

## Department: Department of Biosciences and Bioengineering (BSBE)

**Year of Establishment of the Department:** 2002

**Academic Programmes Offered:** B. Tech, M. Tech. in Biotechnology, M. Tech. in Bioengineering, and Ph. D.

### LABORATORY FACILITIES:

#### Brief description of the laboratories in the department of BSBE:

- 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 lab focuses on the molecular mechanisms underlying host–pathogen interactions in infectious diseases. Key research areas include (i) Dissecting the molecular interactions among hosts and pathogens of infectious diseases, (ii) Investigating gene expression dynamics in spirochetes- *Leptospira interrogans* and *Borrelia burgdorferi*, (iii) Developing vaccine candidates targeting outer membrane proteins of *Leptospira interrogans* and *Borrelia burgdorferi*, and (iv) Studying vector-borne zoonotic diseases with significant public health impact. The lab has the following facilities: Laminar air flow (Thermo Scientific), incubator (Scigenics Biotech), Thermal cycler (PCR, Biorad), centrifuges (Thermo Scientific), Chemidoc (Biorad), Spectrofluorometer (Tecan M Plex), Thermo Scientific multiscan, FPLC system (Biorad), electrophoresis units (Biorad), freezers (-20 °C and 4 °C).
- 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 the aggregation of various therapeutic proteins is studied, and (iii) Environmental Biotechnology: The lab focuses on the 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. Gurbinder 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 the future. We are also investigating application banana fiber, rice varieties from Northeast India, and endophytes from rice.
- 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, Immunotoxicity 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):** Biomechanics Lab with subject specialization and research Interests in Orthopaedic biomechanics, implant design and optimization, surgical simulations and application of soft computing/AI in allied fields.
- 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 2024– 31 MARCH 2025):**

- 1) Walk-in Cold Storage, Make: Bhanu Biotech, Model: Custom Made
- 2) Flowcytometer Make: BD, Model: FACS Lyric
- 3) Oil free compressor, Make: Tarsons, Model: Rockyvac 420
- 4) Projector, Make: Viewsonic, Model: LS510WP; 02 numbers
- 5) Dehumidifier, Make: Origin Novita, Model: ND 328

- 6) Tetra pack, Make: BioRad, Model: Tetrapack
- 7) Transblotter, Make: BioRad, Model: Trans blot SD
- 8) Tower AC 2 TR
- 9) Tower AC 4 TR

## 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.

**Bioprocess Development Lab (Prof. Debasish Das):** Sustainable process development for value-added products using microbes as cell factories. Our research spans microalgae-based biofuel and high-value compounds production, metabolic engineering for omega-3 fatty acids, bioprocess optimization, and innovative waste-to-energy technologies. We combine chemical and biochemical engineering, systems biology, and molecular biology to address challenges in drug reduction costs, bioproducts, and environmental sustainability

**Molecular Microbiology Laboratory (Prof. Manish Kumar):** Investigating host–pathogen interactions and elucidating the molecular pathogenesis of spirochetes; characterizing outer membrane proteins as potential targets for therapeutic and vaccine development; and advancing the understanding of zoonotic diseases to support the development of molecular diagnostics and intervention strategies.

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

**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 contact sites, Inter-organelle communication.

**Biomechanics and Simulations lab (Dr. Souptick Chanda):**

- Patient Specific THR Implant customized with lattice structures.
- Design rationale of expandable pedicle screws for lumbar spine
- Development of a novel lattice-structured THR implant for canine femora
- CT-scan based detection and volume estimation of hemoperitoneum in non-uniform space
- Integrated deep learning and biomechanical framework for femur fracture classification and treatment personalization
- Effects of Porosity in Ti-scaffolds on MG63 Osteoblast-like Cell Behaviour.
- Development of the Microwave-Photonotic Hybrid Wearable Sensor for in vivo Monitoring of Hip Stem Micro-movements (with Co-PIs from another institute)

## MAJOR INITIATIVES AND BREAKTHROUGH IN RESEARCH AND DEVELOPMENT (1 APRIL 2024– 31 MARCH 2025):

### 1. Prof. Rakhi Chaturvedi:

- **Publication:** Pachauri K. K. and Chaturvedi Rakhi\*. 2025. Kinetic analysis and modelling of therapeutically important dodeca-2E, 4E,8Z,10E, Z-tetraenoic acid isobutylamides production from adventitious root cultures of *Spilanthes paniculata* Wall. ex DC. *Ind. Crops Prod.* 229: 120997. (DOI: 10.1016/j.indcrop.2025.120997) [Publisher: Elsevier]

### 2. Prof. Debasish Das:

- **Publication:** Mahana, Abhijeet, Tapas Kumar Mandal, and Debasish Das. "Utilization of cyanobacterial adsorbents for remediation of lead ions from contaminated water: Insights into bioremediation strategies." *Journal of Hazardous Materials* (2025): 138329.

### 3. Dr. Lalit Mohan Pandey:

- The isolation of a probiotic *Bacillus* strain from the traditional Assamese fermented food Panitenga and its subsequent application in biosurfactant-mediated crude oil degradation garnered extensive media attention. The study was featured in prominent national and regional platforms such as The Assam Tribune, Millennium Post, The Economic Times, India Today, ETV Bharat, and several other news outlets, in addition to wide dissemination across social media channels. The scientific findings of this work were also published in the reputed journal *Food and Bioproducts Processing*.
- Synthesis of an engineered albumin hydrogel embedded with in situ silver oxide nanoparticles, unlocking promising avenues for next-generation biomedical applications.

### 4. Prof. Manish Kumar:

- Deciphered Nucleotide-Induced Oligomerization of ClpC and Its Flexible Association with ClpP Isoforms in Pathogenic *Leptospira*
- Identified ErpY-Like Protein as a Key Host-Interacting Factor Modulating Coagulation Pathways
- Characterized TolC Efflux Protein as a Multifunctional Virulence Factor in *Leptospira*

### 5. Prof. Utpal Bora

#### i) Muga Silkmoth's Genome Decoded: A Scientific Milestone:

In a landmark breakthrough, from the Bioengineering Research Lab (BERL) at IIT Guwahati, in collaboration with the Seribiotech Research Laboratory (Bangalore), the Central Muga Eri Research and Training Institute (Jorhat), and the Indian Institute of Science (Bangalore), have successfully decoded the entire genome of the Indian golden silkmoth (*Antheraea assamensis*)—the iconic insect behind Assam's treasured muga silk.

This marks the first-ever mapping of the species' full genetic code, opening up new in silk science, biodiversity conservation, and sustainable innovation. The findings, published in *Genomics*, Volume 116, Issue 3 (2024), offer critical insights into how this unique silkmoth spins its golden fiber, adapts to its environment, and has evolved over tens of millions of years.

Importantly, the study reveals that *A. assamensis* diverged from its closest relatives over 28 million years ago, underlining its remarkable evolutionary distinctiveness.

This achievement marks yet another milestone in IIT Guwahati's pioneering efforts in muga silkworm research, driven by the Bioengineering Research Lab (BERL), which previously mapped the species' transcriptome (*Gene*, May 2017) and mitochondrial genome (*PLOS ONE*, November 2017).

By bridging Assam's silk heritage with cutting-edge science, this achievement lays the groundwork for smarter conservation, advanced silk technologies, and deeper understanding of nature's genetic wonders.

*Dubey, H., Pradeep, A. R., Neog, K., Debnath, R., Aneesha, P. J., Shah, S. K., Bora, U... & Arunkumar, K. P. (2024). Genome sequencing and assembly of Indian golden silkmoth, Antheraea assamensis Helfer (Saturniidae, Lepidoptera). Genomics, 116(3), 110841.*

## ii) IIT Guwahati Team Develops DNA Aptamer for Celiac Detection from Glutenin

Researchers from the Bioengineering Research Lab (BERL) at IIT Guwahati have taken an important step toward better food safety by developing a DNA aptamer that can detect gluten components linked to celiac disease. Their discovery, published in *Cereal Research Communications* (July 2024), expands the diagnostic potential of aptamer-based tools, which until now had focused mostly on one part of gluten called gliadin.

Gluten, the protein found in wheat, rye, and barley, contains elements that can trigger strong autoimmune reactions in people with celiac disease. Unlike previous efforts, this study focuses on another major—but often overlooked—part of gluten known as glutenin.

This aptamer, designed and validated by the BERL team, adds a powerful new tool for identifying harmful gluten fragments in food products. With further refinement, it could be part of new testing technologies to help individuals living with gluten sensitivities or celiac disease better navigate food choices.

