

# JAI NARAIN VYAS UNIVERSITY JODHPUR



**2016 - 2021**

3.2.1 Extramural funding for Research (Grants sponsored by the non-government sources such as industry, corporate houses, international bodies for research projects) endowments, Chairs.

3.2.2 Grants for research projects sponsored by the government agencies during the last five years.

3.2.3 Number of research projects per teacher

**SANCTION LETTERS:  
INDIVIDUAL  
RESEARCH GRANTS**





**M A Jawaid**  
**Deputy Director (R P)**  
**Tel # 011-26742351**

**Indian Council of Social Science Research**  
(Ministry of Human Resource Development)  
JNU Institutional Area, Aruna Asaf Ali Marg  
New Delhi - 110067  
E-mail: [rpr@icssr.org](mailto:rpr@icssr.org) Website: [www.icssr.org](http://www.icssr.org)

F.No. 02/114/SC/2013-14/RPR

Dated: 22.01.2014

The Registrar  
Jai Narayan Vyas University,  
Jodhpur-342001 (Rajasthan)

**Subject: Research Project entitled "Dynamics of Socio- Economic Changes of Tribes in Tribal Sub- Plan Area of Rajasthan".**

Dear Sir,

The Indian Council of Social Science Research (ICSSR) considered the above research project submitted by Dr. Laxman Lal Salvi Assistant Professor, Department of Economics, Jai Narayan Vyas University, Jodhpur-342001 (Rajasthan).

2. I am happy to inform that the ICSSR has sanctioned a grant-in-aid of **Rs. 10,00,000/- (Rupees ten lakhs only)** for the above research project and the grant will be released as follows:

First installment:	Rs.	4,00,000.00
Second installment:	Rs.	1,50,000.00
Third installment:	Rs.	1,50,000.00
Fourth installment:	Rs.	1,50,000.00
Fifth installment:	Rs.	75,000.00
Final installment:	Rs.	75,000.00
Total	Rs.	<b>10,00,000.00</b>

Cont'd



3. The **First** installment of the approved grant-in-aid will be released after receiving the grant-in-aid bill duly filled in, stamped and signed by the Project Director as well as the affiliating organization. **(GIB already received)**.

4. In case, the study involves survey research, the finalized schedules/questionnaires (5 copies) designed to elicit information should be sent to the ICSSR as per the following schedule:

- a) If the schedule /questionnaire for eliciting information is as per standard questionnaire, these will have to be sent to ICSSR immediately,
- b) If the schedule /questionnaire for eliciting information are to be designed afresh keeping in view the requirements of the project, these will have to be sent to the ICSSR within a period of six months in any case.

5. The **subsequent** installments would be released on receipt of the **six monthly progress reports** on the project to be submitted by the Project Director **in the prescribed format (enclosed)** and simple statement of expenditure duly certified by the affiliating institution.

The **fifth** installment will be released after receiving:

- a) The final Report on the research project (in duplicate) in a publishable form.
- b) A short summary of the project report in triplicate in 2,000-5,000 words.
- c) Such data or information relating to the research project as may be asked for by the ICSSR for preservation in its Data Archives.

The **Final** installment will be released **only** after the receipt of the following documents under rule 1.10(3) of the ICSSR Research Grants and acceptance by the ICSSR:

- a) The audited statement of accounts for all expenditure incurred together with utilization certificate in GFR 19-A form for the entire amount of the sanctioned grant.
- b) A statement of assets costing over Rs. 100/- and credit out of the project funds. Such assets are required to be donated to the affiliating organization after completion of the project.

6. The Project Director will have to attend the Mid-Term Appraisal, to be conducted by ICSSR after part of the project work is completed and shall make presentation on the progress of the research project before the subject experts.

7. The Director of the research project will be **Dr. Laxman Lal Salvi**. Who will be responsible for its completion within **24 Months** from the date of commencement of the project, which is **1<sup>st</sup> February 2014**, as intimated by the scholar.

Cont'd





8. In case, the Project Director does not submit the periodic / final project report as per schedule with adequate justification, the scholar may be debarred from availing all future financial assistance from ICSSR.


9. All grants from ICSSR are subject to the general provision of GFR 2005 and in particular with reference to the provision contained in GFR 209, GFR 210, GFR 211 and GFR 212.

10. The Project Director will ensure that the expenditure incurred by him conforms to the approved budget heads. The grant-in-aid is subject to all the conditions laid down in the **ICSSR Research Grants scheme, available in the ICSSR website [www.icssr.org](http://www.icssr.org).**

11. The expenditure on this account is debitable to the Budget Head-B Programmes Research Grants-**Plan SC. (10) Grant-in-aid** for research project (s).

12. As per MHRD instruction, the amount of grant sanctioned herein is to be utilized by **the end of the project duration**. Any amount of the grant remaining unspent shall be refunded to the ICSSR immediately after the expiry of the duration of the project. If the grantee fails to utilize the grant for the purpose for which the same has been sanctioned/or fails to submit the audited statement of expenditure within the stipulated period, the grantee will be required to refund the amount of the grant with interest thereon @ 10% per annum.

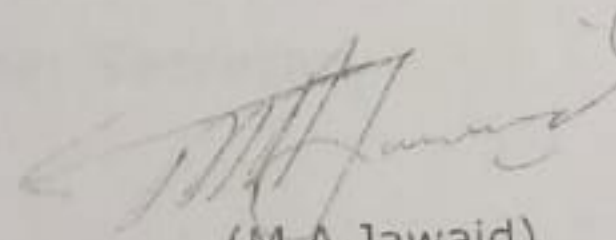
Yours faithfully,

  
(M A Jawaid)  
For MEMBER-SECRETARY

**Encl: as above.**

**Copy to:**

1. Dr. Laxman Lal Salvi  
Assistant Professor,  
Department of Economics,  
Jai Narayan Vyas University,  
Jodhpur-342001 (Rajasthan)
2. Finance Branch, ICSSR, New Delhi
3. Record file

  
(M A Jawaid)  
For MEMBER-SECRETARY

FILE NO. YSS/2015/000733

SCIENCE & ENGINEERING RESEARCH BOARD

5 & 5A, Lower Ground Floor  
Vasant Square Mall  
Plot No. A, Community Centre  
Sector-B, Pocket-5, Vasant Kunj  
New Delhi-110070

Dated: 14-Dec-2015

ORDER

Subject: Financial Sanction of the research project titled **"IMPACT OF BAN ON DICLOFENAC AND USE OF OTHER SAFE, ANTI-INFLAMMATORY DRUGS ON VULTURE POPULATION IN THAR DESERT OF RAJASTHAN"** under the guidance of Dr. Ram Prakash Saran, Zoology, Jai Narain Vyas University, Bhagat Ki Kothi, Pali Road, Jodhpur, Rajasthan-342001, New Campus Rd, Bhagat Ki Kothi, Jodhpur, Rajasthan, RAJASTHAN, JODHPUR-342011 - Release of 1st grant.

Sanction of Science and Engineering Research Board (SERB) is hereby accorded to the above mentioned project at a total cost of Rs. 2600000/- (Rs. Twenty Six Lakh Only) with break-up of Rs. 830000/- under Capital (Non-recurring) head and Rs. 1770000/- under General (Recurring) head for a duration of Three years. The items of expenditure for which the total allocation of Rs. 2600000/- has been approved are given below:

The following budget may be considered for Jai Narain Vyas University, Bhagat Ki Kothi, Pali Road, Jodhpur, Rajasthan, 342001, New Campus Rd, Bhagat Ki Kothi, Jodhpur, Rajasthan

S No	Head	Total (in Rs.)
A	Non-recurring	
1	Equipment -> Videography camera (Camcorder with zoom lens) -> Photography camera with zoom accessories with lens and flash, gun and Tripod -> multifunctional printer -> Global Positioning System -> Laptop -> Semi Auto-analyzer Total (Non Recurring)	830000
B	Recurring Items	830000
1	Recurring - A ( Manpower, Consumables, Travel, Contingencies, Other Cost)	1470000
2	Recurring - B. (Overhead Charges)	300000
B	Total (Recurring)	1770000
C	Total cost of the project (A + B)	2600000

2. Sanction of the SERB is also accorded to the payment of

Rs. 830000/- (Rupees Eight Lakh Thirty Thousand only) under 'Grants for creation of capital assets' and Rs. 600000/- (Rupees Six Lakh only) under 'Grants-in-aid General' to Registrar, Jai Narain Vyas University, Bhagat Ki Kothi, Pali Road, Jodhpur, Rajasthan-342001, New Campus Rd, Bhagat Ki Kothi, Jodhpur, Rajasthan

being the final installment of the grant for the year 2015-2016 for implementation of the said research project



3.2.1 & 3.2.2  
3.2.3  
Projects



FD Diary No.1321  
Dated : 05.06.2014

University Grants Commission  
Bahadur Shah Zafar Marg  
New Delhi-110 002

No.F.30-16/2014(BSR)

Dated: June, 2014

The Under Secretary FD-III Section,  
University Grants Commission  
Bahadur Shah Zafar Marg,  
New Delhi – 110002.

18 JUN 2014

**Subject:-** Approval-cum-Sanction letter for UGC-BSR Research Start-Up-Grant @ Rs.6.00 lakhs each for newly recruited faculty at Assistant Professors level in Science Departments of various Universities – Release of the grant for the year 2013-2014 under Plan.

Sir,

The University Grants Commission convey its approval and allocate a sum of Rs.54,00,000/- (Rupees Fifty Four Lakhs Only) @ Rs.6.00 Lakhs each faculty to the Registrar, Jai Narain Vyas University, Jodhpur – 342 011 Rajasthan being the UGC-BSR Research Start-Up-Grant for newly recruited faculty at Assistant Professors level of Science Departments.

Accordingly, I am further directed to convey the sanction of the University Grants Commission for payment of Rs.54,00,000/- (Rupees Fifty Four Lakhs only) to the Registrar, Jai Narain Vyas University, Jodhpur – 342 011 Rajasthan being the approval of Rs.54,00,000/- (Rupees Fifty Four Lakhs only) @ Rs.6.00 Lakhs each faculty towards UGC-BSR Research Start-Up-Grant for newly recruited faculty at Assistant Professors level in Science Departments as per details given below for the plant expenditure to be incurred during the financial year 2014-15.

Name of the Item	Head of Account	Name of Faculty / Professor	Name of Department	Amount Approved (Rs.)	Amount being released (Rs.)
UGC-BSR Start-up grant @ Rs.6.00 lakhs each for newly recruited faculty at Assistant Professor level in science department	3(A): 2202.03.102.10.01.31	Dr. Nisha Tak	Botany	6,00,000/-	6,00,000/-
		Dr. Priyanka Purohit	Chemistry	6,00,000/-	6,00,000/-
		Dr. Ramprakash Saran	Zoology	6,00,000/-	6,00,000/-
		Dr. Kheta Ram	Botany	6,00,000/-	6,00,000/-
		Dr. Rachana Dinesh Nee Modi	Botany	6,00,000/-	6,00,000/-
		Dr. Anurag Choudary	Chemistry	6,00,000/-	6,00,000/-
		Dr. Om Prakash	Chemistry	6,00,000/-	6,00,000/-
		Dr. Sumitra Kumari Choudhary	Botany	6,00,000/-	6,00,000/-
	3(B): 2202.03.789.03.01.31	Dr. S.K. Barbar	Physics	6,00,000/-	6,00,000/-

*Handwritten signature*

Total Grant	SC Category 3(B): 2202.03.789.03.01.31	General Category 3(A): 2202.03.102.10.01.31
Rs.54,00,000/-	Rs.6,00,000/-	Rs.48,00,000/-

2. The sanctioned amount is debitable to the major Head 3(A): 2202.03.102.10.01.31 & 3(B): 2202.03.789.03.01.31 and is valid for payment during the financial year 2014-15 only.
3. The amount of the Grant shall be drawn by the Under Secretary (Drawing and Disbursing Officer) UGC on the Grants-in-aid bill and shall be disbursed to and credited to the **Registrar, Jai Narain Vyas University, Jodhpur – 342 011 Rajasthan** through Electronic mode as per the following details:
  - a. **Details (Name & Address) : Registrar, Jai Narain Vyas University, of Account Holder Jodhpur – 342 011 Rajasthan**
  - b. **Account No. : 05710100000584**
  - c. **Name & Address of Bank : Bank of Baroda, University Campus Branch, Residency Road, Jodhpur – 342 011**
  - d. **MICR Code : 342012006**
  - e. **IFSC Code : BARB0UNIJOD**
  - f. **Type of Account : Saving Account**
4. The Grant is Subject to the adjustment on the basis of Utilization Certificate in the prescribed proforma submitted by the University/Institution.
5. The University / Institution shall maintain proper accounts of the expenditure out of the Grants which shall be utilized only on the approved items of expenditure.
6. The University / Institution may follow the General Financial Rules, 2005 and take urgent necessary action to amend their manuals of financial procedures to bring them in conformity with GFRs, 2005 and those don't have their own approved manuals on financial procedures may adopt the provisions of GFRs, 2005 and instructions/guideline there under from time to time.
7. The Utilization Certificate to the effect that the grant has been utilized for the purpose for which it has been sanctioned shall be furnished to the UGC as early as possible after the close of the current financial year.
8. The assets acquired wholly or substantially out of University Grants Commission's Grant Shall not be disposed or encumbered or utilized for the purposes other than those for which the grants was given, without proper sanction of the UGC and should at any time the University ceased to function, such assets shall revert to the University Grants Commission.

9. A Register of Assets acquired wholly or substantially out of the grant shall be maintained by the University in the prescribed proforma.
10. The grantee institution shall ensure the utilization of grants-in-aid for which it is being **sanctioned** / paid. In case of non-utilization/part utilization thereof, simple interest @ 10 % per annum as amended from time to time on the unutilized amount from the date of drawal to the date of refund as per provisions contained in General Financial Rules of Govt. of India, will be charged.
11. The University / Institution shall follow strictly the Government of India / UGC's guidelines regarding implementation of the reservation policy [both vertical (for SC, ST & OBC) and horizontal (for persons with disability etc.)] in teaching and non-teaching posts.
12. The University / Institution shall fully implement the Official Language Policy of Union Government and comply with the Official Language Act, 1963 and Official Languages (Use for Official Purposes of the Union) Rules, 1976 etc.
13. The sanction is issued in exercise of the delegation of powers vide UGC Order No. 130/2013 [F.No. 10-11/12 (Admn. IA & B)] dated 28/5/2013.
14. The University / Institution shall strictly follow the UGC Regulations on curbing the menace of Ragging in Higher Education Institutions, 2009.
15. The University / Institution shall take immediate action for its accreditation by National Assessment & Accreditation Council (NAAC).
16. The accounts of the University / Institution will be open for audit by the Comptroller & Auditor General of India in accordance with the provisions of General Financial Rules, 2005.
17. The annual accounts i.e. balance sheet, income and expenditure statement and ~~statement of receipts and payments~~ are to be prepared strictly in accordance with the Uniform Format of Accounting prescribed by Government.
18. This issues with the concurrence of IFD vide Diary No. 7698 (IFD) Dated 03.03.2014.

*K. Lalitha*



19. This issues with the approval of C.M. Sectt. vide Diary No. 20572 Dated 14.03.2014 as revalidated by the Chairman, UGC for the financial year 2014-2015 [No.File.1-1/2014(FD-III)] vide his diary no.28796 dated 07.05.2014.

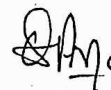
Noted in BCR Register 2014-2015 at P.No.1 S.No.2.

Yours faithfully,

(Shalini)  
Education Officer

Copy forwarded for information and necessary action to:-

1. Registrar, Jai Narain Vyas University, Jodhpur – 342 011 Rajasthan. He/She is requested to abide by these instructions/guidelines of sanction order.
2. The Secretary (Education) to the State Government of Rajasthan, Jodhpur.
3. The Head, Department of Botany / Chemistry / Zoology / Physics, Jai Narain Vyas University, Jodhpur – 342 011 Rajasthan.
4. Dr. Nisha Tak, Assistant Professor, Department of Botany, Jai Narain Vyas University, Jodhpur – 342 011 Rajasthan.
5. Dr. Priyanka Purohit, Assistant Professor, Department of Chemistry, Jai Narain Vyas University, Jodhpur – 342 011 Rajasthan.
6. Dr. Ramprakash Saran, Assistant Professor, Department of Zoology, Jai Narain Vyas University, Jodhpur – 342 011 Rajasthan.
7. Dr. Kheta Ram, Assistant Professor, Department of Botany, Jai Narain Vyas University, Jodhpur – 342 011 Rajasthan.
8. Dr. Rachana Dinesh Nee Modi, Assistant Professor, Department of Botany, Jai Narain Vyas University, Jodhpur – 342 011 Rajasthan.
9. Dr. Anurag Choudary, Assistant Professor, Department of Chemistry, Jai Narain Vyas University, Jodhpur – 342 011 Rajasthan.
10. Dr. Om Prakash, Assistant Professor, Department of Chemistry, Jai Narain Vyas University, Jodhpur – 342 011 Rajasthan.
11. Dr. Sumitra Kumar Choudhary, Assistant Professor, Department of Botany, Jai Narain Vyas University, Jodhpur – 342 011 Rajasthan.
12. Dr. S.K. Barbar, Assistant Professor, Department of Physics, Jai Narain Vyas University, Jodhpur – 342 011 Rajasthan
13. The Director General of Audit, Central Revenues, AGCR Building, I.P. Estate, New Delhi.
14. Guard file.

  
(Usha Arya)  
Section Officer



**NO. SB/YS/LS-137/2013**  
**SCIENCE & ENGINEERING RESEARCH BOARD**

5 & 5A, Lower Ground Floor  
Vasant Square Mall  
Plot No. A, Community Centre  
Sector-5, Pocket-5, Vasant Kunj  
New Delhi-110070

Dated: 5 December, 2013

**ORDER**

Subject: Financial Sanction of the research project titled "Evaluation of genetic diversity and stress tolerance mechanism of *Lasiurus indicus* Henr: Native to Thar desert of Rajasthan" under the guidance of Dr. B. R. Gadi, Deptt. of Botany, Jai Narain Vyas University, Jodhpur-342001, Rajasthan.

Sanction of Science and Engineering Research Board (SERB) is hereby accorded to the above mentioned project at a total cost of Rs. 20,60,000/- (Rs. Twenty Lakh Sixty Thousand Only) with break-up of Rs. 8,00,000/- under Non-Recurring and Rs. 12,60,000/- under Recurring for a duration of three years. The items of expenditure for which the total allocation of Rs. 20,60,000/- has been approved for a period of three years, are given below:

Sl. No	Head	Total (in Rs.) for 3 years
A	Non-Recurring	8,00,000
1	Equipment PCR Machine, Spectrophotometer, Micropipettes, Rocker-Shaker, Microfuge, Balance	8,00,000
A'	Total (Non-recurring)	
B	Recurring	
1	Recurring-A (Manpower, Consumables, Travel, Contingencies, Analytical/Biological Analysis Charges)	9,60,000
2	Recurring- B (Overhead Charges)	3,00,000
B'	Total (Recurring)	12,60,000
C	Total cost of the project (A' + B') for 3 years	20,60,000

2. Sanction of the SERB is also accorded to the payment of Rs. 8,00,000/- (Rs. Eight Lakh Only) under 'Non-Recurring' and Rs. 4,00,000/- (Rs. Four Lakh Only) under 'Recurring' to the REGISTRAR, JAI NARAIN VYAS UNIVERSITY, JODHPUR being the grant for the year 2013-14 for implementation of the said research project.

3. The expenditure involved is debitable to

**Fund for Science & Engineering Research (FSER)**

4. The Sanction has been issued with the approval of the competent authority under delegated powers and vide Diary No. SERB/F/5475/2013-14 dated 26.11.2013.

5. Sanction of the grant is subject to the conditions as detailed in guidelines available at [www.serb.gov.in](http://www.serb.gov.in).

6. Overhead expenses are meant for the host Institute towards the cost for providing infrastructural facilities and general administrative support etc. including benefits to the staff employed in the project.

Contd...2/-

7. While providing operational flexibility among various subheads under head Recurring-A, it should be ensured that not more than Rs. 1.5 lakh each should be spent for travel and contingency.
8. The total release amount of **Rs. 12,00,000/- (Rs. Twelve Lakh Only)** will be drawn by the Finance & Budget Officer of the SERB and will be disbursed by means of cheque/DD favoring **"REGISTRAR, JAI NARAIN VYAS UNIVERSITY, JODHPUR"** and will be sent to Registrar, Jai Narain Vyas University, Jodhpur-342001.
9. As per rule 211 of GFR, the accounts of project shall be open to inspection by sanctioning authority/audit whenever the institute is called upon to do so.
10. The manpower sanctioned in the project, if any is co-terminus with the duration of the project and SERB will have no liability to meet the fellowship etc. beyond the duration of the project.
11. The institute will furnish to the SERB, New Delhi, Utilization certificate and an audited statement of accounts pertaining to the grant immediately after the end of each financial year.
12. The institute will maintain separate audited accounts for the project. It is found expedient to keep a part or whole of grant in a separate bank account earning interest. The interest earned should be reported to the SERB, New Delhi. The interest thus earned will be treated as a credit to the institute to be adjusted towards further installment of the grant.
13. The sanctioned equipments would be procured as per GFR 2005 and its disposal would be done with prior approval of SERB.
14. The project File no. **SB/YS/LS-137/2013** may also be mentioned in all research communications arising from the above project with due acknowledgement of SERB.
15. As this is the first grant being released for the project, no previous U/C is required.
16. The institute may refund any unspent balance to SERB by means of a Demand Draft favoring **"FUND FOR SCIENCE AND ENGINEERING RESEARCH"** payable at New Delhi.

*Gaur*  
(Jacob V.V.)  
Scientist-D

To,

Finance & Budget Officer  
SERB, New Delhi

Copy forwarded for information and necessary action to:-

1	The Principal Director of Audit, A.G.C.R. Building, IIIrd Floor I.P. Estate, Delhi-110002
2	Sanction Folder, SERB, New Delhi.
3	File Copy
4	Dr. B. R. Gadi Deptt. of Botany Jai Narain Vyas University Jodhpur-342001, Rajasthan <small>(Start date of the project may be intimated by name to the undersigned. Please visit website <a href="http://www.serb.gov.in">www.serb.gov.in</a> for all formats and guidelines etc.)</small>
5	Registrar Jai Narain Vyas University Jodhpur-342001 <small>(Receipt of Cheque/DD may be intimated by name to the undersigned.)</small>

*Gaur*  
(Jacob V.V.)  
Scientist-D

**Fwd: SB/YS/LS-369/2013**

1 message

nisha tak <nishatak13@gmail.com>  
To: Shweta Jha <jha.shweta80@gmail.com>

Tue, Aug 16, 2022 at 7:46 PM

----- Forwarded message -----

From: **Jacob V V** <jacobserb2012@gmail.com>  
Date: Wed, 15 Oct 2014 at 2:28 PM  
Subject: SB/YS/LS-369/2013  
To: <nishatak13@gmail.com>, <nt.bo@jnvu.edu.in>

**NO. SB/YS/LS-369/2013****SCIENCE & ENGINEERING RESEARCH BOARD**

5 & 5A, Lower Ground Floor  
Vasant Square Mall

Plot No. A, Community Centre  
Sector-5, Pocket-5, Vasant Kunj

New Delhi-110070

**Dated: 10 October, 2014****ORDER**

Subject: Financial Sanction of the research project titled "Molecular characterization and symbiotic promiscuity studies using GFP reporter gene of some novel root nodule microsymbiont associated with native arid legumes of Indian Thar Desert" under the guidance of **Dr. Nisha Tak, BNF and Stress Biology Lab, Deptt of Botany, Jai Narain Vyas University, Jodhpur-342001, Rajasthan.**

Sanction of **Science and Engineering Research Board (SERB)** is hereby accorded to the above mentioned project at a total cost of **Rs. 22,00,000/- (Rs. Twenty Two Lakh Only)** with break-up of **Rs. 9,00,000/- under Non-Recurring** and **Rs. 13,00,000/- under Recurring** for a duration of three years. The items of expenditure for which the total allocation of **Rs. 22,00,000/-** has been approved for a period of **three** years, are given below:

Sl. No	Head	Total (in Rs.) for 3 years
<b>A</b>	<b>Non-Recurring</b>	
1	Equipment Gradient Thermal Cycler, Deep Freezer(-20), Autoclave, SDS PAGE Electrophoresis Unit	9,00,000
A'	Total (Non-recurring)	<b>9,00,000</b>
<b>B</b>	<b>Recurring</b>	
1	Recurring-A (Manpower, Consumables, Travel, Contingencies (includes Analytical Charges))	10,30,000
2	Recurring- B (Overhead Charges)	2,70,000
B'	Total (Recurring)	<b>13,00,000</b>

C	Total cost of the project (A' + B') for 3 years	22,00,000
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2. Sanction of the **SERB** is also accorded to the payment of **Rs. 9,00,000/- (Rs.Nine Lakh Only)** under '**Non-Recurring**' and **Rs. 4,00,000/- (Rs.Four Lakh Only)** under '**Recurring**' to the **REGISTRAR, JAI NARAIN VYAS UNIVERSITY** being the grant for the year **2014-15** for implementation of the said research project.

3. The expenditure involved is debitable to

**Fund for Science & Engineering Research (FSER)**

This release is made under Start-Up Research Grant (Young Scientists)- Life Sciences.

4. The Sanction has been issued with the approval of the competent authority under delegated powers and vide Diary No.**SERB/F/4999/2014-15 dated 6.10.2014**.

5. Sanction of the grant is subject to the conditions as detailed in guidelines available at [www.serb.gov.in](http://www.serb.gov.in).

6.Overhead expenses are meant for the host Institute towards the cost for providing infrastructural facilities and general administrative support etc. including benefits to the staff employed in the project.

7. While providing operational flexibility among various subheads under head Recurring-A, it should be ensured that not more than Rs. 1.5 lakh each should be spent for travel and contingency.

8. As per rule 211 of GFR, the accounts of project shall be open to inspection by sanctioning authority/audit whenever the institute is called upon to do so.

9. The manpower sanctioned in the project, if any is co-terminus with the duration of the project and SERB will have no liability to meet the fellowship etc. beyond the duration of the project.

Contd...2/-

- 2 -

10. The total release amount of **Rs. 13,00,000/- (Rs.Thirteen Lakh Only)** will be drawn by the Finance & Budget Officer of the SERB and will be disbursed by means of RTGS transaction as per their bank details given below:

<b>Account Name</b>	<b>REGISTRAR</b>
<b>Account Number</b>	<b>05710400000026</b>
<b>Bank Name &amp; Branch</b>	<b>Bank of Baroda, University Campus Branch, Residency Road, Jodhpur</b>
<b>IFSC/RTGS Code</b>	<b>BARB0UNIJOD</b>

11. The institute will furnish to the SERB, New Delhi, Utilization certificate and an audited statement of accounts pertaining to the grant immediately after the end of each financial year.

12. The institute will maintain separate audited accounts for the project. It is found expedient to keep a part or whole of grant in a separate bank account earning interest. The interest earned should be reported to the SERB, New Delhi. The interest thus earned will be treated as a credit to the institute to be adjusted towards further installment of the grant.

13. The sanctioned equipments would be procured as per GFR 2005 and its disposal would be done with prior approval of SERB.

14. The project File no. **SB/YS/LS-369/2013** may also be mentioned in all research communications arising from the above project with due acknowledgement of **SERB**.

15.As this is the first grant being released for the project, no previous U/C is required.

16. The institute may refund any unspent balance to SERB by means of a Demand Draft favoring **“FUND FOR SCIENCE AND ENGINEERING RESEARCH”** payable at New Delhi.

**“FUND FOR SCIENCE**

**(Jacob V.V.)**

**Scientist-D**

**To,**

**Finance & Budget Officer**

**SERB, New Delhi**

**Copy forwarded for information and necessary action to: -**

<b>1</b>	The Principal Director of Audit, A.G.C.R. Building, IIIrd Floor I.P. Estate, Delhi-110002
<b>2</b>	Sanction Folder, SERB, New Delhi.
<b>3</b>	File Copy
<b>4</b>	<p>Dr. Nisha Tak</p> <p>BNF and Stress Biology Lab, Deptt of Botany</p> <p>Jai Narain Vyas University</p> <p>Jodhpur-342001, Rajasthan</p> <p>Email : <a href="mailto:nishatak13@gmail.com">nishatak13@gmail.com</a>,<a href="mailto:nt.bo@jnvu.edu.in">nt.bo@jnvu.edu.in</a></p> <p>(The grant transfer details along with Bank/RTGS transaction no. will be intimated to the above email. Start date of the project may be intimated by name to the undersigned. Please visit website <a href="http://www.serb.gov.in">www.serb.gov.in</a> for all formats and guidelines etc.)</p>
<b>5</b>	<p>Registrar</p> <p>Jai Narain Vyas University</p> <p>Jodhpur-342001, Rajasthan</p> <p>(Receipt of Grant may be intimated by name to the undersigned.)</p>

**(Jacob V.V.)      Scientist-D**

Regards,

*iacob*

जेकब वी.वी

Jacob V.V.

Scientist

**SERB**

5 & 5A, Lower Ground Floor

Vasant Square Mall ,Plot No. A, Community Centre

Sector-5, Pocket-5, **Vasant Kunj**

**New Delhi-110070**

SERB- 011-40000342

DST- 011-26590535

[jacob@nic.in](mailto:jacob@nic.in) with a copy to [jacobserb2012@gmail.com](mailto:jacobserb2012@gmail.com)

--

**Dr. Nisha Tak**

**Assistant Professor**

**BNF and Microbial Genomics Lab.**

**Centre Of Advanced Study**

**Department of Botany**

**Jai Narain Vyas University, Jodhpur-342001 (Rajasthan) India**

**Mobile No. +919461212680**



**NO. SB/YS/LS-39/2014**  
**SCIENCE & ENGINEERING RESEARCH BOARD**

5 & 5A, Lower Ground Floor  
Vasant Square Mall  
Plot No. A, Community Centre  
Sector-5, Pocket-5, Vasant Kunj  
New Delhi-110070  
**Dated: 10 October, 2014**

**ORDER**

Subject: Financial Sanction of the research project titled "Comparative proteomic analysis for salinity stress tolerance in Pearl millet (*Pennisetum glaucum* (L.) R. Br.)" under the guidance of **Dr. Shweta Jha, Deptt of Botany, Jai Narain Vyas University, Prof. V.V. John Marg (Pali Road), Bhagat-ki-Kothi, Jodhpur-342001, Rajasthan.**

Sanction of Science and Engineering Research Board (SERB) is hereby accorded to the above mentioned project at a total cost of Rs. 24,40,000/- (Rs. Twenty Four Lakh Forty Thousand Only) with break-up of Rs. 7,50,000/- under Non-Recurring and Rs. 16,90,000/- under Recurring for a duration of three years. The items of expenditure for which the total allocation of Rs. 24,40,000/- has been approved for a period of **three** years, are given below:

Sl. No	Head	Total (in Rs.) for 3 years
<b>A</b>	<b>Non-Recurring</b>	
1	Equipment SDS PAGE Unit with Western blotter, Uv-Vis spectrophotometer, UPS, UV transilluminator	7,50,000
A'	Total (Non-recurring)	7,50,000
<b>B</b>	<b>Recurring</b>	
1	Recurring-A (Manpower, Consumables, Travel, Contingencies (includes Analytical Charges))	13,90,000
2	Recurring- B (Overhead Charges)	3,00,000
B'	Total (Recurring)	16,90,000
C	Total cost of the project (A' + B') for 3 years	24,40,000

2. Sanction of the SERB is also accorded to the payment of Rs. 7,50,000/- (Rs. Seven Lakh Fifty Thousand Only) under 'Non-Recurring' and Rs. 4,50,000/- (Rs. Four Lakh Fifty Thousand Only) under 'Recurring' to the REGISTRAR, JAI NARAIN VYAS UNIVERSITY being the grant for the year 2014-15 for implementation of the said research project.

3. The expenditure involved is debitable to

**Fund for Science & Engineering Research (FSER)**

This release is made under Start-Up Research Grant (Young Scientists)- Life Sciences.

4. The Sanction has been issued with the approval of the competent authority under delegated powers and vide Diary No. SERB/F/4992/2014-15 dated 6.10.2014.

5. Sanction of the grant is subject to the conditions as detailed in guidelines available at [www.serb.gov.in](http://www.serb.gov.in).

6. Overhead expenses are meant for the host Institute towards the cost for providing infrastructural facilities and general administrative support etc. including benefits to the staff employed in the project.

7. While providing operational flexibility among various subheads under head Recurring-A, it should be ensured that not more than Rs. 1.5 lakh each should be spent for travel and contingency.

8. As per rule 211 of GFR, the accounts of project shall be open to inspection by sanctioning authority/audit whenever the institute is called upon to do so.

9. The manpower sanctioned in the project, if any is co-terminus with the duration of the project and SERB will have no liability to meet the fellowship etc. beyond the duration of the project.



- 2 -

10. The total release amount of **Rs. 12,00,000/- (Rs. Twelve Lakh Only)** will be drawn by the Finance & Budget Officer of the SERB and will be disbursed by means of RTGS transaction as per their bank details given below:

Account Name	REGISTRAR
Account Number	05710400000026
Bank Name & Branch	Bank of Baroda, University Campus Branch, Residency Road, Jodhpur
IFSC/RTGS Code	BARB0UNIJOD

11. The institute will furnish to the SERB, New Delhi, Utilization certificate and an audited statement of accounts pertaining to the grant immediately after the end of each financial year.


12. The institute will maintain separate audited accounts for the project. It is found expedient to keep a part or whole of grant in a separate bank account earning interest. The interest earned should be reported to the SERB, New Delhi. The interest thus earned will be treated as a credit to the institute to be adjusted towards further installment of the grant.

13. The sanctioned equipments would be procured as per GFR 2005 and its disposal would be done with prior approval of SERB.

14. The project File no. **SB/YS/LS-39/2014** may also be mentioned in all research communications arising from the above project with due acknowledgement of **SERB**.

15. As this is the first grant being released for the project, no previous U/C is required.

16. The institute may refund any unspent balance to SERB by means of a Demand Draft favoring **"FUND FOR SCIENCE AND ENGINEERING RESEARCH"** payable at New Delhi.

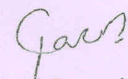
  
(Jacob V.V.)  
Scientist-D

To,

**Finance & Budget Officer  
SERB, New Delhi**

Copy forwarded for information and necessary action to: -

1	The Principal Director of Audit, A.G.C.R. Building, IIIrd Floor I.P. Estate, Delhi-110002
2	Sanction Folder, SERB, New Delhi.
3	File Copy
4	<p>Dr. Shweta Jha Deptt of Botany Jai Narain Vyas University Prof. V.V. John Marg (Pali Road) Bhagat-ki-Kothi, Jodhpur-342001, Rajasthan</p> <p style="text-align: center;">Email : sj.bo@jnvu.edu.in, jha.shweta80@gmail.com</p> <p>(The grant transfer details along with Bank/RTGS transaction no. will be intimated to the above email. Start date of the project may be intimated by name to the undersigned. Please visit website <a href="http://www.serb.gov.in">www.serb.gov.in</a> for all formats and guidelines etc.)</p>
5	<p>Registrar Jai Narain Vyas University Jodhpur-342001 Rajasthan</p> <p>(Receipt of Grant may be intimated by name to the undersigned.)</p>







FD Diary No. 4496  
Dated : 03.08.2017

UNIVERSITY GRANTS COMMISSION  
BAHADUR SHAH ZAFAR MARG  
NEW DELHI 110002

MRP-MAJOR-BOTA-2013-28152  
(OBC)

F.No.43-129/2014(SR)

Dated: Aug, 2017

The Under Secretary (FD-III)  
University Grants Commission  
Bahadur Shah Zafar Marg  
New Delhi - 110002

28 AUG 2017

Sub: Release of Grant-in aid to **Jai Narain Vyas University, Jodhpur-342005, Rajasthan** for the year 2017-18 under revenue in respect of Major Research Project entitled "**Screening.....desert**" awarded to **Dr. H.S. Gehlot, Dept. of Botany** tenure of the project from **01.07.2015 to 30.06.2018. (3 years)**

Sir,

I am directed to convey the sanction of the University Grants Commission for payment of grant of Rs. **2,19,820/- (Rupees Two Lakh Nineteen Thousand Eight Hundred Twenty Only)** as **2<sup>nd</sup> installment** for the year 2017-18 towards Major Research Project to **The Registrar, Jai Narain Vyas University, Jodhpur-342005, Rajasthan** for the revenue expenditure to be incurred during 2017-18.

Name of the Item	Amount Allocated	Head of Account	Grant now Being Sanctioned	Grant already Released	Total Grant
Books & Journals	30,000/-	3.A (65)(a). 35	.....	30,000/-	30,000/-
Equipment	5,00,000/-		.....	5,00,000/-	5,00,000/-
Project Fellow @ Rs. 14,000/-p.m for 2 years & Rs. 16,000 p.m for 3 <sup>rd</sup> year HRA	4,75,355/-	3.A (65)(a). 31	1,27,820/-	3,00,000/-	4,27,820/-
	.....		.....	.....	.....
Contingency	50,000/-		20,000/-	25,000/-	45,000/-
Chemical	1,00,000/-		40,000/-	50,000/-	90,000/-
Hiring Services	50,000/-		20,000/-	25,000/-	45,000/-
Travel/ Field Work	30,000/-		12,000/-	15,000/-	27,000/-
Overhead Charges	80,000/-		.....	80,000/-	80,000/-
Total	13,15,355/-		2,19,820/-	10,25,000/-	12,44,820/-

15. The accounts of the University / Institution will be open for audit by the Comptroller & Auditor General of India in accordance with the provisions of General Financial Rules, 2005.
16. The annual accounts i.e. balance sheet, income and expenditure statement and statement of receipts and payments are to be prepared strictly in accordance with the Uniform Format of Accounting prescribed by Government.
17. The grantee institution shall remit the amount of grants in aid and / or interest through e-mode (RTGS/NEFT) directly to UGC account as per following bank details:-

Account Holder	Secretary, UGC, New Delhi-110 002
Name of Bank & Address	Canara Bank, UGC Office, New Delhi-110 002
A/C No.	8627101002122
Type of A/C	Savings
IFSC Code	CNRB0008627
MICR Code	110015170

18. An amount of **Rs. 9,23,641/-** out the grant of **Rs. 10,25,000/-** sanctioned vide letter No. **F.43-129/2014(SR)** dated **21.07.2015** has been utilized by University/College/Institution for the purpose for which it was sanctioned. Utilization Certificate for **Rs. ....** has already been entered at S. No. .... Now we may enter Utilization Certificate for **Rs. 9,23,641/-** S.No. **314** and in the U.C. Registrar at page No. **94**.
19. Funds to the extent of Rs. .... are available under the scheme or BE / RE of the year.
20. This issues with the concurrence of IFD vide Diary No. **1289** (IFD) dated **23.06.2017**.
21. This issues with the approval of Joint Secretary (MRP) vide Diary No. **46829** dated **30.06.2017**.

Yours faithfully,

(G.S. Aulakh)  
Under Secretary

**Copy forwarded for information and necessary action for :-**

1. The Registrar, Jai Narain Vyas University, Jodhpur-342005, Rajasthan
2. Office of the Director General of Audit, Central Revenues, AGCR Building, I.P. Estate, New Delhi.
3. Accountant General, State Govt. of Jaipur, Rajasthan
4. Dr. H.S. Gehlot, Dept. of Botany, Jai Narain Vyas University, Jodhpur-342005, Rajasthan
5. Guard file.

(Arun Kumar Sinha)  
Section Officer

1. The sanctioned amount is debitable to **Major Research Project 3.A (65) (a) 31(Rs. 2,19,820/-)** and is valid for payment during the financial year 2017-18 only.

2. The amount of the Grant shall be drawn by the Under Secretary (Drawing and Disbursing Officer) UGC on the Grants-in-aid bill and shall be disbursed to and credited to **The Registrar, Jai Narain Vyas University, Jodhpur-342005, Rajasthan** through Electronic mode as per the following details:-

(a)	Bank Name & Address of Branch	Bank of Baroda, University Campus Branch, Residency Road, Jodhpur-342006
(b)	Account no.	05710400000026
(c)	Type of Account : SB /Current /Cash Credit	Current
(d)	IFSC Code	BARB0UNIJOD
(e)	MICR Code	--
(f)	Whether Bank Branch is RTGS or NEFT enabled : RTGS / NEFT /Both	Yes
(g)	Name & Address of Account Holder	The Registrar, Jai Narain Vyas University, Jodhpur-342005, Rajasthan

3. The Grant is Subject to the adjustment on the basis of Utilization Certificate in the prescribed proforma submitted by the University / Institution.
4. The University / Institution shall maintain proper accounts of the expenditure out of the Grants which shall be utilized only on the approved items of expenditure.
5. The University / Institution may follow the General Financial Rules, 2005 and take urgent necessary action to amend their manuals of financial procedures to bring them in conformity with GFRs, 2005 and those don't have their own approved manuals on financial procedures may adopt the provisions of GFRs, 2005 and instructions / guidelines there under from time to time.
6. The Utilization Certificate to the effect that the grant has been utilized for the purpose for which it has been sanctioned shall be furnished to UGC as early as possible after the close of current financial year.
7. The assets acquired wholly for substantially out of University Grants Commission's Grant shall not be disposed or encumbered or utilized for the purposes other than those for which the grants was given without proper sanction of the UGC and should at any time the University ceased to function, such assets shall revert to the University Grants Commission.
8. A Register of Assets acquired wholly or substantially out of the grant shall be maintained by the University in the prescribed proforma.
9. The grantee institution shall ensure the utilization of grants-in-aid for which it is being sanctioned / paid. In case of non-utilization / part utilization thereof, simple interest @ 10% per annum, as amended from time to time on the unutilized amount from the date of drawal to the date of refund as per provisions contained in General Financial Rules of Govt. of India, will be charged.
10. The University / Institutions shall follow strictly the Government of India / UGS's guidelines regarding implementation of the reservation policy [both vertical (for SC, ST & OBC) and horizontal (for persons with disability etc.)] in teaching and non-teaching posts.
11. The University / Institution shall fully implement the Official Language Policy of Union Government and comply with the Official Language Act, 1963 and Official Languages (Use for Official Purposes of the Union) Rules, 1976 etc.
12. The sanction is issued in exercise of the delegation of powers vide UGC Order No. 69/2014 [F.No.10-11/12 (Admn. IA & B)] dated 26/3/2014.
13. The University / Institution shall strictly follow the UGC Regulations on curbing the menace of Ragging in Higher Education Institutions, 2009.
14. The University / Institution shall take immediate action for its accreditation by National Assessment & Accreditation Council (NAAC).





UNIVERSITY GRANTS COMMISSION  
BAHADURSHAH ZAFAR MARG  
NEW DELHI-110002

Dated - 06.07.2015

No - 43-129/2014(SR)

Dated :- July, 2015

MRP-MAJOR-BOTA-2013-28152  
(OBC)

30 JUL 2015

The Under Secretary (FDIII),  
University Grants Commission,  
Bahadur Shah Zafar Marg,  
New Delhi-110002

Sub:- Release of Grants-in-aid to Jai Narain Vyas University, Jodhpur, Rajasthan, India- 342005 for the year 2015-16 under Plan in respect of Major Research Project entitled "Screening and Molecular Characterization of Salt and Temperature Tolerant Nitrogen Fixing Root Nodule Bacterial Strains Isolated From Native Legumes of Indian Thar Desert" awarded to Dr. H.S. Gehlot, Department of Botany, Tenure of project for 3 year(s) w.e.f. 01/07/2015.

Sir/Madam,

I am directed to convey the approval sanction of the University Grants Commission for payment of grant of Rs. 10,25,000/- (Rupees: TEN LAKHS TWENTY FIVE THOUSAND ONLY) as 1st instalment for the years 2015-16 towards Major Research Project to the REGISTRAR, Jai Narain Vyas University, Jodhpur, Rajasthan, India- 342005 for the Plan expenditure to be incurred during 2015-16

REGISTRAR, Jal Narayan

S. No.	Items	Head of Account	Amount Approved(Rs.)	Grant being Released as 1st Installment(Rs.)	Grant Already Released(Rs.)	Total Grant(Rs.)
A.	Non-Recurring	3(A).49(a).35				
1	Books & Journals		Rs. 30,000/-	Rs. 30,000/-	-	Rs. 30,000/-
2.	Equipment		Rs. 5,00,000/-	Rs. 5,00,000/-	-	Rs. 5,00,000/-
B.	Recurring	3(A).49(a).31				
1	Honorium to Retd. Teacher @ s. 18,000/- p.m.		Rs. 0/-	Rs. 0/-	-	Rs. 0/-
2.	a. Project Fellow (Non-Gate/Non NET) @ Rs. 14,000/- p.m. b. Project Fellow (Gate/NET/GPAT) @ Rs. 16,000/- p.m. Tenure - 3 year(s)		Rs. 6,00,000/-	Rs. 3,00,000/-	-	Rs. 3,00,000/-
3.	Chemical/Glassware/Consumable (Raw Material & Packaging Material etc.)		Rs. 1,00,000/-	Rs. 50,000/-	-	Rs. 50,000/-
4.	Contingency		Rs. 50,000/-	Rs. 25,000/-	-	Rs. 25,000/-
5.	Hiring Services		Rs. 50,000/-	Rs. 25,000/-	-	Rs. 25,000/-
6.	Travel / Field Work		Rs. 30,000/-	Rs. 15,000/-	-	Rs. 15,000/-
7.	Any Other		Rs. 0/-	Rs. 0/-	-	Rs. 0/-
8.	Overhead Charges 10% of approved recurring Grant (Except Travel & Field Work)		Rs. 80,000/-	Rs. 80,000/-	-	Rs. 80,000/-
Total (A + B)			Rs. 14,40,000/-	Rs. 10,25,000/-	-	Rs. 10,25,000/-

3.2.1 & 3.2.2  
3.2.3  
Projects



FD Diary No.1321  
Dated : 05.06.2014

University Grants Commission  
Bahadur Shah Zafar Marg  
New Delhi-110 002

No.F.30-16/2014(BSR)

Dated: June, 2014

The Under Secretary FD-III Section,  
University Grants Commission  
Bahadur Shah Zafar Marg,  
New Delhi – 110002.

18 JUN 2014

**Subject:-** Approval-cum-Sanction letter for UGC-BSR Research Start-Up-Grant @ Rs.6.00 lakhs each for newly recruited faculty at Assistant Professors level in Science Departments of various Universities – Release of the grant for the year 2013-2014 under Plan.

Sir,

The University Grants Commission convey its approval and allocate a sum of Rs.54,00,000/- (Rupees Fifty Four Lakhs Only) @ Rs.6.00 Lakhs each faculty to the Registrar, Jai Narain Vyas University, Jodhpur – 342 011 Rajasthan being the UGC-BSR Research Start-Up-Grant for newly recruited faculty at Assistant Professors level of Science Departments.

Accordingly, I am further directed to convey the sanction of the University Grants Commission for payment of Rs.54,00,000/- (Rupees Fifty Four Lakhs only) to the Registrar, Jai Narain Vyas University, Jodhpur – 342 011 Rajasthan being the approval of Rs.54,00,000/- (Rupees Fifty Four Lakhs only) @ Rs.6.00 Lakhs each faculty towards UGC-BSR Research Start-Up-Grant for newly recruited faculty at Assistant Professors level in Science Departments as per details given below for the plant expenditure to be incurred during the financial year 2014-15.

Name of the Item	Head of Account	Name of Faculty / Professor	Name of Department	Amount Approved (Rs.)	Amount being released (Rs.)
UGC-BSR Start-up grant @ Rs.6.00 lakhs each for newly recruited faculty at Assistant Professor level in science department	3(A): 2202.03.102.10.01.31	Dr. Nisha Tak	Botany	6,00,000/-	6,00,000/-
		Dr. Priyanka Purohit	Chemistry	6,00,000/-	6,00,000/-
		Dr. Ramprakash Saran	Zoology	6,00,000/-	6,00,000/-
		Dr. Kheta Ram	Botany	6,00,000/-	6,00,000/-
		Dr. Rachana Dinesh Nee Modi	Botany	6,00,000/-	6,00,000/-
		Dr. Anurag Choudary	Chemistry	6,00,000/-	6,00,000/-
		Dr. Om Prakash	Chemistry	6,00,000/-	6,00,000/-
		Dr. Sumitra Kumari Choudhary	Botany	6,00,000/-	6,00,000/-
	3(B): 2202.03.789.03.01.31	Dr. S.K. Barbar	Physics	6,00,000/-	6,00,000/-

*Heelan*



Total Grant	SC Category 3(B): 2202.03.789.03.01.31	General Category 3(A): 2202.03.102.10.01.31
Rs.54,00,000/-	Rs.6,00,000/-	Rs.48,00,000/-

2. The sanctioned amount is debitable to the major Head 3(A): 2202.03.102.10.01.31 & 3(B): 2202.03.789.03.01.31 and is valid for payment during the financial year 2014-15 only.
3. The amount of the Grant shall be drawn by the Under Secretary (Drawing and Disbursing Officer) UGC on the Grants-in-aid bill and shall be disbursed to and credited to the **Registrar, Jai Narain Vyas University, Jodhpur – 342 011 Rajasthan** through Electronic mode as per the following details:
  - a. **Details (Name & Address) : Registrar, Jai Narain Vyas University, of Account Holder Jodhpur – 342 011 Rajasthan**
  - b. **Account No. : 05710100000584**
  - c. **Name & Address of Bank : Bank of Baroda, University Campus Branch, Residency Road, Jodhpur – 342 011**
  - d. **MICR Code : 342012006**
  - e. **IFSC Code : BARB0UNIJOD**
  - f. **Type of Account : Saving Account**
4. The Grant is Subject to the adjustment on the basis of Utilization Certificate in the prescribed proforma submitted by the University/Institution.
5. The University / Institution shall maintain proper accounts of the expenditure out of the Grants which shall be utilized only on the approved items of expenditure.
6. The University / Institution may follow the General Financial Rules, 2005 and take urgent necessary action to amend their manuals of financial procedures to bring them in conformity with GFRs, 2005 and those don't have their own approved manuals on financial procedures may adopt the provisions of GFRs, 2005 and instructions/guideline there under from time to time.
7. The Utilization Certificate to the effect that the grant has been utilized for the purpose for which it has been sanctioned shall be furnished to the UGC as early as possible after the close of the current financial year.
8. The assets acquired wholly or substantially out of University Grants Commission's Grant Shall not be disposed or encumbered or utilized for the purposes other than those for which the grants was given, without proper sanction of the UGC and should at any time the University ceased to function, such assets shall revert to the University Grants Commission.

9. A Register of Assets acquired wholly or substantially out of the grant shall be maintained by the University in the prescribed proforma.
10. The grantee institution shall ensure the utilization of grants-in-aid for which it is being **sanctioned** / paid. In case of non-utilization/part utilization thereof, simple interest @ 10 % per annum as amended from time to time on the unutilized amount from the date of drawal to the date of refund as per provisions contained in General Financial Rules of Govt. of India, will be charged.
11. The University / Institution shall follow strictly the Government of India / UGC's guidelines regarding implementation of the reservation policy [both vertical (for SC, ST & OBC) and horizontal (for persons with disability etc.)] in teaching and non-teaching posts.
12. The University / Institution shall fully implement the Official Language Policy of Union Government and comply with the Official Language Act, 1963 and Official Languages (Use for Official Purposes of the Union) Rules, 1976 etc.
13. The sanction is issued in exercise of the delegation of powers vide UGC Order No. 130/2013 [F.No. 10-11/12 (Admn. IA & B)] dated 28/5/2013.
14. The University / Institution shall strictly follow the UGC Regulations on curbing the menace of Ragging in Higher Education Institutions, 2009.
15. The University / Institution shall take immediate action for its accreditation by National Assessment & Accreditation Council (NAAC).
16. The accounts of the University / Institution will be open for audit by the Comptroller & Auditor General of India in accordance with the provisions of General Financial Rules, 2005.
17. The annual accounts i.e. balance sheet, income and expenditure statement and ~~statement of receipts and payments~~ are to be prepared strictly in accordance with the Uniform Format of Accounting prescribed by Government.
18. This issues with the concurrence of IFD vide Diary No. 7698 (IFD) Dated 03.03.2014.

*K. Lalitha*

19. This issues with the approval of C.M. Sectt. vide Diary No. 20572 Dated 14.03.2014 as revalidated by the Chairman, UGC for the financial year 2014-2015 [No.File.1-1/2014(FD-III)] vide his diary no.28796 dated 07.05.2014.

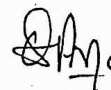
Noted in BCR Register 2014-2015 at P.No.1 S.No.2.

Yours faithfully,

(Shalini)  
Education Officer

Copy forwarded for information and necessary action to:-

1. Registrar, Jai Narain Vyas University, Jodhpur – 342 011 Rajasthan. He/She is requested to abide by these instructions/guidelines of sanction order.
2. The Secretary (Education) to the State Government of Rajasthan, Jodhpur.
3. The Head, Department of Botany / Chemistry / Zoology / Physics, Jai Narain Vyas University, Jodhpur – 342 011 Rajasthan.
4. Dr. Nisha Tak, Assistant Professor, Department of Botany, Jai Narain Vyas University, Jodhpur – 342 011 Rajasthan.
5. Dr. Priyanka Purohit, Assistant Professor, Department of Chemistry, Jai Narain Vyas University, Jodhpur – 342 011 Rajasthan.
6. Dr. Ramprakash Saran, Assistant Professor, Department of Zoology, Jai Narain Vyas University, Jodhpur – 342 011 Rajasthan.
7. Dr. Kheta Ram, Assistant Professor, Department of Botany, Jai Narain Vyas University, Jodhpur – 342 011 Rajasthan.
8. Dr. Rachana Dinesh Nee Modi, Assistant Professor, Department of Botany, Jai Narain Vyas University, Jodhpur – 342 011 Rajasthan.
9. Dr. Anurag Choudary, Assistant Professor, Department of Chemistry, Jai Narain Vyas University, Jodhpur – 342 011 Rajasthan.
10. Dr. Om Prakash, Assistant Professor, Department of Chemistry, Jai Narain Vyas University, Jodhpur – 342 011 Rajasthan.
11. Dr. Sumitra Kumar Choudhary, Assistant Professor, Department of Botany, Jai Narain Vyas University, Jodhpur – 342 011 Rajasthan.
12. Dr. S.K. Barbar, Assistant Professor, Department of Physics, Jai Narain Vyas University, Jodhpur – 342 011 Rajasthan
13. The Director General of Audit, Central Revenues, AGCR Building, I.P. Estate, New Delhi.
14. Guard file.

  
(Usha Arya)  
Section Officer





FD Diary No.4304  
Dated : 31.07.2014

University Grants Commission  
Bahadur Shah Zafar Marg  
New Delhi-110 002

No.F.30-50/2014(BSR)

Dated: August, 2014

The Under Secretary FD-III Section,  
University Grants Commission  
Bahadur Shah Zafar Marg,  
New Delhi – 110002.

12- AUG 2014

**Subject:-** Approval-cum-Sanction letter for UGC-BSR Research Start-Up-Grant @ Rs.6.00 lakhs each for newly recruited faculty at Assistant Professors level in Science Departments of various Universities – Release of the grant for the year 2014-2015 under Plan.

Sir,

The University Grants Commission convey its approval and allocate a sum of **Rs.18,00,000/- (Rupees Eighteen Lakhs Only) @ Rs.6.00 Lakhs each faculty** to the Registrar, Jai Narain Vyas University, Jodhpur – 342 011 Rajasthan being the UGC-BSR Research Start-Up-Grant for newly recruited faculty at Assistant Professors level of Science Departments.

Accordingly, I am further directed to convey the sanction of the University Grants Commission for payment of **Rs.18,00,000/- (Rupees Eighteen Lakhs only)** to the Registrar, Jai Narain Vyas University, Jodhpur – 342 011 Rajasthan being the approval of **Rs.18,00,000/- (Rupees Eighteen Lakhs only) @ Rs.6.00 Lakhs each faculty** towards UGC-BSR Research Start-Up-Grant for newly recruited faculty at Assistant Professors level in Science Departments as per details given below for the plan expenditure to be incurred during the year **2014-2015:-**

Name of the Scheme	Head of Account	Name of Faculty / Professor	Name of Departments	Amount Approved (Rs.)	Amount being released (Rs.)
UGC-BSR Start-up grant @ Rs.6.00 lakhs each for newly recruited faculty at Assistant Professor level in science department	3(A): 2202.03.102.10.01.31	Dr. Rajni Bais Assistant Professor	Chemistry	6,00,000/-	6,00,000/-
		Dr. Sangeeta Parihar Assistant Professor	Chemistry	6,00,000/-	6,00,000/-
		Dr. Shweta Jha Assistant Professor	Botany	6,00,000/-	6,00,000/-
		Total:		18,00,000/-	18,00,000/-

2. The sanctioned amount is debitable to the major Head 3(A): 2202.03.102.10.01.31 and is valid for payment during the financial year 2014-15 only.



3. The amount of the Grant shall be drawn by the Under Secretary (Drawing and Disbursing Officer) UGC on the Grants-in-aid bill and shall be disbursed to and credited to the **Registrar, Jai Narain Vyas University, Jodhpur – 342 011 Rajasthan** through Electronic mode as per the following details:

- a. **Details (Name & Address) of Account Holder** : Registrar, Jai Narain Vyas University, Jodhpur – 342 011 Rajasthan
- b. **Account No.** : 05710100000584
- c. **Name & Address of Bank Branch** : Bank of Baroda, University Campus Branch, Residency Road, Jodhpur – 342 011
- d. **MICR Code** : 342012006
- e. **IFSC Code** : BARB0UNIJOD
- f. **Type of Account** : Saving Account

4. The Grant is Subject to the adjustment on the basis of Utilization Certificate in the prescribed proforma submitted by the University/Institution.

5. The University / Institution shall maintain proper accounts of the expenditure out of the Grants which shall be utilized only on the approved items of expenditure.

6. The University / Institution may follow the General Financial Rules, 2005 and take urgent necessary action to amend their manuals of financial procedures to bring them in conformity with GFRs, 2005 and those don't have their own approved manuals on financial procedures may adopt the provisions of GFRs, 2005 and instructions/guideline there under from time to time.

7. The Utilization Certificate to the effect that the grant has been utilized for the purpose for which it has been sanctioned shall be furnished to the UGC as early as possible after the close of the current financial year.

8. The assets acquired wholly or substantially out of University Grants Commission's Grant Shall not be disposed or encumbered or utilized for the purposes other than those for which the grants was given, without proper sanction of the UGC and should at any time the University ceased to function, such assets shall revert to the University Grants Commission.



9. A Register of Assets acquired wholly or substantially out of the grant shall be maintained by the University in the prescribed proforma.
10. The grantee institution shall ensure the utilization of grants-in-aid for which it is being **sanctioned** / paid. In case of non-utilization/part utilization thereof, simple interest @ 10 % per annum as amended from time to time on the unutilized amount from the date of drawal to the date of refund as per provisions contained in General Financial Rules of Govt. of India, will be charged.
11. The University / Institution shall follow strictly the Government of India / UGC's guidelines regarding implementation of the reservation policy [both vertical (for SC, ST & OBC) and horizontal (for persons with disability etc.)] in teaching and non-teaching posts.
12. The University / Institution shall fully implement the Official Language Policy of Union Government and comply with the Official Language Act, 1963 and Official Languages (Use for Official Purposes of the Union) Rules, 1976 etc.
13. The sanction is issued in exercise of the delegation of powers vide UGC Order No. 130/2013 [F.No. 10-11/12 (Admn. IA & B)] dated 28/5/2013.
14. The University /Institution shall strictly follow the UGC Regulations on curbing the menace of Ragging in Higher Education Institutions, 2009.
15. The University / Institution shall take immediate action for its accreditation by National Assessment & Accreditation Council (NAAC).
16. The accounts of the University / Institution will be open for audit by the Comptroller & Auditor General of India in accordance with the provisions of General Financial Rules, 2005.
17. The annual accounts i.e. balance sheet, income and expenditure statement and statement of receipts and payments are to be prepared strictly in accordance with the Uniform Format of Accounting prescribed by Government.



18. This issues with the concurrence of IFD vide Diary No. 1205 (IFD)  
Dated 23.05.2014.
19. This issues with the approval of C.M. Sectt. vide Diary No. 29374  
Dated 20.06.2014.

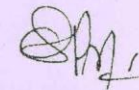
Noted in BCR Register 2014-2015 at P.No.13 S.No.50.

Yours faithfully,

(Shalini)  
Education Officer

Copy forwarded for information and necessary action to:-

1. **Registrar, Jai Narain Vyas University, Jodhpur – 342 011 Rajasthan.**  
He/She is requested to abide by these instructions/guidelines of sanction order.
2. The Secretary (Education) to the State Government of **Rajasthan, Ajmer.**
3. **The Head, Department of Chemistry / Botany, Jai Narain Vyas University,**  
Jodhpur – 342 011 Rajasthan.
4. **Dr. Rajni Bais, Assistant Professor, Department of Chemistry, Jai Narain**  
Vyas University, Jodhpur – 342 011 Rajasthan.
5. **Dr. Sangeeta Parihar, Assistant Professor, Department of Chemistry, Jai**  
Narain Vyas University, Jodhpur – 342 011 Rajasthan.
6. **Dr. Shweta Jha, Assistant Professor, Department of Botany, Jai Narain Vyas**  
University, Jodhpur – 342 011 Rajasthan.
7. The Director General of Audit, Central Revenues, AGCR Building, I.P. Estate,  
New Delhi.
8. Guard file.

  
(Usha Arya)  
Section Officer



3.2.1 & 3.2.2  
3.2.3  
Projects



FD Diary No.1321  
Dated : 05.06.2014

University Grants Commission  
Bahadur Shah Zafar Marg  
New Delhi-110 002

No.F.30-16/2014(BSR)

Dated: June, 2014

The Under Secretary FD-III Section,  
University Grants Commission  
Bahadur Shah Zafar Marg,  
New Delhi – 110002.

18 JUN 2014

**Subject:-** Approval-cum-Sanction letter for UGC-BSR Research Start-Up-Grant @ Rs.6.00 lakhs each for newly recruited faculty at Assistant Professors level in Science Departments of various Universities – Release of the grant for the year 2013-2014 under Plan.

Sir,

The University Grants Commission convey its approval and allocate a sum of Rs.54,00,000/- (Rupees Fifty Four Lakhs Only) @ Rs.6.00 Lakhs each faculty to the Registrar, Jai Narain Vyas University, Jodhpur – 342 011 Rajasthan being the UGC-BSR Research Start-Up-Grant for newly recruited faculty at Assistant Professors level of Science Departments.

Accordingly, I am further directed to convey the sanction of the University Grants Commission for payment of Rs.54,00,000/- (Rupees Fifty Four Lakhs only) to the Registrar, Jai Narain Vyas University, Jodhpur – 342 011 Rajasthan being the approval of Rs.54,00,000/- (Rupees Fifty Four Lakhs only) @ Rs.6.00 Lakhs each faculty towards UGC-BSR Research Start-Up-Grant for newly recruited faculty at Assistant Professors level in Science Departments as per details given below for the plant expenditure to be incurred during the financial year 2014-15.

Name of the Item	Head of Account	Name of Faculty / Professor	Name of Department	Amount Approved (Rs.)	Amount being released (Rs.)
UGC-BSR Start-up grant @ Rs.6.00 lakhs each for newly recruited faculty at Assistant Professor level in science department	3(A): 2202.03.102.10.01.31	Dr. Nisha Tak	Botany	6,00,000/-	6,00,000/-
		Dr. Priyanka Purohit	Chemistry	6,00,000/-	6,00,000/-
		Dr. Ramprakash Saran	Zoology	6,00,000/-	6,00,000/-
		Dr. Kheta Ram	Botany	6,00,000/-	6,00,000/-
		Dr. Rachana Dinesh Nee Modi	Botany	6,00,000/-	6,00,000/-
		Dr. Anurag Choudary	Chemistry	6,00,000/-	6,00,000/-
		Dr. Om Prakash	Chemistry	6,00,000/-	6,00,000/-
		Dr. Sumitra Kumari Choudhary	Botany	6,00,000/-	6,00,000/-
	3(B): 2202.03.789.03.01.31	Dr. S.K. Barbar	Physics	6,00,000/-	6,00,000/-

*Handwritten signature*

Total Grant	SC Category 3(B): 2202.03.789.03.01.31	General Category 3(A): 2202.03.102.10.01.31
Rs.54,00,000/-	Rs.6,00,000/-	Rs.48,00,000/-

2. The sanctioned amount is debitable to the major Head 3(A): 2202.03.102.10.01.31 & 3(B): 2202.03.789.03.01.31 and is valid for payment during the financial year 2014-15 only.
3. The amount of the Grant shall be drawn by the Under Secretary (Drawing and Disbursing Officer) UGC on the Grants-in-aid bill and shall be disbursed to and credited to the **Registrar, Jai Narain Vyas University, Jodhpur – 342 011 Rajasthan** through Electronic mode as per the following details:
  - a. **Details (Name & Address) : Registrar, Jai Narain Vyas University, of Account Holder Jodhpur – 342 011 Rajasthan**
  - b. **Account No. : 05710100000584**
  - c. **Name & Address of Bank : Bank of Baroda, University Campus Branch, Residency Road, Jodhpur – 342 011**
  - d. **MICR Code : 342012006**
  - e. **IFSC Code : BARB0UNIJOD**
  - f. **Type of Account : Saving Account**
4. The Grant is Subject to the adjustment on the basis of Utilization Certificate in the prescribed proforma submitted by the University/Institution.
5. The University / Institution shall maintain proper accounts of the expenditure out of the Grants which shall be utilized only on the approved items of expenditure.
6. The University / Institution may follow the General Financial Rules, 2005 and take urgent necessary action to amend their manuals of financial procedures to bring them in conformity with GFRs, 2005 and those don't have their own approved manuals on financial procedures may adopt the provisions of GFRs, 2005 and instructions/guideline there under from time to time.
7. The Utilization Certificate to the effect that the grant has been utilized for the purpose for which it has been sanctioned shall be furnished to the UGC as early as possible after the close of the current financial year.
8. The assets acquired wholly or substantially out of University Grants Commission's Grant Shall not be disposed or encumbered or utilized for the purposes other than those for which the grants was given, without proper sanction of the UGC and should at any time the University ceased to function, such assets shall revert to the University Grants Commission.

9. A Register of Assets acquired wholly or substantially out of the grant shall be maintained by the University in the prescribed proforma.
10. The grantee institution shall ensure the utilization of grants-in-aid for which it is being **sanctioned** / paid. In case of non-utilization/part utilization thereof, simple interest @ 10 % per annum as amended from time to time on the unutilized amount from the date of drawal to the date of refund as per provisions contained in General Financial Rules of Govt. of India, will be charged.
11. The University / Institution shall follow strictly the Government of India / UGC's guidelines regarding implementation of the reservation policy [both vertical (for SC, ST & OBC) and horizontal (for persons with disability etc.)] in teaching and non-teaching posts.
12. The University / Institution shall fully implement the Official Language Policy of Union Government and comply with the Official Language Act, 1963 and Official Languages (Use for Official Purposes of the Union) Rules, 1976 etc.
13. The sanction is issued in exercise of the delegation of powers vide UGC Order No. 130/2013 [F.No. 10-11/12 (Admn. IA & B)] dated 28/5/2013.
14. The University / Institution shall strictly follow the UGC Regulations on curbing the menace of Ragging in Higher Education Institutions, 2009.
15. The University / Institution shall take immediate action for its accreditation by National Assessment & Accreditation Council (NAAC).
16. The accounts of the University / Institution will be open for audit by the Comptroller & Auditor General of India in accordance with the provisions of General Financial Rules, 2005.
17. The annual accounts i.e. balance sheet, income and expenditure statement and ~~statement of receipts and payments~~ are to be prepared strictly in accordance with the Uniform Format of Accounting prescribed by Government.
18. This issues with the concurrence of IFD vide Diary No. 7698 (IFD) Dated 03.03.2014.

*K. Lalitha*



19. This issues with the approval of C.M. Sectt. vide Diary No. 20572 Dated 14.03.2014 as revalidated by the Chairman, UGC for the financial year 2014-2015 [No.File.1-1/2014(FD-III)] vide his diary no.28796 dated 07.05.2014.

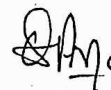
Noted in BCR Register 2014-2015 at P.No.1 S.No.2.

Yours faithfully,

(Shalini)  
Education Officer

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3. The Head, Department of Botany / Chemistry / Zoology / Physics, Jai Narain Vyas University, Jodhpur – 342 011 Rajasthan.
4. Dr. Nisha Tak, Assistant Professor, Department of Botany, Jai Narain Vyas University, Jodhpur – 342 011 Rajasthan.
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14. Guard file.

  
(Usha Arya)  
Section Officer



3.2.1 & 3.2.2  
3.2.3  
Projects



FD Diary No.1321  
Dated : 05.06.2014

**University Grants Commission**  
**Bahadur Shah Zafar Marg**  
**New Delhi-110 002**

**No.F.30-16/2014(BSR)**

**Dated: June, 2014**

The Under Secretary FD-III Section,  
University Grants Commission  
Bahadur Shah Zafar Marg,  
New Delhi – 110002.

18 JUN 2014

**Subject:-** Approval-cum-Sanction letter for UGC-BSR Research Start-Up-Grant @ Rs.6.00 lakhs each for newly recruited faculty at Assistant Professors level in Science Departments of various Universities – Release of the grant for the year 2013-2014 under Plan.

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Total Grant	SC Category 3(B): 2202.03.789.03.01.31	General Category 3(A): 2202.03.102.10.01.31
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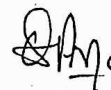
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14. Guard file.

  
(Usha Arya)  
Section Officer

3.2.1 & 3.2.2  
3.2.3  
Projects



FD Diary No.1321  
Dated : 05.06.2014

**University Grants Commission**  
**Bahadur Shah Zafar Marg**  
**New Delhi-110 002**

**No.F.30-16/2014(BSR)**

**Dated: June, 2014**

The Under Secretary FD-III Section,  
University Grants Commission  
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18 JUN 2014

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	3(B): 2202.03.789.03.01.31	Dr. S.K. Barbar	Physics	6,00,000/-	6,00,000/-

*Handwritten signature*

Total Grant	SC Category 3(B): 2202.03.789.03.01.31	General Category 3(A): 2202.03.102.10.01.31
Rs.54,00,000/-	Rs.6,00,000/-	Rs.48,00,000/-

2. The sanctioned amount is debitable to the major Head 3(A): 2202.03.102.10.01.31 & 3(B): 2202.03.789.03.01.31 and is valid for payment during the financial year 2014-15 only.
3. The amount of the Grant shall be drawn by the Under Secretary (Drawing and Disbursing Officer) UGC on the Grants-in-aid bill and shall be disbursed to and credited to the **Registrar, Jai Narain Vyas University, Jodhpur – 342 011 Rajasthan** through Electronic mode as per the following details:
  - a. **Details (Name & Address) : Registrar, Jai Narain Vyas University, of Account Holder Jodhpur – 342 011 Rajasthan**
  - b. **Account No. : 05710100000584**
  - c. **Name & Address of Bank : Bank of Baroda, University Campus Branch, Residency Road, Jodhpur – 342 011**
  - d. **MICR Code : 342012006**
  - e. **IFSC Code : BARB0UNIJOD**
  - f. **Type of Account : Saving Account**
4. The Grant is Subject to the adjustment on the basis of Utilization Certificate in the prescribed proforma submitted by the University/Institution.
5. The University / Institution shall maintain proper accounts of the expenditure out of the Grants which shall be utilized only on the approved items of expenditure.
6. The University / Institution may follow the General Financial Rules, 2005 and take urgent necessary action to amend their manuals of financial procedures to bring them in conformity with GFRs, 2005 and those don't have their own approved manuals on financial procedures may adopt the provisions of GFRs, 2005 and instructions/guideline there under from time to time.
7. The Utilization Certificate to the effect that the grant has been utilized for the purpose for which it has been sanctioned shall be furnished to the UGC as early as possible after the close of the current financial year.
8. The assets acquired wholly or substantially out of University Grants Commission's Grant Shall not be disposed or encumbered or utilized for the purposes other than those for which the grants was given, without proper sanction of the UGC and should at any time the University ceased to function, such assets shall revert to the University Grants Commission.



9. A Register of Assets acquired wholly or substantially out of the grant shall be maintained by the University in the prescribed proforma.
10. The grantee institution shall ensure the utilization of grants-in-aid for which it is being **sanctioned** / paid. In case of non-utilization/part utilization thereof, simple interest @ 10 % per annum as amended from time to time on the unutilized amount from the date of drawal to the date of refund as per provisions contained in General Financial Rules of Govt. of India, will be charged.
11. The University / Institution shall follow strictly the Government of India / UGC's guidelines regarding implementation of the reservation policy [both vertical (for SC, ST & OBC) and horizontal (for persons with disability etc.)] in teaching and non-teaching posts.
12. The University / Institution shall fully implement the Official Language Policy of Union Government and comply with the Official Language Act, 1963 and Official Languages (Use for Official Purposes of the Union) Rules, 1976 etc.
13. The sanction is issued in exercise of the delegation of powers vide UGC Order No. 130/2013 [F.No. 10-11/12 (Admn. IA & B)] dated 28/5/2013.
14. The University / Institution shall strictly follow the UGC Regulations on curbing the menace of Ragging in Higher Education Institutions, 2009.
15. The University / Institution shall take immediate action for its accreditation by National Assessment & Accreditation Council (NAAC).
16. The accounts of the University / Institution will be open for audit by the Comptroller & Auditor General of India in accordance with the provisions of General Financial Rules, 2005.
17. The annual accounts i.e. balance sheet, income and expenditure statement and ~~statement of receipts and payments~~ are to be prepared strictly in accordance with the Uniform Format of Accounting prescribed by Government.
18. This issues with the concurrence of IFD vide Diary No. 7698 (IFD) Dated 03.03.2014.

*K. Lalitha*

19. This issues with the approval of C.M. Sectt. vide Diary No. 20572 Dated 14.03.2014 as revalidated by the Chairman, UGC for the financial year 2014-2015 [No.File.1-1/2014(FD-III)] vide his diary no.28796 dated 07.05.2014.

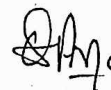
Noted in BCR Register 2014-2015 at P.No.1 S.No.2.

Yours faithfully,

(Shalini)  
Education Officer

Copy forwarded for information and necessary action to:-

1. Registrar, Jai Narain Vyas University, Jodhpur – 342 011 Rajasthan. He/She is requested to abide by these instructions/guidelines of sanction order.
2. The Secretary (Education) to the State Government of Rajasthan, Jodhpur.
3. The Head, Department of Botany / Chemistry / Zoology / Physics, Jai Narain Vyas University, Jodhpur – 342 011 Rajasthan.
4. Dr. Nisha Tak, Assistant Professor, Department of Botany, Jai Narain Vyas University, Jodhpur – 342 011 Rajasthan.
5. Dr. Priyanka Purohit, Assistant Professor, Department of Chemistry, Jai Narain Vyas University, Jodhpur – 342 011 Rajasthan.
6. Dr. Ramprakash Saran, Assistant Professor, Department of Zoology, Jai Narain Vyas University, Jodhpur – 342 011 Rajasthan.
7. Dr. Kheta Ram, Assistant Professor, Department of Botany, Jai Narain Vyas University, Jodhpur – 342 011 Rajasthan.
8. Dr. Rachana Dinesh Nee Modi, Assistant Professor, Department of Botany, Jai Narain Vyas University, Jodhpur – 342 011 Rajasthan.
9. Dr. Anurag Choudary, Assistant Professor, Department of Chemistry, Jai Narain Vyas University, Jodhpur – 342 011 Rajasthan.
10. Dr. Om Prakash, Assistant Professor, Department of Chemistry, Jai Narain Vyas University, Jodhpur – 342 011 Rajasthan.
11. Dr. Sumitra Kumar Choudhary, Assistant Professor, Department of Botany, Jai Narain Vyas University, Jodhpur – 342 011 Rajasthan.
12. Dr. S.K. Barbar, Assistant Professor, Department of Physics, Jai Narain Vyas University, Jodhpur – 342 011 Rajasthan
13. The Director General of Audit, Central Revenues, AGCR Building, I.P. Estate, New Delhi.
14. Guard file.

  
(Usha Arya)  
Section Officer



Dr. Vinod Kataria &lt;vinodkataria2002@gmail.com&gt;

## Approval letter -reg.

4 messages

ShahidulKhair Asstt.ResearchOfficer(Phcgn) &lt;arophg.nmpb@gov.in&gt;

To: aryas@icfre.org

Cc: vinodkataria2002@gmail.com

Mon, Jul 25, 2016 at 6:10 PM

F. No. Z.18017/187/CSS/R&amp;D/RAJ-01/2016-17-NMPB-IV A

Government of India

Ministry of AYUSH

National Medicinal Plants Board

...

Room No: - 309, 3<sup>rd</sup> Floor,  
B-Block, AYUSH Bhawan,  
GPO Complex, INA, New Delhi-110023  
Phone: - 011-2465-1828  
Telefax:- 011-2465-1827  
Email:- info-nmpb@nic.in  
Date: - 25.07.2016

To,

The Director,

Arid Forest Research Institute (AFRI),

New-Pali Road, Jodhpur-342005,

Rajasthan.

**Subject:** Approval of the Project Proposal entitled "Clonal Propagation, Characterization and Biochemical Aanalysis of *Leptadenia reticulata* and *Tylophora indica* – Threatened Medicinal Plants" vide Pr. No. R&D/RAJ-01/2016-17–reg.

Sir/Madam,

The undersigned is directed to refer to the project proposal entitled "**Clonal Propagation, Characterization and Biochemical Aanalysis of *Leptadenia reticulata* and *Tylophora indica* – Threatened Medicinal Plants**" and to say that the project was recommended in the 45<sup>th</sup> PSC meeting held on 27<sup>th</sup> June, 2016 and approved by the 67<sup>th</sup> SFC for 3 years at the total cost of **Rs. 41.25 lakh** for both the institutions. One is **Director, Arid Forest Research Institute (AFRI), Jodhpur, Rajasthan**, for the cost of **Rs. 20.35 lakh** (Rupees Twenty Lakh Thirty Five thousand only) and another is **Jai Narain Vyas University (JNVU), Jodhpur, Rajasthan**, for the cost of **Rs. 20.90 lakh** (Rupees Twenty Lakh Ninety Thousand only).

The financial break-up of the Grant-in-aid as approved by the 67<sup>th</sup> SFC is as below:-

Components	Amount (₹ In lakhs)	Amount (₹ In lakhs)
	AFRI	JNVU
Manpower (JRF - 1)	12.00	12.00
Consumables (Chemicals and glasswares)	2.50	3.00
Travel	2.00	1.00
Contingency etc.	2.00	3.00
Overhead (Inst. Charges @ 10%)	1.85	1.90
<b>TOTAL</b>	<b>20.35</b>	<b>20.90</b>
<b>Grand Total (20.35 +20.90)</b>	<b>41.25</b>	

Self alloted  
Vijay



-2-

Details of Installments will be as follows:-

Instt.	Total	1 <sup>st</sup> installment	2 <sup>nd</sup> installment	3 <sup>rd</sup> installment
AFRI	Rs. 20.35	Rs. 8.00	Rs. 7.00	Rs. 5.35
JNVU	Rs. 20.90	Rs. 8.00	Rs. 7.00	Rs. 5.90

You are requested to submit the duly filled up Performa of Agency Details (Copy enclosed) for transferring the grant-in-aid through RTGS mode & for online monitoring of the project along with the documents indicated below:

1. Pre-receipt of **1<sup>st</sup> installment of Rs. 8.00 lakh each** (for both the institutions), duly signed, on Rs. 1/- revenue stamp affixed.
2. A certificate stating that institute / organization is not involved in any proceeding relating to the account or conduct for any of its office bearers.
3. An undertaking that the terms and conditions of the grant are acceptable to the college / organizations.
4. A certified copy duly authenticated by a Gazetted Officer of the documents showing the Constitution of the governing Body or Managing Committee responsible for the running of the organization and that the persons signing the agreement are authorized to operate upon and bind the funds of organizations / Institute.
5. A certificate that the organization has not received any grant from State or Central Govt. or from any other agency for the same proposal.
6. An agreement on Rs. 100/- stamp paper duly executed & signed in the prescribed Performa.

**Note:** Format copies for Agency Details and S. No. 1, 5 & 6 are attached for convenience. Rest of the certificates/undertaking at S. No. 2 to 4 shall be submitted by the grantee.

Thanking You,

Yours faithfully

-sd/-


(Shahidul Khair)  
ARO (Phcg)


Copy to:-


- **Dr. Sarita Arya**, Principal Investigator and Scientist-F, Arid Forest Research Institute (AFRI), New-Pali Road, Jodhpur-342005, Rajasthan.
- **Dr. (Mrs.) Vinod Kataria**, Assistant Professor, Department of Botany, Jai Narain Vyas University (JNVU), Jodhpur-342005, Rajasthan.

4 attachments

 **Agency Details.doc**  
60K

 **Agreement.doc**  
62K

 **Certificate of Non-Receipt of Fund.doc**  
54K

 **Pre-reciept.docx**  
12K

vinod kataria <vinodkataria2002@gmail.com>  
To: Inder Arya <aryaid@gmail.com>

[Quoted text hidden]

डॉ. (श्रीमती) विनोद कटारिया





Dr. P. K. Malhotra  
Scientist G  
Programme Coordinator (Mathematics)  
Science and Engineering Research Board  
E-mail: [idpkm@nic.in](mailto:idpkm@nic.in)  
Telefax: 26520714

भारत सरकार  
विज्ञान और प्रौद्योगिकी मंत्रालय,  
विज्ञान और प्रौद्योगिकी विभाग,  
टेक्नोलॉजी भवन, महरौली मार्ग,  
नई दिल्ली-110016

GOVERNMENT OF INDIA  
MINISTRY OF SCIENCE AND TECHNOLOGY,  
DEPARTMENT OF SCIENCE AND TECHNOLOGY,  
TECHNOLOGY BHAVAN, NEW MEHRAULI ROAD,  
NEW DELHI-110016

Dated 16/07/2014

D.O. No. SR/S4/MS: 836/13

Recd  
(22) 21.07.14

Dear Prof. Banerji,

**Subject:** Project proposal "Applications of Fractional Differintegrals to Boehmians and Wavelet Transform".

We are happy to inform you that the above mentioned project proposal has been recommended for support for a period of three years under the Science & Engineering Research Board (SERB) with manpower and equipment etc. as follows:

- Manpower – Honorarium to the PI
- Equipment – Nil
- Travel – Rs. 0.45 lakh;
- Consumables – Nil;
- Other Costs/Contingency (including books & journals) – Rs. 1.20 lakh.

The project cost is subject to final concurrence by the Board. If this is agreeable, please send your concurrence along with the following information/documents:

(a) An undertaking that you will:

- Follow the guidelines of SERB as mentioned at [www.serb.gov.in](http://www.serb.gov.in) and
- Acknowledge the support provided by the SERB, with specific mention of project number and title in each of the research paper/reports/manuscripts etc. prepared under the project.

(b) A list of facilities available at your institute for carrying out the work (including those that may be under your other ongoing or completed projects). This information is available in your project proposal but we would like to be updated about the facilities acquired by you/available to you after submission of the proposal.

(c) In case there is any possibility of a change in your position in the institution for example, sabbatical leave, shifting to a new institution, superannuation etc. during the project period, we would appreciate, this is intimated to us.



- (d) Address and designation of the officer (Registrar/Finance Officer/Accounts Officer/Controller, etc.) from your institute in whose favor funds are to be transferred (through electronic transfer) after all the aforesaid formalities have been completed. Please also send the following details about the bank/account to which the funds are to be transferred;

Beneficiary Name :  
Institute Account No. :  
Bank Name :  
Branch Name & Address :  
IFSC/RTGS Code :

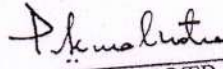
A formal sanction letter and funds will be sent to your institution after we have all the aforesaid information/inputs. The date of start of the project will be counted from the date on which the funds are received by the host institution and duly conveyed to us formally by the receiving authority.

In all future correspondence, please quote the reference number (File No.) mentioned in this letter. This is necessary for speedy action at our end.

With kind regards,

Prof. P. K. Banerji,  
Department of Mathematics,  
Faculty of Science,  
J. N. V. University,  
Jodhpur - 342 005

Yours sincerely,

  
(P.K. MALHOTRA)





**JAI NARAIN VYAS UNIVERSITY, JODHPUR**  
**(DEVELOPMENT SECTION)**

No.: JNVU/Dev./2014/ 719.

Date: 8.11.14

The Comptroller  
J.N. Vyas University  
Jodhpur.

Sir,

Please find herewith the following RTGS/TRF as per details given below:-

S.NO	Purpose	D.D.No. /Cheque No.	Date	Amount	Budget Head
01.	SERB, New Delhi Research Project "Application...Transform" under the guidance of Prof. P. K. Banerji, Department of Maths S.No.SERB/F/4126/2014- 15 dated 03.09.14	RTGS	07.11.14	3,50,000/-	A/c No. 05710400000026 (Part IV)

The amount so collected may please be credited to the above mentioned Budget Head.

Kindly acknowledge the same.

Yours faithfully,

(B.L. Siyota)  
**OFFICER-IN-CHARGE**

Encl.: As above

Copy forwarded to the following for information and necessary action:-  
1. The Head, Department of Mathematics, J.N.V. University, Jodhpur.  
2. Dr. P.K. Banerji, Deptt. of Mathematics, J. N.V. University, Jodhpur.

*Bash*  
**OFFICER-IN-CHARGE**



**JAI NARAIN VYAS UNIVERSITY, JODHPUR**  
(DEVELOPMENT SECTION)

No.: JNVU/Dev./2015/ 517

Date: 7.8.15

The Comptroller  
J.N. Vyas University  
Jodhpur.

