# ANNUAL REPORT
## Department of Biosciences and Bioengineering
## (PERIOD: 1st APRIL 2022 – 31st MARCH 2023)

1. **Year of Establishment of the Department /Centre:** 2002
2. **Academic Programmes Offered:** B. Tech., M. Tech., Ph.D.
3. **No. of Laboratories with brief introduction: (Total No: 39)**

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. **Prof. Siddhartha Sankar Ghosh Laboratory:** 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. **Prof. Arun Goyal Lab:** The lab research interests include 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.

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. **Prof. Aiyagari Ramesh laboratory:** The research group is primarily focused on exploring the chemistry-biology interface and develop rationally designed synthetic amphiphiles and small molecule ligands as antibacterial. The group's Research is based on an interdisciplinary approach and a major endeavor is to generate antibacterial-loaded biocompatible nanocarriers having therapeutic prospects against drug-resistant pathogenic bacteria.

xxv. **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.

xxvi. **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. .

xxvii. **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.

xxviii. **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.

xxix. **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.

xxx. **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.

xxxi. **RNA Binding Proteins Laboratory:** 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.

xxxii. **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.

xxxiii. **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

xxxiv. **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.

xxxv. **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.

xxxvi. **Dr. Selvaraju Narayanasamy Lab:** The research interest of the lab includes Environmental Biotechnology, Bioprocess Engineering, and Biochemical Engineering.

xxxvii. **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.

**xxxviii.** **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.

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

**4. Major Equipment and Facilities acquired during 1st April 2022 – 31st March 2023:**

| Sl. No. | Equipment Name, Make, Model |
|---|---|
| 1. | Gel doc System<br>Make: Amersham<br>Model: Image Quant 500 |
| 2. | Water Purification system<br>Make: Thermo Fisher Scientific<br>Model: Barnstead™ Smart2Pure™) |
| 3. | Laser Projector<br>Make: Optoma Corporation<br>Model: Optoma ZW350 |
| 4. | Laptop PC<br>Make: Dell<br>Model: Vostro 3515 Laptop |
| 5. | Rotary Evaporator<br>Make: Allied Scientific<br>Model: ASP-PBU6D (R160) |
| 6. | Rotary Evaporator<br>Make: Allied Scientific<br>Model: ASP-PBU6D (R160) |
| 7. | Frost Free Refrigerator<br>Make: Samsung<br>Model: RS72R5011SL |
| 8. | Sonicator<br>Make: PCI Analytics Pvt. Ltd.<br>Model: PKS-750F |
| 9. | Shaking incubator<br>Make: Scigenics<br>Model: Orbitek-LE (Part no: LE-TT-D) |
| 10. | Analytical HPLC<br>Make: Shimadzu<br>Model: LC-20AD |
| 11. | Multimode Microplate reader<br>Make: Thermo Fisher Scientific<br>Model: Varioskan™ LUX |
| 12. | -80 Ultra Low Temperature Freezer<br>Make: Haier Biomedical<br>Model: DW-86L486E |
| 13. | Muffle furnace<br>Make: AntsInnovations<br>Model: ANTS-1200 MF 4.5l |
| 14. | Laminar Hood<br>Make: ICT<br>Model: HSNC-9801 |

| | |
|---|---|
| 15. | pH meter<br>Make: Mettler-Toledo<br>Model: FP20 |
| 16. | pH meter<br>Make: Mettler-Toledo<br>Model: FP20 |
| 17. | 3-D Printer<br>Make: Adroitec<br>Model: 4DS Smart One |
| 18. | LED Displays<br>Make: Panasonic<br>Model: LH-65AN6ND |
| 19. | LED Displays<br>Make: Panasonic<br>Model: LH-65AN6ND |
| 20. | Digital Podium<br>Make: Globus<br>Model: GEL 203 |

**Prof. Arun Goyal**: Real-Time PCR systems, Refrigerated centrifuge and -80 °C freezer.

**Prof. Manish Kumar**: Tecan Infinite M Plex

**Dr. Shirisha Nagotu:** Fluorescent plate reader – Tecan Infinite M Nano Plus

**Prof Lingaraj Sahoo:** Gel Documentation System, Leaf Spectrophotometer, Real Time PCR

**Prof. Senthilkumar Sivaprakasam:** Laminar Air Flow system, -20 degree freezer

**Dr. Lalit Mohan Pandey:** FLUOstar Omega multiplate reader, Spinning Drop Tensiometer

**Prof. Biman B. Mandal**: Zeiss AxioObserver Apotome 3 Microscope

**5. Major Areas of Research and Development:**

Cell signaling, Systems Biology, Plant Tissue Culture & Secondary Metabolites Production, Protein Biochemistry, Molecular Biology, Immuno Prasitology, 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".

**6. Major initiatives and breakthrough in Research and Development during 1st April 2022– 31st March 2023:**

**1. Prof. Utpal Bora:**

1. Kabiraj, D., Chetia, H., Nath, A., Sharma, P., Mosahari, P. V., Singh, D., Dutta, P., Neog, K. and Bora, U. (2022) Mitogenome-wise codon usage pattern from comparative analysis of the first mitogenome of Blepharipa sp. (Muga uzifly) with other Oestroid flies. Scientific Reports 12, 7028. https://doi.org/10.1038/s41598-022-10547-8
2. Kalita, J. J., Sharma, P. and Bora, U. (2023). Recent developments in application of nucleic acid aptamer in food safety. Food Control 145, 109406. https://doi.org/10.1016/j.foodcont.2022.109406.
3. Das, A. K., Kalita, J. J., Borah, M., Bora, S., Sharma, M., Saharia D., Sarma, K. K., Das, D. & Bora, U (2023). Papaya latex mediated synthesis of prism-shaped proteolytic gold nanozymes. [Accepted in March, 2023 to be published in Scientific Reports]

**2. Prof. Rakhi Chaturvedi:**

1. Pandey D M, **Chaturvedi R.**, & Singh A K 2023. Developing Stress Resilient Crops, Improving Agri-Food Industry and Healthcare Products. J. Biotechnol., S0168-1656 (DOI: https://doi.org/10.1016/j.jbiotec.2023.01.001 [Publisher: Elsevier].
2. Bajpai, R. and **Chaturvedi R.*.** 2022. In vitro production of doubled haploid plants in Camellia spp. and assessment of homozygosity using microsatellite markers. J. Biotech. 361: 89-98. (DOI:10.1016/j.jbiotec.2022.11.019) [Publisher: Elsevier].
3. Adak R, Pachauri K K, **Chaturvedi R.***. (October 2022), Indigenous Bioresources of NER, YOJANA-Our Ecosystem (A development monthly), Page No: 33-36.
4. Srivastava V. and **Chaturvedi R.***. 2022. An interdisciplinary approach towards sustainable and higher steviol glycoside production from in vitro cultures of *Stevia rebaudiana*. J. Biotech. 358: 76-91. (DOI: 10.1016/j.jbiotec.2022.08.018) [Publisher: Elsevier].

**3. Prof. Arun Goyal:**

1. Multifunctionality and mechanism of processivity of family GH5 endoglucanase, RfGH5_4 from *Ruminococcus flavefaciens* on lignocellulosic polymers.
2. Rhamnogalacturonan acetylesterase (*Ct*Pae12B), a family 12 carbohydrate esterase from *Clostridium thermocellum* with broad substrate specificity and its thermotolerance & pH stability.
3. Computational design and structure dynamics analysis of bi-functional chimera of endoxylanase from *Clostridium thermocellum* and xylosidase from *Bacteroides ovatus*.
4. Molecular dynamics based structural insights of the first putative endoglucanase, *Ps*GH5FL of glycoside hydrolase family 5 from *Pseudopedobacter saltans.*
5. Role of associated carbohydrate binding modules, CBM3A and CBM3B in stability and orchestrating the catalysis by an β-1,4 endoglucanase, *At*GH9C-CBM3A-CBM3B from Acetivibrio thermocellus ATCC 27405

**4. Prof. Pranab Goswami:**

Biosensors & Biofulecell lab: A new paper-based microfluidic device (μPAD) enzymatic biosensor for methanol detection on a combined silk fibroin film-paper platform has been developed. The silk-fibroin film acted as enzyme stabilizing material and optical signal transducer. The advantage of the device comprises improved shelf-life of the enzymes, sharp color change as a response signal for methanol, and reduced coffee-

ring effect on the detection zone. The work has been published in: Biosensors and Bioelectronics: X (2022) Doi.org/10.1016/j.biosx.2022.100147

**5. Dr. Navin Gupta:**

1. Initial results on Integration of camera data with brain signals on a smartphone achieved by Neural Engineering lab. Work presented in two reputed conferences below

   D. Hazarika, S. Chanda and C. N. Gupta, "Smartphone-Based Natural Environment Electroencephalogram Experimentation-Opportunities and Challenges," *2022 IEEE-EMBS Conference on Biomedical Engineering and Sciences (IECBES)*, Kuala Lumpur, Malaysia, 2022, pp. 370-375, doi: 10.1109/IECBES54088.2022.10079412.

