Department: Biosciences and Bioengineering

Year of Establishment of the Department: 2002

Academic Programs Offered: The Department is running following FOUR programs:

- B.Tech in Biosciences and Bioengineering
- M.Tech in Biotechnology
- M.Tech. in Bioengineering
- PhD in all areas of Biosciences and Bioengineering

LABORATORY FACILITIES:

No. of Laboratories with brief introduction:

i. **MAB (Mechanistic Approaches to Biology) Lab (Prof. B. Anand):** The current focus of our vibrant research group is directed towards addressing fundamental and important questions in the area of RNA biology by employing an eclectic mix of modus operandi that is drawn from biochemical, biophysical, computational and molecular genetics approaches. Our immediate obsession is to resolve the mechanistic questions pertaining to CRISPR Biology and Ribosome Biogenesis.

ii. **BERL (Bioengineering Research Laboratory) (Prof. Utpal Bora):** The research interests of this laboratory include Biomedical Engineering, Seri-biodiversity, Seri-bioinformatics and Bio-entrepreneurship.

iii. **Molecular Networks and Recombinant Therapeutics (Dr. Biplab Bose):** The lab is interested in understanding the inter-connected cellular communication systems. Particularly, the lab is interested to know the effect of architecture, kinetics and integration of the molecular pathways on vital cellular processes. The lab uses experimental as well as theoretical tools to understand how information is carried and processed in such signaling networks. The lab is also involved in developing molecules that can target particular signal transduction pathway. Such a molecule can be used to modulate an aberrant pathway involved in a particular disease.

iv. **Plant Tissue Culture & Secondary Metabolite Production Lab (Prof. Rakhi Chaturvedi):** The tree species with long generation cycle are mostly highly heterozygous in nature due to strict cross pollination and are considered to be recalcitrant (difficult to regenerate in vitro). The genetic improvement of these plants and development of homozygous lines (pure) is either very challenging or impossible using the conventional methods, because the cross pollination is a rule. This limitation has completely been overcome by the research group of Dr Chaturvedi while working on two complex tree species, Neem (*Azadirachta indica*) and Tea (*Camellia species*). Prof. Chaturvedi's laboratory has also involved in developing Plant Cell Culture Technology as an alternative to whole plant extraction for the production of secondary metabolites of medicinal and commercial values. Although these compounds can also be isolated from naturally grown whole plants, continued destruction of plants for the purpose may pose a major threat to species getting extinct. Her research group is able to identify, purify and isolate three main categories of bioactive metabolites: essential oils, coumarins and alkylamides, from in vitro elite cell lines of medicinal plants. Some of these compounds are complex triterpenoids which are difficult to synthesize chemically. The focused research work in the laboratory are: (i) Mass multiplication by micropropagation/clonal propagation

of medicinally and economically valuable plants, (ii) In vitro haploid and doubled haploid plant production to generate homozygous (pure) lines to produce hybrid vigour for improved plant yield, (iii) Triploid plant production to develop seedless variety, (iv) Somatic embryogenesis for synthetic seed production, (v) Protoplast isolation and regeneration for single cell cloning and isolation of mutants, (vi) Cytological and Histological studies of in vitro raised cultures to understand their ploidy, development and origin (vii) Cell biomass production in shake-flask for screening, characterization and quantification of medicinally and commercially useful plant metabolites and their scale-up in photo-bioreactors

v. **Biophysical Chemistry Lab (Prof. Nitin Chaudhary):** The laboratory focuses on understanding the molecular self-assembly and amyloid diseases, protein/peptide membrane interactions, and developing peptide based antibiotics.

vi. **Bioprocess Development Lab (Prof. Debasish Das):** Bioprocess Development Lab majorly focuses on developing and demonstrating sustainable technologies towards renewable fuels. We are currently working on developing sustainable technologies towards biocrude production from microalgal isolates, butanol production from *Clostridium* sp, ethanol fermentation from adapted *Z. mobilis* strains. We have ventured towards plant tissue culture and demonstration on a pilot scale facility with industrial collaboration.

vii. **Prof. V. V. Dasu lab:** The laboratory focuses on Bioprocess development (upstream to downstream), metabolic engineering, and bioenergy.

viii. **Cancer therapeutics (Prof. Siddhartha Sankar Ghosh):** The laboratory focuses towards delineating the interconnected molecular pathways involving EMT and MDR as a potential therapeutic strategy to obliterate aggressive malignancies. We have ventured into activated signaling pathways, such as the Wnt and Notch signaling pathways and are exploring the use of gene therapy, protein therapy, SMIs, exosomes and membrane-derived nanovesicles as candidate therapeutic molecules that could be applied to target these pathways, along with the combination of rational therapeutic modalities. The lab has also set up infrastructure facilities for interdisciplinary collaborative research in the field of nanoscience and nanotechnology supported by extramural funding at IIT Guwahati. The major area is to develop new nanoparticles, nanocomposites and nanocarriers and evaluate their antimicrobial and anticancer activities

ix. **Biosensor and Biofuel Cell Research Lab (Prof. Pranab Goswami):** The lab is involved in the development of novel bio-recognition system and their applications for developing biosensors and biofuel cells. DNA aptamers, catalytic as well as non-catalytic proteins have been investigated as biorecognition elements for some clinical applications targeting to operate in point-of-care and resource limited environments. Focus has been given on the rapid detection of acute myocardial infarction (AMI), cholesterol, alcohol, bilirubin and malaria due to their obvious importance in diagnostic sector.

x. **Carbohydrate Enzyme Biotechnology Laboratory (Prof. Arun Goyal Lab):** Research related to molecular biology, protein engineering, structural and functional proteomics of carbohydrate active enzymes are carried in this lab

xi. **Neural Engineering Lab (Dr. Cota Navin Gupta):** Broadly the research lab's current focus is in the areas of brain computer interfaces, imaging genetics for psychiatric disorders, multimodal/multivariate algorithm development and designing wearable medical solutions for patient mobility.

xii. **Stem Cell and Cancer Biology Group (Prof. Bithiah Grace Jaganathan):** The current focus of the research group is to understand the role of mechanotransduction in stem cell differentiation and cancer metastasis. The group also studies various signaling pathways and microenvironment mediated chemoresistance in leukemia and breast cancer.

xiii. **Structural and Computational Biology Laboratory (Prof. Shankar Prasad Kanaujia):** The lab uses the knowledge of various techniques such as molecular biology, structural biology (X-ray Crystallography) and biophysical and biochemical studies to understand the mechanism of different biological functions. In addition, the lab applies the molecular dynamics simulations to further corroborate the results obtained from various experiments. Currently, the lab is focusing on investigating into the mechanisms involved in protein translation initiation, ABC transporters and their role in multidrug resistance.

xiv. **Molecular Microbiology Laboratory (Prof. Manish Kumar):** The research interests of the lab include (i) Molecular interaction of host-pathogen-vector of infectious diseases, (ii) Gene expression analysis of Spirochete, *Leptospira interrogans* and *Borrelia burgdorferi*, (iii) Development of a vaccine against outer membrane proteins of *Leptospira interrogans* and *Borrelia burgdorferi*, and (iv) Vector-borne diseases of Zoonotic importance.

xv. **Viral Immunology lab (Prof. Sachin Kumar):** The paramyxoviruses include viruses that are isolated from many species of terrestrial, avian and aquatic animals. The group includes many important pathogens of humans such as measles virus, human respiratory syncytial virus, human parainfluenza viruses, Nipah virus and Hendra virus and animals such as canine distemper virus and Newcastle disease virus. Newcastle disease virus (NDV) is the prototype member of this family and is a leading cause of respiratory disease in avian species. It leads to huge economic losses to the poultry industry in India. The laboratory focuses mainly on understanding the biology of avian paramyxovirus and development of vaccine against them using reverse genetics system.