Sir,

Please find herewith the following RTGS/NEFT as per details given below:-

S.No.	Purpose	D.D.No. /Cheque No.	Date	Amount	Budget Head
01.	SERB, New Delhi Research Project "Application...Transform" under the guidance of Prof. P. K. Banerji, Department of Mathematics S.No.SR/S4/MS:836/13 dated 04.09.2014	NEFT	06.08.15	2,50,000/-	A/c No. 05710400000026 (Part IV)

The amount so collected may please be credited to the above mentioned Budget Head.

Kindly acknowledge the same.

Yours faithfully,

(B.L. Siyota)  
OFFICER-IN-CHARGE

Encl.: As above

Copy forwarded to the following for information and necessary action:-

1. The Head, Department of Mathematics, J.N.V. University, Jodhpur.
2. Dr. P.K. Banerji, Deptt. of Mathematics, J. N.V. University, Jodhpur.

  
OFFICER-IN-CHARGE



JAI NARAIN VYAS UNIVERSITY, JODHPUR  
(DEVELOPMENT SECTION)

No. JNVU/Dev./17/ 2920

The Comptroller,  
Jai Narain Vyas, University,  
Jodhpur.

Dated: 11.01.20  
24/03/2017

Sir,  
Please find herewith the following RTGS/TRF/NEFT as per details given below:-

No	Particulars	D.D No./ Cheque No./RTGS/ NEFT	Date	Amount	Budget Head
	Science and Engineering Research Board (SERB) Research Project of Prof. P.K. Banerji, Deptt. of Mathematics . No.SB/S4/MS: 836/13	NEFT	16.03.2017	2,00,000/-	05710100000026 Part IV

The amount so collected may please be credited to the A/c No. 05710100000026 instead of A/c No. 057101000000584

Kindly acknowledge the same

Yours faithfully,

OFFICER-IN-CHARGE

Copy forwarded to the following for information and necessary action:-

- ✓ 1. The Head, Deptt. of Mathematics, J.N.V. University, Jodhpur.
- ✓ 2. Prof. P.K. Banerji, Deptt. of Mathematics, J.N.V. University, Jodhpur.

24.3.17  
OFFICER-IN-CHARGE

3.2.1 & 3.2.2  
3.2.3  
Projects



FD Diary No.1321  
Dated : 05.06.2014

**University Grants Commission**  
**Bahadur Shah Zafar Marg**  
**New Delhi-110 002**

**No.F.30-16/2014(BSR)**

**Dated: June, 2014**

The Under Secretary FD-III Section,  
University Grants Commission  
Bahadur Shah Zafar Marg,  
New Delhi – 110002.

18 JUN 2014

**Subject:-** Approval-cum-Sanction letter for UGC-BSR Research Start-Up-Grant @ Rs.6.00 lakhs each for newly recruited faculty at Assistant Professors level in Science Departments of various Universities – Release of the grant for the year 2013-2014 under Plan.

Sir,

The University Grants Commission convey its approval and allocate a sum of **Rs.54,00,000/- (Rupees Fifty Four Lakhs Only) @ Rs.6.00 Lakhs each faculty** to the Registrar, Jai Narain Vyas University, Jodhpur – 342 011 Rajasthan being the UGC-BSR Research **Start-Up-Grant** for newly recruited faculty at Assistant Professors level of Science Departments.

Accordingly, I am further directed to convey the sanction of the University Grants Commission for payment of **Rs.54,00,000/- (Rupees Fifty Four Lakhs only)** to the Registrar, Jai Narain Vyas University, Jodhpur – 342 011 Rajasthan being the approval of **Rs.54,00,000/- (Rupees Fifty Four Lakhs only) @ Rs.6.00 Lakhs each faculty** towards UGC-BSR Research Start-Up-Grant for newly recruited faculty at Assistant Professors level in Science Departments as per details given below for the plant expenditure to be incurred during the financial year **2014-15**.

Name of the Item	Head of Account	Name of Faculty / Professor	Name of Department	Amount Approved (Rs.)	Amount being released (Rs.)
UGC-BSR Start-up grant @ Rs.6.00 lakhs each for newly recruited faculty at Assistant Professor level in science department	3(A): 2202.03.102.10.01.31	Dr. Nisha Tak	Botany	6,00,000/-	6,00,000/-
		Dr. Priyanka Purohit	Chemistry	6,00,000/-	6,00,000/-
		Dr. Ramprakash Saran	Zoology	6,00,000/-	6,00,000/-
		Dr. Kheta Ram	Botany	6,00,000/-	6,00,000/-
		Dr. Rachana Dinesh Nee Modi	Botany	6,00,000/-	6,00,000/-
		Dr. Anurag Choudary	Chemistry	6,00,000/-	6,00,000/-
		Dr. Om Prakash	Chemistry	6,00,000/-	6,00,000/-
		Dr. Sumitra Kumari Choudhary	Botany	6,00,000/-	6,00,000/-
	3(B): 2202.03.789.03.01.31	Dr. S.K. Barbar	Physics	6,00,000/-	6,00,000/-

*Handwritten signature*



Total Grant	SC Category 3(B): 2202.03.789.03.01.31	General Category 3(A): 2202.03.102.10.01.31
Rs.54,00,000/-	Rs.6,00,000/-	Rs.48,00,000/-

2. The sanctioned amount is debitable to the major Head 3(A): 2202.03.102.10.01.31 & 3(B): 2202.03.789.03.01.31 and is valid for payment during the financial year 2014-15 only.
3. The amount of the Grant shall be drawn by the Under Secretary (Drawing and Disbursing Officer) UGC on the Grants-in-aid bill and shall be disbursed to and credited to the **Registrar, Jai Narain Vyas University, Jodhpur – 342 011 Rajasthan** through Electronic mode as per the following details:
  - a. **Details (Name & Address) : Registrar, Jai Narain Vyas University, of Account Holder Jodhpur – 342 011 Rajasthan**
  - b. **Account No. : 05710100000584**
  - c. **Name & Address of Bank : Bank of Baroda, University Campus Branch, Residency Road, Jodhpur – 342 011**
  - d. **MICR Code : 342012006**
  - e. **IFSC Code : BARB0UNIJOD**
  - f. **Type of Account : Saving Account**
4. The Grant is Subject to the adjustment on the basis of Utilization Certificate in the prescribed proforma submitted by the University/Institution.
5. The University / Institution shall maintain proper accounts of the expenditure out of the Grants which shall be utilized only on the approved items of expenditure.
6. The University / Institution may follow the General Financial Rules, 2005 and take urgent necessary action to amend their manuals of financial procedures to bring them in conformity with GFRs, 2005 and those don't have their own approved manuals on financial procedures may adopt the provisions of GFRs, 2005 and instructions/guideline there under from time to time.
7. The Utilization Certificate to the effect that the grant has been utilized for the purpose for which it has been sanctioned shall be furnished to the UGC as early as possible after the close of the current financial year.
8. The assets acquired wholly or substantially out of University Grants Commission's Grant Shall not be disposed or encumbered or utilized for the purposes other than those for which the grants was given, without proper sanction of the UGC and should at any time the University ceased to function, such assets shall revert to the University Grants Commission.



9. A Register of Assets acquired wholly or substantially out of the grant shall be maintained by the University in the prescribed proforma.
10. The grantee institution shall ensure the utilization of grants-in-aid for which it is being **sanctioned** / paid. In case of non-utilization/part utilization thereof, simple interest @ 10 % per annum as amended from time to time on the unutilized amount from the date of drawal to the date of refund as per provisions contained in General Financial Rules of Govt. of India, will be charged.
11. The University / Institution shall follow strictly the Government of India / UGC's guidelines regarding implementation of the reservation policy [both vertical (for SC, ST & OBC) and horizontal (for persons with disability etc.)] in teaching and non-teaching posts.
12. The University / Institution shall fully implement the Official Language Policy of Union Government and comply with the Official Language Act, 1963 and Official Languages (Use for Official Purposes of the Union) Rules, 1976 etc.
13. The sanction is issued in exercise of the delegation of powers vide UGC Order No. 130/2013 [F.No. 10-11/12 (Admn. IA & B)] dated 28/5/2013.
14. The University / Institution shall strictly follow the UGC Regulations on curbing the menace of Ragging in Higher Education Institutions, 2009.
15. The University / Institution shall take immediate action for its accreditation by National Assessment & Accreditation Council (NAAC).
16. The accounts of the University / Institution will be open for audit by the Comptroller & Auditor General of India in accordance with the provisions of General Financial Rules, 2005.
17. The annual accounts i.e. balance sheet, income and expenditure statement and ~~statement of receipts and payments~~ are to be prepared strictly in accordance with the Uniform Format of Accounting prescribed by Government.
18. This issues with the concurrence of IFD vide Diary No. 7698 (IFD) Dated 03.03.2014.

*K. Lalitha*

19. This issues with the approval of C.M. Sectt. vide Diary No. 20572 Dated 14.03.2014 as revalidated by the Chairman, UGC for the financial year 2014-2015 [No.File.1-1/2014(FD-III)] vide his diary no.28796 dated 07.05.2014.

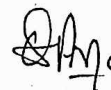
Noted in BCR Register 2014-2015 at P.No.1 S.No.2.

Yours faithfully,

(Shalini)  
Education Officer

Copy forwarded for information and necessary action to:-

1. Registrar, Jai Narain Vyas University, Jodhpur – 342 011 Rajasthan. He/She is requested to abide by these instructions/guidelines of sanction order.
2. The Secretary (Education) to the State Government of Rajasthan, Jodhpur.
3. The Head, Department of Botany / Chemistry / Zoology / Physics, Jai Narain Vyas University, Jodhpur – 342 011 Rajasthan.
4. Dr. Nisha Tak, Assistant Professor, Department of Botany, Jai Narain Vyas University, Jodhpur – 342 011 Rajasthan.
5. Dr. Priyanka Purohit, Assistant Professor, Department of Chemistry, Jai Narain Vyas University, Jodhpur – 342 011 Rajasthan.
6. Dr. Ramprakash Saran, Assistant Professor, Department of Zoology, Jai Narain Vyas University, Jodhpur – 342 011 Rajasthan.
7. Dr. Kheta Ram, Assistant Professor, Department of Botany, Jai Narain Vyas University, Jodhpur – 342 011 Rajasthan.
8. Dr. Rachana Dinesh Nee Modi, Assistant Professor, Department of Botany, Jai Narain Vyas University, Jodhpur – 342 011 Rajasthan.
9. Dr. Anurag Choudary, Assistant Professor, Department of Chemistry, Jai Narain Vyas University, Jodhpur – 342 011 Rajasthan.
10. Dr. Om Prakash, Assistant Professor, Department of Chemistry, Jai Narain Vyas University, Jodhpur – 342 011 Rajasthan.
11. Dr. Sumitra Kumar Choudhary, Assistant Professor, Department of Botany, Jai Narain Vyas University, Jodhpur – 342 011 Rajasthan.
12. Dr. S.K. Barbar, Assistant Professor, Department of Physics, Jai Narain Vyas University, Jodhpur – 342 011 Rajasthan
13. The Director General of Audit, Central Revenues, AGCR Building, I.P. Estate, New Delhi.
14. Guard file.

  
(Usha Arya)  
Section Officer



3.2.1 & 3.2.2  
3.2.3  
Projects



FD Diary No.1321  
Dated : 05.06.2014

University Grants Commission  
Bahadur Shah Zafar Marg  
New Delhi-110 002

No.F.30-16/2014(BSR)

Dated: June, 2014

The Under Secretary FD-III Section,  
University Grants Commission  
Bahadur Shah Zafar Marg,  
New Delhi – 110002.

18 JUN 2014

**Subject:-** Approval-cum-Sanction letter for UGC-BSR Research Start-Up-Grant @ Rs.6.00 lakhs each for newly recruited faculty at Assistant Professors level in Science Departments of various Universities – Release of the grant for the year 2013-2014 under Plan.

Sir,

The University Grants Commission convey its approval and allocate a sum of Rs.54,00,000/- (Rupees Fifty Four Lakhs Only) @ Rs.6.00 Lakhs each faculty to the Registrar, Jai Narain Vyas University, Jodhpur – 342 011 Rajasthan being the UGC-BSR Research Start-Up-Grant for newly recruited faculty at Assistant Professors level of Science Departments.

Accordingly, I am further directed to convey the sanction of the University Grants Commission for payment of Rs.54,00,000/- (Rupees Fifty Four Lakhs only) to the Registrar, Jai Narain Vyas University, Jodhpur – 342 011 Rajasthan being the approval of Rs.54,00,000/- (Rupees Fifty Four Lakhs only) @ Rs.6.00 Lakhs each faculty towards UGC-BSR Research Start-Up-Grant for newly recruited faculty at Assistant Professors level in Science Departments as per details given below for the plant expenditure to be incurred during the financial year 2014-15.

Name of the Item	Head of Account	Name of Faculty / Professor	Name of Department	Amount Approved (Rs.)	Amount being released (Rs.)
UGC-BSR Start-up grant @ Rs.6.00 lakhs each for newly recruited faculty at Assistant Professor level in science department	3(A): 2202.03.102.10.01.31	Dr. Nisha Tak	Botany	6,00,000/-	6,00,000/-
		Dr. Priyanka Purohit	Chemistry	6,00,000/-	6,00,000/-
		Dr. Ramprakash Saran	Zoology	6,00,000/-	6,00,000/-
		Dr. Kheta Ram	Botany	6,00,000/-	6,00,000/-
		Dr. Rachana Dinesh Nee Modi	Botany	6,00,000/-	6,00,000/-
		Dr. Anurag Choudary	Chemistry	6,00,000/-	6,00,000/-
		Dr. Om Prakash	Chemistry	6,00,000/-	6,00,000/-
		Dr. Sumitra Kumari Choudhary	Botany	6,00,000/-	6,00,000/-
	3(B): 2202.03.789.03.01.31	Dr. S.K. Barbar	Physics	6,00,000/-	6,00,000/-

*Heelan*

Total Grant	SC Category 3(B): 2202.03.789.03.01.31	General Category 3(A): 2202.03.102.10.01.31
Rs.54,00,000/-	Rs.6,00,000/-	Rs.48,00,000/-

2. The sanctioned amount is debitable to the major Head 3(A): 2202.03.102.10.01.31 & 3(B): 2202.03.789.03.01.31 and is valid for payment during the financial year 2014-15 only.
3. The amount of the Grant shall be drawn by the Under Secretary (Drawing and Disbursing Officer) UGC on the Grants-in-aid bill and shall be disbursed to and credited to the **Registrar, Jai Narain Vyas University, Jodhpur – 342 011 Rajasthan** through Electronic mode as per the following details:
  - a. **Details (Name & Address) : Registrar, Jai Narain Vyas University, of Account Holder Jodhpur – 342 011 Rajasthan**
  - b. **Account No. : 05710100000584**
  - c. **Name & Address of Bank : Bank of Baroda, University Campus Branch, Residency Road, Jodhpur – 342 011**
  - d. **MICR Code : 342012006**
  - e. **IFSC Code : BARB0UNIJOD**
  - f. **Type of Account : Saving Account**
4. The Grant is Subject to the adjustment on the basis of Utilization Certificate in the prescribed proforma submitted by the University/Institution.
5. The University / Institution shall maintain proper accounts of the expenditure out of the Grants which shall be utilized only on the approved items of expenditure.
6. The University / Institution may follow the General Financial Rules, 2005 and take urgent necessary action to amend their manuals of financial procedures to bring them in conformity with GFRs, 2005 and those don't have their own approved manuals on financial procedures may adopt the provisions of GFRs, 2005 and instructions/guideline there under from time to time.
7. The Utilization Certificate to the effect that the grant has been utilized for the purpose for which it has been sanctioned shall be furnished to the UGC as early as possible after the close of the current financial year.
8. The assets acquired wholly or substantially out of University Grants Commission's Grant Shall not be disposed or encumbered or utilized for the purposes other than those for which the grants was given, without proper sanction of the UGC and should at any time the University ceased to function, such assets shall revert to the University Grants Commission.



9. A Register of Assets acquired wholly or substantially out of the grant shall be maintained by the University in the prescribed proforma.
10. The grantee institution shall ensure the utilization of grants-in-aid for which it is being **sanctioned** / paid. In case of non-utilization/part utilization thereof, simple interest @ 10 % per annum as amended from time to time on the unutilized amount from the date of drawal to the date of refund as per provisions contained in General Financial Rules of Govt. of India, will be charged.
11. The University / Institution shall follow strictly the Government of India / UGC's guidelines regarding implementation of the reservation policy [both vertical (for SC, ST & OBC) and horizontal (for persons with disability etc.)] in teaching and non-teaching posts.
12. The University / Institution shall fully implement the Official Language Policy of Union Government and comply with the Official Language Act, 1963 and Official Languages (Use for Official Purposes of the Union) Rules, 1976 etc.
13. The sanction is issued in exercise of the delegation of powers vide UGC Order No. 130/2013 [F.No. 10-11/12 (Admn. IA & B)] dated 28/5/2013.
14. The University / Institution shall strictly follow the UGC Regulations on curbing the menace of Ragging in Higher Education Institutions, 2009.
15. The University / Institution shall take immediate action for its accreditation by National Assessment & Accreditation Council (NAAC).
16. The accounts of the University / Institution will be open for audit by the Comptroller & Auditor General of India in accordance with the provisions of General Financial Rules, 2005.
17. The annual accounts i.e. balance sheet, income and expenditure statement and ~~statement of receipts and payments~~ are to be prepared strictly in accordance with the Uniform Format of Accounting prescribed by Government.
18. This issues with the concurrence of IFD vide Diary No. 7698 (IFD) Dated 03.03.2014.

*K. Lalitha*

19. This issues with the approval of C.M. Sectt. vide Diary No. 20572 Dated 14.03.2014 as revalidated by the Chairman, UGC for the financial year 2014-2015 [No.File.1-1/2014(FD-III)] vide his diary no.28796 dated 07.05.2014.

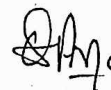
Noted in BCR Register 2014-2015 at P.No.1 S.No.2.

Yours faithfully,

(Shalini)  
Education Officer

Copy forwarded for information and necessary action to:-

1. Registrar, Jai Narain Vyas University, Jodhpur – 342 011 Rajasthan. He/She is requested to abide by these instructions/guidelines of sanction order.
2. The Secretary (Education) to the State Government of Rajasthan, Jodhpur.
3. The Head, Department of Botany / Chemistry / Zoology / Physics, Jai Narain Vyas University, Jodhpur – 342 011 Rajasthan.
4. Dr. Nisha Tak, Assistant Professor, Department of Botany, Jai Narain Vyas University, Jodhpur – 342 011 Rajasthan.
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(Usha Arya)  
Section Officer



3.2.1 & 3.2.2  
3.2.3  
Projects



FD Diary No.1321  
Dated : 05.06.2014

University Grants Commission  
Bahadur Shah Zafar Marg  
New Delhi-110 002

No.F.30-16/2014(BSR)

Dated: June, 2014

The Under Secretary FD-III Section,  
University Grants Commission  
Bahadur Shah Zafar Marg,  
New Delhi – 110002.

18 JUN 2014

**Subject:-** Approval-cum-Sanction letter for UGC-BSR Research Start-Up-Grant @ Rs.6.00 lakhs each for newly recruited faculty at Assistant Professors level in Science Departments of various Universities – Release of the grant for the year 2013-2014 under Plan.

Sir,

The University Grants Commission convey its approval and allocate a sum of Rs.54,00,000/- (Rupees Fifty Four Lakhs Only) @ Rs.6.00 Lakhs each faculty to the Registrar, Jai Narain Vyas University, Jodhpur – 342 011 Rajasthan being the UGC-BSR Research Start-Up-Grant for newly recruited faculty at Assistant Professors level of Science Departments.

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*Handwritten signature*

Total Grant	SC Category 3(B): 2202.03.789.03.01.31	General Category 3(A): 2202.03.102.10.01.31
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*K. L. S.*

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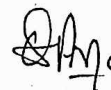
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(Shalini)  
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(Usha Arya)  
Section Officer



3.2.1 & 3.2.2  
3.2.3  
Projects



FD Diary No.1321  
Dated : 05.06.2014

**University Grants Commission**  
**Bahadur Shah Zafar Marg**  
**New Delhi-110 002**

**No.F.30-16/2014(BSR)**

**Dated: June, 2014**

The Under Secretary FD-III Section,  
University Grants Commission  
Bahadur Shah Zafar Marg,  
New Delhi – 110002.

18 JUN 2014

**Subject:-** Approval-cum-Sanction letter for UGC-BSR Research Start-Up-Grant @ Rs.6.00 lakhs each for newly recruited faculty at Assistant Professors level in Science Departments of various Universities – Release of the grant for the year 2013-2014 under Plan.

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Total Grant	SC Category 3(B): 2202.03.789.03.01.31	General Category 3(A): 2202.03.102.10.01.31
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*K. Lalitha*



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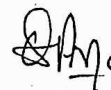
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Education Officer

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14. Guard file.

  
(Usha Arya)  
Section Officer





FD Diary No.4304  
Dated : 31.07.2014

University Grants Commission  
Bahadur Shah Zafar Marg  
New Delhi-110 002

No.F.30-50/2014(BSR)

Dated: August, 2014

The Under Secretary FD-III Section,  
University Grants Commission  
Bahadur Shah Zafar Marg,  
New Delhi – 110002.

12- AUG 2014

**Subject:-** Approval-cum-Sanction letter for UGC-BSR Research Start-Up-Grant @ Rs.6.00 lakhs each for newly recruited faculty at Assistant Professors level in Science Departments of various Universities – Release of the grant for the year 2014-2015 under Plan.

Sir,

The University Grants Commission convey its approval and allocate a sum of **Rs.18,00,000/- (Rupees Eighteen Lakhs Only) @ Rs.6.00 Lakhs each faculty** to the Registrar, Jai Narain Vyas University, Jodhpur – 342 011 Rajasthan being the UGC-BSR Research Start-Up-Grant for newly recruited faculty at Assistant Professors level of Science Departments.

Accordingly, I am further directed to convey the sanction of the University Grants Commission for payment of **Rs.18,00,000/- (Rupees Eighteen Lakhs only)** to the Registrar, Jai Narain Vyas University, Jodhpur – 342 011 Rajasthan being the approval of **Rs.18,00,000/- (Rupees Eighteen Lakhs only) @ Rs.6.00 Lakhs each faculty** towards UGC-BSR Research Start-Up-Grant for newly recruited faculty at Assistant Professors level in Science Departments as per details given below for the plan expenditure to be incurred during the year **2014-2015:-**

Name of the Scheme	Head of Account	Name of Faculty / Professor	Name of Departments	Amount Approved (Rs.)	Amount being released (Rs.)
UGC-BSR Start-up grant @ Rs.6.00 lakhs each for newly recruited faculty at Assistant Professor level in science department	3(A): 2202.03.102.10.01.31	Dr. Rajni Bais Assistant Professor	Chemistry	6,00,000/-	6,00,000/-
		Dr. Sangeeta Parihar Assistant Professor	Chemistry	6,00,000/-	6,00,000/-
		Dr. Shweta Jha Assistant Professor	Botany	6,00,000/-	6,00,000/-
		Total:		18,00,000/-	18,00,000/-

2. The sanctioned amount is debitable to the major Head 3(A): 2202.03.102.10.01.31 and is valid for payment during the financial year 2014-15 only.



3. The amount of the Grant shall be drawn by the Under Secretary (Drawing and Disbursing Officer) UGC on the Grants-in-aid bill and shall be disbursed to and credited to the **Registrar, Jai Narain Vyas University, Jodhpur – 342 011 Rajasthan** through Electronic mode as per the following details:

- a. **Details (Name & Address) of Account Holder** : Registrar, Jai Narain Vyas University, Jodhpur – 342 011 Rajasthan
- b. **Account No.** : 05710100000584
- c. **Name & Address of Bank Branch** : Bank of Baroda, University Campus Branch, Residency Road, Jodhpur – 342 011
- d. **MICR Code** : 342012006
- e. **IFSC Code** : BARB0UNIJOD
- f. **Type of Account** : Saving Account

4. The Grant is Subject to the adjustment on the basis of Utilization Certificate in the prescribed proforma submitted by the University/Institution.

5. The University / Institution shall maintain proper accounts of the expenditure out of the Grants which shall be utilized only on the approved items of expenditure.

6. The University / Institution may follow the General Financial Rules, 2005 and take urgent necessary action to amend their manuals of financial procedures to bring them in conformity with GFRs, 2005 and those don't have their own approved manuals on financial procedures may adopt the provisions of GFRs, 2005 and instructions/guideline there under from time to time.

7. The Utilization Certificate to the effect that the grant has been utilized for the purpose for which it has been sanctioned shall be furnished to the UGC as early as possible after the close of the current financial year.

8. The assets acquired wholly or substantially out of University Grants Commission's Grant Shall not be disposed or encumbered or utilized for the purposes other than those for which the grants was given, without proper sanction of the UGC and should at any time the University ceased to function, such assets shall revert to the University Grants Commission.



9. A Register of Assets acquired wholly or substantially out of the grant shall be maintained by the University in the prescribed proforma.
10. The grantee institution shall ensure the utilization of grants-in-aid for which it is being **sanctioned** / paid. In case of non-utilization/part utilization thereof, simple interest @ 10 % per annum as amended from time to time on the unutilized amount from the date of drawal to the date of refund as per provisions contained in General Financial Rules of Govt. of India, will be charged.
11. The University / Institution shall follow strictly the Government of India / UGC's guidelines regarding implementation of the reservation policy [both vertical (for SC, ST & OBC) and horizontal (for persons with disability etc.)] in teaching and non-teaching posts.
12. The University / Institution shall fully implement the Official Language Policy of Union Government and comply with the Official Language Act, 1963 and Official Languages (Use for Official Purposes of the Union) Rules, 1976 etc.
13. The sanction is issued in exercise of the delegation of powers vide UGC Order No. 130/2013 [F.No. 10-11/12 (Admn. IA & B)] dated 28/5/2013.
14. The University /Institution shall strictly follow the UGC Regulations on curbing the menace of Ragging in Higher Education Institutions, 2009.
15. The University / Institution shall take immediate action for its accreditation by National Assessment & Accreditation Council (NAAC).
16. The accounts of the University / Institution will be open for audit by the Comptroller & Auditor General of India in accordance with the provisions of General Financial Rules, 2005.
17. The annual accounts i.e. balance sheet, income and expenditure statement and statement of receipts and payments are to be prepared strictly in accordance with the Uniform Format of Accounting prescribed by Government.



18. This issues with the concurrence of IFD vide Diary No. 1205 (IFD) Dated 23.05.2014.
19. This issues with the approval of C.M. Sectt. vide Diary No. 29374 Dated 20.06.2014.

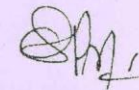
Noted in BCR Register 2014-2015 at P.No.13 S.No.50.

Yours faithfully,

(Shalini)  
Education Officer

Copy forwarded for information and necessary action to:-

1. **Registrar, Jai Narain Vyas University, Jodhpur – 342 011 Rajasthan.** He/She is requested to abide by these instructions/guidelines of sanction order.
2. The Secretary (Education) to the State Government of **Rajasthan, Ajmer.**
3. **The Head, Department of Chemistry / Botany, Jai Narain Vyas University, Jodhpur – 342 011 Rajasthan.**
4. **Dr. Rajni Bais, Assistant Professor, Department of Chemistry, Jai Narain Vyas University, Jodhpur – 342 011 Rajasthan.**
5. **Dr. Sangeeta Parihar, Assistant Professor, Department of Chemistry, Jai Narain Vyas University, Jodhpur – 342 011 Rajasthan.**
6. **Dr. Shweta Jha, Assistant Professor, Department of Botany, Jai Narain Vyas University, Jodhpur – 342 011 Rajasthan.**
7. The Director General of Audit, Central Revenues, AGCR Building, I.P. Estate, New Delhi.
8. Guard file.

  
(Usha Arya)  
Section Officer





UNIVERSITY GRANTS COMMISSION  
BAHADUR SHAH ZAFAR MARG  
NEW DELHI 110002

FD Diary No. 4358

Dated : 25.05.2016

GEN

F.No.42-265/2013 (SR)

24 June 2016  
JUN 2016

The Under Secretary (FD-III)  
University Grants Commission  
Bahadur Shah Zafar Marg  
New Delhi - 110002

Sub: Release of Grant-in aid to **Jai Narain vyas University, Jodhpur- 342003 Rajasthan** for the year 2016-17 under plan in respect of Major Research Project entitled "**Development.....water**" awarded to **Dr. Vikal Gupta, Department of Chemistry**, tenure of project from **01.04.2013 to 31.03.2017**.

Sir,

I am directed to convey the sanction of the University Grants Commission for payment of grant of **Rs. 2,80,336/- (Rupees Two lakh eighty thousand three hundred thirty six only)** as **2<sup>nd</sup> installment** for the year 2016-17 towards Major Research Project to The Registrar, **Jai Narain vyas University, Jodhpur- 342003 Rajasthan** for the plan-expenditure.

I am also directed to say that the tenure of the above project has been extended by the UGC upto 31.03.2017 without any additional financial assistance for the extended period.

Name of the Item	Amount Allocated	Head of Account	Grant now Being Sanctioned	Grant already Released	Total Gr
Books & Journal	60,000/-	3.A(56).35	.....	60,000/-	60,00
Equipment	2,50,000/-		.....	2,50,000/-	2,50,00
Honorarium	.....	3.A(56).31	.....	.....	.....
Project fellow	5,11,484/-		1,96,336/-	2,64,000/-	4,60,3
HRA	.....		.....	.....	.....
Chemicals	1,10,000/-		44,000/-	55,000/-	99,0
Contingency	60,000/-		24,000/-	30,000/-	54,0
Hiring Services	40,000/-		16,000/-	20,000/-	36,
Travel/field work	50,000/-	Head of Chemistry Jai Narain Vyas University, Jodhpur	.....	25,000/-	25,
Overhead Charges	73,800/-		.....	73,800/-	73,
Additional Grant	.....		.....	.....	.....
Total	11,55,284/-		2,80,336/-	7,77,800/-	10,58

- The sanctioned amount is debit able to **Major Research Project head Sector 3.A(56).31** and is valid for payment during the financial year **2016-17** only.



Dr. Anita Aggarwal

Scientist E, TDT Division



Hall J, Cabin No. 1  
Telefax: 011-26862512  
Phone : 011-26590343  
E-mail: [anita.a@nic.in](mailto:anita.a@nic.in)

भारत सरकार  
विज्ञान और प्रौद्योगिकी मंत्रालय,  
विज्ञान और प्रौद्योगिकी विभाग,  
टेक्नोलॉजी भवन, नया महरौली मार्ग,  
नई दिल्ली-110 016

GOVERNMENT OF INDIA  
MINISTRY OF SCIENCE AND TECHNOLOGY,  
DEPARTMENT OF SCIENCE AND TECHNOLOGY,  
TECHNOLOGY BHAVAN, NEW MEHRAULI ROAD,  
NEW DELHI-110 016

Telegram : Sciencetech  
दूरभाष/Tel : 26962819, 26567373,  
26562134, 26562122 (EPBAX)  
फैक्स/Fax : 26569908, 26864570,  
26863847, 26862418

No. IDP/MED/24/2015 v.in

22.03.2016

Subject: Financial assistance for the project entitled "Fabrication of nano-biochip for clinical diagnosis".

Dear Dr. Kumbhat,

We are glad to inform you that the above mentioned project has been sanctioned at a total cost of ₹.36,17,600 i.e. ₹ 33,17,600/- as the contribution of DST and ₹ 3,00,000/- as the contribution of Industrial collaborator for a period of 24 months and released an amount of ₹. 5,16,000/- i.e. ₹. 3,61,000/- for Jai Narain Vyas University and ₹ 1,55,000 for University of Madras under 'Grants for Creation of Capital Assets' and ₹.15,36,600/- i.e. ₹. 8,72,100/- for Jai Narain Vyas University and Rs.6,64,500/- under 'Grants-in-Aid General' being the first installment of the grant. An acknowledgement should be submitted immediately after the receipt of this sanction order and the RTGS from DST. The date will be regarded as the date of starting of the project otherwise the date on the sanction order will be treated as date of commencement.

You are also required to inform DST regarding the recruitment of the manpower sanctioned under the project. The other terms and conditions of the grant are clearly mentioned in Sanction order & Annexure I and you have to abide by them. The industry contribution should be received within six months after initiating the project and reflected in the subsequent Utilization Certificates. The proof of receipt of committed contribution should be sent to DST at earliest. The Support from IDP-DST should be duly acknowledged at all the platforms wherever this work is presented. Kindly do the needful and send the desired information.

With warm regards,

Yours sincerely

(Anita Aggarwal)

To

Dr. Sunita Kumbhat,  
Professor, Biosensor Laboratory,  
Department of Chemistry,,Jai Narain Vyas University,  
Jodhpur-342001,Rajasthan.

Copy to :

✓ Dr. D. Ravi Shankaran, Associate Professor, National Centre for Nanoscience and Nanotechnology, University of Madras, Guindy Campus, Chennai-600025, Tamil Nadu.

Registrar, Jai Narain Vyas University, Jodhpur-342001,Rajasthan.

Registrar, University of Madras, Guindy Campus, Chennai-600025,Tamil Nadu.

Mr. Trilok Tak, M/s Mind Field Technologies Pvt. LTD,H-1/125,Industrial Area, Behind New Power House,  
Jodhpur-342003,Rajasthan.



**ORDER**

**Subject: Financial assistance for the project entitled "Fabrication of nano-biochip for clinical diagnosis" submitted by Dr. Sunita Kumbhat, Professor, Biosensor Laboratory, Department of Chemistry, Jai Narain Vyas University, Jodhpur-342 001, Rajasthan, Dr. D. Ravi Shankaran, Associate Professor, National Centre for Nanoscience and Nanotechnology, University of Madras, Guindy Campus, Chennai- 600 025, Tamil Nadu and M/s MindField Technologies Pvt. LTD, H-1/125, Industrial Area, Behind New Power House, Jodhpur - 342003, Rajasthan.**

Sanction of the President is conveyed for the sanction of ₹. 36,17,600/- (Rupees Thirty Six Lakh Seventeen Thousand Six Hundred only) i.e. ₹. 33,17,600/- (Rupees Thirty Three Lakh Seventeen Thousand Six Hundred only) as the contribution of DST and ₹. 3,00,000/- (Rupees Three Lakh only) as the contribution of Industrial Collaborator M/s MindField Technologies Pvt. LTD, H-1/125, Industrial Area, Behind New Power House, Jodhpur - 342003, Rajasthan.

2. Out of the DST's contribution of ₹. 33,17,600/- (Rupees Thirty Three Lakh Seventeen Thousand Six Hundred only) the break up of ₹. 18,49,100/- (Rupees Eighteen Lakh Forty Nine Thousand One Hundred only) would be the share for Jai Narain Vyas University, Jodhpur-342 001, Rajasthan and ₹. 14,68,500/- (Rupees Fourteen Lakh Sixty Eight Thousand Five Hundred only) would be the share for University of Madras, Guindy Campus, Chennai for a duration of 24 months.

3. Out of the share of ₹. 18,49,100/- (Rupees Eighteen Lakh Forty Nine Thousand One Hundred only) in respect of Jai Narain Vyas University, Jodhpur-342 001, Rajasthan, the break-up of ₹. 3,61,000/- (Rupees Three Lakh Sixty One Thousand only) would be for the Capital head and ₹. 14,88,100/- (Rupees Fourteen Lakh Eighty Eight Thousand One Hundred only) will be under the Grant in Aid General head.

4. Out of the share of ₹. 14,68,500/- (Rupees Fourteen Lakh Sixty Eight Thousand Five Hundred only) in respect of University of Madras, Chennai the break-up of ₹. 1,55,000/- (Rupees One Lakh Fifty Five Thousand only) would be for the Capital head and ₹. 13,13,500/- (Rupees Thirteen Lakh Thirteen Thousand Five Hundred only) will be under the Grant in Aid General head.

5. The Item of expenditure for which the total allocation of ₹. 36,17,600/- has been approved for a period of 24 months are given below.

**A. Non-recurring (Capital Items) (DST)**

	HEAD	Jai Narain Vyas University	University of Madras	Total
1.	<b>EQUIPMENTS</b> : pH meter, Ultrasonication Elma P 60 H 230V, Digital Magnetic Stirrer with hot plate and supporting rod and Upgradation of existing ESPR; Dropsens Electrochemical Reader	₹. 3,61,000/-	₹. 1,55,000/-	₹. 5,16,000/-
	Total- Capital			₹. 5,16,000/-

**B. Recurring Items (General) (DST)**

Sl.No	Item	Jai Narain Vyas University		University of Madras		TOTAL	
		1 <sup>st</sup> Year	2 <sup>nd</sup> Year	1 <sup>st</sup> Year	2 <sup>nd</sup> Year	JNVU	UM
1	MANPOWER	20% HRA		30% HRA			
	JRF -02 @ Rs. 25,000/- + HRA	360000	360000	390000	390000	720000	780000
2	Consumables	200000	100000	100000	100000	300000	200000
3	Travel	50000	50000	50000	50000	100000	100000
4	Contingency	50000	50000	50000	50000	100000	100000
5	Other cost (Outsourcing)	100000	0	0	0	100000	0
6	Overheads	112100	56000	74500	59000	168100	133500
	Grand Total	872100	616000	664500	649000	1488100	1313500
						₹. 28,01,600/-	
	Industry contribution	300000				₹. 3,00,000/-	
						₹. 31,01,600/-	

*Sunita*  
22/3/16



3. The overhead expenses are meant for the host Institute towards the cost for providing infrastructural facilities and benefits to the staff employed in the project etc.

4. Sanction of the President is accorded for the payment of ₹. 5,16,000/- (Rupees Five Lakh Sixteen Thousand only) i.e. ₹. 3,61,000/- (Rupees Three Lakh Sixty One Thousand only) for Jai Narain Vyas University, Jodhpur-342 001, Rajasthan and ₹. 1,55,000/- (Rupees One Lakh Fifty Five Thousand only) for University of Madras, Chennai under 'Grants for Creation of Capital Assets' and ₹. 15,36,600/- (Rupees Fifteen Lakh Thirty Six Thousand Six Hundred only) i.e. ₹. 8,72,100/- (Rupees Eight Lakh Seventy Two Thousand One Hundred only) for Jai Narain Vyas University, Jodhpur-342 001, Rajasthan and ₹. 6,64,500/- (Rupees Six Lakh Sixty Four Thousand Five Hundred only) for University of Madras, Chennai under 'Grants-in-Aid General' being the first installment of the grant for the year 2015-16 for implementation of the said research project.

8. The sanction of the grant is subjected to the conditions mentioned in annexure-I.

9. The amount of ₹. 8,72,100/- (Rupees Eight Lakh Seventy Two Thousand One Hundred only) will be transferred to the Registrar, Jai Narain Vyas University, Jodhpur through BANK Account Number : 05710400000026, Bank of Baroda, IFSC Code : BARB0UNIJOD, Branch : Uni. Jodhpur Branch and ₹. 6,64,500/- (Rupees Six Lakh Sixty Four Thousand Five Hundred only) will be transferred to the Registrar, University of Madras, Chennai through bank account number : 0914101127581, Canara Bank, IFSC Code : CNRB0000914, Branch : Triplicane Branch..

7. The amount involved is debitible to:

Demand No.86	Department of Science & Technology
3425	OTHER SCIENTIFIC RESEARCH (MAJOR HEAD)
60	OTHERS (SUB - MAJOR HEAD)
60.200	ASSISTANCE TO OTHER SCIENTIFIC BODIES (MINOR HEAD)
26	TECHNOLOGY DEVELOPMENT PROGRAMME
26.01	TECHNOLOGY DEVELOPMENT & TRANSFER
26.01.31	GRANTS-IN-AID GENERAL (PLAN) 2015-2016

8. The sanction has been issued under the powers delegated to the Ministries and with the concurrence of the Integrated Finance Division of Department of Science & Technology vide concurrence No. C/6045/IFD/2015-2016 dated 21.03.2016 and with the approval of Head (TDT) vide his diary No.1031 dated 09.03.3016.

9. It is also certified that this is the **first sanction** for the project and as such the clause related to the submission of the Utilization Certificate to PAO is not applicable.

10. The institute will furnish to the DST, utilization certificate and audited statement of accounts pertaining to the grant immediately after the end of each financial year.

11. All purchases of equipments etc. would be as per GFR and the disposal of the same would be done with prior approval of DST.

12. ***"The Institute/Agency will maintain separate audited accounts for the project and would keep the whole of the grant in a Bank Account earning interest, the interest earned should be reported to the DST. The interest thus earned will be treated as a credit to the Institute/Agency to be adjusted towards further installment of the grant"***.

13. As PER Rule 211 GFRs, the account of the project shall be open to inspection by the sanctioning authority/audit whenever the institution is called upon to do so

14. As per GFR-39, the sanction has been entered in the grants register maintained by the Technology Development & Transfer (TDT) Division and the serial number assigned in the register for the sanction is 109.

15. It is certified that all the Utilization Certificate in regard of all schemes/programmes/projects, present and previous pertaining to the institute have been received and no UC is pending against the organization as per the details in the PFMS also.

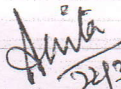
  
(Dr. Anita Aggarwal)  
Scientist-E

The Pay & Accounts Officer  
Department of Science & Technology  
New Delhi -110 016.



Copy for information and necessary action:

1. Cash Section (3 copies) for preparing the bill and remitting the amount to the above grantee.
2. Accounts Section, DST, New Delhi.
3. IFD, DST, New Delhi.
4. Director of audit (CW&M-II) AGCR Building, IP Estate, New Delhi.
5. Registrar, Jai Narain Vyas University, Jodhpur-342 001, Rajasthan.
6. Registrar, University of Madras, Guindy Campus, Chennai- 600 025, Tamil Nadu.
7. Dr. Sunita Kumbhat, Professor, Biosensor Laboratory, Department of Chemistry, Jai Narain Vyas University, Jodhpur-342 001, Rajasthan.
8. Dr. D. Ravi Shankaran, Associate Professor, National Centre for Nanoscience and Nanotechnology, University of Madras, Guindy Campus, Chennai- 600 025, Tamil Nadu.
9. Mr. Trilok Tak, M/s MindField Technologies Pvt. LTD, H-1/125, Industrial Area, Behind New Power House, Jodhpur - 342003, Rajasthan
10. Sanction folder
11. FICCI Cell, DST.

  
24/3/16  
(Dr. Anita Aggarwal)  
Scientist-E



No. IDP/MED/24/2015 (Capital)  
Government of India  
Ministry of Science & Technology  
Department of Science & Technology

Technology Bhavan  
New Mehrauli Road  
New Delhi- 110 016  
Dated: 22.03.2016

**ORDER**

**Subject:** Financial assistance for the project entitled "Fabrication of nano-biochip for clinical diagnosis" submitted by Dr. Sunita Kumbhat, Professor, Biosensor Laboratory, Department of Chemistry, Jai Narain Vyas University, Jodhpur-342 001, Rajasthan, Dr. D. Ravi Shankaran, Associate Professor, National Centre for Nanoscience and Nanotechnology, University of Madras, Guindy Campus, Chennai- 600 025, Tamil Nadu and M/s MindField Technologies Pvt. LTD, H-1/125, Industrial Area, Behind New Power House, Jodhpur - 342003, Rajasthan.

With reference to the Sanction Order No. IDP/MED/24/2015 (General) dated 22.03.2016, sanction of the President is accorded for the release of ₹. 5,16,000/- (Rupees Five Lakh Sixteen Thousand only) i.e. ₹. 3,61,000/- (Rupees Three Lakh Sixty One Thousand only) for Jai Narain Vyas University, Jodhpur-342 001, Rajasthan and ₹. 1,55,000/- (Rupees One Lakh Fifty Five Thousand only) for University of Madras, Chennai under 'Grants for Creation of Capital Assets' for the purchase of the equipment's under the project as indicated below:

**Non-recurring (Capital Items)**

	HEAD	Jai Narain Vyas University	University of Madras	Total
1.	<b>EQUIPMENTS</b> : pH meter, Ultrasonication Elma P 60 H 230V, Digital Magnetic Stirrer with hot plate and supporting rod and Upgradation of existing ESPR; Dropsens Electrochemical Reader	₹. 3,61,000/-	₹. 1,55,000/-	₹. 5,16,000/-
	Total- Capital			₹. 5,16,000/-

2. The amount of ₹. 3,61,000/- (Rupees Three Lakh Sixty One Thousand only) will be transferred to the Registrar, Jai Narain Vyas University, Jodhpur through BANK Account Number : 05710400000026, Bank of Baroda, IFSC Code : BARB0UNIJOD, Branch : Uni. Jodhpur Branch and ₹. 1,55,000/- (Rupees One Lakh Fifty Five Thousand only) will be transferred to the Registrar, University of Madras, Chennai through bank account number : 0914101127581, Canara Bank, IFSC Code : CNRB0000914, Branch : Triplicance Branch.

3. The amount involved is debit to:

Demand No.86	Department of Science & Technology
3425	OTHER SCIENTIFIC RESEARCH (MAJOR HEAD)
60	OTHERS (SUB - MAJOR HEAD)
60.200	ASSISTANCE TO OTHER SCIENTIFIC BODIES (MINOR HEAD)
26.01	TECHNOLOGY DEVELOPMENT & TRANSFER
26.01.35	GRANTS FOR CREATION OF CAPITAL ASSETS (PLAN) 2015-2016 (TSG)

4. The sanction has been issued under the powers delegated to the Ministries and with the concurrence of the Integrated Finance Division of Department of Science & Technology vide concurrence No. C/6046/IFD/2015-2016 dated 21.03.2016 and with the approval of Head (TDT) vide his diary No.1031 dated 09.03.2016.

5. It is also certified that this is the **first sanction** for the project and as such the clause related to the submission of the Utilization Certificate to PAO is not applicable.

6. The institute will furnish to the DST, utilization certificate and audited statement of accounts pertaining to the grant immediately after the end of each financial year.

7. All purchases of equipments etc. would be as per GFR and the disposal of the same would be done with prior approval of DST.

8. "The Institute/Agency will maintain separate audited accounts for the project and would keep the whole of the grant in a Bank Account earning interest, the interest earned should be reported to the DST. The interest thus earned will be treated as a credit to the Institute/Agency to be adjusted towards further installment of the grant".

*Sunita*  
22/3/16

P.T.O.



9. As PER Rule 211 GFRs, the account of the project shall be open to inspection by the sanctioning authority/audit whenever the institution is called upon to do so.

10. As per GFR-39, the sanction has been entered in the grants register maintained by the Technology Development & Transfer (TDT) Division and the serial number assigned in the register for the sanction is 110.

11. It is certified that all the Utilization Certificate in regard of all schemes/programmes/projects, present and previous pertaining to the institute have been received and no UC is pending against the organization as per the details in PFMS also.

*Anita*  
22/3/16  
(Dr. Anita Aggarwal)  
Scientist-E

The Pay & Accounts Officer  
Department of Science & Technology  
New Delhi -110 016.

Copy for information and necessary action:

1. Cash Section (3 copies) for preparing the bill and remitting the amount to the above grantee.
2. Accounts Section, DST, New Delhi.
3. IFD, DST, New Delhi.
4. Director of audit (CW&M-II) AGCR Building, IP Estate, New Delhi.
5. Registrar, Jai Narain Vyas University, Jodhpur-342 001, Rajasthan.
6. Registrar, University of Madras, Guindy Campus, Chennai- 600 025, Tamil Nadu.
7. Dr. Sunita Kumbhat, Professor, Biosensor Laboratory, Department of Chemistry, Jai Narain Vyas University, Jodhpur-342 001, Rajasthan.
8. Dr. D. Ravi Shankaran, Associate Professor, National Centre for Nanoscience and Nanotechnology, University of Madras, Guindy Campus, Chennai- 600 025, Tamil Nadu.
9. Mr. Trilok Tak, M/s MindField Technologies Pvt. LTD, H-1/125, Industrial Area, Behind New Power House, Jodhpur - 342003, Rajasthan.
10. Sanction folder.
11. FICCI Cell, DST.

*Anita*  
22/3/16  
(Dr. Anita Aggarwal)  
Scientist-E



DEPARTMENT OF SCIENCE AND TECHNOLOGY  
(INSTRUMENT DEVELOPMENT DIVISION)

Terms and Conditions of the Grant

1. Approval of the proposal and the grant being released is for specific project mentioned in the sanction letter and the grant should be exclusively spent on the project for which it has been sanctioned within the stipulated time. Any portion of the amount sanctioned which is not utilized would be required to be surrendered to the Government of India and carry forward of unspent funds to the next financial year for utilization for the same project may be considered only with the specific approval of the Department of Science and Technology.
2. For permanent, semi-permanent assets acquired solely or mainly out of the grant, an audited record in the form of register in the prescribed proforma is required to be maintained by the organization. The term 'assets' here means (i) immovable property and (ii) moveable property of a capital nature, where the value exceeds Rs. 1000/-. The grant will not be utilized for construction of any building. Full facilities by way of accommodation etc., for the project will be provided by the organization.
3. All the assets including equipment and prototypes acquired from the grant will be the property of Government of India and should not without the prior sanction of the Department of Science & Technology, be disposed of, or encumbered or utilized for purposes other than those for which the grant has been sanctioned.
4. At the conclusion of the project, the Government of India will be free to sell or otherwise dispose of assets which are the property of the Government, and the organization shall render to the Government necessary facilities for arranging the sale of these assets. The Government of India has the discretion to gift some of the assets to the organization, if it considers it appropriate.
5. The principal Investigator/organization will be required to furnish progress reports as per prescribed proforma every three months on the progress made on all aspects of the project



including technical progress and expenditure incurred on various approved items during the period.

The monitoring of the progress of the project shall be done by the Department of Science & Technology (DST) or the Monitoring Committee set up by DST.

6. The organization is required to send to Department of Science & Technology at the end of financial year as well as at the time of seeking further installments of grant, a list assets referred to in Para 2 above and a statement of accounts along with the progress report

7. The organization would render to the Department of Science & Technology, Utilization Certificate in the prescribed proforma and an audited statement of the accounts including comments of the Auditor regarding the observance of the conditions governing the grant within six months following the end of each financial year.

8. The Comptroller and Auditor General will have the right to access to the books and accounts of the Organization for grant received from the Government.

9. The organization would maintain separate Audited account for the project. If it is found expedient to keep the grant in a bank account earning interest, the interest thus earned should be reported to the Department of Science & Technology. The interest thus earned will be treated as a credit to the organization to be adjusted towards further installments of the grant.

10. The organization may not entrust the implementation of the work for which the grant is being sanctioned to another institution and to divert the grant receipts as assistance to the later institution. In case the organization itself is not in a position to execute or complete the project, it may be required to refund forthwith to the Government of India, the entire amount of grant-in-aid received by it. In exceptional cases, this condition may be relaxed by the Government of India.

11. The staff that may be employed for the project by the organization are not to be treated as employees of the Government of India and the deployment of such staff at the time termination



of the project will not be the concern/responsibility of the Government of India. The manpower required for the project shall be paid as per the guidelines of the Government of India.

12. The Department of Science and Technology reserves the right to terminate the grant at any stage if it is convinced that the grant has not been properly utilized or appropriate progress is not being made. In the event the Department terminates the grant, the grantee shall refund the unspent amount to DST, and also hand over all documents including technical details, equipment purchased as related to the R&D work.
13. If the Principal Investigator wishes to leave the organization where the project is based, the organization / investigator will inform the same to DST with its consultation evolve steps to ensure successful completion of the project, before relieving the Principal Investigator. The Investigator should submit five copies of complete and detailed report of the work done by them on the project before leaving the organization.
14. Sale proceeds, if any of the components, prototypes, pilot plant etc., fabricated as a result of development of the project arising directly from funds granted by Department of Science and Technology shall be remitted to the Government of India. The Government of India may, at its discretion allow a portion of such receipts to be retained by the organization.
15. The know-how generated from the project would be the property of Government of India / DST. However, for the purpose of technology transfer and intellectual property right, the property rights are delegated to the host institute. The utilization of intellectual property rights and technology transfer will be governed by instructions given in Annexure I (Enclosed). The I host institute will be responsible for exploiting the intellectual property rights and transfer of technology and will be responsible for all the legal aspects concerned with intellectual property rights and technology transfer.
16. The principal Investigator/organization will prepare all the documents that would be required for the transfer of know-how to the production agency/agencies. Three copies of the know-how document will be submitted by the PI/organization to DST within three months after



successful completion of all the activities of the project. The technology transfer document will normally include:

- (i) Complete instrument / system design details including circuit and other diagrams, description of various sub-systems, software details and performance specifications etc.,
- (ii) Calibration and testing procedures; testing and evaluation reports of the final prototype.
- (iii) List of materials and components including standard values, tolerances, sources of availability, their inspection requirement etc.,
- (iv) Technical support requirement in respect of repair/maintenance/trouble shooting, spare part requirement etc, instruction manual for use of the product, and,
- (v) Details of tests and test jigs etc.,

The PI/organization will be responsible to transfer the know-how developed to the production agency/agencies and supply all the needed information in this connection to the production agency / agencies / DST as and when required.

17. The PI / organization will submit a Project Completion Report to DST at the end of the project in the prescribed proforma.

18. The project shall be declared successful and completed when:-

- (i) The prototype of the instrument made by the organization are tested, evaluated & accepted by the production agency / agencies or user agency / agencies.
- (ii) The organization has prepared a comprehensive technology transfer document as specified in 16 above.
- (iii) The Monitoring Committee and the Department of Science & Technology has approved the above.



## Annexure-I

### Instruction for Technology Transfer and Intellectual Property Right

With a view to encourage the institutions to file patent applications on their innovations, motivate them to transfer their technologies for commercialization and facilitate them to reward their inventors, the following instructions are issued.

1. In these instructions:
  - (a) **"Institution"** means any technical, scientific or academic establishment where research work is carried out through funding by the Central State Government.
  - (b) **"Intellectual Property Right"** include patents, registered designs, copyrights and layout design of integrated circuits.
  - (c) **"Inventor"** means an employee of the institution whose duties involve carrying out of scientific or technical research.
2. **Scope:-** These instructions apply to those institutions receiving funds for research projects from the Ministry of Science and Technology and Department of Ocean Development.
3. **Inventions by Institutions:-** Institutions shall be encouraged to seek protection of Intellectual Property Rights (IPR) to the results of research through R&D projects. While the patents may be taken in the names (s) of inventor(s), the institution shall ensure that the patent is assigned to it. The institution shall get its name entered in the Register of Patents as the proprietor of the patent. The institution shall take necessary steps for commercial exploitation of the patent on exclusive/non-exclusive basis. The institution is permitted to retain the benefits and earnings arising out of the IPR. However, the institution may determine the share of the inventor(s) and other persons from such actual earnings. Such share(s) shall be limited to 1/3<sup>rd</sup> of the actual earnings.
4. **Invention by institutions and industrial concerns:** IPR generated through joint research by institutions(s) and industrial concern(s) through joint efforts can be owned jointly by them as may be mutually agreed to by them through a written agreement. The institution and industrial



concern them through a written agreement. The institution and industrial concern may transfer the technology to third party for commercialization on exclusive/non-exclusive basis. The third party, exclusively licensed to market the innovation in India, must manufacture the product in India. The joint owners may share the benefits and earnings arising out of commercial exploitation of the IPR. The institution may determine the share of the inventor(s) and other persons from such actual earnings. Such share(s) shall not exceed 1/3 of the actual earnings.

5. *Patent Facilitating fund:-* The institution shall set apart not less than 25% of such earning for crediting into a fund called Patent Facilitating Fund. This fund shall be utilized by the institution for updating innovation, for filing new patent application, protecting their rights against infringements, for creating awareness and building on IPR and related issues.

6. *Information:-* The institutions shall submit information relating to the details of the patent obtained, the benefits and earnings arising of IPR and the turnover of the products periodically to the Department Ministry which was provided funds.

7. *Royalty-Free license:-* The Government shall have a royalty free license for the use of the intellectual property for the purposes of the Government of India.

8. *Review:-* These instructions shall be reviewed by the Central Government after a period of five years.

9. The instructions are issued with the concurrence of the Ministry of Finance, Department of Expenditure vide their O.M. No. 33(5) PF II 99, dated 22<sup>nd</sup> February, 2000.





FD Diary No.4304  
Dated : 31.07.2014

University Grants Commission  
Bahadur Shah Zafar Marg  
New Delhi-110 002

No.F.30-50/2014(BSR)

Dated: August, 2014

The Under Secretary FD-III Section,  
University Grants Commission  
Bahadur Shah Zafar Marg,  
New Delhi – 110002.

12- AUG 2014

**Subject:-** Approval-cum-Sanction letter for UGC-BSR Research Start-Up-Grant @ Rs.6.00 lakhs each for newly recruited faculty at Assistant Professors level in Science Departments of various Universities – Release of the grant for the year 2014-2015 under Plan.

Sir,

The University Grants Commission convey its approval and allocate a sum of **Rs.18,00,000/- (Rupees Eighteen Lakhs Only) @ Rs.6.00 Lakhs each faculty** to the Registrar, Jai Narain Vyas University, Jodhpur – 342 011 Rajasthan being the UGC-BSR Research Start-Up-Grant for newly recruited faculty at Assistant Professors level of Science Departments.

Accordingly, I am further directed to convey the sanction of the University Grants Commission for payment of **Rs.18,00,000/- (Rupees Eighteen Lakhs only)** to the Registrar, Jai Narain Vyas University, Jodhpur – 342 011 Rajasthan being the approval of **Rs.18,00,000/- (Rupees Eighteen Lakhs only) @ Rs.6.00 Lakhs each faculty** towards UGC-BSR Research Start-Up-Grant for newly recruited faculty at Assistant Professors level in Science Departments as per details given below for the plan expenditure to be incurred during the year **2014-2015:-**

Name of the Scheme	Head of Account	Name of Faculty / Professor	Name of Departments	Amount Approved (Rs.)	Amount being released (Rs.)
UGC-BSR Start-up grant @ Rs.6.00 lakhs each for newly recruited faculty at Assistant Professor level in science department	3(A): 2202.03.102.10.01.31	Dr. Rajni Bais Assistant Professor	Chemistry	6,00,000/-	6,00,000/-
		Dr. Sangeeta Parihar Assistant Professor	Chemistry	6,00,000/-	6,00,000/-
		Dr. Shweta Jha Assistant Professor	Botany	6,00,000/-	6,00,000/-
		Total:		18,00,000/-	18,00,000/-

2. The sanctioned amount is debitable to the major Head 3(A): 2202.03.102.10.01.31 and is valid for payment during the financial year 2014-15 only.



3. The amount of the Grant shall be drawn by the Under Secretary (Drawing and Disbursing Officer) UGC on the Grants-in-aid bill and shall be disbursed to and credited to the **Registrar, Jai Narain Vyas University, Jodhpur – 342 011 Rajasthan** through Electronic mode as per the following details:

- a. **Details (Name & Address) of Account Holder** : Registrar, Jai Narain Vyas University, Jodhpur – 342 011 Rajasthan
- b. **Account No.** : 05710100000584
- c. **Name & Address of Bank Branch** : Bank of Baroda, University Campus Branch, Residency Road, Jodhpur – 342 011
- d. **MICR Code** : 342012006
- e. **IFSC Code** : BARB0UNIJOD
- f. **Type of Account** : Saving Account

4. The Grant is Subject to the adjustment on the basis of Utilization Certificate in the prescribed proforma submitted by the University/Institution.

5. The University / Institution shall maintain proper accounts of the expenditure out of the Grants which shall be utilized only on the approved items of expenditure.

6. The University / Institution may follow the General Financial Rules, 2005 and take urgent necessary action to amend their manuals of financial procedures to bring them in conformity with GFRs, 2005 and those don't have their own approved manuals on financial procedures may adopt the provisions of GFRs, 2005 and instructions/guideline there under from time to time.

7. The Utilization Certificate to the effect that the grant has been utilized for the purpose for which it has been sanctioned shall be furnished to the UGC as early as possible after the close of the current financial year.

8. The assets acquired wholly or substantially out of University Grants Commission's Grant Shall not be disposed or encumbered or utilized for the purposes other than those for which the grants was given, without proper sanction of the UGC and should at any time the University ceased to function, such assets shall revert to the University Grants Commission.



9. A Register of Assets acquired wholly or substantially out of the grant shall be maintained by the University in the prescribed proforma.
10. The grantee institution shall ensure the utilization of grants-in-aid for which it is being **sanctioned** / paid. In case of non-utilization/part utilization thereof, simple interest @ 10 % per annum as amended from time to time on the unutilized amount from the date of drawal to the date of refund as per provisions contained in General Financial Rules of Govt. of India, will be charged.
11. The University / Institution shall follow strictly the Government of India / UGC's guidelines regarding implementation of the reservation policy [both vertical (for SC, ST & OBC) and horizontal (for persons with disability etc.)] in teaching and non-teaching posts.
12. The University / Institution shall fully implement the Official Language Policy of Union Government and comply with the Official Language Act, 1963 and Official Languages (Use for Official Purposes of the Union) Rules, 1976 etc.
13. The sanction is issued in exercise of the delegation of powers vide UGC Order No. 130/2013 [F.No. 10-11/12 (Admn. IA & B)] dated 28/5/2013.
14. The University /Institution shall strictly follow the UGC Regulations on curbing the menace of Ragging in Higher Education Institutions, 2009.
15. The University / Institution shall take immediate action for its accreditation by National Assessment & Accreditation Council (NAAC).
16. The accounts of the University / Institution will be open for audit by the Comptroller & Auditor General of India in accordance with the provisions of General Financial Rules, 2005.
17. The annual accounts i.e. balance sheet, income and expenditure statement and statement of receipts and payments are to be prepared strictly in accordance with the Uniform Format of Accounting prescribed by Government.



18. This issues with the concurrence of IFD vide Diary No. 1205 (IFD) Dated 23.05.2014.
19. This issues with the approval of C.M. Sectt. vide Diary No. 29374 Dated 20.06.2014.

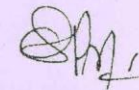
Noted in BCR Register 2014-2015 at P.No.13 S.No.50.

Yours faithfully,

(Shalini)  
Education Officer

Copy forwarded for information and necessary action to:-

1. **Registrar, Jai Narain Vyas University, Jodhpur – 342 011 Rajasthan.** He/She is requested to abide by these instructions/guidelines of sanction order.
2. The Secretary (Education) to the State Government of **Rajasthan, Ajmer.**
3. **The Head, Department of Chemistry / Botany, Jai Narain Vyas University, Jodhpur – 342 011 Rajasthan.**
4. **Dr. Rajni Bais, Assistant Professor, Department of Chemistry, Jai Narain Vyas University, Jodhpur – 342 011 Rajasthan.**
5. **Dr. Sangeeta Parihar, Assistant Professor, Department of Chemistry, Jai Narain Vyas University, Jodhpur – 342 011 Rajasthan.**
6. **Dr. Shweta Jha, Assistant Professor, Department of Botany, Jai Narain Vyas University, Jodhpur – 342 011 Rajasthan.**
7. The Director General of Audit, Central Revenues, AGCR Building, I.P. Estate, New Delhi.
8. Guard file.

  
(Usha Arya)  
Section Officer

**DEPARTMENT OF GEOLOGY, MOHANLAL SUKHADIA UNIVERSITY**

**51-Saraswati Marg, Udaipur-313001**

Tel: 0294-2418125, 2529833 (R); 9414166833 (M)

Fax: 0294-2471150

Dr. Harsh Bhu, Professor

Email: harsh\_bhu2003@yahoo.com

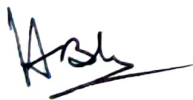
F/Ged/GAD/2016-17/750

Dated: 12<sup>th</sup> January, 2016

**WHOM SO EVER CONCERNED**

It is to certify that Dr. S.R. Jakhar, Associate Professor, Department of Geology, Jai Narain Vyas University, Jodhpur was Co-Principal Investigator in a national projects entitled

1. **"Present Day Crustal Deformation in the Aravalli-Vindhyan Cratons, constrained by GPS measurements"** sponsored by Ministry of Earth Sciences, GoI, New Delhi from 2006-2011 of Rs. 22.456 Lakh.
2. **'Setting up, Operation and Maintenance of GPS Stations at selected locations.'** The project was also sponsored by Ministry of Earth Sciences, Government of India, New Delhi from 2011-2014 of Rs. 29,05,200/-. Its sanction number is MoES/P.O.(Seismo)/GPS.I/2010 dated 30/31. 05. 2011. Further it is clarified that Dr. S.R. Jakhar was the only Co-Principles Investigator in this project.
3. **'Tectono-geomorphic and geodetic study of selected neotectonic faults/Lineaments in Rajasthan'** of Rs. 37,68,800/ sponsored by Ministry of Earth Sciences, Government of India, New Delhi. Its sanction number is MoES/P.O.(Seismo)/GPS.I(233)/2014 dated 19/20. 08. 2014. In this project too Dr. S.R. Jakhar is the only Co-Principles Investigator.



(Harsh Bhu), Department

Head of the Department

Department of Geology and Principal Investigator

UDAIPUR



MoES/P.O.(Seismo)/1(233)/2014

Government of India  
Ministry of Earth Sciences  
(Seismology Division)

Prithvi Bhavan,  
Lodhi Road,  
New Delhi - 110003  
Dated: 19/08/2015  
20

SANCTION ORDER

**Sub:** Financial assistance for the research project entitled, "Tectono-geomorphic and geodetic study of selected neotectonic faults/Lineaments in Rajasthan".

**PI:** Dr. Harsh Bhu, Professor, Department of Geology Mohanlal Sukhadia University, 51 Saraswati Marg, Udaipur-313004, Rajasthan.

Approval of the President is hereby conveyed under Rule 20 of the Delegation of Financial Power Rules, 1978, for the above-mentioned project at a total cost of ₹ 37,68,800/- (Rupees thirty seven lakhs sixty eight thousand and eight hundred only) for a period of three years under Seismicity & Earthquake Precursors Program, AO no. MoES/P.O.(Seismo)/8(7)/2007 dated 24/09/2012 followed by revised A.O. of even No. dated 14/07/2015. The items of expenditure for which the total allocation of ₹ 37,68,800/- has been approved are given below:

Budget in Rupees							Total
	Item	1 <sup>st</sup> Year	2 <sup>nd</sup> Year	3 <sup>rd</sup> Year	4 <sup>th</sup> year	5 <sup>th</sup> year	
<b>A</b>	<b>Recurring</b>						
i	Salaries/wages* JRF (One) @₹25000/- pm + HRA for 1 <sup>st</sup> and 2 <sup>nd</sup> year @₹28000/- pm + HRA for 3 <sup>rd</sup> , 4 <sup>th</sup> and 5 <sup>th</sup> year.	3,30,000/-	3,30,000/-	3,69,600/-	3,69,600/-	3,69,600/-	17,68,800/-
ii	Travel <sup>W</sup>	1,00,000/-	1,00,000/-	1,00,000/-	1,00,000/-	1,00,000/-	5,00,000/-
iii	Contingency (Including watch and ward)	2,75,000/-	2,75,000/-	2,75,000/-	2,75,000/-	2,75,000/-	13,75,000/-
<b>B</b>	<b>Over head</b>	25,000/-	25,000/-	25,000/-	25,000/-	25,000/-	1,25,000/-
	<b>Total A+B</b>	<b>7,30,000/-</b>	<b>7,30,000/-</b>	<b>7,69,600/-</b>	<b>7,69,600/-</b>	<b>7,69,600/-</b>	<b>37,68,800/-</b>

2. Sanction of the President authority is also hereby conveyed to the payment of ₹ 7,30,000/- (Rupees seven lakhs and thirty thousand only) to the Registrar, Mohanlal Sukhadia University, Udaipur-310001 as first installment. The break-up of the same is as follows:

	Head	Amount in Rupees
1	Salaries	3,30,000/-
2	Contingency (Including watch and ward)	2,75,000/-
3	Travel	1,00,000/-
4	Overhead	25,000/-
	<b>Total</b>	<b>7,30,000/-</b>

*R. Udaipur*  
20/8/15

3. The said amount in para 2, will be drawn by DDO, MoES and will be disbursed to the Registrar, Mohanlal Sukhadia University, Udaipur-310001 through RTGS as per following details:

Name of the Bank	:	ICICI Bank
Type of Account	:	Current
IFSC Code	:	ICIC0006942
Account No.	:	694205000011
MICR No.	:	313229007
Branch Name	:	ICICI Bank Ltd., University Campus Udaipur-313001

4. The expenditure involved is debit able to Demand No.31 Ministry of Earth Sciences

3455	- Meteorology (Major Head)
00.001	- Direction & Administration
07	- Seismological and Geosciences (SAGE)
07.00.31	- Grants-in-aid-General for the year 2015-16 (Plan)

5. Sanction of the grant is subject to the conditions as detailed in the enclosed Guidelines for Implementing Research Project.

6. Overhead expenses are meant for the host institute towards the cost for providing infrastructural facilities and benefits to the staff employed in the project, etc.

7. The provisions of GFR 211(1) relating to U.C.'s for the fund released are not applicable at this stage since the said institute would be receiving the grant for the aforesaid purpose for the first time.

8. As per rule 212(1) of GFRs, the account of the Grantee institution shall be open to inspection by sanctioning authority/audit whenever the institute is called upon to do so.

9. It is desirable to have MoES nominee in the selection process for recruitment of JRF/SRF/RA/Scientists in the project.

10. The position of project staff is co-terminus with the duration of the project & MoES would have no liability towards such manpower costs beyond the duration of the project.

11. The assets acquired wholly or substantially out of government grants by the implementing agencies will not be disposed off without obtaining the prior approval of MoES.

12. All the future correspondence regarding the project may be addressed to Adviser & Head Geosciences/Seismology Division.

13. Amount released for the project may be kept in a separate interest earning account of Mohanlal Sukhadia University, Udaipur-310001.

14. Data acquired under the project needs to be sent to Ministry regularly and it should not be shared with any private agency/foreigner, without prior approval of MoES.

15. The expenditure has been entered into ECR register at Page No. 22, Sl. No. 49.



16. This issues under the powers delegated to this Ministry and with the concurrence of IF Division of MoES, vide Dy. No. 564/IFD/15 dated 14/08/2015 and approval of Secretary vides Dy. No. 442/Secy/15 dated 18/08/2015.

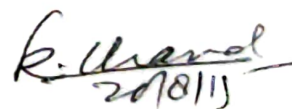
  
(Kailash Chand)

Under Secretary to the Govt. of India

To,  
The Pay & Accounts Officer, MoES, New Delhi.

Copy forwarded for information and necessary action to:

1. The Principal Director of Audit, Scientific Department, III Floor, AGCR Building, IP Estate, New Delhi-110002.
2. **The Registrar, Mohanlal Sukhadia University, Udaipur-31300, Rajashtan.**
3. **Dr. Harsh Bhu, Professor, Department of Geology Mohanlal Sukhadia University, 51 Saraswati Marg, Udaipur-313004, Rajasthan.** Codal provisions and GOI instructions on the subject matter issued from time to time be followed.
4. Cash Section, MoES, New Delhi, *with two spare copies of the sanction for making necessary payment to the grantee.*
5. Controller of Account, MoES, New Delhi.
6. Head, Geosciences/Seismology Division, MoES, New Delhi.
7. Sanction Folder/ File copy.

  
(Kailash Chand)

Under Secretary to the Govt. of India

**Subject:** [Fwd: sanction order issued of your project No: DST/TM,  
**From:** "Shantanu Bhattacharya" <bhattacs@iitk.ac.in>  
**Date:** Sun, October 23, 2022 1:40 pm  
**To:** [sksingh.jnvu@gmail.com](mailto:sksingh.jnvu@gmail.com)  
**Priority:** Normal  
**Options:** [View Full Header](#) | [View Printable Version](#) | [Download this as a file](#)  
[Message Details](#)

Dear Dr. Singh,

Apologies for the delay in sending out this sanction letter of phase II. Please find enclosed the DST email to our project where JNVU, MNT Jaipur and IIT Kanpur were jointly involved. As you may recall the sanction letter was issued to IIT Kanpur and the transactions were enabled from IIT Kanpur from which partial support had reached the collaborators.

It may also perhaps be recalled that we have jointly communicated through the manuscript titled, "Pankaj Singh Chauhan, Aditya Chakraborty, Kirtiman Singh, S.K. Singh, Urmila Bhargava, Shantanu Bhattacharya, "Development of Energy-Efficient Wastewater Treatment Plant using Advanced Oxidation Process with Data-driven Predictive Performance Modeling", 2022, NPJ Clean water (Nature), Under Review.

Sincerely,

Shantanu

Wish you and your family a very very happy Diwali.

----- Original Message -----  
Subject: sanction order issued of your project No: DST/TM/WTI/2K16/21  
From: "neelima.alam" <[neelima.alam@nic.in](mailto:neelima.alam@nic.in)>  
Date: Mon, December 9, 2019 3:20 pm  
To: "Shantanu Bhattacharya" <[bhattacs@iitk.ac.in](mailto:bhattacs@iitk.ac.in)>  
-----

Dear Dr. Shantanu Bhattacharya,

Please find the attached scan copy of sanction order issued of your project No: DST/TM/WTI/2K16/21(G) 3

Thanking you  
WTI Team

Dr. Neelima Alam  
Scientist 'E'  
Technology Mission Division  
Department of Science and Technology  
Ministry of Science and Technology

--  
Shantanu Bhattacharya (FRSC, FIE, FIETE, Senior Member IEEE, Fellow of ISEI  
Abdul Kalam Technology Innovation National Fellow  
Dr. Gurumukh T. and Veena M. Mehta Chair and Professor  
Department of Mechanical Engineering  
IIT Kanpur  
Telephone No. : 0512-259-6056 (Off-Mech.)/0512-259-6611 (Off.- Design)  
Fax No.: 0512-259-7408  
Homepage: <http://home.iitk.ac.in/~bhattacs/>

**Attachments:**



**No. DST/TM/WTI/2K16/21(G)**  
Government of India  
Ministry of Science and Technology  
Department of Science and Technology

Technology Bhavan  
New Mehrauli Road  
New Delhi-110 016  
Date: 27.10.2016

**Sanction Order**

Subject: Financial support for project entitled "Installation of a pilot plant of 10 KLD capacity comprising ZnO-Graphene based sensitive photo catalytic filter for visible light catalysis and carbon nano-mat fiber filter for the treatment of the effluent of CETP, Jodhpur as a replacement of their secondary treatment unit and development of an alternative low cost process for dye adsorption on acid modified soil" submitted by Dr. Shantanu Bhattacharya, Indian Institute of Technology, Kanpur.

Sanction of the President is hereby accorded to the above-mentioned project at a total cost of Rs 1,19,03,000/- (*Rupees One Crore nineteen lakh three thousand only*) from DST with break up of Rs. 20,08,000 (*Rupees Twenty lakh eight thousand only*) from DST under capital head and Rs. 98,95,000/- (*Rupees Ninety eight lakh ninety five thousand only*) from DST under General head for a duration of 36 months. The items of expenditure for which the total allocation has been approved are given below:

S. No	Item	Amount in lakh							
		1st Year		2nd Year		3rd Year		TOTAL	
		DST	Coll.	DST	Coll.	DST	Coll.	DST	Coll.
A.	Capital- Equipment								
	1. Spin Coater	3.50							
	2. Oven	3.00							
	3. Ultrasonic machine	1.00							
	4. Centrifuge machine	1.00							
	5. Super ES-1 Electrospinning machine	7.00							
	6. Furnace with various gas supply	1.00							
	7. COD Close reflux unit along with photometer and vials	1.38							
	8. Experimental set up including flow control devices	1.20							
	9. Rotary extractor	1.00							
	<b>Total</b>	<b>20.08</b>	---	---	---	---	---	<b>20.08</b>	---
B.	Recurring--General								
1	Manpower RA-I (No.1), JRF (No.3)	14.65		14.65	For civil construction work (unskilled labour)	14.65	For civil construction work (unskilled labour)	43.95	For civil construction work (unskilled labour)

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2	Other Costs & Contingencies	4.00	1.00	3.00	--	5.00	--	12.00	1.00 CETP has own lab for some test
3	Travel	2.50	--	4.50	--	5.00	--	12.00	--
4	Consumable	13.00	--	9.00	--	6.00	--	28.00	--
5	Over head Charges on A+B	1.00	--	1.00	--	1.00	--	3.00	--
	<b>Sub total (General)</b>	<b>35.15</b>	<b>1.00</b>	<b>32.15</b>	<b>--</b>	<b>31.65</b>	<b>--</b>	<b>98.95</b>	<b>1.00</b>
	<b>Grand Total</b>	<b>55.23</b>	<b>1.00</b>	<b>32.15</b>	<b>--</b>	<b>31.65</b>	<b>--</b>	<b>119.03</b>	<b>1.00</b>

2. The sanction of the President is also accorded to the payment of an amount of **Rs 35,15,000/- (Rupees Thirty five lakh fifteen thousand only)** under 'Grants-in-aid General' to **Registrar, Indian Institute of Technology Kanpur**, for the year 2016-17 for implementation of the said project.

3. Sanction of the grants is subject to the conditions as detailed in DST's website [www.dst.gov.in](http://www.dst.gov.in). The acceptance of the grant will automatically imply acceptance of DST's term and conditions of the grant. The emoluments to the project manpower would be governed by DST guidelines, terms and conditions mentioned in OM No A. 20020/11/97-IFD dated 31<sup>st</sup> March 2010 available on DST Website. Overhead expenses are meant for the host Institute towards the cost for providing infrastructural facilities and benefits to the staff employed in the project etc.

4. The amount of **Rs 35,15,000/- (Rupees Thirty five lakh fifteen thousand only)** will be disbursed under 'Grants-in-aid General' to **'Registrar, Indian Institute of Technology Kanpur**, through RTGS as per following details:

Name of the Account Holder	Registrar, IIT Kanpur
Name of the bank	State Bank of India
Branch Address	IIT KANPUR
MICR code	208002041
IFSC code	SBIN0001161
Account Number	10426002126

5. The expenditure involved is debit able to -

- Demand No.77 Department of Science & Technology
- 3425 Other Scientific Research (Major Head)
- 60 Others (Sub-major Head)
- 60.200 Assistance to other Scientific Bodies (Minor Head)
- 26 Technology Development Programme (SERI/WTI)

**26.01.31 Grant-in-aid General for the year 2016-2017 (SERI/WTI)**

6. The sanction has been issued under the powers delegated to the Ministries, with the concurrence diary No.4113, of IFD, DST, dated: **27.10.2016**

7. The Institute will furnish to the DST, utilization certificate and audited statement of accounts pertaining to the grant immediately after the end of each financial year. All purchases of equipments etc. would be as per GFR and the disposal of the same would be done with prior approval of DST. As per Rule 211 GFRs, the accounts of the project shall be open to inspection by the sanctioning authority/audit whenever the Institute is called upon to do so.


8. The Institute will maintain separate audited accounts for the project. The grant will be kept in a bank account earning interest; the interest earned should be reported to the DST. The interest thus earned will be treated as a credit to the Institute to be adjusted towards further installment of the grant.

*Handwritten signature and initials*  
S P E



9. The Sanction Order is entered in the register of grants of TMD: WTI Division at Sl. No. 114 (WTI) for the Financial Year 2016-17.

10. It is certified that the no UCs/SEs from the grantee(s) are pending under this scheme/ project

  
(Dr. Neelima Alam)  
Scientist-E

Email: neelima.alam@nic.in

To: The Pay and Accounts Officer, DST, New Delhi

Copy for information and necessary action to:

1. Cash Section(3 copies), DST, New Delhi--for preparing the bill and remitting the amount to the grantee
2. Accounts Section, DST, New Delhi, 3. IFD, DST, New Delhi.
4. Director of Audit (CW & M-II), AGCR Building, IP Estate, New Delhi.

---

5. **Dr. Shantanu Bhattacharya,**

Associate Professor,  
Department of Mechanical Engineering,  
Indian Institute of Technology, Kanpur  
E-mail: [bhattacs@iitk.ac.in](mailto:bhattacs@iitk.ac.in)

6. Sanction folder, 7. Office Copy, 8. Head- TMD

  
(Dr. Neelima Alam)  
Scientist-E

**No. DST/TM/WTI/2K16/21(C)**  
Government of India  
Ministry of Science and Technology  
Department of Science and Technology

Technology Bhavan  
New Mehrauli Road  
New Delhi-110 016  
Date: 27.10.2016

**Sanction Order**


Subject: Financial support for project entitled "Installation of a pilot plant of 10 KLD capacity comprising ZnO-Graphene based sensitive photo catalytic filter for visible light catalysis and carbon nano-mat fiber filter for the treatment of the effluent of CETP, Jodhpur as a replacement of their secondary treatment unit and development of an alternative low cost process for dye adsorption on acid modified soil" submitted by Dr. Shantanu Bhattacharya, Indian Institute of Technology, Kanpur.

With reference to the sanction order No. DST/TM/WTI/2K16/21 (G) dated: 27.10.2016, sanction of the President is hereby accorded to the payment of **Rs. 20,08,000 (Rupees Twenty lakh eight thousand only)** as the 'Grant for creation of capital assets' in the above-mentioned project.

2. The sanction of the President is also accorded to the payment of an amount of **Rs. 20,08,000 (Rupees Twenty lakh eight thousand only)** under 'Grants for creation of capital assets' to Registrar, Indian Institute of Technology Kanpur, for the year 2016-17 for implementation of the said project. The items of expenditure for which the total allocation has been approved are given below:

S. No	Item	Amount in lakh							
		1st Year		2nd Year		3rd Year		TOTAL	
		DST	Coll.	DST	Coll.	DST	Coll.	DST	Coll.
A.	Capital- Equipment								
	1. Spin Coater	3.50							
	2. Oven	3.00							
	3. Ultrasonic machine	1.00							
	4. Centrifuge machine	1.00							
	5. Super ES-1 Electrospinning machine	7.00							
	6. Furnace with various gas supply	1.00							
	7. COD Close reflux unit along with photometer and vials	1.38							
	8. Experimental set up including flow control devices	1.20							
	9. Rotary extractor	1.00							
	<b>Total</b>	<b>20.08</b>	<b>---</b>	<b>---</b>	<b>---</b>	<b>---</b>	<b>---</b>	<b>20.08</b>	<b>---</b>

3. Sanction of the grants is subject to the conditions as detailed in DST's website [www.dst.gov.in](http://www.dst.gov.in). The acceptance of the grant will automatically imply acceptance of DST's term and conditions of the grant. The emoluments to the project manpower would be governed by

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DST guidelines, terms and conditions mentioned in OM No A. 20020/11/97-IFD dated 31<sup>st</sup> March 2010 available on DST Website. Overhead expenses are meant for the host Institute towards the cost for providing infrastructural facilities and benefits to the staff employed in the project etc.

4. The amount of **Rs. 20,08,000 (Rupees Twenty lakh eight thousand only)** will be disbursed under 'Grants- for creation of Capital assets to **'Registrar, Indian Institute of Technology Kanpur,** through RTGS as per following details:

Name of the Account Holder	Registrar, IIT Kanpur
Name of the bank	State Bank of India
Branch Address	IIT KANPUR
MICR code	208002041
IFSC code	SBIN0001161
Account Number	10426002126

5. The expenditure involved is debitable to:  
Demand No77 Department of Science & Technology  
3425 Other Scientific Research (Major Head)  
60 Others (sub major heads)  
60.200 Assistance to other scientific bodies (Minor head)  
26 Technology Development Programme (SERI/ WTI)  
**26.01.35 Grant for creation of capital assets for the year 2016-2017**

6. The sanction has been issued under the powers delegated to the Ministries, with the concurrence diary No. **4114**, of IFD, DST, dated: **27.10.2016**


7. All purchases of equipments etc. would be as per GFR and the disposal of the same would be done with prior approval of DST. Sanction of the grant is subject to the conditions as given on DST's website [www.dst.gov.in](http://www.dst.gov.in). The acceptance of the grant will automatically imply acceptance of DST's term and conditions of the grant. The project would be monitored by a monitoring Committee appointed by Department of Science and Technology, Govt. of India. The Principal Investigator of the project has to ensure of obtaining the statutory clearances required for execution of the project.

8. The Institute will furnish to the DST, utilization certificate and audited statement of accounts pertaining to the grant immediately after the end of each financial year. All purchases of equipments etc. would be as per GFR and the disposal of the same would be done with prior approval of DST. As per Rule 211 GFRs, the accounts of the project shall be open to inspection by the sanctioning authority/audit whenever the Institute is called upon to do so.

9. The Institute will maintain separate audited accounts for the project. The grant will be kept in a bank account earning interest; the interest earned should be reported to the DST. The interest thus earned will be treated as a credit to the Institute to be adjusted towards further installment of the grant.

10. The Sanction Order is entered in the register of grants of TMD: WTI Division at Sl. No.113 (WTI) for the Financial Year 2016-17.

11. It is certified that the no UCs/SEs from the grantee(s) are pending under this scheme/project


  
(Dr. Neelima Alam)  
Scientist-E

Email: [neelima.alam@nic.in](mailto:neelima.alam@nic.in)

To: The Pay and Accounts Officer, DST, New Delhi

Copy for information and necessary action to:

1. Cash Section(3 copies), DST, New Delhi--for preparing the bill and remitting the amount to the grantee
2. Accounts Section, DST, New Delhi, 3. IFD, DST, New Delhi.
4. Director of Audit (CW & M-II), AGCR Building, IP Estate, New Delhi.
5. **Dr. Shantanu Bhattacharya,**  
Associate Professor,  
Department of Mechanical Engineering,  
Indian Institute of Technology, Kanpur  
E-mail: [bhattacs@iitk.ac.in](mailto:bhattacs@iitk.ac.in)
6. Sanction folder, 7. Office Copy, 8. Head- TMD

  
(Dr. Neelima Alam)  
Scientist-E



F.NO. DST/TM/WTI/2K16/21(G) 3  
Government of India  
Ministry of Science & Technology  
Department of Science & Technology  
(Technology Mission Division)

Technology Bhavan, New Delhi  
Dated: 06.12.2019

Sanction Order

Subject: Financial support for project entitled "Installation of a pilot plant of 10 KLD capacity comprising ZnO-Graphene based sensitive photo catalytic filter for visible light catalysis and carbon nano-mat fiber filter for the treatment of the effluent of CETP, Jodhpur as a replacement of their secondary treatment unit and development of an alternative low cost process for dye adsorption on acid modified soil." submitted by Dr. Shantanu Bhattacharya, Indian Institute of Technology, Kanpur.