   D.Hazarika, S.Madhavan and C.N.Gupta, "CameraEEG: Synchronized Recording of Video with Electroencephalogram data on an Android App for Neuroergonomics Applications," 4th IEEE Conference on Architecture, Construction and Environment, Dec 2022, Taiwan [In Press].

2. Initial results on brain connectivity of subgroups for parkinsons patients from structural MRI achieved. Work accepted/under review with journals of repute as below

   T.Samantaray, J.Saini, C.N.Gupta, "Subgrouping and structural brain connectivity of Parkinson's disease – past studies and future directions," Neuroscience Informatics, vol.2, issue 4,2022.

   T.Samantaray, J.Saini, C.N.Gupta, "Brain Connectivity of Parkinson Subgroups using Structural MRI," (Under Review with Frontiers in Human Neuroscience)

**6. Prof. Manish Kumar:**

1. Experimentally redefined the repeat-spacer composition of type I-B CRISPR loci in *Leptospira interrogans* serovar Lai

2. Deciphered the functional PAM sequence for DNA interference by type I-B CRISPR-Cas system of *Leptospira*

3. Reported the structural and functional characterization of Cas2c protein encoded from an array lacking CRISPR-Cas locus in *Leptospira*

**7. Prof. Sachin Kumar:**

1. Buragohain L, Barman NN, Sen S, Bharali A, Dutta B, Choudhury B, Suresh KP, Gaurav S, Kumar R, Ali S, Kumar S, Malik YS [2023] Transmission of African Swine Fever Virus to the Wild Boars of Northeast India, Veterinary Quarterly.

2. Singh K, Mehta D, Dumka S, Singh AK, Kumar S* [2023] Quasi Species nature of RNA viruses: lessons from the past. Vaccines.11(2), 308

3. Vashi Y, Nehru G, Kumar S* [2022] Perturbation of Glycolysis by Niclosamide Inhibits Newcastle Disease Virus Replication. SSRN

4. Shokeen K, Kumar S* [2022] Newcastle disease virus elevates its replication by instigating oxidative stress-driven Sirtuin 7 production. bioRxiv.

5. Neog S, Kumar S, Trivedi V [2022] Isolation and characterization of NDV from biological fluids through column chromatography. Biomed Chromatogr.

6. Gupta A, Gawandi S, Vandna, Yadav I, Mohan Hari, Desai VG, Kumar S* [2022] Analysis of fluoro based pyrazole analogues as a potential therapeutics candidate against Japanese encephalitis virus

infection. Virus Res.

7. Chowdhury P, Bhattacharya S, Gogoi B, Veeranna PV, Kumar S* [2022] An update on complications associated with SARS-CoV-2 infection and COVID-19 vaccination. Vaccines.10(10), 1639

8. Buragohain L, Dutta R, Bharali A, Sen S, Barman N, Borah P, Saikia D, Kumar S, Malik Y, Pawar S, Bora D, Gogoi S, Aasdev A [2022] Draft genome sequence analysis of the genotype II African swine fever virus from India. Microbiology Resource Announcements.

9. Imdhiyas M, Sen S, Barman NN, Buragohain L, Malik YS, Kumar S* [2022] Computational analysis of immunogenic epitopes in the p30 and p54 proteins of African swine fever virus. Journal of Biomolecular Structure & Dynamics.

10. Shokeen K, Pandey S, Shah M, Kumar S* [2022] Insight towards the effect of the multi basic cleavage site of SARS-CoV-2 spike protein on cellular proteases. Virus Res. 318, 198845

**8. Dr. Shirisha Nagotu:**

1. Variable effects of two new mutations of α-synculein on protein aggregation and cellular effects have been reported

2. A role for peroxisome dynamics in both replicative and chronological ageing of yeast cells was reported

3. The role of the various domains of the peroxisomal protein Pex30 in its function has been unraveled.

**9. Prof. Aiyagari Ramesh:**

A membrane-targeting quinoxaline-based ligand was developed that could enhance the activity of ciprofloxacin in combinatorial treatment and hinder bone cell infection by Methicillin-resistant Staphylococcus aureus (MRSA).

**10. Dr. Lalit Mohan Pandey:**

1. Combatting Therapeutic-Protein Aggregation featured in Genetic Engineering and Biotechnology News (GEN)
2. Development of low-cost sterilization box using a combination of heat and ultraviolet/infrared light irradiation for the prevention of COVID-19. These works have been been published in media by PTI, Delhi and got wide coverage in more than 65 news apart from social media platforms. This was also hlighted in Current Science Reports.
3. Design of Self-antibacterial and Biocompatible Titanium Surfaces for Biomedical Applications was featured in Pharma Focus Asia.

**11. Prof. Siddhartha Sankar Ghosh:**

1. Plaboni Sen, Suchandra Roy Acharyya, Arisha Arora, Siddhartha Sankar Ghosh (2023). An in-silico approach to understand the potential role of Wnt inhibitory factor-1 (WIF-1) in the inhibition of the Wnt signalling pathway. ***Journal of Biomolecular Structure and Dynamics, https://doi.org/10.1080/07391102.2023.2192810***

2. Plaboni Sen, Thirukumaran Kandasamy, Siddhartha Sankar Ghosh (2023). Multi-targeting TACE/ADAM17 and gamma-secretase of notch signalling pathway in TNBC via drug repurposing approach using Lomitapide. ***Cellular Signalling, 102, 110529.***

3. Muktashree Saha, Siddhartha Sankar Ghosh (2023). Engineered Hybrid Nanosystem for Homologous Targeting of EMT Induced Triple Negative Breast Cancer Cells. ***ACS Applied Bio Materials, 6, 2, 681–693***

4. Debashree Debasmita, Siddhartha Sankar Ghosh, Arun Chattopadhyay (2023). Living Gut Bacteria Functionalized with Gold Nanoclusters and Drug for Facile Cancer Theranostics. ***ACS Applied Bio Materials, 6, 2, 628–639***

5. Priyam Ghosh, Hirakjyoti Roy, Sayantani Mukhopadhyay, Subrata Mondal, Siddhartha Sankar Ghosh, Parameswar Krishnan Iyer (2023). Analytical techniques in identifying and purifying the proteins. **Book: *Lantibiotics as Alternative Therapeutics,*** *473-489*

6. Karuna Mahato, Santa Mondal, Ahmad Ali, Prasanta Ray Bagdi, Abu T Khan, Neha Arora, Siddhartha Sankar Ghosh (2023). Unconventional sulfur transfer behaviour of 4-hydroxy-dithiocoumarin: an easy access to biologically potent 1, 2-dithiolane scaffolds. ***New Journal of Chemistry, 47, 1954-1961***

7. Plaboni Sen, Thirukumaran Kandasamy, Siddhartha Sankar Ghosh (2022). *In-silico* evidence of ADAM metalloproteinase pathology in cancer signaling networks. ***Journal of Biomolecular Structure and Dynamics, 40, 22, 11771-11786.***

8. Konika Choudhury, Arun Chattopadhyay, Siddhartha Sankar Ghosh (2022). Mannosylated Gold Nanoclusters Incorporated with a Repurposed Antihistamine Drug Promethazine for Antibacterial and Antibiofilm Applications. ***ACS Applied Bio Materials***, ***12, 5911–5923***

9. Niraj Kr Prasad, Amaresh Dalal, Siddhartha Ghosh (2022). Computational study on the breakup of FENE-P drop migrating through microconfinement with gradual entry and exit. ***Bulletin of the American Physical Society, 20–22, 2022***

10. Suchandra Roy Acharyya, Plaboni Sen, Thirukumaran Kandasamy, Siddhartha Sankar Ghosh. (2022). Dual therapeutic approach to modulate Glycogen Synthase kinase −3 beta (GSK-3B) and inhibitor of nuclear factor kappa kinase-beta (IKK-β) receptors by in silico designing of inhibitors. ***Journal of Molecular Graphics and Modelling, 115, 108225***

11. Thirukumaran Kandasamy, Plaboni Sen, Siddhartha Sankar Ghosh (2022). Multi-targeted Drug Repurposing Approach for Breast Cancer via Integrated Functional Network Analysis. ***Molecular Informatics, 41 (8), 2100300***