xvi. **Cancer Biology Laboratory (Prof. Ajaikumar B. Kunnumakkara):** The research interests of the lab include (i) Role of inflammatory pathways in cancer development, (ii) Identification of novel biomarkers for cancer diagnosis and prognosis, (iii) Cancer drug discovery, and (iv) Development of transgenic and gene knockout mouse models for biomedical Research

xvii. **The Molecular Endocrinology lab (Dr. Anil Mukund Limaye):** The laboratory focuses on the following research themes: (i) Hormone regulation of gene expression, (ii) Role of estrogen in breast tumor invasion and metastasis, (iii) Regulation of cystatin A expression and its role in breast cancer, (iv) HoxB2 in breast cancer, (v) GPR30/GPER-1 biology, (vi)Mechanisms of anticancer activity of EGCG, (vii) Karanjin and its biological effects

xviii. **Dr. Soumen Kumar Maiti Laboratory:** The research interests of the lab include Biochemical Engineering, Biofuel, Bioprocess modeling, control, optimization, Metabolic engineering, Downstream processing, Membrane separation, Bioremediation

xix. **Biomaterials and Tissue Engineering Laboratory (A DBT Unit of Excellence) (Prof. Biman B. Mandal):** Tissue engineering has emerged as a potential way to regenerate/treat tissue damage or organ failure as a result of injury and/or disease. Our laboratory majorly focusses on using silk biomaterials for developing affordable and functional lab grown tissue/organ replacements for human transplantation. The lab research is directed towards the following areas of importance i.e. Tissue Engineering of Grafts and Implants, Stem Cell Based Regenerative Medicine, Biomaterials, 3D Bioprinting, Drug Delivery Systems, 3D In Vitro Disease Models for high throughput drug screening applications. More than 160 research articles have been published with very high impact and citations, 23 patents, 03 technology licensed, 01 product launched in market.

xx. **Organelle Biology and Cellular Ageing Lab (Dr. Shirisha Nagotu):** The lab focusses on understanding the biogenesis of organelles and the inter-organelle communication within a cell. The lab tries to understand the effect of ageing on organelle biology and the role of organelles in cellular ageing.

xxi. **Prof. Kannan Pakshirajan's laboratory:** The research interests of the lab are Environmental Biotechnology, Biological removal and recovery of inorganic compounds from wastewaters, Biofuels and other Biotechnological Products: production, process design, kinetics and environmental applications.

xxii. **Bio-interface & Environmental Engineering Lab (Dr. Lalit Mohan Pandey):** The laboratory focuses on the following research aspects: (i) Surface and interfacial science particularly in the area of Bio-interfaces and Biomaterials (Design of Biocompatible surfaces): The surfaces are modified using various Self-Assembled Monolayers (SAMs) and their interactions with water, bio macromolecules i.e. polymers, proteins and cells are studied, (ii) Protein's adsorption and aggregation: The lab investigates the adsorption behavior and properties of various adsorbed proteins on surfaces with different wettabilities by forming mono, mixed and hybrid SAMs. The role of surface chemistry at the nanometer scale on aggregation of various therapeutic proteins is studied, (iii) Environmental Biotechnology: The lab focuses on 3Rs. Reduce waste generation, recycle the treated waste and reuse waste as by-product or recover energy from the waste.

xxiii. **Enzyme and Microbial Technology Laboratory (Prof. Sanjukta Patra):** The EMT research group studies the microbes and their applications in different spectrums of Metagenomics, Industrial Microbiology, Extremophiles, Environmental Biotechnology, Disease Therapeutics and diagnosis

xxiv. **Molecular Informatics and Design Group (Prof. Vibin Ramakrishnan):** Molecular Informatics and Design Group integrates diverse disciplines of science and engineering in the design and development of advanced materials. The lab's approach to a research problem is 'idea centric' with a clear emphasis on the design phase, adopting modeling and informatics tools. The lab experiments a reductionist approach in understanding the interaction between molecules resulting in assembled architectures at nano and micro scale, and further employ it in the design of future materials. An information based modeling approach has been employed in the design and generation of tumor homing and cell penetrating molecules to test their efficacy as future drug delivery vehicles.

xxv. **Applied Biodiversity Laboratory (Prof. Latha Rangan):** The group tries to address the research questions in areas of Applied Biodiversity with special reference to bioresources of Northeast India using an integrative approach. .

xxvi. **Translational Crop Research Laboratory (Prof. Lingaraj Sahoo):** Pathogens, insects and abiotic stresses cause major losses in yield and quality of crops. The discoveries in basic plant research play a vital role in meeting these challenges by developing technologies to improve agriculture by introducing important traits to crop of interest. The lab employs integrated approaches to identify genes with significant agronomic impact in both model (Arabidopsis) and crops (grain legumes and oil seeds), understand the mechanism by which they function and using this knowledge, develop designer crops for diverse plant abiotic (drought, salinity and nutrient deficiency or toxicity) and biotic (viral and insect) stress conditions, useful for growers, industry and consumers. Besides, the lab is working on biofortification in Asiatic grain legumes for healthcare applications and manipulation of key oil biosynthesis genes yield in Jatropha, a tropical perennial biofuel crop to improve oil quality and oil.

xxvii. **Prof. Gurvinder Kaur Saini laboratory:** The laboratory works in fungal biotechnology. The various aspects that are studied include (i) secondary metabolite production, (ii) development of hyper virulent strains of Metarhizium anisopliae and Beauveria bassiana using scorpion and spider neurotoxins, (iii) gene stacking in entomopathogenic fungi.

xxviii. **Computational Structural Biology laboratory (Dr. Priyadarshi Satpati):** Working in biomolecular interactions using computational methods (Molecular Dynamics Simulations, Electronic Structure Calculations etc). We are interested in understanding the speed and accuracy in biological processes. Current projects include studies of antimicrobial-peptide: membrane interactions, drug discovery against Mycobacterium tuberculosis, the accuracy of CRISPR-Cas9 editing, transcription factors, Quorum sensing inhibitors or S. mutans etc.

xxix. **Bio Process Analytical Technology (BioPAT) Laboratory (Prof. Senthilkumar Sivaprakasam):** Our research area is in line with Process Analytical Technology (PAT), an US FDA initiative emphasizing "Building Quality into Products with Innovative Process Design." PAT is an emerging area of Research with the biopharmaceutical industry employing it at different stages such as raw material characterization, in-process monitoring, and final product analysis. Due to the complex and nonlinear characteristics of any bioprocess, monitoring, measuring, modelling, and controlling (M3C) are critical in bioprocess development.

We, as a crew, study the robust manufacturing of bio-therapeutics, biopolymers, and nutraceuticals. Based on the notion of revamping the microbial cells as factories by manipulating their metabolic pathway, optimizing the process conditions, real-time monitoring, and controlling the critical process parameters (CPPs) to boost productivity and achieve consistent product quality. In our BioPAT lab facility, bioprocess development of a product is facilitated via M3C technique. Employing PAT tools such as fermentation calorimeter, dielectric spectroscopy, exhaust gas analyzer, and optical density probe provides real-time metabolic insights into a bioprocess. These tools aid in identifying critical process parameters of the processes. Combining real-time measurements obtained from PAT tools with robust control strategies such as inferential control, adaptive control, model predictive control, and data-driven control ensures a consistent quality of the final product.

xxx. **RNA Binding Proteins Laboratory (Dr Kusum K Singh):** The laboratory focuses on the RNA-binding proteins that are involved in the splicing machinery. During splicing of premature mRNA, the spliceosome deposits a multiprotein complex termed exon-junction complex (EJC) onto the mRNAs. The subunits that form the core EJC are eukaryotic translation initiation factor 4A3 (eIF4A3), Y14, MAGOH and barentsz (BTZ, CASC3, and MLN51). Many proteins interact with the core EJC and our focus of study is a protein complex termed as Apoptosis- and Splicing-Associated Protein (ASAP). Components of both ASAP and EJC have been found to function in a wide range of activities pertaining to RNA metabolism including splicing, translation, nonsense-mediated mRNA decay (NMD) and apoptosis. We are currently focusing on the following research areas: Understanding the functions of ASAP with respect to EJC in mRNA metabolism. Elucidating the molecular involvement of RNA-binding proteins (RBPs) in various human diseases such as cancers, neurodevelopmental disorders. Exploring the post-transcriptional gene regulations of different RBPs.