Sanction of the President is hereby accorded to the release of the above mentioned project at a cost of **Rs.25,00,000/- (Rupees twenty five lakh only)** for the above mentioned activity to Indian Institute of Technology, Kanpur, as third installment.

2. The sanction of the President is also accorded to the release of **Rs.25,00,000/- (Rupees twenty five lakh only)** to Indian Institute of Technology, Kanpur, being the third installment of grant under "General Component" for implementation of the above mentioned project.

3. Permission to carry forward of unspent balance of Rs.3,599/- (C) (Excluding interest earned) from F.Y.2018-2019 to 2019-2020.

4. The grantee organization will have to enter & upload the Utilization Certificate in the PFMS portal besides sending it in physical form to this Division. The subsequent/final installment will be released only after confirmation of the acceptance of the UC by the Division and entry of previous Utilization Certificate in the PFMS.

5. If the grant has been released under capital head through separate sanction order under the same project for purchase of equipment(s), separate SE/UC has to be furnished for the released Capital head grant.

6. The grant-in-aid being released is subject to the condition that:

a. A transparent procurement procedure in line with the Provisions of General Financial Rules 2017 will be followed by the Institute/Organization under the appropriate rules of the grantee organization while procuring capital assets sanctioned for the above mentioned project and a certificate to this effect will be submitted by the Grantee organization immediately on receipt of the grant:

b. While submitting Utilization Certificate/Statement of Expenditure, the organization has to ensure submission of supporting documentary evidences with regard to purchase of equipment/capital assets as per the provisions of GFR 2017. Subsequent release of grants under the project shall be considered only on receipt of the said documents.

7. The grantee organization will maintain separate audited account for the project and the entire amount of grant will be kept in an interest bearing bank account. For Grants released during F.Y. 2017-18 and onwards, all interests and other earnings, against released Grant shall be remitted to Consolidated Fund of India (through Non-Tax Receipt Portal (NTRP), i.e., [www.Bharatkosh.gov.in](http://www.Bharatkosh.gov.in)),

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immediately after finalization of accounts, as it shall not be adjusted towards future release of grant. A certificate to this effect shall have to be submitted along with Statement of Expenditure/Utilization Certificate for considering subsequent release of grant/closure of project accounts.

9. DST reserves sole rights on the assets created out of grants. Assets acquired wholly or substantially out of government grants (except those declared as obsolete and unserviceable or condemned in accordance with the procedure laid down in GFR 2017), shall not be disposed of without obtaining the prior approval of DST.

10. In case the scheme provides for payment of honorarium / remuneration / fellowship / scholarship to the PI, as per may suitably be incorporated in the DSO to the effect that "PI is not drawing any emoluments/ salary/fellowship from any other project either supported by DST or by any other funding agency.

11. The organization named Indian Institute of Technology, Kanpur, agrees to make reservations for Scheduled Castes and Scheduled Tribes or OBC in the posts or services under its control on the lines indicated by the Government of India.

12. Due acknowledgement of technical support / financial assistance resulting from this project grant should mandatory be highlighted by the grantee organization in bold letters in all publications / media releases as well as in the opening paragraphs of their Annual Reports during and after the completion of the project.

13. Failure to comply with the terms and conditions of the Bond will entail full refund with interest in terms of Rule 231 (2) of GFR 2017.

14. The expenditure involved is debit able to-

Demand No 86	Department of Science and Technology for the year 2019-20
3425	Other Scientific Research (Major Head)
60	Others
60.200	Assistance to Other Scientific Bodies (Minor head)
70	Innovation, Technology Development and Deployment
70.00.31	Grants-in-aid General for the year 2019-2020(Plan)
	(Previous: TDP-3425.60.200.26.01.31- (SERI/WTI)

15. The amount of **Rs.25,00,000/- (Rupees twenty five lakh only)** will be drawn by the Drawing and Disbursing Officer, DST and will be disbursed to Indian Institute of Technology, Kanpur. The bank details for electronic transfer of funds through RTGS are given below:-

Name of the Account Holder	Registrar, IIT Kanpur
Name of the bank	State Bank of India
Branch Address	IIT KANPUR
MICR code	208002041
IFSC code	SBIN0001161
Account Number	10426002126

16. As per Rule 234 of GFR 2017, this sanction has been entered at S. No. 512 (TMD,WE) in the register of grants maintained in the Division for the scheme (ITDD).

17. The organization/Institute/University should ensure that the technical support/financial assistance provided to them by the Department of Science and Technology should invariably be highlighted/acknowledged in their media releases as well as in bold letters in the opening paragraph of their Annual Report.

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It is important that the information and knowledge generated through the use of these funds are made publicly available as soon as possible. In order to achieve the aforementioned objectives, each institution is encouraged to set up its own inter-operable institutional open access repository ("IR") for its research papers and review articles published in peer reviewed journals. The Ministry of Science and Technology has set up a central harvester ([www.sciencecentral.in](http://www.sciencecentral.in)) that will harvest the full text and metadata of these publications. Kindly update the findings accordingly.

19. The goods (consumables/equipment) available in GeM portal are to be procured mandatorily online through GeM only.

20. This issues with the concurrence of IFD Vide their Concurrence **Dy. No.4518. Dated.05.12.2019**

*Neelima Alam*  
(Dr. Neelima Alam)  
Scientist-E

To The Pay and Accounts Officer, DST, New Delhi

Copy for information and necessary action to:

1. Cash Section(3 copies), DST, New Delhi--for preparing the bill and remitting the amount to the grantee
2. Accounts Section, DST, New Delhi, 3. IFD, DST, New Delhi.
4. Director of Audit (CW & M-II), AGCR Building, IP Estate, New Delhi.
5. **Dr. Shantanu Bhattacharya,**  
Associate Professor,  
Department of Mechanical Engineering,  
Indian Institute of Technology, Kanpur  
E-mail:[bhattacs@iitk.ac.in](mailto:bhattacs@iitk.ac.in)
6. Sanction folder, 7. Office Copy, 8. Head- TMD

*Neelima Alam*  
(Dr. Neelima Alam)  
Scientist-E

To,

**Dr. S.K. Singh (PI)**

Professor

Department of Civil Engineering

Jai Narain Vyas University Jodhpur

&amp;

**Dr Anil Vyas (CO-PI)**

Assistant Professor

Department of Chemical Engineering

Jai Narain Vyas University Jodhpur

Date: 10<sup>th</sup> Oct 2016**Sub: Acceptance letter for project funding**

Dear Sir,

We have evaluated your proposed project entitled "Reliability and product validation study of CAPDI Technology for removal of TDS from water" technically and also your submitted budget proposal for the same for 53.00 lacs (including pilot plant cost of Rs 50.00 lacs to be imported from Holland)

We are pleased to inform you that our management has accepted the project funding of Rs 300000.00 (Rs. Three lacs only) with the following terms and conditions.

1. **Pilot plant cost (Rs. Fifty lacs only)** for the study will be born by the company directly and this plant is to be returned back to the company after the study. Company will import the pilot plant for the study on its own level and university has not to pay any amount in this regards.
2. **Company will pay Rs 3.0 Lacs to the university account for the recurring expenditure of the project as mentioned in the project proposal.**
3. A.C. Taxi charges of Rs 12.00 / km is permitted in the project.
4. Air travel by any airlines is permitted for PI & CO-PI of the project.
5. For out side testing following labs are recommended
  - a. Shriram Institute for industrial research Delhi
  - b. SIMA Lab Dehli
  - c. VIMTA Lab Hyderabad
  - d. Bangalore Analytical Research Centre ( BARC) Bangalore
6. Payment of Transportation of Pilot plant from one place to other by road is permitted on actual basis.
7. For outside accommodation hotel charges upto maximum 5000.00 per day per person is permitted.
8. For any other expenditure / honorarium paid to staff engaged in the project, PI decision will be final.
9. You will share with us the study report and product validation certificate.

Please let us know the payment mode.

Yours sincerely,

For InNow India Pvt Ltd

Innow India Private Limited

Ashwani Kohli

CEO/Director



**Innow India Private Limited**

(A wholly owned subsidiary of InNow LLC, USA )

Regd. Office : 3, Sukhchain Marg, DLF Phase-1, Gurgaon-122002, Haryana, INDIA.





**JAI NARAIN VYAS UNIVERSITY, JODHPUR**  
**(DEVELOPMENT SECTION)**

No.: JNVU/Dev./2017/ 92

Date: 28.4.2017

The Comptroller  
Jai Narain Vyas University  
Jodhpur.

Sir,

The Director, Gurgaon has released grant and same has been credited through Cheque in ICICI Bank, Jodhpur as per details given hereunder :-

S. No.	PURPOSE	D.D. No./ Cheque No./ RTGS/NEFT	Date	Amount	Budget Head/ University A/c No.
1.	Research Project in Now India Pvt. Ltd., Gurgaon Dr. Anil Vyas, Co-Principle Investigator & Head, Deptt. of Chemical Eng., Faculty of Engineering	Cheque 035156	29.3.2017	3,00,000/-	A/c No. 05710400000026

This is for your information and necessary action.

Yours faithfully,

Encls.: As above.

  
OFFICER-IN-CHARGE

Copy forwarded to the following for information and necessary action:-

1. The Head, Deptt. of Chemical Engineering, Jai Narain Vyas University, Jodhpur.
2. Dr. Anil Vyas, Co-PI, Deptt. of Chemical Engineering, J. N. Vyas University, Jodhpur.

  
OFFICER-IN-CHARGE

Dated: 27-Jul-2018

**ORDER**

Subject: Financial Sanction of the research project titled "Assessment of population status, distribution and movement patterns of the threatened Great Indian Bustard (*Ardeotis nigriceps*) in the Thar Desert of Rajasthan, India" under the guidance of Dr. Hem Singh Gehlot, Zoology Department, Jai Narain Vyas University, Bhagat Ki Kothi, Pali Road, RAJASTHAN-342011 - Release of 1st grant.

Sanction of Science and Engineering Research Board (SERB) is hereby accorded to the above mentioned project at a total cost of Rs. 2614800/- (Rs. Twenty Six Lakh Fourteen Thousand Eight Hundred Only) with break-up of Rs. 159000/- under Capital (Non-recurring) head and Rs. 2455800/- under General (Recurring) head for a duration of 36 months. The items of expenditure for which the total allocation of Rs. 2614800/- has been approved are given below:

The following budget may be considered for Jai Narain Vyas University, Bhagat Ki Kothi, Pali Road

S. No	Head	Total (in Rs.)
A	Non-recurring	
1	Equipment -> Laptop -> Binocular -> Global Positioning System -> Range finder	159000
A'	Total (Non-Recurring)	159000
B	Recurring Items	
1	Recurring - I : (Manpower)	1468800
	Recurring - II : ( Consumables, Travel, Contingencies)	750000
2	Recurring - III : (Overhead Charges)	237000
B'	Total (Recurring)	2455800
C	Total cost of the project (A' + B')	2614800

2. Sanction of the SERB is also accorded to the payment of Rs. 159000/- (Rupees One Lakh Fifty Nine Thousand only) under 'Grants for creation of capital assets' and Rs. 500000/- (Rupees Five Lakh only) under 'Grants-in-aid General' to REGISTRAR, Jai Narain Vyas University, Bhagat Ki Kothi, Pali Road being the first installment of the grant for the year 2017-2018 for implementation of the said research project.

3. The expenditure involved is debitable to Fund for Science & Engineering Research (FSER). This release is being made under Core Research Grant. (PAC Animal Sciences)

4. The Sanction has been issued to Jai Narain Vyas University, Bhagat Ki Kothi, Pali Road with the approval of the competent authority under delegated powers on 20 June, 2018 and vide Diary No. SERB/F/4016/2018-2019 dated 12 July, 2018

5. Sanction of the grant is subject to the conditions as detailed in Terms & Conditions available at website ([www.serb.gov.in](http://www.serb.gov.in)).

6. Overhead expenses are meant for the host Institute towards the cost for providing infrastructural facilities and general administrative support etc. including benefits to the staff employed in the project.

7. While providing operational flexibility among various subheads under head Recurring-II, it should be ensured that not more than Rs. 1.5 lakh each should be spent for travel and contingency.

8. As per rule 211 of GFR, the accounts of project shall be open to inspection by sanctioning authority/audit whenever the institute is called upon to do so.

9. The sanctioned equipment would be procured as per GFR and its disposal of the same would be done with prior approval of SERB.

10. The release amount of Rs. 659000/- (Rupees Six Lakh Fifty Nine Thousand only) will be drawn by the Under Secretary of the SERB and will be disbursed by means of RTGS transaction as per their Bank details given below:

Account Name	JAIR NARAIN VYAS UNIVERSITY JODHPUR
Account Number	05710400000026
Bank Name & Branch	BANK OF BARODA UNIVERSITY CAMPUS, RESIDENCY ROAD, JODHPUR, RAJASTHAN



IFSC/RTGS Code	BARB0UNIJOD
Email id of A/C Holder	jnvuregistrar1962@gmail.com
Email id of PI	gehloths@gmail.com

11. The institute will furnish to the SERB, New Delhi, separate Utilization certificate (UCs) financial year wise to the SERB for Recurring (Grants-in-aid General) & Non-Recurring (Grants for creation of capital assets) and an audited statement of accounts pertaining to the grant immediately after the end of each financial year.

12. The institute will maintain separate audited accounts for the project. A part or whole of the grant must be kept in an interest earning bank account which is to be reported to SERB. The interest thus earned will be treated as credit to the institute to be adjusted towards further installment of the grant.

13. The project File no. EMR/2016/006030 may also be mentioned in all research communications arising from the above project with due acknowledgement of SERB.

14. The manpower sanctioned in the project, if any is co-terminus with the duration of the project and SERB will have no liability to meet the fellowship and salary of supporting staff if any, beyond the duration of the project.

15. As this is the first grant being released for the project, no previous U/C is required.

16. The institute may refund any unspent balance to SERB by means of a Demand Draft favoring "FUND FOR SCIENCE AND ENGINEERING RESEARCH" payable at New Delhi.

17. The organization/institute/university should ensure that the technical support/financial assistance provided to them by the Science & Engineering Research Board, a statutory body of the Department of Science & Technology (DST), Government of India should invariably be highlighted/acknowledged in their media releases as well as in bold letters in the opening paragraphs of their Annual Report.

18. In addition, the investigator/host institute must also acknowledge the support provided to them in all publications, patents and any other output emanating out of the project/program funded by the Science & Engineering Research Board, a statutory body of Department of Science & Technology (DST), Government of India.


(Dr. Doyil T Vengayil)  
Scientist E  
ms\_as@serbonline.in

To,  
Under Secretary  
SERB, New Delhi

Copy forwarded for information and necessary action to:-

1.	The Principal Director of Audit, A.G.C.R. Building, IIIrd Floor I.P. Estate, Delhi-110002
2.	Sanction Folder, SERB, New Delhi.
3.	File Copy
4.	Dr. Hem Singh Gehlot Zoology Department Jai Narain Vyas University, Bhagat ki Kothi, Pali Road, RAJASTHAN-342011 Email: gehloths@gmail.com Mobile: 919887936418 (Start date of the project may be intimated by name to the undersigned. For guidance, terms & Conditions etc. Please visit <a href="http://www.serb.gov.in">www.serb.gov.in</a> .)
5.	REGISTRAR, Jai Narain Vyas University, Bhagat Ki Kothi, Pali Road (Receipt of Grant may be intimated by name to the undersigned)

(Dr. Doyil T Vengayil)  
Scientist E  
ms\_as@serbonline.in

  
ASSISTANT PROFESSOR  
DEPARTMENT OF ZOOLOGY  
J. N. V. UNIVERSITY, JODHPUR

No. BT/PR24584/NER/95/762/2017  
GOVERNMENT OF INDIA  
MINISTRY OF SCIENCE & TECHNOLOGY  
DEPARTMENT OF BIOTECHNOLOGY

Appl. No.: Agri/2017/08

Block 2, 6-8th Floors  
CGO Complex, Lodhi Road,  
New Delhi- 110 003  
Dated: 06/06/2018

**ORDER**

Sanction of the President is hereby accorded, under Rule 18 of the Delegation of Financial Powers Rules, 1978, for the implementation of the project entitled: **"Diversity and molecular characterization of microsymbiont-Legume association in Meghalaya and Nagaland for developing consortia of microsymbionts with wide host range"** for a period of 3 Year 0 Month at a total cost of Rs. 10526988 (Rupees One Crores Five Lakhs Twenty Six Thousand Nine Hundred and Eighty Eight Only) on the terms and conditions detailed here under:-

**2 The Project :**

**2.1 Title :** **"Diversity and molecular characterization of microsymbiont-Legume association in Meghalaya and Nagaland for developing consortia of microsymbionts with wide host range"**

**2.2 Details of the Investigators:**

**Project Coordinator**

**Prof. Chitta Ranjan Deb**

Professor

Department of Botany

Nagaland University

Department of Botany,

Nagaland University, Headquarters: Lumami 798627, Zunheboto,  
Nagaland, 798627

**Principal Investigators:**

*M. Asha*

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**REGISTRAR**  
Jal Narain Vyas University  
JODHPUR (Raj.)



**Prof. Chitta Ranjan Deb**  
Professor  
Department of Botany  
Nagaland University  
Department of Botany,  
Nagaland University, Headquarters:  
Lumami 798627,  
Zunheboto, Nagaland, 798627

**Prof. Hukam Singh Gehlot**  
Professor  
Botany  
Jai Narain Vyas University  
Department of Botany, Faculty of  
Science, New Campus, Pali Road,  
J.N.Vyas University, Jodhpur PIN:  
342001, Jodhpur, Rajasthan,  
342001

**Prof. Satyawada Rama Rao**  
Professor  
Department of Biotechnology and  
Bioinformatics  
North-Eastern Hill University  
Department of Biotechnology &  
Bioinformatics,  
North-Eastern Hill University,  
Shillong 793022,  
Shillong, Meghalaya, 793022

**CO-PI:**

**Dr. Asosii Paul**  
Assistant Professor  
Botany  
Nagaland University  
Department of Botany, Nagaland University,  
Lumami-798627, Zunheboto - 798627,  
Nagaland

**Dr. Nisha Tak**  
Assistant Professor  
Botany  
Jai Narain Vyas University  
Department of Botany, Faculty of Science, New  
Campus, Pali Road, J.N.Vyas University,  
Jodhpur, Jodhpur - 342001, Rajasthan

*Ned. Ash*

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**REGISTRAR**  
Jai Narain Vyas University  
JODHPUR (Raj.)

*Dr. Nisha Tak*  
(PE)

*Dr. Asosii Paul*

## 2.3 Objectives:

### Overall Objectives:

1. Survey of legumes in the selected sites of Nagaland; Herbarium sheets preparation their digitalization; Collection and storage of germplasm; recording of nodule types and study of nodule anatomy
2. Isolation, purification, phenotypic characterization of Nagaland-RNB strains and assessment of their genetic diversity based on RAPD profiles; Identification and molecular phylogeny based on 16S rRNA and recA gene sequences of N fixing Nagaland-RNB strains.
3. Symbiotic characterization and phylogeny based on nodA/nodC and nifH gene sequences to identify major symbiotic groups of Nagaland-RNB strains.
4. Bio-assay work: To perform authentication and cross-inoculation experiments of Nagaland-RNB strains in glass house for determining their host range. To study nitrogen fixing efficiency using ARA (As recommended by Expert Committee assay to be carried out at NEHU, Shillong).
5. Multi locus sequence analysis studies using protein-coding housekeeping genes (glnII, dnaK, rpoB, gyrB, atpD) of selected Nagaland-RNB strains (screened on the basis of novelty in recA and 16S rRNA gene phylogeny). To perform concatenated phylogenetic analysis based on housekeeping and symbiotic genes.
6. Development of consortium using identified and well characterized efficient nitrogen fixing rhizobial strains having broad host range. Deposition of promiscuous and novel RNB strains at the national microbial depositories

### Institute wise Objectives:

#### Jai Narain Vyas University

1. Survey of legumes in the selected sites of Nagaland; Herbarium sheets preparation their digitalization; Collection and storage of germplasm; recording of nodule types and study of nodule anatomy.
2. Isolation, purification, phenotypic characterization of Nagaland-RNB strains and assessment of their genetic diversity based on RAPD profiles; Identification and molecular phylogeny based on 16S rRNA and recA gene sequences of N fixing Nagaland-RNB strains.
3. Symbiotic characterization and phylogeny based on nodA/nodC and nifH gene sequences to identify major symbiotic groups of Nagaland-RNB strains.
4. Bio-assay work: To perform authentication and cross-inoculation experiments of Nagaland-RNB strains in glass house for determining their host range. To study nitrogen fixing efficiency using ARA (As recommended by Expert Committee assay to be carried out at NEHU, Shillong).
5. Multi locus sequence analysis studies using protein-coding housekeeping genes (glnII, dnaK, rpoB, gyrB, atpD) of selected Nagaland-RNB strains (screened on the basis of novelty in recA and 16S rRNA gene phylogeny). To perform concatenated phylogenetic analysis based on housekeeping and symbiotic genes.
6. Development of consortium using identified and well characterized efficient nitrogen fixing rhizobial strains having broad host range. Deposition of promiscuous and novel RNB strains at the national microbial depositories.

#### Nagaland University

1. Survey of legumes in the selected sites of Nagaland; Herbarium sheets preparation their digitalization; Collection and storage of germplasm; recording of nodule types and study of nodule anatomy.
2. Isolation, purification, phenotypic characterization of Nagaland-RNB strains and assessment of their genetic diversity based on RAPD profiles; Identification and molecular phylogeny based on 16S rRNA and recA gene sequences of N fixing Nagaland-RNB strains

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JODHPUR (RAJ.)



3. Symbiotic characterization and phylogeny based on nodA/nodC and nifH gene sequences to identify major symbiotic groups of Nagaland-RNB strains.
4. Bio-assay work: To perform authentication and cross-inoculation experiments of Nagaland-RNB strains in glass house for determining their host range. To study nitrogen fixing efficiency using ARA (As recommended by Expert Committee assay to be carried out at NEHU, Shillong).
5. Multi locus sequence analysis studies using protein-coding housekeeping genes (glnII, dnaK, rpoB, gyrB, atpD) of selected Nagaland-RNB strains (screened on the basis of novelty in recA and 16S rRNA gene phylogeny). To perform concatenated phylogenetic analysis based on housekeeping and symbiotic genes.
6. Development of consortium using identified and well characterized efficient nitrogen fixing rhizobial strains having broad host range. Deposition of promiscuous and novel RNB strains at the national microbial depositories

**North-Eastern Hill University**

1. Survey of legumes in the selected sites of Nagaland; Herbarium sheets preparation their digitalization; Collection and storage of germplasm; recording of nodule types and study of nodule anatomy.
2. Isolation, purification, phenotypic characterization of Nagaland-RNB strains and assessment of their genetic diversity based on RAPD profiles; Identification and molecular phylogeny based on 16S rRNA and recA gene sequences of N fixing Nagaland-RNB strains.
3. Symbiotic characterization and phylogeny based on nodA/nodC and nifH gene sequences to identify major symbiotic groups of Nagaland-RNB strains.
4. Bio-assay work: To perform authentication and cross-inoculation experiments of Nagaland-RNB strains in glass house for determining their host range. To study nitrogen fixing efficiency using ARA (As recommended by Expert Committee assay to be carried out at NEHU, Shillong).
5. Multi locus sequence analysis studies using protein-coding housekeeping genes (glnII, dnaK, rpoB, gyrB, atpD) of selected Nagaland-RNB strains (screened on the basis of novelty in recA and 16S rRNA gene phylogeny). To perform concatenated phylogenetic analysis based on housekeeping and symbiotic genes.
6. Development of consortium using identified and well characterized efficient nitrogen fixing rhizobial strains having broad host range. Deposition of promiscuous and novel RNB strains at the national microbial depositories.

**2.4 Time Schedule:**

The duration of the project is 3 Year 0 Month from the date of this sanction order.

**2.5 Project Cost:**

The total cost of the project is Rs. 10526988/- (Rupees One Crores Five Lakhs Twenty Six Thousand Nine Hundred and Eighty Eight Only) as per details given below :

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Institute	Year I	Year II	Year III	Total Cost(Rs.)
1. Jai Narain Vyas University	1908000	910000	902996	3720996
2. Nagaland University	1782000	880000	869996	3531996
3. North-Eastern Hill University	1461000	910000	902996	3273996
<b>Total (Rs.)</b>	<b>5151000</b>	<b>2700000</b>	<b>2675988</b>	<b>10526988</b>

Institute wise details are:

Budget Head	Year I	Year II	Year III	Total(Rs.)
<b>1. Jai Narain Vyas University</b>				
Equipment	998000.00			998000.00
Manpower	360000.00	360000.00	402996.00	1122996.00
Travel	50000.00	50000.00	50000.00	150000.00
Overhead	100000.00	100000.00	100000.00	300000.00
Consumables	350000.00	350000.00	300000.00	1000000.00
Contingency	50000.00	50000.00	50000.00	150000.00
<b>Total (Rs.)</b>	<b>1908000.00</b>	<b>910000.00</b>	<b>902996.00</b>	<b>3720996.00</b>
<b>2. Nagaland University</b>				
Equipment	902000.00			902000.00
Manpower	330000.00	330000.00	369996.00	1029996.00
Overhead	100000.00	100000.00	100000.00	300000.00
Contingency	50000.00	50000.00	50000.00	150000.00
Travel	50000.00	50000.00	50000.00	150000.00
Consumables	350000.00	350000.00	300000.00	1000000.00
<b>Total (Rs.)</b>	<b>1782000.00</b>	<b>880000.00</b>	<b>869996.00</b>	<b>3531996.00</b>
<b>3. North-Eastern Hill University</b>				
Equipment	551000.00			551000.00
Manpower	360000.00	360000.00	402996.00	1122996.00
Consumables	350000.00	350000.00	300000.00	1000000.00

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Travel	50000.00	50000.00	50000.00	150000.00
Overhead	100000.00	100000.00	100000.00	300000.00
Contingency	50000.00	50000.00	50000.00	150000.00
<b>Total (Rs.)</b>	<b>1461000.00</b>	<b>910000.00</b>	<b>902996.00</b>	<b>3273996.00</b>

#### 2.6 Equipment:

The details of the equipment sanctioned for the Implementation of the project at  
Annexure-I

#### 2.7 Manpower:

The details of the manpower sanctioned for the Implementation of the project at  
Annexure-II

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**3. Head of Account:**

The **Non-Recurring** expenditure involved is debitable to:

Demand No. 85	Department of Biotechnology
3425	Other Scientific Research 2018-2019
3425.60	Others (Sub Major Head)
3425.60.200	Assistance to other Scientific Bodies (Minor Head)
3425.60.200.29	Biotechnology Research and Development
3425.60.200.29.17	Assistance for Research and Development
3425.60.200.29.17.35	Grants for creation of capital assets

The **Recurring** expenditure involved is debitable to:

Demand No. 85	Department of Biotechnology
3425	Other Scientific Research 2018-2019
3425.60	Others (Sub Major Head)
3425.60.200	Assistance to other Scientific Bodies (Minor Head)
3425.60.200.29	Biotechnology Research and Development
3425.60.200.29.17	Assistance for Research and Development
3425.60.200.29.17.31	Grants-In-Aid General

**4. Terms & Conditions:**

Additional Terms and Conditions specific for Twinning R and D program for NER:

- Both NER and Rest of India RoI Institutions scientists should work together for the objectives stated in the sanction of the project and any deviation from this would attract closure of the project at any point of time.
- In the project review meetings, both the PIs from NER and RoI Institutions should participate and make presentation.
- The outcomes of the project such as research papers, patents, copy rights etc. should be made jointly.
- The NER Scientists are to be trained at the collaborating institute appropriately to empower the NER Scientists.
- The project personal such as Research Associate, JRF or SRF, Research Assistant are also to be trained at least once in the collaborating national institute.
- The collaborating institute scientist should visit NER Institutions more frequently to guide NER scientists in design and conduct of experiments.

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Jawahar Vyas University  
JODHPUR (Raj.)



- 4.1 The other terms and conditions governing this sanction are attached at Annexure- III.
- 4.2A Memorandum of Agreement (MoA) will be signed between the Department of Biotechnology and the grantee institution on Non-Judicial stamp paper Rs. 100/- in the enclosed format and the second release/installment will be made only after signing of MoA by the grantee institutions and its acceptance by DBT. In case of NGO or Private Institution, MOA signed is mandatory first release. A format of the MoA is enclosed in Annexure-IV
- 4.3The Institute/Agency will keep the whole of the grant in a Bank Account earning Interest, and the interest so earned should be reported to DBT in the Utilisation Certificate and Statement of Expenditure. The Interest so earned will be treated as created to the Institute/Agency and shall be adjusted towards further installment of the grant and or at the time of Final Settlement of Accounts.
- 5.No International Travel will be undertaken from the sanctioned project grant unless specified otherwise.
- 6.The Registrar, Jai Narain Vyas University, Jodhpur, Rajasthan and The Registrar, Nagaland University, Zunheboto, Nagaland and The Registrar, North-Eastern Hill University, Shillong, Meghalaya would be responsible for submission of Statements of Expenditure (SoE), utilization certificates (UC), Assets Certificates, Manpower staffing & expenditure details in prescribed DBT formats to DBT in respect of grants released in this project from time to time.
- 7.PI's of DBT sponsored projects can consider appointment of JRF from Category-II merit list of DBT-BET exam so that candidates can be paid fellowships at par with NET/GATE/BET qualified candidates as per DST OM No. A.SR/S9/Z-09/2012 dated on 21 Oct 2014. However, there is no compulsion on PI's to select candidates for JRF in their projects from Category-II of DBT-BET.
- 8.As per Rule 236 (1) of GFR 2017, the accounts of all Grantee Institutions or Organisations shall be open to inspection by the sanctioning authority and audit, both by the Comptroller and Auditor General of India under the provision of CAG(DPC) Act 1971 and Internal audit by the Principal Accounts Office of the Ministry or Department, whenever the Institution or Organisation is called upon to do so.
- 9.If the Research Project involves biological resource, the obligations under the Biological Diversity Act 2002 as applicable shall be complied with by the Project Investigator, the details of such obligations can be accessed at [www.nbaIndia.org](http://www.nbaIndia.org)
- 10.This Issues under the power delegated to this Department and with the concurrence of IFD vide their SAN No.102/IFD/SAN/348/2018-2019 dated May, 15 2018.
- 11.This sanction order has been noted at serial no. 42-44 in the Register of Grants.

  
(Dr. Mohd Aslam)  
Adviser

To,  
The Pay & Accounts Officer,  
Department of Biotechnology,  
New Delhi - 110 003.

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REGISTRAR  
Jai Narain Vyas University  
JODHPUR (Raj.)

  
(PE)



**Copy to:**

- 1 The Principal Director of Audit (Scientific Departments), DACR Building, New Delhi- 110 002.
- 2 Prof. Chitta Ranjan Deb(Project Co-ordinator), Department of Botany, Nagaland University, Lumami 798 627, Nagaland, India
- 3 The Registrar, Jal Narain Vyas University, Mohanpura Overbridge, Ratanada, Jodhpur - 342003, Rajasthan
- 4 The Registrar, Nagaland University, ., Zunheboto - 798627, Nagaland
- 5 The Registrar, North-Eastern Hill University, P.O: NEHU Campus, Mawkyntoh Umshing,, Shillong - 793022, Meghalaya
- 6 Dr. Asosli Paul, Assistant Professor, Botany, Nagaland University, Department of Botany, Nagaland University, Lumami-798627, Zunheboto - 798627, Nagaland
- 7 Dr. Nisha Tak, Assistant Professor, Botany, Jal Narain Vyas University, Department of Botany, Faculty of Science, New Campus, Pali Road, J.N.Vyas University, Jodhpur, Jodhpur - 342001, Rajasthan
- 8 Prof. Chitta Ranjan Deb, Professor, Department of Botany, Nagaland University, Department of Botany, Nagaland University, Headquarters: Lumami 798627, Zunheboto - 798627, Nagaland
- 9 Prof. Hukam Singh Gehlot, Professor, Botany, Jal Narain Vyas University, Department of Botany, Faculty of Science, New Campus, Pali Road, J.N.Vyas University, Jodhpur PIN: 342001, Jodhpur - 342001, Rajasthan
- 10 Prof. Satyawada Rama Rao, Professor, Department of Biotechnology and Bioinformatics, North-Eastern Hill University, Department of Biotechnology & Bioinformatics, North-Eastern Hill University, Shillong 793022, Shillong - 793022, Meghalaya
- 11 Cash Section, DBT (2 copies).
- 12 Sanction Folder.
- 13 File Copy.

*Mohd. Aslam*  
(Dr. Mohd Aslam)  
Adviser

*Aslam*  
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Jal Narain Vyas University  
JODHPUR (Ref.)



## Annexure -I

Details of the Equipment sanctioned for the implementation of the project titled "Diversity and molecular characterization of microsymbiont-Legume association in Meghalaya and Nagaland for developing consortia of microsymbionts with wide host range":

Jai Narain Vyas University			
SNo.	Name of Equipment	No.	Cost(Rs.)
1.	High Tech Poly house- Size: 16 X 32 feet	1	502000.00
2.	Growth Chamber/Glass house Size: 14' x 10' x 10' : 8' feet (L x W x H on one side : at other side)	1	266000.00
3.	High capacity (1000 lits) vertical refrigerators (1-10 degree Celsius) with stabilizer	1	230000.00
Total			998000.00
Nagaland University			
SNo.	Name of Equipment	No.	Cost(Rs.)
1.	96 well Gradient Thermal Cycler with 2 KVA UPS	1	402000.00
2.	Electrophoresis systems with power pack (4 channel power supply) and accessories (gel caster, gel tray, combs etc)	1	160000.00
3.	-20 Degree Celsius Deep Freezer (Vertical) with stabilizer	1	160000.00
4.	1-10 Degree Celsius Laboratory Freezer with stabilizer (625 lits)	1	180000.00
Total			902000.00
North-Eastern Hill University			
SNo.	Name of Equipment	No.	Cost(Rs.)
1.	Gas Chromatograph (GC) for Acetylene Reduction Assay (ARA)	1	551000.00
Total			551000.00

*Mohd. Aslam*  
(Dr. Mohd Aslam)  
Adviser

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REGISTRAR  
Jai Narain Vyas University  
JODHPUR (RAJ.)

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## Annexure -II

Details of the manpower sanctioned for the implementation of the project titled "Diversity and molecular characterization of microsymbiont-Legume association in Meghalaya and Nagaland for developing consortia of microsymbionts with wide host range":

Head	No. of Position	Year I	Year II	Year III	Total (Rs.)
<b>1. Jal Narain Vyas University</b>					
Junior Research Fellow Rs. 25000.00 (1st and 2nd year), Rs. 28,000.00 3rd year + 20% HRA	1	360000.00	360000.00		720000.00
Senior Research Fellow Rs. 25000.00 (1st and 2nd year), Rs. 28,000.00 3rd year + 20% HRA	1			402996.00	402996.00
<b>Total(Rs.)</b>		<b>360000.00</b>	<b>360000.00</b>	<b>402996.00</b>	<b>1122996.00</b>
<b>2. Nagaland University</b>					
Junior Research Fellow Manpower + 10% HRA	1	330000.00	330000.00		660000.00
Senior Research Fellow Manpower + 10% HRA	1			369996.00	369996.00
<b>Total(Rs.)</b>		<b>330000.00</b>	<b>330000.00</b>	<b>369996.00</b>	<b>1029996.00</b>
<b>3. North-Eastern Hill University</b>					
Junior Research Fellow Rs. 25000.00 (1st and 2nd year), Rs. 28,000.00 3rd year + 20% HRA	1	360000.00	360000.00		720000.00
Senior Research Fellow Rs. 25000.00 (1st and 2nd year), Rs. 28,000.00 3rd year + 20% HRA	1			402996.00	402996.00
<b>Total(Rs.)</b>		<b>360000.00</b>	<b>360000.00</b>	<b>402996.00</b>	<b>1122996.00</b>

Emoluments detail of research personal(s) mentioned in table(s) of Annexure-II shall be applicable only if candidate(s) met educational qualification and eligibility criteria as per DST OM No.SR/S9/Z-09/2012 dated 21.10.2014.

*Mohd. Aslam*  
(Dr. Mohd Aslam)  
Adviser

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REGISTRAR  
Jal Narain Vyas Univ  
JODHPUR (Raj)



दूरभाष/PHONE : 0291-2510275

फैक्स/FAX : 0291-2511191  
0291-2510260

E-mail : deflab@sancharnet.in

E-drona : drona@dlj.deldom

सभी पत्रादि निदेशक के पते पर  
भेजे जाने चाहिए  
All Correspondence to be  
addressed to the Director



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पत्र संख्या / No. DLJ/TC/1025/I/52

भारत सरकार, रक्षा मंत्रालय  
GOVERNMENT OF INDIA, MINISTRY OF DEFENCE  
रक्षा अनुसंधान तथा विकास संगठन  
DEFENCE RESEARCH & DEVELOPMENT ORGANISATION  
रक्षा प्रयोगशाला DEFENCE LABORATORY  
रातानाडा पैलेस, जोधपुर - ३४२ ०११  
RATANADA PALACE, JODHPUR - 342 011  
दिनांक/Dated 05 Nov, 2018

To

The Registrar  
Jai Narayan Vyas University (JNVU)  
Jodhpur- 342037

**SUB: SANCTION OF PROJECT UNDER CARS**

Ref: L.No. JNVU Dev./2018/345 dated 20/10/2018

Sanction is hereby accorded under Contract for Acquisition of Research Services (CARS) to Jai Narayan Vyas University, Jodhpur (under the authority: letter no. DMM/PP/0002001/M/2348/D (R&D) dated 13<sup>th</sup> July, 2001 and amended thereafter) as per following details:

Title of Research Contract & No.	"Development of Software Modules for Aid in Biological and Radiological Hazard Scenarios"
Principal Investigator	Mr. Abhisek Gour, Asstt. Prof.
Cost of Research Contract (CARS)	₹ 9,02,000/- (Nine Lakh Two Thousand only)
PDC	18 months from the date of release of 1 <sup>st</sup> installment

**Aims & Objectives:**

- Development of Biological & Radiological hazard prediction module.
- Development of Advanced learning-based modules for use in biological and radiological hazard scenarios.
- Development of UI components and adaptable Licensing mechanism for use in existing/future softwares.

## Payment Terms

**Installment I** ₹ 6,30,000/- (Initial advance)

**Installment II** ₹ 1,70,000/- (at performance milestone-I)

**NIL** - (at performance milestone-II)

**Installment III** ₹ 1,02,000/- (On submission of final report & deliverables)

## Other terms & conditions

1. RSP shall submit progress reports to Director, DLJ bringing out the progress on the project at every milestone performance.
2. PI will submit Funds utilization certificate for each Installment for release of next Installment.
3. On completion of the contract, the RSP shall provide the following:-
  - a) All audited expenditure duly signed by Accounts Officer and duly endorsed by SAO, JNVU, Jodhpur
  - b) Final Technical Report.
4. General conditions of CARS will be applicable.

The expenditure will be debited to Major Head 2080 & Minor Head 110 of Defence Services Estimate.

  
(Ravindra Kumar)  
DIRECTOR

*Encl: A copy of Contract*

## Copy to:

1. O/o Director General (NS&M)  
Naval Science & Technological Laboratory  
Vigyan Nagar, Visakhapatnam - 530 027  
Fax No. 0891-2558258
2. Director, Dte. of Finance & Material Management  
DRDO Bhawan, Rajaji Marg, DHQ PO  
New Delhi - 110 011
3. Director, Dte. of ER&IPR  
3<sup>rd</sup> Floor, B Wing  
Room No. 348, DRDO Bhawan,  
Rajaji Marg, New Delhi - 110011
4. ✓ Mr. Abhisek Gour, Asstt. Prof.  
Dept. of Computer Science & Engg.  
Faculty of Engg. & Arch.  
Jai Narayan Vyas University (JNVU)  
Jodhpur- 342011
5. CDA (R&D), L Block,  
New Delhi - 110 011
6. ACDA (R&D)  
DL, Jodhpur



Dated: 31-Dec-2019

**ORDER**

Subject: Financial Sanction of the research project titled "BREEDING, NESTING ECOLOGY AND REPRODUCTIVE SUCCESS IN RESIDENT SPECIES OF GYPS VULTURE IN THAR DESERT OF RAJASTHAN" under the guidance of Dr. Ram Prakash Saran, Zoology, Jai Narain Vyas University, Bhagat ki kothi, Pali road, Jodhpur, Rajasthan-342011 - Release of 1st grant.

Sanction of Science and Engineering Research Board (SERB) is hereby accorded to the above mentioned project at a total cost of Rs. 3218240/- (Rs. Thirty Two Lakh Eighteen Thousand Two Hundred and Forty Only) with break-up of Rs. 500000/- under Capital (Non-recurring) head and Rs. 2718240/- under General (Recurring) head for a duration of 36 months. The items of expenditure for which the total allocation of Rs. 3218240/- has been approved are given below:

S. No	Head	Total (in Rs.)
A	Non-recurring:	
1	Equipment -> Binocular Day vision 10x 50 -> Digital hygrometer -> Digital SLR Camera with Zoom Lense and tripod) -> Digital Vernier calliper + Measuring ruler tape -> Person Portable Tent Outdoor Camping and Hiking Tent -> Trail Camera -> Waterproof Night Vision Binocular with Illuminated Rangefinder Compass Case and Strap Bak4 Porro Pri	500000
A'	Total (Non-Recurring)	500000
B	Recurring Items	
1	Recurring - I: (Manpower) Recurring - II: (Consumables, Travel, Contingencies, Other Cost) Recurring - III: Scientific Social Responsibility	1638240 780000 10000
2	Recurring - IV: (Overhead Charges)	290000
B'	Total (Recurring)	2718240
C	Total cost of the project (A' + B')	3218240

2. Sanction of the SERB is also accorded to the payment of Rs. 500000/- (Rupees Five Lakh only) under 'Grants for creation of capital assets' and Rs. 916000/- (Rupees Nine Lakh Sixteen Thousand only) under 'Grants-in-aid General' to Comptroller, Jai Narain Vyas University, Bhagat Ki Kothi, Pali Road being the first installment of the grant for the year 2019-2020 for implementation of the said research project.

The expenditure involved is debitable to Fund for Science & Engineering Research (FSER)  
This release is being made under Core Research Grant. (Organismal and Evolutionary Biology(Animal Sciences))

4. The Sanction has been issued to Jai Narain Vyas University, Bhagat Ki Kothi, Pali Road with the approval of the competent authority under delegated powers on 31 December, 2019 and vide Diary No. SERB/F/8274/2019-2020 dated 31 December, 2019

5. Sanction of the grant is subject to the conditions as detailed in Terms & Conditions available at website ([www.serb.gov.in](http://www.serb.gov.in)).

6. Overhead expenses are meant for the host Institute towards the cost for providing infrastructural facilities and general administrative support etc. including benefits to the staff employed in the project.

7. While providing operational flexibility among various subheads under head Recurring-II, it should be ensured that not more than Rs. 1.5 lakh each should be spent for travel and contingency.

8. Budget sanctioned under Scientific Social Responsibility (SSR) is meant only for activities enlisted under SSR norms and under no circumstances it can be reappropriated.

9. As per rule 211 of GFR, the accounts of project shall be open to inspection by sanctioning authority/audit whenever the institute is called upon to do so.

10. The sanctioned equipment would be procured as per GFR and its disposal of the same would be done with prior approval of SERB.

11. The release amount of Rs. 1416000/- (Rupees Fourteen Lakh Sixteen Thousand only) will be drawn by the Under Secretary of the SERB and will be disbursed by means of RTGS transaction as per their Bank details given below:

PFMS Unique Code	JNVU
Account Name	Ram Prakash Saran P I and Assistant Registrar Account Section
Account Number	05710100028008
Bank Name & Branch	Bank of Baroda University Campus, Residency Road, Jodhpur Rajasthan, (342001)

ASSISTANT PROFESSOR  
DEPARTMENT OF ZOOLOGY  
J. V. UNIVERSITY, JODHPUR

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3.2.3  
19-20  
20-21  
21-22

F. No. Z.18017/187/CSS/R&D/RAJ-01/2019-20-NMPB-IV A  
Government of India  
Ministry of AYUSH  
(National Medicinal Plants Board)

1<sup>st</sup> & 2<sup>nd</sup> Floor, Annexe Building,  
Indian Red Cross Society,  
New Delhi-110001  
Phone: - 011-23271839  
Email:- info-nmpb@nic.in  
Date: 5<sup>th</sup> February, 2020

To,

- 1) Dr. I.D. Arya, Scientist-G & Group Co-ordinator Research,  
Arid Forest Research Institute (AFRI), New Pali Road, Jodhpur-342005.  
E-mail id: [aryaid@gmail.com](mailto:aryaid@gmail.com).
- 2) **Dr. Vinod Kataria** - Assistant Professor, Department of Botany,  
Jai Narain Vyas (JNV) University, Jodhpur-342005,  
E-mail id: [vinodkataria2002@gmail.com](mailto:vinodkataria2002@gmail.com)

**Subject:-Approval of the Project Proposal entitled "Survey, Inventorisation, Documentation, Propagation and Conservation of rare, endangered and threatened medicinal plants of Arid and Semi Arid Regions" for the year 2019-20- reg.**

Sir,

The undersigned is directed to refer to the project proposal entitled "Survey, Inventorisation, Documentation, Propagation and Conservation of rare, endangered and threatened medicinal plants of Arid and Semi-Arid Regions" and to say that the project was recommended in the 60<sup>th</sup> PSC meeting held on 27-28<sup>th</sup> September, 2019 and approved by the 75<sup>th</sup> SFC held on 5<sup>th</sup> December, 2019 at the total cost of Rs. 48.79 lakhs for 3 years. The total budget approved for SFC AFRI, Jodhpur of Rs. 24.48 lakhs and budget approved by SFC JNV, University, Jodhpur for Rs.24.31 lakhs.

The financial break-up of the Grant-in-aid as approved by the 74<sup>th</sup>SFC is as below:-

Components	Budget approved bySFC AFRI, Jodhpur	Budget approved bySFC JNV, University Jodhpur
Non-recurring	1.20	3.50
Manpower(JRF -01, Field assistant-01)	16.62	16.62
Consumables	1.50	0.75
Travel	3.00	1.50
Contingency (5%)	1.05	0.95
Overhead (5%)	1.11	0.99
Total	24.48	24.31

By *[Signature]*  
PROFESSOR & HEAD  
DEPARTMENT OF BOTANY  
J. N. VYAS UNIVERSITY  
JODHPUR-342005 (RAJ.)  
*[Signature]*

*[Signature]*

(Contd.....2)  
PROFESSOR & HEAD  
DEPARTMENT OF BOTANY  
J. N. VYAS UNIVERSITY  
JODHPUR-342005 (RAJ.)



Details of Installments will be as follows:-

		(Rs. In lakhs)	
Total amount	1 <sup>st</sup> Installment	2 <sup>nd</sup> Installment	3 <sup>rd</sup> Installment
AFRI, Jodhpur Rs. 24.48 lakhs	Rs. 8.96 lakhs	Rs. 7.76 lakhs	Rs. 7.76 lakhs
JNV, University Jodhpur Rs. 24.31 lakhs	Rs. 10.44 lakhs	Rs. 6.94 lakhs	Rs. 6.93 lakhs

You are requested to submit the duly filled up Performa of Agency Details (Copy enclosed) for transferring the grant-in-aid through RTGS mode & for online monitoring of the project along with the documents indicated below:

1. Pre-receipt of 1<sup>st</sup> installment of Rs. 8.96 lakhs in favour of AFRI, Jodhpur and, Rs. 10.44 lakhs in favour JNV, University, Jodhpur duly signed, on Rs. 1/- revenue stamp affixed.
2. A certificate stating that institute / organization is not involved in any proceeding relating to the account or conduct for any of its office bearers.
3. An undertaking that the terms and conditions of the grant are acceptable to the college / organizations.
4. A certified copies duly authenticated by a Gazetted Officer of the documents showing the Constitution of the governing Body or Managing Committee responsible for the running of the organization and that the persons signing the agreement are authorized to operate upon and bind the funds of organizations / Institute.
5. A certificate that the organization has not received any grant from State or Central Govt. or from any other agency for the same proposal.
6. An agreement on Rs. 100/- stamp paper duly executed & signed in the prescribed Performa.

**Note:** Format copies for Agency Details and S. No. 1, 5 & 6 are attached for convenience. Rest of the certificates/undertaking at S. No. 2 to 4 shall be submitted by the grantee.

*Self attested*  
*Vinif*

Yours faithfully

*(Signature)*  
(Dr. Dushyant Kishore)  
Research Officer (Ay.)

*(Signature)*  
PROFESSOR & HEAD  
DEPARTMENT OF BOTANY  
J. N. V. UNIVERSITY  
JODHPUR-342005 (RAJ.)

*(Signature)*  
PROFESSOR & HEAD  
DEPARTMENT OF BOTANY  
J. N. V. UNIVERSITY  
JODHPUR-342005 (RAJ.)



**राष्ट्रीय परियोजना कार्यान्वयन एकाद**  
*National Project Implementation Unit*

18<sup>th</sup> June 2019**CERTIFICATE OF SANCTION**

It is to certify that a Research Proposal entitled, "Development of visible light active catalysts induced oxidation for treatment of textile wastewater" has been approved under "TEQR Collaborative Research Scheme" to the team of following Collaborators:

1	Dr. VIJAYALAKSHMI GOSU	Principal Investigator	MBM Engg College, Jodhpur
2	Mr. SUSHIL SARASWAT	Co-Principal Investigator	MBM Engineering College
3	Mr. SUBBARAMAIAH V	Co-Principal Investigator	MNIT JAIPUR
4	Mr. SIVAKUMAR V.M.	Co-Principal Investigator	CIT Coimbatore

A grant of ₹1617000 (Rupees Sixteen Lakh Seventeen Thousand Only) has been sanctioned for the project, as per following details:

S.No.	Expenditure Head	Sanctioned Amount (₹)
1	Non-recurring	1276667
2	Recurring	
	(i) Domestic Travel	83333
	(ii) Contingencies	40000
	(iii) Consumables	183333
	(iv) Miscellaneous	33333
	<b>Total</b>	<b>1617000</b>

The project is to be completed with expected outcomes achieved on or before 30<sup>th</sup> Sept 2020.

Prof. (Dr.) P M Khodke  
Central Project Advisor



18<sup>th</sup> June 2019

### CERTIFICATE OF SANCTION

This is to certify that a Research Proposal entitled, “**Regionalization of Hydrological model parameters for Indian rivers**” has been approved under “**TEQIP Collaborative Research Scheme**” to the team of following Collaborators:

1	Mr. ANKUSH GUPTA	Principal Investigator	MBM Engg College, Jodhpur
2	Mr. UMESH KUMAR	Co-Principal Investigator	M.B.M. Engineering College, Jodhpur
3	Mr. RAMJI DWIVEDI	Co-Principal Investigator	MNNIT, Allahabad
4	Dr. PRAMOD SONI	Co-Principal Investigator	MNNIT Allahabad
5	Ms. RIMPY KHOKHAR	Co-Principal Investigator	M.B.M. Engineering College, Jodhpur

A grant of **₹905000** (*Rupees Nine Lakh Five Thousand Only*) has been sanctioned for the project, as per following details:

S.No.	Expenditure Head	Sanctioned Amount (₹)
1	Non-recurring	660000
2	Recurring	
	(i) Domestic Travel	112500
	(ii) Contingencies	50000
	(iii) Consumables	50000
	(iv) Miscellaneous	32500
	<b>Total</b>	<b>905000</b>

The project is to be completed with expected outcomes achieved on or before 30<sup>th</sup> Sept 2020.



**Prof. (Dr.) P M Khodke**  
Central Project Advisor

18<sup>th</sup> June 2019

### CERTIFICATE OF SANCTION

This is to certify that a Research Proposal entitled, “**GROUNDWATER QUALITY ASSESSMENT IN JODHPUR CITY, RAJASTHAN**” has been approved under “**TEQIP Collaborative Research Scheme**” to the team of following Collaborators:

1	Dr. JYOTI CHAUBEY	Principal Investigator	MBM Engineering College, Jodhpur
2	Dr. SURESH SINGH	Co-Principal Investigator	MBM Engineering College, Jodhpur
3	Dr. C. S. P. OJHA	Co-Principal Investigator	IIT Roorkee
4	Mr. HIMANSHU ARORA	Co-Principal Investigator	MBM Engineering College, Jodhpur
5	Mr. VARUN	Co-Principal Investigator	MBM Engineering College, Jodhpur

A grant of **₹805000** (*Rupees Eight Lakh Five Thousand Only*) has been sanctioned for the project, as per following details:

S.No.	Expenditure Head	Sanctioned Amount (₹)
1	Non-recurring	491833
2	Recurring	
	(i) Domestic Travel	183333
	(ii) Contingencies	75000
	(iii) Consumables	41667
	(iv) Miscellaneous	13333
	<b>Total</b>	<b>805000</b>

The project is to be completed with expected outcomes achieved on or before 30<sup>th</sup> Sept 2020.



**Prof. (Dr.) P M Khodke**  
Central Project Advisor



18<sup>th</sup> June 2019

### CERTIFICATE OF SANCTION

This is to certify that a Research Proposal entitled, “**Design and Development of Film Bulk Acoustic Resonator as a platform**” has been approved under “**TEQIP Collaborative Research Scheme**” to the team of following Collaborators:

1	Dr. RAJU PATEL	Principal Investigator	MBM Engineering College, Jodhpur
2	Prof. RAJESH BHADADA	Co-Principal Investigator	MBM Engineering College, JNV University, Jodhpur
3	Prof. KAMALJIT RANGRA	Co-Principal Investigator	IIT Jodhpur
4	Prof. D. BOOLCHANDANI	Co-Principal Investigator	MNIT, Jaipur
5	Dr. DEEPAK BANSAL	Co-Principal Investigator	KJ Rangra

A grant of ₹**1638000** (*Rupees Sixteen Lakh Thirty Eight Thousand Only*) has been sanctioned for the project, as per following details:

S.No.	Expenditure Head	Sanctioned Amount (₹)
1	Non-recurring	1170000
2	Recurring	
	(i) Domestic Travel	121667
	(ii) Contingencies	128333
	(iii) Consumables	170000
	(iv) Miscellaneous	48333
	<b>Total</b>	<b>1638000</b>

The project is to be completed with expected outcomes achieved on or before 30<sup>th</sup> Sept 2020.



**Prof. (Dr.) P M Khodke**  
Central Project Advisor

18<sup>th</sup> June 2019

### CERTIFICATE OF SANCTION

This is to certify that a Research Proposal entitled, “**Development of Energy management Scheme to utilize Hybrid source for efficient working of EV**” has been approved under “**TEQIP Collaborative Research Scheme**” to the team of following Collaborators:

1	Mr. ADITYA KACHHWAHA	Principal Investigator	MBM Engineering College, Jodhpur
2	Dr. AKHIL RANJAN GARG	Co-Principal Investigator	M.B.M. Engineering College, Jodhpur
3	Dr. DEEPAK M FULWANI	Co-Principal Investigator	Indian Institute of Technology, Jodhpur
4	Dr. E. CHANDIRA SEKARAN	Co-Principal Investigator	Coimbatore Institute of Technology, Coimbatore
5	Mr. MUKESH KUMAR	Co-Principal Investigator	M.B.M. Engineering College, Jodhpur

A grant of **₹1565000** (*Rupees Fifteen Lakh Sixty Five Thousand Only*) has been sanctioned for the project, as per following details:

S.No.	Expenditure Head	Sanctioned Amount (₹)
1	Non-recurring	1173333
2	Recurring	
	(i) Domestic Travel	116667
	(ii) Contingencies	133333
	(iii) Consumables	100000
	(iv) Miscellaneous	41667
	<b>Total</b>	<b>1565000</b>

The project is to be completed with expected outcomes achieved on or before 30<sup>th</sup> Sept 2020.



**Prof. (Dr.) P M Khodke**  
Central Project Advisor





Saurabh Chopra &lt;saurabhchopra567@gmail.com&gt;

**Release of revised Sanction Certificate and Advance Installment of CRS Project funds (CRS Application ID: 1-5728654504)****Anusha Gupta** <anusha.teqip@gmail.com>

Fri, Aug 14, 2020 at 1:52 PM

To: Saurabh Chopra &lt;saurabhchopra567@gmail.com&gt;

Cc: SPIU RAJASTHAN &lt;spiu.rajasthan@gmail.com&gt;, NPIU MHRD &lt;npiu-mhrd@gov.in&gt;, CPA NPIU &lt;cpa.npiu@gmail.com&gt;, rekha choudhary &lt;rekhaparth2003@yahoo.co.in&gt;

Dear Sir,

With reference to your email, as per the attached institute approved application and based on the recommendations from the domain experts in review-2, the budget is revised as follows:

Subtotal Non-Recurring Amount Recommended	Domestic Travel Amount Recommended	Contingencies Amount Recommended	Consumables Amount Recommended	Miscellaneous Amount Recommended	Total Amount (Round-off)
1,482,396	75,000	50,000	66,667	36,667	1,710,730

Furthermore kindly refer CRS guidelines 2.0 clause 2.7 point a) for Sanction letter.

SPIU, kindly verify the procurement plan submitted by the PI.

Regards,

**Anusha Gupta**

Consultant

National Project Implementation Unit (NPIU)

(A unit of Ministry of HRD, Govt of India)

Copia Corporate Suites

301-302, 3rd Floor,

Jasola Vihar New Delhi - 110025

On Wed, Jun 10, 2020 at 1:58 PM Saurabh Chopra <saurabhchopra567@gmail.com> wrote:

[Quoted text hidden]

18<sup>th</sup> June 2019

### CERTIFICATE OF SANCTION

This is to certify that a Research Proposal entitled, “**Path Tracking Control of All-Terrain Rover (ATR) with manipulator under Actuator Failure Conditions.**” has been approved under “**TEQIP Collaborative Research Scheme**” to the team of following Collaborators:

1	Mr. SAURABH CHOPRA	Principal Investigator	MBM Engineering College, Jodhpur
2	Dr. JAYASHRI VAJPAI	Co-Principal Investigator	M.B.M. Engineering College, Jodhpur
3	Dr. MANAVAALAN GUNASEKARAN	Co-Principal Investigator	Coimbatore Institute of Technology
4	Dr. ALOK SINGH GAHLOT	Co-Principal Investigator	M.B.M. Engineering College, Jodhpur
5	Mr. ADITYA KACHHWAHA	Co-Principal Investigator	MBM Engineering College Jodhpur

A grant of ₹**1100000** (*Rupees Eleven Lakh Only*) has been sanctioned for the project, as per following details:

S.No.	Expenditure Head	Sanctioned Amount (₹)
1	Non-recurring	872000
2	Recurring	
	(i) Domestic Travel	75000
	(ii) Contingencies	50000
	(iii) Consumables	66667
	(iv) Miscellaneous	36667
	<b>Total</b>	<b>1100000</b>

The project is to be completed with expected outcomes achieved on or before 30<sup>th</sup> Sept 2020.



**Prof. (Dr.) P M Khodke**  
Central Project Advisor



18<sup>th</sup> June 2019

### CERTIFICATE OF SANCTION

This is to certify that a Research Proposal entitled, “**Design & Implementation of IoT Based System for Condition Monitoring of Distribution Transformer**” has been approved under “**TEQIP Collaborative Research Scheme**” to the team of following Collaborators:

1	Mr. DEEPAK PATEL	Principal Investigator	MBM Engineering College, Jodhpur
2	Dr. (Mrs.) JAYASHRI VAJPAI	Co-Principal Investigator	MBM Engineering College Jodhpur
3	Dr. KHALEEQUR REHMAN NIAZI	Co-Principal Investigator	Malaviya National Institute of Technology, Jaipur
4	Dr. (Mrs.) S. SUJA	Co-Principal Investigator	Coimbatore Institute of Technology, Coimbatore
5	Ms. KHUSHBOO SHAH	Co-Principal Investigator	MBM Engineering College, Jodhpur

A grant of **₹1581000** (*Rupees Fifteen Lakh Eighty One Thousand Only*) has been sanctioned for the project, as per following details:

S.No.	Expenditure Head	Sanctioned Amount (₹)
1	Non-recurring	1139333
2	Recurring	
	(i) Domestic Travel	133333
	(ii) Contingencies	83333
	(iii) Consumables	150000
	(iv) Miscellaneous	75000
	<b>Total</b>	<b>1581000</b>

The project is to be completed with expected outcomes achieved on or before 30<sup>th</sup> Sept 2020.



**Prof. (Dr.) P M Khodke**  
Central Project Advisor



मोहनलाल सुखाड़िया विश्वविद्यालय, उदयपुर  
MOHANLAL SUKHADIA UNIVERSITY : UDAIPUR

NAAC ACCREDITED 'A' GRADE STATE UNIVERSITY

No.F. ( )/Gen/MLSU/2020/ 6318

Dated : 17-06-2020

ORDER

With reference to request submitted by Prof. Kanika Sharma, Nodal Officer RUSA, MLSU, Udaipur in reference to letter No. F30(16)/SPD/RUSA/2016/178 Dated 31 March, 2020 of SPD. I am directed to convey administrative section for Research and Innovation Project under component 10 of RUSA 2.0 of MHRD as per details given below :

Project No.	Department	Name of PI	Project Title	Budget		
				Soft C.	Hard C.	Total Rs.
1	Biotechnology	Dr. Nitish Rai	Evaluation of the neuroprotective effect and its underlying molecular mechanism by Costus Speciosus, a traditional medicinal plant of Udaipur district, Rajasthan	1800000	1200000	3000000
2	Biotechnology	Dr. Harshada Joshi	Screening and Use of Calcite Solubilizing Bacteria for Restoration of Marble Slurry Contaminated Soil	1750000	1250000	3000000
3	Botany	Prof. Kanika Sharma	Capacity building and livelihood security of tribals of south Rajasthan through bioprospecting, biotechnological interventions and disease management of ginger	18598480	12000000	30598480
4	Chemistry	Dr. Jyoti Choudhary	Noval natural products from traditional medicinal plants of South Rajasthan region: Structural, Synthetic and biological studies	11500000	36000000	47500000
5	Computer Science	Dr. Avinash Panwar	A Customizable LMS for proper utilization and adoption of Global Knowledge Pool: An adaptation of contingency theory of E-learning	13295000	16000000	29295000
6	Environmental Science	Prof. B.R. Bamania	Environmental Issues of urban & rural tribal areas of Southern Rajasthan	15038000	11500000	26538000
7	Geology	Prof. S.R. Jakhar	Remote Sensing Based Study of Desiccated River of the Thar Desert for Demarcating its course, its Rejuvenation Possibilities and Social Benefits	2020000	0	2020000
8	Geology	Dr. Maya Choudhary	Study of Ostracods and Foraminifers from the Bagh Group (Upper Cretaceous) of Lower Narmada	3010000	25000	3035000

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			Valley: Determination of Age (OAE2 and OAE3) events and their Paleogeographic Implications			
9	Geology	Dr. Harish Kapasya	A Study of Tectonic Evolution of the Neoproterozoic metasediments from Southern parts of Pall districts of Rajasthan	2650000	300000	2950000
10	Geology	Dr. Ankush Srivastava	Investigating the role of Inter-oceanic exchange on Indian Ocean surface heat redistribution and its impact on Indian monsoon during Quaternary: A multi-proxy approach	2529000	1630000	4159000
11	Geology	Dr. Anjali Singh	Assessment of Ground Water Quality and mapping Human Health Risk of Drinking Ground Water Resources in Rajasthan State, India	3429000	1415000	4844000
12	Geology	Mr. Akhil Kumar Dwivedi	Heavy Metal apportionment of Geogenic and Anthropogenic sources in Ganga River using Geomagnetic and Geochemical studies	1725000	2450000	4175000
13	Geology	Mr. Niranjan Mohanty	Geochemistry and Isotope systematic of Ultramafic rocks of Phulad shear zone, Aravalli-Delhi fold belt, North West India: Implication on Geodynamic significance and Platinum Group Elements (PGEs) Metallogeny	1852800	1850000	3702800
14	Geology	Mr. Rajnikant Patidar	Geology, Geochemistry and Petrogenesis of Carbonatites and Associated Rocks of Siriwasan area district Chota Udepur, Gujarat	1462800	825000	2287800
15	Geology	Mr. Subhash Chandra Janagal	Study of Mineralogical and Thermo-mechanical Properties of Clay Deposit from Bikaner district, Rajasthan.	1335000	440000	1775000
16	Geology	Prof. (Retd.) Vinod Agrawal	Geological and Geotechnical Studies of Commercial Marbles of Rajasthan	4104000	0	4104000
17	Mathematics & Statistics	Dr. Mahesh Puri Goswami	Applications of Bicomplex algebra to fundamental Electromagnetics using fractional calculus	542640	0	542640
18	Mathematics & Statistics	Dr. Pradeep Kr. Vishwakarma	Bayesian Analysis of Lifetime Models- Application to the Survival Data	1321000	0	1321000
19	Pharmacy	Dr. Joohee Pradhan	Conjunction Based Drug Design Approach in Search of Third Generation Anti epileptics: Design, Synthesis, Anticonvulsant Evaluation and Computer Aided Drug Design Studies of 4-(5-phenyl-1H-pyrazol-3-yl) Benzenamine derivatives.	3000000	2000000	5000000
20	Pharmacy	Dr. Garima Joshi	Design, Development and Characterization of Oral Nanoformulation for Treatment of Cancer	3000000	2000000	5000000

*revised*

21	Pharmacy	Dr. Saurabh Kr. Sinha	Design, Synthesis, Evaluation and kinetic studies of derivatives of 4-aminopiperidine as potential antiamnesic and cognition enhancing agents.	3000000	2000000	5000000
22	Pharmacy	Dr. Vivek Jain	In-vitro and In-vivo screening of poly herbal formulation (PHF-1) in age induced Alzheimer disease in mice	3000000	2000000	5000000
23	Physics	Prof. B.L. Ahuja	Measurement of Magnetic Compton profiles of spintronics and magnetocaloric materials	10560720	1000000	11560720
24	Physics	Prof. N. Laxmi	Development and optimization of energy conversion and storage materials based on perovskites, ferrites and graphene	2050000	7500000	9550000
25	Physics	Prof. M.S. Dhaka	Fabrication of stable and high efficiency perovskite solar cell device	1829600	7000000	8829600
26	Zoology	Prof. Arti Prasad	Survey and Analysis of Pesticide Residues in Consumable products (Fruits and Vegetables) Obtained from Different Vegetable markets (Sabzi Mandis) of Udaipur Region.	7200000	4800000	12000000
27	Zoology	Prof. Arti Prasad	Surveillance and insecticide resistance mapping against mosquitoes of malaria, dengue and chikungunya in Southern Rajasthan and Bacterial bio-pesticide as an urgent alternate tool for resistance management and vector control.	6980000	5000000	11980000
28	Zoology	Dr. Vijay Kumar Koli	Resource partitioning of three sympatric Ibis species (red-naped, Black-headed and Glossy) in Dungarpur district, Rajasthan: Diet, habitat and landscape selection across seasons.	1726000	1170000	2896000
29	Centre For Women Studies	Dr. Garima Mishra	Impact Assessment of Awareness about women's Legal Rights through Advocacy of Course on "Women and Legal Rights"	900000	35000	935000
30	Economics	Prof. Sanjay Lodha	Exploiting the Multidimensional Impact of MGNREGA - A Case Study of Rajasthan			
			(A) Impact of MGNREGA on Women Empowerment in Rajasthan			
			(B) Impact of MGNREGA on Purchasing power of Beneficiaries	1000000		1000000
			(C) An Assessment of impact of assets creation in MGNREGA	500000		500000
			(D) Impact of MGNREGA on Financial Inclusion	500000		500000

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			(E) Impact of MGNREGA on migration and employment generation in Rajasthan	500000		500000
31	English	Prof. Seema Malik	Folklore of Vagad Region: Mapping oral Traditions	2440000	705000	3145000
32	Geography	Dr. Bhanwar Valshvendra Raj Singh	Inclusive & Sustainable Development of Bombora, Borla, Sulawas, Sihad Gram Panchayat: Smart Village Initiatives	2054000	446000	2500000
33	Geography	Dr. Sabina Khan	Prediction Model for Road Accidents: A Case Study of Udaipur City, India	1300000	200000	1500000
34	Geography	Dr. D.S. Chouhan	Impact of Water Quality on Health in Vagad Region of Rajasthan: An Application in Web-GIS	2554000	450000	3004000
35	Geography	Prof. Seema Jalan	Electoral Information System for Governance and Developmental Planning: A G-Governance Initiative	4725000	1000000	5725000
36	Hindi	Dr. Ashish Sisodia	Mewari-vagad bolion ka hindi ka sath tulnatmak addhyan	750000	0	750000
37	Hindi	Dr. Navin Kumar Nandwana	Aadivasi samaj me parivartan aur samkalin hindi upanyas	1884000	0	1884000
38	History	Prof. Pratibha	Evolving Strategies of Conserving Cultural heritage of Udaipur	2403000	600000	3003000
39	Library Science	Dr. P.S. Rajput	Automation of Library Services: An easy access to electronic resources and enhancement of research activities	5475000	0	5475000
40	Mass Comm.	Dr. Kunjan Acharya	Contribution of mass media in socio-economic development of tribal sub plan areas of Rajasthan	1540000	0	1540000
41	Political Science	Prof. Sanjay Lodha	Analyzing Voting Behaviour in Rajasthan: Post-poll study of the 2019 Lok Sabha Elections	3838825	0	3838825
42	Political Science	Prof. Sanjay Lodha	Impact of Social Welfare Policies on Voting Behaviour: Case study of Assembly Election in Madhya Pradesh, Rajasthan and Gujrat, 2008-2018	3603425	0	3603425
43	Psychology	Prof. Kalpana Jain	Strength based development of tribal adolescents of Southern Rajasthan: An empirical Study	2100000	0	2100000
44	Psychology	Dr. Tarun Kumar Sharma	Suicides in Kota: Understanding causes and preparing prevention strategies in the form of a documentary film	500000	200000	700000
45	Readymade Garments	Dr. Dolly Mogra	Dimensions of Gender Discrimination in Textile Industry in Rajasthan	1196000	0	1196000
46	Readymade Garments	Dr. Dolly Mogra	Empowering Entrepreneurial Skills through Advocacy of "Fashion Design and Technology" Diploma Course	1060000	2728020	3788020

*revised*

47	Sociology	Dr. Raju Singh	Research Skill Development in Social Sciences, Communication and Management	1500000	0	1500000
48	Sociology	Prof. P.M. Yadav	Government plans and policies related to mother-child health: A Comparative sociological study (Special referendce to tribal society)	3500000	300000	3800000
49	Accountancy & Statistics	Prof. G. Soral	Blockchain Accounting: An Exploratory Research	5000000	0	5000000
50	Banking & Buss. Eco.	Prof. Renu Jatana	Changing India: Training and market access for organic farming	3543000	0	3543000
51	Business Administration	Prof. Rajeshwari Narendran	Measuring the impact of Workplace Happiness upon individual & Organizational performance: An interdisciplinary Intervention with Yopga and Meditation	1310000	1625000	2935000
52	FMS	Prof. Anil Kothari	Economics of Temple- An empirical Study of Selected Temples of North India	1000000	0	1000000
53	FMS	Prof. Hanuman Prasad	Digital Financial Awareness : A Study of 'X' and 'Y' Generation Citizens of Rajasthan	1000000	0	1000000
54	FMS	Prof. Meera Mathur	Study on Sustainable Consumption Behaviour or Urban Consumers Towards Electronic Products in Rajasthan	1500000	0	1500000
55	FMS	Prof. Karunesh Saxena	Stress Management using Training Intervention Techniques among the Adolescent Students: A study of major cities or Rajasthan	1000000	0	1000000
56	Head, Deptt. of Botany	Head, Deptt. of Botany	D S Kothari Central Research Facility	18022414	10348276	28370690
GRAND TOTAL				210007704	139992296	350000000

Yours faithfully,

  
REGISTRAR

Copy to :

1. P.S. to Vice Chancellor, MLSU, Udaipur

  
DY-REGISTRAR



# MOHANLAL SUKHADIA UNIVERSITY : UDAIPUR

No.PD/OS/SPD-(RUSA-Phase-II)/CSA-1-(3)/2020-21 243

dt: 20-08-2020

21

## ORDER

In pursuance of MHRD Deptt. of Hr. Edu. New Delhi sanction letter No. 2447/2014-U.Policy (RJMMulti-Gen) dt: 03-02-2020 & Govt. of Rajasthan, State Project Directorate-RUSA, Jaipur letter No. F.30(16)/SPD/RUSA/2016/178 dt: 31-03-2020 & No. 316 dt: 06-08-2020, I am directed to convey financial sanction for payment of **Rs. 1750 lakh ( Rupees seventeen Crore fifty Lakh)** only to the Dean/Director/Head of the Departments of concerned Colleges, MLSU, Udaipur for arranging payment to the Principal Investigator of Research Project as per list enclosed, as 1<sup>st</sup> Installment under Component 10: Research Innovation and Quality Improvement (Research Proposals) under RUSA-2.

Admissible expenditure be incurred as per relevant rules/procedure of sponsoring agency/State Project Directorate-RUSA Jaipur as well as of this University rules and as per guidelines of Nodal Officer-RUSA (enclosed vide No. RUSA/NODAL OFF./2016-17/163 dt: 14-08-2020) it shall be met out of Central/State Agencies budget under head "CSA-1-(3)-IV-RI&QI (Research Proposals)-7-B-(a)-(i) / 7-B-(a)-(ii) / 7-B-(a)-(iii) / 7-C-(a)-(i) / 7-D-(i) / 7-D-(ii) / 7-E(a)-(i) / 7-E(a)-(ii) / 7-E(b)-(i) / 7-E(b)-(ii) / 7-F-(i) / 7-F-(ii) / 7-F-(iii) / 7-G-(i) / 7-I(a)-(i) / 7-K-(i) / 7-K-(ii) / 7-K-(iii) / 7-K-(iv) / 8-B-(i) / 8-C-(i) / 8-D-(i) / 9-A / 9-B-(i) / 9-C-(i) / 9-C-(ii) / 9-C-(iii) / 9-C-(iv) / 9-D-(i) / 9-E-(i) / 9-E-(ii) / 9-F-(i) / 9-F-(ii) / 9-G-(i) / 9-G-(ii) / 9-H-(i) / 9-H-(ii) / 9-I-(i) / 9-J-(i) / 9-K-(i) / 9-L-(i) / 9-L-(ii) / 9-P-(i) / 11-A-(i) / 11-A-(ii) / 11-A-(iii) / 11-A-(iv) / 11-A-(v) / 11-A-(vi) / 11-A-(vii) / 11-A-(viii) / 11-A-(ix) / 11-A-(x) / 12-(i) / 12-(ii) / 12-(iii) / 12-(iv)" where in necessary provision shall be made in Revised Estimates 2020-21.

**COMPTROLLER**

### Copy to:-

1. The Registrar, MLSU, Udaipur.
2. The Dean, UCCMS/UCoS/UCSSH, MLSU, Udaipur.
3. Prof. Kanika Sharma, Nodal-officer, RUSA-Programme, Deptt. of Botany, UCoS, MLSU, Udaipur with ref. to letter No. RUSA/NODAL OFF./2016-17/163 dt: 14-08-2020.
4. The Head Department of Physics/Chemistry/Botany/Zoology/Maths. & Stats./Env. Sci./ Geology/Pharmacy, UCoS, MLSU, Udaipur.
5. The Director, Computer Centre, MLSU, Udaipur.
6. The Head, Deptt. of Economics / English / Geography / Hindi / History / Library Sci. / Political Sci. / Psychology / Readymade Garments / Sociology / Incharge-Centre for Women Studies, UCSSH, MLSU, Udaipur.
7. The Head, Deptt. of Accts. & Stats./B.B.E./Bus. Adm., UCCMS, MLSU, Udaipur.
8. The P.S. to Hon'ble Vice-Chancellor, MLSU, Udaipur.
9. The S.O. Bill/Compilation/Cheque, MLSU, Udaipur.
10. The R.E. File 2020-21.
11. The Officer Incharge, University Website, MLSU, Udaipur.
12. Guard file.

**DY COMPTROLLER**



List of R & I Project proposals approved by MHRD for Financial Grant under RUSA2.0

List of R & I Project proposals approved by MHARD for Financial Grant under ROSA-2.0						
S.No.	Department	Principal Investigator	Co-Investigator	Project Title	Total Amt. Budget Head CSA-1(3)-IV	Sanctioned Amount (1st Instalment)
1	Biotechnology	Dr. Nitish Rai	Dr. Namita Ashish Singh, Dr. Vivek Jain, Dr. Avinash Marwal	Evaluation of ne neuroprotective effect and its underlying molecular mechanism by Costus Speciosus, a traditional medicinal plant of Udaipur district, Rajasthan	3000000	1500000
					7-Ε(6)-(i)	
2	Biotechnology	Dr. Harshada Joshi	Dr. Avinash Marwal	Screening and Use of Calcite Solubilizing Bacteria for Restoration of Marble Slurry Contaminated Soil	3000000	1500000
					7-Ε(6)-(ii)	
3	Botany	Prof. Kanika Sharma	Dr. G.S. Deora, Dr. Vinit Soni, Dr. Rohini Trivedi, Dr. Jaya Arora, Dr. Harish, Dr. Kuldeep Sharma, Dr. Amit K. Gupta, Dr. Tripta Jain, Dr. Mukesh Meena	Capacity building and livelihood security of tribals of south Rajasthan through bioprospecting, biotechnological interventions and disease management of ginger	30598480	15299240
					7-Ε(α)-(i)	

*[Signature]*  
 Head Office, RUSA  
 MHRD



4	Chemistry	Dr. Jyoti Choudhary	Prof. Pinki Bala Punjab, Dr. Shikha Agrawal, Dr. Poonam Khandelwal, Dr. Chetna Ameta, Dr. Dinesh Pandey, Dr. Neetu Kumari, Dr. Dinesh Kumar Yadav, Dr. Nitin Kumar, Dr. Prabhakar Kumar Baroliya, Dr. Sidharth Sharma, Dr. Rama Kanwar Khangarot, Dr. Gangotri Pemawat, Dr. Lokesh Kr. Agrawal, Ms. Himanshu Sharma, Dr. Pradhuman Singh Ranawat, Dr. Tarun Kumar, Dr. Devendra Singh, Mr. Vipin Khokher, Ms. Kiran Meena	Novel natural products from traditional medicinal plants of South Rajasthan region: Structural, synthetic and biological studies	47500000	23750000
			7-C-(a)-(i)			
5	Computer Sc.	Dr. Avinash Panwar	Prof. Deepak Khazanchi, Prof. K. Srinivas, Dr. Sumangla Rathore	A Customizable LMS for proper utilization and adoption of Global Knowledge Pool: An adaptation of contingency theory of E-learning	29295000	14647500
					7-I(a)-(i)	

Nodal Officer, USA  
MLSD



6	Env. Science	Prof. B.R. Bannania	Prof. Nidhi Rai, Dr. D.S. Rathore, Dr. Anuya Verma	Environmental issues of urban & rural tribal areas of Southern Rajasthan	26538000 7-A-(i)	13269000
7	Geology	Prof. S.R. Jakhar	Ms. Neha Rathi	Remote Sensing Based Study of Desertification of the Thar Desert for Demarcating its course, its Rejuvenation Possibilities and Social Benefits	2020000 11-A-(i)	1010000
8	Geology	Dr. Maya Choudhary	Prof. (Retd.) M.L. Nagori	Study of Ostracods and Foraminifers from the Bagh Group (Upper Cretaceous) of Lower Narmada Valley: Determination of Age (OAE2 and OAE3) events and their Paleogeographic Implications	3035000 11-A-(ii)	1517500
9	Geology	Dr. Harish Kapasya	Dr. Ritesh Purohit	A Study of Tectonic Evolution of the Neoproterozoic metasediments from Southern parts of Pali districts of Rajasthan	2950000 11-A-(iii)	1475000
10	Geology	Dr. Ankush Srivastava	Dr. Ashutosh K. Singh	Investigating the role of interoceanic exchange on Indian Ocean surface heat redistribution and its impact on Indian monsoon during Quaternary: A multi-proxy approach	4159000 11-A-(iv)	2079500
11	Geology	Dr. Anjali Singh	Dr. Sudhir Kumar, Dr. Avner Vengosh	Assessment of Ground Water Quality and mapping Human Health Risk of Drinking Ground Water Resources in Rajasthan State, India	4844000 11-A-(v)	2422000
12	Geology	Mr. Akhil Kumar Dwivedi	Prof. Jayanta Kumar Pati, Dr. Anil Dutt Shukla, Dr. Ritesh Purohit	Heavy Metal approportionment of Geogenic and Anthropogenic sources in Ganga River using Geomagnetic and Geochemical studies	4175000 11-A-(vi)	2087500

Nodal Officer  
MLSU



13	Geology	Mr. Niranjana Mohanty	Dr. Ritesh Purohit, Dr. Rajnikant Patidar	Geochemistry and Isotope systematic of Ultramafic rocks of Phulad shear zone, Aravalli-Delhi fold belt, North West India: Implication on Geodynamic significance and Platinum Group Elements (PGEs) Metallurgy	3702800	1851400
					11-A-(vii)	
14	Geology	Mr. Rajanikant Patidar	Mr. Niranjana Mohanty	Geology, Geochemistry and Petrogenesis of Carbonates and Associated Rocks of Sirwasan area district Chota Udepur, Gujarat	2287800	1143900
					11-A-(viii)	
15	Geology	Mr. Subhash Chandra Janagal	---	Study of Mineralogical and Thermo-mechanical Properties of Clay Deposit from Bikaner district, Rajasthan.	1775000	887500
					11-A-(ix)	
16	Geology	Prof.(Retd.) Vinod Agrawal	Dr. Harish Kapasya	Geological and Geotechnical Studies of Commercial Marbles of Rajasthan	4104000	2052000
					11-A-(x)	
17	Maths & Stats.	Dr. Mahesh Puri Goswami		Applications of Bicomplex algebra to fundamental Electromagnetics using fractional calculus	542640	271320
					7-D-(i)	
18	Maths & Stats.	Dr. Pradeep Kumar Vishwakarma	Dr. Abhimanyu Singh Yadav	Bayesian Analysis of Lifetime Models- Application to the Survival Data	1321000	660500
					7-D-(ii)	
19	Pharmacy	Dr. Joohee Pradhan	Prof. Lalit Singh Chouhan, Dr. Shikha Agrawal	Conjunction Based Drug Design Approach in Search of Third Generation Anti epileptics: Design, Synthesis, Anticonvulsant Evaluation and Computer Aided Drug Design Studies of 4-(5-phenyl-1H-pyrazol-3-yl) Benzenamine derivatives.	5000000	2500000
					7-K-(i)	
20	Pharmacy	Dr. Garima Joshi	Dr. Deepak Choudhary, Dr. Harish	Design, Development and Characterization of Oral Nanoformulation for Treatment of Cancer	5000000	2500000
					7-K-(ii)	

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 Faculty Office  
 ML-50



21	Pharmacy	Dr. Saurabh K. Sinha	Prof. Lalit Singh Chauhan	Design, Synthesis, Evaluation and kinetic studies of derivatives of 4-aminopiperidine as potential antianemic and cognition enhancing agents.	5000000	2500000
22	Pharmacy	Dr. Vivek Jain	Prof. Lalit Singh Chouhan,, Dr. Nitish Rai	In-vitro and In-vivo screening of poly herbal formulation (PHF-1) in age induced Alzheimer disease in mice	7-1k - (ii)	2500000
23	Physics	Prof. B.L. Ahuja	Dr. Gunjan Arora, Dr. Lekhraj Meena	Measurement of magnetic Compton profiles of spintronics and magnetocaloric materials	7-1k - (iv)	5780360
24	Physics	Prof. N. Lakshmi	Prof. Sudhish Kumar, Dr. Ghanshyam Purohit, Dr. Dinesh Patidar	Development and optimization of energy conversion and storage materials based on perovskites, ferrites and graphene	7-B-(a)-(i)	4775000
25	Physics	Prof. M.S. Dhaka	Dr. Shikha Agrawal	Fabrication of stable and high efficiency perovskite solar cell device	7-B-(a)-(ii)	4414800
26	Zoology	Prof. Arti Prasad	Dr. Girima Nagda	Survey and Analysis of Pesticide Residues in Consumable products (Fruits and Vegetables) Obtained from Different Vegetable market (Sabzi mandis) of Udaipur Region	7-B-(a)-(iii)	6000000
27	Zoology	Prof. Arti Prasad	Dr. Devendra Kumar	Surveillance and insecticide resistance mapping against mosquitoes of malaria, dengue and chikungunya in Southern Rajasthan and Bacterial bio-pesticide as an urgent alternate tool for resistance management and vector control.	7-F-(i)	5990000
					11980000	
					7-F-(ii)	

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28	Zoology	Dr. Vijay Kumar Koli	Dr. K.S. Gopi Sundar	Resource partitioning of three sympatric Ibis species (red-naped, Black-headed and Glossy) in Dungarpur district, Rajasthan: diet, habitat and landscape selection across seasons.	2896000	1448000
29	Centre for Women Studies	Dr. Garima Mishra	---	Impact Assessment of Awareness about Women's Legal Rights through Advocacy of Course on 'Women and Legal Rights'	7-F-(iii)	
					935000	467500
					9-I-(i)	
30	Economics	Prof. Sanjay Lodha	Dr. Neha Paliwal	Exploring the Multidimensional Impact of MGNREGA : A Case Study of Rajasthan.	4000000	2000000
			Dr. Deepa Soni	(A) Impact of MGNREGA on Women Empowerment in Rajasthan		
			Mr. Mukesh Meena	(B) Impact of MNAREGA on Purchasing power of Beneficiaries	9-B-(i)	
			Dr. Anita Joya	(C) An Assessment of impact of assets creation in MNREGA		
			Dr. Vinita Rajpurohit	(D) Impact of MGNREGA on Financial Inclusion		
31	English	Prof. Seema Malik	Dr. P. Trikha, Dr. Bhanupriya Rohila, Mr. M.S.Purohit, Dr. Neetu Parihar, Dr. Suresh Salvi	(E) Impact of MGNREGA on migration and employment generation in Rajasthan		
				Folklore of Vagad Region: Mapping oral Traditions	3145000	1572500
					9-K-(i)	
32	Geography	Dr. Bhanwar Vaishvendra Raj Singh	Dr. Bijay Singh Meena	Inclusive & Sustainable Development of Bombara, Boria, Sulawas, Sihad Gram Panchayat: Smart Village Initiatives	2500000	1250000
				Prediction Model for Road Accidents: A Case Study of Udaipur City, India	9-C-(i)	
					1500000	750000
33	Geography	Dr. Sabiha Khan	---		9-C-(ii)	



34	Geography	Dr. D.S. Chouhan	Prof. Seema Jalan, Dr. Shailesh Chaure	Impact of Water Quality on Health in Vagad Region of Rajasthan: An Application in Web-GIS	3004000 9-c-(iii)	1502000
35	Geography	Prof. Seema Jalan	Dr. Shailesh Chaure, Dr. Urmi Sharma	Electoral Information System for Governanace and Developmental Planning: A G-Governance Initiative	5725000 9-c-(iv)	2862500
36	Hindi	Dr. Ashish Sisodia		Mewari-vagad bolion ka hindi da sath tulnatmak addhayan	750000 9-L-(i)	375000
37	Hindi	Dr. Navin Kumar Nandwana	---	Aadivasi samaj me parivartan aur samkalin hindi upanyas	1884000 9-L-(ii)	942000
38	History	Prof. Pratibha	Prof. Digvijay Bhatnagar, Dr. Peeyush Bhadviya, Dr. Kailash Chand Gurjar, Mr. Manish Shrimali	Evolving Strategies of Conserving Cultural Heritage of Udaipur	3003000 9-P-(i)	1501500
39	Library Sc.	Dr. P.S. Rajput	---	Automation of Libraty services: An easy access to electronic resources and enhancement of research activities	5475000 9-D-(i)	2737500
40	Mass Comm.	Dr. Kunjan Acharya		Contribution of mass media in socio-economic development of tribal sub plan areas of Rajasthan.	1540000 9-J-(i)	770000
41	Political Science	Prof. Sanjay Lodha	Dr. Sanjay Kumar	Analyzing Voting Behaviour in Rajasthan: Post- poll study of the 2019 Lok Sabha Elections	3838825 9-E-(i)	1919412
42	Political Science	Prof. Sanjay Lodha	Dr. Vijay Dixit, Dr. Satish Chand, Dr. Baludan Barathath	Impact of Social Welfare Policies on Voting Behaviour: Case study of Assembly Elections in Madhya Pradesh, Rajasthan and Gujarat, 2008- 2018	3603425 9-E-(ii)	1801713

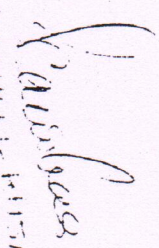


43	Psychology	Prof. Kalpana Jain	Dr. Rashmi Singh, Dr. Hema Kumari Mehtar	Strength based development of tribal adolescents of Southern Rajasthan: An empirical study	2100000	1050000
44	Psychology	Dr. Tarun Kumar Sharma	---	Suicides in Kota: Understanding causes and preparing prevention strategies in the form of a documentary film	9-F-(i) 700000	350000
45	Readymade Garments	Dr. Dolly Mogra	Dr. Garima Mishra, Dr. Rupal Babel	Dimensions of Gender Discrimination in Textile Industry of Rajasthan	1196000	598000
46	Readymade Garments	Dr. Dolly Mogra	---	Empowering Entrepreneurial Skills Through Advocacy of "Fashion Design and Technology" Diploma Course	3788020	1894010
47	Sociology	Dr. Raju Singh	Dr. Sangeeta athwal	Research Skill Development in social Sciences, Communication and Management	9-H-(ii) 1500000	750000
48	Sociology	Prof. P.M. Yadav	Dr. Rajkumari Ahir	Government plans and policies related to mother-child health: A Comparative sociological study (Special reference to tribal society)	9-G-(i) 3800000	1900000
49	Accountancy and Statistics	Prof. G. Soral	Prof. Shurveer S. Bhanawat, Dr. Avinash Panwar, Dr. Shilpa Vardia, Dr. Shilpa Lodha, Dr. Asha Sharma, Dr. Parul Dashora, Sh. Pushpraj Meena	Blockchain Accounting : An Exploratory Research	5000000	2500000
					8-B-(i)	

*Signature*  
 Nodal Officer, PGC  
 MLGU



50	Banking & Buss. Eco.	Prof. Renu Jatana	---	Changing India: Training and market access for organic farming	3543000	1771500
51	Business Adm.	Prof. Rajeshwari Narendran	Prof. Manju Baglmar, Dr. Hemraj Choudhary	Measuring the impact of Workplace Happiness upon individual & Organizational performance: An interdisciplinary Intervention with Yoga and Meditation	8-C-(i) 2935000	1467500
52	FMS	Prof. Anil Kothari	---	Economics of Temple- An empirical Study of Selected Temples of North India	8-D-(Ci) 1000000	500000
53	FMS	Prof. Hanuman Prasad	---	Digital Financial Awareness: A Study of 'X' and 'Y' Generation Citizens of Rajasthan	12-(ci) 1000000	500000
54	FMS	Prof. Meera Mathur	Dr. Shubham Goswami	Study on Sustainable Consumption Behaviour of Urban Consumers Towards Electronic Products in Rajasthan	12C(ii) 1500000	750000
55	FMS	Prof. Karunesh Saxena	---	Stress Management using Training Intervention Techniques among the Adolescent Students : A Study of major cities of Rajasthan.	12-(iv) 28370690	500000
56	Botany	Head, Botany		D S Kothari Central Research Facility	7-E (a)-(ii) 350000000	14185345
Total Rs.					350000000	175000000

  
 Noted  
 M.L.S.U

2  
**COMPTROLLER**  
 Mohanlal Sukhadia University  
 UDAIPUR





15

**Mohanlal Sukhadia University, Udaipur – 313039**  
**Office of the Nodal Officer-RUSA, MLSU**  
(Rashtriya Uchhatar Shiksha Abhiyaan)



Prof. Kanika Sharma  
Nodal Officer, RUSA  
MLSU

RUSA/NODAL OFF./2016-17/ 163

Date: 14.08.2020

To  
Comptroller,  
Mohanlal Sukhadia University,  
Udaipur.

