

Progress Report for R&D Projects [Year: 1-3]*
(21.02.2023 to 20.02.2026)

Section-A: Project Details

- A1. Project Title: DBT-NER Institutional Level Biotech Hub at B.P. Chaliha College, Kamrup, Assam (Phase-II)
- A2. DBT Sanction Order No. & Date: No.: BT/NER/143/SP44333/2021 & Date: 21.02.2023
- A3. Name of Principal Investigator: Dr. Chiranjib Mili
Name of Co-PI/Co-Investigator: Dr. Manash Jyoti Deka
- A4. Institute: B.P. Chaliha College
- A5. Address with Contact Nos. (Landline & Mobile) & Email:
PO/PS: Nagarbera, Dist.: Kamrup (Assam)
PIN: 781127
Email: chiranjibmili93@gmail.com
Mobile: 8822742109
- A6. Total Cost: Rs. 3155200.00
- A7. Duration: 3 Years 0 Months
- A8. Approved Objectives of the Project:
1. To conduct hands-on training/workshops.
 2. To perform outreach activities.
 3. To organize faculty improvement programmes.
 4. To implement student-oriented small research projects on local bioresources.
 5. To produce compost manures, mushrooms, biofertilizers, etc.
- A9. Specific Recommendations made by the Task Force (if any): NIL

Section-B: Scientific and Technical Progress

B1. Progress made against the Approved Objectives, Targets & Timelines during the Reporting Period (1000-1500 words for interim reports; 2500-3500 words for final report; data must be included in the form of up to 3 figures and/or tables for interim reports; up to 7 figures and/or tables for final reports):

During the reporting period, considerable progress was achieved toward the approved objectives of the project through the successful organization of workshops, hands-on training programmes, demonstrations, invited lectures, outreach activities, awareness programmes, and field-based educational initiatives. The activities were designed to strengthen practical knowledge in biological sciences and biotechnology, promote scientific awareness among students and farmers, enhance laboratory and analytical skills, and encourage community engagement through sustainable and eco-friendly practices. A total of 25 academic and outreach programmes were conducted during the project period, benefiting a diverse group of stakeholders, including undergraduate and school students, faculty members, farmers, and local villagers.

Capacity Building through Workshops and Hands-on Training:

One of the major objectives of the project was to provide practical exposure and skill-oriented training in biological sciences and biotechnology. In this regard, 13 workshops, demonstrations, and hands-on training programmes were successfully organized during the project period (Table 1). These programmes collectively benefited 433 participants, representing undergraduate students, school students, faculty members, and farmers.

The first activity under this component was the Workshop on Basic Microscopic Technique conducted during 14–15 September 2023. The programme introduced participants to microscope handling, slide preparation, and specimen observation techniques. A total of 43 undergraduate and school-level students participated, demonstrating strong interest in foundational biological laboratory techniques. Subsequently, a Workshop on Stomatal Analysis was organized on 9 October 2023 for undergraduate students to provide a practical understanding of plant anatomical studies and stomatal characterization.

Analytical instrumentation and laboratory-based skills were strengthened through programmes such as the Workshop on UV–Vis Spectrophotometry (10 November 2023), where participants learned the principles and applications of spectrophotometric analysis in biological research. The training enhanced familiarity with modern analytical tools among undergraduate students and faculty members.

The project also emphasized livelihood-oriented and sustainable practices. The Workshop on Mushroom Cultivation, held from 8 to 10 December 2023, trained participants in low-cost mushroom production technologies and entrepreneurship opportunities. Farmers and undergraduate students benefited from this programme, which supported the project's extension and rural outreach objectives.

In March 2024, a series of intensive laboratory-based training programmes were conducted. The Hands-on Training on Basic Bioinformatics Tools familiarized participants with sequence analysis, database utilization, and computational tools relevant to biological research. The Hands-on Training on DNA Isolation provided practical exposure to molecular biology techniques including extraction and purification of genomic DNA. Furthermore, the Hands-on Training on Basic Instrumentation in Microbial Biotechnology offered five days of intensive laboratory exposure to undergraduate students, significantly strengthening technical competence in microbial biotechnology.

To ensure continued practical learning and equipment handling skills, demonstration-based programmes on the pH Meter and Laminar Air Flow Chamber were organized in October 2024. These activities focused on introducing students to standard laboratory practices, sterilization procedures, and analytical measurements essential for microbiological and biochemical experiments.

A major milestone was achieved in August 2025 through the Workshop on Vermicompost and Entrepreneurship Development, which attracted 94 participants, the highest attendance among all workshops. The programme successfully integrated scientific knowledge with entrepreneurial opportunities in organic farming and waste management. It significantly contributed toward awareness generation regarding sustainable agricultural practices among farmers and students.