xxxi. **Protein Biophysics Lab (Prof. R. Swaminathan)**: The main research focus in this lab is to investigate the structure, function and dynamics of proteins using spectroscopic techniques like UV-Visible spectroscopy and Fluorescence spectroscopy. Intrinsic electronic absorption and luminescence spectra in proteins originating from photoinduced electron transfer and charge

recombination, respectively are actively studied. These novel spectra discovered in our lab are employed to monitor events like protein folding or aggregation in a label-free approach.

xxxii. **Calcium signaling laboratory (Prof. Ranjan Tamuli):** We are interested to understand the molecular mechanism of calcium signaling pathway using the model filamentous fungus Neurospora crassa. Calcium ion is a universal second messenger molecule that impacts almost all cell processes in eukaryotes. We hope to extend our Research to understand the role of calcium signaling in memory, learning, and other related areas in future

xxxiii. **Laboratory for Stem Cell Engineering and Regenerative Medicine (Dr. Rajkumar P. Thummer):** Autologous cell-based therapy is a promising alternative to achieve repair or regenerate damaged cells and/or tissue without any immune rejection. Our laboratory "Stem Cell Engineering and Regenerative Medicine", mainly focuses on generation of human cells using safe, integration-free reprogramming approaches to derive clinical-grade cells for transplantation. The outcome of our Research will bring patient-specific cell therapy closer to clinic for treatment of various debilitating.

xxxiv. **Malaria Research Group (Prof. Vishal Trivedi):** The research interests of the lab include Anti-malarial Drug Discovery, Immunotoxcity studies in Macrophages, Regulation of Innate Immune Response, Endothelial Cells-RBC cytoadherence during Cerebral Malaria, Designing immunostimulatory and Anticancer agents.

xxxv. **Biochemical and Environmental Engineering Laboratory (Dr. Selvaraju Narayanasamy Lab):** The research group is primarily focused on the treatment of wastewater by microbial enzyme immobilisation, adsorption and advanced oxidation processes like photocatalysis, electrochemical oxidation etc; and unravelling the roles of several next-generation materials like MOF, and MXenes in water treatment. In addition, the lab is actively involved in microbial biodiesel production and process optimisation from industrial wastewater.

xxxvi. **Biomechanics and Simulations lab (Dr. Souptick Chanda)**: The Lab is primarily engaged in design and optimization of various orthopaedic implants based on in vitro and in silico biomechanical testing/validations. Simulations for surgery and patient examinations training are also being envisaged at this laboratory.

xxxvii. **Computational lab:** The computational lab is used for carrying out the several computational courses of UG and PG classes such Bioinformatics, Computational Biology, Quantitative Biology, Biological Data analysis etc.

xxxviii. **Experimental Teaching laboratory:** The laboratory is used to conduct the experimental course of the B. Tech. and M.Tech. curriculum.

MAJOR EQUIPMENT AND FACILITIES ACQUIRED (1 APRIL 2023– 31 MARCH 2024):

1. Gas Chromatograph Mass Spectrometer with Auto sampler, **Make:** Thermo Fisher Scientific, **Model:** Thermo ISQ 7610
2. Protein Purification system with accessories and operating software, **Make**: Cytiva, **Model**: AKTA go
3. ICE Flaker Machine, **Make**: Wensar Labman, , **Mode**l: LMIF 100
4. Autoclave (Single Lever Fully Automatic Top Loading, 113L capacity), **Make:** Equitron

Model: #7441 SLEFA

5. Refrigerated Centrifuge, **Make**: Neuation, **Model**: iFUGE M24PR
6. Digital Ultrasonic Bath, **Make**: Grant, **Model**: XUB5
7. Analytical Balance, **Make**: Sartorius, **Model**: BSA224S_CW
8. Water cooler with purification, **Make**: Zero B, **Model**: Zero B UV chill 40-120-120 WCN
9. Video Conferencing system with HDMI Switching , **Make**: People Link
10. Multifunction Colour Laser Jet Printer, **Make**: HP, **Model**: MFP Colour Laser Jet 4303 dw
11. Colony counter, **Make**: Orange, **Model**: TCC
12. Mini Subcell GT Horizontal Electrophoresis System, **Make**: BioRad, **CAT No**.: 1704467
13. Mini Sub Cell GT Horizontal Electrophoresis System, **Make**: BioRad, **CAT No**.: 1704467
14. Power Pack, Basic Power supply, **Make**: Bio-Rad, **Model**: 1640300
15. Paper Shredder, **Make**: GBC, **Model**: GBC Duo
16. Centrifuge, **Make**: REMI (Dr. Selvaraju Narayanasamy Lab)
17. Vacuum Oven. **Make**: IKON (Dr. Selvaraju Narayanasamy Lab)

MAJOR AREAS OF RESEARCH AND DEVELOPMENT:

Cell signaling, Systems Biology, Plant Tissue Culture & Secondary Metabolites Production, Protein Biochemistry, Molecular Biology, Immuno Parasitology, Biofuel, Biochemical Engineering, Tissue Engineering and Biomaterials, Stem Cell Biology, Cell Therapy & Regenerative Medicine, Organelle Biology, Inter-organelle Communications, Cellular Ageing, Bio-interfaces and Biomaterials, Environmental Biotechnology, Nanobiotechnology, Chemistry-Biology Interface for Developing Antibacterials and Sensors, Stem cell engineering and regenerative medicine, Molecular Parasitology, Computational Biology, Plant Biotechnology, RNA Biology, Structural Biology, Fungal Biotechnology, Molecular Endocrinology, Enzyme and Microbial Technology, Metagenomics, Environmental Biotechnology, Applied Biodiversity, Biosensors, Systems Biology, Bioprocess Engineering, Cancer Biology, Bio/Physio Sensors and Nanobioengineering, Biosensors and bio-fuel cells, Neural Engineering. Network medicine, Bio-Nano catalysis, Drug delivery vehicles, Preparation of polypyrrole embedded nanocellulose and surfactant (CTAB) modified carbon adsorbent for efficient elimination of azo-anionic dyes. Elimination of pharmaceutical wastes viz. antibiotics using carbon and grass based nanocellulose adsorbents. Phyto, microbial and fish toxicity studies for ecotoxicological assessment of the prepared adsorbents to understand its significance in eliminating pollutants from aqueous bodies, Biomechanics, Soft computing, Artificial intelligence, Machine learning, Implant design.

Initiatives of DBT programme Support: Prof Ghosh as a PI along with other faculty members, involved in DBT Program Support Phase –II project at IIT Guwahati, received project support from the DBT India on “Translation Research Programme for Developing Diagnostics and Nano-based Sensors”. This multidisciplinary programme was formulated based on the major leads of the existing DBT Programme Support project. Besides manpower training and basic Research, this new project is aimed to develop sensors and Transfer of Technology (ToT) to the Start-Up companies. Prof. Ghosh has also received a multi-institutional grant on "mechanistic Investigation for EMT targeted nanotherapeutics".

Carbohydrate Enzyme Biotechnology Laboratory (Prof. Arun Goyal): Molecular Biology, Protein Engineering, Structural and Functional Proteomics of Carbohydrate active enzymes, other industrially

important microbial enzymes and biofuel production from lignocellulosic agriculture wastes.

RNA Binding Proteins Laboratory (Dr Kusum K Singh): We work in the area of RNA binding proteins that are involved in alternative splicing of RNA, its export, translation and decay.

- We have identified novel microRNAs that can regulate UPF3B protein, which is a crucial factor of RNA decay.

- We have established UPF3B as an important NMD factor that regulates a specific subset of substrates that are stabilized in its absence.