Sub.: Financial Sanction for R & I Projects under RUSA 2.0  
Ref.: No. F30(16)SPD/RUSA/2016/178 dated 31.03.2020

Dear Sir,

With reference to above you are requested to grant Financial sanction for the R & I proposals submitted and approved by MHRD under RUSA 2.0 as per the list enclosed so that work may be commenced on these projects.

Further you are requested to issue the sanction to individual PI with the instruction that all payments will be done through treasury after submission and approval of FVC bills by the PI. Also kindly issue the following guidelines to all PI with regard to the expenditure and implementation of project:

1. GF & AR i.e. Financial Rules and norms of Government of Rajasthan are to be followed.
2. The expenditure will be incurred as per the RUSA guidelines, PAB approvals and DPR submitted by the PI to the institution and forwarded to MHRD.
3. Proper accounts of the expenditure incurred out of the grant are to be maintained and ensure utilization of funds only under approved budget heads. A separate stock register and cash book must be maintained for RUSA grant.
4. Utilization certificate in the GFR 12-C showing clearly the actual expenditure incurred under various heads above and the unspent balance available with the PI, shall be furnished to the University, within 3 months from the receipt of the fund. Non submission of UC on time shall debar PI from release of next installment.
5. The final UC of complete grant supported by audited statement of expenditure to the effect that the grant has been utilized for the purpose for which it has been sanctioned shall be furnished to the SPD office by the institution on the basis of UC submitted by individual PI.
6. Audited record of assets acquired wholly or substantially out of the grant and a Register of Assets shall be maintained.
7. RUSA account details for receipts and payments shall be mapped on PFMS portal to facilitate fund transfer and monitoring.
8. The Council of SPD or its nominee shall have the right to check/verify the accounts to satisfy that the funds have been utilized for the purpose for which they were sanctioned.

Imp 2 Urgent  
SOC Plan


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17/8/2020



- 15
9. FUND TRAKER FORM and Geotag Photographs on Bhuvan portal depicting the progress of implementation for activities carried out under the project are to be updated at periodic intervals showing three stage of implementation, i.e. (a) Before commencement, (b) The intermediate stage and (c) After the completion of the project.
  10. No constructions is allowed under RUSA2.0
  11. Any Renovation of existing facility will be allowed but only if it has been mentioned in the project proposal submitted to Rusa Nodal Officer.
  12. Renovated facility and Equipment created/ acquired under the grant should display the RUSA logo for which this grant is being used.
  13. Monthly progress report shall be submitted to the RUSA Nodal officer who will forward it to SPD RUSA for monitoring.
  14. Monitoring will be based on action plans submitted along with the proposals and achievements made with respect to a set of norms as defined by the institutional development plan.
  15. No change in the approved DCF/DPF/Proposals will be done at PI level. In case it is essential to undertake modification in the approved activities, the proposal for revision in DCF will first be discussed and approved in BOG of the institute and then submitted to SPD/RSHEC for approval of proposed changes with justification note and copy of BOG minutes.

Thanking you,

Yours Sincerely,



(Prof. Kanika Sharma)  
Nodal Officer RUSA-MLSU

Noda. Officer RUSA-  
MLSU



**LEGUMES  
Admin Order**

**No. BT/PR28594/NER/95/1496/2018**

GOVERNMENT OF INDIA  
MINISTRY OF SCIENCE & TECHNOLOGY  
DEPARTMENT OF BIOTECHNOLOGY  
(NER-BPMC)

Block 2, 6-8th Floors  
CGO Complex, Lodhi Road,  
New Delhi- 110 003  
Dated:09 /03 /2022

**ORDER**

Sanction of the President is hereby accorded, under Rule 18 of the Delegation of Financial Powers Rules ,1978 , for the implementation of the project entitled: **"Exploration of native legumes and characterization of associated nitrogen fixing microsymbionts in North-Eastern India for development of biofertilizers"** for a period of 3 Year 0 Month at a total cost of Rs. **31522320/-** (Rupees Three Crores Fifteen Lakhs Twenty Two Thousand Three Hundred and Twenty Only) on the terms and conditions detailed here under:-

**2 The Project :**

**2.1 Title :** "Exploration of native legumes and characterization of associated nitrogen fixing microsymbionts in North-Eastern India for development of biofertilizers"

**2.2 Details of the Investigators:**

**Project Coordinator**

**Prof. Saroj K Barik**

Director

CSIR-National Botanical Research Institute

CSIR-NBRI, Rana Pratap Marg, Lucknow - 226001, Lucknow,  
Uttar Pradesh, 226001

**Principal Investigators:**

**Prof. Saroj K Barik**

Director

CSIR-NBRI

CSIR-National Botanical Research Institute

National Botanical Research Institute, Lucknow - 226001

**Dr. Nisha Tak**

Assistant Professor

Department of Botany, Faculty of Science,

Jai Narain Vyas University

New Campus, Pali Road, Jodhpur 342001, Rajasthan

**Dr. Padmaraj Gajurel**

Associate Professor

Department of Forestry,

North Eastern Regional Institute of Science And Technology

(Demeed University), Nirjuli-791109, Arunachal Pradesh

*Vaishali*

डॉ. वैशाली पंजाबी / Dr. VAISHALI PANJABI

वैज्ञानिक 'ई' / Scientist 'E'

बायोटेक्नोलॉजी विभाग / Deptt. of Biotechnology

विज्ञान और प्रौद्योगिकी मंत्रालय / M/o Science & Tech.

भारत सरकार, नई दिल्ली / Govt. of India, N. Delhi

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**Prof. Santa R Joshi**

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**Dr. Sanjeev Kumar**

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Scientist-D  
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IBSD, Imphal-795001, Manipur

**Prof. Hukam S Gehlot**

Professor  
Department of Botany  
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New Campus, Pali Road, Jodhpur - 342001, Rajasthan

**Dr. Shweta Jha**

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Lucknow - 226001, Uttar Pradesh

**Dr. Puneet Singh Chauhan**

Senior Scientist

Microbial Technologies

CSIR National Botanical Research Institute, Rana Pratap Marg,

Lucknow - 226001, Uttar Pradesh

## 2.3 Objectives:

### Overall Objectives:

1. Exploration of native/underutilized legumes of NER for diversity of root nodule bacterial (RNB) strains, and their molecular characterization. Existing microbial formulations developed for NER would be used as the baseline materials and will be further characterized.
2. Screening of efficient N fixing promiscuous NER-RNB strains and development of plant growth promoting (PGP) formulations for both legume crops and non-legume crops including rice and maize.
3. To understand the mechanisms of specificity of broad-range symbiont system by unraveling signal transduction through NGS, metabolomics, transcriptomics, and small RNAs/peptides approaches.

### Institute wise Objectives:

#### Assam (Central) University, Silchar

1. Exploration of native/underutilized legumes of NER for diversity of root nodule bacterial (RNB) strains in the selected sites of Cachar district of Assam; and their molecular characterization. Existing microbial formulations developed for NER would be used as the baseline materials and will be further characterized.

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2. Screening of efficient N fixing promiscuous Assam -RNB strains: Biological-assay and cross-inoculation experiments in glass house for determining their host range based on analysis of symbiotic genes. And study of host specificity of few beneficial microbes associated with underutilized legumes.
3. Screening of native Assam-RNB strains for their plant growth promoting (PGP) activities with additional non-legume crops including rice and maize. Antagonistic studies to ensure that new bioformulations developed are not affected by existing formulations used in NER and vice versa.
4. NGS and comparative genomic analysis of selected RNB strains for better understanding of molecular basis of symbiotic interactions between rhizobia and host legume.

#### **CSIR-National Botanical Research Institute**

1. Exploration of native/underutilized legumes of NER for diversity of root nodule bacterial (RNB) strains, and their molecular characterization. Existing microbial formulations developed for NER would be used as the baseline materials and will be further characterized.
2. To study cross infectivity of strains isolated from wild/underutilized legumes on legume crops for improved productivity
3. Screening of native NER-RNB for development of plant growth promoting (PGP) formulations and associated antagonistic studies.
4. To understand the mechanisms of specificity of broad-range symbiont system by unraveling signal transduction through NGS, metabolomics, transcriptomics, and small RNAs/peptides approaches.

#### **Jai Narain Vyas University**

1. Exploration of native/underutilized legumes of NER for diversity of root nodule bacterial (RNB) strains, and their molecular characterization. Existing microbial formulations developed for NER would be used as the baseline materials and will be further characterized.
2. Screening of efficient N fixing promiscuous NER-RNB strains: Biological-assay and cross-inoculation experiments in glass house for determining their host range based on analysis of symbiotic genes. And study of host specificity of few beneficial microbes associated with underutilized legumes in glass house.
3. NGS and comparative genomic analysis of selected RNB strains for better understanding of molecular basis of symbiotic interactions between rhizobia and host legume.

#### **Institute of Bioresources and Sustainable Development**

1. Exploration of native/underutilized legumes of NER for diversity of root nodule bacterial (RNB) strains in the selected sites of Manipur; and their molecular characterization. Existing microbial formulations developed for NER would be used as the baseline materials and will be further characterized.
2. Screening of efficient N fixing promiscuous NER-RNB strains: Biological-assay and cross-inoculation experiments in glass house for determining their host range based on analysis of symbiotic genes. And study of host specificity of few beneficial microbes associated with underutilized legumes.
3. Screening of native NER-RNB strains for their plant growth promoting (PGP) activities with additional non-legume crops including rice and maize. Antagonistic studies to ensure that new bioformulations developed are not affected by existing formulations used in NER and vice versa.

*Vaishali*



4. NGS and comparative genomic analysis of selected RNB strains for better understanding of molecular basis of symbiotic interactions between rhizobia and host legume.

**North Eastern Regional Institute of Science And Technology**

1. Exploration of native/underutilized legumes in various sites of Arunachal Pradesh and isolation, purification and phenotypic characterization of NER-root nodule bacteria (RNB) strains from selected legumes.

**North-Eastern Hill University, Shillong**

1. Exploration of native/underutilized legumes of NER for diversity of root nodule bacterial (RNB) strains in the selected sites of Meghalaya; and their molecular characterization. Existing microbial formulations developed for NER would be used as the baseline materials and will be further characterized.
2. Screening of efficient N fixing promiscuous NER-RNB strains: Biological-assay and cross-inoculation experiments in glass house for determining their host range based on analysis of symbiotic genes. And study of host specificity of few beneficial microbes associated with underutilized legumes.
3. Screening of native NER-RNB strains for their plant growth promoting (PGP) activities with additional non-legume crops including rice and maize. Antagonistic studies to ensure that new bioformulations developed are not affected by existing formulations used in NER and vice versa.
4. NGS and comparative genomic analysis of selected RNB strains for better understanding of molecular basis of symbiotic interactions between rhizobia and host legume.

**Tripura University**

1. Exploration of native/underutilized legumes in various sites of Tripura and isolation, purification and phenotypic characterization of NER-root nodule bacteria (RNB) strains from selected legumes.

**2.4 Time Schedule:**

The duration of the project is 3 Year 0 Month from the date of this sanction order.

*Vaisali*

डॉ. वैशाली पंजाली / Dr. VAISHALI PANJABI  
वैज्ञानिक 'ई' / Scientist 'E'  
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विज्ञान और प्रौद्योगिकी विभाग / M/o Science & Tech.  
भारत सरकार, नई दिल्ली / Govt. of India, N. Delhi

## 2.5 Project Cost:

The total cost of the project is Rs. **31522320/-** (Rupees Three Crores Fifteen Lakhs Twenty Two Thousand Three Hundred and Twenty Only) as per details given below :

Institute	Year I	Year II	Year III	Total Cost(Rs.)
1. Assam (Central) University, Silchar	2128520	1628520	1732200	<b>5489240</b>
2. CSIR-National Botanical Research Institute	1396000	1396000	1479520	<b>4271520</b>
3. Institute of Bioresources and Sustainable Development	1503520	1503520	1607200	<b>4614240</b>
4. Jai Narain Vyas University	1563040	1563040	1674400	<b>4800480</b>
5. North Eastern Regional Institute of Science And Technology	1203520	1203520	1307200	<b>3714240</b>
6. North-Eastern Hill University, Shillong	2288040	1788040	1899400	<b>5975480</b>
7. Tripura University	1001760	801760	853600	<b>2657120</b>
<b>Total (Rs.)</b>	<b>11084400</b>	<b>9884400</b>	<b>10553520</b>	<b>31522320</b>

Institute wise details are:

Budget Head	Year I	Year II	Year III	Total(Rs.)
<b>1. North-Eastern Hill University, Shillong</b>				
Equipment	500000.00			<b>500000.00</b>
Manpower	863040.00	863040.00	974400.00	<b>2700480.00</b>
Overhead	50000.00	50000.00	50000.00	<b>150000.00</b>
Travel	100000.00	100000.00	100000.00	<b>300000.00</b>
Consumables	475000.00	475000.00	475000.00	<b>1425000.00</b>
Contingency	50000.00	50000.00	50000.00	<b>150000.00</b>
Hiring/analytical charges	150000.00	150000.00	150000.00	<b>450000.00</b>
Training/Workshop	100000.00	100000.00	100000.00	<b>300000.00</b>
<b>Total (Rs.)</b>	<b>2288040.00</b>	<b>1788040.00</b>	<b>1899400.00</b>	<b>5975480.00</b>
<b>2. Assam (Central) University, Silchar</b>				
Equipment	500000.00			<b>500000.00</b>
Manpower	803520.00	803520.00	907200.00	<b>2514240.00</b>



Overhead	50000.00	50000.00	50000.00	150000.00
Travel	100000.00	100000.00	100000.00	300000.00
Consumables	475000.00	475000.00	475000.00	1425000.00
Contingency	50000.00	50000.00	50000.00	150000.00
Hiring/analytical charges	150000.00	150000.00	150000.00	450000.00
<b>Total (Rs.)</b>	<b>2128520.00</b>	<b>1628520.00</b>	<b>1732200.00</b>	<b>5489240.00</b>
<b>3. Jai Narain Vyas University</b>				
Manpower	863040.00	863040.00	974400.00	2700480.00
Overhead	50000.00	50000.00	50000.00	150000.00
Travel	100000.00	100000.00	100000.00	300000.00
Consumables	400000.00	400000.00	400000.00	1200000.00
Contingency	50000.00	50000.00	50000.00	150000.00
Hiring analytical Service	100000.00	100000.00	100000.00	300000.00
<b>Total (Rs.)</b>	<b>1563040.00</b>	<b>1563040.00</b>	<b>1674400.00</b>	<b>4800480.00</b>
<b>4. Institute of Bioresources and Sustainable Dvelopment</b>				
Manpower	803520.00	803520.00	907200.00	2514240.00
Travel	100000.00	100000.00	100000.00	300000.00
Consumables	400000.00	400000.00	400000.00	1200000.00
Contingency	50000.00	50000.00	50000.00	150000.00
Sequencing of Cultures	150000.00	150000.00	150000.00	450000.00
<b>Total (Rs.)</b>	<b>1503520.00</b>	<b>1503520.00</b>	<b>1607200.00</b>	<b>4614240.00</b>
<b>5. CSIR-National Botanical Research Institute</b>				
Manpower	696000.00	696000.00	779520.00	2171520.00
Overhead	100000.00	100000.00	100000.00	300000.00
Travel	100000.00	100000.00	100000.00	300000.00
Consumables	400000.00	400000.00	400000.00	1200000.00
Contingency	100000.00	100000.00	100000.00	300000.00
<b>Total (Rs.)</b>	<b>1396000.00</b>	<b>1396000.00</b>	<b>1479520.00</b>	<b>4271520.00</b>
<b>6. North Eastern Regional Institute of Science And Technology</b>				
Manpower	803520.00	803520.00	907200.00	2514240.00
Overhead	50000.00	50000.00	50000.00	150000.00
Travel	100000.00	100000.00	100000.00	300000.00
Consumables	200000.00	200000.00	200000.00	600000.00
Contingency	50000.00	50000.00	50000.00	150000.00
<b>Total (Rs.)</b>	<b>1203520.00</b>	<b>1203520.00</b>	<b>1307200.00</b>	<b>3714240.00</b>
<b>7. Tripura University</b>				
Equipment	200000.00			200000.00
Manpower	401760.00	401760.00	453600.00	1257120.00

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Overhead	50000.00	50000.00	50000.00	<b>150000.00</b>
Travel	100000.00	100000.00	100000.00	<b>300000.00</b>
Consumables	200000.00	200000.00	200000.00	<b>600000.00</b>
Contingency	50000.00	50000.00	50000.00	<b>150000.00</b>
<b>Total (Rs.)</b>	<b>1001760.00</b>	<b>801760.00</b>	<b>853600.00</b>	<b>2657120.00</b>

## 2.6 Equipment:

The details of the equipment sanctioned for the implementation of the project at **Annexure-I**

## 2.7 Manpower:

The details of the manpower sanctioned for the implementation of the project at **Annexure-II**

## 3. Head of Account:

The **Non-Recurring** expenditure involved is debitable to:

<b>Demand No. 89</b>	<b>Department of Biotechnology</b>
<b>3425</b>	Other Scientific Research 2021-2022
<b>3425.60</b>	Others (Sub Major Head)
<b>3425.60.200</b>	Assistance to other Scientific Bodies (Minor Head)
<b>3425.60.200.29</b>	Biotechnology Research and Development
<b>3425.60.200.29.17</b>	Assistance to Research and Development
<b>3425.60.200.29.17.35</b>	Grants for creation of capital assets

The **Recurring** expenditure involved is debitable to:

<b>Demand No. 89</b>	<b>Department of Biotechnology</b>
<b>3425</b>	Other Scientific Research 2021-2022
<b>3425.60</b>	Others (Sub Major Head)
<b>3425.60.200</b>	Assistance to other Scientific Bodies (Minor Head)
<b>3425.60.200.29</b>	Biotechnology Research and Development
<b>3425.60.200.29.17</b>	Assistance to Research and Development
<b>3425.60.200.29.17.31</b>	Grants -in-Aid General

## 4. Terms & Conditions:

- The Non-Recurring items must be procured and installed within 18-months of the sanction of the project, failing which the PIs have to return the remaining/unutilized Non Recurring grant with 10% of Interest.
- In case the amount of grant-in-aid is refunded, the whole or a part amount of the grant, with an interest at 10% per annum there on shall be recovered.

**4.1** The other terms and conditions governing this sanction are attached at Annexure-III.

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- 4.2A** Memorandum of Agreement (MoA) will be signed between the Department of Biotechnology and the grantee institution on Non-Judicial stamp paper Rs. 100/- in the enclosed format and the second release/installment will be made only after signing of MoA between the grantee institutions and DBT. In case of NGO's and Private Institution's, execution of MOA is mandatory before first release. A format of the MoA is enclosed in Annexure-IV
- 4.3** The Institute/Agency will keep the whole of the grant in a Bank Account earning interest, and the interest so earned should be reported to DBT in the Utilisation Certificate and Statement of Expenditure. The interest earned should be remitted to the Consolidated fund of India through Bharat Kosh portal([www.bharatkosh.gov.in](http://www.bharatkosh.gov.in)) as per GFR-2017-230(8) after finalization of the account for a given Financial Year.
- 5.** No International Travel will be undertaken from the sanctioned project grant unless specified otherwise.
- 6.** The Director , North Eastern Regional Institute of Science And Technology, Itanagar, Arunachal Pradesh and The DIRECTOR, CSIR-National Botanical Research Institute, Lucknow, Uttar Pradesh and The Director, Institute of Bioresources and Sustainable Dvelopment, Imphal, Manipur and The Registrar, Assam (Central) University, Silchar, Silchar, Assam and The Registrar, Jai Narain Vyas University, Jodhpur, Rajasthan and The Registrar, North-Eastern Hill University, Shillong, Shillong, Meghalaya and The Registrar, Tripura University, Agartala, Tripura would be responsible for submission of Statements of Expenditure (SoE), utilization certificates (UC), Assets Certificates, Manpower staffing & expenditure details in prescribed DBT formats to DBT in respect of grants released in this project from time to time.
- 7.** PI's of DBT sponsored projects can consider appointment of JRF from Category-II merit list of DBT-BET exam so that candidates can be paid fellowships at par with NET/GATE/BET qualified candidates as per DST OM No. A.SR/S9/Z-05/2019 dated on 30 Jan 2019. However, there is no compulsion on PI's to select candidates for JRF in their projects from Category-II of DBT-BET.
- 8.** As per Rule 236 (1) of GFR 2017, the accounts of all Grantee Institutions or Organisations shall be open to inspection by the sanctioning authority and audit, both by the Comptroller and Auditor General of India under the provision of CAG(DPC) Act 1971 and internal audit by the Principal Accounts Office of the Ministry or Department, whenever the Institution or Organisation is called upon to do so.
- 9.** If the Research Project involves biological resources, the obligations under the Biological Diversity Act 2002 as applicable shall be complied with by the Project Investigator, the details of such obligations can be accessed at [www.nbaindia.org](http://www.nbaindia.org)
- 10.(I)** "The PIs/Implementing Agencies shall strictly adhere to the GoI instructions issued vide OM No.F.4.1.2021-PPD dated 30.6.2021 in the matter of issue of Global tender Enquiry with special reference to instructions contained under para 4 of the said OM for procurement of equipments, spares and consumables for research purposes and shall not issue Global Tenders Enquiries before seeking the approval of the competent authority".
- (II)** "After incurring the expenditure on import of such items and at the time of submission of UCs to the department next year, the PIs will also furnish the copy of the approval sought from the competent authority for issue of the GTE for such items of import. The release of next installment of grant will be subject to the fulfillment of the above condition."

*Vaishali*

डॉ. वैशाली पंजाबी / Dr. VAISHALI PANJABI  
वैज्ञानिक 'ई' / Scientist 'E'  
बायोटेक्नोलॉजी विभाग / Deptt. of Biotechnology  
विज्ञान और प्रौद्योगिकी, संकलन / M/o Science & Tech.  
भारत सरकार, नई दिल्ली / Govt. of India, N. Delhi

- 11.If any biological data as specified in the guidelines are being generated in the project then PI should submit the data generated in the project to Indian Biological Data Centre – The National Repository being implemented at Regional Centre for Biotechnology, Faridabad in compliance with the Biotech-PRIDE Guidelines 2021.
- 12.This issues under the power delegated to this Department and with the concurrence of IFD vide their SAN No.102/IFD/SAN/3134/2021-2022 dated **March, 09 2022.**
- 13.This sanction order has been noted at serial no. 172-173 in the Register of Grants.

*Vaishali*

**(Dr. Vaishali Panjabi)**  
**Scientist 'E'**

डॉ. वैशाली पंजाबी / Dr. VAISHALI PANJABI  
वैज्ञानिक 'ई' / Scientist 'E'  
बायोटेक्नोलॉजी विभाग / Dept. of Biotechnology  
विज्ञान और प्रौद्योगिकी मंत्रालय / M/o Science & Tech.  
भारत सरकार, नई दिल्ली / Govt. of India, N. Delhi

**To,**  
The Pay & Accounts Officer,  
Department of Biotechnology,  
New Delhi – 110 003.

**Copy to:**

- 1 The Principal Director of Audit (Scientific Departments), DACR Building, New Delhi- 110 002.
- 2 Prof. S.K. Barik(Project Co-ordinator), National Botanical Research Institute, Lucknow - 226001, India
- 3 The Director , North Eastern Regional Institute of Science And Technology, NIRJULI, Itanagar - 791109, Arunachal Pradesh
- 4 The Director, CSIR-National Botanical Research Institute, Rana Pratap Marg, Lucknow-226001, Uttar Pradesh
- 5 The Director, Institute of Bioresources and Sustainable Development, Takyelpat, Imphal - 795001, Manipur
- 6 The Registrar, Assam (Central) University, Silchar, DARGAKONAH, Silchar - 788011, Assam
- 7 The Registrar, Jai Narain Vyas University, Mohanpura Overbridge, Ratanada, Jodhpur - 342003, Rajasthan
- 8 The Registrar, North-Eastern Hill University, Shillong, NEHU Permanent Campus, Shillong - 793022, Meghalaya
- 9 The Registrar, Tripura University, Suryamaninagar, Agartala - 799022, Tripura
- 10 Dr. Debjyoti Bhattacharyya, Assistant Professor, Department of Life Science & Bioinformatics, Assam (Central) University, Silchar - 788011, Assam
- 11 Dr. Nisha Tak, Assistant Professor, Department of Botany, Faculty of Science, Jai Narain Vyas University New Campus, Pali Road, Jodhpur - 342001, Rajasthan
- 12 Dr. Padmaraj Gajurel, Associate Professor, North Eastern Regional Institute of Science & Technology (NERIST), (Demeed University), Nirjuli- 791109, Arunachal Pradesh
- 13 Dr. Panna Das, Assistant Professor, Department of Botany, Tripura University, Suryamaninagar, Tripura - 799022, Tripura
- 14 Dr. Poonam C Singh, Senior Scientist, CSIR-NBRI, CSIR-National Botanical Research Institute, Lucknow - 226001, Uttar Pradesh
- 15 Dr. Prabodh Kumar Trivedi, Senior Principal Scientist, CSIR-NBRI, CSIR-National Botanical Research Institute, Lucknow - 226001, Uttar Pradesh
- 16 Dr. Puneet Singh Chauhan, Senior Scientist, Microbial Technologies, CSIR-



- National Botanical Research Institute, ana Pratap Marg, Lucknow - 226001, Uttar Pradesh
- 17 Dr. Sanjeev Kumar, Associate Professor, Dept of Life SCience & Bioinformatics, Assam (Central) University, Silchar - 788011, Assam
  - 18 Dr. Sarangthem Indira Devi, Scientist D, Microbial Biotechnology, Microbial Resources Division, Institute of Bioresources and Sustainable Development (IBSD), , Takyelpat, Imphal-795001, Manipur
  - 19 Dr. Satya Narayan Jena, Principal Scientist, Plant Molecular Genetics, CSIR-National Botanical Research Institute, Rana Pratap Marg, Lucknow - 226001, Uttar Pradesh
  - 20 Dr. Shweta Jha, Assistant Professor, Department of Botany, Faculty of Science, Jai Narain Vyas University, New Campus, Pali Road, Jodhpur - 342001, Rajasthan
  - 21 Dr. Sorokhaibam Sureshkumar Singh, Associate Professor, Department of Forestry, North Eastern Regional Institute of Science & Technology (NERIST), (Demeed University), Nirjuli-791109, Arunachal Pradesh
  - 22 Dr. Suchi Srivastava, Senior Scientist, Plant Microbe Interaction Division, CSIR-NBRI, CSIR-National Botanical Research Institute, Lucknow - 226001, Uttar Pradesh
  - 23 Dr. Sunil S Thorat, Scientist-D, Bioresources Database Unit, Institute of Bioresources and Sustainable Development, IBSD, Imphal - 795001, Manipur
  - 24 Prof. Hukam S Gehlot, Professor, Department of Botany, Jai Narain Vyas University, New Campus, Pali Road, Jodhpur, odhpur - 342001, Rajasthan
  - 25 Prof. Piyush Pandey, Professor, Department of Microbiology, Assam (Central) University, - 788011, Assam
  - 26 Prof. Santa R Joshi, Professor, Department of Biotechnology & Bioinformatics, North-Eastern Hill University, Shillong, - 793022, Meghalaya
  - 27 Prof. Saroj K Barik, Director, CSIR-NBRI, CSIR-National Botanical Research Institute, Lucknow - 226001, Uttar Pradesh
  - 28 Cash Section, DBT (2 copies).
  - 29 Sanction Folder.
  - 30 File Copy.

*Vaishali*


**(Dr. Vaishali Panjabi)**  
**Scientist 'E'**

डॉ. वैशाली पंजाबी / Dr. VAISHALI PANJABI  
वैज्ञानिक 'ई' / Scientist 'E'  
बायोटेक्नोलॉजी विभाग / Dept. of Biotechnology  
विज्ञान और प्रौद्योगिकी मंत्रालय / Min. Science & Tech.  
भारत सरकार, नई दिल्ली / Govt. of India, N. Delhi

**Annexure -I**

Details of the Equipment sanctioned for the implementation of the project entitled "**Exploration of native legumes and characterization of associated nitrogen fixing microsymbionts in North-Eastern India for development of biofertilizers**":

<b>North-Eastern Hill University, Shillong</b>			
<b>SNo.</b>	<b>Name of Equipment</b>	<b>No.</b>	<b>Cost(Rs.)</b>
1.	Deep Freezer (-80°C) 500L	1	500000.00
<b>Total</b>			<b>500000.00</b>
<b>Assam (Central) University, Silchar</b>			
<b>SNo.</b>	<b>Name of Equipment</b>	<b>No.</b>	<b>Cost(Rs.)</b>
1.	Gel-Doc EZ System	1	500000.00
<b>Total</b>			<b>500000.00</b>
<b>Tripura University</b>			
<b>SNo.</b>	<b>Name of Equipment</b>	<b>No.</b>	<b>Cost(Rs.)</b>
1.	Incubator	1	200000.00
<b>Total</b>			<b>200000.00</b>



**(Dr. Vaishali Panjabi)**  
**Scientist 'E'**

डॉ. वैशाली पंजाबी / Dr. VAISHALI PANJABI  
वैज्ञानिक 'ई' / Scientist 'E'  
बायोटेक्नोलॉजी विभाग / Deptt. of Biotechnology  
विज्ञान और प्रौद्योगिकी मंत्रालय / M/o Science & Tech.  
भारत सरकार, नई दिल्ली / Govt. of India, N. Delhi



**Annexure -II**

Details of the manpower sanctioned for the implementation of the project entitled  
**"Exploration of native legumes and characterization of associated nitrogen fixing microsymbionts in North-Eastern India for development of biofertilizers":**

Head	No. of Position	Year I	Year II	Year III	Total (Rs.)
<b>1. Assam (Central) University, Silchar</b>					
Project Associate Project Associate I/II Rs. 35000/-+ 8% HRA	2	0	0	907200	907200
Project Associate Project Associate I/II Rs. 31000/-+ 8% HRA	2	803520	803520	0	1607040
<b>Total(Rs.)</b>		<b>803520</b>	<b>803520</b>	<b>907200</b>	<b>2514240</b>
<b>2. CSIR-National Botanical Research Institute</b>					
Project Associate Project Associate I/II Rs. 25000/-+16% HRA	2	696000	696000	0	1392000
Project Associate Project Associate I/II Rs. 28000/-+16% HRA	2	0	0	779520	779520
<b>Total(Rs.)</b>		<b>696000</b>	<b>696000</b>	<b>779520</b>	<b>2171520</b>
<b>3. Institute of Bioresources and Sustainable Dvelopment</b>					
Project Associate Project Associate I/II Rs. 31000/-+ 8% HRA	2	803520	803520	0	1607040
Project Associate Project Associate I/II Rs. 35000/-+ 8% HRA	2	0	0	907200	907200
<b>Total(Rs.)</b>		<b>803520</b>	<b>803520</b>	<b>907200</b>	<b>2514240</b>
<b>4. Jai Narain Vyas University</b>					
Project Associate Project Associate I/II Rs. 31000/-+16% HRA	2	863040	863040	0	1726080
Project Associate Project Associate I/II Rs. 35000/-+16% HRA	2	0	0	974400	974400
<b>Total(Rs.)</b>		<b>863040</b>	<b>863040</b>	<b>974400</b>	<b>2700480</b>
<b>5. North Eastern Regional Institute of Science And Technology</b>					
Project Associate Project Associate I/II Rs.31000/-+ 8% HRA	2	803520	803520	0	1607040
Project Associate Project Associate	2	0	0	907200	907200

*Vaishali*

I/II Rs.35000/-+ 8% HRA					
<b>Total(Rs.)</b>		<b>803520</b>	<b>803520</b>	<b>907200</b>	<b>2514240</b>
<b>6. North-Eastern Hill University, Shillong</b>					
Project Associate Project Associate I/II Rs. 31000/- +16% HRA	2	863040	863040	0	<b>1726080</b>
Project Associate Project Associate I/II Rs. 35000/- +16% HRA	2	0	0	974400	<b>974400</b>
<b>Total(Rs.)</b>		<b>863040</b>	<b>863040</b>	<b>974400</b>	<b>2700480</b>
<b>7. Tripura University</b>					
Project Associate Project Associate I/II Rs.31000/-+ 8% HRA	1	401760	401760	0	<b>803520</b>
Project Associate Project Associate I/II Rs.35000/-+ 8% HRA	1	0	0	453600	<b>453600</b>
<b>Total(Rs.)</b>		<b>401760</b>	<b>401760</b>	<b>453600</b>	<b>1257120</b>

Emoluments detail of research personal(s) mentioned in table(s) of Annexure-II shall be applicable only if candidate(s) met educational qualification and eligibility criteria as per DST OM No. SR/S9/Z-05/2019 dated 10.07.2020.

*Vaishali*

**(Dr. Vaishali Panjabi)**  
**Scientist 'E'**

डॉ. वैशाली पंजाबी / Dr. VAISHALI PANJABI  
वैज्ञानिक 'ई' / Scientist 'E'  
बायोटेक्नोलॉजी विभाग / Deptt. of Biotechnology  
विज्ञान और प्रौद्योगिकी मंत्रालय / M/o Science & Tech.  
भारत सरकार, नई दिल्ली / Govt. of India, N. Delhi





Dr. Harish Sharma  
In-Charge/TCB Division  
Tel. 011-26742831  
Email: harishsharma.icssr@gmail.com

Indian Council of Social Science Research  
(Ministry of Human Resource Development)  
Post Box No. 10528, Aruna Asaf Ali Marg  
New Delhi - 110067  
EPABX: 26741849-51 Fax: 91-11-26741836  
Website: [www.icssr.org](http://www.icssr.org)

F. No: 10-B/CBP/SC/Z019-Z0/TCB

Dated: 27.08.2019

The Registrar  
Jai Narain Vyas University  
Jodhpur- 342001  
Rajasthan

### Sanction Order

**Subject:** Sanction of ICSSR for organizing Two - Week 'Capacity Building Programme' (CBP) for young Social Science Faculty during 04<sup>th</sup>-15<sup>th</sup> November 2019 to Prof. L.N. Bunker, (Course Director), Dept. of Psychology, Dr. Laxman Lal Salvi (Co-Course Director), Dept. of Economics Jai Narain Vyas University, Jodhpur- 342001, Rajasthan.

Sir,

We are happy to convey that the ICSSR, New Delhi has approved the proposal received from Prof. L.N. Bunker, (Course Director), for organizing above mentioned two week CBP and sanctioned an amount of ₹ 8,00,000/- (Rupees Eight Lakhs Only) for this programme.

1. The sanctioned Grant-in-Aid of ₹ 8,00,000/- will be released in two instalments:

a. 1 <sup>st</sup> instalment	: ₹ 6,00,000/-
b. 2 <sup>nd</sup> & Final instalment	: ₹ 2,00,000/-
Grand Total	: ₹ 8,00,000/-

The first instalment of ₹ 6, 00, 000/- will be released on the receipt of an advance Grant-in-Aid bill (copy enclosed) duly signed and stamped by the Competent Authority.

2. The 2<sup>nd</sup> & Final instalment will be released after the receipt of the following:

- Final programme report including observations/recommendations by the Resource Persons.
- Course outlines.
- One set of study material.
- Summary of evaluation by the participants.
- An audited Statement of Accounts and Utilization Certificate in GFR-12-A form for the entire sanctioned amount duly signed by the competent authority and Chartered Accountant.





Revathy Vishwanath  
Deputy Director  
RP Division In-charge  
Tel #011-26716690  
E-mail: rpsicssr@gmail.com

Indian Council of Social Science Research  
(Ministry of Education)  
JNU Institutional Area, Aruna Asaf Ali Marg  
New Delhi 110067  
Website: [www.icssr.org](http://www.icssr.org)

### SANCTION ORDER

F.No. 02/30/2021-22/ICSSR/RP/MN

Dated: 25-03-2022

The Registrar,  
Jai Narain Vyas University,  
Jodhpur, Rajasthan- 342 011,

**Subject:** Sanction of **Minor Project** entitled "**Declining Camel Population in Rajasthan and its effect on Socio-Economic Development of Pastoralist communities of Arid and Semi-Arid Region**" to **Dr. Om Prakash**, Assistant Professor, Dept. of Geography, Jai Narain Vyas University, Jodhpur, Rajasthan- 342 011.

Dear Sir/Madam,

1. The Indian Council of Social Science Research (ICSSR) considered the above Research Programme project submitted by **Dr. Om Prakash, Assistant Professor, Dept. of Geography, Jai Narain Vyas University, Jodhpur, Rajasthan- 342011**. Co-Project Directors of the study are: NIL.
2. The study, as proposed by the researcher, is to be located at and financially administered by your institution as per the guidelines of this award.
3. The ICSSR has sanctioned a grant-in-aid of **Rs. 2,50,000 (Rupees Two Lakh Fifty Thousand only)** for the above research project and the grant will be released as follows:

First instalment @40% :	Rs. 1,00,000/-
Second instalment @ 20%:	Rs. 50,000/-
Third instalment @ 10% :	Rs. 25,000/-
Fourth Instalment @10% :	Rs. 25,000/-
Final instalment @15%:	Rs. 37,500/-
Publication Grant* @ 5-6% :	Rs. 12,500/-
<b>Total</b>	<b>Rs. 2,50,000 /-</b>
Overhead charges over and above 5% or maximum Rs.1,00,000 :	Rs. 12,500/-**

(\* to be retained by the ICSSR. ICSSR would publish it subject to the recommendation by the expert and relevant Committees for the purpose, from the overall budget, so to be retained by the ICSSR).

\*\*will be released on successful completion of project after evaluation.  
(The break-up budget approved by the ICSSR of Rs. 2,50,000/- is enclosed.)

4. The **First** installment of the approved grant-in-aid will be released after receiving the grant-in-aid bill duly filled in, stamped and signed by the Project Director as well as the affiliating organization. **(GIB already received)**.
5. In case, the study involves survey research, the finalized schedules/questionnaires (2 copies) designed to elicit information should be sent to the ICSSR as per the following schedule:
  - a) If the schedule /questionnaire for eliciting information is as per standard questionnaire, these will have to be sent to ICSSR immediately,

*Ram*



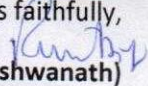
- b) If the schedule /questionnaire for eliciting information are to be designed afresh keeping in view the requirements of the project, these will have to be sent to the ICSSR within a period of six months in any case.
6. **The Second instalment** will be released after receiving a satisfactory six/nine/ twelve months Progress Report (depending on the duration of the programme), simple statement of account of first instalment, published peer reviewed journal, along with grant-in-aid bill towards the second instalment.
  7. **The Third instalment** will be released will be released after receiving second Progress Report (depending on the duration of the programme), simple statement of accounts of the second instalment, along with grant-in-aid bill towards the third instalment.
  8. **The fourth instalment** will be released after receiving book length Final Report in soft copy (both word and PDF format), Executive Summary of Final Report in soft copy (both word and PDF format), 500 words abstract of the Final Report in soft copy, research papers published in peer reviewed journals duly acknowledging ICSSR, similarity index score sheet, simple statement of accounts of third instalment along with grant-in-aid bill towards the fourth instalment. Project Director is required to submit hard copies of the Final Report only after the confirmation from the ICSSR after incorporating the suggested changes. Such data or information relating to the research project as may be asked for by the ICSSR for preservation in its Data Archives should be given by the scholar.
  9. **The publication grant** will be retained by the ICSSR & will be spent by the ICSSR Publication Division if the Final report is found publishable by an Expert Committee constituted by the ICSSR.
  10. The scholar shall acknowledge support of ICSSR in all publications resulting from the project output (Research Paper, Books, Articles, Reports, etc.) and should submit a copy of the same to the ICSSR during its course and after completion.
  11. **Final instalment** will be issued after receipt of recommendation of the expert for acceptance of the Final Report, Audited statement of accounts (AC) in prescribed format with utilization certificate (UC) in GFR-12A form for the entire approved project amount duly signed by the Finance Officer/Registrar /Director of the affiliating Institution, verification of all documents and decision on retaining of equipment and books etc. The institutions of which the accounts are not audited by CAG/AG, their utilisation certificate will be signed by the Finance Officer and a chartered accountant.
  12. The Overhead Charges to the affiliating institution will be released after the Final Report has been accepted and documents verified by the ICSSR. The ICSSR reserves the right to change the affiliation if it is found that the affiliating institute is not co-operating with the scholar and it is not facilitating timely completion of the study.
  13. The Project Director will ensure that the expenditure incurred by him conforms to the approved budget heads and relevant rules. Audited Statement of accounts with Utilization Certificate in GFR of 12A form is for the entire project amount approved for the project.
  14. The University/Institution of affiliation will provide to the scholar office accommodation including furniture, library and research facilities and messengerial services. For this, the ICSSR shall pay to the University/Institution of affiliation **overhead charges @5%** over and above or maximum **Rs.1,00,000** of the total expenditure incurred on the project only after successful completion of the project.
  15. The Contingency Grant may be utilized for research and office assistance, books, stationary, computer cost, research assistance and the field work expenses of Project Director, Co-Project Directors and research personnel connected with the research work.
  16. The overhead charges to the affiliating institution over and above @ 5% or maximum Rs.1,00,000 will be released only after successful completion of the project after evaluation. The accounts and the Utilization Certificate will be signed by the Finance Officer/Registrar/Principal/Director in the case of accounts of the institution are audited by CAG/AG. Otherwise, they need to be signed by the Finance Officer and the Chartered Account.
  17. The Director of the research project will be **Dr. Om Prakash** who will be responsible for its completion within **12 Months** from the date of commencement of the project, which is **01 April 2022**, as intimated by the scholar.

*Om Prakash*



18. In case, the Project Director does not submit the periodic / final project report as per schedule with adequate justification, the scholar may be debarred from availing all future financial assistance from ICSSR.
19. All grants from ICSSR are subject to the general provision of GFR 2017.
20. The Project Director will ensure that the expenditure incurred by him conforms to the approved budget heads. The grant-in-aid is subject to all the conditions laid down in the **Indian Council of Social Science Research (ICSSR) Research Projects available in the ICSSR website [www.icssr.org](http://www.icssr.org)**
21. The expenditure on this account is debatable to the **Budget Head-ICSSR (Scheme Code 0877); OH 31.09 Research Projects.**
22. All project instalments will be transferred through **Public Finance Management System (PFMS)** and ICSSR shall implement the EAT module for ensuring transparency of expenditure at all levels and to ensure that there is no parking of funds.
23. As per MoE (Ministry of Education) instruction, the amount of grant sanctioned herein is to be utilized by **the end of the project duration**. Any amount of the grant remaining unspent shall be refunded to the ICSSR immediately after the expiry of the duration of the project. If the grantee fails to utilize the grant for the purpose for which the same has been sanctioned/or fails to submit the audited statement of expenditure within the stipulated period, the grantee will be required to refund the amount of the grant with interest thereon @ 10% per annum.
24. Any instalment release is subject to availability of grant, and satisfactory progress report of the scholar. Mere award of the study does not entitle the scholar for the release of any of the instalments.

Yours faithfully,

  
(Revathy Vishwanath)


For MEMBER-SECRETARY

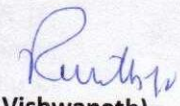
Encl: as above.

Copy to:

1. ✓ **Dr. Om Prakash**, Assistant Professor,  
Dept. of Geography,  
Jai Narain Vyas University,  
Jodhpur, Rajasthan- 342 011.

2. **Finance Branch, ICSSR, New Delhi.**

3.  **Record file**

  
(Revathy Vishwanath)

For MEMBER-SECRETARY



Title: "मातृ एवं शिशु पोषण में आंगनवाड़ी केंद्र की भूमिका का समीक्षात्मक अध्ययन: जनपथ प्रतापगढ़ के विशेष संदर्भ में".

By: Dr. Ved Prakash Mishra

S.No	Heads of Expenditure	Value (Rs.)
1	Project Director/Co-PD	
2	Research Staff: Full time/part time/Hired services	Not exceeding 45% of the total budget.
3	Field work	Not exceeding 35%
4	Equipment and study material	Not exceeding 12%
5	Contingency	Not exceeding 5%
6	Publication of report -	approx.5-7%
	<b>Grand Total</b>	ICSSR will finally make it 100%
	Affiliating Institutional overheads over and above the grand total	(Affiliating Institutional overheads @ 5% of the approved budget, subject to a maximum upper limit of Rs.1,00,000/-)

\* The five percent (5-7%) publication amount will be spent by the ICSSR Publication Division if the Final report is found publishable by an Expert Committee constituted by the ICSSR.

➤ **Remuneration and Emoluments of Project Staff**

(a) Project staff could be engaged by the Project Director on a full/ part-time basis during the research work and the duration/consolidated monthly emoluments of their employment may be decided by the project director within the limits of the sanctioned financial allocation and as per the ICSSR rules (b) Research Associate @Rs.20, 000/- p.m. (Qualification – Post graduate in any social science discipline with minimum 55% marks and NET/SLET /M.Phil/Ph.D)(c) Research Assistant @Rs.16, 000/- p.m.(Qualification-Ph.D./M.Phil./ Post graduate in social science discipline with minimum 55% marks(d) Field Investigator @ Rs.15, 000/-p.m. (not exceeding 6 months) (Qualification- Post graduate in any social science discipline with minimum 55% marks)(e).Retrospective payment for work already done is not permissible.

➤ **Re-appropriation:** The Project Investigator may with the permission of the Institution, re-appropriate expenditure from one sub-head to another, subject to a maximum of 5-7 % of the particular budget heads. If the study necessitates re-appropriation beyond 7%, it may be done only after the approval of the ICSSR.

➤ **Selection of Research Staff** should be done through an advertisement and a selection committee consisting of (1) Project Director; (2) One outside Expert (other than the institute where the project is located); (3) a nominee of the Vice Chancellor/Head of the Institution and (4) Head of the Department)/Dean of relevant faculty duly approved by the competent authority.

➤ **For all field work related expenses** of Project Director, Co-Director and project personnel, rules pertaining to affiliating institutes shall be followed.

➤ **All equipment and books** purchased out of the project fund shall be the property of the affiliating institutions. On completion of the study, the Project Director shall submit an undertaking in this regard. The ICSSR, however, reserves the right to take charge of equipment and books, if it thinks it fit in a case.

➤ **Purchase of equipment/ assets** for the research Project is permissible only if it is originally proposed and approved by the ICSSR and does not exceed the permissible amount.

➤ The scholar should acknowledge the support of ICSSR in all publications resulting from the programme output (Research Paper, Books, Articles, Reports, etc.) and should submit a copy of the same to the ICSSR during its course and even after completion.

*Ruthy*



**PROGRESS REPORTS  
OF  
DEPARTMENTAL SPECIAL PROGRAMS  
(UGC-CAS, SAP-DRS, DST-FIST)  
SHOWING  
NAME OF THE TEACHERS INVOLVED**



**RUSA**  
**(ALL**  
**38 DEPARTMENTS)**





Government of Rajasthan  
**STATE PROJECT DIRECTORATE**  
Rashtriya Uchchatar Shiksha Abhiyaan(RUSA)  
Email: [spdrusaraj@gmail.com](mailto:spdrusaraj@gmail.com)

RUSA A/c No. 037/10/150027

No: F30(16)SPD/RUSA/2016/ 218

Jaipur, Dated: 31 March 2016

**ORDER**

**SUB: Release of First Installment of Rs 5 Crore each to 04 RUSA beneficiary State Universities of Rajasthan as Grant-in-aid for development of infrastructure under Rashtriya Uchchatar Shiksha Abhiyaan (RUSA) for the year 2015-16.**

In accordance with MHRD approval in the 8<sup>th</sup> Project Approval Board (PAB) meeting vide order no F.No.24-7/2015-U.Policy dated 14.09.2015, a sum of Rs 20 crore (twenty crore) is here by sanctioned as per break up given below to each of the following 04 RUSA beneficiary State Universities of Rajasthan as infrastructure grant under Rashtriya Uchchatar Shiksha Abhiyaan (RUSA) for the 12<sup>th</sup> plan period. Against sanctioned amount, approval is here by granted to release Rs 5 crore (Rs Five crore) only in their respective Bank account as first Installment in 2015-16 (including Rs 3 crore as centre share and Rs 2 crore as state share) in accordance with MHRD, sanction orders F.No24-47/2014-U.Policy(RJIGUIGC-Gen), F.No24-47/2014-U.Policy (RJIGUIGC-SC), F.No24-47/2014-U.Policy(RJIGUIGC-ST) dated 29.09.2015 and F.No24-47/2014-U.Policy (RJMulti-Gen), F.No24-47/2014-U.Policy(RJMulti-SC), F.No24-47/2014-U.Policy(RJMulti-ST) dated 21.12.2015 and Department of Higher Education sanction order No. RUSA/Accounts/2015-16 dated 29<sup>th</sup> March 2016.

Component 3: Infrastructure Grant to Universities		Amount Sanctioned for XII plan period (Rs. In Lakhs)					First Installment to be released (Rs. In Lakhs)		
		Place	For new constr uction	For reno vatio n	For equi pme nts	Total	Centr e share	State share	Total amou nt to be relea. ed
1.	University of Rajasthan	Jaipur	700	700	600	2000	300	200	500
2.	MDS University	Ajmer	700	700	600	2000	300	200	500
3.	JNV University	Jodhpur	700	700	600	2000	300	200	500
4.	MLS University	Udaipur	700	700	600	2000	300	200	500
Total			2800	2800	2400	8000	1200	800	2000



2. The sanctioned amount of Rs. 500 lakh to each University will be debited to the following plan budget heads as per breakup given below:

a. General Category Rs. 387.50 lakh

2202- सामान्य शिक्षा

03- विश्वविद्यालय तथा उच्चतर शिक्षा

108- राष्ट्रीय उच्चतर शिक्षा अभियान

(01)- राष्ट्रीय उच्चतर शिक्षा अभियान - सामान्य व्यय

12- सहयतार्थ अनुदान (गैर संवेतन) (आयोजना)

b. SC Category Rs. 75.00 lakh

2202- सामान्य शिक्षा

03- विश्वविद्यालय तथा उच्चतर शिक्षा

789- अनुसूचित जातियों के लिए विशिष्ट संघटक योजना

(06)- राष्ट्रीय उच्चतर शिक्षा अभियान - अनुसूचित जातियों के लिए

12- सहयतार्थ अनुदान (गैर संवेतन) (आयोजना)

c. ST Category Rs. 37.50 lakh

2202- सामान्य शिक्षा

03- विश्वविद्यालय तथा उच्चतर शिक्षा

796- जनजातीय क्षेत्र उपयोजना

(09)- राष्ट्रीय उच्चतर शिक्षा अभियान - अनुसूचित जनजातियों के लिए

12- सहयतार्थ अनुदान (गैर संवेतन) (आयोजना)

The sanction is subject to implementation of the scheme as per RUSA guidelines issued by Govt. of India, Rajasthan State Higher Education Council (RSHEC) and the following terms and conditions:

- i) The Universities shall carry out the project strictly in accordance with the financial and physical norms as approved by the National Mission Directorate RUSA, MHRD, Government of India, and follow the guidelines issued by the Executive Council, RSHEC from time to time.
- ii) All the Financial Rules and norms are to be followed strictly.
- iii) The expenditure will be incurred under three major Heads with maximum permissible limit as given below:




S. No.	Head	Permissible Limit
1	Creation/ Construction of New Facilities	35% of the total allocation
2	Renovation/Up-gradation of Existing Facilities	35% of the total allocation
3	Procurement of New Equipment/ Books, Journals, Furniture, Computers, Peripherals etc.	30% of the total allocation

- iv) A set of two designated signatories at institutional level shall be notified.
- v) The Universities shall maintain proper accounts of the expenditure incurred out of the grants and shall ensure utilization of funds only under approved heads.
- vi) The Utilization Certificate for the installment received shall be furnished to the State Project Directorate, RUSA, within 3 (three) months from the receipt of the fund. Non submission of Utilization Certificate on time shall debar institutions from release of next installment.
- vii) While submitting the proposals for release of further Grant under the scheme, the Universities shall submit the certified copy of Utilization Certificate of the previous Grant received along with the statement of expenditure showing clearly the actual expenditure incurred and the unspent balance available.
- viii) The Utilization Certificate supported by audited statement of expenditure to the effect that the grant has been utilized for the purpose for which it has been sanctioned shall be furnished to the SPD as early as possible after the closure of the financial year.
- ix) The Universities shall maintain an audited record of assets acquired wholly or substantially out of the grant and a register of assets shall be maintained by the Institute.
- x) The RUSA beneficiary Universities shall map account details on PFMS portal to facilitate on line fund transfer and monitoring.
- xi) The Council or its nominee shall have the right to check/verify the accounts to satisfy that the funds have been utilized for the purpose for which they were sanctioned.
- xii) Universities shall furnish photographs of renovation/upgradation carried out under the project at periodic intervals to depict three phases, i.e.
  - a. Before commencement,
  - b. The intermediate stages and



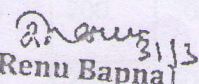
c. After the completion of the project

- xiii) The Universities will have the Governing Bodies and Monitoring bodies in the form of Board of Governors (BoG)/Syndicate/Executive Council and Project Monitoring Unit (PMU) which will monitor the progress of project on a regular basis and shall provide guidance for improving the performance of the institutions in project implementation.
- xiv) All New constructions, Renovations and Equipments created/ acquired under the grant should display the RUSA logo for which this grant is being used.
- xv) Quarterly progress report shall be submitted to the State Project Directorate, RUSA, for monitoring.
- xvi) Monitoring will be based on action plans prepared by each project institution and achievements made with respect to a set of norms, which are defined in the institutional development plan.

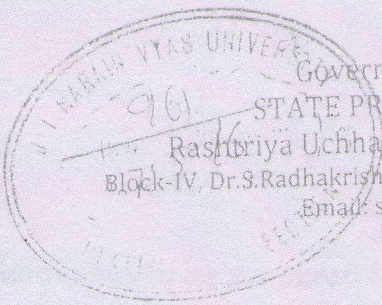
  
(Anoop Khinchi)  
State Project Director,  
RUSA

Copy forwarded for information and necessary action to-

1. S.A. to Hon'ble Minister, Higher Education.
2. P.S. to Additional Chief Secretary, Higher Education Department for kind information of Additional Chief Secretary.
3. The Commissioner of College Education, Rajasthan Jaipur.
4. Director, National Mission Directorate RUSA, New Delhi.
5. Principal Accountant General, Rajasthan, Jaipur.
6. Joint Secretary, Finance (Expenditure I) Department, Secretariat, Jaipur.
7. Joint Secretary, (Education Group-4) Secretariat, Jaipur.
8. Chief Accounts Officer, Commissionerate, College Education, Jaipur.
9. Treasury Officer, Secretariat, Jaipur.
10. Accounts Officer, Higher Education (Group-5) Department.
11. The Drawing and Disbursing Officer, Commissionerate, College Education, Jaipur.
12. Vice Chancellor of the concerned Universities.
13. Registrar of the concerned Universities.
14. Incharge Website, CCE for uploading on website.
15. Guard File.

  
(Renu Bapna)  
Joint Director (RUSA)





Government of Rajasthan  
STATE PROJECT DIRECTORATE  
Rashtriya Uchhatar Shiksha Abhiyaan (RUSA)  
Block-IV, Dr.S.Radhakrishnan Shiksha Sankul, JLN Marg, Jaipur-15  
Email: spdrusaraj@gmail.com

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48860  
07/5/16

F.30 (16) SPD/RUSA/2016/112

Jaipur, 05 May, 2016

*90/16*  
*01C (gov)*  
*on*

To

The Registrar  
Jai Narain Vyas University  
Jodhpur

Subject: Demand Draft of the First Installment of RUSA Grant

Reference:- Sanction orders No. F.30 (16) SPD/RUSA/2016/218; dated 31.03.2016

Sir,

In accordance with the sanction orders No. F.30 (16) SPD/RUSA/2016/218; dated 31.03.2016, the demand draft of Rs. 5.00 Crore (Rupees Five Crore Only) No 452159; Date-02.05.2016 is hereby sent to you towards first Installment of RUSA Grant. Kindly send the receipt of the Demand Draft within three days of receiving the DD.

The general guidelines for utilization of the grant is enclosed with this letter. The utilization certificate in EFR form 19-A (Copy Enclosed) must be submitted by 30<sup>th</sup> June, 2016.

Yours sincerely

(Dr. Renu Bapna)

Joint Director (RUSA)





Government of Rajasthan  
STATE PROJECT DIRECTORATE  
Rashtriya Uchchatar Shiksha Abhiyaan (RUSA)  
Telefax:0141-2712917; email: spdrusaraj@gmail.com

No: F30(16)SPD/RUSA/2016/1412

Date: 22 March 2018

**ORDER**

**SUB: Release of Second Installment of Rs 1000 lakh each to JNV University, Jodhpur & Rajasthan University, Jaipur and Rs 500 lakh to Rajasthan Technical University, Kota as Grant-in-aid for development of infrastructure under Rashtriya Uchchatar Siksha Abhiyan (RUSA) for the year 2017-18.**

1. In accordance with MHRD approval in the 8<sup>th</sup> Project Approval Board (PAB) meeting vide order no F.No.24-7/2015-U.Policy dated 14.09.2015 and in the 9<sup>th</sup> Project Approval Board (PAB) meeting held on 1 December 2015, a sum of Rs 2000 lakh (Rs. twenty crore) was sanctioned to each of the 03 RUSA beneficiary State Universities of Rajasthan as **infrastructure grant (Component 3)** under Rashtriya Uchchatar Siksha Abhiyan (RUSA) for the 12<sup>th</sup> plan period.
2. Against sanctioned amount, a sum of Rs 500 lakh (including Rs 300 lakh as Centre share and Rs 200 lakh as State share) to each of **JNV University, Jodhpur & Rajasthan University, Jaipur** and a sum of Rs 1000 lakh (including Rs 600 lakh as Centre share and Rs 400 lakh as State share) to **Rajasthan Technical University, Kota** has already been disbursed vide sanction orders no. F30 (16) SPD/RUSA/2016/ 218 & 219 dated 31<sup>st</sup> March 2016 respectively.
3. On submission of Utilization certificate, further, approval is hereby granted to release a sum of **Rs 1000 lakh (including Rs 600 lakh as Centre share and Rs 400 lakh as State share) each to JNV University, Jodhpur & Rajasthan University, Jaipur and Rs 500 lakh (including Rs 300 lakh as Centre share and Rs 200 lakh as State share) to Rajasthan Technical University, Kota as Second Installment in 2017-18**, in accordance with MHRD sanction orders no:
  - F.No24-47/2014-U.Policy(RJMulti -Gen), dated 18.12. 17
  - F.No24-47/2014-U.Policy (RJMulti -SC) dated 18.12. 17
  - F.No24-47/2014-U.Policy (RJMulti -ST) dated 18.12. 17
  - Department of Higher Education, Government of Rajasthan sanction order No. P 18(2) Edu-4/2014 RUSA dated 06.03.2018

(Rs. In Lakh)

Component 3 : Infrastructures Grant to Universities					
Name of Beneficiary University	Amount Sanctioned for XII plan period	Amount Released till date	Second Installment to be released		
			Centre Share	State share	Total
JNV University, Jodhpur	2000	500	600	400	1000
Rajasthan University, Jaipur	2000	500	600	400	1000
Rajasthan Technical University, Kota	2000	1000	300	200	500
Total (Rs. Twenty Five Crore)			1500	1000	2500

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243





**Government of Rajasthan**  
**STATE PROJECT DIRECTORATE**  
**Rashtriya Uchhatar Shiksha Abhiyaan (RUSA)**

Telefax:0141-2712917; email: spdrusaraj@gmail.com

1412/22.3.18

4. The sanctioned amount of Rs. 1000 lakh and Rs. 500 lakh will be debited to the following plan budget heads as per breakup given below:

Budget Head	Amount (Rs. In Lakh)	Amount (Rs. In Lakh)
2202-03-103-(11)-[01]-12	152.85	76.43
2202-03-789-(06)-[00]-12	69.05	34.53
2202-03-796-(09)-[00]-12	64.68	32.34
4202-01-203-(07)-[01]-17 Construction	421.53	210.77
4202-01-789-(11)-[01]-17 Construction	154.10	77.04
4202-01-796-(16)-[01]-17 Construction	137.79	68.89
<b>TOTAL</b>	<b>1000</b>	<b>500</b>

This is in accordance with the ID no. 101800723 of Finance Department, Government of Rajasthan.

5. The sanction is subject to implementation of the scheme as per RUSA guidelines issued by Govt. of India, Rajasthan State Higher Education Council (RSHEC) and the following terms and conditions:

i) The institutions shall carry out the project strictly in accordance with the financial and physical norms as approved by the National Mission Directorate RUSA, MHRD, Government of India, and follow the guidelines issued by the state Project Directorate, RUSA, Jaipur from time to time.

ii) All the Financial Rules and norms are to be followed strictly.

iii) The expenditure will be incurred under three major Heads with **maximum permissible limit** as given below:

S. No.	Head	Permissible Limit
1	Creation/ Construction of New Facilities	35% of the total allocation
2	Renovation/Up-gradation of Existing Facilities	35% of the total allocation
3	Procurement of New Equipment/ Books, Journals, Furniture, Computers, Peripherals etc.	30% of the total allocation

iv) A set of two designated signatories at institutional level shall be notified.

v) The institutions shall maintain proper accounts of the expenditure incurred out of the grants and shall ensure utilization of funds only under approved heads.

vi) Utilization Certificate in the GFR 12-C (copy enclosed) showing clearly the actual expenditure incurred under three sub heads mentioned at point (iii) above and the unspent balance available with the college, shall be furnished to the State Project Directorate (SPD), within five months from the receipt of the fund. **Non submission of Utilization Certificate on time shall debar institutions from release of next installment.**

vii) The Utilization Certificate supported by audited statement of expenditure to the effect that the grant has been utilized for the purpose for which it has been sanctioned shall be furnished to the SPD.

viii) Audited record of assets acquired wholly or substantially out of the grant and a **Register Of Assets** shall be maintained by the Institute.

ix) The beneficiary institutions shall map RUSA account details for receipts and payments on PFMS portal to facilitate fund transfer and monitoring.

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Government of Rajasthan  
STATE PROJECT DIRECTORATE  
Rashtriya Uchchatar Shiksha Abhiyaan (RUSA)

Telefax:0141-2712917; email: spdrusaraj@gmail.com

14/12/22.3.18

- x) The Council or its nominee shall have the right to check/verify the accounts to satisfy that the funds have been utilized for the purpose for which they were sanctioned.
- xi) Institutions shall **geotag photographs on Bhuvan portal** depicting the progress of implementation for renovation/up gradation and procurement carried out under the project at periodic intervals showing three stages of implementation, i.e.
  - i) before commencement,
  - ii) The intermediate stages and
  - iii) After the completion of the project
- xii) The institutions will have the **Governing and Monitoring bodies in the form of Board of Governors (BoG) and Project Monitoring Unit (PMU)** which will monitor the progress of project on a regular basis and shall provide guidance for improving the performance of the institutions in project implementation.
- xiii) All New constructions, Renovations and Equipments created/ acquired under the grant should **display the RUSA logo** for which this grant is being used.
- xiv) Quarterly progress report shall be submitted to the State Project Directorate, RUSA, for monitoring.
- xv) Monitoring will be based on action plans prepared by each project institution and achievements made with respect to a set of norms, which are defined in the institutional development plan.
- xvi) No change in the approved DCF will be done at institutional level. In case it is essential to undertake modification in the approved activities, the proposal for revision in DCF will first be discussed and approved in BOG of the institute and then submitted to SPD for approval of proposed changes with justification note and copy of BOG minutes.

(Ashutosh A.T.Pednekar)  
State Project Director- RUSA

**Copy forwarded for information and necessary action to-**

1. S.A. to Hon'ble Minister, Higher Education.
2. P.S. to Additional Chief Secretary, Higher & Technical Education Department for kind information of Additional Chief Secretary.
3. The Commissioner of College Education, Rajasthan Jaipur.
4. The Director, Sanskrit Education, Rajasthan Jaipur.
5. Director, National Mission Directorate RUSA, New Delhi.
6. Principal Accountant General, Rajasthan, Jaipur.
7. Joint Secretary, Finance (Expenditure I) Department, Secretariat, Jaipur.
8. Joint Secretary (Education Group-4) Secretariat, Jaipur.
9. Financial Advisor, Commissionerate, College Education, Jaipur.
10. Treasury Officer, Secretariat, Jaipur.
11. Accounts Officer, Higher Education (Group-5) Department.
12. The Drawing and Disbursing Officer, Commissionerate, College Education, Jaipur.
13. Registrar, Concerned Universities.
14. Divisional Coordinators, SPD, RUSA
15. In charge Website, CCE for uploading on website.
16. Guard File.

31/12/22  
Joint Director (RUSA)





Government of Rajasthan  
**STATE PROJECT DIRECTORATE**  
 Rashtriya Uchchatar Shiksha Abhiyaan (RUSA)  
 Email: spdrusaraj@gmail.com

No: F30(16)SPD/RUSA/2016/Part/251

Date: 27 March 2019

**ORDER**

**SUB: Release of Final Installment of Rs 500 Lakh to each of JNV University Jodhpur & Rajasthan Technical University Kota (Component-3: Infrastructure Grant to Universities) & Final Installment of Rs 50 Lakh to each of R.D. Govt. Girls College, Bharatpur & S.K. Govt. P.G. College, Sikar (Now Govt. Science College, Sikar) (Component-7: Infrastructure Grant to Colleges) as Grant-in-aid under Rashtriya Uchchatar Shiksha Abhiyan (RUSA-1) for the year 2018-19.**

1. In accordance with the approval received in the meeting of 8<sup>th</sup> Project Approval Board (PAB) vide order no F.No.24-7/2015-U.Policy dated 14.09.2015, MHRD has approved Rs. 20 crore (twenty crore) to JNV University Jodhpur (Component 3: Infrastructure Grant to Universities), Rs 200 Lakh (Rs. Two crore) to each of R.D. Govt. Girls College Bharatpur & S.K. Govt. P.G. College, Sikar (Now Govt. Science College, Sikar) (Component-9: Infrastructure Grant to Colleges). In accordance with the approval received in 9<sup>th</sup> Project Approval Board (PAB) meeting held on 1 December 2015, MHRD has approved Rs 20 crore (twenty crore) to Rajasthan Technical University Kota (Component 3: Infrastructure Grant to Universities) under Rashtriya Uchchatar Shiksha Abhiyan (RUSA-1)
2. Against the approved amount, permission is hereby granted to release final installment of Rs 500 Lakh to each of JNV University Jodhpur & Rajasthan Technical University Kota (Component-3: Infrastructure Grant to Universities) & Final Installment of Rs 50 Lakh to each of R.D. Govt. Girls College, Bharatpur & S.K. Govt. P.G. College, Sikar (Now Govt. Science College, Sikar) (Component-7: Infrastructure Grant to Colleges) as Grant-in-aid under Rashtriya Uchchatar Shiksha Abhiyan (RUSA-1) for FY 2018-19 as per detail given in the table below & in accordance with MHRD sanction orders:

- F.No24-47/2014-U.Policy(RJMulti - Gen) dated 10.10.2018
- F.No24-47/2014-U.Policy(RJMulti - SC) dated 10.10.2018
- F.No24-47/2014-U.Policy(RJMulti - ST) dated 10.10.2018 &
- Department of Higher Education, Government of Rajasthan sanction order No. P 18(2) Edu-4/2014 Part RUSA dated 05.11.2018

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RUSA 1.0: Component 3 ( Infrastructures Grant to Universities) Amount in Lakh						
S. No.	Beneficiary	Amount Approved	Amount Released till date	Final Installment to be released		
				Centre Share	State share	Total
1	JNV University, Jodhpur	2000	1500	300	200	500
2	Rajasthan Technical University (RTU), Kota	2000	1500	300	200	500
Sub Total (A)				600	400	1000
RUSA 1.0: Component 7 (Infrastructures Grant to Colleges) Amount in Lakh						
1	S.K. Govt. P.G. College, Sikar (Now Govt. Science College, Sikar)	200	150	30	20	50
2	R.D. Govt. Girls College, Bharatpur	200	150	30	20	50
Sub Total (B)				60	40	100
Grand Total (A+B) (Rs. Eleven Crore)				660	440	1100





Government of Rajasthan  
**STATE PROJECT DIRECTORATE**  
Rashtriya Uchhatar Shiksha Abhiyaan(RUSA)  
Email: spdrusaraj@gmail.com

251/27.03.19

3. The total sanctioned amount of Rs.1100 Lakh has been disbursed by the State Government in the following plan budget heads as per breakup given below:

Budget Head	Amount (Rs. In Lakh)
2202-03-103-(11)-[01]-12	307.85
2202-03-789-(06)-[00]-12	74.85
2202-03-796-(09)-[00]-12	57.29
4202-01-203-(07)-[01]-17 Construction	461.93
4202-01-789-(11)-[01]-17 Construction	112.23
4202-01-796-(16)-[01]-17 Construction	85.85
<b>TOTAL(Rs. Eleven Crore)</b>	<b>1100</b>

This is in accordance with the **ID no. 101805960 dated 01.11.2018** of Finance Department (Expenditure-I), Government of Rajasthan.

4. The sanction is subject to implementation of the scheme as per RUSA-1 guidelines issued by the National Mission Directorate RUSA, MHRD, Government of India and follow the guidelines issued by the RSHEC and State Project Directorate (RUSA) from time to time. The Institutions have to follow:

- GF & AR i.e. Financial Rules and norms of Government of Rajasthan.
- A set of two designated signatories have to be notified for financial transactions.
- Proper accounts of the expenditure incurred out of the grants are to be maintained and ensure utilization of funds only under approved heads. A **separate stock register** and **cash book** must be maintained for RUSA grant.
- Utilization Certificate in the GFR **12-C** showing clearly the actual expenditure incurred under various heads above and the unspent balance available with the college, shall be furnished to the State Project Directorate (SPD), **within 3 months from** the receipt of the fund. Non submission of Utilization Certificate on time shall debar institutions from release of next installment.
- The final Utilization Certificate of complete grant supported by audited statement of expenditure to the effect that the grant has been utilized for the purpose for which it has been sanctioned shall be furnished to the SPD office.
- Audited record of assets acquired wholly or substantially out of the grant and a **Register Of Assets** shall be maintained.
- RUSA account details for receipts and payments shall be mapped on PFMS portal to facilitate fund transfer and monitoring.
- The Council and State Project Directorate or its nominee shall have the right to check/verify the accounts to satisfy that the funds have been utilized for the purpose for which they were sanctioned.

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27.3.19





Government of Rajasthan  
**STATE PROJECT DIRECTORATE**  
Rashtriya Uchhatar Shiksha Abhiyaan (RUSA)  
Email: spdrusaraj@gmail.com

- ix) **FUND TRACKER FORM** and **Geotag photographs on Bhuvan portal** depicting the progress of implementation for New Construction and procurement carried out under the project are to be updated at periodic intervals showing three stages of implementation, i.e.  
(a) Before commencement, (b) The Intermediate stages and (c) After the completion of the project
- x) **Board of Governors (BoG) and Project Monitoring Unit (PMU) shall be formed and notified to SPD** to monitor the progress of project on a regular basis and to provide guidance for improving the performance of the institutions in project implementation.
- xi) All New constructions/Renovation/ Equipment created/ acquired under the grant should display the **RUSA logo** for which this grant is being used.
- xii) Monthly progress report shall be submitted to the State Project Directorate, RUSA, for monitoring.
- xiii) Monitoring will be based on action plans prepared by each institution and achievements made with respect to a set of norms which are defined in the institutional development plan.
- xiv) **No change in the approved DCF will be done at institutional level.** In case it is essential to undertake modification in the approved activities, the proposal for revision in DCF will first be discussed and approved in BOG of the institute and then submitted to SPD/RSHEC for approval of proposed changes with justification note and copy of BOG minutes.

  
(Pradeep Kumar Borar)


State Project Director &

Special Secretary Higher Education, Rajasthan

251/27.03.19

**Copy forwarded for information and necessary action to-**

1. S.A. to Hon'ble Minister, Higher Education.
2. P.S. to Secretary, Higher & Technical Education, Rajasthan.
3. P.A. to Commissioner of College Education, Rajasthan.
4. Director, National Mission Directorate RUSA, New Delhi.
5. Principal Accountant General, Rajasthan, Jaipur.
6. Joint Secretary, Finance (Expenditure -1) Department, Secretariat, Jaipur.
7. Joint Secretary, (Education Group-4) Secretariat, Jaipur.
8. Accounts Officer, Higher Education (Group-5) Department.
9. Financial Advisor, Commissionerate, College Education, Jaipur.
10. Treasury Officer, Secretariat, Jaipur.
11. The Drawing and Disbursing Officer Commissionerate, College Education, Jaipur.
12. Registrar, University of Rajasthan, Jaipur
13. Coordinators, SPD, RUSA
14. Incharge Website, CCE for uploading on website.
15. Guard File.

  
(Dr. Urmil Talwar)  
Joint Director (RUSA)



4.1.4 Average percentage of expenditure excluding salary for infrastructure augmentation during the last five years (INR in Lakhs)

#### File Description

#### Upload audited utilization statements

Upload Details of budget allocation, excluding salary during the last five years (Data Template as in 4.4.1)  
Upload any additional information

#### DOCUMENTS AND INSTRUCTIONS

Provide the consolidated fund allocation towards infrastructure augmentation facilities duly certified by the Finance Officer

☐ Highlight the relevant items in the audited income and expenditure statement.  
Focus of this metric is on infrastructure augmentation only.

Avoid recurring expenditure on laboratory, on maintenance of infrastructure and acquisition of books and journals under this metric

4.4.1 Average percentage expenditure incurred on maintenance of physical facilities and academic support facilities excluding salary component during the last five years (INR in lakhs) .(10)

Year	Budget allocated for infrastructure augmentation (INR in lakhs)	Expenditure for infrastructure augmentation (INR in lakhs)	Total expenditure excluding Salary (INR in lakhs)	Expenditure on maintenance of academic facilities (excluding salary for human resources) (INR in lakhs)	Expenditure on maintenance of physical facilities (excluding salary for human resources) (INR in lakhs)
2016	500.00	6675933.00	-	2663251.00	40660816.00
2018	1000.00	50106966.00	-	35899416.00	13993618.00
2019	500.00	13217101.00	-	31437333.00	5345566.00
Total	2000.00	700.00		700.00	600.00

fin

#### File Description

Upload any additional information

Audited statements of accounts.

Details about assigned budget allocation and expenditure on physical facilities and academic facilities (Data Templates as in 4.1.4)

#### DOCUMENTS AND INSTRUCTIONS

Provide audited income and expenditure statement highlighting the items of expenditure incurred on maintenance of physical facilities and academic support facilities duly certified by the Finance Officer.

☒ Consolidated list of expenditure under this head for five years as endorsed by the Finance Officer

Focus of this metric is only on the maintenance of physical and academic support facilities.

Mere statement of last five years data on the metric without audited statement will not be considered.

*[Signature]*  
17/11/21  
(Control Officer, RUSA)



GFR 12 – C  
(See Rule 212 (1))  
Form of Utilization Certificate

Name of Institute: JAI NARAIN VYAS UNIVERSITY, JODHPUR Date 18-11-2020

Installment No.	Sanction letter Nos. and Date ( Issued by SPD - RUSA)	Amount Sanctioned (in INR)
I	F30(16)SPD/RUSA/2016/218 dated 31.03.2016	5,00,00,000
II	F30(16)SPD/RUSA/2016/1412 dated 22.03.2018	10,00,00,000
III	F30(16)SPD/RUSA/2016/251 dated 27.03.2019	5,00,00,000
	Total	20,00,00,000

1. Certified that out of Rs 20,00,00,000/- (In words: Rs. Twenty Crore only) of total grant received under Component- RUSA (Name of Component Infrastructure
2. Grant to University) of RUSA-1 scheme sanctioned during the year / years 2015-16 to 2019-20 in favour of (Name of Institute) Jai Narain Vyas University, Jodhpur vide letter no. given in the above table, a sum of Rs. 20,00,00,000/- (In words: Twenty Crore Only) has been utilized for the purpose New construction / Renovation / Procurement of books and Equipments for which it was sanctioned.
3. An amount of Rs. Nil remaining.
4. Certified that I have satisfied myself that the conditions on which the RUSA grant was sanctioned have been duly fulfilled. Bills, Vouchers & Relevant Registers have been checked to see that the money was actually utilized for the purpose for which it was sanctioned.