12. Suchandra Roy Acharyya, Plaboni Sen, Thirukumaran Kandasamy, Siddhartha Sankar Ghosh (2022). Designing of disruptor molecules to restrain the protein–protein interaction network of VANG1/SCRIB/NOS1AP using fragment-based drug discovery techniques. ***Molecular Diversity, 1-22***

13. Anitha T Simon, Arun Chattopadhyay, Siddhartha Sankar Ghosh (2022). *In Vitro* Therapeutic Attributes of Luminescent Hydroxyapatite Nanoparticles in Codelivery Module. ***ACS Applied Bio Materials, 5 (6), 2741-2753***

14. Debashree Debasmita, Siddhartha Sankar Ghosh, and Arun Chattopadhyay (2022). Hierarchical Passage of Gold Nanoclusters in Living Bacteria. ***ACS Applied Bio Materials, 5 (6), 2543-2548***

15. Santa Mondal, Shilpi Sarkar, Siddhartha S Ghosh, Abu Taleb Khan (2022). Regioselective Ring-Opening of Epoxide and N-Tosylaziridine with 4-Hydroxydithiocoumarin: Key Precursors for 2,3-Dihydro-1,4-oxathiin and 2,3-Dihydro-1,4-thiazine Derivatives. ***European Journal of Organic Chemistry***, (18), e202200355

16. Niraj Kr Prasad, Rajib Shome, Gautam Biswas, Siddhartha Sankar Ghosh, Amaresh Dalal (2022). Transport Behavior of Commercial Anticancer Drug Protein-Bound Paclitaxel (Paclicad) in a Micron-Sized Channel. ***Langmuir, 38 (6), 2014-2025.***

17. Subhasis Dey, Plaboni Sen, Anjali Patel, Biswa Mohan Prusty, Siddhartha Sankar Ghosh, Debasis Manna (2022). A photo-responsive fluorescent amphiphile for target-specific and image-guided drug delivery applications. ***Organic & Biomolecular Chemistry, 20 (39), 7803-7813***
18. Subhra Kanti Roy, Anisha Purkait , Rajib Shome , Saurav Das, Debapratim Das , Siddhartha Sankar Ghosh and Chandan K. Jana (2022). Proline selective labeling via on-site construction of naphthoxazole (NapOx). ***Chemical Communications, 58 (39), 5909-5912***

**12. Prof. Biman B. Mandal:**

1. Swatilekha Hazra, Souradeep Dey, Biman B. Mandal, and Charanya Ramachandran. "In Vitro Profiling of the Extracellular Matrix and Integrins Expressed by Human Corneal Endothelial Cells Cultured on Silk Fibroin-Based Matrices." ACS Biomaterials Science & Engineering, 2023.
2. Chitra Jaiswal, Tarishi Gupta, Praveen Kumar Jadi, Joseph Christakiran Moses, Biman B Mandal. Injectable anti-cancer drug loaded silk-based hydrogel for the prevention of cancer recurrence and post-lumpectomy tissue regeneration aiding triple-negative breast cancer therapy. Biomaterials Advances, 2023.
3. G Janani, Li Zhang, Stephen F Badylak, Biman B Mandal. Silk fibroin bioscaffold from Bombyx mori and Antheraea assamensis elicits a distinct host response and macrophage activation paradigm in vivo and in vitro. Biomaterials Advances, 2023.
4. Yogendra Pratap Singh, Joseph Christakiran Moses, Ashutosh Bandyopadhyay, Biman B Mandal. 3D Bioprinted Silk-Based In Vitro Osteochondral Model for Osteoarthritis therapeutics. Advanced Healthcare Materials, 2022.
5. Kazuharu Arakawa, Nobuaki Kono, Ali D Malay, Ayaka Tateishi, Nao Ifuku, Hiroyasu Masunaga, Ryota Sato, Kousuke Tsuchiya, Rintaro Ohtoshi, Daniel Pedrazzoli, Asaka Shinohara, Yusuke Ito, Hiroyuki Nakamura, Akio Tanikawa, Yuya Suzuki, Takeaki Ichikawa, Shohei Fujita, Masayuki Fujiwara, Masaru Tomita, Sean J Blamires, Jo-Ann Chuah, Hamish Craig, Choon P Foong, Gabriele Greco, Juan Guan, Chris Holland, David L Kaplan, Kumar Sudesh, Biman B Mandal, Y Norma-Rashid, Nur A Oktaviani, Rucsanda C Preda, Nicola M Pugno, Rangam Rajkhowa, Xiaoqin Wang, Kenjiro Yazawa, Zhaozhu Zheng, Keiji Numata. 1000 spider silkomes: Linking sequences to silk physical properties. Science Advances, 2022 DOI: 10.1126/sciadv.abo6043 IF 14.136
6. Souradeep Dey, Chitra Jaiswal, Sayanti Shome, Bibrita Bhar, Ashutosh Bandyopadhyay, Kodieswaran Manikumar, Rajat Dadheech, Biman B Mandal. Photocrosslinkable Silk-Based Biomaterials for Regenerative Medicine and Healthcare Applications. Regenerative Engineering and Translational Medicine, 2022 DOI: 10.1007/s40883-022-00277-8 IF 2.68
7. Biman B Mandal, Chitta R Patra, Subhas C Kundu. Biomedical materials research in India. Biomedical Materials, 2022 DOI: 10.1088/1748-605X/ac8902 IF 4.103
8. Rashmi Ramakrishnan, Dimple Chouhan, Harikrishnan Vijayakumar Sreelatha, Sabareeswaran Arumugam, Biman B Mandal, and Lissy K Krishnan. Silk Fibroin-Based Bioengineered Scaffold for Enabling Hemostasis and Skin Regeneration of Critical-Size Full-Thickness Heat-Induced Burn Wounds. ACS Biomaterials Science & Engineering, 2022 DOI: 10.1021/acsbiomaterials.2c00328 IF 5.39
9. Saptarshi Biswas, Bibhas K Bhunia, G Janani, and Biman B Mandal. Silk Fibroin Based Formulations as Potential Hemostatic Agents. ACS Biomaterials Science & Engineering, 2022; 2654–2663. DOI: 10.1021/acsbiomaterials.2c00170 IF 5.39
10. Satyajit Mahata, Sandeep Kumar, Souradeep Dey, Biman B Mandal, and Vadivelu Manivannan. A probe with hydrazinecarbothioamide and 1, 8-naphthalimide groups for “turn-on” fluorescence detection of Hg2+ and Ag+ ions and live-cell imaging studies. Inorganica Chimica Acta, 2022. DOI: 10.1016/j.ica.2022.120876 IF 3.18 [03: citations]

11. Arnab Chakraborty, Chitra Jaiswal, Atikur Hassan, Saurabh Kumar, Khushwant Singh, Biman B Mandal, and Neeladri Das. Tunable and improved antiproliferative activity of Pt (II)–based organometallics bearing alkynyls and 1, 2, 3-triazole moieties. Applied Organometallic Chemistry, 2022. DOI: 10.1002/aoc.6711 IF 4.55

12. Satyajit Mahata, Souradeep Dey, Biman B Mandal, and Vadivelu Manivannan. 3-(2-Hydroxyphenyl) imidazo [5, 1-a] isoquinoline as Cu (II) sensor, its Cu (II) complex for selective detection of CN− ion and biological compatibility. Journal of Photochemistry and Photobiology A: Chemistry, 2022; 113795. DOI: 10.1016/j.jphotochem.2022.113795 IF 5.14

13. Balaji Mahendiran, Shalini Muthusamy, G Janani, Biman B Mandal, Selvakumar Rajendran, Gopal Shankar Krishnakumar. Surface Modification of Decellularized Natural Cellulose Scaffolds with Organosilanes for Bone Tissue Regeneration. ACS Biomaterials Science & Engineering, 2022; 8, 5, 2000-2015. DOI: 10.1021/acsbiomaterials.1c01502 IF 5.39

14. Guru Janani, Li Zhang, Stephen F Badylak, and Biman B Mandal. Host response and macrophage activation profile towards mulberry and non-mulberry silk. Tissue Engineering Part A, 2022; 28, S125-S125. IF 4.08

15. Ashutosh Bandyopadhyay, Biman B Mandal, and Nandana Bhardwaj. 3D bioprinting of photo-crosslinkable silk methacrylate (SilMA)-polyethylene glycol diacrylate (PEGDA) bioink for cartilage tissue engineering. Journal of Biomedical Materials Research Part A, 2022; 110, 4, 884-898. DOI: 10.1002/jbm.a.37336 IF 4.85

