



तेजपुर विश्वविद्यालय

(केंद्रीय विश्वविद्यालय)

नपाम, तेजपुर - 784 028, असम, भारत

TEZPUR UNIVERSITY

(A Central University)

Napam, Tezpur - 784 028 Assam, India

A REPORT ON

Research collaboration with Visva Bharati, supported by DBT India

1. Name of the Collaborative Activity: Collaborative research
2. Nature of Activity: A research project entitled "Earthworm Gut Microbes Mediated Carcinogenic Polycyclic Aromatic Hydrocarbon Remediation in Contaminated Soil" was undertaken, which was supported by BDT, GoI
3. Name of the Collaborating Agency/ Individual with affiliation, and contact details: Department of Environmental Studies Institute of Science, Visva-Bharati, Santiniketan 731236, West Bengal, India. +91-95315-35710
e-mail: s.balachandran@visva-bharati.ac.in
4. Summary of collaboration:
To evaluate concentration and variation of PAHs in selected contaminated soil samples in different seasons.
To identify possible sources and health risk (carcinogenicity) of PAHs in selected contaminated soil samples.
To isolate, characterize and identify carcinogenic PAHs degrading earthworm gut microbial diversity.
To evaluate the CPAHs degrading enzymatic capability of selected isolates.
To optimize the physical and nutritional conditions for utmost PAH degrading enzyme production by gut microbe.
To assess selected CPAHs contaminated soil remediation with earthworm as well as its gut bacteria in in-vitro condition.
To quantify the PAHs accumulation in the tested agro-economic plant systems before and after microbial remediation at selected fields.
5. List of year-wise activities under the collaboration:
2017 – preparation of research project and submission at DBT, GoI and presentation
2018 – sanction of the project by DBT and the project begins
2019 – Project meeting at Visva Bharati and exchange of project fellows
2020 – Field work and analysis. Communication of research paper
2021 – Communication of research papers and research ongoing.

Signature of Faculty

Name: Dr. Raza R. Hoque
Designation: Professor

Professor,

Deptt. of Environmental Science
Tezpur University
Napam : Tezpur

Signature and Seal of HoD

Name: R. R. Hoque
Designation: HoD

Head

Deptt. of Environmental Science
Tezpur University
Napam : Tezpur

No. BT/PR25736/NER/95/1339/2017
GOVERNMENT OF INDIA
MINISTRY OF SCIENCE & TECHNOLOGY
DEPARTMENT OF BIOTECHNOLOGY
New Delhi

App. No.: BMR/2017/87

Block 2, 6-8th Floor
CGO Complex, Lodhi Road,
New Delhi- 110 003
Dated: 29/11/2017

ORDER

sanction of the President is hereby accorded under Rule 10 of the Delegation of Financial Powers Rules, 1978 for the implementation of the project entitled **'Earthworm Gut Microbes Mediated Carcinogenic Polycyclic Aromatic Hydrocarbons (CPAHs) Remediation in Contaminated Soil'** for a period of () Year () Month at a total cost of Rs. **5639200** (Rupees Fifty Six Lakhs Ten Thousand Three Hundred Only) on the terms and conditions detailed here under.

2 The Project :

2.1 Title : **'Earthworm Gut Microbes Mediated Carcinogenic Polycyclic Aromatic Hydrocarbons (CPAHs) Remediation in Contaminated Soil'**

2.2 Details of the Investigators:

Project Coordinator

Prof. Raza Rafiqul Hoque

Professor

Environmental Science

Tezpur University

Department of Environmental Science

Tezpur University, Tezpur, Assam, 784020

Principal Investigators

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Dept. of Environmental Science
Tezpur University
Napaam, Tezpur



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Napaam, Tezpur

Prof. Raza Rafiqul Hoque

Professor

Environmental Science
Tezpur University
Department of Environmental
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Tezpur University, Tezpur, Assam,
784028

Dr. Srinivasan Balachandran

Assistant Professor

Environmental Studies
Visva Bharati University
Dr. Srinivasan Balachandran,
Department of Environmental
Studies,
Siksha Bhavana
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Santiniketan-731235
West Bengal, West Bengal,
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Prof. Raza Rafiqul Hoque

Professor

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Tezpur University
Department of Environmental
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784028

CO-PI:

Dr. Nayanmoni Gogoi

Assistant Professor

Environmental Science
Tezpur University
Department of Environmental Science,
Tezpur University, Napaam,
Tezpur - 784028, Assam, Tezpur - 784028,
Assam

Prof. Narayan Chandra Mandal

Professor

Botany
Visva Bharati University
Department of Botany,
Siksha Bhavana, Visva-Bharati, Santiniketan
Dist.:Birbhum West Bengal, Santiniketan -
731235, West Bengal

V. Srinivasan

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Head

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Tezpur University
Napaam : Tezpur

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Napaam : Tezpur

2.3 Objectives:

Overall Objectives:

1. To evaluate concentration and variation of PAHs in selected contaminated soils in different seasons.
2. To identify the possible sources and health risk (carcinogenic) of PAHs in selected soil samples.
3. To isolate, characterize and identify carcinogenic PAHs degrading earthworm gut microbial diversity
4. To evaluate the CPAHs degrading enzymatic capability of selected isolates
5. To optimize the physical and nutritional conditions for utmost CPAHs degrading enzyme production by the gut microbes
6. To assess selected CPAHs contaminated soil remediation with earthworm as well as its gut bacteria in vitro condition
7. To quantify the PAHs accumulation in the tested agronomic plant systems (leaf, stem, seed and root) before and after microbial remediation process at the selected field

Institute wise Objectives:

Tezpur University

1. To evaluate concentration and variation of PAHs in selected contaminated soils in different seasons.
2. To identify the possible sources and health risk (carcinogenic) of PAHs in selected soil samples.
3. To isolate, characterize and identify carcinogenic PAHs degrading earthworm gut microbial diversity.
4. To evaluate CPAHs degrading enzymatic capability of selected isolates and carcinogenicity assay of the enzymatic products.
5. To optimize the physical and nutritional conditions for utmost CPAHs degrading enzyme production by the gut microbes.
6. To assess selected CPAHs contaminated soil remediation with earthworm as well as its gut bacteria in vitro condition
7. To quantify the PAHs accumulation in the tested agronomic plant systems (leaf, stem, seed and root) before and after microbial remediation process in pot culture.