*Kalita, J. J., Sharma, P., & Bora, U. (2024). Selection and characterisation of DNA aptamer targeting immunogenic peptide sequence of high molecular weight glutenin (HMW-GS) of gluten. Cereal Research Communications, 1-14.*

### List of Publications: (In reverse chronological order)

1. Bharali, B., Basumatary, P., & **Bora, U.** (2025). Microbiome Dynamics in *Samia cynthia ricini*: Impact of Growth Stage and Dietary Variations. *Applied Microbiology*, 5(2), 40.
2. Kalyan, E., Manta, A., Lama, R., Borah, U., Basumatary, P., **Bora, U.** (2025). Innovations in Leguminous Microgreens: Recent Trends and Applications. In: Mathur, P., Gupta, A. (eds) *Recent Trends and Applications of Leguminous Microgreens as Functional Foods*. Springer, Cham. [https://doi.org/10.1007/978-3-031-75678-8\\_11](https://doi.org/10.1007/978-3-031-75678-8_11).

3. Samanta, N. S., Das, P. P., Mondal, P., **Bora, U.**, & Purkait, M. K. (2024). Physico-chemical and adsorption study of hydrothermally treated zeolite A and FAU-type zeolite X prepared from LD (Linz–Donawitz) slag of the steel industry. *International Journal of Environmental Analytical Chemistry*, 104(14), 3219-3241.

4. Das, A. K., Borah, M., Kalita, J. J., & **Bora, U.** (2024). Cytotoxic potential of Curcuma caesia rhizome extract and derived gold nanoparticles in targeting breast cancer cell lines. *Scientific Reports*, 14(1), 17223.

5. Kalita, J. J., Sharma, P., & **Bora, U.** (2024). Selection and characterisation of DNA aptamer targeting immunogenic peptide sequence of high molecular weight glutenin (HMW-GS) of gluten. *Cereal Research Communications*, 1-14.

6. Dubey, H., Pradeep, A. R., Neog, K., Debnath, R., Aneesha, P. J., Shah, S. K., **Bora, U.** & Arunkumar, K. P. (2024). Genome sequencing and assembly of Indian golden silkmoth, *Antheraea assamensis* Helfer (Saturniidae, Lepidoptera). *Genomics*, 116(3), 110841.

## 6. Dr. Souptick Chanda

S. No.	Publication Title	Journal/Conference	Type	Date
1	Bhardwaj, J.S. and Chanda, S.; Structural and hemodynamic analysis of Weaire-Phelan scaffolds made of Ti-alloy as bone replacement component: a preclinical investigation	PLOS ONE	Journal	December 02, 2024
2	Kumar N, Nag P, Chanda S. Significance of Nonlinearity Consideration in Finite Element Analysis for Preclinical Strength Assessment of Extramedullary Femur Plates	Journal of Engineering and Science in Medical Diagnostics and Therapy, ASME	Journal	March 28, 2025.
3	Hazra A, Chanda S, Chakraborty D, Computational assessment of periprosthetic tissue growth over hip stem subjected to various biomechanical stimuli	Sadhana, Springer	Journal	January 21, 2025
4	Sanjay D, Ghosh R, Chanda S. Full-cortical vs detailed anatomical vertebra for preclinical assessment of spinal implants	29th Congress of the European Society of Biomechanics, Edinburgh, Scotland.	Poster Presentation	June 30-July 3, 2024.
5	Bhardwaj J.S., Salunke A., Chanda S., “Patient-specific 3D printed prosthesis in reconstruction after resection of scapula tumour”	18th International Conference on Biomedical Engineering (ICBME), NUS Singapore	Oral Presentation	Dec 9-12, 2024
6	Sarkar S, Chanda S, Sundariwal R. Comparative computational study of a solid and a porous hip stem	18th International Conference on Biomedical Engineering	Oral Presentation	Dec 9-12, 2024

	for canine femora through Finite Element Analysis (FEA)	(ICBME), NUS Singapore		
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### 7. Siddhartha Shankar Ghosh:

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

#### Following are the list of publications from the associated research work:

1. Sarkar, S., Kandasamy, T., & Ghosh, S. S. (2025). Inhibition of the MLL1-WDR5 interaction modulates Epithelial to mesenchymal transition and metabolic pathways in triple-negative breast cancer cells. *Biochemical and Biophysical Research Communications*, 755, 151559.
2. Venkatesh, D., Sarkar, S., Kandasamy, T., & Ghosh, S. S. (2024). In-silico identification and validation of Silibinin as a dual inhibitor for ENO1 and GLUT4 to curtail EMT signaling and TNBC progression. *Computational Biology and Chemistry*, 115, 108312.
3. Kandasamy, T., Sarkar, S., & Ghosh, S. S. (2025). Synergistic Therapeutic Effects of Zn ions and Pimozide in Breast Cancer Cells. *Chemistry & Biodiversity*.
4. Roy, S., Debasmita, D., Dey, U., Ghosh, S. S., & Chattopadhyay, A. (2025). Unveiling the Cytotoxic Potential of Quercetin-Loaded Magnetic Bacterial Bots against Cervical Cancer. *ACS Applied Materials & Interfaces*.
5. Sarkar, S., Kandasamy, T., & Ghosh, S. S. (2024). Imatinib Impedes EMT and Notch Signalling by Inhibiting p300 Acetyltransferase in Breast Cancer Cells. *Molecular Carcinogenesis*.
6. Sarkar, S., & Ghosh, S. S. (2024). Synergistic effect of salinomycin with budesonide on TNBC regression via EMT reversal and autophagy induction. *Journal of Biochemical and Molecular Toxicology*, 38(11).
7. Kandasamy, T., Sarkar, S., & Ghosh, S. S. (2024). Harnessing drug repurposing to combat breast cancer by targeting altered metabolism and Epithelial-to-Mesenchymal transition pathways. *ACS Pharmacology & Translational Science*, 7(12), 3780–379
8. Sen, P., & Ghosh, S. S. (2024). Targeting Cross-Talks of Notch and VEGF to tweak the EMT and EPT dynamics in triple negative breast cancer cells. *Advanced Therapeutics*.
9. Choudhury, K., Sen, P., & Ghosh, S. S. (2024). SAHA potentiates the activity of repurposed drug promethazine loaded PLGA nanoparticles in triple-negative breast cancer cells. *Nanotechnology*, 35(46), 465102.
10. Sarkar, S., Venkatesh, D., Kandasamy, T., & Ghosh, S. S. (2024). Epigenetic Modulations in Breast Cancer: An Emerging paradigm in therapeutic Implications. *Frontiers in Bioscience-Landmark*, 29(8).
11. Kandasamy, T., Sarkar, S., Sen, P., Venkatesh, D., & Ghosh, S. S. (2024). Concurrent inhibition of IR, ITGB1, and CD36 perturbed the interconnected network of energy metabolism and epithelial-to-mesenchymal transition in breast cancer cells. *Journal of Cellular Biochemistry*, 125(7).
12. Nambiar, S. S., Ghosh, S. S., & Saini, G. K. (2024). Gliotoxin triggers cell death through multifaceted targeting of Cancer-Inducing genes in breast cancer therapy. *Computational Biology and Chemistry*, 112, 108170.

13. Patra, A., Arora, A., Ghosh, S. S., & Saini, G. K. (2024). Beauvericin Reverses Epithelial-to-Mesenchymal Transition in Triple-Negative Breast Cancer Cells through Regulation of Notch Signaling and Autophagy. *ACS Pharmacology & Translational Science*, 7(9), 2878–2893.
14. Patra, A., Ghosh, S. S., & Saini, G. K. (2024). Exploring potential molecular targets and therapeutic efficacy of beauvericin in triple-negative breast cancer cells. *Computational Biology and Chemistry*, 112, 108154.