16. Bibrita Bhar, Bijayashree Chakraborty, Samit K. Nandi, and Biman B. Mandal. Silk-based phyto-hydrogel formulation expedites key events of wound healing in full-thickness skin defect model. International Journal of Biological Macromolecules, 2022; 623-637. DOI: 10.1016/j.ijbiomac.2022.01.142 IF 8.02

17. Guru Janani, Biman B Mandal. A perfusion bioreactor culture of silk liver ECM blend scaffolds facilitating functional polarity and maturation in primary hepatocytes. Tissue Engineering Part A, 2022; 4,1, s140-s141 IF 4.08

18. Araghni Bhattacharya, Satyajit Mahata, Ashutosh Bandyopadhyay, and Biman B Mandal, Vadivelu Manivannan. Application of 2, 4, 5-tris (2-pyridyl) imidazole as 'turn-off' fluorescence sensor for Cu (II) and Hg (II) ions and in vitro cell imaging. Luminescence 2022; 3,22 DOI: 10.1002/bio.4232 IF 2.61

**7. Conferences/Workshops/Symposia Attended: International, National**

| Sl. No. | Name of Faculty | Name of Conf./Workshop | Place | Date | International/ National |
|---|---|---|---|---|---|
| 1 | Prof. B. Anand | 11th RNA group meeting | NCCS, Pune | December 1-3, 2022 | National |
| 2 | Prof. Utpal Bora | CME on Targeted Drug Delivery and Nanotechnology | Lakhimpur Medical College and Hospital | 22.11.2022 | National |
| 3 | Prof. Utpal Bora | ISARCON 2022: 33rd Annual Conference of Indian Society for Atherosclerosis Research | AIIMS Guwahati | 11.11.2022 | National |
| 4 | Prof. Rakhi Chaturvedi | 108th Indian Science Congress (ISC) | RTM Nagpur University, Nagpur, Maharashtra, India | January 03-07, 2023 | International |
| 5 | Prof. Rakhi Chaturvedi | International Conference on Modernization of Traditional Indian Medicine: Public Health & Industrial Perspectives | University of Patanjali, Haridwar, Uttarakhand, India | August 01-04, 2022 | International |
| 6 | Prof. Rakhi Chaturvedi | Lecture series on "Technological interventions to standardize the | Indian Institute of Technology Madras, | June 20-25, 2022 | National |

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| | | indigenous system of medicine in India" (AYURTECH-2022) | Chennai, Tamil Nadu, India | | |
| 7 | Dr.Cota Navin Gupta | *IEEE Symposium Series on Computational Intelligence, 2022* | Singapore | 2022 | International |
| 8 | Prof. Manish Kumar | 12th International Leptospirosis Society Conference 2022 | Bangkok, Thailand | Nov 13-16, 2022 | International |
| 9 | Prof. Manish Kumar | International Symposium on "Zoonotic and Transboundary Diseases: Breaking the Chain through Multidisciplinary Approach and XVIII$^{th}$ annual conference of IAVPHS | ICAR Research complex for NEH region, Meghalaya, India | Dec 1-2, 2022 | International |
| 10 | Prof. Ajaikumar B Kunnumakkara | Agri-Food-Aqua Summit 2022 | Bangkok, Thailand | 28-29$^{th}$ July 2022 | International |
| 11 | Prof. Ajaikumar B Kunnumakkara | Fifth International Conference on Nutraceuticals and Chronic Diseases | Delhi University | 7-9 October 2022 | International |
| 12 | Dr. Shirisha Nagotu | 12$^{th}$ International conference on yeast biology: Fundamentals to applications of yeast and fungi | IISER Mohali, Mohali | 10/3/23-13/3/23 | International |
| 13 | Dr. Shirisha Nagotu | BSBB 2022 conference | IIT Guwahati, Guwahati | 7/12/22-11/12/22 | International |
| 14 | Dr. Shirisha Nagotu | 20th Biennial meeting of Association of Gerontology (India) | Banaras Hindu University, Varanasi | 5/11/22 to 7/11/22 | National |
| 15 | Dr. Shirisha Nagotu | The nexus between peroxisome abundance and ageing in Saccharomyces cerevisiae at 44th All India Cell Biology Conference | University of Kashmir, Srinagar | 2-9-22 to 4-9-22 | National |
| 16 | Prof. Kannan Pakshirajan | North East Research Conclave 2022 | IIT Guwahati, Assam | May 20-22, 2022 | National |
| 17 | Prof. Kannan Pakshirajan | 3rd International Conference on Bioprocess for Sustainable Environment and Energy (ICBSEE-India-2022) | NIT Rourkela, Odisha | June 20-24, 2022 | International |
| 18 | Prof. Kannan Pakshirajan | Two Days National Conference on Recent Advances in Mechanical and Petrochemical Engineering (RAMPE 22) | Mahendra Institute of Engineering and Technology, Namakkal, Tamil Nadu | September 1-2, 2022 | National |
| 19 | Prof. Kannan Pakshirajan | 8th International Conference on Research Frontiers in Chalcogen Cycle Science & Technology | University of Galway, Ireland | November 17-18, 2022 | International |
| 20 | Prof. Aiyagari Ramesh | "In Vitro Models of Drug Discovery" | National Institute of Pharmaceutical Education and Research (NIPER), Guwahati | 7 January 2023 | National |
| 21 | Prof. Aiyagari Ramesh | Synthetic Antibacterials and the Nano-Bio Platform as Potential Therapeutics Against Drug-Resistant Pathogenic Bacteria | National Institute of Pharmaceutical Education and Research (NIPER), Guwahati | 7 January 2023 | National |
| 22 | Prof. Vibin Ramakrishnan | IDAR 2022, 5th international conference of D-amino acid research. | Urbana, Illinois, USA | July 27, 2022 | International |

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| 23 | Prof. Vibin Ramakrishnan | ICRACBS 2022: International conference on “Recent Advances in Chemical and Biological Sciences | NBMSC, Bordi, Maharashtra, India | September 26, 2022 | International |
| 24 | Prof. Vibin Ramakrishnan | TIFAC-NIPERG-DSIR joint workshop on "Techno-commercial Assessment of TRL 6 and above Technologies. | NIPER, Guwahati | November 4, 2022 | National |
| 25 | Prof. Vibin Ramakrishnan | ATAL (AICTE Training and Learning Academy) FDP on the topic “Current Era of Artificial Intelligence in Biological Sciences” | AITH, Kanpur | Feb 13, 2023 | National |
| 26 | Prof. Latha Rangan | 92nd NASI Annual Session | Allahabad | 4-6 Dec 2022 | National |
| 27 | Prof. Lingaraj Sahoo | 1st GILP JD International Symposium 2023 | Gifu University, Japan | 9th March, 2023 | International |
| 28 | Prof. Senthilkumar Sivaprakasam | The 15th Asian Congress on Biotechnology inconjunction with The 7th International Symposium on Biomedical Engineering | Bali, Indonesia | 02.10.2022 – 06.10.2022 | International (Presented online) |
| 29 | Prof. Senthilkumar Sivaprakasam | International Conference on Biotechnology for Sustainable Bioresources and Bioeconomy | IIT Guwahati | 07.12.2022 – 11.12.2022 | International |
| 30 | Prof. Senthilkumar Sivaprakasam | Centre of Excellence Biopharmaceutical Technology course series | IIT Delhi | 12.12.2022-15.12.2022 | International |
| 31 | Prof. Senthilkumar Sivaprakasam | 8th International Bioprocessing India Conference - Recent Advancements & Applications in Bioprocessing for Biosimilars, Vaccines, and Bioenergy | National Chemical Laboratory (NCL), Pune | 16.12.2022 – 18.12.2022 | International |
| 32 | Dr. Kusum K. Singh | Regulatory and Noncoding RNAs | Cold Spring Harbor Laboratory (online) | 17th to 21st May 2022 | International |
| 33 | Dr. Kusum K. Singh | The Complex Life of RNA | EMBO-EMBL Symposium (online) | 12th to 15th October 2022 | International |
| 34 | Dr. Kusum K. Singh | 11th RNA Group Meeting | NCCS Pune | 01st to 3rd December 2022 | National |
| 35 | Prof. R. Swaminathan | 13th National Workshop on Fluorescence and Raman Spectroscopy | IISER, Thiruvananthapuram, Kerala, India | 6th –11th January 2023 | National |
| 36 | Prof. R. Swaminathan | IC3EM 2022<br>5th International Caparica Conference on Chromogenic<br>and Emissive Materials | Caparica, Portugal | 3rd—7th July 2022 | International |
| 37 | Prof Vishal Trivedi | International Conference on "Innovations in Chemical, Biological, and Pharmaceutical Sciences | Institute of Pharmaceutical Research, GLA University, Mathura, UP, India. | Nov 18-19, 2022 | International |
| 38 | Prof Vishal Trivedi | International Conference on Recent Innovations in Biotechnological, Chemical and Environmental Sciences | Mohanlal Sukhadia University, Udaipur-313001, Raj. (INDIA) | March 15-16, 2023 | International |