Visva Bharati University

1. To evaluate concentration and variation of PAHs in selected contaminated soils in different seasons.
2. To isolate, characterize and identify carcinogenic PAHs degrading earthworm gut microbial diversity.
3. To evaluate CPAHs degrading enzymatic capability of selected isolates and carcinogenicity assay of the enzymatic products.
4. To optimize the physical and nutritional conditions for utmost CPAHs degrading enzyme production by the gut microbes.
5. To assess selected CPAHs contaminated soil remediation with earthworm as well as its gut bacteria in vitro condition.
6. To quantify the PAHs accumulation in the tested agronomic plant systems (leaf, stem, seed and root) before and after microbial remediation process in pot culture.

2.4 Time Schedule:

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

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Tezpur University
Napaam : Tezpur



Professor,
Deptt. of Environmental Science
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2.5 Project Cost:

The total cost of the project is Rs. **5639200/-** (Rupees Fifty Six Lakhs Thirty Nine Thousand Two Hundred Only) as per details given below :

Institute	Year I	Year II	Year III	Total Cost (Rs.)
1. Tezpur University	1135000	1105000	1144600	3384600
2. Visva Bharati University	805000	705000	744600	2254600
Total (Rs.)	1940000	1810000	1889200	5639200

Institute wise details are:

Budget Head	Year I	Year II	Year III	Total (Rs.)
1. Tezpur University				
Manpower	330000.00	330000.00	369600.00	1029600.00
Contingency	50000.00	50000.00	50000.00	150000.00
Travel	50000.00	50000.00	50000.00	150000.00
Consumables	575000.00	575000.00	575000.00	1725000.00
Overhead	130000.00	100000.00	100000.00	330000.00
Total (Rs.)	1135000.00	1105000.00	1144600.00	3384600.00
2. Visva Bharati University				
Manpower	330000.00	330000.00	369600.00	1029600.00
Contingency	20000.00	20000.00	20000.00	60000.00
Overhead	30000.00	30000.00	30000.00	90000.00
Travel	25000.00	25000.00	25000.00	75000.00
Consumables	400000.00	300000.00	300000.00	1000000.00
Total (Rs.)	805000.00	705000.00	744600.00	2254600.00

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



Professor,
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Head
Deptt. of Environmental Science
Tezpur University
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3. Head of Account:

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 MER

- a. Both MER 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.
 - b. In the project review meetings, both the PIs from MER and RoI Institutions should participate and make presentation.
 - c. The outcomes of the project such as research papers, patents, copy rights etc. should be made jointly.
 - d. The NER Scientists are to be trained at the collaborating institute appropriately to empower the NER Scientists.
 - e. 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.
 - f. The collaborating institute scientist should visit NER institutions more frequently to guide NER scientists in design and conduct of experiments.
- 4.1 The other terms and conditions governing this sanction are attached at Annexure- 111.
- 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.

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Professor,

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Head

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Tezpur University
Napaam : Tezpur

6. The Registrar, Tezpur University, Tezpur, Assam and The Registrar, Visva Bharati University, Bhubnum, West Bengal would be responsible for submission of Statements of Expenditure (SoE), Utilization Certificates (UC), Assets Certificates, Manpower staffing & expenditure details in prescribed DBT format, to DBT in respect of grants released in this project from time to time.


7. PIs 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/5972-09/2017 dated on 21 Oct 2014. However, there is no compulsion on PIs 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/2573/2018-2019** dated **September, 24 2018**.

11. This sanction order has been noted at serial no. 104 in the Register of Grants.


(Dr. Vaishali Panjabi)
Scientist 'E'

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. Raza Rafiqul Haque(Project Co-ordinator), Department of Environmental Science Tezpur University, Tezpur, Assam, Pin-784028
- 3 The Registrar, Tezpur University, Tezpur University, Napaam, Tezpur, Sonitpur, Tezpur - 784026, Assam.
- 4 The Registrar, Visva Bharati University, Santiniketan, Birbhum, Bibhnum - 731235, West Bengal
- 5 Dr. Nayanmoni Gogoi, Assistant Professor, Environmental Science, Tezpur University, Department of Environmental Science, Tezpur University, Napaam, Tezpur – 784026, Assam, Tezpur - 784026, Assam
- 6 Dr. Srimivasan Balachandran, Assistant Professor, Environmental Studies, Visva Bharati University, Department of Environmental Studies, Siksha Bhavana, Visva Bharati Santiniketan-731235, West Bengal
- 7 Prof. Narayan Chandra Mandal, Professor, Botany, Visva Bharati University, Department

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Santiniketan - 731235, West Bengal

Prof. Raza Rafiqul Hoque, Professor Environmental Science, Tezpur University,

Department of Environmental Science, Tezpur University, Tezpur - 784028, Assam

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9 Cash Section, DBT (2 copies)

10 Sanction Folder.

11 File Copy.

Vaishali Panjabli

(Dr. Vaishali Panjabli)
Scientist 'E'

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