#### **Poster presentations in conferences**

1. Poster presentation on “Inhibition of MELK via drug repurposing: a promising strategy for triple negative breast cancer treatment” **Arisha Arora**, Siddhartha Sankar Ghosh, at Research and Industrial Conclave, IIT Guwahati, 2024.
2. Poster presentation on “Elucidating the therapeutic potency of macrophage-derived small extracellular vesicles in targeting Lung Cancer” **Basab Ghosh**, Siddhartha Sankar Ghosh, at Research and Industrial Conclave, IIT Guwahati, 2024.
3. Poster presentation on “In silico screening of retinoid family to target the PI3K/Akt/mTOR axis of breast cancer progression” **Pijush Kanti Khanra**, Siddhartha Sankar Ghosh, at Research and Industrial Conclave, IIT Guwahati, 2024.
4. Poster presentation on “Harnessing ROCK Inhibition: A Therapeutic Approach in NSCLC Progression and EMT regulation” **Basab Ghosh**, Shilpi Sarkar, Siddhartha Sankar Ghosh, at 47<sup>th</sup> All India Cell Biology Conference, 2024 organized by NISER Bhubaneswar.
5. Poster presentation on “Therapeutic targeting of Rho Kinase to regulate EMT in NSCLC” **Basab Ghosh**, Shilpi Sarkar, Siddhartha Sankar Ghosh, at 44<sup>th</sup> Indian Association for Cancer Research Conference, 2025 organized by Chittaranjan National Cancer Institute Kolkata.
6. Poster presentation on “Aggregation-Induced Emission (AIE) based luminogens in Cancer Theranostics” **Hirakjyoti Roy**, Laxmi Raman Adil, Parameswar K Iyer, Siddhartha Sankar, Ghosh, at Indo-Japan Symposium on Nanotheranostics (InJaNa 2024), IIT Roorkee.
7. Poster presentation on “Targeting Lysosomal Protease in Cancer Theranostics: a nanocarrier based repurposed drug delivery approach” **Sayantani Mukhopadhyay**, Parameswar K Iyer, Siddhartha Sankar Ghosh, at Indo-Japan Symposium on Nanotheranostics (InJaNa 2024), IIT Roorkee.
8. Poster presentation on “Drug Repurposing Mediated Targeting of Lysosomal Protease in Cancer Theranostics” **Sayantani Mukhopadhyay**, Kandasamy Thirukumaran, Parameswar K Iyer, Siddhartha Sankar Ghosh, at 44<sup>th</sup> Indian Association for Cancer Research Conference, 2025 organized by Chittaranjan National Cancer Institute Kolkata.
9. Poster presentation on “Role of Magnetic Bacterial Bots against Cervical Cancer” **Sawna Roy**, Debashree Debasmita, Ujjala Dey, Siddhartha Sankar Ghosh, and Arun Chattopadhyay, at Indo-Japan Symposium on Nanotheranostics (InJaNa 2024), IIT Roorkee.
10. Poster presentation on “Role of Magnetic Bacterial Bots against Cervical Cancer” **Sawna Roy**, Debashree Debasmita, Ujjala Dey, Siddhartha Sankar Ghosh, and Arun Chattopadhyay, at Current trends in Drug discovery Research (CTDDR 2025), CSIR CDRI-Lucknow.
11. Poster presentation on “Nano based targeted drug delivery system for triple negative breast cancer using predictive modeling” **Sujisha S Nambiar**, Siddhartha Sankar Ghosh, Gurvinder Kaur Saini, at Indo-Japan Symposium on Nanotheranostics (InJaNa 2024), IIT Roorkee.
12. Poster presentation on “Harnessing the fungal metabolite gliotoxin for TNBC therapy” **Sujisha S Nambiar**, Siddhartha Sankar Ghosh, Gurvinder Kaur Saini, at Frontiers in Material science conference 2024, KVT Kochi.
13. Poster presentation on “Drug Repurposing for Targeting Triple-Negative Breast Cancer” **Sayantani Biswas**, Arun Chattopadhyay and Siddhartha Sankar Ghosh, at Research and Industrial Conclave, IIT Guwahati, 2024.

14. Poster presentation on “Drug Repurposing as an Alternative Approach against Triple-Negative Breast Cancer” **Sayantani Biswas**, Arun Chattopadhyay and Siddhartha Sankar Ghosh, at Current trends in Drug discovery Research (CTDDR 2025), CSIR CDRI-Lucknow.

**CONFERENCES/WORKSHOPS/SYMPOSIA ATTENDED: NATIONAL/ INTERNATIONAL (1 APRIL 2024– 31 MARCH 2025)**

Sl. No.	Name of Faculty	Name of Conf./Workshop	Place	Date	International/National
1.	Prof. Ajaikumar B. Kunnumakkara	American association for cancer research annual meeting	San Diego Convention Center, San Diego, USA	April 5 - 10, 2024	International
2.	Prof Arun Goyal	Sustainability and Bioresource Management (IBA-IFIBiop XI, 2024)	Hong Kong, China.	1-6/12/2024	International
3.	Prof. Arun Goyal	IX International Conference on Sustainable Energy and Environmental Challenges (IX SEEC 2024)	IIT Mandi, Himachal Pradesh, India.	13-15/12/2024	International
4.	Prof. B. Anand	Asia-Pacific Worm Meeting 2024	IISc, Bangalore	13/06/2024 – 16/06/2024	International
5.	Prof. B. Anand	CRISPR-2025	Christchurch, New Zealand	16/02/2025 – 20/02/2025	International
6.	Dr. Kapish Gupta	Brainstorming session on Organ on chip organized by ILBS and CEFIPRA	NIPER Guwahati	12-Jan-25	National
7.	Dr Kusum Kumari Singh	India EMBO Lecture Course RNA-protein complexes: from molecular assembly to physiological functions and diseases	NCCS, Pune, India	24 <sup>th</sup> to 28 <sup>th</sup> Feb, 2025	International
8.	Dr Kusum Kumari Singh	Nobel Lecture Series	Tezpur University	29 <sup>th</sup> Jan, 2025	National
9.	Dr Kusum Kumari Singh	National Conference on Advanced Biotechnology and Biosystem	DDU Gorakhpur University	11 <sup>th</sup> to 12 <sup>th</sup> Nov, 2024	National
10.	Dr Kusum Kumari Singh	FASEB SRC: Mechanism of RNA decay	University Institute of Lisbon	18 <sup>th</sup> to 22 <sup>nd</sup> Aug, 2024	International
11.	Prof. Kannan Pakshirajan	Joint Conference of ISEH, ICEPH & ISEG on	Galway, Ireland	11/08/2024 – 18/08/2024	International

		Environment and Health			
12.	Prof. Kannan Pakshirajan	9th International Conference on Research Frontiers in Chalcogen Cycle Science & Technology	Online	20/03/2025 – 21/03/2025	International
13.	Prof. Kannan Pakshirajan	2nd International Conference on Advances in Energy and Environment for Sustainable Development (AEESD – 2025)	Bhubaneswar, Odisha	28/03/2025 – 29/03/2025	International
14.	Dr. Lalit Mohan Pandey	24th International Symposium on Surfactants in Solution	BITS Pilani, K K Birla Goa Campus, India	June 16-21, 2024	International
15.	Dr. Lalit Mohan Pandey	An International Conference on Environmental Challenges, Opportunities and Sustainable Solutions	Indian Institute of Technology Guwahati, Assam	December 09-12, 2024	International
16.	Dr. Lalit Mohan Pandey	Expert Talk in STC/FDP on "Nanomaterials and their applications in Biotechnology"	NIT Jalandhar	Jan 20-24, 2025	National
17.	Dr. Lalit Mohan Pandey	International Conference on 'Innovation & Impacts: A Multidisciplinary Approach to Sustainable Development Goals'	Rabindranath Tagore University, Hojai, Assam, India	March 22– 24, 2025	International
18.	Dr. Lalit Mohan Pandey	Invited lecture in Research & Industrial Conclave 2024	Indian Institute of Technology Guwahati, Assam	August 09- 11, 2024	National
19.	Prof. Manish Kumar	International Leptospirosis Society	Brussels, Belgium	2-4 Sept 2024	International
20.	Prof. Rakhi Chaturvedi	National conference on biotechnology for	Birla Institute of Technology Mesra,	27/3/2025 to	National

		sustainable development (BSD-25)	Ranchi, Jharkhand, India	29/03/2025	
21.	Prof. Rakhi Chaturvedi	7-Days National Level hands-on training cum workshop on modern tools and techniques in biological science	Manipur University, Canchipur, Imphal	03/3/2025 to 09/03/2025	National
22.	Chetna Sharma, Prof. Emiko Yanase, Prof. Yoshiharu Y. Yamamoto and <b>Prof. Rakhi Chaturvedi</b>	Japan-NER Sustainable Technologies Cooperation Symposium (JNSTCS)	Indian Institute of Technology Guwahati, Guwahati, Assam	03/3/2025 to 05/03/2025	International
23.	Prof. Rakhi Chaturvedi	46th Annual Meeting of Plant Tissue Culture Association India Symposium on Current Trends and Challenges in Plant Biotechnology (CTCPB)	BITS Pilani K K Birla Goa Campus, Goa	24/02/2025 to 26/02/2025	National
24.	Krishna Kant Pachauri and <b>Prof. Rakhi Chaturvedi</b>	46 <sup>th</sup> Annual Meeting of Plant Tissue Culture Association India Symposium on Current Trends and Challenges in Plant Biotechnology (CTCPB)	BITS Pilani K K Birla Goa Campus, Goa	24/02/2025 to 26/02/2025	National
25.	Chetna Sharma and <b>Prof. Rakhi Chaturvedi</b>	46 <sup>th</sup> Annual Meeting of Plant Tissue Culture Association India Symposium on Current Trends and Challenges in Plant Biotechnology (CTCPB)	BITS Pilani K K Birla Goa Campus, Goa	24/02/2025 to 26/02/2025	National
26.	Chetna Sharma, Abhishek Dwivedi, Krishna Kant Pachauri and <b>Prof. Rakhi Chaturvedi</b>	International Conference on Advances in Medicinal and Aromatic Plant Research in Context to Indian Ocean Region (Ensuring Trade, Sustainability and Global Transformation) (IORA-AMAR)	CSIR - Central Institute of Medicinal and Aromatic Plants (CIMAP), Lucknow	04/02/2025 to 06/02/2025	International