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| 39 | Dr. Anil Mukund Limaye | 5th International Conference on Nutraceuticals and Chronic Diseases | New Delhi, India | 7th to 9th Oct, 2022 | International |
| 40 | Dr. Anil Mukund Limaye | International conference on Biomedical and Clinical Research | Dharwad, Karnataka, India | 21st to 22nd Nov, 2022 | International |
| 41 | Dr. Anil Mukund Limaye | 42nd Annual Conference of the Indian Association of Cancer Research | Mumbai, India | 12th to 16th Jan, 2023 | National |
| 42 | Dr. Anil Mukund Limaye | International Bioresource Conclave and Ethnopharmacology Congress | Imphal, Manipur, India | 24th to 26th Feb, 2023 | International |
| 43 | Dr. L. M. Pandey | Biomaterials, Regenerative Medicine And Devices (BIO-Remedi 2022) | IIT Guwahati, India | Dec 15-18, 2022 | International |
| 44 | Dr. L. M. Pandey | Condensed Matter Days, 2022 (CMDAYS-22) | NIT Nagaland, India | Dec 14-16, 2022 | National |
| 45 | Dr. L. M. Pandey | Biotechnology for Sustainable Bioresources and Bioeconomy, (BSBB-2022) | IIT Guwahati, India | Dec 07-11, 2022 | International |
| 46 | Dr. L. M. Pandey | North-East Research Conclave: Sustainable Science and Technology (NERC-2022) | IIT Guwahati, India | May 20-22, 2022 | National |
| 47 | Prof Sanjukta Patra | 62nd Annual International Conference of the Association of Microbiologists of India (AMI). Microbes and Society: Current Trends and Future Prospects (MSCTFP-2022). | University of Mysuru, Karnataka, India | 21st-23rd September, 2022 | International |
| 48 | Prof Sanjukta Patra | Green energy and sustainable environment technology | KIIT, Orissa | 15th-16th September, 2022 | International |
| 49 | Prof Sanjukta Patra | "Export Worthy Natural packaging of Natural, Organic and Geographical Indication (GI) Agro products" | Assam Administrative Staff College Guwahati | 30th June, 2022 | National |
| 50 | Prof Sanjukta Patra | Gurukul in Emerging areas in modern biology and medicine | Tezpur University, Assam | 2nd-3rd March, 2023 | National |

**8. Invited Lectures of Faculty: In India, Abroad (Please do not repeat entries from Sl. No. 10)**

| Sl. No. | Name of Faculty | Name of Lecture | Name of Inst./Org. | Place | Date |
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| 1 | Prof. B. Anand | Disparate Dual Nucleases exhibit functional redundancy during CRISPR RNA Biogenesis | ICGEB | New Delhi | 23 November 2022 |
| 2 | Prof. Utpal Bora | Bio-nanotechnology and its application in crop improvement. | Assam Agriculture University | Jorhat | 15.12.2022 |
| 3 | Prof. Utpal Bora | Robotics in Medicine. | Chaygaon College | Kamrup | 11.01.2023 |
| 4 | Dr. Souptick Chanda | Femoroacetabular Impingement (FAI): To Automate a Process of Manual Diagnosis | IACS Kolkata | Kolkata | 23.03.23 |

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| 5 | Dr. Souptick Chanda | Application of Biomechanics in Biomaterials / Implants: Opportunities and Challenges | Karpaga Vinayaga College of Engineering and Technology, Chengalpattu | (Online) | 28.04.22 |
| 6 | Prof. Rakhi Chaturvedi | Talk on Sustainibility of Bioresources using Plant Tissue Culture Techniques | Department of Botany, MMV, Banaras Hindu University | Varanasi, UP, India | February 15-18, 2023 |
| 7 | Prof. Rakhi Chaturvedi | Nodal segment culture for clonal propagation and large scale multiplication of elite plants. Steps involved in Plant Tissue Culture. | Poona College of Pharmacy, Bharati Vidyapeeth (Deemed to be University) | Pune, Maharashra, India | November 23, 2022 |
| 8 | Prof. Rakhi Chaturvedi | Sustainable Production of Plant Secondary Metabolites by the Application of Plant Tissue Culture Techniques | UGSAS, Gifu University | Yanagido, Gifu, Japan | November 09, 2022 |
| 9 | Prof. Rakhi Chaturvedi | Plant Tissue Culture Techniques and Sustainable Production of Plant Secondary Metabolites by the Application of Cellular Totipotency | Guru Ghasidas Vishwavidyalaya, | Bilaspur, Chhattisgarh, India | August 25, 2022 |
| 10 | Prof. Rakhi Chaturvedi | Refresher Course on Biodiversity and Conservation (Inter-Disciplinary) | North-Eastern Hill University (NEHU), | Shillong, Meghalaya, India | August 17, 2022 |
| 11 | Prof. Rakhi Chaturvedi | Sustainable production of Plant Secondary Metabolites by the Application of Cellular Totipotency | Indian Institute of Technology Madras | Chennai, Tamil Nadu, India | June 20-25, 2022 |
| 12 | Prof. Rakhi Chaturvedi | Sustainability, Atmanirbhar Bharat (Self Reliant India) & 75 years of Azadi ka Amrit Mahotsav | MSME Chamber of Commerce and Industry of India, National Productivity Council NPC & Services Export Promotion Council SEPC | Vigyan Bhavan, New Delhi, India | April 25 - 28, 2022 |
| 13 | Prof. Rakhi Chaturvedi | Talk on Sustainibility of Bioresources using Plant Tissue Culture Techniques | Department of Botany, MMV, Banaras Hindu University | Varanasi, UP, India | February 15-18, 2023 |
| 14 | Prof. Nitin Chaudhary | Invited Lecture in loving memory of Dr. Ashish Kumar Singh | IIT-BHU | Delivered online | April 27, 2022 |
| 15 | Prof. Pranab Goswami | Biosensors and biofuelcell for waste water tteatment | NATIONAL RESEARCH CENTRE | Al-Buhouth St.Dokki, Cairo-Egypt | 18.12.2022 |
| 16 | Dr.Cota Navin Gupta | Invited Talk on Brain Computer Interfaces. | IIIT Guwahati, | Assam | March 2023 |
| 17 | Dr.Cota Navin Gupta | Invited Talk on Neural Engineering | BIT MESRA | Jharkand | Sept 2022 |
| 18 | Prof. Shankar Prasad Kanaujia | Identification and characterization of translation initiation factors in archaea. | National Conference on Emerging trends in Bioinformatics for Agriculture, Food and Health | Jacob Institute of Biotechnology and Bioengineeri | March 15-16, 2023 |

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| | | | | ng, Sam Higginbottom University of Agriculture, Technology and Sciences | |
| 19 | Prof. Manish Kumar | Advanced disease control tools to secure animal and public health in a changing world | ICAR Research complex for NEH region, Meghalaya, India | ICAR research complex, Umiam, Meghalaya, India | Mar 28-29, 2023 |
| 20 | Dr. Shirisha Nagotu | Cellular ageing: deciphering the role of peroxisomes in yeast at the 12th International conference on yeast biology: Fundamentals to applications of yeast and fungi | IISER Mohali | Mohali, Punjab | 11/3/23 |
| 21 | Dr. Shirisha Nagotu | The nexus between peroxisomes and cellular ageing at BSBB 2022 conference | IIT Guwahati | Guwahati, Assam, India | 11/12/22 |
| 22 | Dr. Shirisha Nagotu | The nexus between peroxisomes and cellular ageing at 20th Biennial meeting of Association of Gerontology (India) | Department of Zoology, Institute of Science, Banaras Hindu University, | Varanasi, UP, India | 6/11/22 |
| 23 | Dr. Shirisha Nagotu | Organelles and Inter-organelle communication: deciphering th cellular cause of Parkison's diease | SDM College of Medical Sciences and Hospital | Dharwad, Karnataka, India | 29-9-2022 |
| 24 | Dr. Shirisha Nagotu | The nexus between peroxisome abundance and ageing in Saccharomyces cerevisiae at 44th All India Cell Biology Conference | Department of Biochemistry, University of Kashmir | Srinagar, Kashmir, India | 3-9-22 |
| 25 | Prof. Kannan Pakshirajan | Biological treatment, toxicity removal and value addition to refinery wastewater using the hydrocarbonoclastic oleaginous bacterium *Rhodococcus opacus* | Manipal Academy of Higher Education | Manipal, Karnataka, India | November 12, 2022 |
| 26 | Prof. Kannan Pakshirajan | A biorefinery approach toward biofuels and value-added products from biomass gasification waste | Gandhi Institute For Technology | Bhubaneswar Odisha, India | November 14-19, 2022 |
| 27 | Prof. Vibin Ramakrishnan | Chromatography | IIT Guwahati | Guwahati | March 23, 2023 |
| 28 | Prof. Vibin Ramakrishnan | Molecular Dynamic Simulations | IIT Guwahati | Guwahati | March 2, 2023 |
| 29 | Prof. Latha Rangan | Biological Science Presidential Lecture. | NASI, Allahabad | Allahabad | 6 Dec 2022 |