Signature & Seal (Incharge Accounts/Finance)

Name \_\_\_\_\_

Designation बंगला राय विल्लोई

Date वित्त-नियंत्रक

Signature & Seal (Principal/Registrar)

Name \_\_\_\_\_

Designation \_\_\_\_\_

Date \_\_\_\_\_



**Annexure 1: Detail of Utilization of RUSA Grant**

**Name of Institute:** JAI NARAIN VYAS UNIVERSITY, JODHPUR **Date** 18-11-2020

Installment no.	Amount Received (In Rs.)	Amount Utilized (In Rs.)				Unspent Amount (In Rs.)
		New construction	Renovation	Equipments/ books	Total	
I	05,00,00,000	66,75,933	26,63,251	4,06,60,816	05,00,00,000	Nil
II	10,00,00,000	5,01,06,966	3,58,99,416	1,39,93,618	10,00,00,000	Nil
III	05,00,00,000	1,32,17,101	3,14,37,333	53,45,566	05,00,00,000	Nil
Grand Total	20,00,00,000	7,00,00,000	7,00,00,000	6,00,00,000	20,00,00,000	Nil

**Status of Unspent Amount:**

1. Tender released but work order not issued of Amount Rs. NA

Date of tender issued, \_\_\_\_\_

date of finalize(opening) the tender

2. Work order issued of amount Rs. NA, Date of work order NA, status of Goods / Equipment (received—Yes/No) NA

3. Process yet to be initiated of amount Rs. NA

Total Rs. NA (sum of 1,2 & 3 should be equal to unspent amount)

Signature & Seal (Incharge-Accounts/Finance)

Name \_\_\_\_\_

Designation मंगला राम विश्णोई

Date दिस-नियंत्रक

Signature & Seal (Principal/Registrar)

Name \_\_\_\_\_

Designation \_\_\_\_\_

Date \_\_\_\_\_





**Government of Rajasthan**  
**STATE PROJECT DIRECTORATE**  
**Rashtriya Uchhatar Shiksha Abhiyaan (RUSA)**

Telefax:0141-2712917; email: spdrusaraj@gmail.com

F30(21)( U-04)SPD/RUSA/2016 /500

Date: 23.07.2019

**The Registrar,**  
**Jai Narayan Vyas University**  
**Jodhpur**

**Subject: Approval of revised activities to be undertaken for infrastructure development under RUSA Grant**

**Ref:** Your letter no.97/10.07.2018 & 18.07.2019, 77/11.05.2019 & 90/25.06.2019

Dear Sir / Madam,

Your request for revision of activities to be undertaken under RUSA for sanctioned Infrastructure grant has been approved by the competent authority. The following changes have been approved:

NEW CONSTRUCTION		
S.No.	Activities	Amount in lakh
1	<b>Faculty of Engineering:-</b>	
	<b>Computer Science and Engineering: -</b> Construction of One class room.	50.00
	<b>Structural Engineering :-</b> Construction of class Room/Lab, on Ist floor (above ESA and Applied Mechanics Lab.)	30.00
	<b>Civil Engineering :-</b> Construction of Lab, in Ist floor (above Geotechnical)	25.00
	<b>Electrical Engineering :-</b> Construction of Lab on Ist Floor above power electronics in Electrical Engineering.	40.00
	<b>Production &amp; Industrial Engg :-</b> Construction of One Lecture theatre.	15.00
	Construction of 5 No. Toilets	20.12
	<b>Sub Total</b>	<b>180.12</b>
2	<b>Faculty of Science</b>	
	<b>Auditorium, Faculty of Science :-</b> Construction & Extension work in auditorium at faculty of Science, New Campus With Furniture	60.00
	<b>Mathematics &amp; Statistics :-</b> Construction of Two Labs (i) Computational Lab, (ii) Statistics Lab & Construction of office with common facilities.	60.00
	Construction of Two (02) Class rooms in <b>Mathematics department, New campus.</b>	40.00
	Construction works of the Chambers with common facilities for the <b>Dean of the faculty of Science.</b>	20.00





**Government of Rajasthan**  
**STATE PROJECT DIRECTORATE**  
**Rashtriya Uchhatar Shiksha Abhiyaan (RUSA)**  
 Telefax:0141-2712917; email: spdrusaraj@gmail.com

500/23-47.19  
*[Signature]*  
*[Name]*

	Construction of the Examination controller hall, <b>Faculty of Science</b>	20.00
	Construction of One Lab in the <b>Department of Chemistry</b>	20.00
	Construction of One Lab in the <b>Department of Zoology</b>	20.00
	<b>Sub Total</b>	<b>240.00</b>
	<b>Faculty of Arts</b>	
	Construction of Examination Controller Hall and 04 Nos of Class Room in Faculty of Arts J.N.V.University, Jodhpur	90.00
3	Construction of Additional 07 Nos. of Class rooms at Language wing (Sanction for 04 nos. of class room already issue)	90.00
	Construction of Staff Room with common facilities for the <b>language wing</b> in place of social Science.	25.00
	Construction works of the Chambers with common facilities for the <b>Dean of the faculty of Arts Education &amp; Soc. Science.</b>	20.00
	<b>Sub Total</b>	<b>225.00</b>
4	<b>ST Girls Hostel :-</b> Construction of New Warden Residence at New Campus.	20.00
5	<b>Kamala Nehru Women's College</b> Construction of hall above seminar hall at KNCW	28.50
	<b>Total</b>	<b>693.62</b>
6	Available Balance Subject to final bills & with the discretion of the Hon'ble Vice-Chancellor / BoG for final allocation.	6.38
	<b>G. Total (New Construction)</b>	<b>700.00</b>

REPAIR & RENOVATION		
S.No.	Activities	Amount in lakh
	<b>Faculty of Engineering:-</b>	
	<b>Electrical Engineering:-</b> 1. Renovation/ Up-gradation of Existing Facilities, Repair of Electrical Workshop & Stores and Concrete casting of their Roofs	40.00
1	<b>Electronics &amp; Communication Engineering :-</b> Addition of a floor over Electronics workshop	40.40
	<b>Mining Engineering :-</b> Renovation (Computer Lab & Conference Room)	11.20
	<b>All Departments :-</b> Upgradation of Existing Class Rooms to Smart Class Rooms (05 Nos)	30.50



**Government of Rajasthan**  
**STATE PROJECT DIRECTORATE**  
**Rashtriya Uchhatar Shiksha Abhiyaan (RUSA)**  
 Telefax:0141-2712917; email: spdrusaraj@gmail.com

500/23.7.19  
*[Signature]*  
*[Signature]*

	<b>Faculty of Engineering :-</b> General facilities for Students (a) Canteen 2,00,000/- (b) Girls Common room 1,00,000/-	3.00
	<b>Common facilities :-</b> Renovation and Repair of all Toilets in all the Departments and all the Hostels (Inclusive of Flooring Tiles and Repairing of Walls etc.) of the Faculty of Engineering and Dean's Secretariat of the Engineering Faculty.	61.25
	<b>Mechanical Engineering :-</b> Laying of Interlocking tiles in the Compound of the Department of Mechanical Engineering, Faculty of Engineering	15.00
	<b>Mechanical Engineering :-</b> 01. RCC Roof of Foundry Lab. of Work shop	27.00
	<b>Faculty of Engineering &amp; Architecture :-</b> Truss work in the five courtyards in the Department of Architecture and T.P. with water proofing etc complete, area 2570.00 Sq. Ft Rs. 8,50,000/-, Security grills for Windows for workshops and laboratories Rs. 1,30,000/-,	20.50
	<b>Chemical Engineering :-</b> A. Developments of existing hall into Modern Seminar Hall including ladies and gents toilet and other renovation works Rs. 20.00 Lakhs (RSRDC) B. Repair & Renovation work due to shifting of the department Rs. 05.00 Lakhs (Head of the Department)	25.00
	<b>Administrative Building :-</b> Repair & Renovation work in Administrative Building.	17.35
	<b>Computer Science and Engineering :-</b> Installation of Fire Safety System with water Supply Facilities in the Labs of the Department.	15.00
	<b>Computer Centre:-</b> To rejuvenate the old age infrastructure of computer centre in terms of electrical wiring/wall paneling /false roofing etc.	10.00
	<b>Electronics &amp; Communication Engineering :-</b> 1. Renovation/Up-gradation of Existing Facilities 2. Repair/Renovation of exiting Laboratories 3. Repair/Renovation of exiting Class Room 4. Repair/Replacement of Electric Panels/Lab wiring	20.60
	<b>Sub Total</b>	<b>336.80</b>
<b>2</b>	<b>Faculty of Science</b> <b>Mathematics &amp; Statistics :-</b> Misc. work : Payment made to Jodhpur Vidhut Vitran Nigam Ltd. For shifting of elect. Line for mathematic department as demand notice received from JVVNL & accordingly approval vide letter no. JNVU/Dev/RUSA/2019/59 Dt. 26.03.2019	<b>8.41</b>





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505/23.7.19  
*[Signature]*

3	<b>Faculty of Commerce:- Commerce Library :-</b> Repairing & Renovation work of PG Library in Commerce Faculty	10.00
	<b>Faculty of Arts</b>	
4	<b>Auditorium, Faculty of Arts :-</b> Installation of Furniture (Fix Chairs, Dias Tables, Chairs etc.) in the Auditorium of Faculty of Arts Education & Soc. Sci.	10.00
	<b>Language Wing :-</b> Construction of Cemented Tiles around Language wing	10.00
	<b>Sub Total</b>	20.00
5	<b>All Faculties &amp; Hostels :-</b> Renovation and Repair of all Toilets in all the Faculties and all the Hostels (Inclusive of Flooring Tiles and Repairing of Walls etc.) (except Faculty of Engineering and its Hostel) of the University.	105.00
	<b>All Faculties, Hostels and Centers</b>	
	<b>All Faculties :-</b> Class room and Laboratory furniture Procurement A. Laboratory Stools (2ft. Height) 200Nos. B. Pair of Chairs & Table 5000 Nos.	90.00
6	Repair, Renovation & Upgradation of Existing Class rooms (Approx. 25) into Smart Class rooms with equipments.	68.00
	Repair/Renovation of boundary wall of University campus and staff quarters	15.00
	Upgradation of existing drinking water facilities in various faculties and centers	5.00
	<b>Sub Total</b>	178.00
	<b>ST Girls Hostel:-</b>	
7	(a) Upgradation of Hostel mess furniture including Dining tables, chairs, installation of Two Desert Coolers and a big size Double Door Refrigerator	5.00
	(b) Upgradation of Hostel rooms and mess with curtains and linen etc.	1.50
	<b>Sub Total</b>	6.50
8	<b>Kamala Nehru Women's College KNCW :-</b> Renovation of Hall at KNCW (Roofs/Truss work/ Flooring)	20.00
	<b>Total</b>	684.71



**Government of Rajasthan**  
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500/23.7.19  
*[Signature]*  
 RUSA

9	Available Balance Subject to final bills & with the discretion of the Hon'ble Vice-Chancellor / BoG for final allocation.	15.29
<b>G. Total ( Renovation )</b>		<b>700.00</b>

EQUIPMENT/ BOOKS/JOURNALS		
S.No	Activities	Amount in lakh
1	<b>Faculty of Engineering</b>	
	Dean, Faculty of Engineering	18.5000
	Dean, Faculty of Engineering (Computer)	91.2250
	Architecture & Town Planning	8.0000
	Civil Engineering	16.2427
	Chemical Engineering	9.4362
	Computer Science & Engineering (Rs.22224 Extra amount from P & I Engg.)	8.0000
	Electrical Engineering	11.8000
	Electronics & Communication Engineering	8.0000
	Production & Industrial Engineering	8.0000
	Structural Engineering	9.2520
	Mechanical Engineering	13.1202
	Dean, Faculty of Engineering (Software)	60.0000
	Computer Centre :- BSNL/Fire wall UTM Net work	43.0000
	Purchase of Computers/ Printers (One coloured printer in the Vice-Chancellor office)/UPS and Accessories + One Laptop	32.6600
	<b>Sub Total</b>	<b>337.2361</b>
2	<b>Faculty of Science</b>	
	Chemistry	30.3504
	Botany	27.0000
	Physics	30.9707





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**STATE PROJECT DIRECTORATE**  
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 Telefax:0141-2712917; email: spdrusaraj@gmail.com

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	Geology	27.4738
	Zoology	15.0000
	Mathematics & Statistics	9.2500
	Home Science	5.0000
	<b>Sub Total</b>	<b>145.0449</b>
<b>3</b>	<b>Faculty of Arts</b>	
	Music	4.0000
	Psychology	8.0000
	Geography	8.0000
	Fine Arts & Painting	3.7400
	Dean Faculty of Arts	4.8400
	<b>Sub Total</b>	<b>28.5800</b>
<b>4</b>	<b>Others</b>	
	Board of Sports	5.0000
	Assistant Registrar, Exam Section	20.0000
	Officer-In-Charge, Development Section	1.5600
	Assistant Registrar, Secrecy Section	0.5600
	Assistant Registrar, Academic Section	0.5600
	Sanitary Napkin Vending Machine & Incinerator (10 Pcs.)	6.0000
	Supply of Water cooler with Purifier and Office Furniture	40.0000
	<b>Faculty of Engineering &amp; Architecture:-</b> Building Security System (Wiring & Installation of CCTV Camera) Rs. 1,00,000/-, Construction of Girls and Boys common room with attach toilet 75.0 x2 =150.0Sq. Mtrs	7.5000
	PS to Vice-Chancellor:- Purchase of photocopier and computer etc. and Purchase of office equipments almirah	3.9500

6/7



Government of Rajasthan  
STATE PROJECT DIRECTORATE  
Rashtriya Uchhatar Shiksha Abhiyaan (RUSA)  
Telefax:0141-2712917; email: spdrusaraj@gmail.com

	<b>Central Office Campus</b> Upgradation of Kitchen facilities in the central office	1.0000
	Contingency/ Stationery/ Office Repair etc.	3.0000
	<b>Sub Total</b>	<b>89.1300</b>
	<b>Total</b>	<b>599.9910</b>
5	Available Balance Subject to final bills & with the discretion of the Hon'ble Vice-Chancellor / BoG for final allocation.	0.0090
	<b>Total(Equipment/ Books/ Journals)</b>	<b>600.0000</b>
	<b>Total Sanction amount under all the Heads</b>	<b>1,978.32</b>
	Available Balance Subject to final bills & with the discretion of the Hon'ble Vice-Chancellor / BoG for final allocation.(in three Heads) (6.38 + 15.29+0.0090)	21.68
	<b>Grand Total (Construction, Renovation &amp; Equipments /Books/Journals)</b>	<b>2000</b>

In Upgradation of Hostel mess of **ST Girls Hostel**, Two Desert Coolers and Double Door Refrigerator should be included in **Equipment Head**. It is required to utilize the amount in the given timeline and submit status of expenditure by 30/07/2019.

Yours Sincerely

*उर्मिल तालवार*  
- - 23/7/19

(Dr. Urmil Talwar)

Joint Director RUSA

F30(21)( U-04)SPD/RUSA/2016 /500

Copy to: Nodal Officer, Jai Narayan Vyas University Jodhpur

Date: 23.07.19

*उर्मिल तालवार*

Joint Director RUSA

7/2



**UGC-CAS**  
**(DEPARTMENT OF**  
**BOTANY)**



UNIVERSITY GRANTS COMMISSION  
BAHADUR SHAH ZAFAR MARG  
NEW DELHI - 110 002

No. F.5-1/2013 (SAP-II)

To

The Registrar,  
Jai Narain Vyas University  
Jodhpur-342001

January, 2014

Sub.: University Grants Commission Assistance to the selected department under Special Assistance Programme (SAP)- Review of the Programme in the **Department of Botany, Jai Narain Vyas University, Jodhpur-342001** for upgradation /continuation from **DSA-Phase-III to CAS-Phase-I** for a period of **5 years (1-4-2013 to 31-3-2018)**.

Sir,

1. The UGC Special Assistance Programme (SAP) is intended through constant effort to raise the quality of teaching/ research in different disciplines in Bio-Sciences, Sciences, Engineering & Technology, Humanities, Social Science departments and carefully selected on the basis of their work, academic achievements and viable potential for further development. The essence and primary aim of the scheme is combination of teaching and research to encourage group research efforts in pursuit of excellence.
2. The Department of **Botany** was implementing **DSA-Phase-III (2002-2007)** of the programme at the level of **CAS-I** approved for a duration of five years.
3. As per guidelines, the Commission constituted an Expert Committee to review the progress made by the above department which has completed its approved term of participation under the Special Assistance Programme (SAP). The Expert Committee Reviewed the department on **12.4.2013 and 13.4.2013** at **University**.
4. The Review Committee, after a very careful and critical in-depth examination of the academic achievements made by the department during the terms as well as discussing various aspects of implementation of the programme with the departmental representatives has submitted their recommendations to the Commission.
5. The UGC has approved the **Department for up-gradation/ continuation from DSA-III to CAS-I** programme for a further period of **Five years from 1.4.2013 to 31.3.2018**.



..2..

6. On the basis of the recommendations of the Review Committee, I am directed to convey approval of the University Grants Commission to the continuation/Up-gradation of the programme at the level of **CAS-I** for a duration of **5 years** with the following thrust area(s) for research and teaching.

**Thrust Area Identified**

- Bio-resources of Plants and Microbes of Desert Areas
- Taxonomy, Ecology and Molecular aspects of Desert Plants

As recommended by the Review Committee, the Co-ordinator of the Programme for the present phase of the Programme will be as indicated below:

**Dr. H.S. Gehlot** (Coordinator) & **Dr. S. Sundramurthy** (Dy. Coordinator) for **CAS-I** programme under SAP

The Co-ordinator may continue till the end of the present duration of the programme or till his/her superannuation.

7. The financial assistance approved for implementing the present phase at the level of **CAS-I** for a duration of **5 years (01/04/2013 to 31/03/2018)** is given below:

	(Rs. In lakh)
Non – Recurring	Rs. 93.00
Recurring	Rs. 54.00
<hr/>	
Total (NR + R) for 5 years =	Rs. 147.00
<hr/>	

Details of the item-wise grant approved above are given in the **Annexure-I.**

8. The Commission will also provide additional grant (Subject to availability of funds) for the following purposes.
- Maintenance, modernization, upgradation, accessories spare etc. for equipments procured under the programme @ 5% of total equipment cost per annum from the date of expiry of warranty period till the end of the term. Thereafter, it has to be met by the University/Institute.
  - Expenditure incurred or any amount deducted from the sanctioned amount by the University for any other purposes other than the items approved for implementing the programme will not be acceptable to the Commission.
9. To avoid inbreeding in SAP supported departments regarding recruitment of teachers and intake of students, the Commission has decided that the appointment on the faculty position in the departments financially assisted under Special Assistance Programme of the University Grants Commission be made from among the applications who have obtained their last academic qualification (M.A./M.Sc./M.Phil/Ph.D) from the university other than the one for which the appointment is being made. It has also been decided that the preference be given to the students from other states on at least 20% of the prescribed number of seats for admission in Graduate and Post Graduate courses in the departments under Special Assistance Programme (SAP).



..3..

10. The Additional financial inputs for Summer Institute, Attachment of students, International Collaboration etc. may be extended by the Commission on receipt of specific proposal from the University / Department and subject to availability of funds under the programme.
11. As stipulated in the revised guideline for SAP/COSIST Integrated Programme all sanctions under Special Assistance Programme (SAP) henceforth are subject to the conditions that departments under this programme would have to be given autonomy by the University /Institute for academic, financial and administrative matters relating to the Special Assistance Programme (SAP).
12. It is desired that the departments having SAP and COSIST or both Programme should immediately introduce the examination reform measure and funding for SAP and COSIST would be linked with the implementation of the minimum programme of examination reforms in these departments.
13. It may also be ensured that the physical facilities created under the Special Assistance Programme SAP/COSIST may be opened, to be used by the other faculty members of the departments and other users within the University and from other University /Agency.
14. The University is to maintain a separate bank account for the grants released under Special Assistance Programme. All interest earned by the university/ department by investment of funds sanctioned and by the UGC under Special Assistance Programme will be treated as additional grant and may be spent only after prior approval of the UGC.
15. Other general terms and conditions of the above grant are in the SAP guidelines on the UGC website.
16. The University/ Institute may follow the norms for appointment of Programme Co-ordinator and Deputy Co-ordinator (no Joint Co-ordinator or Co-ordinator) and also constitute an Advisory Committee as per the guidelines of the Commission which can be downloaded from UGC website [www.ugc.ac.in](http://www.ugc.ac.in) and follow the terms of reference of the Advisory Committee to ensure effective implementation and monitoring of the Programme. The constitution of the Advisory Committee is compulsory for all departments which are being supported under SAP. The UGC nominees in the Committee will be as indicated below. The department may contact the UGC nominees for their acceptance and intimate the Commission.

1) Prof. Madhoolika Agarwal, Dept. of Botany, Banaras Hindu University.  
M-09415628573.

2) Prof. S.R. Yadav, Dept. of Botany, Shivaji University, Kolhapur.  
0231-2607025 (R). 0231-26099389 (O).

The active participation of the UGC nominees in each meeting of the Advisory Committee is essential. The composition and terms & reference of the Advisory Committee will be as given in the UGC website [www.ugc.ac.in](http://www.ugc.ac.in).



..4..

17. For optimizing the effective and usefulness of the programme the Commission will send an expert committee or organize group monitoring / review after two years of support given to the department for mid-term evaluation of the progress of work done by the department. The department will send accordingly a consolidated progress report in the prescribed form.
18. The University/Institute/Department is requested to take immediate steps to submit the following information/documents for necessary action:
  - i) Acceptance of the terms and conditions of the grants duly signed by the Registrar of the University/Institute.
  - ii) Name of the competent University Officer with full address and other bank details in the the prescribed enclosed proforma so that the fund can be transferred electronically.
  - iii) Detailed statement of year-wise actual expenditure in incurred against the grants allocated, sanctioned during the last phase may be submitted in the PROFORMA in the Annexure-V, of SAP Guidelines duly audited and certified by the Competent authority, in order to finalise the accounts of the earlier phase.
  - iv) Name of the Department Co-ordinator and Dy. Co-ordinator indicating (i) present designation (ii) specialised areas(s) of research and (iii) date of superannuation.
  - v) List of members of the Advisory Committee constituted by the university/ institute as per guidelines.
  - vi) Year-wise academic programme and action proposed to be undertaken by the department during the period of **5 years** to implement the programme.
  - vii) An undertaking from the University/institute to take over the recurring liabilities of the items including staff approved under the programme other than Project Fellow i.e JRFs/RAs after a period of **5 years** of the programme.
  - viii) Action taken on the academic recommendations made by the Expert/Review Committee may be intimated in due course.
  - ix) The annual report of the work done during the year (as per effective date of the programme) should be submitted by the Programme Co-ordinator highlighting the academic achievements in research and teaching and indicating separately the progress in procuring of equipment/ construction of building (only addition, alteration and renovation, if sanctioned under the programme) and the list of papers published in referred journal during the year positively reported by the end of every year.
  - x) The steps taken by the university/ institute to implement the decision of the Commission as indicated at **Para-10 and 11**.



..5..

19. The University/Institute shall take all possible measures to ensure effective implementation of policies of Government of India relating to SC/ST students and teachers in regard to the UGC programme. In case of non-teaching staff, the policies of the Central Government in respect of Central Universities and of the State Government in respect of State Universities shall be implemented.
20. The first installment of admissible grant will be released separately. In the meantime, the University may submit the following information requested for at para 18 (i, ii, iii, iv, v & vi) by return of post. The programme will be effective from 1.4.2013 to 31.3.2018.
21. No request for any change in the effective date will be considered.
22. It may be noted that if orders for purchase of equipment are not placed within six months from the date of receipt of the grant by the university, the approval shall be treated as withdrawn.
23. The second and subsequent installment of grant for any approved items will be considered and sanctioned only on receipt of the Utilization Certificate for the earlier installment in the prescribed form duly signed by the Registrar/Finance Officer as the case may be.
24. The University/Institution shall include a specific condition in the Utilization Certificate, in respect of any financial assistance or grants-in-aid to any institution under any of the general or special schemes of the Commission that the University/institution has complied with the anti-ragging measures by stating that.

"The University/ Institution/College is strictly following the UGC Regulations on curbing the menace of Ragging in Higher Educational Institutions, 2009".

Yours faithfully,

sd -  
(Dr. Nidhi Sharma)  
Deputy Secretary

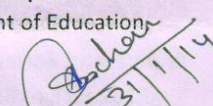
NOTE:- Please see SAP guidelines on UGC website [ugc.ac.in](http://ugc.ac.in).

Copy forwarded alongwith the copies of Annexure-I for information and necessary action to:-

✓ Dr. H.S. Gehlot  
Co-ordinator (CAS Programme),  
Department of Botany,  
Jai Narain Vyas University,  
Jodhpur-342001

Copy for information to:

1. The P.S. to Vice Chancellor, Jai Narain Vyas University, Jodhpur-342001.
2. The Head, Department of Botany, Jai Narain Vyas University, Jodhpur-342001.
3. The Secretary to the State Government of Rajasthan, Department of Education, Jodhpur.
4. Guard File.

  
(Dr. Nikhil Kumar)  
Education Officer



**Annexure - I****UNIVERSITY GRANTS COMMISSION**

Financial assistance approved for implementation of the Special Assistance Programme in the **Department of Botany, Jai Narain Vyas University, Jodhpur-342001** at the level of **CAS-I** for duration of Five years from **(1.4.2013 to 31.3.2018)**.

S. No.	<u>Non-Recurring (Items)</u>	Allocation
		Rs. (In Lakh)
I.	<b><u>Equipment</u></b>	
	i Storing Microbial Culture	11.00
	ii Atomic Absorption Spectrophotometer	20.00
	iii Digital Cameras for various existing Microscope	10.00
	iv Water Purification System	05.00
	v Nanodrop Spectrophotometer	08.00
	vi Blotters (Northern/Western)	03.00
	vii Lyophilizer	05.00
	viii Online UPS System, Eco-friendly power generator	12.00
	ix Rockers and Shakers	05.00
	x Strengthening of green house/hardening facilities	10.00
2.	Reprographic facilities	4.00
	<b>TOTAL</b>	<b>93.00</b>
SNo.	<b><u>Recurring</u></b>	
1.	Contingency/Working expenses @ Rs.2.00 p.a.	10.00
2.	Chemicals/Consumables/Glassware @ Rs.2.00 p.a.	10.00
3.	Travel/industry visits/Community field work for faculty members only @Rs.2.00 p.a.	10.00
4.	Visiting fellows @Rs. 1.00 p.a.	05.00
5.	Seminars (for organization) on thrust area @Rs.1.00 p.a.	05.00
6.	Hiring the services of Technical/Industrial/Secretarial assistance as relevant to the programme (for programme duration only) @Rs.1.00 p.a.	05.00
7.	Advisory Committee meetings (TA/DA for UGC nominee in the committee) @Rs.0.80 p.a.	04.00
8.	Books and Journals @ Rs.1.00 p.a.	05.00
	<b>Total</b>	<b>54.00</b>
	<b>Grand total (NR + R)</b>	<b>147.00</b>

Grand total (NR + R) Rs.93.00+ Rs.54.00 = Rs.147.00 lakh  
(Rupees one crore forty seven lakh only)

*Nidhi Sharma*  
(Dr. Nidhi Sharma)  
Deputy Secretary



जयनारायण व्यास विश्वविद्यालय, जोधपुर  
Jai Narain Vyas University, Jodhpur

**DEPARTMENT OF BOTANY  
CENTER OF ADVANCED STUDY**

**Progress Report (IV-year) Under CAS Program**

**Thrust Areas:**

Bio-resources of Plants and Microbes of Desert Areas

Taxonomy, Ecology and Molecular aspects of Desert Plants

Prof. S. Sundaramoorthy – Coordinator

Prof. Pawan Kumar Kasera – Dy. Coordinator



## Research in Progress

The Department Council discussed the research endeavours for achieving the targets in CAS program to a satisfactory level. Accordingly, five sub teams have been formed so as to cover all aspects of Departmental research activities that fall within the ambit of the thrust areas. The teams formed and their main areas of research are as under:

### A. Bio resources of Desert Plants

- i. Prof. P.K. Kasera, In-Charge
- ii. Dr. H.R. Dagla
- iii. Dr. Vinod Kataria
- iv. Dr. Suman Parihar
- v. Dr. Ashok Patel
- vi. Dr. Rachana Dinesh Nee Modi
- vii. Dr. Sumitra Kumari Choudhary

### B. Microbes of Desert Areas

- i. Prof. H.S. Gehlot, In-Charge
- ii. Dr. Praveen Gehlot
- iii. Dr. Sharad Bissa
- iv. Dr. NishaTak
- v. Dr. Kamana Sharma
- vi. Mr. AlkeshTak

### C. Taxonomy

- i. Dr. G.S. Deora, In-Charge
- ii. Ms. Seema Sen

### D. Ecology of Plants

- i. Prof. S. Sundramoorthy, In-Charge
- ii. Dr. Santosh K. Mehar

### E. Molecular aspects of Desert Plants

- i. Dr. Gyan Singh Shekhawat, In-Charge
- ii. Dr. Shweta Jha
- iii. Dr. Kheta Ram
- iv. Ms. Meena

### F. Non-Thrust Areas:

#### Stress Physiology

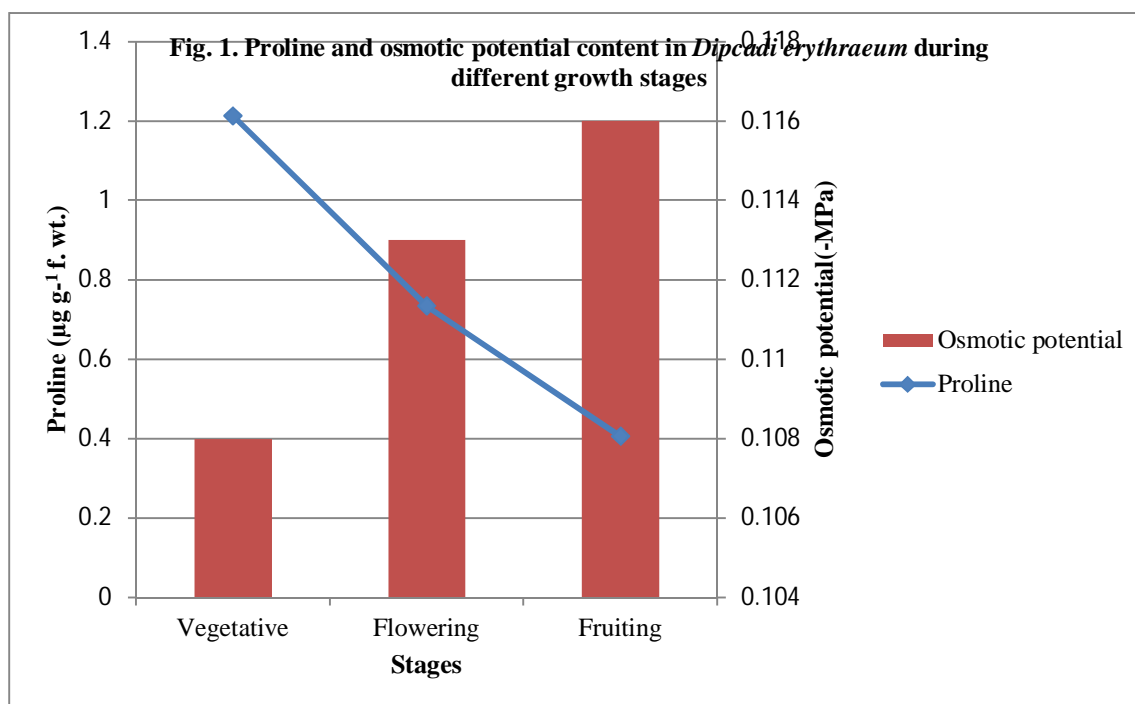
- i. Dr. Bhana Ram Gadi, In-Charge
- ii. Mr. Ramesh

The area-wise research progress achieved is briefly reported:

#### A. Thrust area: Bio resources of Desert Plants:

**Group-I: Prof. Pawan K. Kasera** [Plant Ecology Laboratory]

**Primary and secondary metabolic products in selected medicinal plants**



It is evident from Fig. 1 that in *D. erythraeum* proline and osmotic potential were maximum during vegetative stage and decreased simultaneously with an advancement of growth stages (flowering and fruiting).



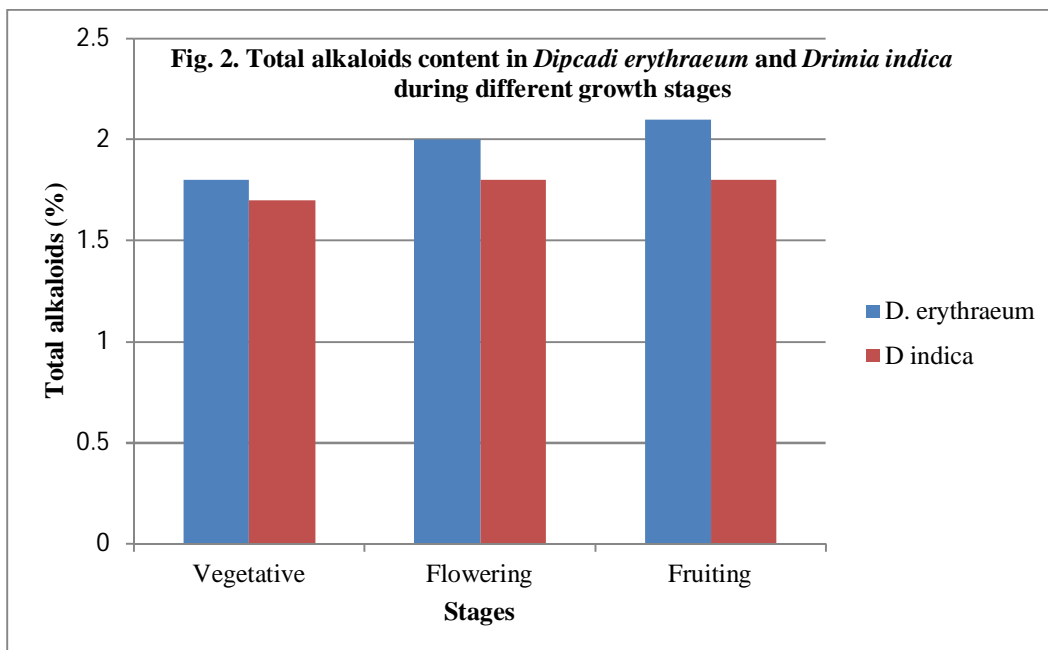


Fig. 2 shows that total alkaloids values ranged from 1.8 to 2.1 and 1.7 to 1.8% in *D. erythraeum* and *D. indica*, respectively. The values remain almost same during all growth stages. Bulbs of *D. erythraeum* accumulated higher amount as compared to *D. indica*.

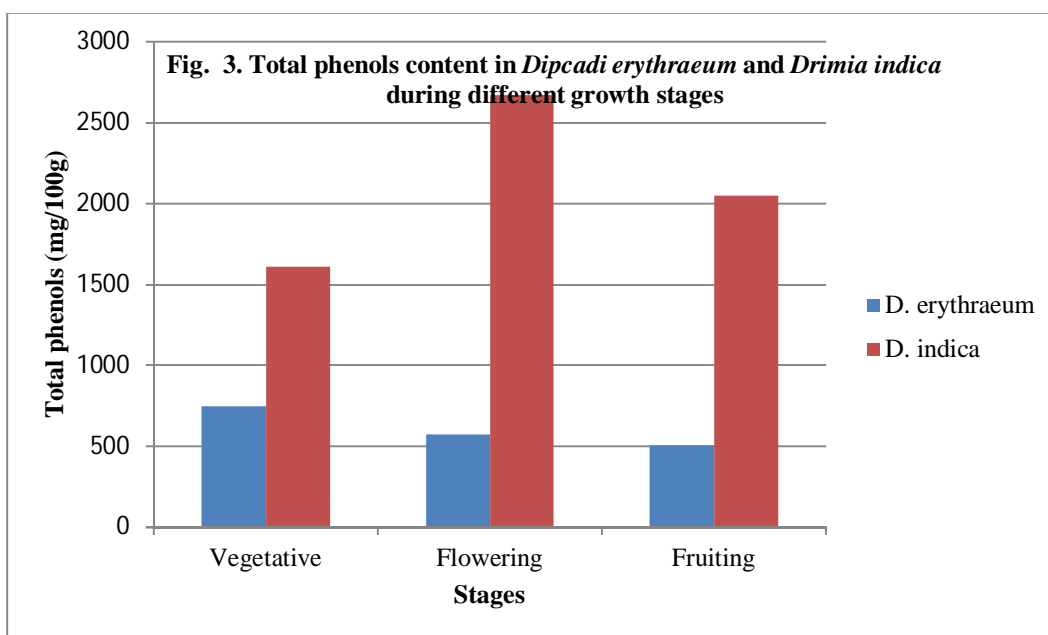
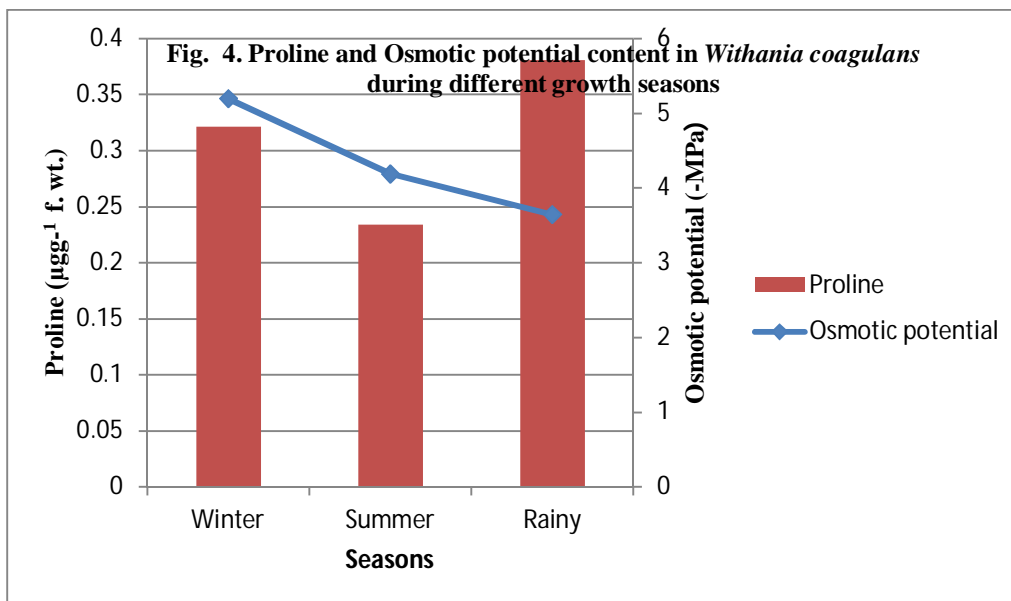
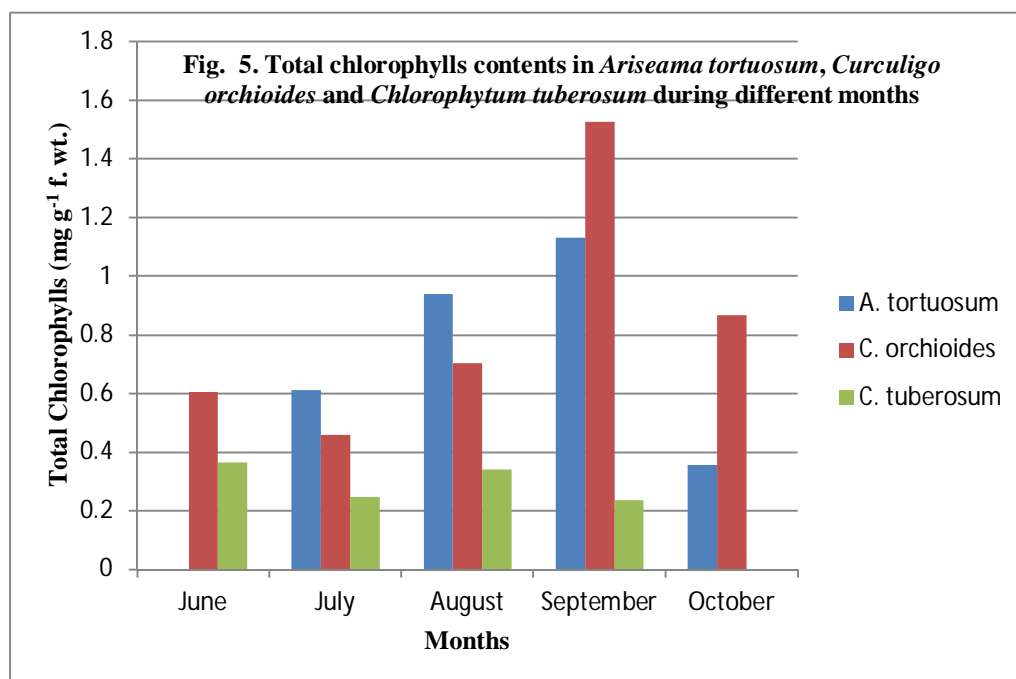


Fig. 3 reveals that total phenols were maximum during vegetative in *D. erythraeum* whereas during flowering in *D. indica*. The values were higher in *D. indica* bulbs as compared to *D. erythraeum*.

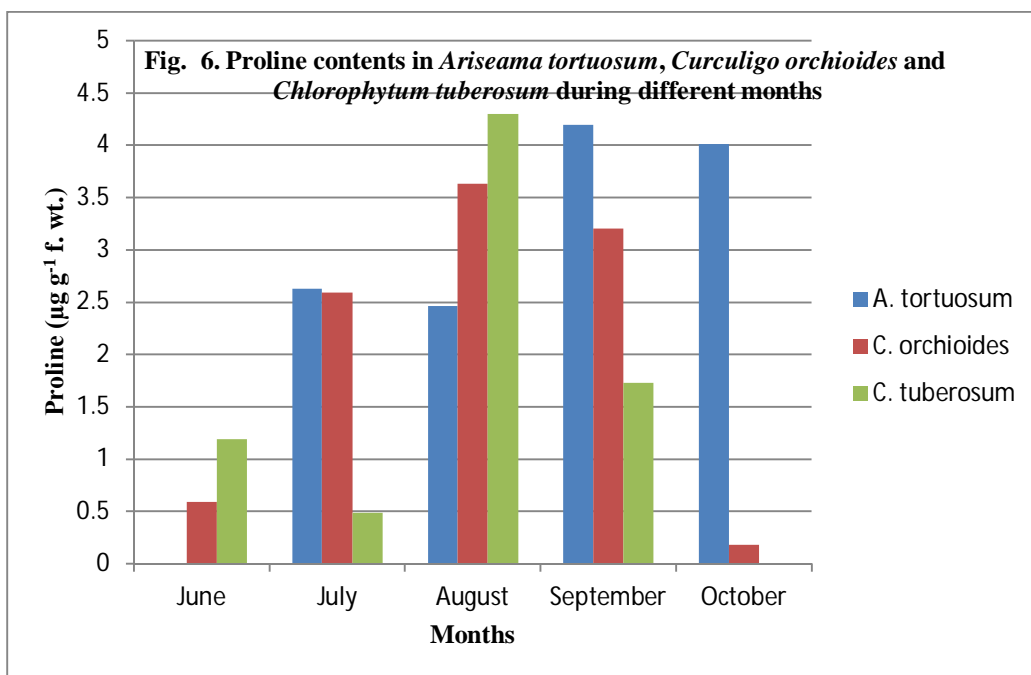


The data presented in Fig. 4 reveals that in *W. coagulans* the values of osmotic potential and proline were maximum during rainy season and both indicates negative correlations with each other

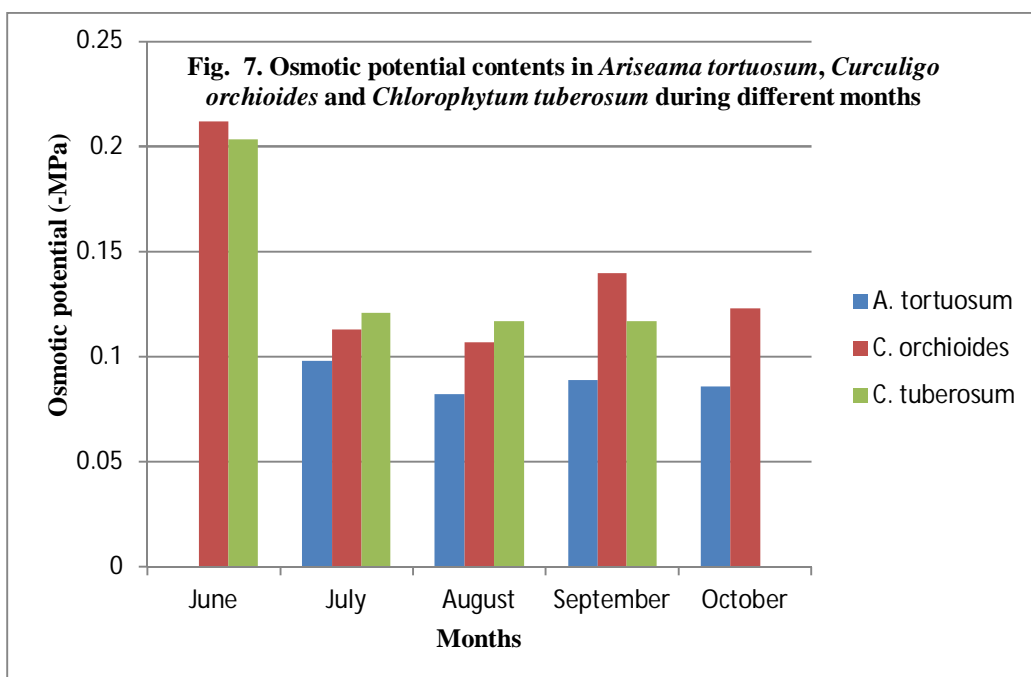


The maximum values of total chlorophylls were observed during September in *A. tortuosum* and *C. orchoides* where as in *C. tuberosum* during June (Fig. 5).





Data presented in Fig. 6 shows that in *C. orchioides* and *C. tuberosum*, the highest values of proline content were observed during August whereas in *A. tortuosum* during September.

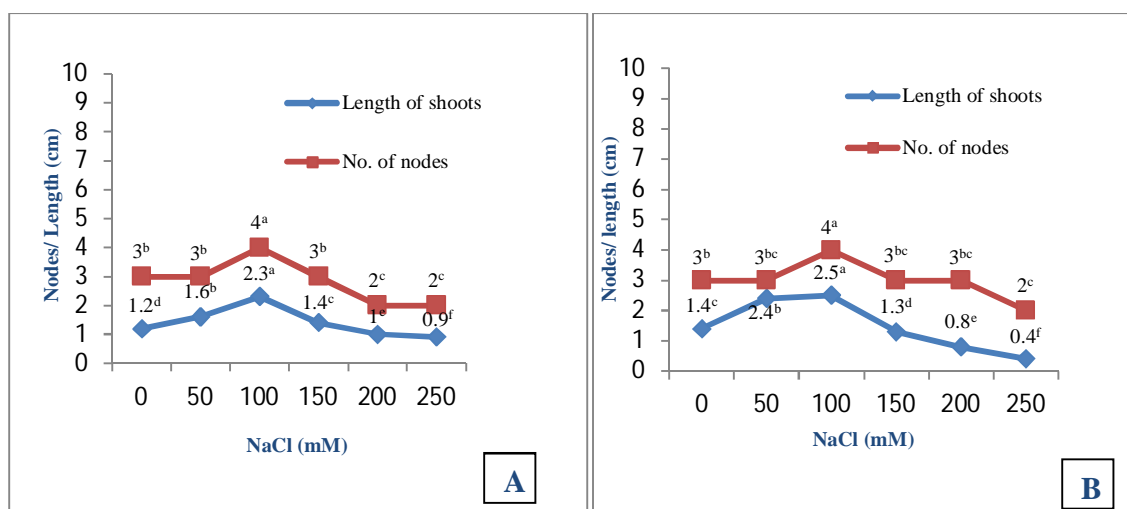


*C. orchioides* and *C. tuberosum* exhibited maximum values of osmotic potential during June where as in *A. tortuosum* during July (Fig. 7).

**Group-II: Prof. H.R. Dagla [Plant Biotechnology and Molecular Biology (PBMB) Laboratory]**

**Effect of NaCl on growth and development of *in vitro* cultured shoots of *Haloxylon recurvum* and *H. Salicornicum***

Cotyledonary node of *in vitro* germinated seedlings were used as explants for analysis of growth and development on different concentrations of NaCl. Seedlings were cultured on hormone free MS culture medium for one week. Cotyledonary node of *in vitro* germinated seedlings were excised and inoculated on MS culture medium containing BAP (4 $\mu$ M BAP and 1 $\mu$ M NAA for *H. recurvum* and 8  $\mu$ M BAP for *H. salicornicum*) and different concentration of NaCl, for four weeks. On the basis of number of nodes, axillary shoots and length of shoots and leaves, 100mM NaCl was found to be suitable for growth and development of *in vitro* cultured shoots of *Haloxylon recurvum* and *H. Salicornicum*.



**Fig.** Effect of NaCl on shoot length and node number of *in vitro* cultured shoots: (A) *Haloxylon recurvum* and (B) *H. Salicornicum*



**Group-III: Dr. Vinod Kataria, Dr. Suman Parihar, Dr. Ashok Kumar Patel, Dr. Sumitra Choudhary and Dr. Rachana Dinesh nee Modi (Biotechnology Unit)**

**(i) Dr. Vinod Kataria:**

**In Vitro Studies, Micromorphological Studies, Molecular Analysis and Transcriptome analysis of some Plants of Stressed Ecosystem**

The following protocols were developed for conservation and multiplication of some multipurpose trees of arid environments.

**1. *Bauhinia racemosa***

*Bauhinia racemosa* Lam. is a medicinal tree in family of Caesalpiniaceae, A micropropagation system for *Bauhinia racemosa* Lam. was developed involving axillary shoot proliferation and ex vitro rooting using nodal explants obtained from mature tree. MS medium with 3.0 mg l<sup>-1</sup> BA (6benzyladenine) was optimum for shoot bud induction. For shoot multiplication, mother explants were transferred repeatedly on medium containing low concentration of BA (0.75 mg l<sup>-1</sup>). In vitro regenerated shoots were rooted under ex vitro conditions treated with 400 mg l<sup>-1</sup> IBA (indole-3-butyric acid) for 7 min on sterile soilrite. After successful hardening in greenhouse, ex vitro rooted plants were transferred to the field conditions with &85% of survival rate. Micromorphological changes were observed on leaf surface i.e. development of vein density and trichomes and stomatal appearance, when plants were subjected to environmental conditions.

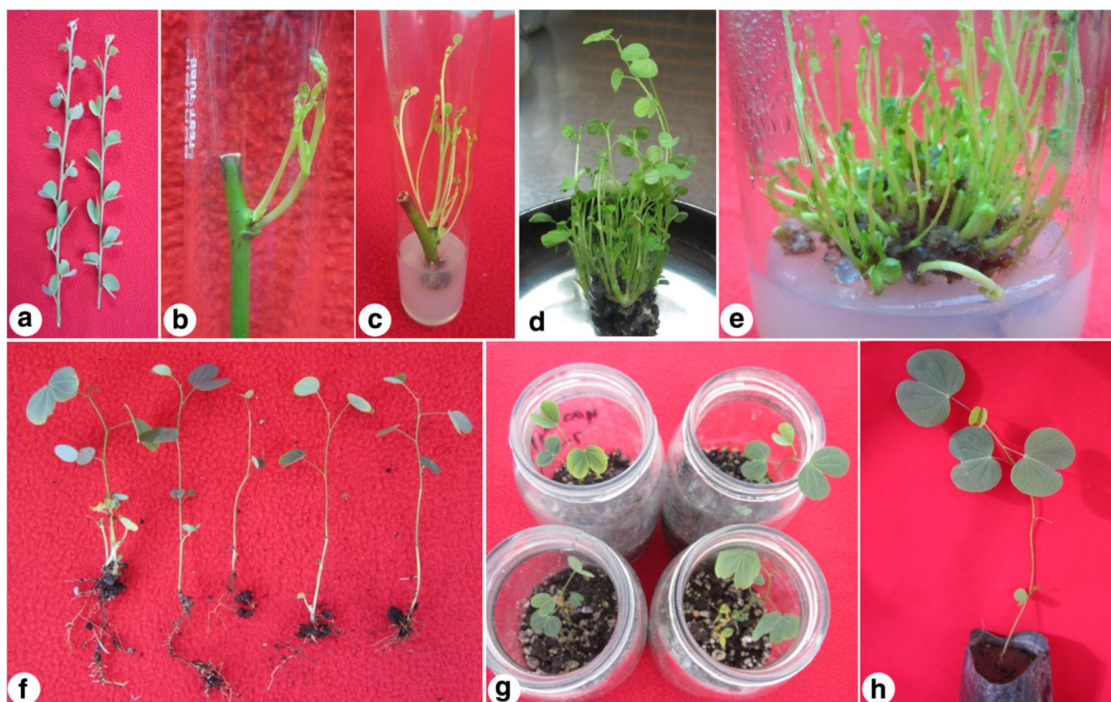


Fig. 1 a Young branches with axillary nodes. b Induction of axillary shoots on MS + 3 mg l<sup>-1</sup> of BA. c Repeated transfer of mother explants on MS + 0.75 mg l<sup>-1</sup> of BA. d, e Shoot multiplication and subculturing on MS medium supplemented with BA (0.25 mg l<sup>-1</sup>), Kin (0.25 mg l<sup>-1</sup>), NAA (0.1 mg l<sup>-1</sup>) and TDZ (0.004 mg l<sup>-1</sup>). f Ex vitro rooting in shoots pulse treated with IBA (400 mg l<sup>-1</sup>) for 7 min. g Acclimatization of ex vitro rooted plantlets under greenhouse conditions. h Transfer of a successfully hardened plant into polybag

## 2. *Prosopis cineraria*

*Prosopis cineraria* (L.) Druce, which belongs to the family Fabaceae, is an important tree of the arid and semiarid regions. This study reports the identification and characterization of microsatellite markers in *P. cineraria* by cross species amplification of 18 microsatellite markers developed in *P. chilensis*, *P. alba*, and *P. flexuosa*.

We identified and characterized 10 microsatellite markers in *P. cineraria* by cross species amplification. Total 18 Simple Sequence Repeat (SSR) primer pairs developed in *P. chilensis*, *P. alba*, and *P. flexuosa* were used to amplify SSR loci in *P. cineraria*. Out of eighteen SSR markers tested, ten (55.5%) amplified recognizable amplicons. The number of alleles detected at each locus ranged from one to four, a total of 24 with an average of 2.4 alleles. Observed heterozygosity (*Ho*) and expected heterozygosity (*He*) values varied from 0.14 to 0.85 and 0.21



to 0.56 with an average of 0.47 and 0.37, respectively. The polymorphic information content (PIC) values ranged from 0.49 to 0.78 with an average of 0.66. Of the nine polymorphic markers, seven were highly informative and polymorphic (PIC >0.5). These microsatellite markers are characterized for the first time in *P. cineraria*. All microsatellite markers identified in this study may be useful in comparative genomics and population genetics studies of *P. cineraria*.

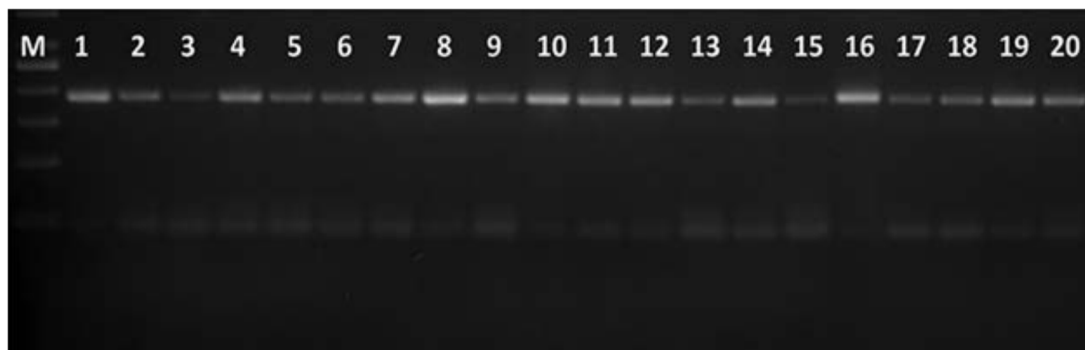


Figure 1. A gel image showing amplification patterns in 20 *P. cineraria* samples using SSR primer Mo07. M ¼ 50 bp DNA, 1 to 20 - *P. cineraria* samples.

### 3. *Farsetia macrantha* Blatt. & Hallb.:

An erect, perennial medicinal undershrub, commonly known as motio-hiran chobbo belongs to the family Brassicaceae. *F. macrantha* is an endemic plant species and categorized as rare and threatened species. The whole plant is used as rheumatism and as a cooling medicine. The *in vitro* propagation of this plant is via Cotyledonary nodes segments excised from 2-3 weeks old aseptically grown seedlings served as explant and cultured on MS basal media containing 3% sucrose and additives (50.0 mg l<sup>-1</sup> of ascorbic acid, and 25.0 mg l<sup>-1</sup> each of citric acid L-arginine and adenine sulfate). The multiplication of shoots has been done on 0.5 mg/l of BAP + 0.25 mg/l of Kin and subculture within 14-15 days. About 70% of the shoots of *F. macrantha* rooted *in vitro* on half strength MS salts + 2.0 mg/l of IBA.

### 4. *Dipterygium glaucum* Decne.:

*D. Glaucum* locally known as “Phel” belongs to the family Capparaceae is medicinally an important shrub and also a source of volatile alkaloids, flavinoides, cumarins and cyanides. The whole plant is used to cure respiratory diseases, skin redness and irritation, wounds, unhealthy

patchy skin, chronic fever. It has multiple medicinal uses like antispasmodic, analeptic, antileishmanial, insecticidal, antibacterial and antifungal. Ecologically it is also an important plant plays a role as a soil binder. The nodal explant and leaves of *Dipterygium glaucum* were inoculated on MS medium supplemented with 2,4-D (0.2-2 mg/l) and NAA (0.2-2 mg/l) for callus induction. For differentiation of shoot, proliferated callus was transferred to MS medium fortified with 0.25 mg/l of BAP and 0.1 mg/l of Kin and NAA. Further work for plant regeneration is in progress.



*Tylophora indica* : (a) Bud break (b) Shoot multiplication



*Farsetia macrantha* : (a) Plant in habitat (b) seedling as

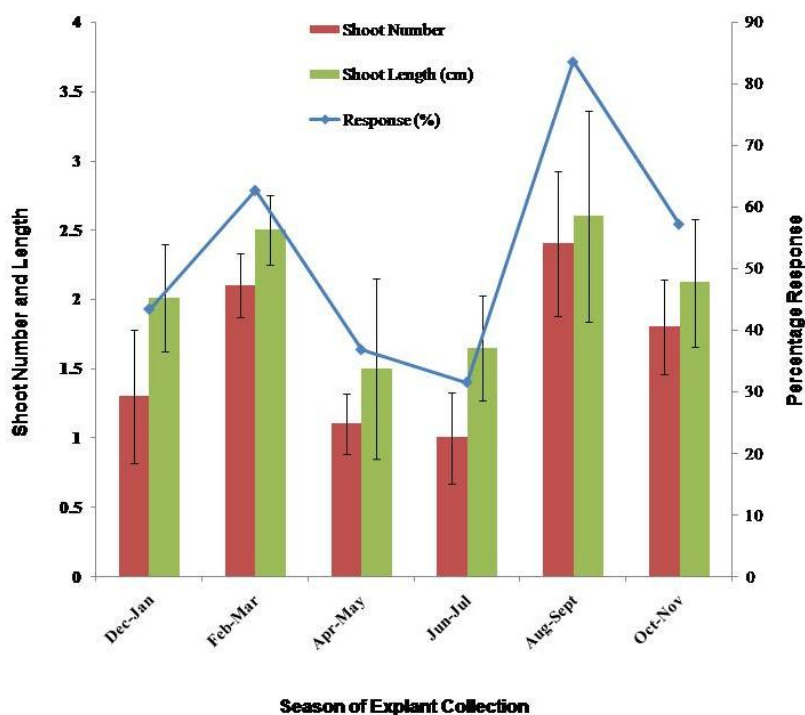
(ii) **Dr. Suman Parihar**

**Micropropagation of *Ceropegia bulbosa***

*Ceropegia bulbosa* (Roxb.) commonly known as khedula, belongs to family Apocynaceae, is a medicinally important plant of Thar Desert of Rajasthan. Murashige and Skoog (1962) medium supplemented with 6-benzyladenine (BA) ( $2.0 \text{ mg l}^{-1}$ ) was found optimum for axillary shoot bud induction with 83.4 % response. The nodal shoot segments collected during rainy



season (August-September) was found to be the best for initiation of culture. Further shoots were multiplied through repetitive (3-4 times) transfer of the original explant and by subculture of the *in vitro* generated shoots. Maximum number of shoots  $5.7 \pm 0.78$  with shoot length of  $3.6 \pm 0.82$  cm was achieved on MS medium augmented with combination of cytokinins i.e. BA  $0.25 \text{ mg l}^{-1}$  + KN  $0.25 \text{ mg l}^{-1}$  + IAA  $0.1 \text{ mg l}^{-1}$  and additives ( $50.0 \text{ mg l}^{-1}$  ascorbic acid,  $25 \text{ mg l}^{-1}$  each of citric acid, arginine and adenine sulphate). *In vitro* produced shoots were harvested and washed with water to remove adhered agar to avoid bacterial and fungal contamination. The basal part of these shoots was pulsed with different concentrations of IBA for 3-4 minutes and subsequently transfers to bottles containing soilrite and placed near pad section of the green house. The maximum frequency (73.5 %) of root induction with  $3.1 \pm 0.56$  roots with root length of  $2.3 \pm 0.44$  cm. was recorded when the shoots were treated with  $250 \text{ mg l}^{-1}$  of IBA for 3 minutes. The rooted shoots were successfully hardened in the green house condition (RH 75-80% with  $26-28^\circ\text{C}$  temperature) and about 80 % shoots were transferred to the garden.



**(iii) Dr. Ashok Patel**

**Transverse thin cell layer induced micropropagation of *Caralluma edulis* (Edgew.) Benth. & Hook. f., a rare and nutraceutically important plant of extreme arid regions**

*Caralluma edulis* (Edgew.) Benth. & Hook. f., (family Asclepiadaceae) is an edible plant of the extreme arid regions of the Thar Desert. It is locally known as “**Pimpa**” and habitat/region in which it grows is said as **Pimpthali**. This plant is a rich source of anti-oxidants and attracted interest of several nutraceutical and cosmetic industries. *C. edulis* has been historically used as emergency food and appetite suppressor during the times of scarcity in arid regions for centuries. Anthropogenic activities on established sand dunes, habitat destruction and harvesting/grazing of complete plant prior to its reproductive maturity restrict the propagation by sexual means. Poor reproduction and seed set have put adverse pressure on native populations of this endemic and slow multiplying plant of Indian Thar desert. Therefore, an alternative method is necessary to meet the growing pharmaceutical needs and its sustainable utilization. Plant tissue culture includes transverse thin cell layer (tTCL) technique that provides an opportunity to produce large number of plants in a short period of time by using a minimum of starting plant material and hence has a minimal impact on its native populations.

For transverse thin cell layer culture, the nodal as well as internodal portions of shoot segment were transversely sliced in to pieces of about 1–4 mm (thickness), and these slices were used as tTCL explants for shoot regeneration. Of the concentrations of cytokinins studied, MS medium containing BAP ( $1.0 \text{ mg l}^{-1}$ ) proved the best in terms of percentage response (93.0 %) and number of shoot buds ( $4.2 \pm 0.78$ ) from tTCL nodal explants. For further multiplication of shoots, explants along-with the induced shoots were transferred to the medium containing different combinations of PGRs. Among the all combinations tested, MS medium having a combination of BAP and Kin ( $0.25 \text{ mg l}^{-1}$  each) + IAA ( $0.1 \text{ mg l}^{-1}$ ) was found the best and produced the higher number of shoots ( $23.6 \pm 1.34$  per tTCL explant) of an average length ( $6.09 \pm 0.67 \text{ cm}$ ). In comparison to inverted orientation, significantly higher ( $P < 0.05$ ) number of shoots per tTCL explant was observed in upright oriented tTCL nodal explants. The internodal thin cell layer explants were also tried for shoot differentiation using different concentrations and combinations of PGRs. On all the combinations of PGRs tried, only callus was induced from tTCL explants and the callus further failed to differentiate shoots. The tTCL raised shoots



were rooted *ex vitro* on pulse treatments with freshly prepared IBA and NOA (50 and 100 mg L<sup>-1</sup>) for 4 min. The rooted plantlets were acclimatized and hardened successfully in the green house.

**(iv) Dr. Sumitra Choudhary**

**Assessment of genetic stability of wild female plant of *Momordica dioica* regenerates**

In vitro genetic stability of wild female plant of *Momordica dioica* regenerates (developed from *in vitro* maintained shoot cultures) was assessed by two DNA-based fingerprinting techniques i.e. RAPD and ISSR. Of 10 RAPD and 12 ISSR primers screened 5 primers from each produce 2-4 scorable/reproducible bands. A total of 15 and 16 amplicon/fragments were generated with an average 3 and 3.2 band per RAPD and ISSR primer respectively. Among all the amplicons no polymorphism was observed; confirm the reliability of micropropagation method for wild female plant of *Momordica dioica* as shoot cultures maintains the genetic integrity even after prolonged period more than three years under *in vitro* conditions without any somaclonal variations. Cultures were maintained on agar gelled [0.8% (w/v) bacteriological grade, Qualigens Fine Chemicals, Mumbai, India] MS medium having sucrose 3% (w/v), additives (50 mg L<sup>-1</sup> ascorbic acid, 25 mg L<sup>-1</sup> each of adenine sulphate, citric acid and L-arginine (HiMedia®, Mumbai, India)) and PGRs ( BAP (0.5 mg L<sup>-1</sup>), IAA (0.1 mg L<sup>-1</sup>)). The probable reason for this attribute may be the regeneration of plants through organized (pre-existing meristems), which is supposed to maintain strict genotypic and phenotypic stability under tissue culture conditions ). In addition, maintenance of shoot cultures on lower levels of PGRs (cytokinin and auxin).

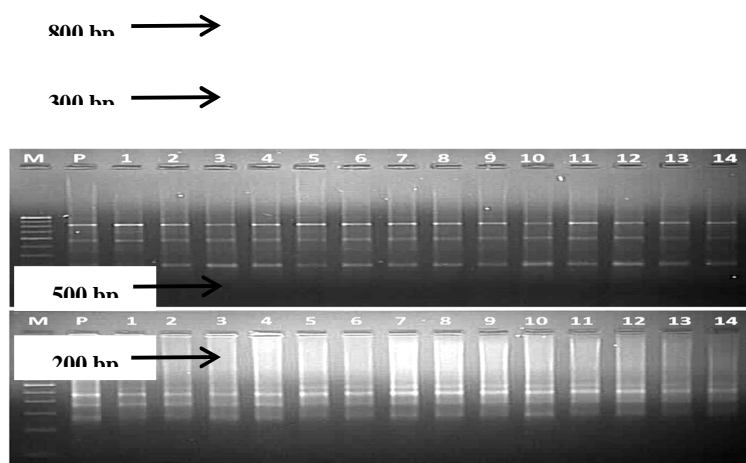


Figure 1: Shoot multiplication by subculturing of in vitro raised shoot-clumps on MS + BAP ( $0.5 \text{ mg L}^{-1}$ ) + IAA ( $0.1 \text{ mg L}^{-1}$ ) and additives; Figure 2: Ex vitro rooted shoot in Soilrite® on pulse treatment with IBA ( $250 \text{ mg L}^{-1}$ ) for 5 min; Figure 3: Validation of genetic homogeneity in micropropagated plants of wild female *M. dioica*; DNA amplification pattern obtained with RAPD primer OPG-06; DNA amplification pattern obtained with ISSR primer UBC-821; Lane M: 100 bp ladder, Lane P: Mother plant, Lanes 1-14: Micropropagated plants.

**(v) Dr. Rachna Dinesh nee Modi**

**Molecular characterization of germplasm and also in vitro studies of selected plants of arid and semi arid region of Rajasthan i.e. Date palm and Pomegranate.**

**(i) In vitro propagation and ex vitro rooting of *Punica granatum***



A micropropagation protocol for plant regeneration of a selected genotype of *Punica granatum* cv. Jalore seedless has been developed using rapid axillary bud proliferation followed by ex vitro rooting. The nodal segments obtained from a field grown mature plant were used as explants. The highest bud breaking response (82.8%) was recorded on Murashige and Skoog (MS; 1962) medium containing BAP ( $3.0 \text{ mg l}^{-1}$ ). The shoots were further multiplied by subculturing of in vitro raised shoots on MS medium containing cytokinins (BAP or Kin) in combination with an auxin (IAA). Amongst the combinations tested, MS medium containing BAP ( $0.5 \text{ mg l}^{-1}$ ) and IAA ( $0.1 \text{ mg l}^{-1}$ ) was found the best and produced the maximum number of shoots ( $14.2 \pm 1.03$  per culture vessel) with an average length ( $5.50 \pm 0.54 \text{ cm}$ ), after 5 weeks of culture. The regenerated shoots were rooted under vitro as well as ex vitro conditions. About 72.9% shoots were rooted in vitro on half-strength MS medium containing IBA ( $2.0 \text{ mg l}^{-1}$ ) and activated charcoal ( $200 \text{ mg l}^{-1}$ ). In comparison to in vitro, a higher percentage (85.2%) of shoots was rooted ex vitro and formed a maximum number ( $5.2 \pm 0.78$ ) of roots per shoot on treating the shoot base with IBA ( $300 \text{ mg l}^{-1}$ ) for 5 min. The incorporation of ex vitro rooting technique in a micropropagation protocol is more emphasized due to its cost-effectiveness, less labour intensiveness and it also saves time. The rooted plantlets by both the methods were acclimatized successfully in the green house and transferred to the nursery. The discussed micropropagation protocol could be employed for the large scale propagation of this seedless genotype of the *Punica granatum*, an economically important horticultural fruit plant.

**(ii) Propagation of female Date Palm (*Phoenix dactylifera*) through somatic embryogenesis**

Date-Palm (*Phoenix . dactylifera* L.) is an important horticultural plant of arid/semi-arid regions. A protocol has been developed for *in vitro* regeneration of selected mature female plants of Date-Palm suited for climatic conditions of Rajasthan. The axillary shoot buds (measuring 0.5-2.0 cm) were used as explants for culture initiation. After 5-6 months the cultured buds produced creamy white, slow growing callus on MMS medium augmented with  $10.0 \text{ mg l}^{-1}$  of 2,4-D and additives.. The cultures were transferred to MMS medium containing  $3.0 \text{ mg l}^{-1}$  of 2,4-D,  $0.5 \text{ mg l}^{-1}$  each of iP and kinetin, 4.0% sucrose, 1.0% glucose and 2.0%

maltose and additives for the proliferation of callus. The granular embryogenic cell cultures differentiated on hormone-free full strength of MMS salts containing 4.0% sucrose, 1.0% glucose and 2.0% maltose and additives. The *in vitro* raised plantlets were hardened in the green house and then transferred to soil in polybags.

## **B. Microbes of Desert Areas**

### **1. In-Charge of Thrust area: Prof. Hukam S. Gehlot**

#### **Group-I**

A. Characterization of Native rhizobia associated with wild legumes of Thar Desert (Dr. H.S.Gehlot)

B. Genomics of native rhizobia and their symbiotaxonomy (Dr. Nisha Tak)

C. Characterization of symbiotic genes and structure of nodules (Mr. Alkesh Tak)

#### **Group-II**

D. Biodiversity and molecular characterization of wild mushroom from diverse regions of Indian Thar Desert (Investigator: Dr. Praveen Gehlot)

#### **Group-III**

E. Antimicrobial potential of some desert plants (Dr. Sharad Bissa)

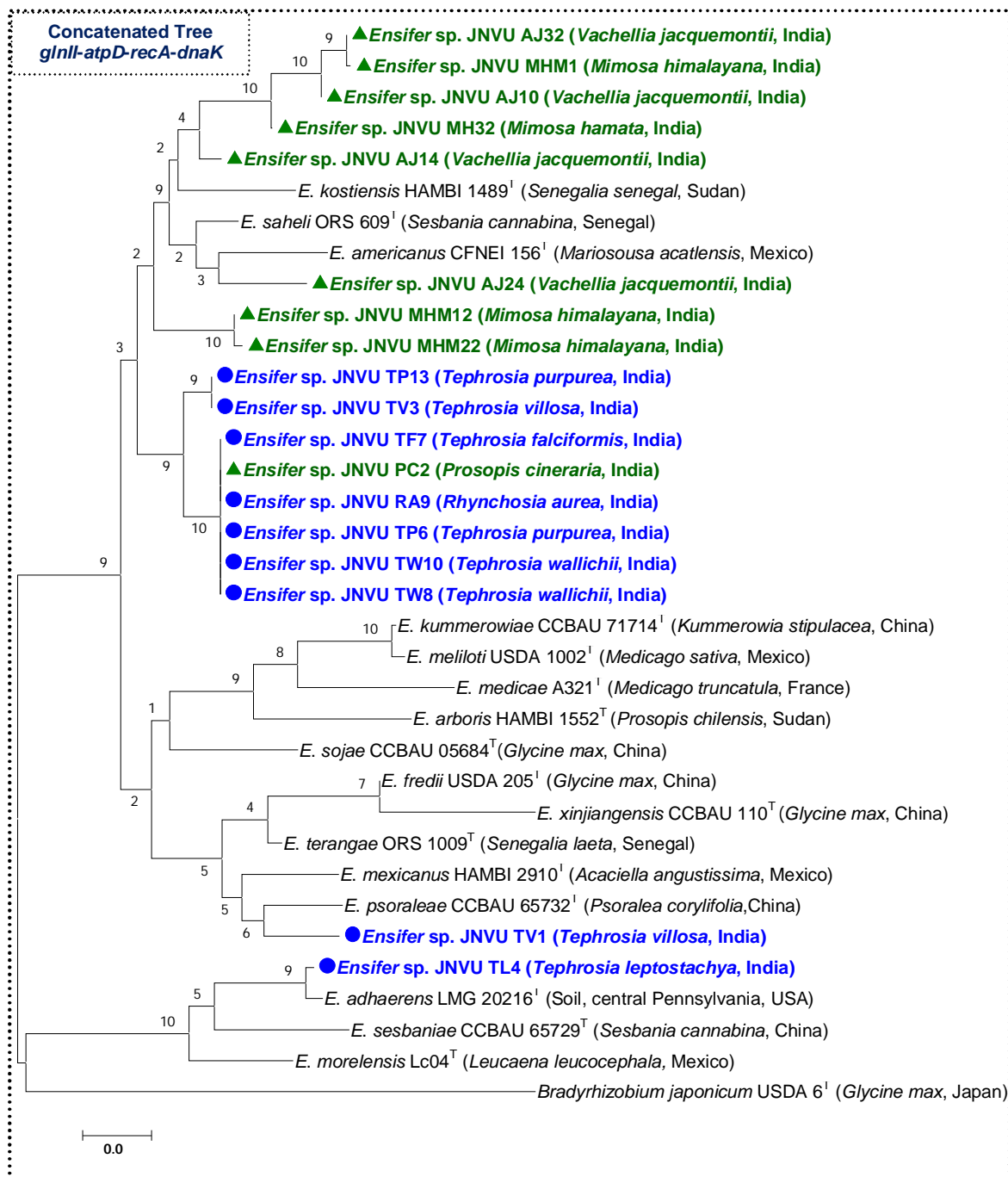
### **Group-I (BNF and Microbial Genomics Lab.) and its objectives**

1. Characterization of Native rhizobia associated with wild legumes of Thar Desert
2. Genomics of native rhizobia and their Symbiotaxonomy.
3. Characterization of symbiotic genes and structure of nodules

**Summary of Group-I (BNF and Microbial Genomics Lab.) work:** After molecular identification of root nodule microsymbionts associated with native legumes of Indian Thar Desert, the novelty of RNB strains was defined using multi locus sequence analysis of 3-4 housekeeping including protein-coding genes. Since our laboratory is working on number of native legumes belonging to all the three subfamilies and we have ongoing projects from DST and UGC, the UGC-SAP-II-CAS program additionally helped us to achieve the long-term objectives and specifically strengthen our microbial storage facilities to accommodate large number of isolated and well characterized microsymbionts from all over the country. In this report we are presenting Symbiotaxonomy/host range, robust phylogenetic trees based on number of housekeeping genes as well as symbiotic genes from number of microsymbionts isolated from several native legumes worked out under other projects as well as partial support from UGC-SAP-CAS-I program. UGC-SAP-CAS-I program has been duly acknowledged in the papers published in high impact factor SCI journals in addition to other funding agencies.



**Comparative Concatenated Housekeeping Gene(s) Analysis:** Concatenated phylogenetic tree constructed using *glnII-atpD-recA-dnaK* gene sequences of various Thar Desert-*Ensifer* revealed that tree (species of *Mimosa* and *Vachellia*) rhizobial strains formed a separate clade and distinct lineages close to *E. saheli* and *E. kostiensis*. The maximum percentage sequence similarity of these *Ensifer* strains with various type strains based on individual and concatenated sequences of housekeeping gene is given in Table 1. The *Tephrosia-Ensifer* strains formed four MLSA phylogenetic types. *Ensifer* sp. TV1 and *Ensifer* sp. TL4 formed a discrete lineage close to *E. psoraleae* and *E. adhaerens* respectively. Interestingly the mimosoid-*Ensifer* sp. PC2 clustered along with other papilionoid-*Ensifer* strains in a novel clade. Probably the alkalinity and aridity of the Thar Desert are acting as driving force for diversification of *Ensifer* strains nodulating native legumes of this region.



**Fig. 2 Comparative phylogenetic analysis based on symbiotic gene (*nodA*) of selective Thar-Desert-Ensifer strains isolated from various native and invasive legume hosts growing in Western Rajasthan.**



**Table 1: The maximum percentage sequence similarity of selective Thar Desert-*Ensifer* strains with closest type strains based on housekeeping and symbiotic genes.\*\***

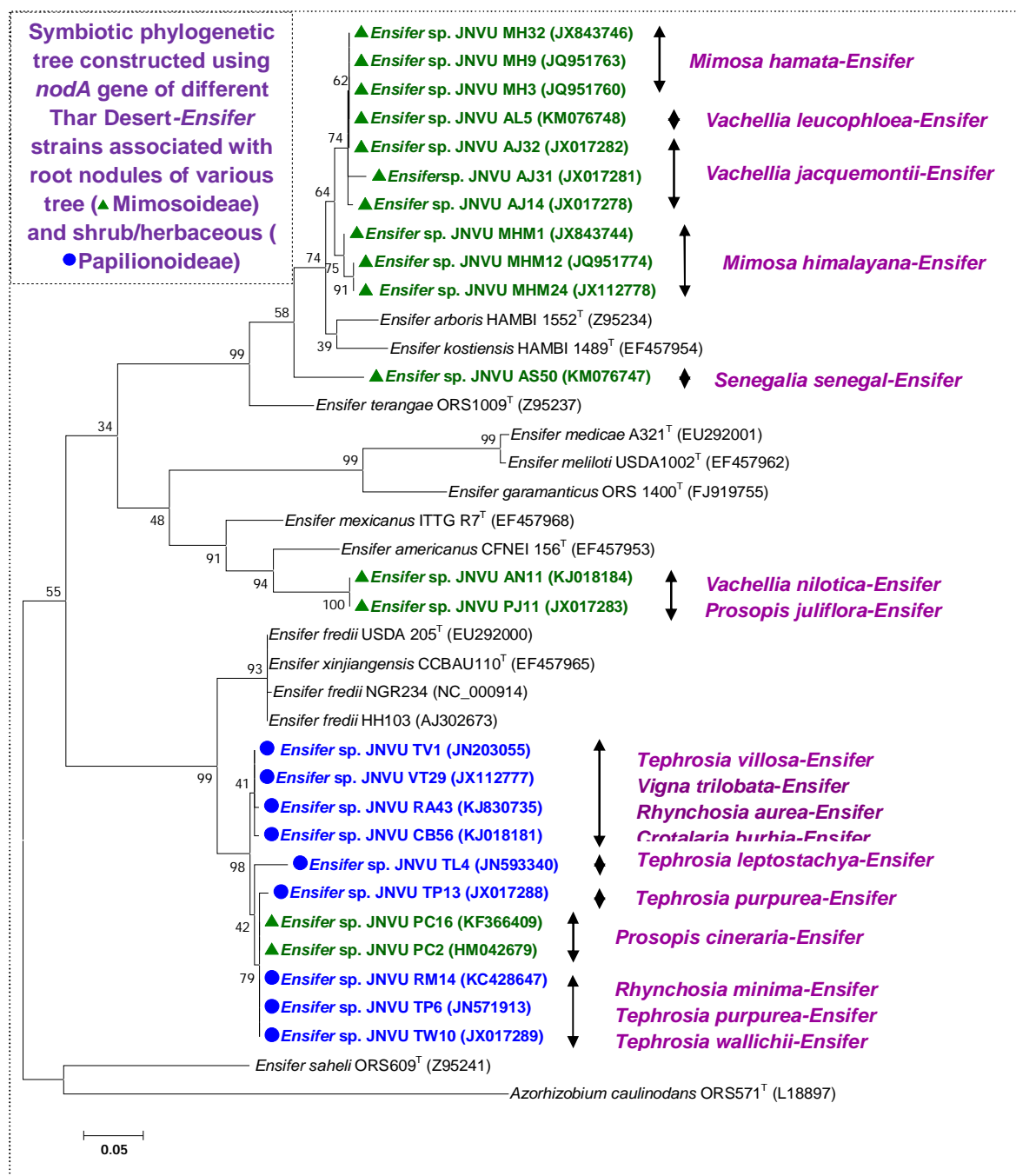
Gene Strain name	<i>rrs</i>	<i>recA</i>	<i>atpD</i>	<i>glnII</i>	<i>dnaK</i>	Concatenated <i>glnII, atpD, recA and dnaK</i>	Concatenated <i>rrs, glnII, atpD, recA and dnaK</i>	<i>nodA</i>	<i>nifH</i>
TF7 TP6 TW10 TW8	<i>E. saheli</i> and <i>E. kostiensis</i> (99.7)	<i>E. saheli</i> (96.0)	<i>E. saheli</i> (96.4)	<i>E. saheli</i> (95.5)	<i>E. saheli</i> (93.7)	<i>E. saheli</i> (96.0)	<i>E. saheli</i> (98.0)	<i>E. fredii</i> and <i>E. xinjiangensis</i> (92.6)	<i>E. xinjiangensis</i> and <i>E. sojae</i> (97.3)
TV3 TP13	<i>E. kostiensis</i> (99.7)and <i>E. saheli</i> (99.6)	<i>E. saheli</i> (96.0)	<i>E. saheli</i> (95.8)	<i>E. saheli</i> (95.3)	<i>E. saheli</i> (92.2)	<i>E. saheli</i> (95.6)	<i>E. saheli</i> (97.8)	<i>E. fredii</i> and <i>E. xinjiangensis</i> (91.8)	<i>E. xinjiangensis</i> and <i>E. sojae</i> (97.0)
TV1	<i>E. terangae</i> (99.7)	<i>E. psoraleae</i> (99.0)	<i>E. psoraleae</i> (96.7)	<i>E. garamanticus</i> (95.6)	<i>E. terangae</i> (93.2)	<i>E. psoraleae</i> (95.8)	<i>E. terangae</i> (97.7)	<i>E. fredii</i> and <i>E. xinjiangensis</i> (93.0)	<i>E. xinjiangensis</i> and <i>E. sojae</i> (96.6)
TL4	<i>E. adhaerens</i> (100)	<i>E. adhaerens</i> (98.2)	<i>E. adhaerens</i> (99.4)	<i>E. adhaerens</i> (99.1)	----	<i>E. adhaerens</i> (99.2)	<i>E. adhaerens</i> (99.7)	<i>E. fredii</i> and <i>E. xinjiangensis</i> (90.1)	<i>E. xinjiangensis</i> and <i>E. sojae</i> (98.5)
AJ10	<i>E. saheli</i> (99.6)	<i>E. saheli</i> (98.1)	<i>E. saheli</i> (95.01)	<i>E. saheli</i> (96.1)	<i>E. saheli</i> (92.9)	<i>E. saheli</i> (95.6)	<i>E. saheli</i> (97.7)	<i>E. arboris</i> (95.0)	<i>E. kostiensis</i> (98.4)
AJ14	<i>E. saheli</i> (100)	<i>E. kostiensis</i> (96.4)	<i>E. saheli</i> (97.1)	<i>E. saheli</i> (97.0)	<i>E. saheli</i> (94.3)	<i>E. saheli</i> (97.0)	<i>E. saheli</i> (98.5)	<i>E. arboris</i> (95.0)	<i>E. kostiensis</i> (98.4)
AJ23	<i>E. saheli</i> (100)	<i>E. saheli</i> (97.9)	<i>E. saheli</i> (95.0)	<i>E. saheli</i> (96.6)	<i>E. saheli</i> (93.4)	<i>E. saheli</i> (95.9)	<i>E. saheli</i> (98.0)	<i>E. arboris</i> (92.0)	<i>E. kostiensis</i> (97.2)
AJ24	<i>E. mexicanus</i> (99.7) and <i>E. terangae</i> (99.7)	<i>E. saheli</i> (95.1)	<i>E. saheli</i> (94.4)	<i>E. saheli</i> (97.2)	<i>E. fredii</i> (95.1)	<i>E. saheli</i> (96.0)	<i>E. saheli</i> (97.7)	<i>E. kostiensis</i> (93.6)	<i>E. terangae</i> (94.3)
AJ18 AJ31 AJ32	<i>E. saheli</i> (99.8)	<i>E. saheli</i> (97.9)	<i>E. saheli</i> (95.0)	<i>E. saheli</i> (95.2)	<i>E. saheli</i> (92.4)	<i>E. saheli</i> (95.1)	<i>E. saheli</i> (97.6)	<i>E. arboris</i> (95.2)	<i>E. kostiensis</i> (98.4)

Abbreviations: TF, *Tephrosia falciformis*; TL, *Tephrosia leptostachya*; TP, *Tephrosia purpurea*; TV, *Tephrosia villosa*; TW, *Tephrosia wallichii*; AJ, *Vachellia*(*Acacia*) *jacquemontii*

**Multi locus sequence analysis (MLSA) data as published in Tak et al., 2016 (Systematic and Applied Microbiology) and Sankhla et al., 2017 (Plant and Soil)**

**Symbiotic *nodA* gene phylogenetic analysis:** Symbiotic (*nodA*) gene phylogeny of various Thar-Desert *Ensifer* strains isolated from different shrub/herbaceous (Papilionoideae) legumes revealed that these *Ensifer* strains have novel nodulation genes forming a separate clade distant from the clade of type strain *E. fredii* (Asiatic origin). Interestingly the *nodA* gene of mimosoid *Prosopis cineraria*-*Ensifer* also clustered in this clade. However on the basis of core genes these all strains showed genetic similarity with Old World *Ensifer* strains such as *E. saheli*, *E. kostiensis* and *E. teranga*. This incongruence is due to horizontal transfer of the *sym* genes. *Ensifer* strains nodulating species of *Mimosa* and *Vachellia* in the Thar Desert possess different *nodA* genes that are closer to *E. arboris* (Old World). Other tree rhizobia (*Senegalia senegal*-*Ensifer*) AS50 had *nodA* genes divergent from other tree rhizobia. Similarly *Vachellia nilotica*-*Ensifer* (AN11) and *Prosopis juliflora*-*Ensifer* (PJ11) *nodA* genes were divergent and showed close similarity with *nodA* gene of New World *Ensifer americanus* CFNEI 156<sup>T</sup> strain.