27.	Prof. Rakhi Chaturvedi	International Conference on Advances in Medicinal and Aromatic Plant Research in Context to Indian Ocean Region (Ensuring Trade, Sustainability and Global Transformation) (IORA-AMAR)	CSIR - Central Institute of Medicinal and Aromatic Plants (CIMAP), Lucknow	04/02/2025 to 06/02/2025	International
28.	Prof. Rakhi Chaturvedi	Path to sustainable future: Innovations in Biomanufacturing (IGSTC-NCCS workshop)	National Centre for Cell Sciences, NCCS complex, Pune	14/10/2024 to 15/10/2024	National
29.	Prof. Rakhi Chaturvedi	1st Asia-Pacific Congress on Alternate Crops (APCAC – 2024)	The Assam Royal Global University, Guwahati, Assam	09/09/2024 to 12/09/2024	National
30.	Krishna Kant Pachauri and <b>Prof. Rakhi Chaturvedi</b>	International Conference on Frontier Areas of Science & Technology (ICFAST-2024), Indian JSPS Alumni Association (IJAA) & Indian Institute of Technology Guwahati	Indian Institute of Technology Guwahati, Guwahati, Assam	06/09/2024 to 07/09/2024	International
31.	Dr. Priyadarshani Yengkokpam and <b>Prof. Rakhi Chaturvedi</b>	International Conference on Frontier Areas of Science & Technology (ICFAST-2024), Indian JSPS Alumni Association (IJAA) & Indian Institute of Technology Guwahati	Indian Institute of Technology Guwahati, Guwahati, Assam	06/09/2024 to 07/09/2024	International
32.	Prof. Rakhi Chaturvedi	Society for In Vitro Biology Meeting (SIVB 2024)	St. Louis, Missouri, USA	08/06/2024 to 12/06/2024	International
33.	Prof. Rajaram Swaminathan	IUPAB Meeting 2024	Kyoto, Japan	24-06-2024 to 28-06-2024	International
34.	Prof. Ranjan Tamuli	Bioinformatics and Molecular Biology Techniques	Gauhati University	22.11.2024	National
35.	Prof. Ranjan Tamuli	3 <sup>rd</sup> National Conference of North	NEMPSCON and GMCH	16.11.2024	National

		Eastern Medical Pharmacological Society (NEMPSCON 2024), Guwahati Medical College and Hospital (GMCH)			
36.	Dr. Shirisha Nagotu	Moderator for the session “Imaging Infrastructure Around the Globe” on Day 1 of the India Bio-imaging meeting	IISER Pune	12/12/24	National
37.	Prof. Utpal Bora	National Conference on Polymers and Advanced Functional Materials (NCPAFM)	IASST, Guwahati.	13/12/2024 to 14/12/2024	National
38.	Prof. Utpal Bora	5th International Conference on Contemporary Antimicrobial Research 2024	NEHU, Shillong.	08/12/2024 to 10/12/2024	International
39.	Prof. Utpal Bora	International Conference on Fisheries Biotechnology	ICAR- Central Institute of Fisheries Education, Mumbai.	17/03/2025 to 18/03/2025	International
40.	L Rangan	International conference on Biotechnology, Medicine and Cancer Therapeutics	SV University	25-27 Dec 2024	International
41.	L Rangan	Workshop on Women Leader in IITs	IIT Chennai	31/08/2024 & 22/11/2024	National

**INVITED LECTURES OF FACULTY: IN INDIA, ABROAD (1 APRIL 2024– 31 MARCH 2025)**

Sl.No.	Name of Faculty	Name of Lecture	Name of Inst./Org.	Place	Date
1.	Prof. Ajaikumar B. Kunnumakkara	Methods to Enhance the Bioavailability of Curcumin: Insights and Discoveries	University Sains Malaysia	Malaysia	May 13 -14, 2024
2.	Prof. Ajaikumar B. Kunnumakkara	TIPE 2 as a novel molecular target for lung cancer	Research world	Bangkok, Thailand	June 21 - 22, 2024
3.	Prof. Ajaikumar B. Kunnumakkara	Mortalin: A potential therapeutic target in oral cancer	6 <sup>th</sup> international seminar on smart molecules of natural resources (ISSMART) and Asian Federation of	Malang, Indonesia	Aug 26 - 27, 2024

			Biotechnology (AFOB)		
4.	Prof. Ajaikumar B. Kunnumakkara	Withaferin A is a promising natural drug for oral cancers: Insights from clinical resources	Widyaloka Brawijaya University	Malang, Indonesia	Sep 28 - 29, 2024
5.	Prof. Ajaikumar B. Kunnumakkara	Development of novel therapeutics for the treatment of triple negative breast cancer	National University of Singapore	Singapore	Oct 1 - 2, 2024
6.	Prof. Ajaikumar B. Kunnumakkara	Potential role of mortalin as a novel molecular target for oral cancer	Global Society for Research and Development (GSRD)	Dubai, UAE	Oct 13 - 14, 2024
7.	Prof. Ajaikumar B. Kunnumakkara	Ashwagandha - a new hope for treating oral cancers, a scary threat in the North-East region of India	All India Institute of Ayurveda (AIIA), New Delhi	New Delhi	Oct 17 - 19, 2024
8.	Prof. Ajaikumar B. Kunnumakkara	Emerging health issues and challenges: Perspective from North East India	Physiological Society of India, Tripura University	Agartala, Tripura	Nov 15 - 17, 2024
9.	Prof. Ajaikumar B. Kunnumakkara	Mortalin as a promising target for drug development for oral cancers	Jawaharlal Nehru University	New Delhi	Nov 23 - 25, 2024
10.	Prof. Ajaikumar B. Kunnumakkara	Withaferin A as a promising natural drug for the treatment of oral cancer	Dr. D. Y. Patil Vidyapeeth Pune	Pune, Maharashtra	Nov 26 - 29, 2024
11.	Prof. Ajaikumar B. Kunnumakkara	Why Ashwagandha for Oral cancers?	CSIR-IITR, Lucknow	Lucknow	Nov 28 - Dec 1, 2024
12.	Prof. Ajaikumar B. Kunnumakkara	Ethnopharmacology: Role in Affordable Healthcare	NIPER Guwahati	Guwahati	Feb 22, 2025
13.	Prof. Arun Goyal	Multifunctional and highly efficient endoglucanase ( <i>RfGH5_4</i> ) from <i>Ruminococcus flavifaciens</i> for lignocellulosic biomass conversion	Banaras Hindu University (BHU),	Varanasi, UP	April 4, 2024
14.	Prof. Arun Goyal	Structure and functional analysis of recombinant rhamnogalacturonan acetyl esterase and its role in inhibiting colon cancer cells and colon-targeted drug delivery by forming hydrogels.	International Conference on Advanced Bioprocessing Technologies for Biomass Conversion - Sustainability and Bioresource Management (IBA-IFIBiop XI, 2024)	Hong Kong, China.	December 01 - 04, 2024