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| 30 | Prof. Lingaraj Sahoo | Climate resilient technology for low input agriculture in India | Gifu University | Japan | 9th March, 2023 |
| 31 | Dr Selvaraju Narayanasamy | Biodrasillence VT'22 Ghurupreya R, Vishnu Priyan and Selvaraju Narayanasamy "Removal of pharmaceutical drugs from water by tailored nano-polysaccharide: Adsorption mechanism and Toxicity assessment." | Department of Biotechnology, Vel Tech High Tech Dr. Rangarajan Dr. Sakunthala Engineering College, Chennai & Society of chemical & synthetic Biology | Chennai, India | June 10-11, 2022 |
| 32 | Dr Selvaraju Narayanasamy | National Conference on Innovative Trends in Biotechnology Ghurupreya R, Vishnu Priyan and Selvaraju Narayanasamy "Adsorptive removal of Ibuprofen and Sulfamethoxazole by Corn Starch Nanoparticles: Isotherm, Kinetics and Thermodynamics study." | Department of Biotechnology, Vel Tech High Tech Dr. Rangarajan Dr. Sakunthala Engineering College, Chennai, India | Chennai, India | August 5-6, 2022 |
| 33 | Dr Selvaraju Narayanasamy | International conference on Emerging Trends in Biosciences and Chemical Technology Vishnu Priyan and Selvaraju Narayanasamy "Sequestration of Endocrine disruptor Bisphenol A from water by modified Hydrophobic Chitosan and its ecotoxicological assessment via Phyto and Fish Toxicity studies." | Shri Mata Vaishno Devi University, Katra, Jammu, India | Jammu, India | December 03-05, 2022 |
| 34 | Dr Selvaraju Narayanasamy | An International Conference on ADVANCES IN SMART MATERIALS, CHEMICAL & BIOCHEMICAL ENGINEERING (CHEMSMART-22) Ajit Kumar and Selvaraju Narayanasamy "Remediation of contaminant from water by plastic-based adsorbent: A trash to cash approach." | Department of Chemical Engineering, National Institute of Technology, Rourkela | Rourkela, India | December 16-18, 2022 |
| 35 | Dr Selvaraju Narayanasamy | An International Conference on ADVANCES IN SMART MATERIALS, CHEMICAL & BIOCHEMICAL ENGINEERING (CHEMSMART-22) Ghurupreya R, Vishnu Priyan and Selvaraju Narayanasamy "Sequestration of Basic | Department of Chemical Engineering, National Institute of Technology, Rourkela | Rourkela, India | December 16-18, 2022 |

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| | | Fuchsin from water using Oxidant modified Biomass: Mechanism and Toxicity assessment" | | | |
| 36 | Dr Selvaraju Narayanasamy | International e-Symposium on Materials Development and Scale-up for Membrane Separation, Sensing, Energy and Biological Applications (MDS-MSEB) Ajit Kumar and Selvaraju Narayanasamy "Fabrication of Magnetic Acid-Activated Carbon for The Remediation of Antibiotics from Water Solution" | Department of Chemical Engineering, SRM Institute of Science and Technology, Kattankulathur | Kattankulathur, India | January 24-25, 2023 |
| 37 | Dr Selvaraju Narayanasamy | DST Sponsored Synergistic Training Program Utilizing the Scientific and Technological Infrastructure (STUTI) on "Challenges and Opportunities in WAter, Sanitation & Hygiene (WASH)" | Department of Bioengineering, National Institute of Technology, Agartala, Tripura, India | Agartala, India | January 23-29, 2023 |
| 38 | Dr Selvaraju Narayanasamy | Machine learning and its applications in Environmental Issues | Centre for Clean Environment, Vellore Institute of Technology, Vellore, India | Vellore, India | February 24-25, 2023 |
| 39 | Dr. Kusum K. Singh | Post-transcriptional gene regulations by RNPS1 in cervical cancer cells | National Centre for cell Science | Pune | 01st December 2022 |
| 40 | Prof. R. Swaminathan | Protein Charge Transfer Spectra: A novel spectral probe to track protein folding and aggregation | Department of Chemistry, IIT Bombay | Mumbai | 5 Dec 2022 |
| 41 | Prof. R. Swaminathan | Protein Charge Transfer Spectra: A novel spectral probe to track protein folding and aggregation | Department of Chemistry, IISER Mohali | Mohali | 13 Aug 2022 |
| 42 | Prof. R. Swaminathan | Protein Charge Transfer Spectra (ProCharTS): A novel label-free probe to track protein unfolding and aggregation | Department of Inorganic and Physical Chemistry, Indian Institute of Science, Bengaluru | Bengaluru | 30 Mar 2023 |
| 43 | Prof Vishal Trivedi | Ayurveda and Cancer Drug Discovery. | Institute of Pharmaceutical Research, GLA University, Mathura, UP, India. | Mathura | Nov 18-19, 2022 |
| 44 | Prof. Vishal Trivedi | Repurposing of Ayurvedic formulations for Cancer Drug Discovery. | Mohanlal Sukhadia University, Udaipur-313001, Raj. (INDIA) | Udaipur | March 15-16, 2023 |

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| 45 | Dr. Lalit M. Pandey | Nano Hydroxyapatite: A Potential Bioceramic for Bone Tissue Engineering | 30th National Conference on Condensed Matter Physics 2022 (CMDAYS–22) | NIT Nagaland | December 14-16, 2022 |
| 46 | Dr. Lalit M. Pandey | Biodegradation kinetics of binary mixture of Hexadecane and Phenanthrene by the bacterial microconsortium | International Conference on Biotechnology, Sustainable Bioresources and Bioeconomy (BSB2-2022) | IIT Guwahati | December 7-11, 2022 |
| 47 | Dr. Lalit M. Pandey | Kinetics of Protein Aggregation | FDP and Symposium on Protein Biology & Proteomics | IIT Gandhinagar | November 12, 2022 |
| 48 | Dr. Lalit M. Pandey | Design and development of multifunctional nanoassembly for Environmental and Biomedical Applications | TIFAC-NIPERG-DSIR joint workshop on "Techno-commercial Assessment of TRL 6 5and above Technologies" | NIPER, Guwahat | Novermebr 4, 2022 |
| 49 | Dr. Lalit M. Pandey | Plant Ayurveda | FDP on Indian Knowledge System | Dibrugarh University Institute of Engineering and Technology | August 09, 2022 |
| 50 | Dr. Lalit M. Pandey | Traditional and Modern Storage Practices for Food Grains | North-East Research Conclave: Sustainable Science and Technology (NERC-2022) | IIT Guwahati | May 20-22, 2022 |
| 51 | Dr. Lalit M. Pandey | Distilling Science, Engineering and Technology from the Ancient Literature of Mahapuranas | North-East Research Conclave: Sustainable Science and Technology (NERC-2022) | IIT Guwahati | May 20-22, 2022 |
| 52 | Prof Sanjukta Patra | Agriculture wastes into value added products | The Agricultural and Processed Food Products Export Development Authority | Assam Administrative Staff College Guwahati | 30th June, 2022 |
| 53 | Prof Sanjukta Patra | Microbes in agro-waste utilization and fermentation technology | National Institute of Technology Rourkela, Orissa, India | Rourkela, Orissa, India | 9th-11th December, 2022 |
| 54 | Prof. Siddhartha Sankar Ghosh | Imminent Prospects of Nanotechnology in Cancer Theranostics | ICCAES 2022: International Conference on Chemical and Environmental Sciences 2022 | Kolkata, India | December 16-18, 2022 |
| 55 | Prof. Siddhartha Sankar Ghosh | Confocal Microscopy | INUP | IIT Guwahati | 6th April 2022 |

