

Advisory

Appl. No.: Agri/2017/08

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

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. P. Asha

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REGISTRAR
Jai 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

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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.
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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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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
Total (Rs.)	5151000	2700000	2675988	10526988

Institute wise details are:

Budget Head	Year I	Year II	Year III	Total(Rs.)
1. Jai Narain Vyas University				
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
Total (Rs.)	1908000.00	910000.00	902996.00	3720996.00
2. Nagaland University				
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
Total (Rs.)	1782000.00	880000.00	869996.00	3531996.00
3. North-Eastern Hill University				
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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 Jai Narain Vyas University
 JODHPUR (Raj.)

V. B. K.
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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
Total (Rs.)	1461000.00	910000.00	902996.00	3273996.00

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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 JODHPUR (Raj.)

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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 (Rd.)

- 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
- 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.

Mohd. Aslam
(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.)

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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, Mawkynroh 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

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Jal Narain Vyas University
JODHPUR (Reg.)

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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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.)
1. Jal Narain Vyas University					
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
Total(Rs.)		360000.00	360000.00	402996.00	1122996.00
2. Nagaland University					
Junior Research Fellow Manpower + 10% HRA	1	330000.00	330000.00		660000.00
Senior Research Fellow Manpower + 10% HRA	1			369996.00	369996.00
Total(Rs.)		330000.00	330000.00	369996.00	1029996.00
3. North-Eastern Hill University					
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
Total(Rs.)		360000.00	360000.00	402996.00	1122996.00

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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Jal Narain Vyas Univ
JODHPUR (Ra)