15.	Prof. Arun Goyal	Lignocellulosic bioethanol production from delignified rice straw using tailor-made crude recombinant hydrolytic enzyme cocktail and <i>Saccharomyces cerevisiae</i> MTCC170. IX	International Conference on Sustainable Energy and Environmental Challenges, (IX SEEC, 2024)	IIT Mandi, HP, India.	December 12-14, 2024
16.	Prof. Arun Goyal	Recombinant carbohydrate enzyme in conversion of waste biomass to biovalued products (Endo- $\beta$ -mannanase (CtManf) of <i>Clostridium thermocellum</i> for recovery of Manno-oligosaccharides from Coprameal and their prebiotic and anticancer properties)	Department of Microbiology, Maharishi Dayanand Saraswati University,	Ajmer, Rajasthan	February, 7, 2025
17.	Prof. Arun Goyal	Bioethanol from rice straw using recombinant hydrolytic enzyme cocktail and <i>Saccharomyces cerevisiae</i> .	Japan-NER Sustainable Technologies Cooperation Symposium (JNSTCS) 2025	IIT Guwahati, Assam, India	March 3 -5 2025
18.	Prof. B. Anand	CRISPR-Cas System: From Genome Defence to Tinkering Genome	Manipal University, Jaipur	Jaipur	13/09/2024
19.	Prof. B. Anand	Panel Discussion: "Next Generation Biotechnology: Transforming Healthcare and Medicine in India"	India International Science Festival 2024	IIT Guwahati	01/12/2024
20.	Prof. B. Anand	CRISPR-Cas System: From Genome Defence to Tinkering Genome	Pondicherry University	Puducherry	03/03/2025
21.	Dr. Kapish Gupta	Mechanobiology	NUS Singapore	Online	12 November 2024 and 26 November 2024
22.	Dr Kusum Kumari Singh	India EMBO Lecture Course: "BioID proximity mapping reveals novel SAP18 interactome in the presplicesomal complex."	NCCS, Pune	Pune	24/02/2025
23.	Dr Kusum Kumari Singh	Nobel Lecture Series: "Regulation of RNA Binding Proteins via microRNAs."	Tezpur University	Tezpur	29/01/2025
24.	Dr Kusum Kumari Singh	National Conference on Advanced Biotechnology and Biosystem: "Role of NMD factor in faulty transcripts degradation."	DDU Gorakhpur University	Gorakhpur	12/11/2024

25.	Dr Kusum Kumari Singh	FASEB SRC: "Impairment of NMD upon UPF3B-KO cells."	University Institute of Lisbon	Lisbon	20/08/2024
26.	Prof. Kannan Pakshirajan	Biological removal and recovery of lanthanum from electronic waste leachate using the lanthanum binding protein lanmodulin from <i>Methylobacterium extorquens</i>	University of Galway	Galway, Ireland	15/08/2024
27.	Prof. Kannan Pakshirajan	Environmental effects and toxicity removal of chemicals and fertilizers	Central Industrial Security Force (CISF) CISF NES	CISF NES HQr Guwahati	18/10/2024
28.	Prof. Kannan Pakshirajan	Functional bionanominerals for sustainable circular economy	Dr. B R Ambedkar National Institute of Technology (NIT) Jalandhar	Jalandhar, Punjab, INDIA	24/01/2025
29.	Prof. Kannan Pakshirajan	Unraveling the potential of lanmodulin as a peptide-based platform for biorecovery and biosensing of rare earth elements	University of Galway	Online	20/03/2025
30.	Prof. Kannan Pakshirajan	Functional biometalsulfide and selenium nanoparticles from wastewater: A circular economy approach	Siksha 'O' Anusandhan	Bhubaneswar Odisha	28/03/2025
31.	Dr. Lalit Mohan Pandey	Expert Talk on "Nanomaterials and their applications in Biotechnology"	NIT Jalandhar		Jan 20-24, 2025
32.	Dr. Lalit Mohan Pandey	Plenary talk on "Biotechnology and Sustainability"	Rabindranath Tagore University, Hojai, Assam, India		March 22–24, 2025
33.	Dr. Lalit Mohan Pandey	Invited lecture on "Biointerface Engineering and Biomaterials"	Indian Institute of Technology Guwahati, Assam		August 09-11, 2024
34.	Prof. Pranab Goswami	Photosynthetic Microbial Fuel Cell: A Bio-inspired System for Generating Green Energy and Developing Sensors	School of Energy, IIT Guwahati	IIT Guwahati, Assam	03/01/2025
35.	Prof. Rakhi Chaturvedi	Sustainable Production of Plant Secondary Metabolites by the Application of Cellular Potency	Department of Bioengineering & Biotechnology, Birla Institute of Technology Mesra, Ranchi, Jharkhand, India	Birla Institute of Technology Mesra, Ranchi, Jharkhand, India	27/3/2025 to 29/03/2025

36.	Prof. Rakhi Chaturvedi	Application of Cellular Totipotency in Large Scale Clonal Propagation and Sustainable Metabolite Production in Plants	Department of Life Science, Manipur University, Canchipur, Imphal	Manipur University, Canchipur, Imphal	03/3/2025 to 09/03/2025
37.	Prof. Rakhi Chaturvedi	Scaling-Up Plant Tissue Culture Products Through Bioreactor Technology	46th Annual Meeting of Plant Tissue Culture Association India Symposium on Current Trends and Challenges in Plant Biotechnology (CTCPB)	BITS Pilani K K Birla Goa Campus, Goa	24/02/2025 to 26/02/2025
38.	Prof. Rakhi Chaturvedi	Bioreactor Technology: A sustainable tool for commercial scale production of plant cell derived products	International Conference on Advances in Medicinal and Aromatic Plant Research in Context to Indian Ocean Region (Ensuring Trade, Sustainability and Global Transformation) (IORA-AMAR)	CSIR - Central Institute of Medicinal and Aromatic Plants (CIMAP), Lucknow	04/02/2025 to 06/02/2025
39.	Prof. Rakhi Chaturvedi	Sustainable Tools for Commercial Scale Production of Plant Products	Path to sustainable future: Innovations in Biomanufacturing (IGSTC-NCCS workshop)	National Centre for Cell Sciences, NCCS complex, Pune	14/10/2024 to 15/10/2024
40.	Prof. Rakhi Chaturvedi	Cellular totipotency favouring large scale sustainable plant propagation	1st Asia-Pacific Congress on Alternate Crops (APCAC – 2024)	The Assam Royal Global University, Guwahati, Assam	09/09/2024 to 12/09/2024
41.	Prof. Rakhi Chaturvedi	Bioreactor Technology: A sustainable tool for conservation and commercial scale production of plant bioresources	National Academy of Sciences, India (NASI)	Rajiv Gandhi University, Itanagar, Arunachal Pradesh	09/09/2024 to 10/09/2024
42.	Prof. Rakhi Chaturvedi	Bioreactor technology: A sustainable tool for commercial scale production of plant cell derived products	Society for In Vitro Biology Meeting (SIVB 2024)	St. Louis, Missouri, USA	08/06/2024 to 12/06/2024
43.	Prof. Rajaram Swaminathan	Detection of Post-translational Modifications in Proteins by UV-Visible Absorption Spectra arising from Charge Transfer	M S University Baroda	Vadodhara	27 Dec 2024
44.	Prof. Rajaram Swaminathan	UV-Visible Spectra in Proteins arising from Charge Transfer: A useful intrinsic	IIT Bombay	Mumbai	21 Nov 2024

		probe to investigate changes in protein structure			
45.	Prof. Ranjan Tamuli	Concept of Bacterial Transformation and Plasmid Isolation	Gauhati University, and DBT, India	Department of Botany, Gauhati University	22.11.2024
46.	Prof. Ranjan Tamuli	Antifungals, artificial intelligence, and personalized medicine: a holistic approach	North Eastern Medical Pharmacological Society (NEMPSCON 2024), Guwahati Medical College and Hospital (GMCH)	Guwahati Medical College and Hospital	16.11.2024
47.	Dr. Souptick Chanda	Design rationale of custom 3D printable lattice structured hip stem: a futuristic scheme	Stryker India Pvt Ltd	R&D Building, IIT Guwahati	05/07/2024
48.	Dr. Souptick Chanda	Custom 3D printable lattice structured hip stem: A future for total hip replacement	Sadhana Editorial Board, Indian Academy of Sciences	IIT Bhubaneswar	09/11/2024
49.	Dr. Souptick Chanda	Custom 3D printable lattice structured hip stem: A future for total hip replacement	Sadhana Editorial Board, Indian Academy of Sciences	KIIT Bhubaneswar	10/11/2024
50.	Dr. Souptick Chanda	Lattice hip stems: The present and the future	<i>SPARC sponsored international workshop on Recent Trends in Electromagnetics and Optics (RTEOP) special focus on Biomedical application, IEST</i>	IEST Shibpur, Howrah	07/01/2025
51.	Dr. Souptick Chanda	Customizable implants: The era of 3D printing	Jindal Steel & Power	Pragati Manor, Guwahati	23/01/2025
52.	Dr. Shirisha Nagotu	“Organelle dynamics: role in cellular ageing and age-associated diseases” at Longevity India conference	Indian Institute of Science	Bangalore	11/03/25
53.	Dr. Shirisha Nagotu	“Organelle dynamics: role in cellular ageing and age-associated diseases” at 1st International Conference on Biomedical and Applied Clinical Sciences (BioMACS’25)	Woxen University	Hyderabad	25/02/25
54.	Dr. Shirisha Nagotu	“Organelle dynamics: role in cellular ageing and age-associated diseases” at 21st Biennial International Conference of AGI 2024 on Elderly Empowerment & Graceful Ageing Conference	National Institute of Health and Family Welfare	New Delhi	14/12/24