Bio-interface & Environmental Engineering Lab (Dr. Lalit Mohan Pandey): Bio-interface Engineering, Surface modification, Protein aggregation, Nano-biotechnology, Microbial enhanced oil recovery, Bioremediation of hazardous wastes i.e. oil spills, dyes, heavy metals

Plant Tissue Culture and Secondary Metabolite production laboratory (Prof. Rakhi Chaturvedi): We are primarily working in the field of plant tissue culture and secondary metabolite production. Our lab has established a solid foundation, both theoretically and experimentally, in the area of Plant Tissue Culture (PTC) and Secondary Metabolite analysis and large-scale production, Plant Biochemical Engineering, Bioreactor cultivation and Plant Sciences

Calcium signaling laboratory (Prof. Ranjan Tamuli): Calcium and cell signaling, Genetics of the filamentous fungus Neurospora crassa, DNA repair.

Cancer therapeutics (Prof. Siddhartha Sankar Ghosh): Multifaceted approach in cancer therapeutics which encompasses Drug Repurposing, Nanotheranostics and targeting EMT Dynamics.

Biochemical and Environmental Engineering Laboratory (Dr. Selvaraju Narayanasamy): Environmental Biotechnology; Wastewater treatment; Biodiesel Production and Optimization; Nanomaterials: Characterizations and Synthesis; Microbial Enzyme Production and environmental application; Advanced Oxidation Processes.

Organelle Biology and Cellular Ageing Lab (Dr. Shirisha Nagotu): Organelle biology, Cellular ageing, Membrane dynamics.

MAJOR INITIATIVES AND BREAKTHROUGH IN RESEARCH AND DEVELOPMENT (1 APRIL 2023– 31 MARCH 2024):

1. **Dr. Cota Navin Gupta**: A novel algorithm developed by Neural Engineering Lab, Dept of BSBE, IIT Guwahati in collaboration with National Institute of Mental Health and Neurosciences (NIMHANS) Bangalore may code brain connectivity patterns from structural MRI for healthy individuals and parkinsons patients into a numerical representation. This work published Brain Sciences Journal (https://doi.org/10.3390/brainsci13091297) received wide media attention as per below links:
   https://timesofindia.indiatimes.com/city/guwahati/iit-g-algorithm-to-encode-healthy-individuals-parkinsons-patients/articleshow/108691052.cms

   https://www.indianeconomicobserver.com/news/iit-guwahatis-novel-algorithm-helps-code-brain-networks20240322093735/.

2. **Dr. Lalit Mohan Pandey:**
   - Surface, interfacial and thermodynamic aspects of the Rhamnolipid-salt systems

- Potential of biosurfactant, Surfactin, for the inhibition of protein aggregation and reducing aggregate-mediated cytotoxicity and inflammation
- Potential and Prospective of Traditional Indian Medicinal Plants for the Treatment of Diabetes
- Green Synthesis of iron oxide nanoparticles for the remediation of toxic heavy metals

3. **Prof. Rakhi Chaturvedi:**
   - Doubled haploid production (homozygous diploids) in two challenging tree species, Neem (*Azadirachta indica*) and Tea (*Camellia* species) using in vitro androgenic haploids developed in our laboratory

   - Bioreactor cultivation of in vitro generated high yielding cell lines to scale-up the product and process for producing medicinally important metabolites, like azadirachtin, N-alkylamides, catechins, anthocyanins etc. on commercial scale**.**

4. **Dr. Selvaraju Narayanasamy:**
   - Organic polymer doped graphene-based composite for the effective elimination of diclofenac: a detailed study with phytotoxic assessments
   - Synthesis, characterization, and application of oxidant-modified biochar prepared from sawdust for sequestration of basic fuchsin: isotherm, kinetics, and toxicity studies
   - Graphene-Based Materials in Effective Remediation of Wastewater
   - A review on the laccase assisted decolourization of dyes: Recent trends and research progress
   - Fabrication of a novel bio-polymer adsorbent with high adsorptive capacity towards organic dyes
   - UiO-66 octahedrons for adsorptive removal of direct blue-6: process optimization, interaction mechanism, and phytotoxicity assessment
   - Performance analysis of hydrochar derived from catalytic hydrothermal carbonization in the multicomponent emerging contaminant systems: Selectivity and modelling studies
   - Harnessing the Chemical Functionality of Metal-Organic Frameworks Toward Removal of Aqueous Pollutants

5. **Dr. Shirisha Nagotu:**
   - Two putatively phosphorylated residues T62 and S277 in the dynamin-like protein Dnm1 were characterized and we reported for the first time, a single residue (S277) change that does not alter the localization of Dnm1 but makes it non-functional in a dominant-negative manner. *"This research work published in IJBM Elsevier, was also highlighted in the annual newsletter of Indian Society of Cell Biology 2023".*
   - Two novel pathogenic mutations in α-synuclein A18T and A29S were characterized for various cellular effects such as ROS accumulation, cytotoxicity, and effect on cell organelles. These mutations exhibited lesser intense phenotype when compared to the most studied A53T mutation

6. **Prof. Siddhartha S. Ghosh :**

   Comprehensive *in-silico* and *in-vitro* studies identified potential repurposed drugs for breast cancer therapy. Additionally, suitable co-therapeutic modules were developed to target multiple signaling pathways in triple negative breast cancer (TNBC) cells. Recombinant proteins were developed to possess anti-neoplastic properties and modulate cancer cell signaling. Suitable drug delivery vehicles were established to target the tumor microenvironment of metastatic TNBC cells for enhancing drug susceptibility.

7. **Dr. Souptick Chanda:**

- Helped establish Orthotech Research Lab (ORC) inside Research Park, IITG jointly with Orthotech India Ltd., Gujarat.
- Helping students get internships at ORC.
- Developed novel metallic scaffold having osteogenic potential for bone applications.
- Designed a novel spinal cage; to be filed for an Indian patent.

CONFERENCES/WORKSHOPS/SYMPOSIA ATTENDED: NATIONAL/ INTERNATIONAL (1 APRIL 2023– 31 MARCH 2024)

Sl. No.	Name of Faculty	Name of Conf./Workshop	Place	Date	International/ National
1.	Arun Goyal	92nd Annual meeting of The Society of Biological Chemists (India): Biological Chemistry, Opportunities and Way forward (SBC 2023)	BITS Pilani, Goa, India	18/12/2023-20/12/2024	International
2.	Arun Goyal	Biotech Research Society India-International Conference on New Horizons in Biotechnology INDIA (BRSI-NHBT 2023)	Thiruvananthapuram, Kerela, India	26/11/2023-29/11/2023	International
3.	Arun Goyal	Research and Industrial conclave (RIC 2023)	IIT Guwahati, Assam, India	14/05/2023-16/05/2023	National
4.	Dr. Anil M. Limaye	6th International Conference on Nutraceuticals and Chronic Diseases.	Chandigarh	22/02/2024 to 24/02/2024	National
5.	Prof. B. Anand	28th Annual Meeting of the RNA Society	Singapore	30/05/2023 to 04/06/2023	International
6.	Dr. Kusum Kumari Singh	Eukaryotic mRNA Processing	Cold Spring Harbor (Virtual mode)	22-26/08/2024	International
7.	Prof. Kannan Pakshirajan	The 1st International Conference on the Practical Zero Emissions (PZETS 2023)	Ho Chi Minh City Vietnam	09/12/2023 – 12/12/2023	International
8.	Prof. Kannan Pakshirajan	International Conference on Trends in Chemical, Energy and Environmental Engineering (ChemEEE-2024)	Visakhapatnam Andhra Pradesh	19/02/2024 – 21/02/2024	International