## 9. Visitors from Other Institutes / Universities / Organizations / Invited Lectures

| Sl. No. | Name | Name of Inst./Univ./Org. | Purpose/ Name of Lecture | Date | Remarks |
|---|---|---|---|---|---|
| 1 | P.V. Shivaprasad | National Centre for Biological Sciences, TIFR, GKVK Campus, Bellary Road, Bangalore | Insights into the mechanisms that counter glycation-mediated damage implants. | 28/03/2023 | |
| 2 | Prof. Umesh Varshney | J N Tata Chair Professor with the Department of Microbiology and Cell Biology, IISc | UdgX, an unconventional uracil DNA glycosylase that forms a stable complex with DNA upon uracil release | 05/05/2022 | |
| 3 | Kohei Maruyama and four others | Tohoku University, Japan | Project Discussion | Dec 11-12, 2022 | |
| 4 | Khim Panthi | Tribhuvan University, Nepal | Indian Science Research fellowship | Nov 2022-March 2023 | |

## 10. Seminars/Workshops/Conferences/Short-Term Courses Organised

| Sl. No. | Name of Faculty (Convener/ Co-ordinator, etc.) | Name of Sem./Wor./Con. | Funded By | Date | International/ National | No. of participants |
|---|---|---|---|---|---|---|
| 1 | Prof. Sachin Kumar | Workshop on Diagnostic Approaches in Virology | | 13-15th May 2022 | National | 30 |
| 2 | Prof. Latha Rangan | BSBB 2022 | DBT, DSIR | 7-11 Dec 2022 | International | 544 |
| 3 | Prof. Lingaraj Sahoo | Indo-Japan Bilateral Symposium (IJBS-2023) on Technologies for Bio Economic Development of NER". | | March 03-04, 2023 | International | 150 |
| 4 | Dr. Lalit M. Pandey | NPTEL MOOCS course on Biointerface Engineering | Ministry of Education, Govt. of India | Feb 20 to Mar 14, 2023 | National | 770 |
| 5 | Prof. Biman B. Mandal | Pre-conference workshop Advances in 3D Printing and Bioprinting & Publishing, Scientific Writing and Communication | SERB, Department of Science and Technology, Govt. of India | 14th -15th December 2022 | International | 65 |
| 6 | Prof. Biman B. Mandal | International Conference on Biomaterials, Regenerative Medicine And Devices | SERB, Department of Science and Technology, Govt. of India | 15th -18th December 2022 | International | 550 |

**A brief report on the major NATIONAL and INTERNATIONAL events with photographs may also be given separately in addition to the format given above.**

**1. Prof. Latha Rangan:**

International Conference on Biotechnology for Sustainable Bioresources and Bioeconomy (BSBB-2022) & XI Convention of Biotech Research Society, India (BRSI) was held on 7th-11th December 2022 at Indian Institute of Technology, Guwahati, India. BSBB-2022 was organized by the Department of Biosciences and Bioengineering, Department of Chemical Engineering, School of Agro and Rural Technology and School of Energy Sciences and Engineering, IIT Guwahati in association with the BRSI. The conference was sponsored by the Department of Scientific and Industrial Research, Govt of India, New Delhi; Department of Biotechnology, Govt of India, New Delhi; Centre for Energy and Environmental Sustainability, India; Centre for Development Communication, Jaipur, India; Elsevier; Taylor & Francis

Key highlights of the Conference held in physical mode were;

- More than >555 registered delegates
- Participatinn from 38 countires including India
- Five Parallel Technical Sessions for three days (8-10th Dec 2022)
- Twelve Scientific Sessions for three days (8-10th Dec 2022)
- Fifteen Plenary Lectures (PL) and 125 Invited Lectures (IL)
- Two Technical Workshops- 7th Dec 2022 "Art of Scientific Writing" and 9th Dec 2022 Taylor and Francis Workshop
- One public lecture on 8 Dec 2022
- BRSI Award Lectures on 8th Dec 2022
- Contributory Talks: 35 Short Oral Talks (8th Dec 2022) and 268 Flash Talks (8-9th Dec 2022)
- Poster Presentations: 278 Posters (8-9th Dec 2022)
- Industry Young Researcher Interaction on 10th Dec 2022
- Eight special issues in Scientific Journals

There was an overwhelming response and participation from different communities from North Eastern States. Participants shared their feedback and their overall experience about the conference.

**2. Prof. Biman B. Mandal**

BIO-Remedi 2022 (International conference on Biomaterials, Regenerative Medicine and Devices) was held from Dec 14$^{th}$ - Dec. 18$^{th}$, 2022 at IIT Guwahati, India. BIO-Remedi 2022 was be organized by Society for Tissue Engineering and Regenerative Medicine India (STERMI) in association with The Society for Biomaterials & Artificial Organs India (SBAOI) and Department of Biosciences and Bioengineering and Department of Mechanical Engineering, IIT Guwahati. The conference had funding support from the Science and Engineering Research Board, Department of Science and Technology, Govt. of India as well as many other reputable commercial and institutional sponsors including Cellink, HiMedia, BISS-Instron, Anton Paar, ALTEM Technologies, Zeiss, Thermofisher Scientific, Royal Society of Chemistry, Springer, Henry Royce Institute and American Chemical Society.

Some of the important highlights of BIO-Remedi 2022 were:

- More than 500 registered participants and delegates
- Four Parallel Scientific Sessions for four days (15$^{th}$ -18$^{th}$ Dec 2022)
- 17 Plenary Lectures and 69 Keynote/Invited Lectures

- Two Pre-conference workshops on Advances in 3D Printing and Bioprinting on 14th December and Publishing, Scientific Writing and Communication on 15th December 2022.
- SBAOI Award Lecture on 15th Dec 2022
- >110 Oral Presentations, >80 Flash Talks and >180 Poster Presentations

There was participation from all over the country and the world with scientific discussion on the advances in fields of biomaterials, tissue engineering, drug delivery, therapeutics, healthcare devices and regenerative medicine.

**11. Patents:**

**No. of Patents Applied with details: 01**

**No. of Patents Granted with details: 07**

| Sl. No. | Name of Faculty and co researcher | Name | Date Applied/Granted | Application No. | Remarks |
|---|---|---|---|---|---|
| 1 | Prof. Pranab Goswami & Ankana Kakoti | DNA aptamers specifically binding to human heart type fatty acid binding protein (fabp3) | 30/03/2023 | 1287/KOL/2015 | Granted patent No. 427726 |
| 2 | Prof. Pranab Goswami & Dr. Lightson Ng | Portable kit for onsite determination of formaldehyde in aqueous sample | 19/05/2022 | 201831041908 | Granted patent No. 397154 |
| 3 | Prof. L Rangan, Prof. S Senthilkumar, S Shreekant, H. Boro, MK Gupta, Prof. R, Swaminathan | Device for evaporation and recovery of organic solvents using simple labwares | 04/01/2023 Granted | Patent Grant No 416769 | Patent is for a new process/device with regard to recovery of organic solvents and has 15 claims in granted patent |
| 4 | Dr. Selvaraju Narayanasamy and Tasrin Shahnaz | A method for preparing novel adsorbent for removing dyes from wastewater | 16th June, 2022 (Applied) | 202231034656 | |
| 5 | Prof. R. Swaminathan and Saumya Prasad | Transforming protein into a prime Number sequence: assigning unique prime integer to each amino acid | 5th May 2022 Granted | 201831038890 | Patent number 396261 Granted by The Patent Office, "Intellectual Property INDIA" |
| 6 | Arun Chattopadhyay, Sunil Kumar Sailapu, Deepanjalee Dutta, Amaresh Kumar Sahoo, Prof. Siddhartha Sankar Ghosh | Device with integrated methods for reverse transcription polymerase chain reaction (RT-PCR) and/or DNA/protein array based analyses | 2022 Granted | US11213827B2 | PCT/IN2016/000141 |

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| 7 | Biman B Mandal, Y.P. Singh, A. Bandyopadhyay, S. Mehrotra, J.C. Moses, B.K. Bhunia, G. Janani, D. Chouhan | Development of silk based bioinks for 3D printing and uses thereof | Granted on: 21st December 2022 | 201831038727 | 415089 |
| 8 | Biman B Mandal and G. Janani | Urokinase production through fiber reinforced silk sacffold using high density perfusion culture | Granted on: 21st December 2022 | 201831024035 | 415174 |