		Association of Gerontology, India			
55.	Dr. Shirisha Nagotu	Microscopy facility: Indian Imaging Cores	IISER Pune	Pune	12/12/24
56.	Prof. Utpal Bora	Engineering Advanced Biomaterials with Synthetic Biology	IASST, Guwahati.	Guwahati	14/12/2025
57.	Prof. Utpal Bora	Green Remedies: Medicinal Plants in a Changing Climate	NEHU, Shillong.	Shillong	10/12/2024
58.	Prof. Utpal Bora	Scaffold Engineering	ICAR- Central Institute of Fisheries Education, Mumbai.	Mumbai	17/03/2025
59.	Prof. Latha Rangan	Partial estrogen-like effects of karanjin and the mechanism involved.	SV University Tirupati	Tirupati, AP	27/12/2024
60.	Prof. Latha Rangan	Legume Gold Mine- Pongam Saga	Tezpur university	Tezpur, Assam	16/12/2024
61.	Prof. Latha Rangan	Exploring Intersectionality: Gender, Ethnicity, and Identity in Northeast India	NEHU	Shillong, Meghalaya	14-15/06/2024
62.	Prof. Siddhartha Sankar Ghosh	Theranostics: The Offspring of Therapeutics and Diagnostics	11th Annual Scientific Conference; ACCLMPCON 2025	Dichang Resort, Guwahati, Assam	11/01/2025
63.	Prof. Siddhartha Sankar Ghosh	Two Decades Advancing Nanotheranostics: From Laboratory to Clinical Applications	Indo-Japan Symposium on Nanotheranostics (InJaNa 2024)	IIT Roorkee	23/04/2025

**VISITORS FROM OTHER INSTITUTES/UNIVERSITIES/ORGANISATIONS/INVITED LECTURES (1 APRIL 2024– 31 MARCH 2025)**

Sl. No.	Name	Name of Inst./Univ./Org.	Purpose/ Name of Lecture	Date	Remarks
1.	Dr Rajesh S. Gokhale	Secretary, DBT, Govt. India	Discussion and interaction with BSBE faculty members	01/12/2024	
2.	Prof. Nitish R Mohapatra	Department of Biotechnology, IIT Madras	Post-transcriptional regulation of cardiometabolic-susceptibility genes by microRNAs	25/10/2024	Invited Talk
3.	Prof. Hiroyuki Koyama	Professor of Plant Nutrition at the Faculty of Applied Biological Science, Gifu University, Japan	Interaction with faculty members of BSBE department	06/09/2024	He joined Dept. of BSBE as Honorary Professor
4.	Dr. Aravind Penmatsa	Indian Institute of Science, Bangalore	Ion-coupled transport in neurons and superbugs	04/11/2024	Dr. Aravind is a recipient of Vigyan Yuva-Shanti Swarup

					Bhatnagar Award in 2024
5.	Shri Khim Panthi	Tribhuvan University, Nepal	Indian Science Research Fellowship	April-May, 2024	
6.	Prof. Aron Lau	University of Strathclyde, Glasgow	Visiting lab	December 10, 2024	
7.	Prof. Seetharaman Vaidyanathan	Sheffield University, England	Towards sustainable biomanufacturing in a circular bioeconomy	16-08-2024	
8.	Dr. Durgadas P. Kasbekar	CCMB and CDFD (Retd.)	Editorial Board Meeting and mini-symposium on October 4, 2025	04.10.2025	Editor, Journal of Genetics
9.	Dr. Madhusudan Reddy Nandineni	Staff Scientist and Group Leader, Centre for DNA Fingerprinting and Diagnostics (CDFD), Hyderabad	DNA profiling in criminal investigations and mass disaster victim identification	04.10.2025	Institute Lecture
10.	Prof. M. Michael Gromiha	Professor, Department of Biotechnology, Indian Institute of Technology Madras	Bioinformatics approaches for understanding mutational effects on protein structure and function: implications to diseases	17/05/2025	Bio-Talk at the BSBE department
11.	Prof. Avadesha Surolia	Professor of Biophysics, Molecular Biophysics Unit, Indian Institute of Science, Bangalore	Discovery of an allosteric inhibitor of M. Tuberculosis Ornithine acetyltransferase: Implications towards novel combinatorial therapy	04/11/2024	Invited talk
12.	Prof. Amitabha Chattopadhyay	CSIR Bhatnagar Fellow, Centre for Cellular and Molecular Biology, Uppal Road, Hyderabad	G Protein-Coupled Receptors and Cholesterol Sensitivity: Excitements and Challenges	04/11/2024	Invited talk
13.	Dr. Nobuyoshi Ishino and team	R&D Operation and Business Development Group at IBIDEN Co. Japan	Technical discussion with the IITG team lead by Prof. Lingaraj Sahoo, Professor at BSBE department	08/08/2024	

**SEMINARS/WORKSHOPS/CONFERENCES/SHORT-TERM COURSES ORGANISED (1 APRIL 2024– 31 MARCH 2025)**

Sl. No.	Name of Faculty (Convener/ Co-ordinator, etc.)	Name of Sem./Wor./Con.	Funded By	Date	International/ National	No. of participants
1.	Prof. B. Anand and Dr. Kusum K. Singh	12 <sup>th</sup> RNA Group Meeting (RNA Meet -2024)	SERB	22/05/2024 – 24/05/2024	National	150

2.	Dr. Kapish Gupta	BSBE Alumni meet	NA	26-27 October 2024	NA	100
3.	Dr. Kusum Kumari Singh	12 <sup>th</sup> RNA Group Meeting	SERB	22 to 24 <sup>th</sup> May, 2024	National	130
4.	Dr. Lalit Mohan Pandey	Curtain raiser event on Indian Knowledge Systems	Pandit Hemchandra Goswami Foundation	06 <sup>th</sup> April, 2024	International	200+
5.	Dr. Lalit Mohan Pandey	Unraveling Indian Knowledge Across Asia (UNIKAA 2024)	North Eastern Council, Govt. of India (NEC), Indian Council of Philosophical Research (ICPR), Indian Council of Astrological Sciences (ICAS)	3 <sup>rd</sup> to 5 <sup>th</sup> October, 2024	International	350+
6.	Dr. Lalit Mohan Pandey	Leadership Summit 2024	NRL, BNY, Micronesia, NetApp	October 19- 20, 2024	National	1000
7.	Dr. Lalit Mohan Pandey	BSBE Alumni Meet 2024	Merck, Orbitek, Molbiogen, Digitek Solutions, BDS Analytical, Innovative Technologies, Jaldhara	October 26 - 27, 2024	National	100
8.	Prof. Ranjan Tamuli, Organizer	DNA, chromosomes, genotypes, phenotypes, and the mighty Brahmaputra	Indian Academy of Sciences, Bangalore	04.10.202 4	National	~50
9.	Prof. Ranjan Tamuli (Member, Organizing Committee)	India International Science Festival (IISF) 2024	Government of India	30.11.202 4 to 03.12.202 4	International	Over 15000