9.	Dr. Lalit M. Pandey	3rd International Scientific Conference on Environmental Research: Issues, Challenges and Strategies for Sustainable Development and livelihood Security	Karwar Karnataka	01.12.2023 to 02/12/2023	International
10.	Dr. Lalit M. Pandey	International Chemical Conference (ICC-2023): Chemistry for Sustainable Development	Kathmandu, Nepal	25/05/2023 to 27/05/2023	International
11.	Prof. Latha Rangan	New Horizon in Biotechnology NHBT 2023	Trivandrum	28/11/2023	International
12.	Prof. Latha Rangan	DAILAB CAFÉ Series AIST-INDIA DAILAB	Tsukuba & Tokyo, Japan	11-15 /03/2024	International
13.	Prof. Rakhi Chaturvedi	2nd International Conference on Plant Physiology and Biotechnology	Lovely Professional University	April 20-21, 2023	International
14.	Prof. Rakhi Chaturvedi	Research and Industrial Conclave-Integration 2023	IIT Guwahati	May 14-16 2023	National
15.	Prof. Rakhi Chaturvedi	Society for In Vitro Biology Meeting 2023	Norfolk, Virginia, USA,	June 10-14 2023	International
16.	Prof. Rakhi Chaturvedi	Academia-Industry Interface for Promoting Entrepreneurship in Medicinal and Aromatic Plants	Central University of Jammu	July 14-15, 2023	National
17.	Prof. Rakhi Chaturvedi	Recent Advances in Plant Biotechnology (RAPB - 2024)	Pondicherry University, Puducherry, INDIA.	January 23-25 2024	National
18.	Prof. Rakhi Chaturvedi	Japan-NER Bioeconomic Technology Cooperation Symposium2024 ("JNBTCS 2024")	IIT Guwahati	March 3–5, 2024	International
19.	Prof. Rajaram Swaminathan	14th EBSA Congress 2023	Stockholm, SWEDEN	31/7/23	International

20.	Dr. Selvaraju Narayanasamy	International Hybrid Conference on Nano-Structured Materials and Polymers – ICNP – 2023	Mahatma Gandhi University, Kerala.	14/05/2023	International
21.	Dr. Selvaraju Narayanasamy	CHEM-TECHNOVA 2023	Harcourt Butler Technical University, Kanpur	27/05/2023	International
22.	Dr. Selvaraju Narayanasamy	International Conference on Waste, Energy and Environment – ICWEE-2023	Sathyabama Institute of Science and Technology	07/07/2023	International
23.	Dr. Selvaraju Narayanasamy	International Conference on Molecular Matter – Emerging Directions for Sustainability - ICMM-2023	Indian Institute of Technology Madras	18/12/2023	International
24.	Dr. Shirisha Nagotu	Yeast and Life Sciences conference organized by Cold Spring Harbor Asia	Matsue, Japan	10/10/2023 to 13/10/2023	International
25.	Dr. Shirisha Nagotu	International seminar on comparative reflections on gender and higher education in India. Special focus on the NEP 2020 and the states of north east	II Guwahati	5/03/2024 to 6/03/2024	International
26.	Dr. Shirisha Nagotu	Abbelight Safe 360 SMLM imaging platform workshop	IIT Kanpur	14/1/2024 to 15/01/24	National
27.	Prof. Vibin Ramakrishnan	Sustainability-Aligning External and Internal Drivers	HFN Global Head Quarters, Hyderabad	02/05/2023	National
28.	Prof. Vibin Ramakrishnan	Elsevier Editor's Workshop	NIPER KOLKOTA	06/10/2023	International
29.	Prof. Vibin Ramakrishnan	DBT BIC Workshop on Protein Modelling: A Rational Tool for Drug Discovery and Development	DBT-Bioinformatics Centre, Department of Pharmaceutical Sciences and Drug Research, Punjabi University, Patiala	31/10/2023	National
30.	Prof. Vibin Ramakrishnan	InBix 2023	Vellore Institute of Technology, Vellore	24/11/2023	International

31.	Prof. Vibin Ramakrishnan	9th International Conference on Bio-inspiration and Bio-based approaches	University of Nice/ LE SAINT PAUL HOTEL, Nice, France	12/12/2024	International
32.	Dr. Souptick Chanda	ISTA 2023: The 34th International Congress New York City, September 27-30, 2023	Sheraton New York Times Square Hotel, NYC, USA	28/09.2024	International

INVITED LECTURES OF FACULTY: IN INDIA, ABROAD (1 APRIL 2023– 31 MARCH 2024)

Sl.No.	Name of Faculty	Name of Lecture	Name of Inst./Org.	Place	Date
33.	Prof. B. Anand	It takes two to tango: CRISPR RNA Biogenesis Requires Two Disparate Cas Nucleases	92nd Annual Meet of Society of Biological Chemists, BITS-Pilani	Goa	19-12-2023
34.	Prof. B. Anand	How CRISPR-based immunological memory is stored in bacterial genome ?	Frontier Symposium in Biology, IISER Thiruvananthapuram	Thiruvananthapuram	03-02-2024
35.	Prof. B. Anand	Bacterial Cell Growth and Dormancy: An Interplay Between Ribosome Biogenesis and Stringent Response Pathway	Recent Advances in Cryo-EM and Chemical Biology, IIT Bombay	Mumbai	09-03-2024
36.	Prof. B. Anand	Mechanistic Basis of CRISPR-Cas Adaptive Immunity	National Conference on Advances in Biochemical Sciences: Basic to Translational Research, Central University of Rajasthan	Bandar Sindri (Rajasthan)	20-03-204
37.	Dr.Cota Navin Gupta	Invited Talk on Introduction to Cognitive Science and Sensor Applications	INUP-i2i, IIT Guwahati (https://www.iitg.ac.in/nano/inup-i2i/assets/news_events/fam_14_16_feb_24/index.html#footer)	Online	16/2/2024
38.	Dr.Cota Navin Gupta	Invited Talk on Introduction to Cognitive Neuro-engineering and its Applications	Weblink: https://ibrainiitg23.in/ibrain/speakers/ (Last Accessed Feb 2024)	Dept of HSS, IIT Guwahati	26/8/2023
39.	Dr. Kusum Kumari Singh	Transcriptome analysis of UPF3B-knockout cells unveils accumulation of PTC-containing transcripts with IR and ATTS events.	University of Lisbon (Virtual mode)	Caparica Portugal	18/7/2023

40.	Prof. Kannan Pakshirajan	Next generation biorefineries based on *Rhodococcus opacus* as a biological chassis	Sathyabama Institute of Science and Technology	Chennai Tamil Nadu	05/07/2023 – 07/07/2023
41.	Prof. Kannan Pakshirajan	Biodegradation and toxicity removal of endocrine disrupting phthalates (EDPs)	North-Eastern Hill University	Shillong Meghalaya	13/09/2023 – 27/09/2023
42.	Prof. Kannan Pakshirajan	Biorecovery of metals and selenium: a circular economy approach	Central Institute of Technology	Coimbatore Tamil Nadu	30/10/2023 – 03/11/2023
43.	Prof. Kannan Pakshirajan	Bioengineered systems for biodegradation and toxicity removal of endocrine disrupting phthalates (EDPs)	University of Calicut	Thenjipalam, Malappuram District Kerala	23/11/2023 - 25/11/2023
44.	Prof. Kannan Pakshirajan	Bioremediation	Sherubtse College, Royal University of Bhutan	Kanglung Trashigang Bhutan	25/03/2024 – 26/03/2024
45.	Dr. Lalit M. Pandey	Nano Hydroxyapatite: A Potential Bioceramic for Bone Tissue Engineering	Nepal Chemical Society (NCS), Tribhuvan University, Nepal	Kathmandu, Nepal	05/05/2023
46.	Dr. Lalit M. Pandey	Aahar and Yoga in holistic Healthcare	IIT Guwahati	Guwahati	20/05/2023
47.	Dr. Lalit M. Pandey	Microbial biosurfactants: Production and potential applications in the remediation of oil-contaminated sites	Eurasian Academy of Environmental Sciences Sub-Regional Science Centre - Karwar Karnataka	Karwar Karnataka	02/12/2023
48.	Dr. Lalit M. Pandey	Protein Aggregation	Gorakhpur University	Gorakhpur	17/12/2023
49.	Dr. Lalit M. Pandey	Biointerface Engineering and Biomaterials	The University of Turin, Italy	Turin, Italy	25/03/2024
50.	Prof. Latha Rangan	Role of Women in protecting the Ecosystem	NASI North East Local Chapter under	Online	02/05/2023
51.	Prof. Latha Rangan	Plastome mining of selected small genome sized plants	CSIR, NIIST	Trivandrum	28/11/2023
52.	Prof. Latha Rangan	Mining renewable energy resources- rendezvous with Karanj.	AIST, Tsukuba	Japan	11/03/2024
53.	Prof. Latha Rangan	Zingiberaceae exploration	Gauhuti University	Guwahati	07/02/2024
54.	Lingaraj Sahoo	Host Plant induced Gene Silencing – Tool to fight pathogen and climate adversities.	Hands on Workshop on Molecular Approaches to assess Toxicity and Stress in Biological samples" Organized by Department of Botany, Zoology and Biotechnology under DST-PURSE program	Guwahati	20/02/2024