**Fig. 2 Comparative phylogenetic analysis based on symbiotic gene (*nodA*) of selective Thar-Desert-*Ensifer* strains isolated from various native and invasive legume hosts growing in Western Rajasthan.**

**Table 2: Authentication and Cross inoculation tests of novel Thar Desert-*Ensifer* strains on different wild and crop legume species.\*\*\***

Host plant species	Sub-family	Wild/crop	PAPILIONOIDEAE <i>TEPHROSIA-ENSIFER</i>							MIMOSOIDEAE TREE- <i>ENSIFER</i>						
			TF 7	TP 6	TW 10	TP 13	TP 18	TV 1	TL 4	PC 2	AJ 32	AJ 18	AJ 24	AL 5	MH 40	MH M2
<i>Tephrosia falciformis</i>	P	Wild	+	+	+	+	NT	+	NT	NT	NT	NT	NT	NT	NT	NT
<i>Tephrosia leptostachya</i>	P	Wild	+	+	+	NT	NT	+	+	NT	NT	NT	NT	NT	NT	NT
<i>Tephrosia purpurea</i>	P	Wild	+	+	+	+	+	+	+	+	NT	NT	NT	NT	NT	NT
<i>Tephrosia villosa.</i>	P	Wild	+	+	+	+	NT	+	NT	NT	NT	NT	NT	NT	NT	NT
<i>Tephrosia wallichii</i>	P	Wild	+	+	+	+	+	+	+	+	NT	NT	NT	NT	NT	NT
<i>Prosopis cineraria</i>	M	Wild	+	+	+	+	NT	+	NT	+	+	+	-	NT	+	-
<i>Prosopis juliflora</i>	M	Wild	NT	+	+	NT	NT	NT	NT	+	NT	NT	NT	NT	+	+
<i>Vachellia gummifera</i>	M	Wild	NT	+	+	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
<i>Senegalia senegal</i>	M	Wild	NT	-	-	NT	NT	NT	NT	NT	NT	NT	NT	+	+	+
<i>Mimosa hamata</i>	M	Wild	-	-	-	-	-	-	-	+	+	+	-	NT	+	+
<i>Mimosa himalayana</i>	M	Wild	-	-	-	-	-	-	-	NT	+	+	-	NT	NT	+
<i>Vachellia jacquemontii</i>	M	Wild	NT	NT	NT	NT	NT	NT	NT	NT	+	+	+	NT	+	+



<i>Vachellia nilotica</i>	M	Wild	NT	NT	NT	NT	NT	NT	NT	NT	+	+	-	+	+	+
<i>Vachellia tortilis</i>	M	Wild	NT	+	+	NT	NT	NT	NT	+	NT	NT	NT	NT	NT	NT
<i>Vachellia leucophloea</i>	M	Wild	NT	+	+	NT	NT	NT	NT	+	NT	NT	NT	+	NT	NT
<i>Leucaena leucocephala</i>	M	Wild	NT	+	+	NT	NT	+	NT	+	NT	NT	NT	NT	-	NT
<i>Chamaecrista pumila</i>	C	Wild	NT	+	+	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
<i>Vigna unguiculata</i>	P	Crop	NT	+	+	NT	+	NT	NT	+	NT	NT	NT	NT	NT	NT
<i>Vigna radiata</i>	P	Crop	+	+	+	+	+	+	+	+	NT	NT	NT	-	-	-
<i>Vigna aconitifolia</i>	P	Crop	+	+	+	+	+	+	NT	+	NT	NT	NT	NT	NT	NT
<i>Vigna trilobata</i>	P	Crop	NT	NT	NT	NT	NT	NT	NT	NT	-	-	-	NT	NT	NT
<i>Macroptilium atropurpureum</i>	P	Crop	+	+	+	+	NT	+	NT	+	-	-	-	NT	NT	NT
<i>Cyamopsis tetragonoloba</i>	P	Crop	+	+	+	+	+	+	NT	+	NT	NT	NT	NT	NT	NT
<i>Phaseolus vulgaris</i>	P	Crop	-	-	-	-	NT	-	+	-	NT	NT	NT	NT	NT	NT
<i>Arachis hypogaea</i>	P	Crop	NT	-	-	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
<i>Glycine max</i>	P	Crop	NT	-	-	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT

**Abbreviations:**P, Papilionoideae; C, Caesalpinioideae; M, Mimosoideae +, nodulation observed and positive expression of GFP; -, no nodulation; NT, not tested TF, *Tephrosia falciformis*; TL, *Tephrosia leptostachya*; TP, *Tephrosia purpurea*; TV, *Tephrosia villosa*; TW, *Tephrosia wallichii*; AJ, *Vachellia jacquemontii*; AL, *Vachellia leucophloea*; PC, *Prosopis cineraria*; MHM, *Mimosa himalayana*; MH, *Mimosa hamata*. \*\*\*Nodulation data published in Gehlot et al. 2016 (BMC-Standards in Genomic Sciences); Tak et al., 2016 (Systematic and Applied Microbiology); Le Quere et al., 2017 (BMC-Genomics); Sankhla et al., 2017 (Plant and Soil); Choudhary et al., 2016 (Indian Forester) and few unpublished data.

**Symbiotaxonomy/Host-range analysis:** The nodulation tests (Table 2) performed on various leguminous species demonstrated the specificity of Tree-*Ensifer* strains and broad host range of *Tephrosia-Ensifer* strains. The inoculated plants comparatively had vigorous growth, higher biomass and more height as compared to un-inoculated N-control. Mostly no nodules were found on the plant roots of N- and N+ controls. *Ensifer* strains isolated from root nodules of perennial *Tephrosia* species could nodulate the wild tree legumes *P. cineraria*, *P. juliflora*, *V. gummifera*, *V. tortilis*, *V. leucophloea* and *L. leucocephala* belonging to the sub-family Mimosoideae, indicating a wide host range, but these strains failed to nodulate *S. senegal*, *M. hamata* or *M. himalayana*. The *Tephrosia-Ensifer* strains nodulated *Chamaecrista pumila* of sub-family Caesalpinioideae. Interestingly these strains effectively nodulated various crop legumes such as *Vigna* sp., *M. atropurpureum* and *C. tetragonoloba*. The genetically different *Tephrosia-Ensifer* strains having similar monophyletic symbiotic genes had common host range. The broad host range of *Tephrosia-Ensifer* strains is remarkable and these strains could be used as potential inoculums in improving the productivity of agricultural crops grown in arid regions of Rajasthan.

Some tree rhizobial strains are host-specific, whereas others have a wide host range. Our knowledge about symbiotic affinities among Thar Desert tree rhizobia is limited. The cross-inoculation studies of various Thar tree-rhizobia indicated that the *E. saheli*-like group of *Ensifer* strains isolated from *V. jacquemontii* (AJ10, AJ14, AJ23, AJ31 and AJ32) had a wide host range and were capable of nodulating other mimosoid legumes, such as *V. nilotica*, *M. hamata*, *M. himalayana* and *P. cineraria*. While single strain AJ24, was very specific and nodulated only *V. jacquemontii*. The leguminous trees *Prosopis* have been reported to be infected by both fast and slow growing rhizobia. The legume *Prosopis cineraria*, state tree of Rajasthan is nodulated by highly effective novel strain *Ensifer* sp. PC2 which in addition to cross-nodulating various papilionoid and mimosoid legumes is also able to nodulate the *Acacia saligna* (Western Australian golden wattle), a promiscuous legume tree mainly nodulated by species of *Bradyrhizobium* in Australia. Other native tree rhizobias, *Ensifer* sp. MH40 and MHM2 showed effective nodulation on cross-inoculation in wild tree legume *P. juliflora*, *S. senegal*, *V. nilotica* and *V. jacquemontii* belonging to sub-family Mimosoideae but failed to nodulate *Leucaena leucocephala* (exotic tree) of same sub-family and crop legume *Vigna*



*radiata*. Similarly the *Vachellia (Acacia) leucophloea* RNB (*Ensifer* sp. AL5) effectively cross nodulated *S. senegal* and *V. nilotica* but failed to nodulate the *V. radiata*. The cross-inoculation results are signifying wide host range of these Thar *Ensifer* strains and more studies are needed to explore their nodulating efficiency in different tribes of three sub-families of Leguminosae.

## Group-II

1. **Title of Research Project:** Biodiversity and molecular characterization of wild mushroom from diverse regions of Indian Thar Desert
2. **Investigator:** Dr. Praveen Gehlot
3. **Summary of work:**

In continue to research progress (III year i.e. 2015-2016), Ethno-mycology surveys were conducted to collect information about nutraceutical and pharmaceutical values of local gastroid mushroom *Phellorinia herculeana* Berk. (*P. iniquinans*) and *Podaxis pistillaris* (Linn.) Fr.. Study revealed that *P. herculeana* and *P. pistillaris* are edible and medicinal significance mushroom but no comprehensive literatures were available. Therefore, review work done on both xeric mushrooms occurred in very short period in Indian Thar Desert. In review, distribution, taxonomy, morphology, nutritive value, bioactive components, cultivation, economic importance with traditional pharmacological significances were documented.

During the ethno-mycological survey, It has been observed that *P. herculeana* mushroom is known to its delicacy and deliciousness as its medicinal value. It is hunted and eaten by rural folk, since centuries for its nutritional as well therapeutic worth. It is sold in the market as a fresh as in dried form by local ethnic persons of Thar Desert.

Despite of high Nutraceutical and Pharmaceutical properties, *P. herculeana* is defying attempts of its domestication. Mycologists have been making sustained efforts since long for cultivation but couldn't domesticate it till date. Many researchers have made sustained efforts to cultivate it under controlled environmental conditions but the optimum conditions that are favorable for sporophore (Basidiocarp) development have not been clearly determined and till date no one achieved success in domesticating *Phellorinia* under controlled conditions. This call for continued studies on the basic biology and life cycle of *Phellorinia* with comprehensive study of ecological factors especially soil characteristics and weather prerequisites of natural growing sites. However, soil characteristics of natural growing sites of *Phellorinia* have been

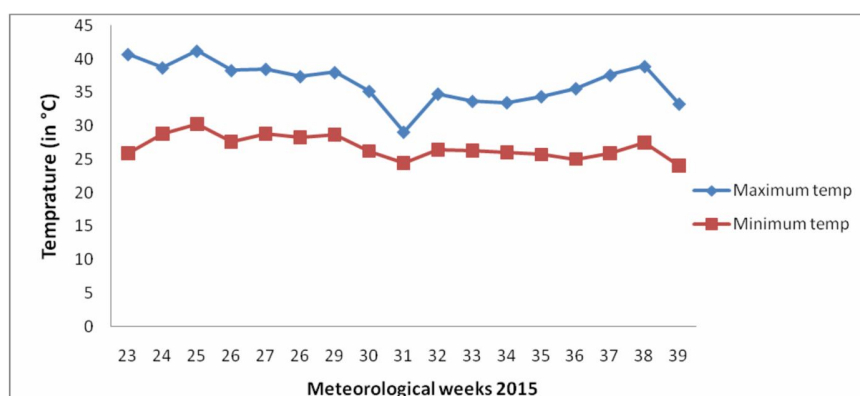
studied in previous year (year 2014-2015) but information regarding precise weather prerequisites like air temperature, relative humidity and total rainfall in this region were need to work out for fructification in *Phellorinia* under natural growing sites of Jodhpur district of Rajasthan.

During the study of meteorological data of the year, 2015, it was found that specimens of *Phellorinia* were observed and collected in the vicinity of the site during 26<sup>th</sup> to 36<sup>th</sup> meteorological weeks (M.wk). Therefore, only *i.e.* 23<sup>th</sup> to 39<sup>th</sup> week were taken into consideration and correlated with the initiation and development of the fruiting bodies of *Phellorinia*. A graphical representation of the maximum and minimum air temperatures during this period is depicted in fig-1. The data exhibited wide variation, the maximum temperature varied from 29.1 to 41.2°C and the minimum from 24 to 30.3°C during the period. The maximum and minimum relative humidity varied considerably from 44.7 to 90% and 20.7 to 76%, respectively (fig-2). The first rainfall was received during the 23<sup>th</sup> M. wk and subsequent rainfall in 24<sup>th</sup> to 34<sup>th</sup> M. wk was recorded. There was no rainfall from 35<sup>th</sup> to 38<sup>th</sup> M. wk. The minimum rainfall of 0.5 mm was received in 25<sup>th</sup> M. wk and the maximum of 13.5mm was recorded in 30<sup>th</sup> M.wk (fig.3). The sporophore observed during 26<sup>th</sup> to 36<sup>th</sup> M. wk *i.e.* 22 June to 6 September, 2015. During these 11 weeks, the maximum temperature varied from 29.1 to 38.9°C and minimum temperature from 24.9- 28.8°C. The maximum relative humidity varied 61-90% and the minimum from 31-76 %.

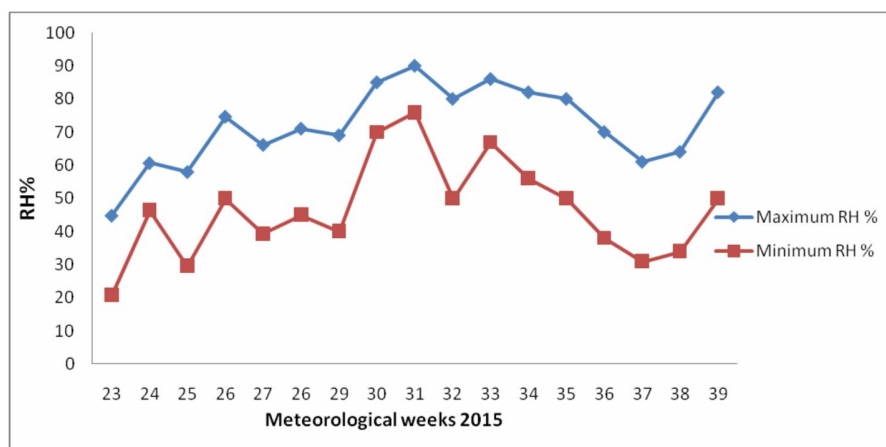
The fructification in *Phellorinia* occurred during 26 to 36 M.wk and it indicates that the prevalent air temperature, relative humidity and persistent rains during the period must have favored the sexual life cycle of the *Phellorinia* from either over wintered spores or dormant mycelium presented in soil as inoculums. The over wintering spores and dormant mycelium lying in the soil in the vicinity of the observation sites might have received a triggering shock due to sufficient rains in preceding week 23- 25<sup>th</sup> M. wk resulting in absorption of water and change in their osmotic pressure. Sufficient rainfall in prior to *Phellorinia* appearance under natural conditions appear to be the limiting factors and prerequisite for initiation of sexual cycle in *Phellorinia*. Although the air temperatures were favorable during the entire period of observations but sporophore does not appear to be limited factor for *Phellorinia* fructification.



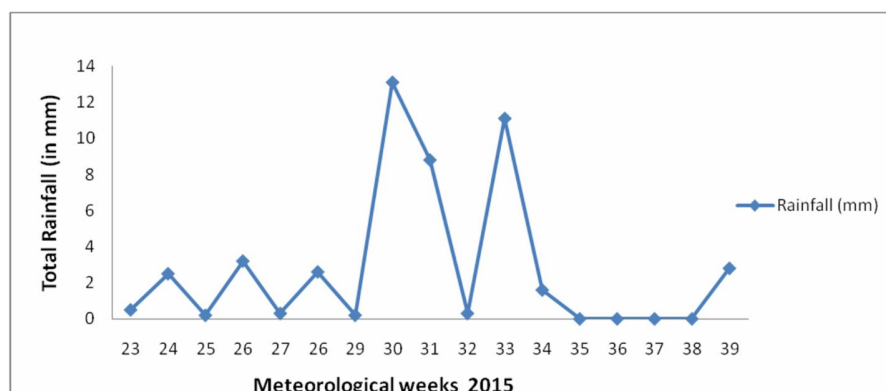
The data from 1 to 25 M.wk and 37 to 52 M.wk exhibited favorable air temperatures and relative humidity but *Phellorinia* but the sexual cycle didn't trigger. It might explain so as to why *Phellorinia* grow only in 26 to 36 M.wk due to availability of sufficient water in soil. Despite rainfall in 9<sup>th</sup>, 10<sup>th</sup>, 11<sup>th</sup>, 14<sup>th</sup> and 15<sup>th</sup>, M. wk, *Phellorinia* failed to produce sporophore due to unfavorable temperature. Fruiting bodies of *Phellorinia* could not be collected after 36 M.wk, despite all favorable condition available in 39<sup>th</sup> M. wk. because majority of the overwintering spores and active mycelium completed life cycles in the form of basidiocarps and produced next generation spores which require sufficient dormant period (over wintering period). Nevertheless, active mycelium also converted into dormant stage. **Thus**, Present studies give sufficient clues for further controlled experimentation by maintaining air temperature near to 29.1-41.2°C, relative humidity between 44 to 90% and sufficient availability of water in substrates to conduct domestication trials under controlled conditions.



**Fig.1:** Air temperature variation during mushroom fructification



**Fig. 2:** RH (%) variation during mushroom fructification



**Fig. 3:** Total rainfall during mushroom fructification

### Group-III

**1. Title of Research Project:** Antimicrobial Activities of Some Medicinal Plants of Thar desert

**Investigator:** Dr. Sharad Bissa

**Summary of work:**

The traditional use of medicinal plants in health care practices among rural communities of villages in desert area provides the basis for novel natural drug discovery development. In the present study 5 desert medicinal plants: *Convolvulus microphyllous*, *Evolvulus alsinoides*, *Moringa oleifera*, *Mollugo cerviana* and *Pedaliium murex* were screened for their antibacterial potential against different human pathogenic bacteria viz. *E. coli*, *Salmonella typhi*, *Enterobacter aerogenes* and *Klebsiella pneumoniae*, procured from IMTECH, Chandigarh. Different plant parts i.e. root, leaves, stem, fruits and seeds were examined using water, Ethanol, Chloroform and Petroleum ether as solvents. The antibacterial activity was determined by using



disc diffusion method. Minimum Inhibitory Concentration (MIC) assay were determined for the effective extracts. Ciprofloxacin was used as positive control whereas DMSO and water as negative controls. All the plants exhibited antibacterial but extracts of *Moringa oleifera* showed highest bactericidal action.

*Moringa* species are well documented plant herbs due to their extraordinary nutritional and medicinal properties. *Moringa oleifera* Lam. are the most widely cultivated species of the monogenic family, the Moringaceae. They have long been known in folk medicine as having value in treating a wide variety of ailments. *Moringa oleifera* is a highly valued plant, distributed in many countries of the tropics and subtropics and it has an impressive range of medicinal uses with high nutritional value. They are known to be anti-helminthic, antibiotic, detoxifiers, immune builders and have been used to treat malaria. The whole *Moringa oleifera* plant is used in the treatment of psychosis, eye diseases, fever and as an aphrodisiac. In the present investigation antibacterial potential of leaves, roots, bark and seeds of *Moringa oleifera* Lam. were tested against some human pathogenic bacteria. All the plants parts exhibited significant antibacterial activity and highest activity was observed in petroleum ether extract of leaves against *E.coli* and petroleum ether extract of seeds against *E. aerogenes*. Phytochemical screening was also done which confirmed the presence of Alkaloids, Flavanoids, Tannin, steroids, glycosides and Saponins in leaves and root extracts.

The findings revealed that the medicinal plants of desert area are a major source of herbal drugs and the survey can be used as baseline information for further scientific investigation to develop new plant based commercial drugs.

**Table. 1. Antibacterial activity of dried plant part extracts of *Moringa oleifera***

Plant Part	Plant Extracts	Zone of Inhibition (mm)			
		<i>E. coli</i>	<i>S. typhi</i>	<i>K. pneumoniae</i>	<i>E. aerogenes</i>
Root	Aqueous	5	-	-	7
	Ethanol	8	4	-	10
	Chloroform	11	7	7	6

	Pet. Ether	12	9	9	9
Leaves	Aqueous	11	-	-	-
	Ethanol	10	-	7	9
	Chloroform	14	8	9	9
	Pet. Ether	<b>18</b>	8	9	12
Bark	Aqueous	7	5	5	-
	Ethanol	12	5	5	-
	Chloroform	12	10	8	12
	Pet. Ether	14	11	11	14
Seeds	Aqueous	8	-	-	6
	Ethanol	13	6	7	11
	Chloroform	6	6	5	11
	Pet. Ether	15	10	10	<b>18</b>

**Table 2. Phytochemical Analysis of plant part extracts of *Moringa oleifera***

Phytochemical Component	Root	Leaves	Bark	Seeds
<b>Alkaloids</b>	+	+	+	+
<b>Glycosides</b>	+	+	+	-
<b>Saponins</b>	-	+	+	+
<b>Flavonoids</b>	+	+	+	+
<b>Tannins</b>	+	+	+	-
<b>Steroids</b>	+	+	+	+

### **C. Taxonomy**



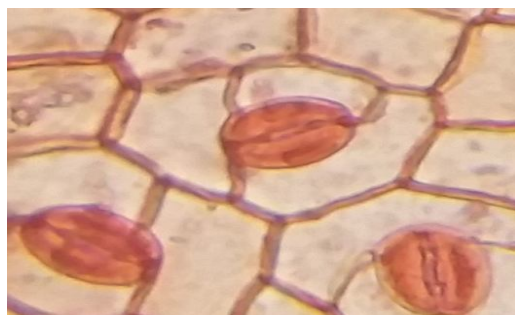
Title of project: Plant diversity of Thar Desert: Collection, Taxonomic characterization and Digitization.

Investigators: Dr. G.S. Deora  
Mrs. Seema Sen

I In continuation of earlier work done, listing, proper arrangement, photography, preparation of soft copy and systematic arrangement of total 102 plants species belonging to 19 families was done for digitization of departmental herbarium.

## II Micromorphological studies:

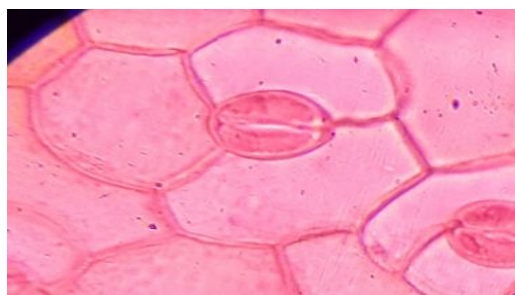
Micromorphological characters of taxon species are important tools for species level identification and classification along with morphological characterization. Micromorphological study of leaf peel of different species of *Tephrosia* and *Abutilon* were studied to correlate and identify the species .On the basis of stomatal and trichomes type the species can be easily identified and classified.



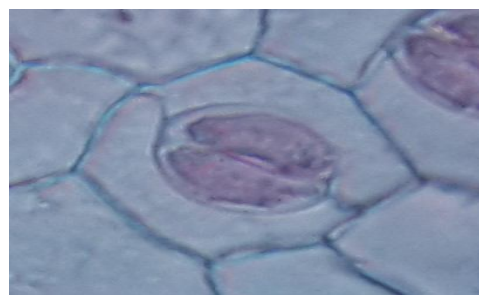
***T. purpurea*: Animocytic stomata**



***T. uniflora*: Hemiparacytic stomata**

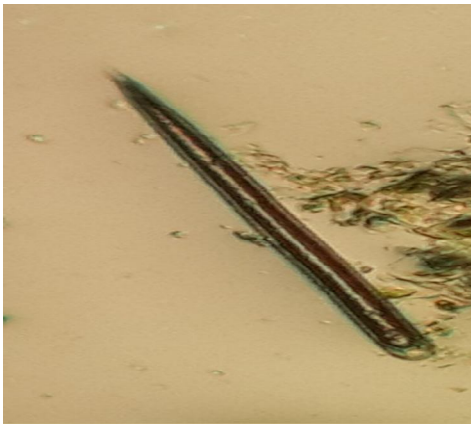


***T. villosa*: Isocytic stomata**

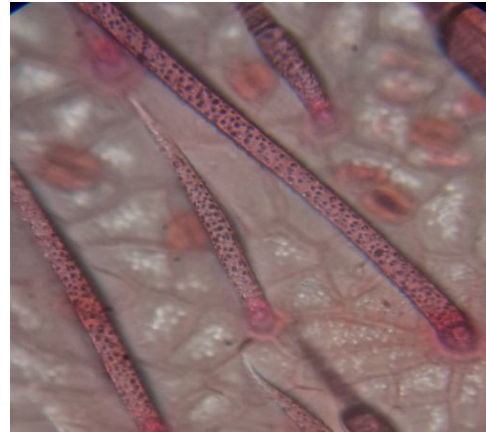


***T. wallichii*: Paracytic stomata**

### Micromorphological characters of *Abutilon* Spp



***T. purpurea*: Single tapering trichome**



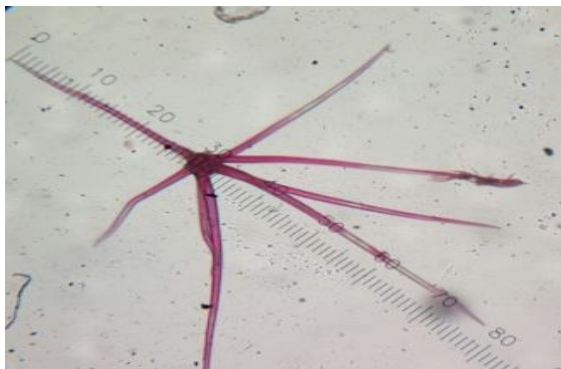
***T. unilora*: Trichomes with warty wall**



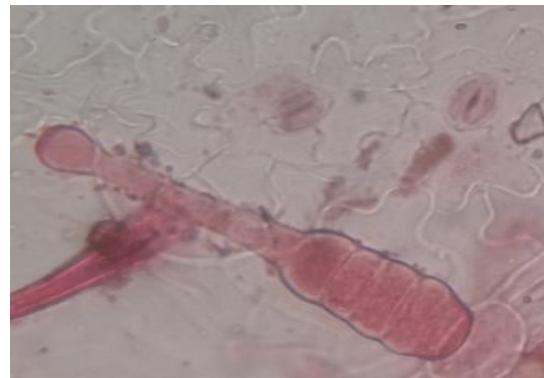
***A. indicum*: Simple unicellular trichome**



***A. pannosum*: Forked trichome**



***A. ramosum*: Stellate trichome**



***A. ramosum*: Glandular trichome**

### **III Collection, identification, taxonomical study of other vascular plants such as**



## **Pteridophytes.**

Listing, proper arrangement, photography, preparation of soft copy and systematic arrangement of total 13 Pteridophytes and gymnosperms plants species belonging to 11 families were done for digitization of departmental herbarium.

### **Pteridophytes:**

#### **1. *Asplenium nidus* L.**

##### **Systematic position**

Kingdom: Plantae

Division: Pteridophyta

Class: Polypodiopsida/Pteridopsida

Order: Polypodiales

Family: Aspleniaceae

Genus: *Asplenium*

Species: *nidus*



##### **Description:**

*Asplenium nidus* is an epiphytic species of fern in the family Aspleniaceae, native to tropical southeastern Asia eastern Australia, Hawaii. It is known by the common names **bird's nest fern** or **simply nests fern**. It forms large fronds visually similar to banana leaves, with the fronds growing to 50-150 centimeters long and 10-20 centimeters in broad. They are slight green, often crinkled, with a black midrib and exhibit circinate vernation. Sores develop in sori on the underside of the fronds. The fronds roll back as they brown and create a massive leaf nest in the branches and trunks of trees.

#### **2. *Athyrium angustum*(L.) Roth**

### Systematic position

Kingdom: Plantae

Division: Pteridophyta

Class: Pteridopsida

Order: Polypodiales

Family: Athyriaceae

Genus: *Athyrium*

Species: *angustum*(*filix-femina*)



### Description:

*Athyrium filix-femina* commonly known as lady fern is a large, feathery species of fern, native throughout most of the temperate Northern Hemisphere, where it is often abundant in damp, shady woodland environments and often grown for decoration. It is caespitose (the fronds arising from a central point as a clump rather than along a rhizome). The deciduous fronds are lightly yellow-green 20-90 centimeters broad. Sori appear as dots on the underside of the frond, 1-6 per pinna. They are covered by a prominently whitish to brown reniform indusium. Fronds are much dissected, being 3-pinnate. The stipe may bear long, pale brown, papery scales at the base. The spores are yellow.



### 3. *Diplazium esculentum* (Retz.) Sw.

#### Systematic position

Kingdom: Plantae

Division: Pteridophyta

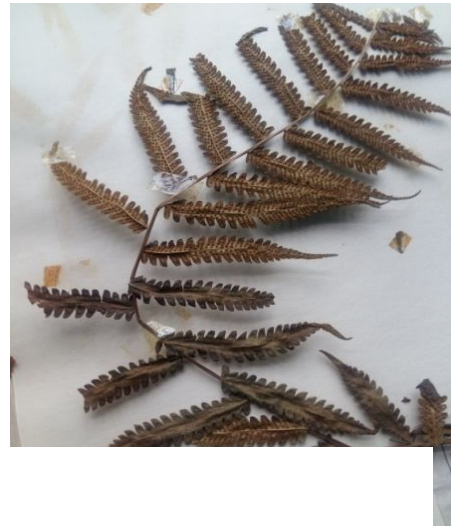
Class: Pteridopsida (Polypodiopsida)

Order: Polypodiales

Family: Athyriaceae

Genus: *Diplazium*

Species: *esculentum*



#### Description:

*Diplazium esculentum*, the vegetable fern, is an edible fern found throughout the Asia and Oceania. The plant is a large perennial fern with ascending rhizome of about 20 cm high and covered with short rufous scales of about one cm long. The plant is bipinnate with long brownish petioles and the petiole base is black and covered with short scales. The frond can reach 1.5 m in length and the pinnae is about 8 cm long and 2 cm wide.

### 4. *Azolla pinnata* R.Br.

#### Systematic position

Kingdom: Plantae

Division: Pteridophyta

Class: Pteridopsida (Polypodiopsida)

Order: Salviniales

Family: Salviniaceae

Genus: *Azolla*

Species: *pinnata*



#### Description:

*Azolla* is commonly known as **mosquito fern, duckweed fern, fairy moss, and water fern**. It is aquatic fern. They are extremely reduced in form and specialized, looking nothing like typical other ferns but resembling duckweed or some mosses. *Azolla* are often grown in rice fields, where the plants, after the harvest of rice are plowed down and then with their content of nitrate are an excellent replacement for artificial fertilizers. *A.pinnata*, which is found in an area from Asia to Australia, has a high demand of light and temperature.

#### 5. *Salvinia auriculata* Seg.

##### Systematic position

Kingdom: Plantae

Division: Pteridophyta

Class: Pteridopsida (Polypodiopsida)

Order: Salviniales

Family: Salviniaceae

Genus: *Salvinia*

Species: *auriculata*



##### Description:

*Salvinia* is a floating named in honor of Anton Maria Salvini, a 17<sup>th</sup> century Italian scientists. It is commonly known as water moss. It is heterosporous, producing two types of spores in size. However, leaf development in *Salvinia* is unique. The upper side of the floating leaf, which appears to face the stem axis is morphologically abaxial. It is small floating aquatics with creeping stems, branched, bearing hairs on leaf surface papillose but no roots. Leaves are in trimerous whorls, with two leaves green, sessile or short-petioled, flat, entire and one leaf finely dissected, petiolate, root like and pendent. Submerged leaves bearing sori that are surrounded by basifixed membranous indusia(sporocarp). They bear two types of sporocarp, either megasporangia that are few in number, each with single megaspore or many microsporangia each with 64 microspores. Spores are of two kinds in size, both globose, trilete.



## 6. *Sphaeropteris cooperi* Smith

### Systematic position

Kingdom: Plantae

Division: Pteridophyta

Class: Pteridopsida (Polypodiopsida)

Order: Cyatheales

Family: Cyatheaceae

Genus: *Sphaeropteris*

Species: *cooperi*



### Description:

*Sphaeropteris cooperi* is a tree fern that grows upto 40 meter tall with a skinny trunk. Fronds emerge from the trunk covered with stiff white hairs and are generally less arching than other fern of this family. It looks similar to a martini glass. The trunk will be covered with triangular shaped scars caused by old fronds. The fronds look lacey, more intricate than the other native ferns.

## 7. *Pteridium esculentum*(G.Frost.) Cockayne

### Systematic position

Kingdom: Plantae

Division: Pteridophyta

Class: Pteridopsida (Polypodiopsida)

Order: Polypodiales

Family: Dennstaedtiaceae

Genus: *Pteridium*

Species: *esculentum*



### Description:

*Pteridium esculentum* is commonly known as **bracken fern**, **Australian bracken** or simply **bracken** is a species of the bracken genus native to a number of countries in the Southern Hemisphere. First described as *Pteris esculentum* by German botanist George Forster in 1786<sup>th</sup> it gained its current binomial name in 1908. *P. esculentum* grows from creeping rhizome, which are covered with reddish hair. From them arise single large roughly triangular fronds, which grow to 0.5-2 metres tall. The fronds are stiff with a brown stripe, minor rachises with wing-like lobes between segments, lamina dark green above but paler below, older fronds glabrous above with fine hairs below, broad triangular in outline, 3-4 pinnate; ultimate segments narrow, entire or with a few basal lobes. Sori are continuous between margins. Inducium 2-lipped, outer lip green, inner lip pale brown.



## 8. *Dryopteris filix-mas* Adans

### Systematic position

Kingdom: Plantae



Division: Pteridophyta

Class: Pteridopsida (Polypodiopsida)

Order: Polypodiales

Family: Dryopteridaceae

Genus: *Dryopteris*

Species: *filiX-mas*

### Description:

*Dryopteris* is commonly called **wood fern**, **male fern** or **buckler fern**, is a with distribution in Eastern Asia, the Americas, Europe, Africa, India and the Pacific islands. Plant is stout, slowly creeping rootstocks that form a crown, with a vase like ring of fronds. The sori are round, with a peltate inducium. The stipes have prominent scales.

### 9. *Isoetes butleris* Rchb.

#### Systematic position

Kingdom: Plantae

Division: Lycopodiopsida

Class: Isoetopsida

Order: Isoetales

Family: Isoetaceae

Genus: *Isoetes*

Species: *butleri*



### Description:

*Isoetes* is commonly known as the **quillworts** is a genus of plants in the class Isoetopsida and order Isoetales. They are lycopods and the only genus in Isoetaceae. *Isoetes* are mostly aquatic or semi aquatic in clear ponds and slow moving streams, though several grow on wet ground that dries out in the summer. *Isoetes* leaves are hollow and quill like with a minute ligule at the base of

the upper surface arising from a central corn. Each leaf is narrow 2-20 cm long and 0.5 -3.0 mm wide, with. They can be either ever green, winter deciduous or dry season deciduous. Leaves broaden to a swollen base upto 5 mm wide where they attach in clusters to a bulb like underground rhizome characteristic of most of the quillwort species. This swollen base also contains male and female sporangia, protected by a thin transparent covering (velum), which is used diagnostically to help identifying quillwort species. They are heterosporous containing megaspores and microspores.

#### 10. *Marsilea minuta*. L.

##### Systematic position

Kingdom: Plantae  
Division: Pteridophyta  
Class: Polypodiopsida/ Pteropsida  
Order: Salviniales  
Family: Marsileaceae  
Genus: *Marsilea*  
Species: *minuta*



##### Description:

*Marsilea minuta* or dwarf waterclover is a species of aquatic fern in the family Marsileaceae. In the water the plant is creeping and spreading, while on land it can appear cushion like. It is typically perennial but sometimes appears annual. It is a tanagonophyte with the juvenile growing submerged and the adult typically terrestrial. It has a light brown to green rhizome that is 0.4-0.8 mm thick with short tan hairs at the ends and internal roots. The land leaves are on erect teret, 5-13 cm long petioles. The leaflets are 0.8-1.8 cm by 1.3-2.1 cm. mostly glabrous, cuneate or flabellate. The leaves in water are typically not floating, but emergent from the water. Fertile leaves are produced on land withpu to four sporocarps each at peduncles near the base of the petiole. The sporocarp has a superior tooth at the apex of the atslk and an inferior tooth at the base and sporocarp mature above ground.



## 11. *Polypodium vulgare* L.

### Systematic position

Kingdom: Plantae

Division: Pteridophyta

Class: Polypodiopsida/ Pteropsida

Order: Polypodiales

Family: Polypodiaceae

Genus: *Polypodium*

Species: *vulgare*

### Description:



*Polypodium vulgare*, the common **polypody** is a fern of the Polypodiaceae, develops from a horizontal rhizome. The fronds with triangular leaflets measure 10-51 cm. They are divided all the way back to the central stem in 10- 18 pairs of segments or leaflets. The leaflets become much shorter at the end of the frond. The leaflets are generally whole or slightly denticulated and somewhat wider at their base, where they often touch each other. They have an alternating arrangement. Those on one side being slightly offset from those on the other side. The petioles have no scales. The sori are found on the lower side of the fronds and range in colour from bright yellow to orange. They become dark grey at maturity.

## 12. *Cheilanthes micropteris* Sw.

### Systematic position

Kingdom: Plantae  
Division: Pteridophyta  
Class: Polypodiopsida  
Order: Polypodiales  
Family: Pteridaceae  
Genus: *Cheilanthes*  
Species: *micropteris*



### Description:

*Cheilanthes micropteris* is a rock dwelling fern with a cosmopolitan distribution in warm, dry, rocky regions, often growing in small crevices high up to on cliffs. They are small, sturdy and evergreen. The leaves often densely covered in trichomes, spring directly from the rootstocks. They curling up during dry condition and reviving with the coming of moisture. At the ends of veins sporangia or spore bearing structures are protected by leaf margins which curlper them.

## 13. *Selaginella rupestris* P. Beauv.

### Systematic position

Kingdom: Plantae  
Division: Pteridophyta/ Lycopodiophyta  
Class: Isoetopsida  
Order: Selaginellales  
Family: Sellaginellaceae  
Genus: *Selaginella*  
Species: *rupestris*



### Description:



It is creeping or ascendant plant with simple scale like leaves on branching stems from which roots also arise. The stems are aerial, horizontal creeping on the substratum. The vascular steles are polystelic protosteles. Stem sections shows the presence of more than two protosteles. Each stele is made up of diarch and exarch xylem in the center, which are modified endodermal cells with casperian strips on their lateral walls. The stem contains no pith. In *Sellaginella*, each microphyll and sporophyll has a small scale like outgrowth called a ligule at the base of the upper surface. The plants are heterosporous with spores of two different sizes known as megaspores and microspores.

**Note: Most of the photos taken from the Departmental herbarium sheets and some others from nature**

## D. Ecology of Plants

- i. Prof. S. Sundramoorthy, In-Charge
- ii. Dr. Santosh K. Mehar

### I Bioremediation:

*Chlorella vulgaris* is a unicellular green alga and was collected from Jojari River. Jojari River receives effluents from nearby industrial area known as Boranada. *Chlorococcum humicola*, is collected from Ayad River near Udaipur. Ayad River carried entire domestic and industrial waste water of Udaipur. Repeated isolation and culture provided the axenic cultures of the algae.

Both the algae were grown diazotrophically in BG-11 medium (Rippka *et al.*, 1979). The axenic culture was multiplied in 250 mL conical flask containing 100 mL BG-11 medium and grown in culture room under continuous light, illuminated with cool fluorescent light (14.4 watt. m<sup>-2</sup>) at 24±1°C. For routine maintenance, exponentially growing (8-10 day old) algal cells were harvested by centrifugation (4000g, 10 min.), washed thrice with sterile double distilled water before transfer to fresh growth medium.

All the experiments were conducted in triplicate at same culture conditions. The culture contains glass beads (0.5 mm size each; 5 in number in each culture flask) to prevent clumping of cells in growing algal mass, and were shaken gently every day.

Growth pattern were determined in five different media to identify the best one for *Chlorococcum humicola* and *Chlorella vulgaris* so as to establish nutrient composition that best suit for future experiments with test algae. The five media are: [Bold Basal medium, BG -11 medium, Modified CHU - 10, Kartz & Myer and Hughes medium] were selected based on literature survey. Protein content is determined at different growth stages starting from 1- 28 days. Day one that is the day on which algae is inoculated and after this at regular intervals estimation is done.

All the five media supported the growth of algae in linear fashion in the following order: BG-11 ( $r^2=0.98$ ) > C-10 ( $r^2=0.92$ ) > K&M ( $r^2=0.90$ ) > Hughes ( $r^2=0.62$ ) > BB ( $r^2=0.61$ ) for *C.*



*vulgaris* and K&M ( $r^2=0.97$ ) > BG-11( $r^2=0.95$ ) > C-10 ( $r^2=0.95$ ) > Hughes ( $r^2=0.84$ ) > BB ( $r^2=0.01$ ) for *C. humicolo*.

Protein content was maximum in BG-11, which reveals that BG-11 is most suitable medium for the growth of both the selected algae.

For short term time series experiment 10 ml of sample was harvested in time series (i.e. after every 15, 45, 75, 105 and 135 minutes) and algal cells were immediately vacuum filtered through Whatman filter paper 42 so that any further uptake of metal by algae from medium could be prevented. Filtrates were then oven dried, digested with double acid [ $\text{HNO}_3$ :  $\text{HClO}_4$  mixture (10:1, v/v)] in boiling water bath for 1 hr. After cooling, the samples were diluted to 10 ml with triple glass distilled water and analyzed for metal level by Atomic Absorption Spectrophotometer (Spectrum SP-AA 5000).

Cadmium depletion was observed immediately after treatment starting from 15 minutes. Continuous increase in uptake rate of Cadmium from 15-75 minutes after treatment was found in both the algae. Two peaks for  $\text{Cd}^{+2}$  uptake was exhibited by *C. vulgaris* and *C. humicolo*. First peak was observed after 75 minutes with uptake rate of (7.941 and 7.65  $\mu\text{g per ml Cd}^{+2}$  uptake  $\text{min}^{-1}$ ) and at 135 minutes a second peak (8.191 and 7.84  $\mu\text{g per ml Cd}^{+2}$  uptake  $\text{min}^{-1}$ ) was observed for *C. vulgaris* and *C. humicolo*, respectively. Elapsed time period was the only factor contributing for the observed variation ( $F=82.501$ ;  $P>0.01$  and  $F=13.35$ ;  $P>0.01$  for *C. vulgaris* and *C. humicolo* respectively)

Similar to  $\text{Cd}^{+2}$ ,  $\text{Ni}^{+2}$  depletion was too increased with the time. Initially lowest (1.225 and 0.500  $\mu\text{g per ml Ni}^{+2}$  uptake  $\text{min}^{-1}$ ) uptake was found after 15 minutes of treatment and it increased consciously as the time passed in *C. vulgaris* and *C. humicolo*, respectively.  $\text{Ni}^{+2}$  depletion was found maximum (3.175 and 2.633  $\mu\text{g per ml Ni}^{+2}$  uptake  $\text{min}^{-1}$ ) after 135 minutes for *C. vulgaris* and *C. humicolo*, respectively. Elapsed time period was the only factor contributing for the observed variation ( $F=59.28$ ;  $P > 0.01$  and  $F=4.41$ ;  $P > 0.05$  for *C. vulgaris* and *C. humicolo* respectively).

$\text{Zn}^{+2}$  depletion was observed immediately after treatment starting from 15 minutes. *C. vulgaris* and *C. humicolo* exhibited continuous increase in uptake rate of Zinc from 15-75

minutes and 15 to 45 minutes after treatment, respectively. First peak was observed after 75 and 45 minutes with uptake rate of 2.80 and 1.8  $\mu\text{g per ml Zn}^{+2}$  uptake  $\text{min}^{-1}$  from the media for *C. vulgaris* and *C. humicola*, respectively. Then uptake rate was slightly decreased (2.65 and 1.50  $\mu\text{g per ml Zn}^{+2}$  uptake  $\text{min}^{-1}$  from the media) after 105 and 75 minutes for *C. vulgaris* and *C. humicola*, respectively. Elapsed time period was the only factor contributing for the observed variation ( $F=82.501$ ;  $P>0.01$ ).

Absorption/adsorption kinetics of heavy metal uptake was assessed as long term experiment. After 15<sup>th</sup> and 30<sup>th</sup> days of inoculation, 10 ml of algal sample was harvested from homogenous culture and centrifuged (4000 g, 15 minutes) and supernatant media was separated. The algal sample in the sediment were mixed with 10 ml of EDTA (10 $\mu\text{M}$ ) solution and gently shaken. Samples were once again centrifuged (4000g, 15 minutes). Supernatant EDTA was taken out for measuring the adsorbed ionic concentration. All three parts i.e. media, EDTA and algal pellets from each sample were dried, digested with double acid mixture in boiling water bath for 1 hour. After cooling sample were diluted to 25 mL with triple glass distilled water and analyzed for heavy metal level by atomic absorption spectrometer. Accumulation factor was assessed as the ratio of concentration in the algae in relation to its surroundings.

Metal accumulation was judged on the basis of its concentration in medium, chelating agent (EDTA) and alga. Both the algae were grown in BG-11 medium having different concentrations of metals.  $\text{Cd}^{+2}$ : (0, 4, 8, 12, 16, 20);  $\text{Ni}^{+2}$ : (0, 3, 6, 9, 12, 15) and  $\text{Zn}^{+2}$ : (0, 4, 6, 8, 10, 12) respectively for *C. vulgaris*;  $\text{Cd}^{+2}$ : (0, 3, 6, 9, 12, 15);  $\text{Ni}^{+2}$ : (0, 2, 4, 6, 8, 10) and  $\text{Zn}^{+2}$ : (0, 3, 6, 9, 12, 15) whereas for *C. humicola*. Concentration in medium, EDTA and algae was determined at two stages of algal growth i.e. 15<sup>th</sup> and 30<sup>th</sup> days of growth.

For *C. vulgaris*,  $\text{Cd}^{+2}$  adsorption was comparatively more than absorption for both the days and concentration in the media (X) and adsorption (Y) and absorption (Y) related parabolically for 15<sup>th</sup> and 30<sup>th</sup> days of growth ( $Y = -6.8267 + 6.8874 X - 0.3631 X^2$ ;  $R^2=0.99$ ;  $Y = -9.2625 + 8.824 X - 0.0302 X^2$ ;  $R^2=0.90$  and  $Y = 0.5917 + 0.3262 X + 0.1857 X^2$ ;  $R^2=0.71$ ;  $Y = -9.535 + 14.521 X - 1.6762 X^2$ ;  $R^2=0.71$  for adsorption and absorption, respectively). Adsorption was maximum (41.05  $\mu\text{g ml}^{-1}$ ) at 20  $\text{mg L}^{-1}$  during 30<sup>th</sup> day of experiment, indicating increase in adsorption along with passing of time. Absorption was maximum (22.933  $\mu\text{g ml}^{-1}$ ) at 8  $\text{mg}$



$L^{-1}$  during 30<sup>th</sup> day of experiment and it decreased in higher concentrations with passing of days. In case of *C. humicola*,  $Cd^{+2}$  adsorption was comparatively more than absorption. Concentration in the media and adsorption and absorption related significantly and represent a linear and logarithmic relationship for 15<sup>th</sup> and 30<sup>th</sup> days of growth ( $Y = -0.4563 + 1.373 X$ ;  $r^2 = 0.99$ ;  $Y = -1.0891 + 1.4223 X$ ;  $r^2 = 0.96$  and  $y = 0.617 + 4.195 \log X$ ;  $r^2 = 0.94$ ;  $y = 0.0808 + 10.52 \log X$ ;  $r^2 = 0.97$  for adsorption and absorption, respectively).

In *C. vulgaris*  $Ni^{+2}$  adsorption was comparatively more than absorption for both the days. Concentration in the media and adsorption and absorption related significantly and followed a parabolic path for 15<sup>th</sup> and 30<sup>th</sup> days of growth ( $Y = -5.9283 + 5.5468 X - 0.4732 X^2$ ;  $R^2 = 0.93$ ;  $Y = -3.1375 + 3.645 X - 0.1903 X^2$ ;  $R^2 = 0.87$  and  $Y = -4.0417 + 5.481 X - 0.681 X^2$ ;  $R^2 = 0.69$ ;  $Y = -4.2242 + 7.319 X - 1.0207 X^2$ ;  $R^2 = 0.79$  for adsorption and absorption respectively). Similarly, in *C. humicola* absorption was comparatively more than adsorption for  $Ni^{+2}$ . Concentration (x) and adsorption (y) or absorption (y) related significantly and followed a parabolic path for 15<sup>th</sup> and 30<sup>th</sup> days of growth ( $Y = 1.0442 + 1.201 X + 0.496 X^2$ ;  $R^2 = 0.88$ ;  $Y = 1.6442 + 1.661 X + 0.1588 X^2$ ;  $R^2 = 0.92$ , and  $Y = -0.655 + 0.5412 X + 0.6796 X^2$ ;  $R^2 = 0.69$ ;  $Y = -9.0283 + 9.3949 X - 1.1186 X^2$ ;  $R^2 = 0.8785$  for adsorption and absorption, respectively).

For  $Zn^{+2}$  also adsorption was comparatively more than absorption for both the days in *C. vulgaris*. Concentration in the media and adsorption and absorption related significantly and followed a linear (adsorption) and parabolic (absorption) path for 15<sup>th</sup> and 30<sup>th</sup> days of growth ( $(Y = -5.03 + 6.8139 X - 0.6851 X^2$ ;  $R^2 = 0.96$  and  $Y = -1.9217 + 5.2407 X - 0.4893 X^2$ ;  $R^2 = 0.98$  and  $y = -2.725 + 4.6762 X - 0.4833 X^2$ ;  $R^2 = 0.83$ ;  $Y = -1.9592 + 6.1019 X - 0.7234 X^2$ ;  $R^2 = 0.75$  for adsorption and absorption, respectively). In *C. humicola* too adsorption was comparatively more than absorption for both the days. Concentration (x) and adsorption (y) or absorption (y) related significantly and followed a parabolic path for 15<sup>th</sup> and 30<sup>th</sup> days of growth ( $Y = -5.9187 + 7.201 X - 0.6638 X^2$ ;  $R^2 = 0.99$ ;  $Y = -5.2687 + 6.0237 X - 0.5322 X^2$ ;  $R^2 = 0.99$ , and  $Y = -0.4775 + 2.833 X + 0.0326 X^2$ ;  $R^2 = 0.9523$ ;  $Y = 0.3067 - 0.3236 X + 0.06 X^2$ ;  $R^2 = 0.97$  for adsorption and absorption, respectively).

Maximum (4.2) Accumulation Factor value was found on 30<sup>th</sup> day at 4 mg  $L^{-1}$  metal concentration; with increase in  $Cd^{+2}$  concentration in the media for *C. vulgaris*. With increase

in  $\text{Cd}^{2+}$  concentration in the media AF reduced significantly and at  $20 \text{ mg L}^{-1}$  minimum (1.05) AF value was recorded. In case of *C. humicolo* maximum AF value 2.57 was found on 30<sup>th</sup> day at metal  $15 \text{ mg L}^{-1}$  concentration; with increase in  $\text{Cd}^{2+}$  concentration in the media AF value increased during the later stage of growth exhibiting the adaptive mechanism of tolerance.

Maximum (2.08) AF value was found on 30<sup>th</sup> day at  $3 \text{ mg L}^{-1}$  metal concentration; with increase in  $\text{Ni}^{2+}$  concentration in the media AF value increased during the later stage of growth in *C. vulgaris*. Similarly, for *C. humicolo* maximum AF value 2.07 was found on 30<sup>th</sup> day at  $2 \text{ mg L}^{-1}$  metal concentration; with increase in  $\text{Ni}^{2+}$  concentration in the media AF value increased during the later stage of growth exhibiting the adaptive mechanism of tolerance.

Maximum (2.66 and 2.70) AF was found on 30<sup>th</sup> day at  $4$  and  $3 \text{ mg L}^{-1}$  concentration of  $\text{Zn}^{2+}$  for *C. vulgaris* and *C. humicolo*, respectively. Similar to  $\text{Cd}^{2+}$  and  $\text{Ni}^{2+}$ , for  $\text{Zn}^{2+}$  too both the algae exhibited the adaptive mechanism of tolerance. Maximum AF value 2.70 was found on 30<sup>th</sup> day at metal  $3 \text{ mg L}^{-1}$  concentration. Results of present study suggested that both of the algae were not only tolerant species but also found to be a hyper accumulator of the selected metals ( $\text{Cd}^{2+}$ ,  $\text{Ni}^{2+}$  and  $\text{Zn}^{2+}$ ).

In case of nickel treatment overall expression of proteins was found to be decreased, specifically in the range of mol. weight 18.4-166 kDa for *C. vulgaris* and *C. humicolo*. This decrease in protein expression might be due to toxic effect of heavy metal nickel. Quantitative analysis showed no major difference in overall protein content (*C. humicolo*) and decrease ~0.5 fold in overall protein content (*C. vulgaris*) due to nickel treatment as compared to control.

## **II Species Association:**

Three saline inland sites namely Pachpadra (site-I), Didwana (site-II) and Kaparda (site-III) were selected for the detailed phyto-sociological survey (Table 1). At each site nested quadrates were employed for ( $5\text{m} \times 5\text{m}$  for woody perennials and  $1\text{m} \times 1\text{m}$  for annual) quantification of temporal vegetation dynamics (Kent and Cooker, 1992).

### **Sites Characteristics**

Soil profile of the selected sites, revealed the basic difference among them where dominant sub-equal proportion of fine sand and coarse sand and coarse sand and gravel are the



characteristic features of site 1 and 2, respectively, while site 3 differed from them with dominant coarse sand texture (Table 1).

Table 1. GPS locations and basic soil features of studied sites

Coordinates		Soil texture				
N	E	Clay	Silt	Fine Sand	Coarse sand	Gravel
25°91'51"	72°06'81"	0.8	0.3	54.6	32.6	11.5
26°28'32"	73°44'49"	0.05	0.1	7.2	46.1	46.2
27°23'8"	74°34'56"	0.1		0.3 19.3	75.5	4.6

### Species Composition

During the samplings, a total of 47 herbaceous and shrub species were recorded that belongs to 16 families and 41 genera (Figure 1) dominated by Poaceae 12 followed by Cyperaceae and Fabaceae (6). 47, 21 and 15 species were recorded during rainy, winter and summer seasons, respectively at studied sites (Table 2). During the rainy season site wise species richness was ranged from 17 (S3) -27 (S1) and which were dropped to 9 (S2)-15 (S1) and 6 (S2)- 11 (S1) during winter and summer seasons, respectively (Table 3). Among the halophytic grasses and other species, dominance of *Aeluropus lagopoides*, *Cressa cretica*, *Salsola baryosma* and *Suaeda fruticosa* were increased from rain to winter and winter to summer at their respective sites (Table 2). However, *Sporobolus helvolus* was recorded only during rain and winter seasons with IVI 24 (S1 rain)-63 (S1 winter). Seasons wise 17 different grass / sedges species were recorded during the rainy season (*Aeluropus lagopoides*, *Aristida funiculata*, *Cenchrus biflorus*, *Cenchrus setigerus*, *Chloris virgate*, *Cyperus arenarius*, *Cyperus bulbosus*, *Cyperus iria*, *Cyperus rotundus*, *Cyperus compressus*, *Dactyloctenium aegyptium*, *Eleusine compressa*, *Eragostis ciliaris*, *Eragostis tremula*., *Melanocenchrus jacquemontii*, and *Sporobolus helvolus*) which were dropped to 5 during two remaining seasons and *Oligochaeta ramosa* was recorded as new species during these two sampling period. *Cressa cretica*, *Dicoma tomentosa*, *Salsola baryosma*, *Suaeda fruticosa*, *Senna angustifolia*, *Crotolaria burhia*, *Fagonia cretica*, *Leptadenia pyrotechnica*, *Tephrosia purpurea*, *Tribulus terrestris*, *Calotropis procera* and *Capparis decidua* were the other important species having various types of provisional, cultural and regulating ecosystem services potentials.

Table 2. IVI of different species recorded during three seasonal events

Rain					Winter				
S. No	Species	S1	S2	S3	S. No	Species	S1	S2	S3
1	<i>Aeluropus lagopoides</i>	19	23	36	1	<i>Aeluropus lagopoides</i>	78	13	88
2	<i>Aerva persica</i>	8	0	0	2	<i>Aerva persica</i>	9	0	0
3	<i>Aristida funiculata</i>	10	0	0	3	<i>Blepharis sindica</i>	0	8	0
4	<i>Blepharis sindica</i>	3	0	0	4	<i>Calotropis procera</i>	0	27	0
5	<i>Boerhavia diffusa</i>	8	0	10	5	<i>Capparis decidua</i>	0	0	6
6	<i>Calotropis procera</i>	0	4	0	6	<i>Senna aungustifolia</i>	10	0	0
7	<i>Sena aungustifolia</i>	1	0	0	7	<i>Convolvulus auricomus</i>	6	0	0
8	<i>Cassia fistula</i>	1	0	0	8	<i>Cressa cretica</i>	41	11	28
9	<i>Cenchrus biflorus</i>	0	16	0	9	<i>Crotolaria burhia</i>	4	5	0
10	<i>Cenchrus setigerus</i>	13	0	0	10	<i>Cyperus iria</i>	0	16	0
11	<i>Chloris virgate</i>	17	37	43	11	<i>Fagonia cretica</i>	8	0	10
12	<i>Convolvulus auricomus</i>	5	0	0	12	<i>Heliotropium marifolium</i>	0	13	0
13	<i>Corchorus depressus</i>	0	0	12	13	<i>Leptadaenia pyrotechnica</i>	5	10	0
14	<i>Corchorus tridens</i>	0	7	0	14	<i>Oligochaete ramosa</i>	4	0	0
15	<i>Cressa cretica</i>	20	0	28	15	<i>Salsola baryosma</i>	6	0	0
16	<i>Crotolaria burhia</i>	0	5	8	16	<i>Scripustuberosus</i>	0	0	11
17	<i>Cyperus arenarius</i>	0	10	0	17	<i>Sonchus aspera</i>	12	0	41
18	<i>Cyperus bulbosus</i>	0	0	31	18	<i>Sporobolus helvolus</i>	63	0	44
19	<i>Cyperus iria</i>	0	10	0	19	<i>Suaeda fruticosa</i>	15	71	10
20	<i>Cyperus rotundus</i>	0	10	0	20	<i>Tephrosia purpurea</i>	4	0	0
21	<i>Cyperus compressus</i>	13	0	0	21	<i>Vernonia cinerea</i>	18	0	50
22	<i>Dactyloctenium aegyptium</i>	18	37	15					
23	<i>Dicoma tomentosa</i>	0	0	4	Summer				
24	<i>Eleusine compressa</i>	13	0	0		Species	S1	S2	S3



25	<i>Eragrostis ciliaris</i>	0	31	21		1	<i>Aeluropus lagopoides</i>	11 6	12 7	11 3
26	<i>Eragrostistremula</i>	0	10	0		2	<i>Calotropis procera</i>	0	23	0
27	<i>Fagonia cretica</i>	7	0	7		3	<i>Capparis decidua</i>	0	0	10
28	<i>Farsetia macrantha</i>	10	0	0		4	<i>Senna aungustifolia</i>	13	0	0
29	<i>Haloxylon recurvum</i>	11	0	0		5	<i>Convolvulus auricomus</i>	9	0	0
30	<i>Heliotropium curassavicum</i>	8	0	0		6	<i>Cressa cretica</i>	59	61	67
31	<i>Heliotropium marifolium</i>	9	33	0		7	<i>Crotolaria burhia</i>	5	0	0
32	<i>Indigofera cordifolia</i>	6	0	0		8	<i>Fagonia cretica</i>	16	0	0
33	<i>Leptadaenia pyrotechnica</i>	4	2	0		9	<i>Leptadaenia pyrotechnica</i>	11	14	0
34	<i>Melanocenchrus jacquemontii</i>	0	0	23		10	<i>Oligochaete ramosa</i>	0	11	0
35	<i>Polygala irregularis</i>	10	0	0		11	<i>Salsola baryosma</i>	8	0	0
36	<i>Prosopis juliflora</i>	3	0	0		12	<i>Sonchus aspera</i>	9	0	34
37	<i>Pulicaria wightiana</i>	12	0	0		13	<i>Suaeda fruticosa</i>	19	65	29
38	<i>Salsola baryosma</i>	3	0	0		14	<i>Tamarix aphyla</i>	0	0	4
39	<i>Scripustuberosus</i>	0	9	0		15	<i>Vernonia cinerea</i>	14	0	42
40	<i>Sonchus aspera</i>	0	5	10						
41	<i>Sporobolus helvolus</i>	24	0	0						
42	<i>Suaeda fruticosa</i>	10	18	8						
43	<i>Tamarix aphyla</i>	0	0	3						
44	<i>Tephrosia purpurea</i>	6	3	10						
45	<i>Tragus racemosus</i>	0	28	10						
46	<i>Tribulus terrestris</i>	7	0	0						
47	<i>Vernonia cinerea</i>	11	0	21						

### Species Diversity

Values of two diversity indices viz. Shannon and Weaver index ( $H'$ ) and Simpson index during different seasonal time and at different habitat are depicted in Table 3. Value of Shannon and Weaver index varies from 1.5 to 3.5 and rarely surpasses 4. Higher value indicates more diversity and vice-versa and this index is highly influenced by rare species. While Simpson index represents the Dominance of Concentration (DC). Lower DC indicates sharing of dominance by many species and higher DC values denote dominance of one (or a few) species indicating unequal sharing of resources. In present study higher diversity (High  $H'$  and DC values) were recorded during rainy seasons which continuously declined during other two sampling period (Table 3). Among the sites, site one was identified as more rich and diversified with compare to sites two and three.

Table 3. Diversity parameters of at three studied sites during different seasonal events

Diversity Parameters	Rain			Winter			Summer		
	S1	S2	S3	S1	S2	S3	S1	S2	S3
Richness	27	18	17	15	9	10	11	6	7
Shannon Index	1.4	1.1	1.1	0.94	0.69	0.86	0.8	0.64	0.7
Simpson Index	0.04	0.07	0.07	0.15	0.28	0.16	0.23	0.27	0.23

### Site Similarity

Season wise site similarity values are presented in table 4. This analysis reveled the high sites similarities during summer season >70% and lowest during rainy seasons. In comparison to site two, site one showed more similarity with site three (70%) during winter seasons, while site two and three were more similar during rainy season as compared to site one. High site similarities during summer season can be explained with the high proportion of perennials while lowest during rainy season due to high annual presence.

Table 4. Site Similarity (Sorensen Index) values

	Rain			Winter			Summer		
	S1	S2	S3	S1	S2	S3	S1	S2	S3
S1	-	26.5	37	-	38.9	70	-	70.7	74.2
S2	-	-	42.5	-	-	36.5	-	-	68



### **Dominance Diversity Curve**

DD curve of at three studied sites during three sampling period are depicted in Figure 2. Within a plant community three basic types of distribution can be found viz. geometric, broken-stick and lognormal. In present study we observed a clear impact of temporal factor on plant community distribution pattern at selected habitats. We found log normal, broken-stick and geometric models during rainy, winter and summer seasons at all the sites, respectively. On log-normal model, peak of the curve represented by *Sporobolus helvolus* (23.9 IVI), *Dactyloctenium aegyptium* (37.5 IVI) and *Chloris virgate* (42.7) at site 1, 2 and 3, respectively. While tail of DD curves at these sites represented by *Cassia fistula* (1.1 IVI), *Leptadaenia pyrotechnica* (2.2 IVI) and *Tamarix aphylla* (2.8 IVI) respectively. The lognormal dominance–diversity curves indicate the heterogeneity of the species (May, 1975). Lognormal hypothesis assumes that the importance of species is governed by the interactions between a large numbers of factors determining success in the niche hyperspace (Whittaker, 1970). In connection to this, Whittaker (1965) noted that the log-normal series describes the partitioning of realized niche space among various species and is the consequence of the evolution of particular species diversity along the niche parameters which they exploit. Similar types of dominance–diversity curves have been reported in Harshin rangelands of the Somali Regional State in Eastern Ethiopia by Hailu (2017).

Geometric distribution type prevails at relative species poor community where a single environmental resource (like moisture) is extremely important to species survival and is utilized in a strongly hierarchical fashion. Under such condition a single dominant species preempts a large fraction of the resource; the next most successful species preempts a smaller fraction of the remaining resources and so forth. Broken-stick model assumes that the species in a community partition or utilize some critical resources with no overlapping between the species while large species assembly with sub-equal abundance is the characteristic feature of log normal model (Clark, 1990). Interestingly, in this study *Aeluropus lagopoides* (a saline grass) was identified a dominant species at the peak of broken-stick and geometric models during winter and summer seasons. While *Tephrosia purpurea*, *Crotolaria burhia* and *Capparis decidua* were the tail species of broken stick model at three sites, respectively. Similarly tails of geometric model were occupied *Capparis decidua*, *Oligochaete ramose* and *Tamarix aphylla*. Such findings would help us to create more resilient and sustainable plant community created

with the deliberately introduction of species with similar resource demand and acquisition capability.

### **Community Specialization Index**

At the community level, a community specialization index (CSI) of species assemblages can be calculated as the average of each species SSI present in the assemblage (Devictor et al., 2008). Declining value of CSI indicates an increase of generalist species while its higher value shows higher proportion of specialized species of particular site (Vimal and Devictor, 2014). In present study, we found CSI values of 1.60, 2.77 and 2.94 during rain, winter and summer sampling period, respectively. Lower value of CSI during the rainy or resourceful period was due to adding of more generalized species in the community like *Aerva persica*, *Blepharis sindica*, *Boerhavia diffusa*, *Convolvulus auricomus*, *Farsetia macrantha*, *Dichoma tomentosa*, *Pulicaria wightiana*, *Sonchus aspera* and *Chorchorus tridens*. Higher values of this index during the other two seasons were due to dominant presence of more specialized species like *Aeluropus lagopoids*, *Cressa cretica*, *Suaeda fruticosa*, and *Sporobolus helvolus*. These species are indicators of saline grass. Thus, this index can be used as an interesting ecological indicator complementary to more traditional indicators based on diversity (Filippi-Codaccioni et al., 2010; Abadie et al., 2011). Mapping the CSI can thus provide a picture of spatial variation in the specialization level of communities, which can be related to independent sources of disturbance or used as a spatial guideline to identify sites of conservation interest (Devictor et al., 2008). This finding further linked with our spatial distribution of pattern of every species across different seasonal events.

### **Spatial Distribution Pattern**

Based on index of dispersion ( $I_D$ ) we got two types of spatial distribution i.e. random and clumped or aggregation (Table 4). Thus, our analysis revealed the absence of uniform pattern types of plant species on saline habitats. Based on available plant species during sampling seasons *Calotropis procera*, *Convolvulus auricomus*, *Sonchus aspera*, *Vernonia cinerea*, *Aerva persica*, *Cyperus iria*, *Heliotropium marifolium*, *Scripus tuberosus* and *Sporobolus helvolus* were represents clumped distribution pattern type only. While species like *Senna aungustifolia*, *Fagonia cretica*, *Leptadaenia pyrotechnica*, *Salsola baryosma*, *Suaeda fruticosa*, *Blepharis sindica* and *Tephrosia purpurea* showed temporal shifts in spatial distribution pattern from



random (rain) to aggregated (winter and summer). *Aeluropus lagopoides* showed random to clumped and clumped to random pattern during rainy-winter and winter –summer, respectively. *Cressia cretica* and *Crotolaria burhia* showed temporal shifts from clumped to random and random to clumped, respectively. Thus, such information's would also help us to understand the introduction strategists of these species for reallocation and rehabilitation of the degraded lands. This analysis also provides an insight about the post emergence species behavior within the community and its preference and non-preference companion.

#### **Agglomerative Hierarchical Clustering (AHC)**

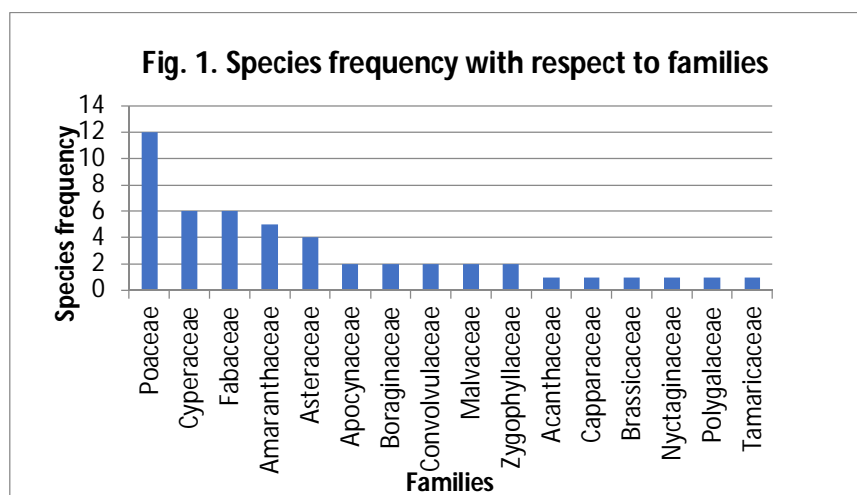
AHC dendrograms for species assemblage during three sampling periods are depicted in Figure 3. Such multivariate tool grouped the species on the basis of their IVI similarities and that provided good information about the selection of species for restoration/rehabilitation of degraded land with minimum competition for resources. During the rainy season AHC provided two distinct groups. Group one started with *Aeluropus lagopoides* and ended with *Convolvulsaauricomus*, with total 22 species while group two started with *Aristida funiculata* and ended with *Tamarix aphylla* having 25 species. Group one which has only two saline *sps.* i.e. *Aeluropus lagopoides* and *Suaeda fruticosa* and seven woody perennials like *Aerva persica*, *Corchorus depressus*, *Crotolaria burhia*, *Tephrosia purpurea*, *Fagonia cretica*, *Boheravia diffusa*, *Vernonia cinerea*

Group two having four saline species i.e. *Tamarix aphylla*, *Salsola baryosoma*, *Sporobolus helvolus* and *Haloxylon recurvum* with woody perennials like *Leptadenia pyrotechnica*, *Blepharis sindica*, *Prosopis juliflora*, *Senna angustifolia*, *Cassia fistula*, *Calotropis procera*. However, this group having more grasses (total 10) then group one (6). During winter season we got a different scenario in which *Aeluropus lagopoides* showed proximity with *Sporobolus helvolus* and *Suaeda fruticosa* with *Salsola baryosoma*. This further changed during the summer seasons where both *Aeluropus lagopoides* and *Suaeda fruticosa* showed proximity with each other compared to *Salsola baryosoma*.

Table 5. Species Distribution patterns during sampling period

Species	Rain	Winter	Summer
<i>Aeluropus lagopoides</i>	Random	Aggregated	Random
<i>Calotropis procera</i>	Aggregated	Aggregated	Aggregated

<i>Senna aungustifolia</i>	Random	Aggregated	Aggregated
<i>Convolvulus auricomus</i>	Aggregated	Aggregated	Aggregated
<i>Cressa cretica</i>	Aggregated	Aggregated	Random
<i>Crotolaria burhia</i>	Random	Random	Aggregated
<i>Fagonia cretica</i>	Random	Aggregated	Aggregated
<i>Leptadaenia pyrotechnica</i>	Random	Aggregated	Aggregated
<i>Salsola baryosma</i>	Random	Aggregated	Aggregated
<i>Sonchus aspera</i>	Aggregated	Aggregated	Aggregated
<i>Suaeda fruticosa</i>	Random	Aggregated	Aggregated
<i>Vernonia cinerea</i>	Aggregated	Aggregated	Aggregated
<b>Species</b>	<b>Rain</b>	<b>Winter</b>	
<i>Aerva persica</i>	Aggregated	Aggregated	
<i>Blepharis sindica</i>	Random	Aggregated	
<i>Cyperus iria</i>	Aggregated	Aggregated	
<i>Heliotropium marifolium</i>	Aggregated	Aggregated	
<i>Scripustuberosus</i>	Aggregated	Aggregated	
<i>Sporobolus helvolus</i>	Aggregated	Aggregated	
<i>Tephrosia purpurea</i>	Random	Aggregated	





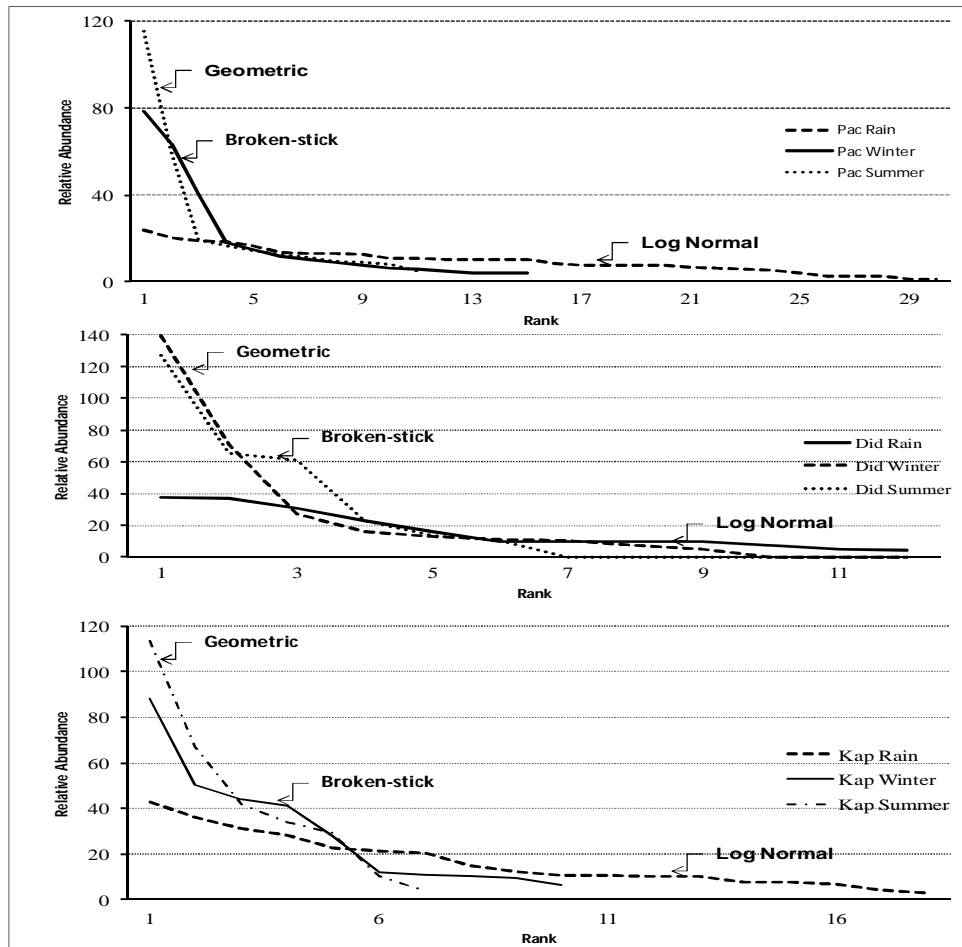


Figure 2. Diversity Dominance Curve at sampling sites during three sampling periods

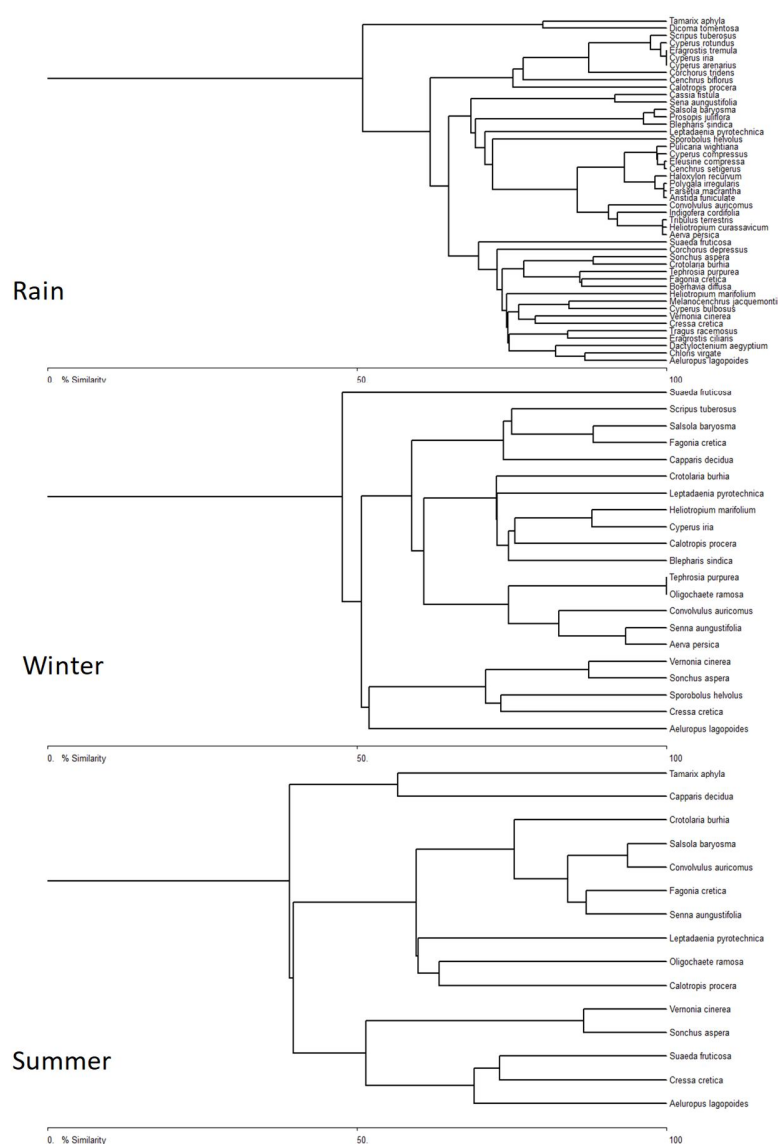


Figure 3. Agglomerative Hierarchical Clustering during different seasonal period

## E. Molecular aspects of Desert Plants

**Title: Molecular characterization and elucidation of HO (Hemeoxygenase) role in metal/salinity stress (Investigator: G.S. Shekhawat)**

In continuation with previous report; effect of heavy metals ( $\text{CdCl}_2$ ) and NaCl on *Vigna radiata* seedlings were observed at genetic level. The sublethal concentrations of metal (50  $\mu\text{M}$  Cd, 20 mM NaCl and 60 mM NaCl) were selected for the polymorphic study.

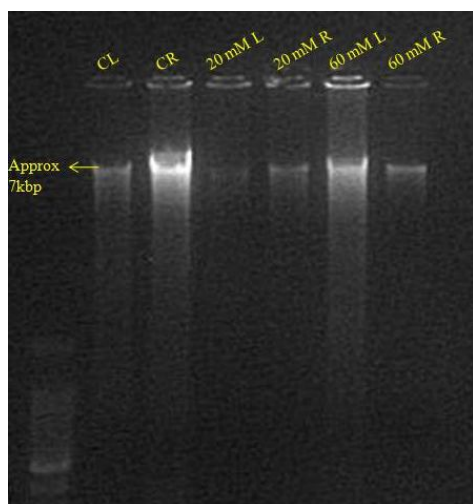


### **Genomic DNA Extraction**

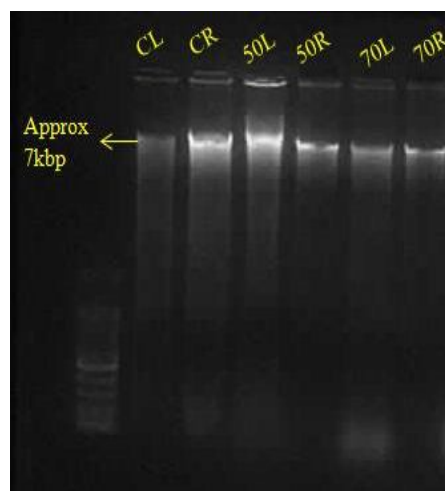
Plant genomic DNA was isolated from leaves and roots tissue (approx. 1 gm) of hydroponically grown seedlings of *Vigna radiata*. Genomic DNA was extracted by CTAB method (Doyle and Doyle 1990), for which plant tissues were fixed in liquid nitrogen and crushed using autoclaved prechilled mortar and pestle. Extracted genomic DNA was quantified using nanodrop and the quality was checked on agarose gel electrophoresis. 0.8% agarose gel prepared in 1X TBE buffer was used for agarose gel electrophoresis. The electrophoresis was carried at 150V for 1-2 hours. The gel was then observed on a UV transilluminator (Syngene) and DNA was seen as fluorescent bands. 1Kbp DNA ladder was loaded for comparing the size of the isolated genomic DNA.

### **Polymorphic analysis using SCOT 1 primer**

The extracted genomic DNA (50 ng/ µl) was used for study the polymorphism in crop plants treated with cadmium chloride for a period of 96 hours using SCOT 1 primer (5'-CAACAATGGCTACCACCA-3'). The PCR reactions were performed in a total reaction volume of 15 µl (12 µl of master mixture + 3µl of genomic DNA) using T100 thermocycler (Biorad). The reaction mixture contained 10 X PCR buffer, MgCl<sub>2</sub> solution, 10 mM dNTPs, Taq polymerase (3U) and SCOT 1 primer. A standard PCR cycle was used: an initial denaturation step at 94 °C for 4 minutes, followed by 35 cycles of 94 °C for 1min, 58.5 °C for 1min and 72 °C for 2 minutes; the final extension at 72 °C was held for 10 minutes. All PCR amplification products were separated on 1.2% agarose gels in TBE stained with EtBr and visualized under UV light). In the present study, the high level of polymorphism was noticed at varying concentrations of NaCl and Cd after exposing the seedlings of crop plant for 96 hours. The number and intensity of polymorphic band was higher in roots tissue in comparison to leaves (Fig. 3). In lane no.5, lane no. 7 and lane no. 9 a new polymorphic band of approximately 4kbp and 2.8 kbp, 2.5 kbp, 2 kbp (lane no. 7) were observed which might be due to the upregulation of antioxidants during stress environment. The pattern of polymorphism was observed in between 1 kbp to 4 kbp.

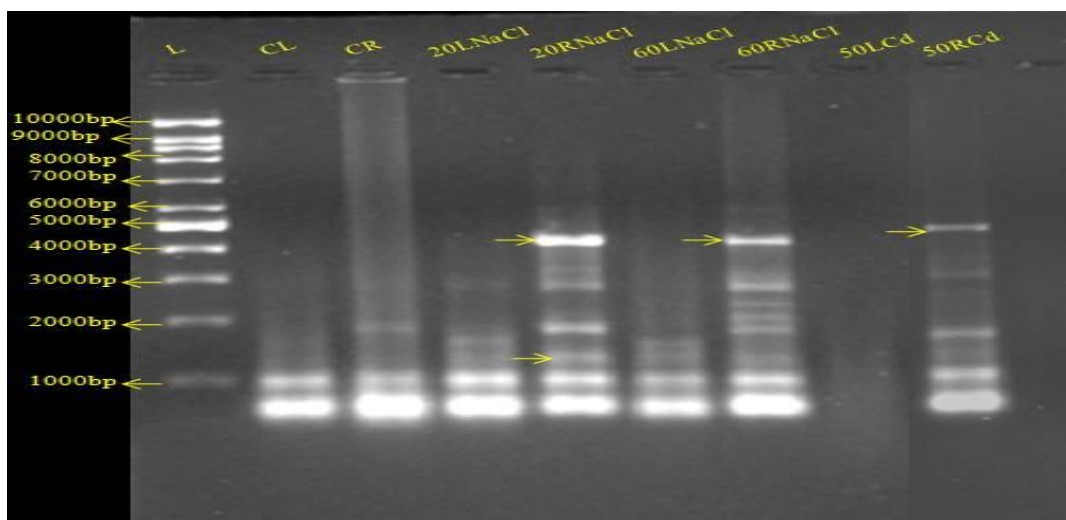


**Fig. 1:** Represents the Genomic DNA from leaves and roots tissue of *V. radiata* seedlings exposed to 20 mM and 60 mM NaCl for a period of 96 hours. Lane first represents 1 Kbp ladder while lane 2 to 6 represents samples.



**Fig. 2:** Represents the Genomic DNA from leaves and roots tissue of *V. radiata* seedlings exposed to 50  $\mu$ M and 70  $\mu$ M CdCl<sub>2</sub> for a period of 96 hours. Lane first represents ladder while 2 to 6 represents samples.





**Fig-3:** Polymorphism in stressed seedlings using SCOT 1 primer from leaves and roots tissue of *V. radiata* seedlings exposed to NaCl (20 mM and 60 mM) and CdCl<sub>2</sub> (50  $\mu$ M) for 96 hours

**Title: Identification of novel genes for abiotic stress tolerance from Indian Thar desert plants through comparative proteomics approach (Dr. Shweta Jha).**

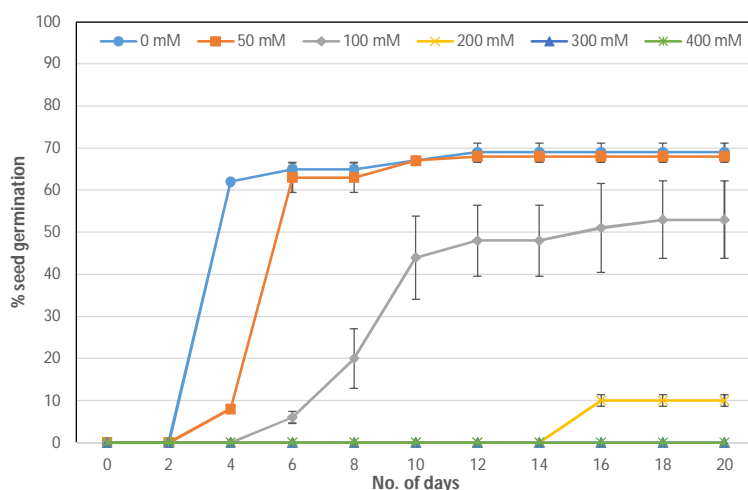
#### **Work done:**

We have optimized seed germination conditions for *Atriplex* spp. collected from Dwarka, and observed that removal of bracteoles exerted a great effect on germination, and markedly improved the germination percentage. Soaking of seeds in distilled water for overnight also helped in removal of inhibitory compounds from seed coat, thereby increasing rate of germination. Morphological, physiological and biochemical characterization of *Atriplex* spp. was performed under salinity stress conditions.

#### **1. Effect of salinity on seed germination**

To determine effect of salinity on seed germination of *Atriplex*, ebracteate seeds were surface sterilized, soaked overnight in distilled water and germinated under different salt concentrations (0, 50, 100, 200, 300 and 400 mM NaCl) on moistened filter paper in closed petri-plates at 20°C under continuous fluorescent light (25-100  $\mu$ mol m<sup>-2</sup> sec<sup>-1</sup>). At least 50 seeds (for one replicate) were used for each treatment, and three independent biological replicates were analyzed for each concentration. The number of seeds germinated was counted daily for 20 d. Seeds were considered germinated when the radicle emerged 1 mm from the

seed. These data were used to determine the germination time and percent germination in different NaCl concentrations. As the salt concentration increased, the Atriplex species exhibited a decreasing trend of germination rate. Although the germination of Atriplex seeds was strongly inhibited when they were subjected to salt stress, the degree of inhibition differed markedly. After 20 days, only 10% seed were found to be germinated under 200 mM NaCl, as compared to 69% in control, whereas germination was completely inhibited under 300 and 400 mM NaCl (Fig. 1). On the other hand, seed germination was slightly affected upon exposure to 50 mM and 100 mM NaCl concentrations. The speed of seed germination was also significantly affected under treatment conditions.