The project further extended its outreach to school-level learners through the Workshop on Biotechnology for Young Minds: Exploring Science beyond the Classroom conducted from 9 to 13 September 2025. This five-day programme engaged 64 school students from Classes VII–XII and successfully stimulated scientific curiosity through demonstrations, interactive sessions, and laboratory exposure. Such initiatives contributed meaningfully to the promotion of science education among younger students.

A specialized three-day training programme for Life Science faculty on “Extraction of Essential Oils from Aromatic Plants and Screening for their Antimicrobial Activities” conducted during 9–11 October 2025 further strengthened faculty capacity in applied research techniques. In this programme, a total of 12 faculties participated.

The final activity under this category was the Hands-on Training on Emasculation Techniques conducted in February 2026. The programme enhanced practical understanding of plant breeding techniques among undergraduate students and aligned with the project’s objective of strengthening applied biological skills.

Table 1: Workshop/Hands-on Training/Demonstrations organized during the project period.

Sl. No.	Programme	Duration (Dates)	No. of participants	Level of participants (PhD/PG/UG students/Farmers)
1	Workshop on Basic Microscopic Technique	Two Days (14-15 Sep, 2023)	43	UG & School level
2	Workshop on Stomatal Analysis	One Day (9 Oct, 2023)	40	UG
3	Workshop on UV-Vis Spectrophotometry	One day (10 Nov, 2023)	09	Faculty & UG
4	Workshop on Mushroom Cultivation	Three days (8 -10 Dec, 2023)	15	Farmers &UG
5	Hands-on training on Basic Bioinformatics Tools	Two Days (15 -16 Mar, 2024)	22	Faculty &UG
6	Hands-on training on DNA Isolation	Two days (22 – 23 Mar, 2024)	29	UG
7	Hands-on training on Basic Instrumentation in Microbial Biotechnology	Five Days (26 – 30 Mar, 2024)	47	UG
8	Demonstration on pH Meter	One Day (11 Oct, 2024)	11	UG
9	Demonstration on Laminar Air Flow Chamber	One Day (28 Oct, 2024)	28	UG
10	Workshop on Vermicompost and Entrepreneurship Development	Two days (18-19 Aug, 2025)	94	Farmers, UG
11	Workshop on Biotechnology for Young Minds: Exploring Science beyond the Classroom	Five Days (9 -13 Sep, 2025)	64	School students (Class VII-XII)
12	Faculty training on Extraction of Essential Oils from Aromatic Plants and Screening for their Antimicrobial Activities.	Three Days (9-11 Oct, 2025)	12	Faculty
13	Hands-on Training on Emasculation Techniques	Two days (20 - 21 Feb, 2026)	19	UG

Invited Talks and Outreach Activities:

In addition to laboratory-oriented training, the project successfully organized altogether 12 invited lectures, awareness programmes, demonstrations, and field studies aimed at promoting scientific awareness and community engagement (Table 2). These programmes collectively reached more than 423 participants from various academic and community backgrounds.

The outreach component began with an Invited Lecture on “Genetics to Genomics: An Incredible Journey of Science” held on 3 May 2023. The lecture introduced undergraduate students to the evolution of genetic sciences and modern genomic technologies, thereby broadening their conceptual understanding of contemporary biology.

Practical demonstrations, such as the Vegetative Cell and Chromosome Study in Onion Root Tips organized for school students on 21 July 2023, promoted early exposure to cytological techniques and microscopy. Such programmes helped bridge the gap between classroom teaching and practical scientific observation.

The project also addressed social and health-related awareness through the Awareness Programme on Basic Life Support and First Aid Training conducted on 25 November 2023. With participation from 85 undergraduate students, the programme enhanced awareness regarding emergency response and healthcare preparedness.

A significant educational exposure activity was the Advanced Laboratory Visit to ICAR and NBPGR, New Delhi, organized during 3–7 April 2023. Undergraduate students and faculty members visited premier national research institutes and gained insight into advanced laboratory infrastructure, plant genetic resource conservation, and modern agricultural biotechnology practices. This activity contributed substantially toward motivating students for higher education and research careers.

Environmental sustainability and agricultural awareness were promoted through programmes such as the Awareness Programme on Eco-friendly Farming and the awareness campaign on Vermicomposting: Building Healthy Soil for a Healthy Future. These initiatives emphasized sustainable agricultural methods, soil health improvement, and environmentally responsible farming practices among local farming communities.

The project also actively celebrated important scientific and environmental observances. On National Science Day (28 February 2024), an awareness programme cum sapling distribution drive was organized in a village setting to promote environmental consciousness and scientific awareness among students and villagers. Similarly, the International Day for Biological Diversity (22 May 2025) was celebrated through academic and awareness activities involving students and faculty members.

To strengthen scientific temper among school students, a special awareness talk was delivered on 4 March 2024. The programme encouraged critical thinking, rational scientific understanding, and curiosity-driven learning among young learners.