55.	Lingaraj Sahoo	Gene Silencing – Tool to fight pathogen and climate adversities	"Refresher Course in Biosciences" By Malaviya Mission Teacher Training Centre (MMTTC), Utkal University	Bhubaneswar	23/02/2024
56.	Lingaraj Sahoo	Panel discussion on "Transforming Higher Education through Indo-Japan Collaboration	Japan-NER Bioeconomic Technology Cooperation Symposium 2024 ("JNBTCS 2024") co-organized by Gifu University, Japan, and Indian Institute of Technology, Guwahati	IIT Guwahati	04/03/2024
57.	Lingaraj Sahoo	Gene Silencing – Tool to fight pathogen and climate adversities	National Seminar on Recent Advances in Plant Science for Sustainable Development" at Utkal University	Bhubaneswar	30/03/2024
58.	Prof. Rakhi Chaturvedi	Totipotency and regeneration in tissue cultures of plants: An Engineering Consideration for Enhanced Metabolite Production	Lovely Professional University	Punjab, India	April 20-21, 2023
59.	Prof. Rakhi Chaturvedi	Bioprocessing and plant cell culture technology for mass production of essential metabolites	Society for In Vitro Biology (SIVB)	Norfolk, Virginia, USA	June 14, 2023
60.	Prof. Rakhi Chaturvedi	Totipotency and regeneration in tissue cultures of plants for Enhanced Metabolite Production	Central University of Jammu	Jammu, UT of J&K	July 14-15, 2023
61.	Prof. Rakhi Chaturvedi	Refresher Course in Bioscience through virtual mode	Banaras Hindu University	Varanasi, India	December 06-19, 2023
62.	Prof. Rakhi Chaturvedi	Cellular totipotency favoring large scale sustainable plant propagation	Gauhati university	Guwahati, India	February 09, 2024
63.	Prof. Rakhi Chaturvedi	Plant improvement by utilizing plant tissue culture techniques	Gauhati university	Guwahati, India	February 09, 2024
64.	Prof. Rakhi Chaturvedi	Plant cell culture techniques for sustainable production of plant biomass and secondary metabolites	Pondicherry university	Puducherry, India	February 16, 2024
65.	Prof. Rakhi Chaturvedi	A next generation approach for medicinal metabolite production at commercial scale in Bioreactor	IIT Guwahati	Guwahati, India	March 4, 2024

66.	Prof. Rakhi Chaturvedi	Cellular Totipotency – A Sustainable Approach to Large Scale Plant Propagation	Chaudhary Charan Singh Haryana Agricultural University (CCSHAU)	Hisar, Haryana, India	March 22-30, 2024
67.	Prof. Rajaram Swaminathan	Looking at proteins using spectroscopy	Assam Don Bosco University	Kamarkuchi, Sonapur 782402	9/10/23
68.	Prof. Rajaram Swaminathan	Alumni Lecture Series	Agurchand Manmull Jain College	Meenambakkam, Chennai 600 061	22/12/23
69.	Dr. Selvaraju Narayanasamy	Technical session speaker in "Technological Innovation for Environmental Sustainability ' 24"	National Institute of Technology, Calicut	Calicut	03/02/2024
70.	Dr. Selvaraju Narayanasamy	Technical session speaker in "Innovating Environmental Protection: Integrating Cutting-Edge Chemical Engineering Practices for Sustainable Futures"	Hindusthan College of engineering and technology	Tamil Nadu	01/03/2024
71.	Dr. Selvaraju Narayanasamy	Resource person for Faculty Development Programme on "Advancement in Biotechnology and Chemical Engineering"	Vel Tech High Tech	Chennai	12/01/2024
72.	Dr. Shirisha Nagotu	Insights into the role of the conserved GTPase domain residues T62 and S277 in yeast Dnm1	Cold Spring Harbor Asia Conference	Matsue, Japan	13/10/2023
73.	Dr. Shirisha Nagotu	Women in STEM: bridging the gap	National institute of education planning and administration and IIT Guwahati	IIT Guwahati	06/03/2024
74.	Prof. Vibin Ramakrishnan	SDG 7: Affordable and Clean Energy for all	HFN Hyderabad	Hyderabad	02/05/2023
75.	Prof. Vibin Ramakrishnan	Peptide based Drug delivery - 'Drawing board to bed side'.	Elsevier & NIPER Kolkata	Kolkata	06/10/2023
76.	Prof. Vibin Ramakrishnan	Idea to Innovation: Development of Protein Engineering Tools for Drug Discovery	DBT-Bioinformatics Centre, Punjabi University, Patiala	Patiala	31/10/2023
77.	Prof. Vibin Ramakrishnan	Tools for Molecular Design and Activity Profiling; A reductionist approach	Vellore Institute of Technology, Vellore	Vellore, Tamilnadu	24/11/2023
78.	Prof. Vibin Ramakrishnan	Functional Programming of Peptide-based Delivery Vehicles Encoding Surface Electrostatics	University of Nice, France	Nice, France	12/12/2023

VISITORS FROM OTHER INSTITUTES/UNIVERSITIES/ORGANISATIONS/INVITED LECTURES (1 APRIL 2023– 31 MARCH 2024)

Sl. No.	Name	Name of Inst./Univ./Org.	Purpose/ Name of Lecture	Date	Remarks
1.	Prof. Saptarshi Mukherjee)	Department of Chemistry, Indian Institute of Science Education and Research Bhopal, Madhya Pradesh	Applications of Luminescent Metal Nanoclusters in Biological Systems	24/04/2023	
2.	Prof. K. Yamauchi	Gifu University	Bioactivity of components from medicinal plants	14/09/2023	
3.	Prof. Jose Gadea Vacas	University of Valencia	**1.** Understanding the role of flavonoids in seed development and seed longevity. **2.** Understanding the impact of parental environment on seed longevity.	18-27/02/2024	Visit under KA107 Erasmus Mundus Exchange Programmein the Applied Biodiversity Lab
4.	Prof. Eduardo Cortón	University of Buenos Aires	A glimpse on Argentina and bioanalytical research in LABB at the University of Buenos Aires and CONICET	07/02/2024	Visit as an Adjunct Professor

SEMINARS/WORKSHOPS/CONFERENCES/SHORT-TERM COURSES ORGANISED (1 APRIL 2023– 31 MARCH 2024)

Sl. No.	Name of Faculty (Convener/ Co-ordinator, etc.)	Name of Sem./Wor./Con.	Funded By	Date	International/ National	No. of participants
1.	Lalit M. Pandey	National conference of Gau-Vigyan in modern life and medical science (NCGV 2023)	Ayush, SERB, DSIR, NECTAR, NEDFi and others	20-21/05/2023	National	250
2.	Lalit M. Pandey	Sri Aurobindo International Youth Conference (SAIYC)	Auroville Foundation	25/02/2024	National	150
3.	Lingaraj Sahoo	Japan-NER Bioeconomic Technology Cooperation Symposium 2024 ("JNBTCS 2024") co-organized by Gifu University, Japan, and Indian Institute of Technology, Guwahati	MEXT, Japan	3–5th March, 2024	International	250