**Fig. 1** Seed germination assay to assess the impact of salinity on seed germination of Atriplex spp. Seeds of Atriplex were germinated in presence of different concentration of NaCl (0-400 mM), and germination percentage was recorded every day, upto 20 days.

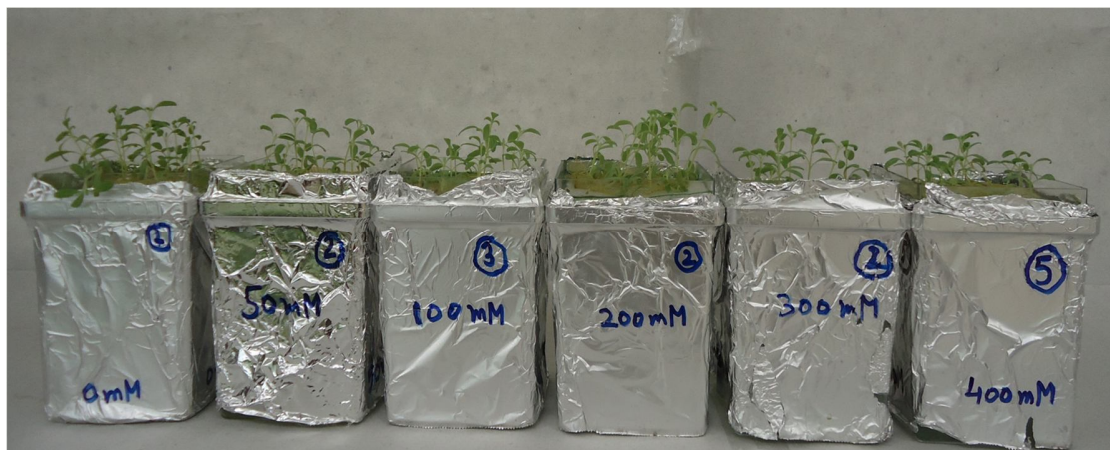
## 2. Effect of salinity on seedling growth

Phenotypic characters of Atriplex such as shoot and root length (cm) fresh weight (mg) and no. of leaves were recorded at different salt treatment conditions for the purpose of determining effect of salinity on seedling growth. In our study, the growth of Atriplex seedlings slightly increased with increasing salt concentration, and optimal growth occurred under 200 mM NaCl conditions, which showed that low salt could promote the seedling growth of a halophyte (Fig. 2). Further increases in salinity caused a gradual decline in growth and an



increase in salt-injury (Fig. 2, 3). However, plants did not experience any seedling death after 7 days of treatment with higher concentration of salt. Results of the present study indicate that *Atriplex* is a moderately salt tolerant species and low concentration of salt (upto 200 mM) significantly promotes its growth and biomass.

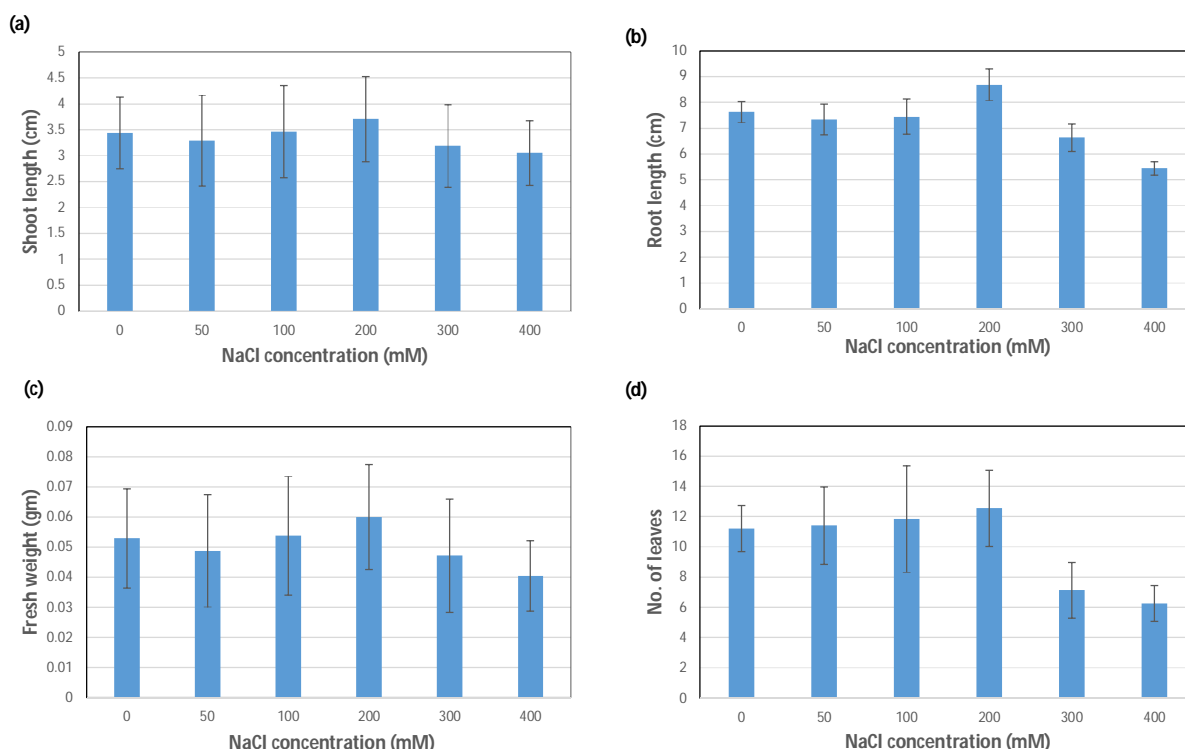
(a)



(b)



**Fig. 2** Phenotype of *Atriplex* seedlings after 7 days of NaCl treatment at 0 mM (control), 50 mM 100 mM, 200 mM, 300 mM and 400 mM concentrations. Plants were grown in Hoagland's medium supplemented with different concentration of NaCl, or without NaCl (control).



**Fig. 3** Growth characteristics of *Atriplex* seedlings after 7 days of NaCl treatment at 0 mM (control), 50 mM 100 mM, 200 mM, 300 mM and 400 mM concentrations. (a) Shoot length, (b) root length, (c) fresh weight and (d) number of leaves.

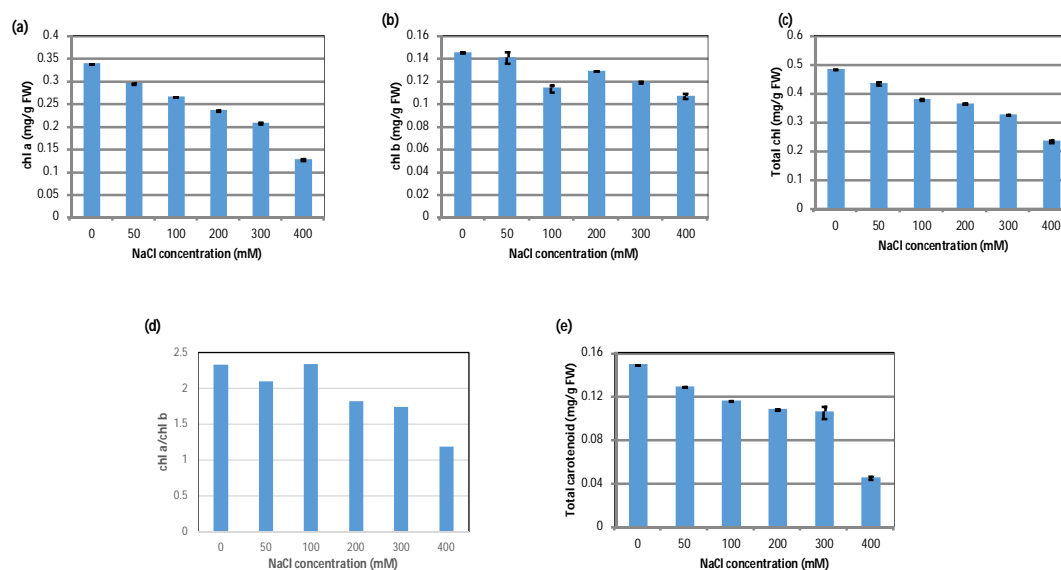
### 3. Physiological responses of *Atriplex* under salt stress

#### 3a. Pigment estimation

Chlorophyll content in plants correlates directly to the healthiness of plant. The resistance of photosynthetic systems to salinity is associated with the capacity of the plant species to effectively compartmentalize the ions in the vacuole, cytoplasm and chloroplast. High levels of salinization induces a significant decrease in content of pigment fractions and consequently of the total chlorophyll content. The effect of different concentrations of salts on pigment content of seedlings of *Atriplex* is shown in Fig. 4. It is evident from the results that chl-b content was not much affected by the salinity, whereas significant changes were observed for chl-a (Fig. 4 a,b). Total chlorophyll content, which is an indicator of greenness of plants, also followed the similar trend as chl-a (Fig. 4c). The ratio of chl-a and b (chl a/ chl b) significantly decreased at only 400 mM NaCl concentration (Fig. 4 d).



Carotenoids in all higher plants are synthesized and located in the chloroplast along with the chlorophyll. These are of two types, xanthophyll and carotene. They protect chloroplast from photo-oxidative damage and act as accessory light harvesting pigments. They also play an important role in the protection against oxidative stress. The response shown by the plants with respect to accumulation of carotenoids under the salinity stress varies from plant to plant. In our study, upto ~0.3-fold reduction in carotenoid content has been observed under 400 mM NaCl concentration (Fig. 4 e). Interestingly, salt concentrations lower than 400 mM NaCl did not exhibit significant reduction in pigment content, further proving salt-tolerant nature of Atriplex.



**Fig. 4** Pigment estimation in seedlings of *Atriplex* spp. after 7 days of NaCl treatment at 0 mM (control), 50 mM 100 mM, 200 mM, 300 mM and 400 mM concentrations. (a) Chl a, (b) Chl b, (c) total chlorophyll (d) chl a/chl b and (e) total carotenoid contents.

### 3b. Proline content

Plants can protect themselves against salinity stress by accumulating compatible solutes in cytosol which help in maintaining osmotic potential of the cell and stabilizing proteins and other cellular structures. Proline is one of the most common compatible osmolyte which maintains the cellular redox homeostasis by direct scavenging of excess reactive oxygen species (ROS), protecting ROS scavenging enzymes and activating alternate detoxification pathways. During the present investigation, *Atriplex* seedlings performed well under salt stress conditions and accumulated higher level of proline under salinity stress. A progressive increase in the levels of free proline was recorded in seedlings of *Atriplex* exposed to increasing concentration of salt, (Fig. 5a). This accumulation of proline act as an adaptive mechanism for salinity stress tolerance.

### 3c. Lipid peroxidation (MDA content)

Salinity is known to cause extensive lipid peroxidation resulting in damage to cellular membrane. It is used as an indicator for stress-induced oxidative damage. Malondialdehyde (MDA) is a lipid breakdown product and generated by oxidation of poly-unsaturated fatty acids



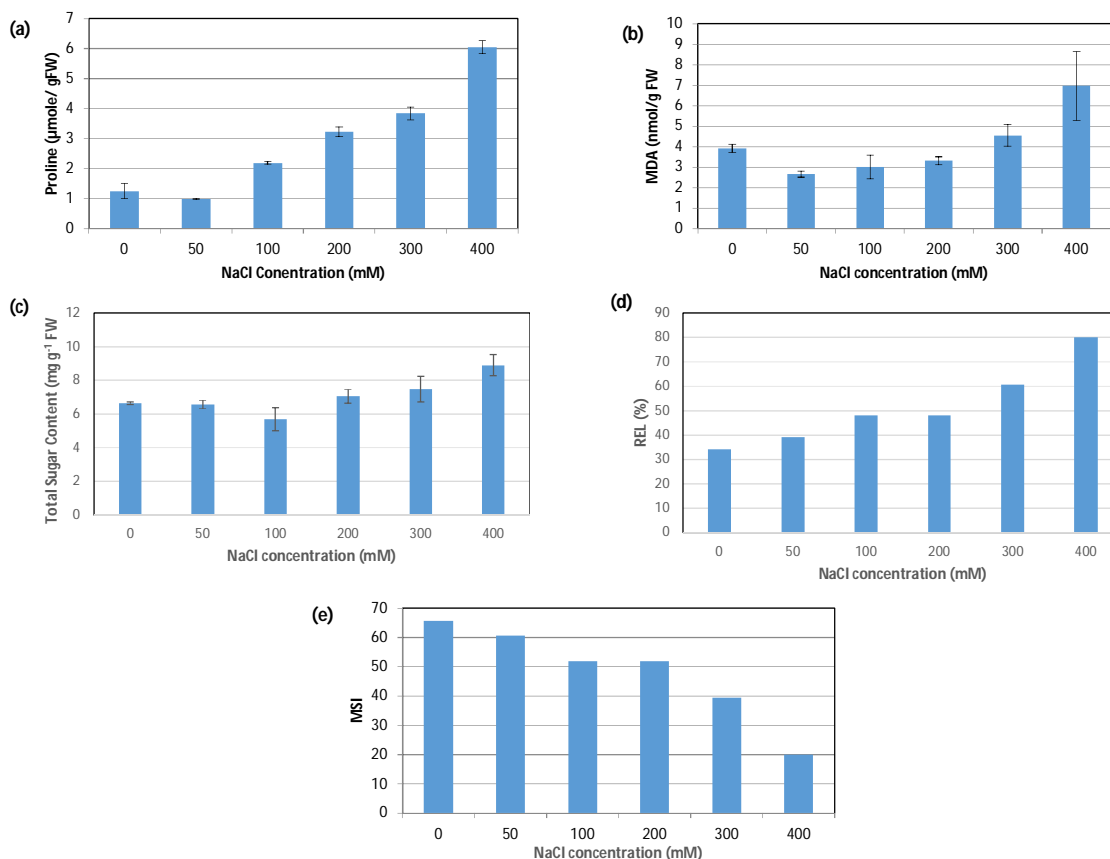
(PUFA) in membranes. MDA concentration varies in response to abiotic stress; hence it can be used as marker for assessing the extent of lipid peroxidation and membrane damage, and the rate of lipid peroxidation indicates the sensitivity of plants to salt stress. In our study, Atriplex species showed ~1.7-fold increase in MDA content upon treatment with 400 mM NaCl, showing membrane damage at this concentration. On the other hand, no significant difference in MDA content was found at NaCl concentrations lower than 400 mM, indicating reduced oxidative damage to membranes that has been attributed to its salinity tolerant behavior (Fig. 5b).

### **3d. Total soluble sugar**

In abiotic stress, increased sugar content help in combating the effect of stress by osmotic adjustment and used as potential biochemical indicator for salinity stress in plants. In our study total soluble sugar content exhibited no significant change upon salt treatment (Fig. 5c), confirming the stress-tolerant nature of Atriplex.

### **3e. Relative Electrolyte Leakage**

Relative electrolyte leakage (REL) is an indicator of membrane damage. After 7-day salt treatment, NaCl treatment caused a slight increase in REL at lower concentrations (upto 200 mM), whereas significant electrolyte leakage upto 1.8 and 2.3-fold was observed for 300 and 400 mM NaCl treatments, respectively as compared to control (Figure 5d). In contrast, membrane stability index did not show significant change at lower salt concentrations, while it showed reduction upto 0.5-fold at 400 mM NaCl (Fig. 5 e). This suggests that salt tolerance capability of Atriplex may be closely related to the maintenance of ion homeostasis and membrane recovery under salt stress.



**Fig. 5** Effect of salt stress on physiology of *Atriplex* seedlings after 7 days of NaCl treatment at 0 mM (control), 50 mM 100 mM, 200 mM, 300 mM and 400 mM concentrations. (a) Proline content ( $\mu\text{mole/g FW}$ ), (b) lipid peroxidation (nmoles MDA content / g FW), (c) total sugar content ( $\text{mg/g FW}$ ), (d) relative electrolyte leakage (REL, %) and (e) membrane stability index (MSI).

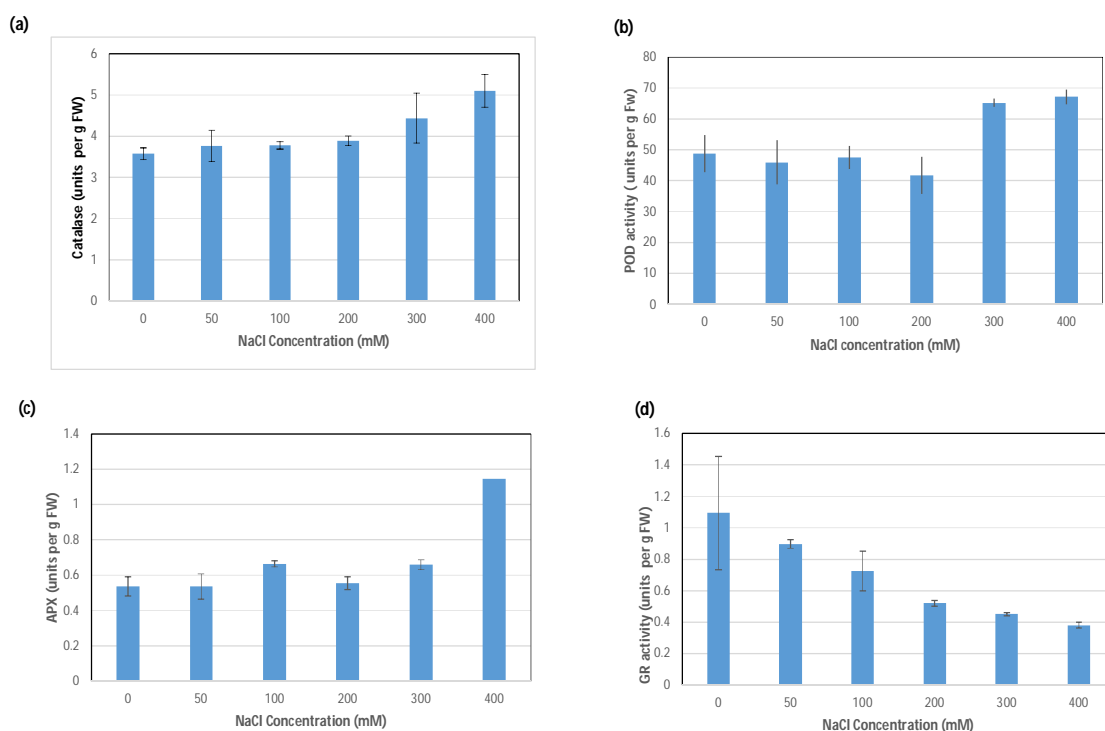
### 3f. Anti-oxidant enzyme activity

Due to high salinity plants produce reactive oxygen species (ROS) such as superoxide radical, hydrogen peroxide and hydroxyl radical. These ROS cause oxidation of biomolecules in the cytoplasm and membrane resulting in extensive cell damage. Oxidative stress can lead to inhibition of photosynthesis and respiration and, thus, plant growth. Plants have evolved enzymatic and non-enzymatic systems to scavenge reactive oxygen species. In enzymatic systems, for example, ROS are scavenged by antioxidant enzymes such as catalase, SOD, APX, POD, GR etc.



In the present study, we have analyzed activity of these important antioxidant enzymes to support our phenotype data for salt-tolerant nature of Atriplex. CAT, POD and APX activities showed similar trend in Atriplex under salt stress condition. Their activity did not show significant change upto 200 mM NaCl concentration. Whereas it was significantly increased at higher concentrations, and exhibited upto 1.4-fold, 1.3-fold and 2.1-fold increase at 400 mM NaCl concentration for CAT, POD and APX respectively, as compared to unstressed control (Fig. 6 a,b,c). In contrast, GR activity was found to be gradually reduced upon exposure to different concentrations of salt, and it exhibited upto 0.3-fold reduction at 400 mM NaCl, as compared to control (Fig. 6d). The reduction in GR activity in salt tolerant halophyte indicates that this enzyme may not be directly involved in protection against oxidative stress.

These antioxidant enzyme assays indicate that salt tolerance in Atriplex species may be related to higher constitutive levels of catalase and peroxidase, and a greater capacity to regulate ascorbate peroxidase activity. This is additional evidence supporting the salt-stress tolerant capabilities of Atriplex plants.



**Fig. 6** Effect of salt stress on antioxidant enzyme activity in seedlings of *Atriplex* spp. after 7 days of NaCl treatment at 0 mM (control), 50 mM 100 mM, 200 mM, 300 mM and 400 mM concentrations. (a) Catalase activity expressed in units per gram FW. (b) Peroxidase (POD) (Guaicol) activity expressed in units per gram FW. (c) Ascorbate peroxidase (APX) activity expressed in units per gram FW. (d) Glutathione reductase (GR) activity expressed in units per gram FW.

## **Non - Thrust Area ( Stress Physiology)**

### **Investigators**

- i. **Dr.B.R.Gadi (Incharge )**
- ii. **Mr.Ramesh Kumar (Member)**

**Title of Research : Stress tolerance mechanism of some wild/native plants of Thar Desert**

### **Work Done**

Plant (*Lasiurus indicus* Henr ) materials were collected from different sites of Jaisalmer, Barmer, Jodhpur and Bikaner districts of Rajasthan. Most of these plants were collected from different sandy habitat of the Desert, near canal region, plain area and rocky habitat. Biochemical parameters like proteins, proline ,sugars pigments, and antioxidants were assayed under different levels of water and salinity stress in *in vivo* grown plants . Total genomic DNA was extracted from the collected leaf sample using CTAB (Cetyl trimethyl ammonium bromide) method . Further the extracted DNA is used for the amplification with RAPD primers in thermo cycler.

### **In Vivo Studies**

Effect of of NaCl ( 50,100 and 150mM) and PEG 6000 (5,10 and 20 %) on biochemical and enzyme activities were studied on *Lasiurus indicus* grown *in-vivo* at 15, 30 and 45 days after treatment (DAT).

### **Effect of NaCl on and Water stress on following parameters :**

- (I) Plant metabolites (soluble protein, proline and total soluble sugars) content.
- (II)Photosynthetic pigments (Chl-a and Chl-b) content.
- (III) Membrane integrity parameters-Chlorophyll Stability Index (CSI%), Membrane Stability Index (MSI%) and lipid peroxidation in term of Malondialdehyde (MDA) content.



(IV) Enzymes -Nitrate reductase (NR) activity and Antioxidant- non-enzymatic (Ascorbic acid and Total Phenols) content and enzymatic (SOD, POX and CAT) activities.

### Effect of NaCl

NaCl stress has negative effects on plant growth as it decreased the soluble protein, pigments CSI, MSI and NR activity at 15, 30 and 45 days after treatment (DAT). Proline, ascorbate, phenol and total soluble sugars content increased significantly with increasing concentration of NaCl. The proline and total soluble sugars content was more at 45 DAT with 150 mM NaCl.

The peroxidase, catalase and superoxide dismutase (SOD) activities as well as MDA content showed an increasing trend with concentration and duration of treatments. Phenols initially increased, but showed a lower value for 150 mM NaCl at 45 DAT as compared to 30 DAT.

**Table1: Effect of salt stress on total phenols, total soluble sugars content and peroxidase activity in *in-vivo* grown seedlings of *L.sindicus*. (±Standard error of mean)**

Treatments	Phenol			total soluble sugars			Peroxidase activity		
	DAT			DAT			DAT		
	15	30	45	15	30	45	15	30	45
<b>Control</b>	23.41 ±0.75 4	25.35 ±0.84 3	28.45 ±1.32 3	40.81 ±1.17 3	44.76 ±1.32 9	49.04 ±0.87 3	66.17 ±0.80 7	69.24 ±0.91 6	71.92 ±0.82 5
<b>NaCl 50</b>	23.81 ±1.36 5	26.87 ±1.44 3	28.82 ±1.43 2	42.19 ±1.28 2	46.32 ±0.42 1	50.54 ±1.43 2	67.37 ±0.39 2	72.28 ±0.42 2	74.54 ±0.71 2
<b>NaCl 100</b>	26.21 ±1.54 5	28.37 ±1.54 4	30.42 ±1.34 3	48.25 <u>0.984</u>	52.71 ±1.42 8	53.11 ±1.03 6	79.15 ±0.68 3	86.67 ±0.72 4	88.63 ±0.89 2
<b>NaCl 150</b>	29.62 ±1.23 2	35.50 ±2.33 2	34.12 ±2.43 2	57.360 ±1.57 7	62.25 ±0.47 3	65.59 ±1.01 8	86.59 ±0.82 4	89.59 ±1.02 6	94.37 ±1.13 7

### Effect of Water stress

PEG treatment caused more pigments (Chl a and Chl.b ) reduction than NaCl treatment and maximum decrease in pigment content was observed at 45 DAT treated with 20 % of PEG. Percentage of chlorophyll stability index and MSI gradually decreased with duration and increasing concentration of PEG and salt. Maximum decrease in CSI% and MSI % was recorded in drought stress with 20 % PEG at 45 DAT.

It was also observed that proline level increased with increasing concentration and duration of PEG treatment in *Lasiurus* seedlings, and higher increase in level of proline was reported in 20 % of PEG treatment at 45 DAT.

Activity of nitrate reductase and protein content was declined under water stress over control seedlings. Maximum reduction in NR activity was observed with drought stress compared to salt stress.

**Table 2 : Effect of PEG-6000 on chlorophyll stability index (CSI), Peroxidase (POD) activity and Protein content in *in-vivo* grown plants of *L.sindicus* .(±Standard error of mean ).**

Treatments	CSI %			POD			Protein		
	DAT			DAT			DAT		
	15	30	45	15	30	45	15	30	45
<b>Control</b>	76.13 ±0.754	78.24 ±0.843	79.56 ±1.323	66.17 ±0.807	69.24 ±0.916	71.92 ±0.825	24.33 ±0.741	25.27 ±0.173	28.51 ±0.374
<b>5 % PEG</b>	74.53 ±1.365	78.19 ±1.443	78.38 ±1.432	66.321 ±1.323	71.25 ±0.433	75.38 ±1.761	23.53 ±0.235	24.16 ±0.345	27.48 ±0.324
<b>10% PEG</b>	73.31 ±1.545	76.37 ±1.544	76.91 ±1.343	74.54 ±1.433	75.82 ±1.434	79.43 ±1.031	20.31 ±0.544	22.28 ±0.522	22.93 ±0.567
<b>20% PEG</b>	70.14 ±1.232	70.02 ±2.332	69.03 ±2.432	82.40 ±1.657	97.38 ±0.545	90.25 ±1.126	17.14 ±0.127	16.29 ±0.463	15.62 ±0.245

The lipid peroxidation product in the form of MDA content was greatly increased when plants were subjected to both stresses of NaCl and PEG. It was also observed that with increasing duration of stress, MDA level was increased as compared to control. The activities of antioxidant enzymes such as superoxide dismutase (SOD), peroxidase (POD) and catalase (CAT) increased significantly with increasing concentration of PEG. In different concentration of PEG (5,10 and 20 % PEG ), activities of all three examined enzymes (SOD, POD and CAT) varied greatly.



Salt and PEG treatments caused an increase in non enzymatic (ascorbic acid and phenolic content) and enzymatic antioxidants (SOD, POD and CAT) that depended on the concentration and duration of exposure to stress of PEG and NaCl applied to the plants.

### **Genetic Diversity analysis of *L. indicus***

#### **DNA extraction**

Young leaves of *Lasiurus indicus* were collected from plants grown in arid region of western Rajasthan. The leaves were stored in liquid nitrogen. DNA was extracted CTAB method described by Murray & Thomson (1980) with slightly modifications. The pre-chilled mortar and pestle was used to grind leaf (1.0 g) samples in liquid nitrogen. Precipitated DNA was kept for air dry. Then re-suspend DNA appropriate volume of TE for storage at 4°C.

Quantity and purity also check by nanodrop spectrophotometer through 260/280 ratio. The DNA was examined using the agarose gel electrophoresis method. 0.8% (w/v) agarose was dissolved in 1X TAE buffer and electrophoreses with marker DNA ( $\lambda$  Hind III DNA marker). The gel was visualized and photographed under UV transilluminator to visualize the fluorescent bands of ethidium bromide-stained DNA.

### **Polymerase Chain Reaction (PCR) optimization and Data analysis**

#### **PCR Optimization and selection of primers**

Varying concentrations of (i) template DNA (20, 30, 40, 50 and 60 ng), (ii) Taq DNA polymerase (0.5- 2 U) and (iii)  $Mg^{++}$  salt (1- 5 mM) were used to optimize the reaction conditions of the PCR using one specific DNA sample. 10 RAPD primers from the kits OPA, OPB, OPC, OPD and OPK (Operon Technologies, USA) were assayed to screen primers that produced best amplification products. Three RAPD primers (OPA 10, OPA 07 and OPK 01) were finally selected.

40 ng template DNA, 15ng RAPD primer, 0.24mM dNTP, 2.5 mM  $Mg^{++}$ , and 1U Taq DNA polymerase making up to final volume as 25  $\mu$ l was used for PCR amplification. The amplification was carried out for 40 cycles with DNA denaturation at 94 °C for 5 min followed by 45 cycles of denaturation (94 °C for 1 min), annealing (37 °C for 1min), and extension (72°C for 2 min), with a final extension at 72 °C for 7 min in a thermal cycler.

### Gel electrophoresis

Aliquots of amplified PCR products, along with DNA ladder were run in 1.2 % (w/v) agarose gel in 1X TAE buffer . The 100bp and 1 kb ladder was taken as the standard marker in each amplification. The ethidium bromide stained agarose gels were visualised under ultra violet and photographed.

The quality of DNA extracted was found to be good and good RAPD profiles (Fig1-2) were obtained with the chosen primers in different accessions of *L.sindicus*

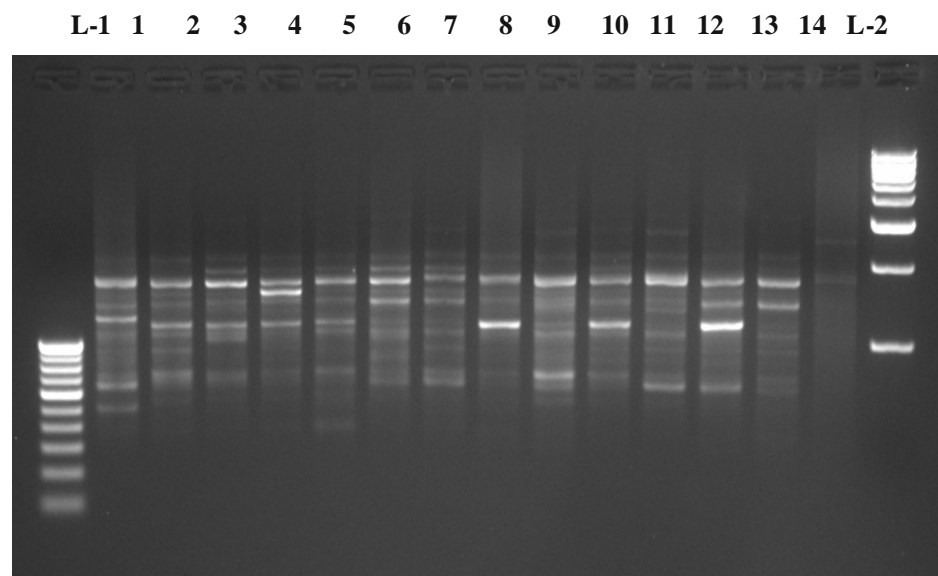


Fig.1. **RAPD (OPA-10)** Primer profile of *Lasiurus indicus* lane 1-14 & **L-1** is 100 bp ladder and **L-2** is 1 kb ladder.

L-1 1 2 3 4 5 6 7 8 9 10 11 12 13 14 L-2



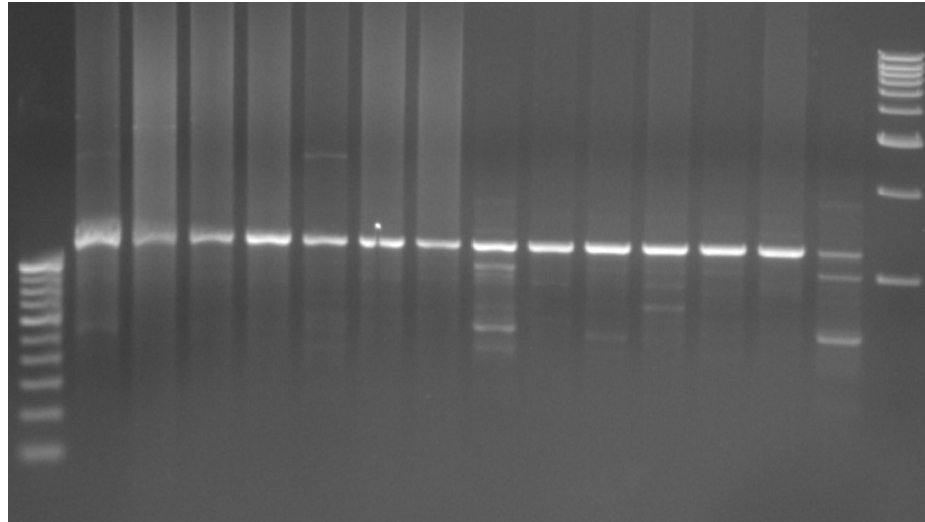
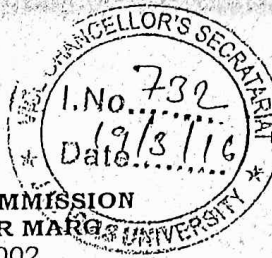


Fig.1. **RAPD (OPK-7)** Primer profile of *Lasiurus indicus* lane 1-14 & **L-1** is 100 bp ladder and **L-2** is 1 kb ladder.

**UGC-SAP-DRSII**  
**(DEPARTMENT OF**  
**PHYSICS)**





UNIVERSITY GRANTS COMMISSION  
BAHADUR SHAH ZAFAR MARG  
NEW DELHI - 110 002

No. F. 530/12/DRS-II/2016(SAP-I)

February, 2016

The Registrar  
Jai Narain Vyas University  
Jodhpur-342 005 (Rajasthan).

Sub: University Grants Commission Assistance to selected departments under Special Assistance Programme (SAP) – **Review of the Programme in the Department of Physics, Jai Narain Vyas University, Jodhpur for Continuation from DRS-I to DRS-II for a period of 5 years (1.4.2016 to 31.3.2021).**

Sir,

1. The UGC Special Assistance Programme (SAP) is intended through *constant* effort to raise the quality of teaching/ research in different disciplines in Humanities, Social Science, Engineering & Technology science departments and carefully selected on the basis of their work, academic achievements and viable potential for further development. The essence and primary aim of the scheme is combination of teaching and research to encourage group research efforts in pursuit of excellence.
2. **The Department of Physics, Jai Narain Vyas University, Jodhpur was implementing the DRS-I of the programme approved for a duration of five years. (2009-2014)**
3. As per guidelines, the Commission constituted an Expert Committee to review the progress made by the above department which has completed its approved term of participation under the Special Assistance Programme (SAP). The Expert Committee Reviewed the department **on 26<sup>th</sup> May, 2015 at UGC office, New Delhi.**
4. The Review Committee, after a very careful and critical in-depth examination of the academic achievements made by the department during the terms as well as discussing various aspects of implementation of the programme with the departmental representatives has submitted their recommendations to the Commission.
5. The UGC has approved the **Department of Physics from DRS-I to DRS-II programme** for a further period of **Five years from 1.4.2016 to 31.3.2021.**
6. On the basis of the recommendations of the Review Committee, I am directed to convey the approval of the University Grants Commission to the **up gradation** of the programme at the level of **DRS-II** for duration of **five Years** with the following thrust area(s) for research and teaching.

**Thrust Area(s) Identified:**

**Material Science**

As recommended by the Review Committee, the Co-ordinator of the programme for the present phase of the programme will be as indicated below:

**Name of the Coordinator :**

**Prof.(Dr.) R.J. Singwa**

**Name of the Deputy Coordinator:**

**To be nominated by Vice Chancellor**

The Co-ordinator may continue till the end of the present duration of the programme or till his/her superannuation.

7. The financial assistance approved for implementing the present phase at the level of **II** for duration of **Five years (01/04/2016 to 31/03/2021)** are given below:

S.No.	Non- Recurring Equipments	Allocation (in lakh)
1	Differential Scanning Calorimetry(DSC)	70.00
2	Impedance Analyzer (RF impedance and material analyzer over frequency range 1MHz to 1GHz) with dielectric material test fixture	
3	US - VIS-NIR Spectrometer	
<b>Total</b>		70.00

**Recurring**

1	Contingency/ working expenses @ Rs.1.00 lakh p.a	5.00
2	Chemical/consumables/glasswaires @Rs.1.00 lakh p.a.	5.00
3	Travel/Field facilities/Field trips for faculty members (all within India) @ Rs. 0.50 lakh p.a.	2.50
4	Visiting Fellows@Rs.0.50 lakh p.a.	2.50
4.	Seminars for Organization on thrust area @ Rs.1.00 lakh p.s. ( <b>THREE</b> )	3.00
5	Hiring the services of Technical/Industrial/Secretarial assistance as relevant to the programme(for programme duration only) @Rs.0.60 lakh p.a	3.00
6.	Advisory Committee meeting (TA/DA for UGC nominees in the Committee) @ Rs. 0.50 lakh p.a.	2.50
7.	Books & Journals @ Rs.1.00 lakh p.a.	5.00
<b>Total</b>		<b>28.50</b>

<b>Non -Recurring :</b>	<b>(Rs. In lakh)</b>
	<b>Rs.70.00</b>
<b><u>Recurring:</u></b>	<b>Rs. 28.50</b>
<b>Total(NR+R) for 5 years</b>	<b>Rs.98.50 (Rupees Ninety Eight lakh fifty thousand only)</b>

8. The University is to maintain a separate bank account for the grants released under Special Assistance programme. All interest earned by the university/department by investment of funds sanctioned and by the UGC under Special Assistance Programme will be treated as additional grant. The university/department will have to submit the Utilization Certificate of the earned interest (after prior approval of Advisory committee), at the time of submitting the annual accounts for the programme.
9. The university/department may follow the SAP Guidelines posted on the UGC website.
10. The university/institute may follow the norms for appointment of Programme Co-ordinator and Dy. Co-ordinator (no Joint Co-ordinator or Co-Co-ordinator) and also constitute an Advisory Committee as per the guidelines of the Commission and follow the terms of reference of the Advisory Committee to ensure effective implementation and monitoring of the Programme. The constitution of the Advisory Committee is compulsory for all departments which are being supported under SAP. The UGC nominees in the Committee will be as indicated below. The department may contact the UGC nominees for their acceptance and intimate to the Commission.



1. **Prof. R.K. Singh, Department of Physics, Banaras Hindu University, Varanasi.**
2. **Prof. Kundu, Department of Physics, IIT Bombay, Mumbai**

The active participation of the UGC nominees in each meeting of the Advisory Committee is essential. The composition and terms & reference of the Advisory Committee will be as give in the **UGC website [www.ugc.ac.in](http://www.ugc.ac.in)**

11. The university/institute/départment is requested to take immediate steps to submit the following information/documents for necessary action:
  - I Acceptance of the terms and conditions of the grants duly signed by the Registrar of the University/Institute.
  - II Name of the competent University Officer with full address in favour of the Demand Draft is to be sent by the UGC.
  - III Detailed statement of year-wise actual expenditure incurred against the grants allocated, sanctioned during the last phase may be submitted in the PROFORMA in the Annexure - V, of SAP Guidelines duly audited and certified by the Competent authority, in order to finalize the accounts of the earlier phase.
  - IV Name of the Department Co-ordinator and Dy. Co-ordinator indicating (i) present designation (ii) specialised areas(s) of research and (iii) date of superannuation.
  - V List of members of the Advisory Committee constituted by the university/ institute as per guidelines.
  - VI Year-wise academic programme and action proposed to be undertaken by the department during the period of 5 years to implement the programme.
  - VII The annual report of the work done during the year (as per effective date of the programme) should be submitted by the Programme Co-ordinator highlighting the academic achievements in research and teaching and indicating separately the progress in procuring of equipment/construction of building (only addition, alteration and renovation, if sanctioned under the programme) and the list of papers published in referred journal during the year positively reported by the end of every year.
  - VIII A certificate from the Registrar of the university that the department is not self finance and is eligible to receive the UGC financial assistance.
12. The university/institute shall take all possible measures to ensure effective implementation of policies of Government of India relating to SC/ST students and teachers in regard to the UGC programme. In case of non-teaching staff, the policies of the Central Government in respect of Central Universities and of the State Government in respect of State Universities shall be implemented.
13. The first installment of admissible grant is being sanctioned separately. In the meantime, the university may submit the following information requested for at para 11 (i to viii) by return of post.
14. No request for any change in the effective date will be considered.
16. The orders of purchase of equipment may be placed within six months from the date of receipt of the grant by the university.
15. The second and subsequent installment of grant for any approved items will be considered and sanctioned only on receipt of the Utilization Certificate of the earlier installment in the prescribed form duly signed by the Registrar/Finance Officer as the case may be.



16. The Non-Recurring Grant approved will be released only after settlement of the previous accounts of SAP programme.(in case of on going programme)
17. The University/Institution shall include a specific condition in the Utilization Certificate, in respect of any financial assistance or grants-in-aid to any institution under any of the general or special schemes of the Commission that the University/institution has complied with the anti-ragging measures by the stating that "The University/Institution/college is strictly following the UGC Regulations on curbing the menace of Ragging in Higher Educational Institutional, 2009"

Yours faithfully,

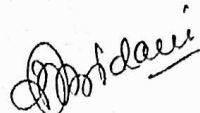
(Dr. Renu Batra)  
Joint Secretary

**NOTE:- Please see SAP guidelines on UGC website : [www.ugc.ac.in](http://www.ugc.ac.in)**  
Copy forwarded for information and necessary action to:

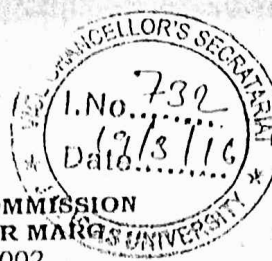
Prof. (Dr.) R.J. Singwa  
Programme Co-ordinator (DRS-II)  
Department of Physics  
Jai Narain Vyas University, Jodhpur-342 005(Rajasthan)

Copy for information to:

1. The P.S. to Vice Chancellor,  
Jai Narain Vyas University, Jodhpur-342 005(Rajasthan)
2. The Head, Department of Physics  
Jai Narain Vyas University, Jodhpur-342 005(Rajasthan)
3. The Secretary to the State Government of Rajasthan  
Department of Higher Education, Jaipur.
4. Prof. R.K. Singh  
Department of Physics, Banaras Hindu University, Varanasi.
5. Prof. Kundu  
Department of Physics,  
Indian Institute of Technology Bombay, Mumbai
6. Guard File.
7. F. 530/9/DRS/2009(SAP-I)

  
(Ms. Smita Bidani)  
Education Officer





HOD, Physics  
[Signature]

UNIVERSITY GRANTS COMMISSION  
BAHADUR SHAH ZAFAR MARG  
NEW DELHI - 110 002

No. F. 530/12/DRS-II/2016(SAP-I)

February, 2016

The Registrar  
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Jodhpur-342 005 (Rajasthan).

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**Thrust Area(s) Identified:**

**Material Science**

As recommended by the Review Committee, the Co-ordinator of the programme for the present phase of the programme will be as indicated below:

**Name of the Coordinator :**

**Prof.(Dr.) R.J. Singwa**

**Name of the Deputy Coordinator:**

**To be nominated by Vice Chancellor**

The Co-ordinator may continue till the end of the present duration of the programme or till his/her superannuation.

[Signature]

7. The financial assistance approved for implementing the present phase at the level of **III** for duration of **Five years (01/04/2016 to 31/03/2021)** are given below:

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1	Differential Scanning Calorimetry(DSC)	70.00
2	Impedance Analyzer (RF impedance and material analyzer over frequency range 1MHz to 1GHz) with dielectric material test fixture	
3	US - VIS-NIR Spectrometer	
<b>Total</b>		<b>70.00</b>

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	<b>(Rs. In lakh)</b>
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Yours faithfully,

(Dr. Renu Batra)  
Joint Secretary

**NOTE:- Please see SAP guidelines on UGC website : [www.ugc.ac.in](http://www.ugc.ac.in)**  
Copy forwarded for information and necessary action to:

Prof. (Dr.) R.J. Singwa  
Programme Co-ordinator (DRS-II)  
Department of Physics  
Jai Narain Vyas University, Jodhpur-342 005(Rajasthan)

Copy for information to:

1. The P.S. to Vice Chancellor,  
Jai Narain Vyas University, Jodhpur-342 005(Rajasthan)
2. The Head, Department of Physics  
Jai Narain Vyas University, Jodhpur-342 005(Rajasthan)
3. The Secretary to the State Government of Rajasthan  
Department of Higher Education, Jaipur.
4. Prof. R.K. Singh  
Department of Physics, Banaras Hindu University, Varanasi.
5. Prof. Kundu  
Department of Physics,  
Indian Institute of Technology Bombay, Mumbai
6. Guard File.
7. F. 530/9/DRS/2009(SAP-I)

  
(Ms. Smita Bidani)  
Education Officer



**DEPARTMENT OF PHYSICS**  
**(UGC SAP DRS)**



विश्वविद्यालय अनुदान आयोग  
(मानव संसाधन विकास मंत्रालय, भारत सरकार)  
बहादुर शाह जफर मार्ग, नई दिल्ली - 110 002  
University Grants Commission  
(Ministry of Human Resource Development, Govt. of India)  
Bahadur Shah Zafar Marg, New Delhi - 110 002  
[www.ugc.ac.in](http://www.ugc.ac.in)

Ph: 011-23604105, 23604516, 23604407, 23604503



ज्ञान - विज्ञान विमुक्तये

**SPECIAL ASSISTANCE PROGRAMME (SAP)  
IMPACT CREATION POINTS/OUTCOME PARAMETERS**

SAP ID: FILE NO.: **F.530/12/DRS-II/2016(SAP-I)** dtd:08.03.2016

NAME OF THE UNIVERSITY: **Jai Narain Vyas University, Jodhpur (Raj)**

NAME OF THE DEPARTMENT: **Department of Physics**

LEVEL (DRS/DSA/CAS): **DRS - II** TENURE: **01/04/2016 - 31/03/2021**

THRUST AREA: **MATERIALS SCIENCE**

**MAJOR ACHIEVEMENTS: (AVERAGE OF OUTCOMES IN GIVEN TENURE)**

**1) Paper Publications – Journals (numbers only):**

Refereed Journals	Other Journals	Average Impact Factor	Average H - Index
16	Nil	3	

**2) Paper Publications – Conferences (numbers only):**

Outside the University	Within the university
Nil	Nil

**3) Patents (numbers only):**

No. of Patents granted	No. of Patents licensed
Nil	Nil

**4) Copyright (numbers only):**

Filed	Granted
Nil	Nil

**5) Adoption of Interdisciplinary Approach:**

S.No.	No. of Interdisciplinary Departments	Name of Collaborating Departments

**6) Revenue Generated:**

Source of revenue	Amount generated (Rs. in Lakhs)
Nil	Nil



**7) Students:**

Programme	Ph.D.	PG	UG	Other, if any (specify)
No. of students awarded				
No. of students attached from neighboring Universities/Colleges				

**8) Sponsored Research / Consultancy Details:**

No. of funding agencies	Name of Funding agencies	Amount of funding
Nil	Nil	Nil

**9) Industrial / Commercial attachment:**

No. of collaborating industries	Types of collaborating industry	Whether within or outside the Country	Brief details of collaboration output
Nil	Nil	Nil	

**10) Research / Academic Collaboration (within the Country):**

No. and type of academic institutions	Names of academic institutions	Details of collaboration, indicating specific outcomes
2 R&D Institutions of CSIR	CSIR-NISCAIR & HRDC, New Delhi	Collaboration in characterization and interpretation of experimental work, and publications of some results in international journals

**11) Research / Academic Collaboration (outside the Country):**

No. and type of academic institutions	Names of academic institutions	Details of collaboration, indicating specific outcomes
Nil	Nil	Nil

**12) Faculty training:**

No. of faculty training programmes organised	No. of faculty members benefitted
1	3

**13) Student training:**

No. of student training programmes organised	No. of students benefitted
3	5

**14) Student Placement:**

Average pass % of students – clearing exams in minimum time (entry to exit)	No. of students placed in industry	Percentage placement	Average salary
N/A	N/A	N/A	N/A

**15) Exam and Curriculum reforms details:**

Reform type	Details (in bullet points)
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N/A

N/A

**16) Noticeable facilities creation:**

Infrastructure / equipment facilities created	Details (in bullet points)
<p>1. Differential Scanning Calorimetry (DSC)</p> <p>2. Impedance Analyzer (RF impedance and material analyzer over frequency range 1 MHz to 1 GHz) with dielectric material test fixture</p>	<ul style="list-style-type: none"> <li>➤ Differential scanning calorimetry (DSC) Netzsch Polyma 214, Germany, is purchased in SAP DRS-II grant and installed in the department.</li> <li>➤ Crystalline phase melting temperatures, degree of crystallinity, and glass transition temperature of different polymer nanocomposites (PNCs) and solid polymer electrolytes (SPEs) are characterized using the DSC instrument.</li> <li>➤ Thermal stability of the materials are explored and the results have been published in the following international journals.</li> <li>➤ Impedance Analyzer (Model: E4991B of Keysight Technologies, Inc., USA) and its compatible solid material dielectric test fixture (Product No.: 16453A) of frequency range 1 MHz to 1 GHz generator was established.</li> <li>➤ Broadband radio frequency complex dielectric permittivity, dielectric loss tangent and AC electrical conductivity of various PNCs and SPEs are measured using Impedance Analyzer.</li> <li>➤ Dielectric polarization behaviour of the materials is examined and with the help of measured dielectric parameters the significance of PNCs as Nanodielectrics in advances of radio frequency electronic devices and SPEs in the energy storage devices are suggested.</li> <li>➤ The results of dielectric properties of these materials have been published in following international journals.</li> </ul>
<p>3. UV-VIS-NIR Spectrophotometer</p>	<ul style="list-style-type: none"> <li>➤ The UV-Vis spectrophotometer (Cary 60, Agilent Technologies, USA) of double beam geometry and wavelength range from 200 nm to 800 nm is established.</li> <li>➤ Various PNC films are characterized recording the absorbance spectra and optical parameters including energy band gaps are determined using UV-Vis spectrophotometer.</li> <li>➤ In-depth analysis of the hybrid nanocomposites and solid polymer nanocomposite electrolytes are made and suitability of these materials in advances of flexible optoelectronic devices are suggested.</li> <li>➤ The results have been published in the following journal of high impact factor:</li> </ul>



## **Publications:**

- [1]. Ionics (2020) 26:2259–2275
- [2]. Macromolecular Research 27 (2019) 1009–1023
- [3]. Journal of Polymer Research 26 (2019)196
- [4]. Composite Interfaces 28 (2021) 827–842
- [5]. Journal of Macromolecular Science, Part B (2021)  
<https://doi.org/10.1080/00222348.2021.1971839>
- [6]. Functional Composites and Structures 3 (2021) 025008
- [7]. Indian Journal of Pure & Applied Physics 59 (2021) 92-102
- [8]. Journal of Applied Polymer Science  
DOI: 10.1002/app.51599
- [9]. Journal of Materials Science: Materials in Electronics 32 (2021) 9661–9674.
- [10]. Journal of Polymer Research 28 (2021) 63
- [11]. Materials Letters 299 (2021) 130081
- [12]. Optical Materials 113 (2021) 110837
- [13]. Optik - International Journal for Light and Electron Optics 233 (2021) 166594
- [14]. Optik - International Journal for Light and Electron Optics 241 (2021) 167215
- [15]. Physica B 613 (2021) 412989
- [16]. Journal of Physics and Chemistry of Solids (2021) communicated

- In all these publications the SAP DRS-II assistance granted by the UGC, New Delhi is acknowledged with the grant number.
- The work on HPNCs, SPNEs and Nanofluids are in progress by employing the above-mentioned experiment facilities generated in SAP DRS-II grant.
- Several students have registered for Ph. D. programme and taking the training on these equipments for completion of their research work.
- Several JRF and NET qualified students are registered for Ph. D. because of these advance experimental techniques created, and further several more students are trying to registered in the Physics Department of JNV University because of these advanced equipments.
- In future moreresearch work will be published for the academic point of view and technological advances in next generation flexible device technologies with the acknowledgement to UGC for SAP DRS-II grant.
- Intra Departmental collaboration of JNVU on the experimental facilities is in progress
- Collaboration with other institutes/universities of the Jodhpur is in progress for utilisation of the experimental facilities developed through SAP DRS-II grant

**17) Any other outcome that resulted in Impact creation / enhanced effectiveness:**

Outcome	Impact (in bullet points)
N/A	N/A

**18) Community outreach / Extension Programmes, if any:**

No. and type of programme	Details of the programme, indicating specific outcomes
N/A	N/A

**19) Utilisation of UGC Funds:**

Grant received (NR + R) (Rs.)	Grant utilised (NR + R) (Rs.)	% utilisation
<b>7610000.00</b>	<b>7378402.00</b>	96.957
(Grant was received in 3 <sup>rd</sup> financial year (2 <sup>nd</sup> half of financial year i.e., dtd: 04.10.2018) due to which the whole work schedule of the project was disturbed)		

**Head**  
**Department of Physics**  
Jai Narain Vyas University, Jodhpur (Raj)

**Professor (Dr.) R. J. SENGWA**  
**Co-ordinator SAP DRS-II**  
**(with Stamp)**





**DST-FIST**  
**(DEPARTMENT OF**  
**BOTANY)**



No. SR/FST/LSI-690/2016(C)  
GOVERNMENT OF INDIA  
MINISTRY OF SCIENCE & TECHNOLOGY  
DEPARTMENT OF SCIENCE & TECHNOLOGY  
R & D (Infrastructure) DIVISION

Technology Bhawan,  
New Mehrauli Road,  
New Delhi - 110016

15<sup>th</sup> December, 2017

**ORDER**

Subject: Financial assistance (1<sup>st</sup> installment) to the Department of Botany, Center of Advanced Study, Jai Narayan Vyas University, Jodhpur-342001, (Rajasthan) under FIST Program.

Sanction of the President is hereby accorded to the approval of the aforesaid project at a total cost of **Rs. 71.00,000/- (Rupees Seventy one lakh only)** for 5 years. The detailed breakup of the grant for General as well as Capital Components are given below:

**To augment the post-graduate teaching and research facilities in the Department**

**Capital Assets: Rs. 65.0 L**

**E-Rs. 55.00 L** [ i) Gas Chromatograph-Rs. 16.0 L, ii) Growth Chamber-Rs. 12.0L, iii) High Speed Cooling Centrifuge-Rs. 12.0 L, iv) UV-Vis Spectrophotometers-Rs. 7.0 L and v) -80°C Deep Freezer-Rs. 8.0 L]

**NW-Rs. 5.0 L** [to setting up a Computer Lab, CLC genomics work bench]

**IF-Rs. 5.0 L** [Herbarium upgradation and digitization]

**General Components: Rs. 6.00 L**

**M- Rs. 6.00 L**

**Total : Rs. 71.00 Lakh**

2. The total budget recommended for 5 years has been phased as below: (Rs. In lakh)

Budget Heads	1 <sup>st</sup> year	2 <sup>nd</sup> year	3 <sup>rd</sup> year	4 <sup>th</sup> year	5 <sup>th</sup> year	Total
Equipment	55.0	-	-	-	-	55.0
Networking	5.0	-	-	-	-	5.0
Infrastructure (Books)	-	5.0	-	-	-	5.0
Maintenance	-	1.0	1.5	1.5	2.0	6.0
Total	60.0	6.0	1.5	1.5	2.0	71.0

3. Sanction of the President is also accorded to the release of **Rs. 60,00,000/- (Rupees Sixty lakh only)** to the **Registrar, Jai Narayan Vyas University, Jodhpur-342001, (Rajasthan)** under FIST Program as a 1<sup>st</sup> installment of the grant in 2017-2018 under 'creation of capital assets' head for the maximum cost of the aforesaid Equipment including (9.4%) Custom Duty & other duties under the 'Equipment'. The break-up of the 1<sup>st</sup> installment grant released now would be **'Equipment': Rs. 55.00 lakh for procurement of Equipment mentioned above [Equipments of Foreign Origin to be acquired on FE Terms only and should not include charges for any comprehensive Maintenance and training personnel from the vendors during procurement process] & 'Networking and Computational facilities': Rs. 5.0 lakh.** Under the 'Networking & Computational facilities' the proposed lab will have CLC genomics work bench with CLC Genome Finishing Module, 7 PCs, UPS, NW Tables & Chair (7 nos.) and NW peripherals.

4. **The Department/Institute will appropriately limit the expenditure within the sanctioned amount in case of any expected excess expenditure.** The Department is requested to utilize the released funds in first one year from the date of sanction order.

5. This sanction is subject to the condition that the grantee organisation will furnish to the Department of Science & Technology, financial year wise Utilization Certificate (UC) in the proforma prescribed as per GFR 2017 and audited statement of expenditure (SE) along with up to date progress report at the end of each financial year duly reflecting the interest earned / accrued on the grants received under the project. This is also subject to the condition of submission of the final statement of expenditure, utilization certificate and project completion report within one year from the scheduled date of completion of the project.

6. The grantee organisation will have to enter & upload the Utilization Certificate in the PFMS portal besides sending it in physical form to this Division with UC id generated in PFMS Portal. The subsequent/final instalment will be released only after confirmation of the acceptance of the UC by the Division and entry of previous Utilization Certificate in the PFMS.

7. If the grant has been released under Capital head/General through separate sanction order(s) under the same project for purchase of equipment, separate SE/UC has to be furnished for the released Capital head/General grant.

Contd 2/-

22/12/17



8. There is no pending SE/UC on this Project as per details in the PFMS also. This is the first release of this project under FIST Program, which has been initiated, in this financial year so no previous UC is attached with this sanction order.

9. The grant-in-aid being released is subject to the condition that:

(a). a transparent procurement procedure in line with the provisions of General Financial Rules 2017 will be followed by the University/Institute under the appropriate rules of the grantee organisation while procuring capital assets sanctioned for the above mentioned project and a certificate to this effect will be submitted by the University/Institute immediately on receipt of the grant, and

(b). while submitting Utilization Certificate/Statement of Expenditure, the University/Institute has to ensure submission of supporting documentary evidences with regard to the purchase of equipment/capital assets as per the provisions of GFR 2017. Subsequent release of grants under the project shall be considered only on receipt of the said documents.

(c). Grantee Institute may furnish copy of invoice in respect of equipments worth Rs. 5.0 L and above along with customs clearance certification (in case of imported equipments) after procurement of the equipments.

(d). Servers, Desktops, Workstations, Printers etc. may be procured through GeM (Government E-Market) platform.

(e). Grantee Institute will furnish copy of bills showing expenditure incur on maintenance of the equipments after warranty period of respective equipments are over.

10. The grantee organisation will maintain separate audited account for the project and the entire amount of grant will be kept in an interest bearing bank account. The interest earned / accrued should be reported to DST (financial year wise) while submitting the Statement of Expenditure/Utilization Certificate. The interest thus earned will be treated as a credit to the grantee organisation, which will be adjusted towards future release of grant.

11. DST reserves sole rights on the assets created out of grants. Assets acquired wholly or substantially out of government grants (except those declared as obsolete and unserviceable or condemned in accordance with the procedure laid down in GFR 2017), shall not be disposed of without obtaining the prior approval of DST.

12. The account of the grantee organisation shall be open to inspection by the sanctioning authority and audit (both by C&AG of India and Internal Audit by the Principal Accounts Office of the DST), whenever the organisation is called upon to do so, as laid down under Rule 236(1) of General Financial Rules 2017.

13. Due acknowledgement of technical support / financial assistance resulting from this project grant should mandatorily be highlighted by the grantee organisation in bold letters in all publications / media releases as well as in the opening paragraphs of their Annual Reports during and after the completion of the project.

14. Failure to comply with the terms and conditions of the scheme will entail full refund with interest in terms of Rule 231 (2) of GFR 2017.

15. The expenditure involved is to be debited to

Demand No. -84 Department of Science & Technology;

"3425" -Other Scientific Research (Major Head);

60-Others (Sub-Major Head);

60.200-Assistance to other Scientific Bodies (Minor Head);

68- Science and Technology Institutional and Human Capacity Building

**68.00.35-Grants for creation of capital assets for the year 2017-2018 (Voted)**

[Previous: R&D Support: 3425.60.200.25.01.35]

The above release is made under 'R&D' Scheme

16. The amount of **Rs. 60,00,000/- (Rupees Sixty lakh only)** will be drawn by the Drawing and Disbursing Officer, DST and will be disbursed to the to the **Registrar, Jai Narayan Vyas University, Jodhpur-342001, (Rajasthan)**. The bank details for electronic transfer of funds through RTGS are given below:-

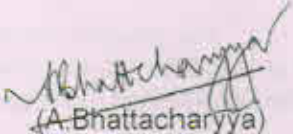
1. Name of the Account Holder: Registrar, Jai Narayan Vyas University, Jodhpur

2. Name of the Bank: Bank of Baroda

3. Bank Account Number: 05710400000026

4. IFSC Code: BAR0UNIJOD

5. MICR Code.

  
(A. Bhattacharyya)  
Scientist 'D'

Email: [a.bhattacharyya@nic.in](mailto:a.bhattacharyya@nic.in)



17. As per Rule 234 of GFR 2017, this sanction has been entered at S. No.272 in the register of grants maintained in the Division for the scheme (R&D Support).

18. This issues with the concurrence of IFD Vide their **Concurrence Dy.No. 3839** dated the **14.12.2017**.

To  
The Pay and Accounts Officer,  
Department of Science & Technology,  
New Delhi.


Copy forwarded for information and necessary action to:

1. Cash Section (with two spare copies)

2. Registrar,  
Center of Advanced Study,  
Jai Narayan Vyas University,  
Jodhpur-342001,  
(Rajasthan)

3. Head,  
Department of Botany,  
Center of Advanced Study,  
Jai Narayan Vyas University,  
Jodhpur-342001,  
(Rajasthan)

4. Office of the Director & Audit, Scientific Department, AGCR Bldg., 3rd Floor, IP Estate, New Delhi -110002.
5. Office of Account General, Rajasthan, Jaipur.
6. FIST-Secretariat.
7. CoA / IFD, DST, New Delhi.
8. Head, R & D (Infrastructure), DST New Delhi.
9. Sanction Folder.

  
(A. Bhattacharyya)  
Scientist 'D'

Email: [a.bhattacharyya@nic.in](mailto:a.bhattacharyya@nic.in)

ps

**Department of Botany, Center of Advanced Study  
JNV University, JODHPUR**

**APPLICATION FOR DST- FIST ASSISTANCE-2016**

**Application for [please tick one]    Level I**

☐

**Level II**

☒

- 1
  - a) Name of the Department & Year of Establishment :Department of Botany  
Center of Advanced Study
  - b) Name of the University :Jai Narian Vyas University,  
Jodhpur
  - c) Address for correspondence including Telephone, Telegram, FAX, e-mail etc :Department of Botany  
JNV University, Jodhpur 342001  
[jnvusundar@rediffmail.com](mailto:jnvusundar@rediffmail.com);  
[jnvuhodbotany@gmail.com](mailto:jnvuhodbotany@gmail.com)  
9414871532; 0291-2720799
  - d) Year of Commencement of PG Program in the Department & its Financial Status (General/ Self-financed) 1962  
General
- 2
  - a) Academic Status University
  - b) Financial Status State University
3.
  - a) Name & Number of Faculty members in position:
    - a) Professors = 3
    - b) Associate Professors = 8
    - c) Assistant Professors = 15

Name of Faculty Member	Designation	Age	Highest Qualification
Dr. S. Sundaramoorthy	Professor	57	M.Sc., Ph.D.
Dr. P.K. Kasera	Professor	53	M.Sc., Ph.D.
Dr. H.S. Gehlot	Professor	56	M.Sc., Ph.D.
Dr. Anil Vyas	Associate Professor	55	M.Sc., Ph.D.
Dr. H.R. Dagla	Associate Professor	47	M.Sc., Ph.D.
Dr. Sunita Arora	Associate Professor	44	M.Sc., Ph.D.
Dr. Gyan Singh Shekhawat	Associate Professor	39	M.Sc., Ph.D.
Dr. Ganpat Singh Deora	Associate Professor	54	M.Sc., Ph.D.
Dr. Parveen Gehlot	Associate Professor	43	M.Sc., Ph.D.
Dr. Bhana Ram	Associate Professor	42	M.Sc., Ph.D.
Dr. Santosh Kumar Mehar	Associate Professor	42	M.Sc., Ph.D.



Dr.(Mrs.)Vinod Kataria	Assistant Professor	41	M.Sc., Ph.D.
Mrs. Vandana Meena	Assistant Professor	38	M.Sc.
Dr. Sharad Bissa	Assistant Professor	36	M.Sc., Ph.D.
Dr (Ms.) Shweta Jha	Assistant Professor	36	M.Sc., Ph.D.
Dr.(Mrs.) Suman Parihar	Assistant Professor	35	M.Sc., Ph.D.
Dr.(Ms.) Nisha Tak	Assistant Professor	32	M.Sc., Ph.D.
Dr. Ashok Kumar Patel	Assistant Professor	30	M.Sc., Ph.D.
Dr.(Mrs.) Rachna Dinesh Nee Modi	Assistant Professor	44	M.Sc., Ph.D.
Dr. (Mrs.) Kamna Sharma	Assistant Professor	34	M.Sc., Ph.D.
Mr. Alkesh Tak	Assistant Professor	34	M.Sc., M.Tech.
Dr.(Mrs.) Sumitra Kumari Choudhary	Assistant Professor	33	M.Sc., Ph.D.
Dr. Kheta Ram	Assistant Professor	38	M.Sc., Ph.D.
Mrs. Seema Sen	Assistant Professor	31	M.Sc.
Mrs. Meena	Assistant Professor	36	M.Sc.
Mr. Ramesh Kumar	Assistant Professor	34	M.Sc.

- b) Sanctioned Strength
- Professors = 1
  - Associate Professors = 5
  - Assistant Professors = 24

- 4 Distinction earned by faculty members like National and International Awards, Professional Societies
- Prof. Sundaramoorthy is Fellow of Indian Botanical Society; Indian Agroforestry Society; Arid Zone Research Association
  - Prof. P.K. Kasera is Fellow of Arid Zone Research Association; Soil Science Society of India
  - Prof. H.S. Gehlot is Fellow of Indian Plant Physiology Association; awarded Visiting Scientist under UGC-Indo-Hungary Educational Exchange Programme-2013-14 (April-May, 2014) to visit Biological Research Centre, Hungarian Academy of Sciences, Szeged, Hungary; awarded DBT-VRP NER Visiting Research Professor award (2015-16) to visit NEHU, Shillong, ME for six months
  - 
  -

- 5 a) Actual Current student strength
- In M.Sc. COSIST Botany Previous 30      Final 25
  - Total Full Time Ph. D scholars in each sub-discipline
    - Biotechnology Laboratory = 4
    - BNF Laboratory = 5

- c. Cytogenetic Laboratory = 4
- d. Ecology Laboratory = 10
- e. Microbiology & Biotechnology Laboratory = 4
- f. Molecular Biology Laboratory = 3
- g. Pathology Laboratory = 3
- h. PBMB Laboratory = 4
- i. Stress Physiology Laboratory = 2
- j. Taxonomy Laboratory = 2

b) Degree-wise actual number of passing out students in last five years:

No. of Students in each degree	YEARS					Total
	2011	2012	2013	2014	2015	
M.Sc.	24 out	25 out	28 out	28 out	20 out of	24+25+28+28+2
COSIST	of 24	of 25	of 29	of 29	20	0 = 125

c) (i) Number of Students (year-wise) who qualified in NET in M. Sc. Program

UGC- CSIR NET	2011	2012	2013	2014	2015	Total
	2+0	2+2	1+4	3+1	5+2	June 13 + December 9 = 21

(ii) Number of Full Time Ph. D. research scholars with fellowships awarded from any agency in the department

S No.	Name of Ph.D. scholar	Date of joining	Fellow ship awarding agency	Current Fellowship amount (Rs)
1.	Ms. Krishna Sodha	January 14, 2011	CSIR-NET	28000/-
2.	Ms. Renu	January 14, 2011	CSIR-NET	28000/-
3.	Ms. Anupama Sagar	May 16, 2012	CSIR-NET	28000/-
4.	Ms. Deepmala Goswami	October 18, 2012	UGC-NET	28,000/-
5.	Ms. Tanvi Agarwal	January 17, 2013	CSIR-NET	28000/-
6.	Ms. Arti Soni	February 5, 2013	CSIR-NET	28000/-
7.	Mr. Raju Ram Meghwal	April 1, 2013	UGC-PDF	46,500/-
8.	Dr. Ruchika Sharma	October 1, 2013	DST-SERB	55,000/-
9.	Ms. Deepika Matwa	January 1, 2014	JNV University	600/-
10.	Ms. Sonam Meena	January 27, 2014	UGC- RGNF	25,000/-
11.	Dr. Monoj Rai	June 4, 2014	DST-SERB	55,000/-
12.	Ms. Kushboo Khator	August 1, 2014	JNV University	600/-
13.	Mr. Bhuvnesh Goswami	July 1, 2015	CSIR-NET	25000/-
14.	Mr. Udit Sharma	July 24, 2015	UGC-NET	25,000/-
15.	Ms. Illam Bhano	July 24, 2015	UGC-NFO	25,000/-
16.	Ms. Jatan Shekhawat	July 24, 2015	UGC-NET	25,000/-
17.	Ms. Sushila Kumari	July 24, 2015	UGC-NET	25,000/-
18.	Ms. Sonam Rathi	September 2, 2015	UGC-NET	28,000/-



d) Placement of graduating post-graduate & Ph D students in the Department:

For 2011-12:

- Dr. Mangal Singh Rathore, Scientist, Discipline of Wasteland Research Central Salt & Marine Chemical Research Institute (CSMCRI) (CSIR).G.B. Marg, Bhavnagar, (Gujarat- 364021) India

For 2012-13:

- Two M.Sc. students (Harshita Singh, Priyanka Kayshap), and one Ph.D. scholar (Neetu Joya) have been selected in Nationalized Banks as Bank Officers
- One M.Sc. student (Amitap) selected in Rajasthan Electricity Board as an Officer

For 2013-14:

- Indu Singh Sankhla- Assistant Prof. of Botany at Rajasthan University, Jaipur
- Neelam Poonar- Assistant Prof. of Botany at Rajasthan University, Jaipur
- Sunil Choudhary- Research Assistant, Arid Forest Research Institute, Jodhpur
- Aparna Raturi: Assistant Prof. of Biotechnology, HN BG University, Uttarakhand
- Priya Dudi - Assistant Prof. of Botany at Rajasthan University, Jaipur
- Deepika Lodha - Research Assistant, Arid Forest Research Institute, Jodhpur

For 2014-15

- Amit Kumar selected for Sr. Science Teacher, UP Staff Selection Commission

For 2015-till date:

- One M.Sc. student (Abishek) selected as Bank Officer in SBI
- Dr. Mahendra Pulwariya has been selected as Scientist in DOEn, New Delhi

6. Indicate the development grant received from UGC during the Eleventh and Twelfth Plan.

	11 <sup>th</sup> Plan	12 <sup>th</sup> Plan
Building	Nil	Nil
Equipment	10,00,000.00	14,28,571.00

7. What is the annual grant available to the department from your university during the last two years?

Year	For Teaching	For Research
2014-15	Laboratory grant 3,00,000/- Garden 30,000/- Others 60,000/- Plant Material collection 1,00,000/-	Note: The grant allotted is not distinguished. Most of the Laboratories have R&D research project funds/UGC-CAS Thrust Area fund to meet research needs.
2015-16	-do-	

8. Has the Department received any major infrastructure research grant during the last five years from S&T agencies including UGC/AICTE. If yes, details.

Heads	Name of Agency/ Scheme with year and amount: UGC-CAS
-------	------------------------------------------------------

Building	Nil
Equipment	89,00,000/-
Books	1,00,000/-PA
Supplies and Materials	2,00,000/- + 2,00,000/- PA (Contingencies + Consumables)
Computing & Networking	Nil
Facilities	4,00,000/- [Reprographic facilities]

- 9 Is the Department recognized under DRS (Departmental Research Support), DSA (Departmental Special Assistance), CAS (Centre for Advanced Study) and COSIST schemes of UGC for receiving support? Please [tick] one:

DRS ☐ DSA ☐ CAS ☒ COSIST ☒

Note: The Department received one time grant Assistance under COSIST during July 1999 and the scheme of teaching under COSIST is continued till date with the only chance from 2015 is to opt for Choice Based Credit System in M.Sc. COSIST Botany

- 10 Details of research grant received from different agencies during the last five years:

Name of the Investigator	Title of the project and duration	Amount sanctioned	Funding Agency
Dr. B.R. Gadi	Evaluation of Genetic Diversity and stress tolerance mechanism in <i>Lasiurus indicus</i> Henr.: Native to Thar Desert of Rajasthan.	20,60,000/-	SERB - DST (New Delhi)
Dr. H R Dagla	In vitro studies on growth and development of two important plant species of Indian Arid Environment	6, 06, 800/-	UGC, New Delhi
Dr. Kheta Ram	Molecular characterization and in vitro studies of <i>Cordia myxa</i> of arid and semi arid region of Rajasthan	6,00,000/-	UGC-Start up grant
Dr. Kheta Ram	Molecular characterization and in vitro studies of <i>Cordia myxa</i> of arid and semi arid region of Rajasthan	6,00,000/-	UGC-Start up grant
Dr. Nisha Tak	Phylogenetic studies of novel root nodule bacterial strains isolated from native legumes of Indian Thar Desert on the basis of multi locus sequence analysis (MLSA)	6,00,000/-	UGC-Start up grant
Dr. Nisha Tak	Molecular Characterization and Symbiotic promiscuity studies using GFP reporter gene of some novel root	22,00,000/-	DST-SERB-Young



	nodule microsymbiont associated with native arid legumes of Indian Thar Desert		Scientist Project
Dr. Rachana Dinesh nee Modi	Characterization of germplasms and in vitro studies on two horticulture plants of arid and semi arid regions of Rajasthan ( Date palm and Pomegranate)	6,00,000/-	UGC-Start up grant
Dr. Shweta Jha	Comparative proteomic analysis for salinity stress tolerance in Pearl millet ( <i>Pennisetum glaucum</i> (L.) R. Br.)	24,40,000/-	DST-SERB
Dr. Shweta Jha	Comparative proteomic analysis of xero-halophyte saltbush - <i>Atriplex</i> under salt stress	6,00,000/-	UGC (Start-up grant)
Dr. Sumitra Kumari Choudhary	Molecular characterization and micromorphological studies on selected edible Cucurbits of Rajasthan	6,00,000/-	UGC-Start up grant
Prof. Hukam Singh Gehlot	Screening and molecular characterization of salt and temperature tolerant nitrogen fixing root nodule bacterial strains isolated from native legumes of Indian Thar desert	14,40,000/-	UGC-MRP
Prof. Hukam Singh Gehlot	Characterization and evaluation of PGP activity of rhizobial isolates native to arid regions of Rajasthan	33,61,000/-	DBT, New Delhi
Prof. Pawan K. Kasera	Bioprospecting, agrotechniques and phytochemical characterization of commercially exploitable and endangered medicinal plants of the Indian Thar desert	6, 27, 800/-	UGC, New Delhi
Prof. S. Sundaramoorthy	Impact of allelopathic plant material on soil biology and rhizosphere modifications for sustainable farming in arid Agroforestry	7,62,800/-	UGC, New Delhi
Dr. Ruchika Sharma Young Scientist	Diversity assessment of Actinomycetes based on 16s rRNA from Indian Thar desert and their antimicrobial potential	27,20,000/-	DST, SERB

Dr. Manoj Kumar Rai Young Scientist	Molecular characterization of <i>Prosopis</i> and <i>Acacia</i> species- Well accepted agro-forestry tree of Indian Thar desert	29,22,000/-	DST, SERB
Dr. Manoj Kumar Rai DS Kothari Post- Doctoral Fellowship	Molecular characterization, propagation and <i>in vitro</i> conservation of guava ( <i>Psidium guajava</i> L.)	14,46,939/-	UGC, New Delhi
Dr. Mahendra Phulwaria UGC Post-Doctoral Fellowship for SC/ST	Development of Biotechnological Tools for <i>Arnebia hispidissima</i> - Characterization, Conservation and Utilization for production of alkannins	23,02,112/-	UGC, New Delhi
Dr. Pooja Khurana DST Women Scientists Scheme (WOS-A)	Application of aeroponics in desert specific plants for biomass production	23,60,000/-	DST, SERB

Dr. G.S. Shekhawat and Dr. Santosh Kumar Mehar has received five and three R&D research project funding in the University where they were previously serving, respectively. Prof. H.S. Gehlot is a Co-Investigator for a R&D project operative at NEHU, Shillong

- 11 Details of any other Resource Generation Avenues (other than Sponsored Research Grants). NIL
12. Indicate the research activities of the faculty members as per the following pro-forma
- | Name the of Faculty      | Designation         | Major areas of Research              | Number of Ph. Ds produced (in last 5 years) |
|--------------------------|---------------------|--------------------------------------|---------------------------------------------|
| Dr. S. Sundaramoorthy    | Professor           | Ecology                              | 2                                           |
| Dr. P.K. Kaseria         | Professor           | Ecology & Resource Biology           | 4                                           |
| Dr. H.S. Gehlot          | Professor           | Biological Nitrogen Fixation         | 5                                           |
| Dr. Anil Vyas            | Associate Professor | Microbiology                         | 4                                           |
| Dr. H.R. Dagla           | Associate Professor | Tissue culture and molecular biology | 2                                           |
| Dr. Sunita Arora         | Associate Professor | Cytogenetics                         | 1                                           |
| Dr. Gyan Singh Shekhawat | Associate Professor | Molecular biology                    | 8*                                          |
| Dr. Ganpat Singh Deora   | Associate Professor | Taxonomy                             | 1*                                          |
| Dr. Bhana Ram            | Associate Professor | Stress Physiology                    | 2                                           |



\* Guided in other Universities where they were serving previously

- 13 a) List of Research Publications in SCI Journals coming from the Department during the last five years (Authors Names, Title of Paper, Name of the Journal, Volume, Page nos., Year).
  - Agarwal S., Jha S., Sanyal, I. and Amta D.V. 2010. Expression and purification of recombinant human alpha-1-proteinase inhibitor and its single amino acid substituted variants in *Escherichia coli* for enhanced stability and biological activity. *J. Biotechnol.*, 147:64-72
  - Agarwal, T., Gupta, A.K., Patel, A.K. and Shekhawat, N.S. 2015. Micropropagation and validation of genetic homogeneity of *Alhagi maurorum* using SCoT, ISSR and RAPD markers. *Plant Cell, Tissue and Organ Culture* 120: 313-323.
  - Bissa, S. 2014. Screening of Antibacterial Potential of *Nerium indicum* against Some Pathogenic Bacteria. *Int. Res. Jour. Of Man. Sci. and Tech.*, 5: 181-187.
  - Bissa, S. 2015. Evaluation of Antibacterial Potential of *Ephedra foliata* Bioss. ex. C.A.Mey. *The Bioscan*. 10: 1169-1172.
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  - Bissa, S. and Bohra, A. 2012. Evaluation of Antibacterial Potential of *Ranunculus sceleratus*. *Botany Research International* 5: 10-13.
  - Bissa, S. and Bohra, A. 2015. Antimicrobial Botanicals Against *Enterobacter aerogenes*. *Advances in Plant Sciences*. 28: 269-273.
  - Bissa, S., Bohra, A. and Bohra, A. 2011. Screening of *Dahlia pinnata* for Its Antimicrobial Activity. *Journal of research in Biology* 1: 51-55.
  - Chaudhary, A., Shekhawat, G.S. and Singh, R.V. 2010. Investigations on New Revolutionary Fertility Inhibitors 9, 10-Diaminophenanthrene Derivatives of Bivalent Manganese: Antifertility, Antibacterial, Antifungal and Percent Disease Incidence Review in *inorganic chemistry (Israel)* 30:113-133
  - Chouhan, R., Kaur, S. and Gehlot, P. 2010. Some new records of Mushroom from India *Journal of Mycology and Plant Pathology* 40: 550-554.
  - Dagla, H. R. 2012. Plant Tissue Culture Historical Developments and Applied Aspects. *Resonance (IASC)*, 17:759-767.
  - Dagla, H. R., Paliwal, A., Rathore, M. S. and Shekhawat, N. S. 2012. Micropropagation of *Leptadenia pyrotechnica* (Forsk.) Decne. A Multipurpose Plant of an Arid Environment. *Journal of Sustainable Forestry*, 31: 283-293.
  - Deora, G. S. and Vishwakarma, G. 2016. Antimicrobial efficacy of *Bryumargenteum* (Hedw.) (Bryales: Bryaceae) against plant pathogen *Pseudomonas syringae* (PV.) (Pseudomonadales: Pseudomonadaceae) *J. of Applied Life Sciences International* 5:1-8.