Field-based experiential learning was another important achievement of the project. A Field Study at Udpad Beel Wetland, Goalpara, Assam, was conducted on 9 March 2024 for vegetation analysis and ecological observation. Subsequently, a field study visit to Manas National Park, Assam, was organized on 8 November 2025. These activities provided students with firsthand exposure to biodiversity assessment, ecological interactions, and environmental conservation practices.

Table 2: Invited Talks/Outreach activities conducted during the project period.

Sl. No.	Programme	Duration (Dates)	No. of participants	Level of participants (PhD/PG/UG/ School students/ Farmers)
1	Invited lecture on Genetics to Genomics: An Incredible Journey of Science	One day (3 May, 2023)	38	UG
2	Demonstration on Vegetative Cell and Chromosome in onion root tips	One day (21 July, 2023)	12	School student
3	Awareness programme on Basic Life Support and First Aid Training	One Day (25 Nov, 2023)	85	UG
4	Advanced laboratory visit to ICAR and NBPGR, New Delhi	Five Days (3 -7 April, 2023)	40 +3	UG + Faculty
5	Invited Talk on "Basic Biotechnological Tools"	One day (8 Aug, 2023)	33	UG
6	Awareness programme on eco-friendly farming	One Day (28 Sep, 2023)	18	Farmers
7	Observed Science Day with an awareness programme cum sapling distribution at a village	One Day (28 Feb, 2024)	46	UG & villagers
8	Talk delivered to promote scientific temper.	One Day (4 Mar, 2024)	21	School students
9	Field study at Udpad Beel Wetland, Goalpara, Assam, for a vegetation study	One Day (9 Mar, 2024)	32	UG
10	Celebrated International Day for Biological Diversity	One day (22 May, 2025)	34 + 6	UG + Faculty
11	Field study at Manas National Park, Assam	One Day (8 Nov, 2025)	30 +3	UG + Faculty
12	Awareness programme on "Vermicomposting: Building Healthy Soil for a Healthy Future"	One Day (30 Aug, 2025)	22	Farmers

B2. Summary and Conclusions of the Progress made so far (minimum 100 words, maximum 200 words):

During the project period, significant progress was achieved toward the approved objectives through the successful implementation of workshops, hands-on training programmes, demonstrations, invited lectures, awareness campaigns, and field-based educational activities. A total of 25 programmes were conducted, benefiting 856 participants, including undergraduate students, school students, faculty members, farmers, and local community members. The project effectively enhanced practical laboratory skills, scientific awareness, and technical knowledge in biological sciences and biotechnology. Farmer-oriented programmes on mushroom cultivation, vermicomposting, and eco-friendly farming promoted sustainable agricultural practices and entrepreneurship development. Outreach activities and field studies strengthened environmental awareness and experiential learning among participants. Exposure visits to premier research institutes further motivated students toward higher studies and scientific research. Overall, the project has successfully fulfilled its planned objectives and timelines by creating meaningful academic, technical, and community-level impacts through inclusive and multidisciplinary educational initiatives.

B3. Details of New Leads Obtained, if any: NIL

B4. Details of Publications & Patents, if any:

A total of six research articles have been published in Scopus-indexed/peer-reviewed journals during the project period; these are listed below.

1. Kalita, C.K., Mili, C., Deka, M.J., Das, P., & Das, S.N. (2024). Study on ethnoveterinary medicinal plants used by local people inhabiting char area, Kamrup District, Assam, North-East India. *Ecological Questions*, 35(4), 1-18. <https://doi.org/10.12775/EQ.2024.048>
2. Kalita, C.K., Das, P., Mech, B., Das, S., & Mili, C. (2025). A study on ethnomedicinal plants used by Karbi tribes in West Karbi Anglong district of Assam, India. *Vegetos*, 1-15. <https://doi.org/10.1007/s42535-025-01311-0>
3. Kalita, G., Kalita, B., Borah, D., Kayang, H., & Mili, C. (2025). Antimicrobial Activity and GC-MS Analysis of Selected Wild Edible Plants from the Karbi-Anglong Plateau, India. *National Academy Science Letters*, 1-4. <https://doi.org/10.1007/s40009-025-01895-w>
4. Deka, M.J., Mili, C., Patar, S., Majumdar, S., Sarmah, T., Borthakur, L.J., & Kalita, C.K. (2025). Areca nut husk derived activated carbon and carbon quantum dots for effective removal of methylene blue from water. *Discover Chemistry*, 2(1), 225. <https://doi.org/10.1007/s44371-025-00307-8>
5. Mili C., Kalita C.K., Deka M.J., Das P., Tayung K. (2025). Cytogenotoxic effects of alphas-methrin and carbofuran based on mitotic index and chromosomal aberrations in *Allium cepa* root tip cells. *Cell Biology and Development* 9, 71-77. <https://doi.org/10.13057/cellbioldev/v090201>
6. Mili, C., Dowarah, B., Dutta, C., Laskar, R. A., Tayung, K., & Boruah, T. (2024). A comprehensive review on traditional uses, phytochemical, and pharmacological properties of the genus *Antidesma* L. *Fitoterapia*, 176, 106023. <https://doi.org/10.1016/j.fitote.2024.106023>

Section-C: Details of Grant Utilization#

C1. Equipment Acquired or Placed Order with Actual Cost:

(Financial figures given in this equipment procured details are shown in Rs.)