**PATENTS (1 APRIL 2024– 31 MARCH 2025)**

**No. of Patents Applied: 04**

**No. of Patents Granted: 06**

Sl. No.	Name of Faculty and co researcher	Name	Date Applied/Granted	Application No.	Remarks
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1.	<b>Prof. Pranab Goswami,</b> Lightson Ngashangva, and Smita Das	A paper platform-based Methanol detection kit	03/07/2024	202031004522	Granted patent No. 544090
2.	<b>Prof. Pranab Goswami,</b> Priyanki Das, Lepakshi Borbora, and Arup Das	Enzymatic biofuel cell	17/09/2024	201931046354	Granted patent No. 550361
3.	<b>Prof. Rakhi Chaturvedi</b> and Krishna Kant Pachauri	A stirred tank photo-bioreactor	29/01/2025	202531007470	Applied
4.	<b>Prof. Rakhi Chaturvedi</b> and Krishna Kant Pachauri	Method and system for production of N-alkylamides from <i>Spilanthus</i> species	17/12/2024	202431100100	Applied
5.	Dr. Souptick Chanda Mr. Jaideep Singh Bhardwaj	VOIX LATTICE SYSTEM AS BONE REPLACEMENT SCAFFOLDS	Applied on 12/03/2025	VOIX LATTICE SYSTEM AS BONE REPLACEMENT SCAFFOLDS	Request for examination (form 18) filed
6.	<b>Dr. Souptick Chanda</b> Mr. Jaideep Singh Bhardwaj	VOIX LATTICE SYSTEM AS BONE REPLACEMENT SCAFFOLDS	Applied on 12/03/2025	VOIX LATTICE SYSTEM AS BONE REPLACEMENT SCAFFOLDS	Request for examination (form 18) filed
7.	<b>Prof. Sanjukta Patra</b> and Mr. Satyam	Method of producing recombinant Human xanthine oxidase using <i>Pichia pastoris</i> for bioremediation of azo dyes	19/06/2024	202431047152	Published
8.	<b>Prof. Sanjukta Patra</b> and Mr. Satyam	IoT enabled real-time water monitoring system with hybrid power management and remote data accessibility	03/01/2025	202531000806	Published
9.	<b>Prof. Sanjukta Patra</b> and Mr. Satyam	Energy efficient water distillation unit using Piezoelectric and Peltier technologies with sterile UV-C integrated water collector	09/01/2025	202531002175	Published
10.	<b>Prof. Sanjukta Patra</b> and Dr. Satakshi Hazra	Nucleic acid aptamer binding to Ag85b	12/04/2024	202431029861	Published

**AWARDS AND HONOURS (1 APRIL 2024– 31 MARCH 2025)**

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. Ajaikumar B. Kunnumakkara	Highly ranked scholar	ScholarGPS	In recognition to exceptional productivity, noteworthy impact and quality of scholarly work in the top 0.05% of scholars in the Specialty worldwide.	Recognition
2.	Prof. Ajaikumar B. Kunnumakkara	Biology and Biochemistry leader award, 2024	Research.com	For top scientist in the field of Biology and Biochemistry	Recognition
3.	Prof. Ajaikumar B. Kunnumakkara	Best scientist in the country area: Biological sciences	AD Scientific index	Based on total H-index scores	Recognition
4.	Prof. Arun Goyal	Distinguished Scientist Award 2024	International Bioprocessing Association (IBA), Hong Kong, PR China	Excellent accomplishments in the fields of Energy, Environment, Sustainability	Medal, citation, Plaque
5.	Prof. Arun Goyal	Elected Fellow, (FACCTI), December 4, 2024.	Association of Carbohydrate Chemists and Technologists of India (ACCTI), Gauhati University Assam, India	Excellence in structural and functional studies of Carbohydrate active enzymes	Certificate
6.	Prof. Arun Goyal	Elected Fellow, (FSEES), December 14, 2024	International Society of Energy, Environment and Sustainability (ISEES), IIT Mandi, India	Excellent achievements in the fields of Energy and Environment	Citation and plaque
7.	Dr. Kusum Kumari Singh	FASEB's SRC Award	FASEB's 2024 Science Research Conferences	offset of participation costs	Cash
8.	Souptick Chanda	Editorial Board Member	Scientific Reports	Honorary	Honorary
9.	Dr. Shirisha Nagotu	Mid-career Lady Gerontologist Award by the Association of	21st Biennial International Conference of AGI 2024 on Elderly Empowerment &	Association award for mid-career scientists	Cash and Citation

		Gerontology India	Graceful Ageing Conference Association of Gerontology, India		
10.	Prof. Utpal Bora	Appointed as Adjunct Professor	University of Chittagong	Honorary	Honorary

**STUDENTS' ACHIEVEMENTS (1 APRIL 2024– 31 MARCH 2025)**

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.	Ms. Anjana Sajeev	DAILAB PRIME CAFÉ PLUS 2024	Advanced Industrial Science and Technology, Japan	Best presentation	Cash
2.	Mr. Aviral Kumar	Foreign travel grant	CSIR	To attend and present paper	Cash
3.	Mr. Aviral Kumar	ISSMART	Asian Federation of biotechnology	Best presentation	Citation
4.	Ms. Bintee	3 <sup>rd</sup> International Conference of Biological Science (ICOBIO) 2024	Universitas Brawijaya, Indonesia	Best Oral Presenter Award	Trophy
5.	Ms. Bintee	DAILAB PRIME CAFÉ PLUS 2024	Advanced Industrial Science and Technology, Japan	Best presentation	Cash
6.	Ms. Anjana Sajeev	DAILAB PRIME CAFÉ PLUS 2024	Advanced Industrial Science and Technology, Japan	Best presentation	Cash
7.	Ashwani Kumar Verma	Best Paper Award	At IX International Conference on Sustainable Energy and Environmental Challenges, IIT Mandi, Himachal Pradesh, India	Best paper award for research work presentation in conference	Medal
8.	Bipasha Choudhury	Best Paper Award	At IX International Conference on Sustainable Energy and Environmental Challenges, IIT Mandi, Himachal Pradesh, India	Best paper award for research work presentation in conference	Medal
9.	Madhulika Shrivastava	Best Paper Award	At IX International Conference on Sustainable Energy and Environmental Challenges, IIT Mandi, Himachal Pradesh, India	Best paper award for research work presentation in conference	Medal
10.	Annu Anand	Best Poster presentation award	At CARBO-XXXVIII: International Conference on "Recent Advances in Glycoscience and Glycotechnology",	Best Poster presentation award in conference	Medal

			Gauhati University, Guwahati, assam, India		
11.	Yumnam Robinson Singh	ANRF (formerly SERB) International Travel Grant	At the International Conference on Advanced Bioprocessing Technologies for Biomass Conversion- Sustainability and Bioresource Management (IBA-IFIBIOP XI, 2024) held at Hong Kong, China	Received the financial assistance from Anusandhan National Research Foundation (ANRF) to present his work	Cash
12.	Sweta Kumari	EMBL Corporate Partnership Programme fee waiver	EMBL, 2025	Registration Fee Waiver	Cash
13.	Ayushi Rehman	EMBL Corporate Partnership Programme travel grant	EMBL, 2025	Travel Grant	Cash
14.	Ayushi Rehman	ITS-ANRF	ANRF, 2025	Travel Grant	Cash
15.	Ayushi Rehman		EMBO, 2024	Registration Fee Waiver	Cash
16.	Priyanka Yadav		EMBO, 2024	Registration Fee Waiver	Cash
17.	Ms. Shilpa Nandi	Conference: Environment 2024 (Session theme: Environmental Biotechnology)	Indian Institute of Technology Guwahati, Assam	Best oral presentation	Citation
18.	Ms. Jaya Bharti Singh	International Conference on Unraveling Indian Knowledge Across Asia	Indian Institute of Technology Guwahati, Assam	Best oral presentation	Citation
19.	Mr. Soumyajit Das	International Conference on Unraveling Indian Knowledge Across Asia	Indian Institute of Technology Guwahati, Assam	Best oral presentation	Citation
20.	Ms. Prattusha Khan	Best poster presentation award	IIT Guwahati	Poster presentation in Research and Industrial Conclave-Integration 2024	Momento prize
21.	Ms. Pratibha Koundal	Best poster presentation award	Birla Institute of Technology, Mesra, Ranchi	Poster presentation in Frontiers in Translational Bioengineering for Healthcare, 2025	Momento prize
22.	Mr.Suraj_Kumar,	IEEE Student Travel award	<a href="https://ieeesmc2024.org/home">https://ieeesmc2024.org/home</a>	To attend conference	Travel Grant
23.	Vishnu K.N, Doli Hazarika and Shivani Mittal (participated as a team)	Research Pavilion Healthcare Award	PIWOT 2025	Presented ongoing research at Neural Engineering lab,	