- Deora, G.S and Guhil, N. 2014. Bryophytes: A potent tool for controlling some fungal diseases of crop plants. *International J. of Pharmaceutical Science Invention*; 3: 21-26.
- Deora, G.S and Guhil, N. 2016. Studies on antifungal potential of *Bryum cellulare* (a moss) crude extracts against spore germination of fungus *Curvularia lunata*. *International J. of Pharmaceutical Sciences and Research*.7:353-357.
- Deora, G.S. 2015. Phytochemical screening and antibacterial activity against some phytopathogenic bacteria. *Int. J. Pharma. Sci. Rev. Res.*, 35:74-77.
- Deora, G.S. and Guhil, N. 2014. Antifungal potential of *Bryum cellulare* against some common diseases of maize. *International J. of Applied and Natural Sciences* 2: 21-48.
- Deora, G.S. and Guhil, N. 2014. Ecology, phytogeography and perennation of bryophytes in Rajasthan. *IJSR* 3: 49-53.
- Deora, G.S. and Guhil, N. 2014. *In vitro* antifungal activity of *Bryum capillare* (A. moss) extract against *Drechslera maydis*. *International J. of Pharmaceutical Biosciences*. 3: 268-275.
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- Deora, G.S., Suhalka, D. and Vishwakarma, G. 2010. Antifungal potential of *Philonotis revoluta* – A moss against certain phytopathogenic fungi. *J. Pure and Applied Microbiology* 4: 425-428.
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- Dhir, R. and Shekhawat, G. S. 2014. In Vitro propagation using transverse thin cell layer culture and homogeneity assessment in *Ceropegia bulbosa* Roxb. *Journal of Plant Growth Regulation* 39: 540-549.
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- Dixit, S., Verma, K. and Shekhawat, G.S. 2014. In vitro evaluation of mitochondrial–chloroplast subcellular localization of heme oxygenase1 (HO1) in *Glycine max*. *Protoplasma* 251:671-675.
- Dwivedi, S, Alam, A. and Shekhawat, G.S. 2016. Antioxidant response of *Stevia rebaudiana* (Bertoni) Bertoni (Angiosperms; Asteraceae) during developing phase of suspension cell culture. *Plant Science Today* 3: 115-12.3
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- b) List of Publications in Conference Proceedings during last five years (Authors Names, Title of Paper, Name of the Conference, Volume, Page nos., Year).
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- Deora, G.S. 2010. Ethnomedicinal uses of bryophytes in Rajasthan. In: *International conference on folk and herbal medicine*. 25<sup>th</sup> -26<sup>th</sup> November, Organised by Department of botany M.L.S.University, Udaipur (Rajasthan)



- Deora, G.S. 2011. Antifungal potential and phytoconstituents of *Ricciagangatica*-a bryophyte. In: National symposium on “recent advantages in plant tissue culture and biotechnological researches in India”, XXXII annual meet of plant tissue culture association (India), organized by M.N. Institute of applied sciences (Maharaja Ganga Singh Univ.) from 4<sup>th</sup> -6<sup>th</sup> February, Bikaner (Rajasthan)
- Deora, G.S. 2011. Antimicrobial activity of *Plagiochasma appendiculatum* (a liverwort). In: 1<sup>st</sup> conference on Novel developments in medical chemistry. on April 19<sup>th</sup>. Organized by department of Chemistry, Mewar University, Chitorgarh (Rasthan)
- Deora, G.S. 2011. Commercial use of bryophytes as biofungicides to recover global financial crisis in agricultural field. In: UGC sponsored International conference on global financial crisis challenges and opportunities, from 13<sup>th</sup>—15<sup>th</sup> January, organized by Bhupal Nobles P.G.College, Udaipur (Rajasthan)
- Deora, G.S. 2011. *In vitro* management of *Helminthosporium turcicum*. In: National conference on pest management through transgenesis in agro ecosystem, from 25<sup>th</sup> -26<sup>th</sup> February, organized by Maharana Pratap Univ. of Agriculture and Technology, Udaipur (Rajasthan)
- Deora, G.S. 2011. Isolation ,biochemical characterization and commercial use of biofertilizers in crop plants. In: 1<sup>st</sup> International science congress, 24<sup>th</sup>-25<sup>th</sup> December, under the auspices of Maharaja Ranjit Singh College of Professional Sciences, Indore. Indore, M.P., India.
- Deora, G.S. 2011. Studies on the traditional uses of medicinal plants by tribes of Udaipur district (Rajasthan). In: UGC sponsored National conference on current status and opportunities in medicinal plant of Thar Desert, from 17<sup>th</sup>-18<sup>th</sup> December, organized by Mahila P.G. Mahavidyalaya, Jodhpur
- Deora, G.S. 2012. Studies on folk medicines of Udaipur district (Rajasthan). UGC sponsored National seminar on conservation of indigenous folk medicinal plants, from 3<sup>rd</sup> -4<sup>th</sup> February, organized by Seth Moti Lal (P.G.) Jhunjhunu (Rajasthan)
- Deora, G.S. 2013. Bryophytes: A remarkable source of secondary metabolites. In: National conference on Climate change and environment, sponsored by UGC, 23<sup>rd</sup> to 34<sup>th</sup> December, organized by VBRI Udaipur (Rajasthan)
- Deora, G.S. 2013. Evaluation of bryophytes, as green fungicides to control leaf spot disease in maize. In: 3<sup>rd</sup> Global conference and Dr. Norman E. Borlaug memorial celebrations January, 10-13, held at Rajasthan College of Agriculture, Maharana Pratap University of Agriculture and Technology, Udaipur (Rajasthan)
- Deora, G.S. 2014. Bryophytes: A potent tool for heavy metal pollution monitoring. In: National conference on Harmony with nature in context of environmental issues and challenges of the 21<sup>st</sup> century, organized by Department of Environmental Sciences, faculty of Earth Sciences, from 28-30 November, M. L. S. Univ. Udaipur (Rajasthan) in association with National environmentalists association, Ranchi (Jharkhand), India,
- Deora, G.S. 2016. Bryophytes: A reliable source of antimicrobial agents. In: UGC sponsored National conference on recent advantages in botany,

- biotechnology and sustainable development” RABBSD”. March 18-19, Organized by M.L.S. University Udaipur
- Gadi B.R., Ram A and Verma P. 2014. Salinity induced anti oxidative response of *Urginea indica* (Roxb.) Kunth: A medicinally important bulbous plant of Indian Thar Desert. In: *International Conference on Agriculture, Forestry, Horticulture, Aquaculture, Animal Sciences, Food Technology, Biodiversity and Climate Change: Sustainable Approaches* 30th and 31st August, J. N. U, New Delhi .
- Gadi, B. R., Ram, A. and Verma, P. 2011. Effect of salicylic acid on nitrate reductase activity in *Citrullus lanatus* under NaF stress. In: National workshop on Stress agriculture and climate change: Exploring synergy with natural resource management in agriculture (NaRMA-III). Jodhpur, Rajasthan.
- Gadi, B. R., Ram, A. and Verma, P. 2011. Influence of salicylic acid on proline content and nitrate reductase activity in *Citrullus colocynthis* under drought stress. Physiological and molecular interventions on sustainable crop productivity under changing climate conditions. Anand, Gujrat.
- Gadi, B.R. 2015. Impact and tolerance of salinity stress in plants. In: Symposium on Advances in research on the Resources of Bikaner SARRB-2015. February 24,, Dungar College Bikaner
- Gehlot, H.S. 2010. Participated as “Invited Speaker” in 1st Asian N Fixation Conference at Miyazaki-JAPAN 20-24 September
- Gehlot, H.S. 2012. Invited as “Invited Speaker” and participated in 2nd Asian N Fixation Conference held at Phuket, Thailand, 28-31 October.
- Gehlot, H.S. 2013. Invited speaker and chaired session in 11 Desert Technology International conference at San Antonio, TX, USA, November 19-22
- Gehlot, H.S. 2014. Delivered guest lecture at Biological Research Centre of Hungarian Academy of Sciences, Szeged, Hungary, April 15-30.
- Gehlot, H.S. 2014. Delivered guest lecture at Department of Microbiology, University of Szeged, Hungary 19<sup>th</sup> April
- Gehlot, H.S. 2014. Invited speaker as Key Note address in 3<sup>rd</sup> Asian Plant Microbe and Nitrogen Fixation at Chengdu, China. October 28- November 3<sup>rd</sup> November
- Gehlot, P., Sharma, R. and Sharma, K. 2014. Diversity of wild mushroom flora from Indian Thar Desert. In: Proceeding of VIII<sup>th</sup> International conference on *Mushroom Biology and Mushroom Products* PP. 92-97.
- Gehlot, P., Sharma, R. and Sharma, K. 2014. Diversity of wild mushroom flora from Indian Thar Desert. In: Proceeding of VIII<sup>th</sup> International conference on *Mushroom Biology and Mushroom Products* PP. 92-97.
- Harish, Gupta, A.K., Ram, K., Phulwaria, M. and Shekhawat N.S., 2011. Isolation of PCR usable genomic DNA from *Anogeissus rotundifolia*. In: Proceeding of National Symposium on ‘Recent Advances in Plant Tissue Culture and Biotechnological Researches in India’ & XXXII Annual Meet of PTCA (India). 4-6 February, Organized by M.N. Institute of Applied Sciences, Bikaner, Rajasthan, (Poster presentation)



- Jha S., Sanyal, I., Amla, D.V. and Singh B.D. 2015. “*Engineering thermotolerance in recombinant human  $\alpha_1$ -proteinase inhibitor ( $\alpha_1$ -PI) expressed in Escherichia coli.*” 56<sup>th</sup> International Conference “AMI 2015”, December 7-10 at Jawaharlal Nehru University, New Delhi.
- Jha S., Sanyal I. and Amla D.V. 2013. *Single amino acid substitutions in recombinant  $\alpha_1$ -antitrypsin confer enhanced stability and efficacy*”; in Asian Congress on Biotechnology (ACB-2013), under the aegis of Asian Federation of Biotechnology (AFOB), December 15-19 at IIT, New Delhi.
- Jha S., Sanyal I., Amla D.V. 2015. *High-level expression and purification of a therapeutic recombinant serine protease inhibitor from transgenic tomato plants.* In: International Conference on Recent Trends in Engineering Science and Management (ICRTESM-2015) March 15 at Jawaharlal Nehru University, New Delhi.
- Jha S., Sanyal, I., and Amla, D.V. 2014. *Targeting of recombinant human  $\alpha_1$ -proteinase inhibitor to ER enhances yield, biological activity and stability in transgenic tomato plants*; In: International Conference on Proteomics & 6<sup>th</sup> Annual Meeting of the Proteomics Society, India PS(I) held on December 7-9 at IIT, Bombay. Conference proceedings published in *JOURNAL OF PROTEINS AND PROTEOMICS* (Special issue: Dec. 2014) (NAAS Rating 3.75)
- Jha S., Sharma M., Giri J., Tyagi A.K 2015. Overexpression of a rice A20/AN1 zinc-finger protein modulates defence response against pathogen infection in tobacco 3<sup>rd</sup> International Plant Physiology Congress, held on December 11-14 at Jawaharlal Nehru University, New Delhi.
- Karra, S. and Mehar, S.K. 2012. Importance and applications of phytoremediation, especially phytoextraction. Proc. AP Science congress, 14<sup>th</sup>-16<sup>th</sup> November, 287p.
- Karra, S. Shaik, G., Murali, O., Varalakshmi, S. and Mehar, S.K. 2013. Neutraceuticals. Souv. National seminar on perspectives of phytomedicine and medicinal plants conservation (nsppmc-2013), 22<sup>nd</sup>-23<sup>rd</sup> March, 47p.
- Kasera, P.K. 2010. Status and opportunities of some important medicinal plants of Indian arid zone. In: National Seminar on Current Status and Opportunities in Medicinal Plants of Thar Desert, Mahila PG Mahavidyalaya, Jodhpur, 9-11 December, 2010.
- Kasera, P.K. 2016. Invited as speaker. In: Dissemination of Agro technology of important medicinal plants developed through NMBP – Issues and Challenges. 28-29 February, Ch. Brahm Prakash Ayurveda Charak Sansthan & AYUSH, GOI, New Delhi,
- Kasera, P.K., Lal, H. and Mohammed, S. 2012. Distribution, seed germination behaviour, cultivation, uses and conservation of *Commiphora wightii* - a critically endangered medicinal plant from the Indian arid zone. In: National Conference on Biodiversity Depletion: Causes, Consequences and Solutions, 28-29 September M.L.V. Govt. College, Bhilwara
- Kataria, V. and Shekhawat, N.S. 2016 Micropropagation of *Capparis spinosa* (Caper): An important medicinal plant. In: UGC sponsored conference on Recent

advances in Biological Sciences, Biotechnology & Sustainable development 18<sup>th</sup> -19<sup>th</sup> March, organized by Department of Botany MLS University, Udaipur(oral)

- Lal, H. and Kasera, P.K. 2012. Guggal: a critical endangered medicinal plant from the Indian arid zone. In: National Seminar on Environment & Biodiversity Conservation (Present Status & Future Strategy), 6-7 October, Govt. Lohia P.G College, Churu,
- Murali, O. and Mehar, S.K. 2013. Bioremediation of Cobalt and Chromium by using cyanobacteria. Souv. 7 National Teacher's Science Congress, 14-17 December, 204p.
- Murali, O. and Mehar, S.K. 2014. Plants of eastern ghats used with proven medicinal potential. Souv. National conference on Conservation of Eastern Ghats, 4<sup>th</sup>-5<sup>th</sup> December, SV University, Tirupati and Green's Alliance for conservation of eastern ghats, Hyderabad, 118p.
- Patel, A.K. and Shekhawat, N.S. 2014. An efficient in vitro plant regeneration system from leaf of mature plant of *Leptadenia reticulata* (Jeewanti): an endangered woody climber of pharmaceutical importance. National Conference on "Plant Bioresource and Management Biotechnology", January 29<sup>th</sup> to 31<sup>st</sup>, organized by Department of Botany, University of Rajasthan, Jaipur,
- Patel, A.K. and Shekhawat, N.S. 2014. Direct shoot regeneration and rooting protocols for the propagation of *Pentstemon spialis* (Forsk.) Decne.: a medicinally important Asclepiadaceous plant species. National Conference on "Harmony with Nature in Context of Environmental Issues and Challenges of the 21<sup>st</sup> Century", November 28<sup>th</sup> to 30<sup>th</sup>, Organized by Department of Environmental Sciences Faculty of Earth Sciences M. L. Sukhadia University Udaipur.
- Patel, A.K. and Shekhawat, N.S. 2014. Micropropagation technology for the conservation of *Caralluma edulis* (Edgew.) Benth. & Hook. f.: a rare and endangered anti-diabetic plant species from Indian Thar Desert. National Symposium on "Green Economy and Harnessing Natural Products for Sustainable Development", July 12<sup>th</sup>, organized by The Indian Science Congress Association, Jaipur Chapter and Indian Society for Life Sciences (ISLS). (BEST POSTER PRESENTATION AWARD)
- Patel, A.K., Lodha, D. and Shekhawat, N.S. 2014. Transverse thin cell layer induced micropropagation of *Caralluma edulis* (Edgew.) Benth. & Hook. f.: a rare and nutraceutically important plant of extreme arid regions. 84<sup>th</sup> Annual Session of the National Academy of Sciences, India and the National Symposium on "Desert Science – Opportunities and Challenges" December 4<sup>th</sup> to 6<sup>th</sup>, organized by Faculty of Science, Jai Narayan Vyas University, Jodhpur.
- Patel, A.K., Lodha, D., Ram, K. and Shekhawat, N.S. 2015. Conservation of two threatened and medicinally important Asclepiadaceous species of Indian Thar Desert through in vitro technology. ICCB: 27<sup>th</sup> International Congress for Conservation Biology; 4<sup>th</sup> European Congress for Conservation Biology, MONTPELLIER – FRANCE, August 2-6
- Patel, A.K., Lodha, D., Ram, K., Shekhawat, S. and Shekhawat, N.S. 2015. Evaluation of physiochemical factors affecting high frequency plant regeneration of *Blyttia*

- spiralis* (Forssk.) D. V. Field & J. R. I. Wood [Synonym: *Pentatropis spiralis* (Forssk.) Decne.], a threatened climber of medicinal values. XXXVIII All India Botanical Conference 2015 and “National Symposium on Emerging Trends in Plant Sciences”. October 26<sup>th</sup> to 28<sup>th</sup>, organized by Department of Botany, University of Rajasthan, Jaipur
- Ram K. and Shekhawat N.S. 2016. Cell Cultures and morphogenesis in *Arnebiahispidissima* (Lehm.) DC.- Dye/Shikonin production in Cultures. In: Proceeding of National Symposium on ‘Plant Biotechnology for Crop Improvement and 37<sup>th</sup> Annual Meeting of PTCA (India), 25-27 February. (Poster presentation)
- Ram K. and Shekhawat N.S., 2011. In vitro and ex vitro rooting of regenerated shoots of some medicinally and economically important plants of arid regions. In: Proceeding of National Symposium on ‘Recent Advances in Plant Tissue Culture and Biotechnological Researches in India’ & XXXII Annual Meet of PTCA (India); Organized by M.N. Institute of Applied Sciences, Bikaner, Rajasthan, 4-6 February (Poster presentation)
- Ram K., Patel A.K., Shekhawat N.S. and Kasera P.K. 2016. Agrotechnology of *Leptideniaraticulata*. Invited as speaker in National Seminar on “Dissemination of Agro Technology of Important Medicinal Plants Developed thorough NMBP-Issues and Challenges”, 28-29 February, organized by National Medicinal Plant Board, India,
- Ram K., Rathore J. S., Phulwaria M. and Shekhawat N.S., 2010. Micropropagation of *Capparis decidua* (Forsk) Edgew- medicinal and famine food plants. In: International conference on folk and herbal medicine. 25-27 November, organized by MLSU, Udaipur, Rajasthan (India), (Poster presentation).
- Ram, A. Verma, P. and Gadi, B.R. 2014. Salicylic acid induced changes in activities of anti oxidative enzymes of *Citrulluscolocynthis* seedlings under drought stress. In: National conference on Harmony with nature in context of environmental issues and challenges of the 21<sup>st</sup> Century”, November 28-30, at M.L.S. University, Udaipur
- Ram, A. Verma, P. Goswami, B. and Gadi, B.R. 2015. Fluoride induced oxidative stress and protective role of salicylic acid on watermelon seedlings. In: XXXVIII All India conference of the Indian Botanical Society & National Symposium on “Emerging trends in Plant Sciences”, October 26-28, at Department of Botany, University of Rajasthan,
- Shaik, G. and Mehar, S.K. 2011. Medicinal usage of plants for common and fortuitous health problems by chenchu tribes of Andhra Pradesh. In: International conference on updates on protein drug discovery, formulation and production challenges, 28<sup>th</sup>-29<sup>th</sup> October, Sri Padmavathi Mahila Viswa Vidyalayam, Tirupati, 113p,
- Shaik, G. and Mehar, S.K. 2012. Addition of allelopathic litter of *Prosopis juliflora* supports the activity of the soil microbial community in rice fields. Proc. National seminal seminar on advances in Microbial technology, 4p, 13<sup>th</sup>-14<sup>th</sup> February, Sri padmavathi Mahilaviswa vidyalayam, Tirupati,.



- Shaik, G. and Mehar, S.K. 2012. Allelopathic affect of *Prosopis juliflora* leaves on the growth of algae. 14<sup>th</sup>-16<sup>th</sup> November, AP Science congress, 190p,
- Shaik, G. and Mehar, S.K. 2012. *Ceanorhabditis elegans* - an eco-friendly tool for heavy metal detoxification in soil. Souv. International seminar on emerging threats and challenges o biodiversity: policy framework for sustainable management, 2<sup>nd</sup>-4<sup>th</sup> March, Sri Venkateswara University, Tirupati, 207p,
- Shaik, G. and Mehar, S.K. 2012. Invasive plant mesquite: assessing the extent of its negative influence on rice. Souv. International seminar on emerging threats and challenges o biodiversity: policy framework for sustainable management, 2<sup>nd</sup>-4<sup>th</sup> March, Sri venkateswara University, Tirupati, 193p
- Shaik, G. and Mehar, S.K. 2014. Laboratory assay for evaluating the effect of *Prosopis juliflora* extract on seed germination and seedling growth of rice. Souv. Global summit on Emerging science and Technologies: Impact on Environment and human health, 1<sup>st</sup>-3<sup>rd</sup> August, 185p.
- Shaik, G. and Mehar, S.K. 2014. Medicinally useful trees of Eastern Ghats of Andhra Pradesh. Souv. National conference on Conservation of Eastern Ghats, 42p, 4<sup>th</sup>-5<sup>th</sup> December, SV University, Tirupati and Grence's Alliance for conservation of eastern ghats, Hyderabad,
- Shaik, G. and Mehar, S.K. 2014. Promoting effects of allelopathic extract on nitrate reductase activity in rice. Souv. National Seminar on Present Status andFuture Prospects of Modern Biotechnology and Their Applications, 27-29<sup>th</sup> March, Dravidian University, Kuppam, , 61p.
- Shekhawat S., Ram K., Choudhary S. and Shekhawat N.S., 2010. Cloning of traditional medicinal plants of *Lyciumbarbarum*. In: International conference on folk and herbal medicine. 25-27 November, Organized by MLSU, Udaipur, Rajasthan (India), (Poster presentation).
- Shekhawat, G.S. and Hynei D. 2011. In vitro synthesis of Cds, ZnO, Ag and Tio2 nanoparticles and evaluation of their effect on cellular metabolism of Brassica juncea,. In NanoFlorida, Sept. 30- Oct. 1,Florida International University, Miami, USA,
- Shekhawat, G.S. 2010. National symposium on Advanced Functional Materials: opportunities and challenges in new global era (NSAFM-2010). Organized by Department of Physics, Banasthali University
- Shekhawat, G.S. 2010. National workshop on Biological data bases and data mining approaches, Dec.18-20, organized by Bioinformatics center Department of Bioscience and Biotechnology, Banasthali University,
- Shekhawat, G.S. 2011. Podium presentation on Biological synthesis of metal nanoparticles and evaluation of their impact on Plants. In: Research one Oktberfest, October, 21, at University of South Florida, Tampa Florida, USA,
- Shekhawat, G.S. and Mahawar, L. 2015. Metabolic adaptation to cadmium induced oxidative stress in Brassica juncea and role of Hemeoxygenase (HO) In: XXXVIII All India Botanical Conference and National Symposium on Emerging trends in Plant Sciences". from 26th- 28th October held at Department of Botany, University of Rajasthan, Jaipur (Rajasthan)

- Shekhawat, G.S. and Rao, S. 2010. Biological and chemical synthesis of Ag, CdS, ZnO and TiO<sub>2</sub> nanoparticles: evaluation of their Regulatory Effect on Plant Defense and Metabolism. In: National symposium on advanced functional materials opportunity and challenges in new global era. 4-5 Oct, Banasthali University,
- Shekhawat, G.S. and Rao, S. 2011. National symposium on Materials for advanced technology. March 27-29, organized by Department of physics, Banasthali University (NSMAT-2011),
- Shekhawat, G.S. and Verma, K 2011. Podium presentation in vitro biochemical evaluation of cadmium tolerance mechanism in callus and seedlings of Brassica juncea. In National Symposium on "Recent Advances in Plant Tissue Culture and Biotechnological Researches in India"& XXXII Annual Meet of Plant Tissue Culture Association (India), Feb. 4-6, organized by M. N. Institute of Applied Sciences, Bikaner,
- Shekhawat, G.S. Dixit, S; Mahawar, L 2014. In vitro evaluation of Heme oxygenase1 (HO1) role in plant defence and study mitochondrial-chloroplast subcellular localization in Glycine max. In: national conference on plant bioresource management and biotechnology, Jan.29-31, at University Of Rajasthan Jaipur,
- Shekhawat, G.S. Dixit, S; Mahawar, L and Khator, K 2014. Hemeoxygenase-1 in modulating antioxidant defence responses under metal induce stress and its mitochondrial-chloroplast localization in Glycine max". In: 84th Annual Session of the National Academy of Sciences (NASI), India & Symposium on Desert Science-Opportunity and Challenges: December 4-6, at J.N.V. University, Jodhpur.
- Shekhawat, G.S. Rao, S. 2010. Bio-Chemical Synthesis of CdS, ZnO TiO<sub>2</sub> & Ag Nanoparticles and evaluation of their Regulatory Effect on Plant Defense and Metabolism. March 30, Poddar International College Jaipur,
- Tak, N. and Gehlot, H.S. 2013. Whole genome sequence of Novel nodulating Ensifer strain (TW10) native to Indian Thar Desert. In: 54th Annual Conference of Association of Microbiologists of India (AMI-2013) at Rohtak, Haryana 18-21st November (Poster presentation)
- Vinod Kataria and NS Shekhawat 2011 Micro propagation and somatic cell genetics of some important plant of Rajasthan. In: National Symposium on PTC and Biotech & XXXII PTCA (I) meet, 4<sup>th</sup> -6<sup>th</sup> Feb, MN Institute of Applied Sciences. Bikaner.

- c) List of Patents obtained or applied for during last five years. – Nil
- d) List of scientific/ technical Books written by Faculty Members in the Department (including chapters in books)
- Bohra, A., Bohra, A. and Bissa, S. 2013. *Advances in Medicinal Plant Research* (Edited). Agrobios, Jodhpur (INDIA).
- Dagla, H. R., Nair, S., Vyas, D. K. and Upendra, J. M. 2014. *In vitro* culture of plants from arid environments. In: Tuteja N, Gill S S (eds.) *Climate Change and Abiotic Stress Tolerance*. Wiley-VCH Verlag GmbH & Co. KGaA, 933-938.

- Gehlot, P., Bohra, N. and Harwani, D. 2015. Endophytic microorganisms and their function. In: *Microbes: In Action* Singh, J. and Gehlot, P. (eds.). Agrobios India. Pp. 167-187.
- Gehlot, P., Raliya, R., Singh, S.K. Pathak, R. 2015. Role of Fungi in biosynthesis of nanoparticles. In: *Microbes: In Action* Singh, J. and Gehlot, P. (eds.), Agrobios India. Pp. 317-336
- Gehlot, P., S. Kaur and Sharma, K. 2012. Preservation of Anamorphic Fungi. In: *Phytotechnology: Emerging Trends*, Daniel, M & Arya, A. (eds.), Scientific publisher, Jodhpur.
- Gehlot, P., S. Kaur and Sharma, K. 2012. Preservation of Anamorphic Fungi. In: *Phytotechnology: Emerging Trends*, Daniel, M. & Arya, A. (eds.), scientific publisher, Jodhpur.
- Gehlot, P., Singh, S.K., Lakhani, J. and Harwani, D. 2015. Secondary Structure modeling of ITS1, 5.8S and ITS2 ribosomal sequences for intra-specific differentiation among *Aspergillus* species. In: *Microbes: In Action* , Singh, J. and Gehlot, P. (eds.), Agrobios India. Pp. 337-354.
- Jha, S. and Pudake, R.N. 2016. Advances in Understanding Molecular Mechanism of Plant-Nanoparticle Interactions, In: *Plant Nanotechnology - Principles and Practices* (Springer)
- Kasera, P.K. 2014. *Evolvulus alsinoides* Linn. Syn. *Convolvulus alsinoides* Linn. Fam. Convolvulaceae. In: *Agro-techniques of Selected Medicinal Plants*, Vol. II. NMPB, Department of AYUSH, Ministry of Health & Family Welfare, GOI, New Delhi, pp. 42-44.
- Kasera, P.K. 2014. *Salvadorapersica* Linn. Syn. *S. indica* Wt. Fam. Salvadoraceae. In: *Agro-techniques of Selected Medicinal Plants*, Vol. II. NMPB, Department of AYUSH, Ministry of Health & Family Welfare, GOI, New Delhi, pp. 88-90.
- Kasera, P.K. 2016. *Prosopis cineraria* (Linn.) Druce Syn. *P. spicigera* L. Fam. Mimosaceae. In: *Agro-techniques of Selected Medicinal Plants*, Vol. II. NMPB, Department of AYUSH, Ministry of Health & Family Welfare, GOI, New Delhi, pp. (in press)
- Kasera, P.K. and Mohammed, S. 2010. Ecology of inland saline plants. In: *Desert Plants: Biology and Biotechnology*, K.G. Ramawat (ed.). Springer-Verlag, New York, USA, pp. 299-320.
- Kasera, P.K., Lal, H. and Mohammed, S. 2013. Status, distribution and cultivation of *Commiphora wightii*– a critically endangered medicinal plant of the Rajasthan desert. In: *Advances in Medicinal Plant Research*, Bohra, A. Bohra, A. and Bissa, S. (eds.). Agrobios (India), Jodhpur, pp. 69-74.
- Kasera, P.K., Mohammed, S. and Sen, D.N. 2011. Techniques for seed germination and cultivation of some desert medicinal plants. In: *Medicinal Plant in Changing Environment*, Ahmad, A. Siddiqi, T. M. and Iqbal, M. (eds.). Capital Publishing Company, New Delhi, pp. 249-263.
- Mathur, Shaifali and Shekhawat, G.S. 2012. Plant Tissue Culture Technology: A Promising Approach for Biodiversity Conservation and Sustainable Resource Utilization. In: *Biodiversity Management and Conservation* Khan, J.B & Singh,



- G.S (eds.), Lap Lambert Academic Publishing AG & CO. KG, DudweilerLandstr, Germany
- Mehar, S.K. and Sundaramoorthy, S. 2015. Horizontal gene transfer: A determining factor of microbial diversity. In: *Microbes: In Action*, Singh, J. and Gehlot, P. (eds.). Agrobios, India 189-199pp.
- Ojha, A., Rao, C.S., Tak, N., Gehlot, H.S., Rao, S. R. 2015. Genetic diversity analysis of rhizobial symbionts associated with legumes of India for Efficient Biological Nitrogen Fixation (BNF) Technology and Natural Soil Fertility In: *Biology, Biotechnology and Sustainable Development*. Research India Publications. Chapter 9- Pg: 183-196)
- Panwar, D., Tak, N., Gehlot, H.S. 2014. Nodulated Native Legumes in an Arid Environment of Indian Thar Desert. In: M.H. Fulekar & R. K. Kale (eds.) *Recent Trends in Plant Sciences-I.K.* International Publishing House Pvt. Ltd. New Delhi, India. (Chapter 16- pg: 284-298).
- Pathak, R., Gehlot, P. and Singh, S.K. 2016. Seed Priming mediated induced disease resistance in arid zone plants. In: *Microbial mediated induced systemic resistance in Plants*, Choudhary, D.K. and Verma, A. (eds.), Springer Science Media, pp. 57-67. ISBN 978-981-10.
- Raturi, A., Gyaneshwar, P., Singh, S.K., Tak, N., Gehlot, H.S. 2014. Bacterial endophytes and their significance in the sustainable production of food in non-legumes. In: Tuteja, N. and Gill, S. S. (eds.) *Climate change and plant abiotic stress tolerance–VCH Verlag GmbH & Co. KGa AWeinheim*. Pg: 1013-1039.
- Shekhawat, G.S. 2012. *United Botany part I*. Ramesh Book Depot. Jaipur-Rajasthan.
- Shekhawat, G.S. 2013. *Microbiology, Fungi and Plant pathology B.Sc. Part I*. Ramesh Book Depot. Jaipur-Rajasthan.
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- e) Average Impact Factor of the publications and Name of the Major Journals in which publications are made:  $2 \pm 1.5$ ; basic Botany research papers were published in low impact factor journals, whereas applied/molecular biology research papers in high impact factor journals, hence high variations. As many as twenty major international journals have publications from the Department of Botany, JNV University. A few journals are as under:
- Acta Physiol Plant*  
*Acta Physiologiae Plantarum*  
*American Journal of Biology and Life Sciences*  
*Annals of Botany Plants*  
*AoB Plants*  
*Applied Biochemistry and Biotechnology*  
*Biologia plantarum*  
*Biometals*  
*BMC Virology Journal*  
*Critical Reviews in Biotechnology*  
*Gene*  
*In Vitro Cellular and Developmental Biology of plant*  
*Industrial Crops and Products*  
*International Journal of Pharmaceutical Sciences and Research*  
*International Journal of Biological Macromolecules*  
*International Journal of Plant Production*  
*Journal of Arid Environments*

*Journal of Arid Land Studies*  
*Journal of Biotechnology*  
*Journal of Crop Science and Biotechnology*  
*Journal of Environmental Chemical Engineering*  
*Journal of Experimental Botany*  
*Journal of Plant Growth Regulation*  
*Journal of Stress Physiology & Biochemistry*  
*Molecular Biology Reports*  
*National Academy Science Letters*  
*New Forest*  
*Nitric Oxide: Biology and Chemistry*  
*Pharmacology Reviews*  
*Physiology and Molecular Biology of Plants*  
*Plant and Soil*  
*Plant Cell Biotechnology and Molecular Biology (PCBMB)*  
*Plant Cell, Tissue and Organ Culture*  
*Plant Science Today*  
*Proceeding of the National Academy of Sciences, India Section B: Biological Sciences*  
*Protoplasma*  
*Review in Inorganic Chemistry*  
*Scientia Horticulturae*  
*Standards in Genomic Sciences*

- 14 Give a list of Equipment, which are available and functional in the Department costing Rs.5 lakhs and above

<i>Name of Equipment</i>	<i>Year of Purchase</i>	<i>Status</i>
Electrophoresis Systems 1-D and 2-D	2007	Working and in use
Electroporation cum Protoplast Fusion System	2005	Working and in use
Fluorescence Microscope	2010	Working and in use
HPLC system	2010	Require replacement of spare parts
Microbial storage facility	2015	Working and in use
Micropropagation/Green House Facilities	2004 (2015)	Working and in use, renovated
Portable Photosynthetic system Li-6400	2000	Require additional chambers, CO <sub>2</sub> , light, temperature and humidity control accessories and calibration



Real Time-PCR	2013	Working and in use
Atomic Absorption Spectrophotometer	2016	Working and in use
Lypolizer	2015	Working and in use
Nano drop Spectrophotometer	2015	Working and in use

15. Library facilities - List the Journals received in your department/ university library in the concerned discipline:  
 Springer journals are made available online; and with reduced fund allocation to Library for journals, University library subscribing to international journals is in abeyance for couple of years now. From 2016, with RUSA funding, the Department anticipate subscription restoration to fifteen national/international journals; including new online journal is anticipated. However, the Faculty members receive:
  - a. Journal of Indian Botanical Society
  - b. Indian Journal of Agroforestry
  - c. Journal of Tree Science
  - d. Annals of Arid Zone
  - e. Current Science
  - f. Indian Journal of Plant Physiology
16. Details of computing and networking facilities available in your department and institution.  
 University has LAN-NET work facility and all the laboratories in the Department of Botany are connected, the service connectivity is by fiber optics with capacity of 100mbps.  
 The centralized computing facility for scholars and teachers established using FIST I assistance is over lived and all the computers are outdated and nonfunctional now; hence a new Computational facility laboratory with a server and at least fifteen client systems is requested now. Statistical softwares shall be procured and put in to the use for all teachers and scholars in the Department/ Faculty.
17. Details of facilities in Central Instrumentation Centres such as RSIC, USIC etc., if any:  
 The limited facility that is in USIC has been utilized by the Department; mechanical and glassware fabrications are mostly used.
18. Details of Post-graduate Teaching & Research profile/ plans of the Department for next 5 years:  

**Postgraduate Teaching:** The Department continuing the COSIST scheme and provides vast amount of reading materials to our students every year. From the academic year 2015-16, the Department has taken a lead in offering Choice Based Credit system with semesterization of examinations for students in M.Sc. Ten subject specific elective papers including newer domains in Botany and as many as ten effective skill courses are offered now to the students.

The course papers offered in M.Sc. semester-wise is as under:

**SEMESTER I**

- Bot 101. Cell and Molecular Biology of plants
- Bot 102. Cytology and Genetics
- Bot 103. Biology and Diversity of Microbes, Algae and Fungi
- Bot 104. Biology and Diversity of Archegoniate
- SC I Skill course I (for students of Botany Department only)

**SEMESTER II**

- Bot 201. Taxonomy and Diversity of Seed Plants
- Bot 202. Plant Development and Reproductive Biology
- Bot 203. Plant Resource Utilization and Conservation
- Bot 204. Plant Physiology
- SC II Skill course II (for students of other Departments)

**SEMESTER III**

- Bot 301. Plant Ecology
- Bot 302. Plant Metabolism
- Elective I Elective paper I
- Elective II Elective paper II
- SC III Skill course III (for students of Botany Department only)

**SEMESTER IV**

- Bot 401. Applied Ecology
- Bot 402. Biotechnology and Genetic Engineering of Plants
- Elective I Elective paper I
- Elective II Elective paper II
- SC IV Skill course IV (for students of other Departments)

**Elective paper group – First – Semester III**

- Bot 303A. Genomics, Proteomics and Bioinformatics - I
- Bot 303B. Plant Molecular Biology and Biotechnology
- Bot 303C. Principles of Plant Pathology
- Bot 303D. Plant Microbe Interaction (PMIs) - I
- Bot 303E. Cytogenetics and Plant Breeding -I
- Bot 303F. Industrial Microbiology - I

**Elective paper group – Second – Semester III**

- Bot 304A. Population Biology
- Bot 304B. Microbial Ecology-I
- Bot 304C. Stress Physiology-I
- Bot 304D. Advanced Physiology
- Bot 304E. Biosystematics of Plants -I
- Bot 304F. Environmental Monitoring, Management and Restoration - I

**Elective paper group – First – Semester IV**

- Bot 403A. Genomics, Proteomics and Bioinformatics - II
- Bot 403B. Applied Molecular Biology and Plant Biotechnology
- Bot 403C. Plant Diseases and their Management
- Bot 403D. Plant Microbe Interaction (PMIs) - II
- Bot 403E. Cytogenetics and Plant Breeding - II
- Bot 403F. Industrial Microbiology - II

**Elective paper group – Second – Semester IV**

- Bot 404A. Desert Ecology
- Bot 404B. Microbial Ecology-II

Bot 404C. Stress Physiology-II  
 Bot 404D. Advanced Physiology  
 Bot 404E. Biosystematics of Plants - II  
 Bot 404F. Environmental monitoring, management and Restoration-II

### **Skill Courses in Botany**

Bot-SC-1 Intellectual Property Rights  
 Bot-SC- 2 Agrotechniques for Desert Plants  
 Bot-SC- 3-Data Analysis and Presentation  
 Bot-SC- 4-Bioinformatics  
 Bot-SC- 5-Micropropagation  
 Bot-SC- 6-Value Addition for Bioresources  
 Bot-SC- 7-Chromosome Analysis  
 Bot-SC- 8-Mushroom Cultivation  
 Bot-SC- 9-Molecular Techniques  
 Bot-SC- 10-Nutrient Mangement

**Research plans:** After pondering over current research endeavours of the various laboratories that are working independently with no joined theme that is expected to have a major impact for the Department at national and international level, the Department proposes the following combined and focused themes for next five/ten years:

- (i) Biosynthesis and characterization of nanoparticles using xeric/haloxeric plants and microbes
- (ii) Characterization and evaluation of phytotoxicity of engineered metal nanoparticles
- (iii) Nano-particles utilization and response assessment for in-vitro propagated plants of arid region
- (iv) Effects of nanoparticles on plant growth promoting bacteria nodulation and their efficacy in enhancing productivity of arid pulse crops
- (v) Role of nanoparticles in enhancing the production antibacterial secondary metabolites in plants
- (vi) Application of nanoparticles for abating abiotic stress including changes in photosynthetic/transpiration parameters and with modified CO<sub>2</sub>, light, humidity parameters.
- (vii) Nanoparticles effect on proteomics and genomic expressions of heavy metal tolerant algae/ plant growth promoting bacteria that significantly enhances pulses productivity / stress tolerance in crops

19 The research profile of the Department may fall in the following categories. Please [tick]:

Make in India ☐ Swachch Bharat ☐ Digital India ☐ Swastha Bharat ☐

Start-up India ☐

20. Details of Strength of the Department/ School/ Centre and Deliverables in the proposal:

- i) Existing Faculty and Infrastructure strengths of Deptt/ Centre/ School justifying the Proposal:



The Department of Botany is one of the leading Department in teaching and research in India from inception. Eminent teachers/scholars nurtured this Department to highly appreciable standards. And during 2013, five Associate Professors and thirteen Assistant Professors joined the Botany fraternity here and most of them are very enthusiastic researchers with vast expertise in the field of their research; Assistant Professors who were/are receiving special training including training from Australia on specialized areas infused newer blood to research endeavours.

For the proposed combined-focused theme, we have trained hands who can form a team with the rest to zeal in all frontiers so as to reach the target. The team formed for successfully achieving the target is:

- a. Prof. S. Sundaramoorthy – Coordinator
- b. Prof. Pawan Kumar Kasera – Member
- c. Prof. Hukam Singh Gehlot – Member
- d. Dr. H.R. Dagla – Member
- e. Dr. G.S. Shekhawat –Member
- f. Dr. Vinod Kataria – Member

ii) Specific Objectives of the Proposal in relation of above strengths:

The teachers trained in nanoparticle on biological systems can assist others; with active collaboration with Defense Research Laboratory and CAZRI, Jodhpur, wherein we have recognized Scientist having/ wish to have joint ventures, shall ensure smooth and successful completion of the targets proposed in this project

iii) Expected Academic Outcomes (experimental facilities to be created, UG/PG programs supported as well as research themes to be enabled by these facilities, publications with impact factor) from the implementation of the proposed proposal:

Being a combined-focused research with many principal and subsidiary experimentations including molecular tools to field evaluations, we anticipate high quality holistic research publications having very high impact factor in future. The themes shall involve most of the teachers in the Department, hence joint effect expected to be additive.

The instruments requested in this FIST assistance shall assist this Department to venture to a new frontier in biological research and strengthen the research endeavours of all teachers and scholars in the Department.

The newer courses proposed/ under preparation is expected to get a booster with new modern equipment facility in the Department

iv) Definite Product/Process/Design/Software/System Development efforts that will be added by the proposal:

Increasing productivity and stress tolerance in crops, increased mass multiplication with nanoparticles are expected to abate the arid zone agrarians in sustainable fashion.

v) Potential beneficiaries (specify industry segment and/ or strategic programs) or societal paybacks envisaged at the end of the project, if supported.

- a. Productivity enhancement for pulse crops
- b. Increased tolerance to abiotic stress
- c. Insight to the mechanisms at molecular level

21 Has the Department applied in previous years & not been recommended for support?

If yes, indicate (in 200 Words) year & the major developments in the Department in last 3 years:

Not applicable, received funds during both the times i.e. 2000, 2007

22. Has the Department received support under the FIST Program in previous years? If so, indicate the details of support received their utilization and the impact of that support in Department's profile & growth.

During 2000 and 2007 the Department received support under FIST program that enabled this Department to guide students to excel in research endeavours; nearly three students per academic year qualified UGC-CSIR-NET examinations with invariable one/two within the first fifty rank indicates the tremendous progress the Department could make with the support. The twenty/twenty five research publications from various disciplines of Botany in well reputed journals per year is considered as a major achievement. The continued progress the Department could achieve with the support of UGC and DST enabled to move to the status "Center of Advanced Study"

23. Details of funds requested for 5 years (Cost in Rs. (FE component in US\$))

S.No.	Items Name	Total FE Cost (in US \$)	Total INR Cost (in lakhs)
<b>A. Equipment (Name of each Equipment)</b>			
For Advanced Research			
i.	LC ESI MS/MS, Q-TRAP hybrid system	289856.00	200.00
ii	Field Emission Scanning Electron Microscope (FESEM)	289856.00	200.00
iii	High speed Cooling centrifuge	86957.00	60.00
vi	Biolog Micro plate reader for studying metabolic fingerprinting	36232.00	25.00
vi	Trinocular Research Fluorescence Microscope with Cytogenetics System for Karyotyping and FISH analysis with additional camera for tissue observation	31885.00	22.00
vii	Gas Chromatography Mass Spectrometry (GC-MS)	28986.00	20.00
viii	Fourier transform infrared spectroscopy (FTIR)	21740.00	15.00
For further Strengthening research endeavours			
i	UV-Vis Spectrophotometers		10.00
ii	High accuracy electronic balances		10.00
iii	High speed Cooling centrifuge with fixed angle rotor for 1.5-2 ml tubes		10.00
iv	Herbarium scanner with digital herbaria software		10.00
v	Deep freezers		5.00

vi	Online UPS		5.00
For Teaching			
i	Trinocular Research Microscope with photographic attachment	14493.00	10.00
ii	Mastercycler® pro S, with Control Panel, 230 V/50 – 60 Hz	10870.00	7.50
iii	Gel Documentation System	10870.00	7.50
iv	Stereomicroscope with photographic facility, illuminator, and accessories	10145.00	7.00
For upgradation/ repair of existing equipment			
i	Li-Cor 6400 PS	10145.00	7.00
ii	Waters HPLC	10145.00	7.00
iii	Canopy Analyzer & Porometer	1450.00	1.00
<b>B. Infrastructure Facilities (Books, Renovation of Labs etc.)</b>			
	Glass House (with three chambers) light, humidity and temp control Size: 12 X 36 feet.		25.00
	Poly houses with controlled temperature facility		10.00
	Renovation of mass culture room facility		5.00
	Renovation of electric supplies with circuit breakers, etc for seven research laboratories and two M.Sc. Laboratories		5.00
	Books		5.00
<b>C. Networking &amp; Computational Facilities etc.</b>			
	Computer lab with one server and 15 client facility		10.00
	Statistical softwares (SPSS) for institutional use	14493.00	10.00
	Software for 2-D image analysis (IMP7) for existing GE system	11595.00	8.00
<b>D. Maintenance of Equipment</b>			
	To pay AMC for major equipments from second year to fifth year		20.00
<b>Total</b>		<b>869581.00</b>	<b>737.00</b>

24. Details of each Budget Heads with full justifications for each item as given at Item No. 23 including details of similar support from any other sources

For Biolog Micro plate reader : The metabolic fingerprinting data/ information will help us to raise our publication standards as well as formal description of novel species. This is a



new generation microbial/bacterial identification based on metabolic phenotypes (unique metabolic fingerprint) generated by a species of bacteria on a set of carbon sources and biochemical. The biologic data is essential now days for the description of any new species under the polyphasic approach.

For FESEM: Scanning electron microscope is an indispensable tool for research evaluation in materials science and environmental biology, in the biological and medical sciences. The FESEM is routinely used to generate high-resolution images of shapes of objects (SEI) and to show spatial variations in topology morphology, particle size and local chemical analysis. The SEM is also widely used to identify phases based on qualitative chemical analysis and/or crystalline structure. Precise measurement of very small particles and objects down to 50 nm in size is accomplished using the SEM. Back scattered electron images can be used for rapid discrimination of phases in multiphase samples. SEMs equipped with diffracted backscattered electron detectors can be used to examine microfabric and crystallographic orientation in many materials.

For FTIR: Several faculties in the department of Botany are working on the metal stress/metal phytotoxicity and its related physiological consequences on different plant species and FTIR is quite important equipment required to know metal concentration/accumulation in plant samples.

FOR GC-MS: The estimation of ARA activity directly that gives nitrogenase efficacy so it will be useful in raising standards of our publication in addition to getting important information having applied aspect. Further for characterization of volatile secondary metabolites

For Gel Doc system: The highest performance gel doc system necessary for visualization and photography of amplified fragments in the gel(s).

For Glass Houses: One chamber to study ability of some of these novel strains of *Ensifer*'s to nodulate crop legumes and other wild legumes to establish host range of several novel strains of N fixing *Ensifer*, *Bradyrhizobium* and *Rhizobium*. Another chamber shall assist scholars to assess nanomaterial impact analysis in controlled condition. The third to assist the other users in the department to do studies in controlled glass house conditions.

For High speed centrifuges: Essentially separating particle and also required for centrifugation of large volumes (for DNA, RNA, Protein work) and for 96-well plates (for PCR/RT-PCR).

For LC ESI MS/MS, Q-TRAP hybrid system: Essentially required for proteomics work, for qualitative and quantitative proteomics, protein identification etc. Outsourcing of this work is very expensive (ranging from Rs. 3000-10000 per sample). We can also generate revenues for our deptt. by offering outsourcing, as its not available anywhere in Rajasthan.

For Microscope: Chromosomal, FISH, and advanced research, Image analysis and high quality imaging systems (two) for M.Sc. teaching/ research laboratory.

For PCR: For inter-generic and inter-species diversity analysis and downstream DNA barcoding of threatened and endemic plants of the Thar Desert.

For repairs: The instruments procured from different agencies support, additional spares and calibrations require FE component for which we need specific sanctions.

For Soft wares: It is for strengthening research, statistical softwares are very essential and integral part in every data analysis. This availability shall enable M.Sc. students to have hand on practice on various data analysis modules that they learn in theory classes.

For equipment to strengthen research: Many of the scholars and teachers work for long hours and hence require additional/ independent equipment facilities.

25. Specify the recipient of the Grant (Registrar/ Director / Any other) by attaching an endorsement from Head of Institution/ University:

Information submitted as above is true and is correct.

#### Signatures

(S. Sundaramoorthy)

Professor & Head

(Prof. R.P. Singh)

Vice Chancellor

**TEQIP**  
**(FACULTY OF ENGINEERING**  
**/MBM ENGINEERING**  
**COLLEGE:**  
**8 DEPARTMENTS)**



**Government of Rajasthan**  
Department of Technical Education

No. 11 (4) T.E/2007 Part

Dated 08.06.2018

The Registrar  
JNU University  
Jodhpur

Sub: Separate BOG for constituent Engineering College participating under TEQIP-III.

Sir,

It is a matter of pride for your University as well as Government of Rajasthan that the constituent Engineering College of your University "MBM Engineering College, Jodhpur" has been chosen by the MHRD for the World Bank sponsored project TEQIP-III. Under the project, the constituent college shall be getting a grant of Rs. 10.00 Crores. However, one of the conditions laid down by the MHRD and World Bank requires the constituent colleges to have their own Board of Governance (BoG) which should be different from the BoG/ BOM / Senate / Syndicate / Academic Council of the University. The composition of the Institute level BoG has already been informed by NPIU to the TEQIP Coordinator vide email (copy enclosed).

Please note that this is a mandatory condition for disbursement of funds. Therefore, it is requested that separate BoG (as prescribed by NPIU) may be constituted for MBM Engineering College, Jodhpur at the earliest and Government of Rajasthan may be informed about the same.

(Pushpa Satyani)  
JS-1 & S.P.A.

Copy to :

1. PS to Hon'ble Vice Chancellor, JNU University, Jodhpur
2. Dean, Faculty of Engineering, JNU University, Jodhpur
3. Prof. S.k. Parihar, Coordinator TEQIP-III, MBM Engineering College Jodhpur

Name of Institute:- MBM Engineering College, JNVU, Jodhpur												
Institute Monthly Expenditure Report												
Technical Education Quality Improvement Project-III												
S.No	Particulars		Audited Expenditure				Expenditure after reconciliation	Exp. as per tally/M32	Total expenditure from Starting to Dec-2020	Exps. as per M32/ Tally		
			FY 2017-18	FY 2018-19	FY 2019-20	Total	April-20 to Sept.-20	Oct. to Dec-2020		Jan-21	Feb-21	Mar-21
Name of Component			A	B	C	D= A+B+C	E	F	G = D+E+F	H	I	J
	1.1.1 - Procurement of goods	1.1.1.1 Equipments	-	67,26,294.00	3,00,42,541.00	3,67,68,835.00	85,18,890.00	57,031.00	4,53,44,756.00	-	3,84,660.00	13,26,209.00
2		1.1.1.2 - Learning resources	-	-	46,30,688.00	46,30,688.00	3,06,931.00	-	49,37,619.00	-	-	-
3		1.1.1.3 - Furniture	-	-	22,54,725.00	22,54,725.00	10,71,459.00	-	33,26,184.00	-	-	1,75,015.00
4		1.1.1.4 - Minor civil works	-	-	1,18,210.00	1,18,210.00	-	-	1,18,210.00	-	-	-
Sub total Total (i)			-	67,26,294.00	3,70,46,164.00	4,37,72,458.00	98,97,280.00	57,031.00	5,37,26,769.00	-	3,84,660.00	15,01,224.00
5	1.1.2 - Academic processes	1.1.2.1 - Improve students learning	-	5,17,843.00	58,84,631.00	64,02,474.00	21,11,934.00	12,950.00	85,27,358.00	-	8,244.00	72,000.00
6		1.1.2.10 - Services	-	-	-	-	-	-	-	-	-	-
7		1.1.2.11 - Industry-Institute Interaction	-	21,435.00	1,66,218.00	1,87,653.00	-	-	1,87,653.00	-	-	-
8		1.1.2.2 - Assistantships	-	5,61,600.00	24,47,094.00	30,08,694.00	33,99,886.00	10,19,355.00	74,27,935.00	2,75,000.00	1,39,758.00	5,25,000.00
9		1.1.2.3 - Graduates employability	-	36,592.00	7,53,598.00	7,90,190.00	1,03,690.00	-	8,93,880.00	-	-	-
10		1.1.2.4 - Faculty/staff development and motivation	-	12,31,945.00	45,58,970.00	57,90,915.00	2,08,292.00	8,540.00	60,07,747.00	1,41,600.00	97,880.00	35,544.00
11		1.1.2.5 - Research and development	-	-	56,817.00	56,817.00	16,500.00	92,365.00	1,65,682.00	-	-	41,115.00
12		1.1.2.6 - MOOCs and digital learning	-	1,08,296.00	38,110.00	1,46,406.00	6,500.00	-	1,52,906.00	-	3,300.00	-
13		1.1.2.7 - Mentoring/Twinning system	-	4,49,973.00	5,29,796.00	9,79,769.00	18,672.00	-	9,98,441.00	-	-	-
14		1.1.2.8 - Reforms and governance	-	7,12,455.00	47,200.00	7,59,655.00	4,80,800.00	-	12,40,455.00	-	-	-
15		1.1.2.9 - Management capacity development	-	3,50,568.00	-	3,50,568.00	-	-	3,50,568.00	-	-	-
Sub total Total (ii)			-	39,90,707.00	1,44,82,434.00	1,84,73,141.00	63,46,274.00	11,33,210.00	2,59,52,625.00	4,16,600.00	2,49,182.00	6,73,659.00
16	1.1.3 - Operating costs	1.1.3.1 - Consumables	-	6,968.00	11,215.00	18,183.00	69,946.00	5,450.00	93,579.00	-	7,485.00	1,960.00
17		1.1.3.2 - Operation & maintenance of equipments	-	-	2,48,067.00	2,48,067.00	2,18,716.00	-	4,66,783.00	-	9,500.00	-
18		1.1.3.3 - Office expenses	-	1,46,273.00	2,60,906.00	4,07,179.00	96,043.00	4,455.00	5,07,677.00	-	1,200.00	12,769.00
19		1.1.3.4 - Meetings	48,113.00	4,55,903.00	10,12,739.00	15,16,755.00	5,10,437.00	40,000.00	20,67,192.00	3,180.00	-	14,132.00
20		1.1.3.5 - Hiring of vehicles	-	31,253.00	1,46,050.00	1,77,303.00	6,270.00	-	1,83,573.00	-	-	-
21		1.1.3.6 - Travel cost	-	29,379.00	71,387.00	1,00,766.00	-	-	1,00,766.00	-	-	-
22		1.1.3.7 - Salary	-	6,10,758.00	9,47,290.00	15,58,048.00	4,11,810.00	2,28,150.00	21,98,008.00	1,18,135.00	44,175.00	1,67,700.00
Sub total Total (iii)			48,113.00	12,80,534.00	26,97,654.00	40,26,301.00	13,13,222.00	2,78,055.00	56,17,578.00	1,21,315.00	62,360.00	1,96,561.00
Grand Total (i) + (ii) +(iii)			48,113.00	1,19,97,535.00	5,42,26,252.00	6,62,71,900.00	13,24,95,687.00	25,29,93,839.00	45,17,61,426.00	5,37,915.00	6,96,202.00	23,71,444.00


(Expenditutre in Rs.)

Total Expenditure from Starting to March- 2021	Fund Allocated in TEQIP Project Life	Available Fund
K= G+H+I+J		
4,70,55,625.00		
49,37,619.00		
35,01,199.00		
1,18,210.00		
5,56,12,653.00	6,00,00,000.00	43,87,347.00
86,07,602.00		
-		
1,87,653.00		
83,67,693.00		
8,93,880.00		
62,82,771.00		
2,06,797.00		
1,56,206.00		
9,98,441.00		
12,40,455.00		
3,50,568.00		
2,72,92,066.00	3,00,00,000.00	27,07,934.00
1,03,024.00		
4,76,283.00		
5,21,646.00		
20,84,504.00		
1,83,573.00		
1,00,766.00		
25,28,018.00		
59,97,814.00	1,00,00,000.00	40,02,186.00
8,89,02,533.00	10,00,00,000.00	1,10,97,467.00

Procurement

Acadmic

IOC



**UGC-SAP-DRSII**  
**(DEPARTMENT OF**  
**CHEMISTRY)**



## Thrust Areas Identified

- Solar Energy Conversion
- Environmental Chemistry

As recommended by the Review Committee, the name of the Co-ordinator & the deputy Co-ordinator of the Programme for the present phase will be

- Name of the Co-ordinator - **Prof. Pradeep K. Sharma.**
- Name of the Dy. Co-ordinator - **Dr. R.C. Meena** for **DRS-II** programme under SAP

The Co-ordinator may continue till the end of the present duration of the programme or till his/her superannuation

The financial assistance approved for implementing the present phase at the level of **DRS-II** for a duration of **5 years (01-04-2018 to 31-03-2023)** is given below

S. No.	Non-Recurring (Items) (Rs. In Lakh)	Rs. (In Lakh)
1.	Equipment: (Impedance photochemical, Voltametric Analyzer, Photo electrochemical Work Station, Solar Simulator, Continuous photoreactor, Sonicator)	46.00
	<b>TOTAL</b>	<b>46.00</b>
S. No.	Recurring p.a.	
1	Contingency Chemicals/Consumables/Glassware @ Rs 1.00 Lakh	5.00
2	Chemical Consumables/Glassware @ Rs 2.00 lakh	10.00
3	Travel/Field facilities/Field trips for Faculty members only (all within India Only) @ Rs 0.50 Lakh	2.50
4	Visiting Fellow @ Rs 0.50 lakh	2.50
5	Seminars organization on thrust area @ Rs 1.00 (Two)	2.00
6	Hiring the Services of Technical Industrial Secretarial Assistance @ Rs 1.00 lakh	5.00
7	Advisory Committee meetings (TA + DA for UGC nominee in the committee) @ Rs 0.50	2.50
8	Books & Journals @ Rs 1.00 lakh	5.00
	<b>Project Fellows ( Two )</b>	<b>5.00</b>
	<b>Total</b>	<b>Actuals</b>

**Grand total (NR + R + P.F. )**

**34.50 + Two P.F.**  
**80.50 + Two P.F.**

Non - Recurring  
Recurring

(Rs. In lakh)  
Rs. 46.00 Lakh  
Rs. 34.50 Lakh

\*Total (NR + R + P.F. ) for 5 year = Rs. 80.50 Lakh + Two P.F.

up to Eighty Lakh Fifty Thousand only) + Two Project Fellows

The aforesaid approval is up to 31-03-2019 only. Further the scheme may continue subject to concurrence and availability of funds from Ministry of Human Resource Development (MHRD).

*[Signature]*

Head  
Ministry





UNIVERSITY GRANTS COMMISSION  
BAHADUR SHAH ZAFAR MARG  
NEW DELHI - 110 002

No. F.540/1/DRS-II/2018(SAP-I)

April, 2018

The Registrar,  
Jai Narayan Vyas University,  
Jodhpur - 342 011.

Sub: University Grants Commission assistance to the selected department under Special Assistance Programme (SAP) Review of the Programme in the **Department of Chemistry, Jai Narayan Vyas University**, for upgradation/continuation from **DRS-I** to **DRS-II** for a period of 5 years (01-04-2018 to 31-03-2023) Subject to availability of funds and continuation of the scheme beyond 31-03-2019.

1. UGC's Special Assistance Programme (SAP) is intended through constant effort to raise the quality of teaching/ research in different disciplines in Bio Sciences, Sciences, Engineering & Technology, Humanities, Social Science departments and carefully selected on the basis of their work, academic achievements and viable potential for further development. The essence and primary aim of the scheme is combination of teaching and research to encourage group research efforts in pursuit of excellence.
2. The Department of **Chemistry** was at **DRS-I** of the SAP programme at **Phase-I** approved for a duration of five years for **01.04.2011 to 31.03.2016**.
3. As per guidelines, the Commission constituted an Expert Committee to review the progress of above said department on completion of tenure under the Special Assistance Programme (SAP). The Expert Committee Reviewed the department on **24<sup>th</sup> October 2016 in the office of UGC New Delhi**.
4. The Review Committee, after a very careful and critical in depth examination of the academic achievements of the department during the term as well as various aspects of implementation of the programme with the departmental representatives has submitted their recommendations to the Commission.
5. UGC has approved the **Department of Chemistry** from **DRS-I to DRS-II** programme for a period of **Five years from 01-04-2018 to 31-03-2023**. Period from 1-4-2016 to 31-03-2018 may be treated as gap years.
6. On the basis of the recommendations of the Review Committee, approval of the University Grants Commission is conveyed for continuation/Up gradation of the programme at the level of **DRS-II** for **5 years** with following thrust area(s) for research and teaching.

  
Prof. & Head  
Department of Chemistry  
J.N.V. University, Jodhpur



## UTILIZATION CERTIFICATE

This is to certify that a sum of 1050000/- (Rs. Ten Lakh Fifty Thousand Only) was sanctioned by UGC to The Registrar, JNU, Jodhpur for the purpose of AP at the level of DRS-II in the Department of Chemistry vide its sanctioned letter No. F 54.1/DRS-II 2018(SAP-I) dated 13.08.2018.

Against the above sanctioned a sum of Rs. 571955.80/- was utilized for the purpose for which it was sanctioned as given here under:

### RECEIPT & PAYMENT ACCOUNTS

Receipt		Amount in Rupees	
	Amount	Payment	Amount
Balance b/f	1050000.00	By Consumables	199075.00
Grant-in-Aid		By Contingent	99970.00
for the year 12.01.2019		By Travel	50000.00
		By Visiting Fellow	4000.00
		By Hiring Services	82710.00
		By Advisory Committee Meetings	24311.00
		By Books & Journals	90831.00
		By Project Fellow	14000.00
		By Advertisement	6291.00
		By MBDEU	172.00
		By Bank Charges	295.50
		By Balance b/f	178044.50
<b>Total</b>	<b>1050000.00</b>	<b>Total</b>	<b>1050000.00</b>

Checked & found in conformity with the original produced before me.

For Kanstia & Company  
Chartered Accountants

DATE: 14.08.2019  
ACCT: JODHPUR



Prof. & Head  
 Department of Chemistry  
 J.N.V. University, Jodhpur

M.C. KANSTIA  
 (Partner)  
 SACR 1904

**(Mamta R. Agarwal)**  
**Joint Secretary**

**NOTE:** Please see SAP guidelines on UGC website [www.ugc.ac.in](http://www.ugc.ac.in).

**Prof Padeep K Sharma,**  
**Co-ordinator (DRS II),**  
**Department of Chemistry,**  
**Jai Narayan Vyas University,,**  
**Jodhpur - 342 011**

**Copy for information to:**

**The P. N. to Vice-Chancellor**  
**Jai Narayan Vyas University,**  
**Jodhpur - 342 011**

**The Head Department of**





## UTILIZATION CERTIFICATE

This is to certify that a sum of 550927 00/- (Rs Five Lakh Fifty Thousand Nine hundred Twenty Seven Only) was sanctioned by UGC to the Registrar, JNVU, Jodhpur for the purpose of SAP at the level of DRS-II in the Department of Chemistry vide its sanctioned letter No F 540/1/DRS-II/2018(SAP-I) dated 07 February, 2020.

Against the above sanctioned a sum of Rs. 777045/- was utilized for the purpose for which it was sanctioned as given here under.

### RECEIPT & PAYMENT ACCOUNTS

		(Amount in Rupees)	
Receipts	Amount	Payment	Amount
o Opening Balance	478044.50	By Contingencies	100167.00
o Grant in Aid	550927.00	By Consumables	198303.00
Transfer on			
9-06-2020			
o Interest received	19683.00	By Travel	19200.00
		By Hiring Services	99059.00
		By Books & Journals	94316.00
		By Project Fellows	266000.00
		By Balance	271609.50
		-Bank	
<b>Total</b>	<b>1048654.50</b>	<b>Total</b>	<b>1048654.50</b>

Checked & found in conformity  
With the records produced before us

For Kanstia & Company  
Chartered Accountants

DATE: 15-10-2020  
PLACE: JODHPUR

M.C. KANSTIA  
(PARTNER)  
UDIN20011271AAAAOP1440

Prof. & Head  
Department of Chemistry  
J.N.V. University, Jodhpur



12. The University/Institute/Department is requested to take immediate steps to submit the following information/documents for necessary action
- Acceptance of the terms and conditions of the grants duly signed by the Registrar of the University/Institute
  - Name of the competent University Officer with full address and other bank details in (mandate form) the prescribed enclosed proforma so that the fund can be transferred electronically
  - Detailed statement of year-wise actual expenditure incurred against the grants allocated sanctioned during the last phase may be submitted in the PROFORMA in the Annexure V, of SAP guidelines duly audited and certified by the Competent authority in order to finalize the accounts of the earlier phase
  - Name of the Department Co-ordinator and Dy. Co-ordinator indicating (i) present designation (ii) specialised area(s) of research and (iii) date of superannuation. List of members of the Advisory Committee constituted by the university/ institute as per guidelines
  - Year wise academic programme and action proposed to be undertaken by the department during the period of **5 years** to implement the programme
  - List of members of the Advisory Committee constituted by the university/ institute as per guidelines
  - The annual report of the work done during the year (as per effective date of the programme) should be submitted by the Programme Co-ordinator highlighting the achievements in research and teaching and indicating separately the progress in procuring of equipment construction of Building (only addition, alteration and renovation, if sanctioned under the programme) and the list of papers published in referred journal during the year positively reported by the end of every year
  - A Certificate from the Registrar of the university that the department is not self finance and is eligible to receive the UGC financial assistance
13. The University/Institute shall take all possible measures to ensure effective implementation of policies of Government of India relating to SC/ST students and teachers in regard to the UGC programme. In case of non-teaching staff, the policies of the Central Government in respect of Central Universities and of the State Government in respect of State Universities shall be implemented
14. The first installment of admissible grant will be released separately. In the meantime, the University should submit the requisite information requested vide **para 12 (i to viii)** by return of post.
15. No request for any change in the effective date will be considered
16. The orders for purchase of equipment is to be placed within six months from the date of receipt of the grant by the university
17. The second and subsequent installment of grant for any approved items will be considered and sanctioned only on receipt of the Utilization Certificate for the earlier installment in the prescribed form duly signed by the Registrar/Finance Officer as the case may be
18. **The Non Recurring Grant approved will be released only after settlement of the previous accounts of SAP programme.**
19. **Non-recurring Grant released by UGC should be utilized by the department/university positively within a period of three years from the date of receipt of grant, otherwise UGC may ask for refund of the un-utilized amount of non-recurring grant.**

Prof. & Head

Department of Chemistry  
JNU University, Jaipur



The University is to maintain a separate **flexible saving bank account** for the grants released under Special Assistance Programme. Interests earned against Grants in aid (other than reimbursement) released to any grantee institutions should be mandatorily remitted to UCo account immediately after finalization of accounts. Any interest earned out of Grants in aid should not be allowed as additional funds over and above the allocation.

**The University/ Department shall follow the SAP Guidelines posted on the UOC website.**

For appointment of Project Fellow, UGC guidelines for SAP/MRP shall be followed. The details of the appointed Project Fellow duly authenticated by the competent authority are to be send to UGC as per the enclosed format. However, following documents are to be retained by the University / Department and furnished to UGC as and when called for.

**Copy of Notification      Advertisement of the vacancy**

Copy of Minutes/Recommendation of the Selection Committee consulted by  
Project Fellow

Copy of University Order to the appointment of the Project Director

Copy of Joining Report of Project Fellow

Attested copy of P or Mark Sheet

Attested copy of Cast/Disability Certificate

category and obtained below 55% marks

Attested copy of Matriculation Certificate for

HRA certificate duly signed by the  
Project fellow

Bio-data in respect of Project 1

Month wise salary expenditure summary

**Age of project fellow should be below 40 years**

The University / Institute shall follow the norms for appointment of Programme Co-ordinator and Joint Co-ordinator or Co-ordinator) and also constitute an Advisory Committee which can be downloaded from the website of the Commission. The constitution of the Advisory Committee as per the guidelines of the Commission shall be followed by the University / Institute and follow the terms of reference of the Commission.

Prof. J. K. Stille  
Department of Chemistry  
J.N.V. University, Jodhpur



**DEPARTMENT OF CHEMISTRY**  
**(UGC SAP DRS)**



**UNIVERSITY GRANTS  
COMMISSION NEW DELHI**

**PROGRESS REPORT ANNUAL/FINAL REVIEW  
UNDER SAP (DRS)**

Name of the University: Jai Narain Vyas University, Jodhpur (Raj) 342001

Name of the Department: Department of Chemistry, JNVU, Jodhpur

Date of first approval with level at inception: 11/04/2018

Date of implementation of current phase as noted by the UGC:

Status (CAS/DSA/DRS with phase): DRS II

Period of Report: 1/04/2019 to 31/03/2020

Amount allocated for 5 years: 34.50 (NR) + 46.00 (R)= 80.50 lac + Two PF

Amount sanctioned during the year: 10.50 lac

Amount utilized during the year: Rs. 777045.00

Date of first sanction (current phase): 07/02/2020

Total grants received since inception: 10.50 lac +550927

Coordinator's Name: Prof. Kailash Daga

Dy. Coordinator's Name: Prof. R.C Meena

Address: Department of Chemistry,  
Jai Narain Vyas University,  
Jodhpur (Raj)

City: Jodhpur

Pin: 342005

State: Rajasthan

Tel: 0291-2720840

Fax: 0291-2720840

1. (a) Thrust Area(s):

(i) Identified since inception: Solar energy conversion and Environmental Chemistry

Ongoing:

Modified to, if any, and when inception approval reference no and date: NA

- (ii) Thrust Area Approved: a. Solar Energy Conversion and Storage  
b. Environmental studies

(b).UGC nominees with Address, City, Pin, State,Tel.,Fax,  
e- mail (as approved by the UGC) :

I. Prof. N.B. Singh, Department of Chemistry, Sarda University, Greater Noida,  
E-mail:[nbsingh43@gmail.com](mailto:nbsingh43@gmail.com), Mob.-7838500311.

II. Prof. Anshu Dandia, Department of Chemistry, University of Rajasthan, Jaipur,  
E-mail:[dranshudandia@yahoo.com](mailto:dranshudandia@yahoo.com), Mob.- 9414073436.

## 2. Major Achievements:

### (i) Research

- a. Research (highlight major objectives set-forth (as proposed) and achievements made with breakthrough, innovation brought in, technology transferred, international collaboration which have created resources):

## Academic Achievements in Thrust Area (Solar Energy Conversions)

### A. National Conference

1. **Prof. R C Meena** represented his research paper in National Conference on Indian Council of Chemist (ICC) held in December 2019 at Jaipur National Institute Jaipur.
2. Prof. K. R. Genwa attended International Conference on Trombay Symposium on Radiation & Photochemistry held on January 5-9, 2020 in DAE, BARC, Mumbai.

### B. Research Publications

1. **Dr. Pooran Koli**, Natural sunlight irradiated Rhodamine B dye sensitized and surfactant enhanced photo galvanic solar power and storage, *International Journal Ambient Energy*, TAEN 2018-0677; Taylor & Francis, Accepted
2. **Prof. R. C. Meena<sup>a</sup>** Pramod Kumar Meena<sup>\*a</sup> and **Dr. S. L. Meena<sup>a</sup>** Study of Natural photo sensitizer (*Punica granatum*) to enhance storage capacity of photo galvanic cell Journal of energy and environment, published RSC 2020 (7) 4-8.
3. K. R. Genwa, Chanchal Mahavar and Virendra Soni, Evaluation of solar conversion efficiency in Dye Sensitized Solar Cell using cobalt nitrate and magnesium sulphate in mixture of dyes. *J. Mat. Sci.* 6(4), 45-58 (2020).

### C. Other Achievements

1. **Dr. S L Meena** participated in Scientific Event on Nanotechnology held in IIT Jodhpur on 15<sup>th</sup> oct, 2019

## **Academic Achievements in Thrust Area (Environmental Chemistry)**

### **A. National Conference / Seminar Attended**

1. Dr. Priyanka Purohit presented a poster in International conference on Recent Advances at Interfaces of Physical and Life Sciences held on 2019 in Department of Chemistry university of Rajasthan.
2. Dr. Priyanka Purohit presented a paper in International conference on Environmental Conservation and management by Jambhoji Philosophy through public participation held on 2019 in Guru Jambheshwar environment Conservation Research Bench, J.N.V. University, Jodhpur
3. Dr. Priyanka Purohit presented a poster in National conference on Energy and Environment : Perspective & Challenges held on 2019 in Department of Chemistry, Jai Narain Vyas University, Jodhpur.
4. Dr. Priyanka Purohit presented research paper in National Seminar on Recent Trends and Advancement in Chemical , Physical and Life Sciences held on 2019 in Department of Chemistry, Jai Narain Vyas University, Jodhpur.
5. Dr. Priyanka Purohit attended a National workshop on Bioinformatics held on 2019 in IIT, Jodhpur.
6. Dr Anurag Choudhary attended International conference on environment protection and management by public participation through Jambhoji philosophy held on 05-06 June, 2019 in Guru Jambheshwar environmental protection thesis.
7. Dr Anurag Choudhary presented oral paper in 38<sup>th</sup> Annual National Conference held on 26<sup>th</sup> -28<sup>th</sup> December 2019 in Indian Council of Chemists at Jaipur National University , Jaipur.
8. Dr. Om Prakash presented oral paper in 38<sup>th</sup> Annual National Conference held on 26<sup>th</sup> -28<sup>th</sup> December 2019 in Indian Council of Chemists at Jaipur National University , Jaipur .

### **B. Research Publications**

1. S.Loonker and A.Maheshwari, Microwave assisted synthesis, characterization and biological evaluation of newly synthesized 1,3,5-thiadiazole derivative of Guar Gum. International Journal of Pharmaceutical Sciences and Research. vol.10(2) ,666-671(2019).



2. Vikal Gupta, One Chepter "Nanomaterial: Synthesis and characterization. Published in book" Nano Scale Engineering in Agricultural Management" CRS Press, Taylor and Francis group, New York (2019).
3. Vikal Gupta, Removal of Cu(II) from aqueous solution using chemically activated banana peels as an adsorbent, Poll Res.(3)(2020).
4. Pallavi Mishra and Shipra Singh, A comparative study of different bioadsorbents obtained from domestic waste material for the fluoride removal poll res. 38 (2),104-111 (2019).
5. Pallavi Mishra and Rajshri Soni, Monitoring Of Heavy Metals Content In The Soil Samples Collected From The Industrial Areas And Agricultural Fields Near Jajari River In The Jodhpur City, Poll Res., 38 (3),248-252 (2019).
6. S Kothari, T Kachawa, R Kalal and D Panday, Mechanistic studies of the oxidation of some alpha amino acids by benzamidazolium dichromate, Oxid. Commun. 42,307-317(2019).
7. Priyanka Purohit, Rekha Sharma, Deepika Soni, and Pradeep K Sharma, Oxidation of some Organic Sulfides by Pyridinium Dichromate: A Kinetic & Mechanistic Approach, Journal of Emerging Technologies and Innovative Research, 6(4),136-145(2019).

### C. Other Achievements

1. Dr Anurag Choudhary completed Refresher course in chemistry (with Grade A<sup>+</sup>) from 18<sup>th</sup> November 2019 to 01 December 2019 at UGC-HRDC , Gujarat University, Ahmedabad.
2. Dr.Om Prakash attended Refresher Course held at HRDC University of Rajasthan, Jaipur during 29<sup>th</sup> July to 10<sup>th</sup> August 2019.
3. Dr. Ramlal Saini attended Online Refresher course in Chemistry for higher education, organized by Swayam from 1<sup>st</sup> sept to 31<sup>st</sup> Dec 2019.
4. Dr. Ramlal Saini attended Interdisciplinary workshop on Innovations in Research, Teaching Learning and Women empowerment, from 02 to 08 Jan 2020, J.N.V.University (Jodhpur).
5. Dr. Sangeeta Parihar attended one refresher course in chemistry on "Advancement in Science & Technology", at UGC, HRDC, Jaipur, 2019.

Dr. Sangeeta Parihar attended one week National Workshop on "Strategic Quality Initiatives in Technical Education" Organised by Engineering Staff College of India held at Port Blair, 19-23 December, 2019.

7. Dr. Seema Parveen attended Refresher course in Advancements in Science and Technology (Inter-Disciplinary) held on 29.07.2019 to 10.08.2019 in University of Rajasthan.
8. Dr. Seema Parveen attended Interdisciplinary workshop on Innovations in Research, Teaching Learning and Women empowerment held on January, 02-08 2020, J.N.V. University Jodhpur.

If the objectives set-forth could not be achieved, the specific reasons thereof: N. A

- b. Utilization of findings in policy formulation, development and modification of strategies (for Social Science departments mainly): Autonomy under M.Sc. Chemistry course for the university under department of chemistry.

**(ii) Human Resource Training :**

- a. **Persons trained (Nos.):** UG- PG- 2 (UG) and 3 (PG)
- b. **Rural/Tribal-** More than 60% PG students come from rural and tribal areas of Western Rajasthan specially desert region of India.
- c. **Industrial-** Industrial training is a part of curriculum of PG course.
- d. **International-** Extension lectures are organized regularly by eminent scientist and professors from foreign universities to give international exposure to our PG students. And some of our faculty members are trying to establish International collaboration.
- e. **From other agencies-** Various competitions are organized for school children for awareness about the development in science and technology.

**3. Infrastructure Developed:** The Department has developed an Instrumental laboratory and also established CCT vigilance of the department.

- a. **Name major Equipments(>Rs.3 lacs):** i. Stop Flow for Fast Kinetics (DRS-I)  
ii. Electrochemical Analyzer (DRS-I)

**b. Central Schemes/facilities for PG, Research and Extension Activities :**

- (i) USIC / RSIC (ii) Patent Promotion Cell (iii) Guesthouse with capacity of 30 rooms (iv) Seminar / Conference Room with capacity of 50 no. (v) Regional/Mainframe computing facilities- net facility and 40 computers (vi) Women Development Cell.

- c. **Networking:** (i) Library (ii) Laboratory (iii) University Department.

**4. Knowledge disseminated to (in the thrust area identified):**

**(i) Other teaching institution (Name, No. of faculty involved):** NA

**(ii) Industry (Name with amount received if any):** DST IDP project with Surana Scientifics, Jodhpur.

**(iii) Rural/Tribal/Govt./NGOs(Provide No. with amount):** Approved testing centre

**(iv) International (name organization):** INSA, Canfield University UK

**(v) Others:** DMRC, Defense Lab, CAZRI and IIT Jodhpur

**(vi) Innovation/excellence brought in:** Area of Biosensors has been developed.

**5 Breakthrough (already organized):** Patent has been approved in the field of Biosensors.

**6. Emerging/Hi-tech/Priority area generated:** Biosensors and Trace Electro analysis, sensors and fast kinetics.

**7. Resource generation (specify amount, Rs.16 lac per annum):** One section of 40 students for M.Sc. Chemistry (SAP) under SFS (Self Finance Scheme) is running.

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<u>Items</u>	<u>Amount</u>
SFS	Rs.147500/year
One section of PG Chemistry under Self Finance Scheme	

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- a. International students: NA
- b. Industrial: NA
- c. Extension Activities: NA
- d. Other Courses: NA



- a. Total amount of resource generated from all sources above: Rs.20 lacs
- b. Also mention development grant received from University in other areas of the Department: Rs. 30.0 lacs received from Faculty of Science.

**8. Use of output of research, teaching in (tick and fill up the right one)**

<u>Item</u>	<u>No.</u>
a. Industries:	40% of PG students
b. Other user depts. Research lab, DRDO, ICMR lab & CSIR lab:	20% of PG students
c. National Organizations:	20% of PG students
d. Other organizations:	20% of PG students

**9. Other activities:**

1. Items	Numbers
Seminar	- 2 days each
Summer Institute	1 2 weeks
Conference	2 2 days each

b. Autonomous Character: Yes for M.Sc. Chemistry (SAP):

- a. Financial: Yes
- b. Administrative: Yes
- c. Academic: Yes

d. Others

c. Advisory Committee Meeting (No. with Dates): No

**10. Faculty Involved**

a. Faculty Strength:	Position Available	Working	Vacant
	54	27	27
Created			
Professor:	13		
Associate Prof.:	02		
Assistant Prof.:	12		
Others:			

b. In the identified thrust area(s)\*:

Faculty	Name	Membership (INSA/BHATNAGAR/BIRLA)	Specialisation/ Specific Areas of expertise
<b>Professor</b>			
	1. Prof. Kailash Daga		Environmental Chemistry
	2. Prof. Sangeeta Loonker		Environmental Chemistry
	3. Prof. Vikal Gupta		Environmental Chemistry
	4. Prof. A.V. Singh		Environmental Chemistry
	5. Prof. Vimla Chaudhary		Environmental Chemistry
	6. Prof. Pallavi Mishra		Environmental Chemistry
	7. Prof. R.C. Meena		Solar Energy Conversion & Storage
	8. Prof. K.R. Genwa		Solar Energy Conversion & Storage
<b>Associate Prof.</b>			
	1. Dr. P. Kohli		Solar Energy Conversion & Storage
<b>Assistant Prof.</b>			
	1. Dr. S.L. Meena		Solar Energy Conversion & Storage
	2. Dr. Jaishree Rathore		Solar Energy Conversion & Storage
	3. Dr. Anita Meena		Solar Energy Conversion & Storage
	4. Ms. Meenakshi Jonwal		Solar Energy Conversion & Storage

c. Intake(Please put numbers)	Identified thrust area	Other than thrust area
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Ph.D.	:	39	19
PG	:	130	
Fellows	:	04	01
NET scholar	:	08	02
GATE Scholar	:	04	01
Res. Asso.	:	-	01
Proj. Asstt.	:	-	--
Others(INSPIRE fellow)	:	04	--

11. National/Nodal Character of the Department National/Nodal/All India Centre:

a. Resource Persons Invited (Nos.)-

International:

National: 2

b. Serving for outside user departments in (Nos. & hrs.)

- Hands-on OR technical training to university/college teachers: NA
- Collaborative (international): yes
- Teaching to neighboring institute: Yes

- iv. Visiting Teachers to foreign university: Yes
- v. Equipment facilities: A separate Instrumental lab established: yes
- vi. Other major infrastructure facilities: yes AAS

**12.** Most critical and essential requirements that may be required to continue the programmes if the UGC agrees to continue or extend support based on the evaluation and final review by expert committee.

Non-Recurring: 34.50 lacs

Recurring : 46.00 lacs + 2 Project fellow

S.No.	Items	Amount
1	contingency @ 1.0 lac per annum	5.00 lac
2	Chemical and consumables @ 2.0 lac per annum	10.00 lac
3	Advisory committee meeting @ 0.5 lac per annum	2.50 lac
4	Books and journals @ 1.00 lac	5.00 lac
5	Travel/field work @ .05 lac per annum	2.50 lac
6	Visiting fellow @ 0.50 lac	2.50 lac
7	Seminar organization in thrust area @ Rs. 1.0 lac (two)	2.00 lac
8	Hiring the services of Technical/Industrial/Secreterial assistance @ Rs. 1.00 lac	5.00 lac
9	Project Fellows (two)	Actual
	Total	34.50 lacs+ two project fellow
	Grand Total (NR+R+PF)	80.50lacs+2 PF

- 13.** a. Whether the State Government will take up the liability of the faculties and the staff approved under SAP after cessation of the tenure of the programme i.e. five years: NA
- b. Whether the State Government has already agreed or has taken up the liability after five years of completion of the tenure of the programme as was communicated along with the approval letter?: NA



- c. How the Department is going to maintain infrastructure and the status if UGC disagrees to continue the support further. Whether the Department /University will agree for up gradation of the status on no cost basis, if it so happens as per the recommendation of the Committee:
14. Utilization Certificates may be provided as per the UGC format. The accounts of the earlier phase be completed, finalized, audited and duly authenticated by the competent authority (Registrar and Finance Officer both) (item-wise and year-wise) for all the allocations and sanctions given to the Department for ongoing/current phase are to be submitted by the Department so that UGC, if provides support again, may immediately release the funds for the phase to be approved as per the above activities. (Annexure-I Enclosed)
- 

**Signature :**  
**Programme**  
**DY. Coordinator**  
  
Dy. Coordinator (DRS-II)  
Department of Chemistry  
JNV University, Jodhpur (Raj.)

  
**Signature:**  
**Programme**  
**Coordinator**  
Coordinator (DRS-II)  
Department of Chemistry  
JNV University, Jodhpur (Raj.)

**COUNTER SIGNED**  
  
REGISTRAR  
**Signature:**  
Jai Narain Vyas University  
**Registrar of**  
**the University**

## Certificate

Certified that the grant has been utilized for the purpose for which it was sanctioned and in accordance with terms and conditions attached to the grant.  
If as a result of check or audit objection, some irregularity is noticed at a later stage, action will be taken to refund, adjust or regularize the objected amount.



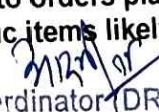
Signature  
Coordinator  
DRS-II (SAP-1)

Signature  
Dy. Coordinator  
DRS-II (SAP-1)

COUNTER SIGNED  
  
REGISTRAR  
Jai Narain Vyas University  
JODHPUR (Raj.)  
Signature  
Registrar  
with Seal

N.B. : This may not include any amount related to orders placed or likely to be placed, commitments entered into or amount for specific items likely to be obtained.

Coordinator (DRS-II)  
Department of Chemistry  
JNV University, Jodhpur (Raj.)

  
Dy. Coordinator (DRS-II)  
Department of Chemistry  
JNV University, Jodhpur (Raj.)

## ANNEXURE -I

## UNIVERSITY GRANTS COMMISSION PROGRESS REPORT OF EXPENDITURE

University JNV University, Jodhpur  
Sanction letter No. & Date No. F 540/1/DRS-II/2018(SAP-I) Dated 07/02/2020  
Statement of Actual expenditure during 2019-20  
And estimated expenditure for 2020-21

**NON-RECURRING ITEMS:**

(As approved by the UGC)

Item of expenditure	Total grant approved In Lakh	Actual grant received In Lakh	Actual expenditure incurred (bills actually paid) Rs.	Excess expenditure during 2019-20 Rs.	Estimated expenditure during 2020-21 in Lakh	Remarks
Contingency	5.00	1.00	100167/-	167/-	1.00	
Chemicals	10.00	2.00	198303/-	Nil	2.00	
Travel Field	2.50	.50	19200/-	Nil	.50	
Visiting Fellow	2.50	.50	Nil	Nil	.50	
Organizing Seminars	2.00	1.00	Nil	Nil	1.00	
Hiring Services	5.00	1.00	99059/-	Nil	1.00	
Advisory Committee	2.50	.50	Nil	Nil	.50	
Books and Journals	5.00	1.00	94316/-	Nil	1.00	
Project Fellow Two	Actual	3.00	266000/-	Nil	3.36	
<b>Total</b>	<b>34.50+ Actual</b>	<b>10.50</b>	<b>777045/-</b>	<b>167/-</b>	<b>10.86</b>	

Total

N.R.

**RECURRING ITEMS:**

(As approved by the UGC)

Item of expenditure	Actual grant received	Actual expenditure	Excess Saving (difference of Col. 3 & 4)	Estimated expenditure during 2019-20	Remarks
Equipments	Nil	Nil	Nil	46 Lakh	

Total

Grand Total (Recurring + Non-recurring)

Recurring



### Certificate

Certified that the grant has been utilized for the purpose for which it was sanctioned and in accordance with terms and conditions attached to the grant.  
If as a result of check or audit objection, some irregularity is noticed at a later stage, action will be taken to refund, adjust or regularize the objected amount.



Signature  
Coordinator  
DRS-II (SAP-1)



Signature  
Dy. Coordinator  
DRS-II (SAP-1)


COUNTER SIGNED



REGISTRAR  
Jal Signature University  
Registrar (Raj.)  
with Seal

**N.B. : This may not include any amount related to orders placed or likely to be placed, commitments entered into or amount for specific items likely to be obtained.**

Coordinator (DRS-II)  
Department of Chemistry  
JNV University, Jodhpur (Raj.)

  
Dy. Coordinator (DRS-II)  
Department of Chemistry  
JNV University, Jodhpur (Raj.)

ANNEXURE-VI

**UNIVERSITY GRANTS COMMISSION**  
**UTILIZATION CERTIFICATE**

It is certified that the amount of Rs. 777045/-  
(Rupees Seven Laks Seventy Seven Thousand Fourty Five only ) out of the total grant of Rs. 10.50  
lacs (Rupees Ten lakh fifty thousand) sanctioned to DRS-II (SAP-1)  
Department of Chemistry, JNV University, Jodhpur by the University Grants Commission vide its letter  
No. F. 540/1/DRS-II/2018- (SAP-I) dated 07/02/2020 towards  
Research in the thrust areas under DRS-II SAP-I scheme has been utilized for the purpose for which  
it was sanctioned and in accordance with the terms and conditions as laid down by the Commission.

If as a result of check or audit objection some irregularities are noticed at a later stage, action will be  
taken to refund, adjust or regularize the objected amount.

**COUNTER SIGNED**

REGISTRAR  
Jai Narain Vyas University  
JODHPUR (Raj.)  
Registrar with Seal

Signature  
Finance Officer with Seal  
Assistant Registrar (Accounts)  
Jai Narain Vyas University  
Jodhpur

Signature  
Dy.Coordinator of SAP  
Dy. Coordinator (DRS-II)  
Department of Chemistry  
JNV University, Jodhpur (Raj.)

Signature  
Coordinator of SAP  
Coordinator (DRS-II)  
Department of Chemistry  
JNV University, Jodhpur (Raj.)

Signature  
UC attached  
Chartered Accountant  
with Seal and Registration No.  
Prior to the audit of Statutory  
Auditors)