S. No.	Name of Equipment(s)/ Asset(s) Acquired	Sanctioned Cost	Quantity Procured	Actual Cost (Figures not to roundoff)	Balance to be reimbursed
	1	2	3	4	5
a.	Digital pH	70000.00	1	71372.92	00
b.	Electronic Balance	45000.00	1	45000.48	00
c.	Vortex mixer	12000.00	1	11999.42	00
d.	Electrophoresis System	53000.00	1	52999.70	00
e.	Compound Microscope	11000.00	1	10999.96	00
f.	pH meter (pen type)	9000.00	1	7627.51	00
Total		200000.00		199999.99	00

C2. Manpower Staffing and Expenditure Details:

(Financial figures given in this MSE details are shown in Rs.)

Name of the person	Name of the post	From	To	Total monthly salary	Total salary paid during the project period	Remark
Chhan Kumar Kalita	Technical Assistant	01.04.2023	20.02.2026	21600.00	518400.00	
Dweepjyoti Medhi	Laboratory Assistant	01.04.2023	20.02.2026	21600.00	518400.00	
Total					1036800.00	

C3. Details of Recurring Expenditure:

(Financial figures given in this RE are shown in Rs.)

(Financial figures given in this table are shown in Rs.)																					
Budgetary Object Heads	Total Sanctioned Grant within each Budget Head (as per the Sanctioned Order)	Grants Release Made by DBT										Expenditure Incurred (This must align with UCs and SoEs submitted yearly) **				Amount Refunded through Bharat Kosh	Unspent Balance left with the Institution	Remark (if any)			
		Details to be furnished Financial Year wise										Details to be furnished Financial Year wise									
		2022 - 2023				2024 - 2025				2025 - 2026		2022 - 2023		2023 - 2024					2024 - 2025		Total
		Year 1	Year 2	Year 3	Year 4	Year 1	Year 2	Year 3	Year 4	Year 1	Year 2	Year 3	Year 4								
Manpower	1555200	518400	0.00	0.00	518400	1036800	0.00	518400	0.00	518400	1036800	0.00	518400	0.00	1036800	0.00	0.00				
Training/ Workshop/ Outreach activities, etc.	600000	200000	0.00	0.00	200000	400000	0.00	200000	0.00	200000	400000	0.00	200000	0.00	400000	0.00	0.00				
Consumables	350000	150000	0.00	0.00	100000	250000	0.00	147616	0.00	100000	247616	0.00	100000	0.00	247616	0.00	0.00	2384.00 was lapsed in Year 2			
Travel	150000	50000	0.00	0.00	50000	100000	0.00	50000	0.00	50000	100000	0.00	50000	0.00	100000	0.00	0.00				
Contingency	150000	50000	0.00	0.00	50000	100000	0.00	50000	0.00	50000	100000	0.00	50000	0.00	100000	0.00	0.00				
Overhead	150000	50000	0.00	0.00	50000	100000	0.00	50000	0.00	50000	100000	0.00	50000	0.00	100000	0.00	0.00				
Total	2955200	1018400	0.00	0.00	968400	1986800	0.00	1016016	0.00	968400	1984416	0.00	968400	0.00	1984416	0.00	0.00				

C4. Financial Requirements for the Next Year with Justifications: N/A

#Grant utilization details (UC&SE, Assets Certificate & manpower details) also required to be submitted separately as per the prescribed format

1. DR. CHIRANJIB MILI

2. DR. MANASH JYOTI DEKA

Coordinator
INSTITUTIONAL PROTECH HUB
B.P. CHANDRA COLLEGE
NAGARBERA

[Signature(s) of the Investigator(s)]

Instructions:

- (i) All the information needs to be provided; otherwise the Progress Report will be treated as incomplete. In case of 'Nil' / 'Not Applicable' information, the same may be indicated.
- (ii) In case of multicentre project, a combined Progress Report should be submitted incorporating the progress of all components. The Project Co-coordinator/ PI will be responsible for this.
- (iii) *Please indicate the reporting period [i.e. Year 1/2/3/4/5].
- (iv) Submission of Progress Report by the end of the 11th month of grant sanction is linked with further continuation of the project and timely release of funds for the next year.