PATENTS (1 APRIL 2023– 31 MARCH 2024)

No. of Patents Applied 04

No. of Patents Granted 02

Sl. No.	Name of Faculty and co researcher	Name	Date Applied/Granted	Application No.	Remarks
1.	**Lingaraj Sahoo**, Sanjeev Kumar, Bharatheeswaran M, Mahesh Das	A method for developing yellow mosaic disease resistance in plants	08/12/2023	202331083730 A	Published
2.	**Lingaraj Sahoo**, Sanjeev Kumar, Mahesh Das, Debee Prasad Sahoo	An efficient process for transforming mungbean	22/09/2023	202331063902 A	Published
3.	**Prof. Vibin Ramakrishnan,** Yvonne Christian	Cell penetrating heterochiral peptides for targeted drug delivery in triple negative breast cancer	17/03/2024	TEMP/E1/23122/ 2024- KOL	Applied
4.	**Prof. Vibin Ramakrishnan,** Kalpana Kumari	Catalytic Peptide Based Mimetics of Carbonic Anhydrase with Improved Stability and Substrate Specificity for Enhanced Carbon Dioxide Sequestration	23/03/2024	TEMP/E1/27392/ 2024-KOL	Applied
5.	**Prof. Vibin Ramakrishnan,** Kalpana Kumari	Histidine containing catalytic tripeptides with enhanced stability and substrate specificity for hydrolase activity	24/03/2024	TEMP/E1/27521/ 2024-KOL	Applied
6.	**Prof. Vibin Ramakrishnan,** Mouli Sarkar	Tinospora cordifolia Derived phytochemicals and designed peptides for the treatment of Parkinson's disease: A network based and Chemoinformatics approach	25/03/2024	TEMP/E1/27781/ 2024-KOL	Applied

AWARDS AND HONOURS (1 APRIL 2023– 31 MARCH 2024)

Sl. No.	Name of Faculty	Name of Award	Name of Institute/ Organization/ Foundation bestowing the award	Reason for award	Form of Award (Citation/ Medal/ Cash etc)
1.	Prof. B. Anand	S. Ramachandran National Bioscience Award for Career Development	Department of Biotechnology, Ministry of Science and Technology, GoI	Research Excellence	Cash Award + Research Grant

2.	Prof. Kannan Pakshirajan	Best Oral Presentation	Indian Institute of Petroleum and Energy Visakhapatnam, Andhra Pradesh	Oral Presentation in ChemEEE-2024	Certificate
3.	Dr. Lalit M. Pandey	Fellow, Eurasian Academy of Environmental Science (FEAES)	Eurasian Academy of Environmental Sciences	Significant contribution in the environmental science	Citation and Medal
4.	Dr. Lalit M. Pandey	Outstanding Achievement Award-2023	Agricultural & Environmental Technology Development Society (AETDS)	Significant contribution in the environmental science	Citation and Medal
5.	Prof. Rakhi Chaturvedi	Advisory Committee Member	Japan-NER Bioeconomic Technology Cooperation Symposium 2024 ("JNBTCS 2024")	Subject expert	Citation
6.	Prof. Rakhi Chaturvedi	National Advisory Committee Member	Academia-Industry Interface for Promoting Entrepreneurship in Medicinal and Aromatic Plants 2023	Subject expert	Citation
7.	Prof. Rakhi Chaturvedi	National Advisory Committee Member	45th Annual Meeting of Plant Tissue Culture Association (India) & National Symposium on Recent Advances in Plant Biotechnology (RAPB - 2024)	Subject expert	Medal
8.	Dr. Shirisha Nagotu	International travel grant	DST-SERB-ITS	Travel to Japan	Financial support
9.	Prof. Vibin Ramakrishnan	FRSC. Fellow, Royal Society of Chemistry	Royal Society of Chemistry, UK	Excellence in Chemistry and allied areas of Research	Citation
10.	Prof. Vibin Ramakrishnan	FRSB. Fellow, Royal Society of Biology	Royal Society of Biology, UK	Excellence in Research in Biophysics and Chemical Biology	Citation

STUDENTS' ACHIEVEMENTS (1 APRIL 2023– 31 MARCH 2024)

Sl. No.	**Name of Student**	**Name of Award**	**Name of Institute/ Organization/ Foundation bestowing the award**	**Reason for award**	**Form of Award (Citation/**

					Medal/ Cash etc)
1.	Mr. Ardhendu Mandal	Best Poster Award	92nd Annual meeting of The Society of Biological Chemists (India): Biological Chemistry, Opportunities and Way forward (SBC 2023), BITS-Goa, India	Best poster	Cash
2.	Dr. Akanksha Bansal	Biotechnology Career Advancement and Re-Orientation Programme For Women Scientists (BioCARe)	Department of Biotechnology, Ministry of Science and Technology, GoI	Research Excellence	Research Fellowship + Grant
3.	Dr. Akanksha Bansal	DBT-Research Associateship	Department of Biotechnology, Ministry of Science and Technology, GoI	Research Excellence	Research Fellowship
4.	Dr. Dipak Kumar Kanaujiya	Best Ph.D. Thesis Award 2023	IIT Guwahati	Best Thesis	Medal and Certificate
5.	Ms. Naorem Bela Devi	Best Oral Presentation	IIT (ISM) Dhanbad, Jharkhand	Novelty of the work presented in NOET-2023	Certificate along with Cash (Rs. 3000/-)
6.	Mr. Rushikesh Fopase	Best Poster Award	IIT Guwahati	Presenting Poster at a National Conference on Gau Vigyan (NCGV 2023), 20-21 March 2023	Certificate
7.	Mr. Anurag Mishra	Best Poster Award	IIT Guwahati	Presenting Poster at a National Conference on Gau Vigyan (NCGV 2023), 20-21 March 2023	Certificate
8.	Ms. Shalini Prajapati	Best Poster Award	IIT Guwahati	Presenting Poster at a National Conference on Gau Vigyan (NCGV 2023), 20-21 March 2023	Certificate
9.	Ms. Smrity Sonbhadra	Best Oral Presentation Award	IIT Guwahati	Oral Presentation at a National Conference on Gau Vigyan (NCGV 2023), 20-21 March 2023	Certificate
10.	Ms. Mehak	Best Poster Award	Tezpur University, Assam	Presenting Poster at a National Conference-Condensed Matter	Certificate

				Days (CMDAYS 2023)	
11.	Mr. Anurag Mishra	Best Oral Presentation Award	Indian Institute of Petroleum Engineering (IIPE) Vishakhapatnam	Oral Presentation at an International Conference on Trends in Chemical, Energy and Environmental Engineering, 19-21 Feb, 2024	Medal and Certificate
12.	Ms. Shilpa Nandi	Best Oral Presentation Award	Indian Institute of Petroleum Engineering (IIPE) Vishakhapatnam	Oral Presentation at an International Conference on Trends in Chemical, Energy and Environmental Engineering, 19-21 Feb, 2024	Medal and Certificate
13.	Mr. Chinmaya Panda	Best Poster Award	Gujarat Biotechnology University, Gandhinagar, Gujarat	Presenting Poster at 4th Student Indian Pewptide Society (sIPS) Conference, Feb 23-24	Cash and Medal Prize
14.	Ms. Rashmi Singh	Poster Award	CMS Vellore	Best Poster Award- Third Prize	Citation plus Cash
15.	Team- Ms Nuzelu and Mr Sonu	Vishwakarma Project	Maker Bhawan Foundation and WIN Foundation	Finalist in Top 5 for the product BHEEMA	Citation and Cash
16.	Mr. Krishna Kant Pachauri	SERB-DST Travel Grant	Science and Engineering Research Board (SERB) - DST, Govt. of India	To attend conference of international association for plant biotechnology conference (IAPB 2023) in South Korea, Seoul	Financial Support
17.	Mr Mohammed Askkar	PMRF	Ministry of Education, Govt. of India	Ground breaking research	Fellowship
18.	Mr Ajithkumar V	PMRF	Ministry of Education, Govt. of India	Ground breaking research	Fellowship
19.	Mr Harish Kumar	ACS Best Short Invited Talk - 3rd position	International Hybrid Conference on Nano Structured Materials and Polymers (ICNP-2023)	Extraordinary research presentation	Certificate
20.	Mr Jeevanantham S	Best Presentation Award (2nd place)	International Conference on Waste, Energy and Environment – ICWEE-2023	Extraordinary research presentation	Certificate