				Dept of BSBE, IITG	
24.	Vishnu K.N, Doli Hazarika and Shivani Mittal (participated as a team)	Finalist	BioNest 2025	Presented an idea to develop a biomedical device to measure human attention	
25.	Mr. Krishna Kant Pachauri	Best oral presentation	BITS Pilani K K Birla Goa Campus, Goa	Oral presentation	Medal and certificate
26.	Ms. Chetna Sharma	3 <sup>rd</sup> position in poster presentation	BITS Pilani K K Birla Goa Campus, Goa	Poster presentation	Certificate
27.	Mr. Jaideep Singh Bhardwaj	Pratibha Samman	Aghariya community education encouragement committee	Research in Biotechnology	Shield and Certificate
28.	Mr. Jaideep Singh Bhardwaj	Best Interactive Pavilion	India International Science Festival (IISF) 2024	Demonstrated Research work in a stall	Shield and Certificate
29.	Mr. Jaideep Singh Bhardwaj	Research Podium (Winner)	PanIIT World of Technology (PIWOT) Conference 2025	Demonstrated Research work in a stall	INR 5,000/- cash
30.	Mr. Jaideep Singh Bhardwaj	Financial grant, International Travel Scheme	Anusandhan National Research Foundation (ANRF)	To participating in "30th Congress of the European Society of Biomechanics, Switzerland (06 July, 2025 to 09 July, 2025)	Financial Assistance
31.	Ms. Divya Saini	Student Intern (STEM Educator)	IIT Guwahati, RAA (Rashtriya Avishkar Abhiyan), under the supervision of the Government. Of Assam	Conducted STEM activities with secondary school students of Assam	INR 30,000/- cash
32.	Harish Kumar, Mohammed Askar and Sulaiha Juvairiya	Vishwakarma Awards 2024	Maker Bhavan Foundation in association with iTIC, IIT Hyderabad	Development of prototype on the title 'Harnessing Metal-Organic Framework and MXene: A sequential continuous column approach to combat textile dye effluent'	Cash prize: INR 1,00,000
33.	Rakshita Mehta	New Generation Ideation Contest (NGIC-2024)	Hindustan Petroleum (HPCL)	Idea proposed on the topic, 'One pot hydrogen production coupled with electricity generation and fertilizer production: A zero-waste generation approach'	Cash prize: INR 10,000

34.	Ajithkumar Veluchamy	Best Poster Presenter Award	IIT Madras	Poster presentation on the topic entitled, 'Process Optimization and Metabolite characterization of <i>Brevundimonas naejangsanensis</i> mediated Azo-dye degradation: A Promising Bioremediation strategy for Textile Effluent dyes'	Certificate
35.	Ragavan Chandrasekar	Best Oral Presenter Award	Banaras Hindu University	Oral presentation	Memento and Book
36.	Mr. Satyendu Nandy	3 <sup>rd</sup> Best oral presentation Award at VIBCON 2024 conference	TANUVAS, Chennai		Medal
37.	Mr. Nilave Ranjan Bora	1 <sup>st</sup> Best oral presentation Award at 5th International Conference on Contemporary Antimicrobial Research, 2024	NEHU, Shillong		Medal
38.	Ms. Tanveera Sarhadi	Oral Talk Prize	Conference on Biomedical and Applied Clinical Sciences (BioMACS, 2025) at Woxsen University, Hyderabad, (25 <sup>th</sup> -28 <sup>th</sup> February, 2025)	Oral Presentation	Certificate
39.	Ms. Isha Kashyap	Poster Prize	21st Biennial International Conference of AGI 2024 on Elderly Empowerment & Graceful Ageing Conference Association of Gerontology, India, (13 <sup>th</sup> -15 <sup>th</sup> December, 2024)	Poster Presentation	Certificate and Cash
40.	Mr. Satyam	Vishwakarma Awards 2023	Organized by IIT Delhi & Makerbhawan Foundation	Best Product Design Award	Cash
41.	Mr. Sonu S S	Erasmus+ KA171 Academic Exchange Fellowship	Erasmus+ KA171 academic exchange program at Universitat Politècnica de València, Valencia, Spain	Student academic exchange program for a 5-month period starting from January Date:- 14th to June 29th, 2025	Certificate

42.	Ms. Arisha Arora	Certificate of Achievement	RIC in Indian Institute of Technology Guwahati	1 <sup>st</sup> place in Scientifique: Poster presentation	Certificate and Momento
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### 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 and optimization, surgical simulations and application of soft computing/AI in allied fields
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	Structure and functional studies and applications of carbohydrate active enzymes
12.	Gupta Kapish	NUS Singapore	Assistant Professor	Toxicity Assay, Liver Mechanobiology, Cholestasis, Drug Testing, Biliary Atresia
13.	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
14.	Jaganathan Bithiah G.	Johann Wolfgang Goethe University, Frankfurt, Germany	Professor	Stem Cell Biology, Cancer signaling
15.	Kanaujia Shankar Prasad	Indian Institute of Science Bangalore	Professor	Structural Biology and Bioinformatics Studies

16.	Kumar Manish	University of Maryland, College Park, USA	Professor	Investigating the molecular basis of host–pathogen interactions in infectious diseases, with a focus on spirochetes- <i>Leptospira interrogans</i> and <i>Borrelia burgdorferi</i> . Key areas include gene expression profiling, vaccine development targeting outer membrane proteins, and the study of vector-borne zoonotic diseases with public health relevance
17.	Kumar Sachin	University of Maryland, College Park, USA	Professor	Molecular biology of paramyxoviruses, flaviviruses
18.	Kunnumakkara A. B.	Amala Cancer Research Center, Thrissur, Kerala, India, 2005 University of Calicut, Kerala	Professor	Role of inflammatory pathways in cancer development, Identification of novel biomarkers for cancer diagnosis and prognosis, Cancer drug discovery.
19.	Limaye Anil Mukund	Indian Institute of Science Bangalore	Associate Professor	Hormonal regulation of gene expression
20.	Maiti Soumen Kumar	Indian Institute of Technology Bombay	Associate Professor	Bioprocess Engg, Biofuel
21.	Mandal Biman B	Indian Institute of Technology Kharagpur	Professor	Regenerative Medicine, Biomaterials, Tissue Engineering, Stem Cells
22.	Nagotu Shirisha	University of Groningen, the Netherlands	Assistant Professor	Cell biology, Organelle biology, Cellular Ageing, Membrane dynamics
23.	Pakshirajan Kannan	IIT Madras	Professor	Environmental Biotechnology
24.	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.
25.	Patra Sanjukta	Central Food Technological Research Institute, Mysore	Professor	Enzyme and Microbial Technology Environmental Biotechnology Diagnosis and therapeutics
26.	Ramakrishnan Vibin	Indian Institute of Technology Bombay	Professor	Network medicine, Bio-Nano catalysis, Drug delivery vehicles
27.	Rangan Latha	University of Madras	Professor	Applied Biodiversity
28.	Sahoo Lingaraj	Maharshi Dayanand University, Rohtak, India	Professor	Plant Molecular Biology
29.	Saini Gurvinder Kaur	Andhra University, Visakhapatnam	Professor	Fungal Biotechnology, Engineering entomopathogenic fungi
30.	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
31.	Selvaraju Narayanasamy	Indian Institute of Technology Madras, India	Associate Professor	Environmental Biotechnology, Wastewater remediation, Microbial Biodiesel production, Advanced Oxidation Process
32.	Senthilkumar S	Central Leather Research Institute, Chennai	Professor	Bioprocess Analytical Technology (BioPAT), Metabolic Engineering

33.	Singh Himanshu	Tata Institute of Fundamental research (TIFR) Mumbai	Assistant Professor	Chemical Biology, Biophysical Chemistry, Molecular Biophysics, Structural Biology, and Biomolecular NMR Spectroscopy and Applications
34.	Singh Kusum K	Institute of Molecular Medicine, Heinrich-Heine University of Duesseldorf, Germany	Assistant Professor	Genome Editing, Alternative Splicing; Prediction of splicing using neural network; Regulation of gene expression; functions of mRNA-binding proteins (mRNPs) in isoform switching; implications in diseases.
35.	Swaminathan Rajaram	Tata Institute of Fundamental Research	Professor	Proteins, Spectroscopy, Biochemistry
36.	Tamuli Ranjan	Centre for Cellular and Molecular Biology, Hyderabad	Professor	Fungal biology, genetics, molecular biology, cell signaling, banana fiber, rice
37.	Thummer Rajkumar P	University of Groningen, Groningen, The Netherlands	Assistant Professor	Stem Cell Engineering and Regenerative Medicine
38.	Trivedi Vishal	Central Drug Research Institute, Lucknow	Professor	Intracellular Signaling in Plasmodium falciparum