21.	Bharathwaj N	PMRF	Ministry of Education, Govt. of India	Ground breaking research	Fellowship
22.	Deepa Mehta	PMRF	Ministry of Education, Govt. of India	Ground breaking research	Fellowship
23.	Pooja Jatav	PMRF	Ministry of Education, Govt. of India	Ground breaking research	Fellowship
24.	Shomina Dehury	PMRF	Ministry of Education, Govt. of India	Ground breaking research	Fellowship
25.	Vishwa R	PMRF	Ministry of Education, Govt. of India	Ground breaking research	Fellowship

FACULTY MEMBERS

Sl. No.	**Name**	**Name of the University/Institute/Org PhD degree received from**	**Designation**	**Areas of Interest**
1.	B. Anand	Indian Institute of Technology Kanpur, Kanpur	Professor	RNA Biology, CRISPR Biology, Ribosome Biogenesis
2.	Bora Utpal	Institute of Genomics and Integrative Biology, Delhi	Professor	Biomedical Engineering, Biodiversity and Bio-entrepreneurship
3.	Bose Biplab	All India Institute of Medical Sciences	Associate Professor	Systems Biology, Cell signaling, Recombinant therapeutics
4.	Chanda Souptick	Indian Institute of Technology Kharagpur, India	Assistant Professor	Biomechanics, implant design & optimization, surgical simulation, biomedical image processing
5.	Chaturvedi Rakhi	University of Delhi, India	Professor	Plant Tissue Culture & Secondary Metabolites Production
6.	Chaudhary Nitin	CSIR-Centre for the cellular and Molecular Biology, Hyderabad	Professor	Peptide self-assembly and amyloid aggregates, Peptide-membrane interactions Curvature inducing proteins
7.	Das Debasish	Indian Institute of Technology Bombay	Professor	Metabolic engineering, Biochemical engineering, Modelling of fermentation process, Biofuel
8.	Dasu V. Venkata	Indian Institute of Technology Madras	Professor	Bioprocess Development, Metabolic Engineering
9.	Ghosh Siddhartha S.	Indian Institute of Chemical Biology (IICB), Kolkata	Professor	Cancer Therapeutics, Nanobiotechnology, Molecular Pathways Involving Drug Resistance and EMT
10.	Goswami Pranab	Gauhati University	Professor	Biosensors and Biofuel cells
11.	Goyal Arun	Indian Institute of Technology Kanpur, Kanpur, India.	Professor	Molecular Biology, Protein Engineering, Rational Enzyme Engineering, 3-Dimensional Structure (In silico, crystal and solution) and Function analysis of enzymes and their industrial (Biorefinery,

				therapeutic, food, Pulp and paper) applications.
12.	Gupta Navin	Brain Computer Interfaces and Neural Engineering (BCI-NE) Group, University of Essex	Assistant Professor	Imaging Genetics, Biomedical Signal/Image Processing, Multimodal Analysis,Computer Aided Diagnosis, Biomedical Instrumentation
13.	Jaganathan Bithiah G.	Johann Wolfgang Goethe University, Frankfurt, Germany	Professor	Stem Cell Biology, Cancer signaling
14.	Kanaujia Shankar Prasad	Indian Institute of Science Bangalore	Professor	Structural Biology and Bioinformatics Studies
15.	Kumar Manish	University of Maryland, College Park, USA	Professor	Molecular interaction of host-pathogen-vector of infectious diseases (vector-borne diseases of zoonotic importance), Gene expression analysis of Spirochete, Leptospira interrogans and Borrelia burgdorferi, Development of a vaccine against outer membrane proteins of Leptospira interrogans and Borrelia burgdorferi
16.	Kumar Sachin	University of Maryland, College Park, USA	Professor	Molecular biology of paramyxoviruses, flaviviruses
17.	Kunnumakkara A. B.	University of Calicut, Kerala	Professor	Role of inflammatory pathways in cancer development, Identification of novel biomarkers for cancer diagnosis and prognosis, Cancer drug discovery.
18.	Limaye Anil Mukund	Indian Institute of Science Bangalore	Associate Professor	Hormonal regulation of gene expression
19.	Maiti Soumen Kumar	Indian Institute of Technology Bombay	Associate Professor	Bioprocess Engg, Biofuel
20.	Mandal Biman B	Indian Institute of Technology Kharagpur	Professor	Regenerative Medicine, Biomaterials, Tissue Engineering, Stem Cells
21.	Nagotu Shirisha	University of Groningen, the Netherlands	Assistant Professor	Cell biology, Organelle biology, Cellular Ageing, Membrane dynamics
22.	Pakshirajan Kannan	IIT Madras	Professor	Environmental Biotechnology
23.	Pandey Lalit Mohan	Indian Institute of Technology Delhi	Associate Professor	Bio-interfaces and Biomaterials, Protein's adsorption and aggregation, Nanomaterials and composites for Biomedical applications, Environmental Chemical Engineering
24.	Patra Sanjukta	Central Food Technological Research Institute, Mysore	Professor	Enzyme and Microbial Technology; Biosensors; Metagenomics; Environmental Biotechnology

25.	Ramakrishnan Vibin	Indian Institute of Technology Bombay	Professor	Network medicine, Bio-Nano catalysis, Drug delivery vehicles
26.	Rangan Latha	University of Madras	Professor	Applied Biodiversity
27.	Sahoo Lingaraj	Maharshi Dayanand University, Rohtak, India	Professor	Plant Molecular Biology
28.	Saini Gurvinder Kaur	Andhra University, Visakhapatnam	Professor	Fungal Biotechnology, Engineering entomopathogenic fungi
29.	Satpati Priyadarshi	Indian Institute of Science Bangalore	Associate Professor	Classical molecular dynamics (MD) free energy simulation, Electronic Structure calculations that predict the structure, properties, reactivity, bonding etc. of small molecules
30.	Selvaraju Narayanasamy	Indian Institute of Technology Madras, India	Associate Professor	Environmental Biotechnology, Wastewater remediation, Microbial Biodiesel production, Advanced Oxidation Process
31.	Senthilkumar S	Central Leather Research Institute, Chennai	Professor	Bioprocess Analytical Technology (BioPAT), Metabolic Engineering
32.	Singh Kusum K	Institute of Molecular Medicine, Heinrich-Heine University of Duesseldorf, Germany	Assistant Professor	Genome Editing, Alternative Splicing, RNA Binding Proteins, posttranscriptional gene regulations, isoform switching, nonsense mediated RNA decay
33.	Swaminathan Rajaram	Tata Institute of Fundamental Research	Professor	Proteins, Spectroscopy, Biochemistry
34.	Tamuli Ranjan	CSIR-Centre for Cellular and Molecular Biology, Hyderabad (degree awarded by the Jawaharlal Nehru University, New Delhi)	Professor	Calcium and cell signaling, Genetics of the filamentous fungus Neurospora crassa, DNA repair
35.	Thummer Rajkumar P	University of Groningen, Groningen, The Netherlands	Assistant Professor	Stem Cell Engineering and Regenerative Medicine
36.	Trivedi Vishal	Central Drug Research Institute, Lucknow	Professor	Intracellular Signaling in Plasmodium falciparum