**12. Awards and honours (Only awards/honours at national/international level from reputed organisations)**

| 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. Utpal Bora | Honorary Visiting Faculty | Nowgong College (Autonomous) | Academic | |
| 2 | Prof. Utpal Bora | External Expert Member | Assam Agricultural University | Academic | |
| 3 | Prof. Utpal Bora | Advisory Committee | Agricultural Biotechnology | Academic | |
| 4 | Dr. Souptick Chanda | SAS Best Academician Award (Biomedical) 2023 | Scholars Academic and Scientific Society | Research in Biomedical Domain | Citation |
| 5 | Prof. Rakhi Chaturvedi | Women in STEM: Vanguards of India@75 | Featured in a Compendium on at the first CII (Confederation of Indian Industry) "Women in STEM Summit"July 2022. | For the contribution in the field of science | Citation |
| 6 | Prof. Rakhi Chaturvedi | Distinguished Service Award | Society of In Vitro Biology (SIVB) during 2022 In Vitro Biology Meeting at San Diego, California, USA 2022 | Outstanding achievements in the field of plant tissue culture and in vitro biology | Award |
| 7 | Prof. Sachin Kumar | IVS Fellowship Award | Indian Virological society (VIROCON-2022) | Contribution to Veterinary Virology | Certificate of recognition, Memento |
| 8 | Prof. Latha Rangan | Women Faculty Research and Innovation Award | IIT Guwahati | For Research and innovation carried out in IIT Guwahati for last 10 years | Citation and Award amount of Rs 3 lakhs towards Research |
| 9 | Prof. vishal Trivedi | Best Researcher Award | Microbiologist Society of India. | | Citation and Trophy |
| 10 | Prof. Biman B. Mandal | 75 under 50 Scientists Shaping Today's India | DST/Vigyan Prasar in a book released by Hon. Science and Technology Minister, Govt of India | Outstanding achievements and contribution to research in the field of tissue | Recognition |

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| | | | | engineering and regenerative medicine | |

**13. Students' Achievements:**

| 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 | Rohan Pal | Travel Award | EMBO | Travel grant to attend CEM3DIP | Cash Award |
| 2 | Jaideep Singh Bhardwaj | PMRF (SERB-IIRRADA) | SERB, Govt. of India | PhD work with industry | Fellowship |
| 3 | Imnanaro | Assam Bio-Innovation Fellowship (ABF) Award | Assam Biotechnology Council (ABTC) under Department of Science, Technology and Climate Change, Govt. of Assam. | One year project work proposal | Cash |
| 4 | Krishna Kant Pachauri, Rajendra Adak, Imnanaro and Arabindu Debbarma | NEWGEN IEDC PROJECT RECOMMENDATION FOR 2022-2023 | IIT, GUWAHATI | One year students Project | Cash |
| 5 | Parmeshwar Gavande | IITG-Student Travel Assistance Fund (STAF) | IIT Guwahati | To present the research work in International Conference on BIOTECHNOLOGY FOR BETTER TOMORROW (ICBBT22), held between 29th-30th October 2022 at Universitas Udayana, Bali, Indonesia | Cash |
| 6 | Parmeshwar Gavande | Best Flash Presentation & Poster Award. | Biotech Research Society India | Received the Best Flash Presentation & Poster Award at BRSI-BSBB-22, Dec 7-10 2022 IIT Guwahati | Medal |
| 7 | Rwivoo Baruah | Nehru-Fulbright Postdoctoral Fellowship | Department of Food Science, Purdue University, USA | | Fellowship |
| 8 | Parmeshwar Gavande | Young Researcher Award 2022 | Institute of Scholars (InSc), Bangalore | For research work entitled "Highly efficient, processive and multifunctional recombinant endoglucanase | Medal |

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| | | | | RfGH5_4 from *Ruminococcus flavefaciens* FD-1 v3 for recycling lignocellulosic plant biomasses." Published in International Journal of Biological Macromolecules, (2022) 209, 801-813 | |
| 9 | Kalpajyoti Hazarika | MTP student @ Neural Engineering lab placed at IISc Phd Program | IISC, Bangalore | | |
| 10 | Tanmayee Samantaray, Aditya S, Suraj K | Alzheimer's Challenge @ ICASSP 2023 | https://luzs.gitlab.io/madress-2023/ranking.html | | |
| 11 | Vishnu K N, D.Hazarika, Nanaki.S, Shivakumar D | Epilepsy Challenge @ ICASSP 2023 | https://biomedepi.github.io/seizure_detection_challenge/ | | |
| 12 | Navarun Yadav | BTP student @ Neural Engineering lab. Placed in IISc MTech Program | IISC, Bangalore | | |
| 13 | Rekshand Gehlot | Completed M. Tech @ Neural Engineering lab and now Systems Engineer @ Tata Consultancy Services, India | Tata Consultancy Services, India | | Systems Engineer @ Tata Consultancy Services, India |
| 14 | Angshu Dutta | Best Oral Presentation Award | National Seminar on Crystallography (NSC-49) | Best Oral Presentation | Certifcate |
| 15 | Md. Saddam Hussain | Travel grant award | ICAR Research complex for NEH region, Meghalaya and IAVPHS, India | Poster presentation in XVIII$^{th}$ annual conference of IAVPHS | Medal and Cash |
| 16 | Saswat Hota | Travel grant award | ICAR Research complex for NEH region, Meghalaya and IAVPHS, India | Oral presentation in XVIII$^{th}$ annual conference of IAVPHS | Medal and Cash |
| 17 | Surbhi Kumari | Best poster presentation award | ICAR Research complex for NEH region, Meghalaya and IAVPHS, India | Poster presentation in XVIII$^{th}$ annual conference of IAVPHS | Medal |
| 18 | Rakesh Kumar | Travel grant award | International conference on coronaviruses: Past, present and future. | Oral presentation | Trophy, Certificate |
| 19 | Shinjini Bhattacharya | Travel grant award | International conference on coronaviruses: Past, present and future. | Oral presentation | Trophy, Certificate |
| 20 | Deepa Mehta | Best Poster presentation Award | Indian Virological society (VIROCON-2022) | Poster presentation | Trophy, Certificate |
| 21 | Kamal Shokeen | Best Oral presentation Award | Indian Virological society (VIROCON-2022) | Oral presentation | Trophy, Certificate |

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| 22 | Vijay Singh Bohara | Best Poster presentation Award | Annual Conference of Indian Association of Veterinary Public Health Specialist (IAVPHS-2022) | Poster presentation | Trophy and certificate |
| 23 | Nilave Ranjan Bora | 3rd position in Poster Presentation | Anual Conference of Indian Association of Veterinary Public Health Specialist (IAVPHS-2022) | Poster presentation | Trophy and certificate |
| 24 | Sushil Kumar | 2nd position in best oral presentation | Anual Conference of Indian Association of Veterinary Public Health Specialist (IAVPHS-2022) | Oral presentation | Trophy and certificate |
| 25 | Shaurya Dumka | Best Oral presentation Award | Association for the Advancement of Veterinary Research (IAAVR -2023) | Oral presentation | Trophy and certificate |
| 26 | Anjali Gupta | Best poster presentatn award | Association of microbiologist of india | Poster presentation | Cash and certificate |
| 27 | Rubeka I | Scientific Writing | BSBB2022 | Scientific Writing Workshop | Citation and Book |
| 28 | Nuzelu | Flash and Poster Presentation | BSBB2022 | Poster presentation | Citation and cash |
| 29 | Bimal K Chetri | Best Paper Award | BIMSTEC | Oral Award | Citation and Book |
| 30 | A Senapati | Best Poster Award | NERC 2022 | Poster | Citation and Book |
| 31 | Rubeka I | Best Oral Paper | NERC 2022 | Pral Paper | Citation and Cash |
| 32 | Vishnu Priyan V | Best Poster | Shri Mata Vaishno Devi University, Katra, Jammu, India | Best Poster | Medal |
| 33 | Jothika J | Dr. V. N. Mishra Travel grant | Phenome research foundation and GRF, Varanasi, India | For presenting the poster in the ADNAT-23 conference | Cash (Rs. 5000) |
| 34 | Manish Hardas Ghumnami | Best Flash presentation and Poster award | IIT Guwahati | Best Flash presentation and poster on BSBB-2022 conference | Certificate |
| 35 | Chinamaya Panda | PMRF | Ministry of Education, Govt. of India | Promising research proposal | Fellowship |
| 36 | Smrity Sonbhadra | PMRF | Ministry of Education, Govt. of India | Promising research proposal | Fellowship |
| 37 | Satakshi Hazara | Best Oral Presentation | 62nd Annual International Conference of the Association of Microbiologists of India (AMI). Microbes and Society: Current Trends and Future Prospects (MSCTFP-2022). | Best oral presentation | Certificate and Memento |
| 38 | Ngouenam Romial Joel | Best Oral Presentation | International Workshop On Key Enabling Technologies for Sustainable Agri-Food Chain | Best oral presentation | Certificate and Medal |

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| 39 | Arisha Arora | PMRF | Ministry of Education, Govt. of India | Promising research proposal | Fellowship |
| 40 | Sujisha S Nambiar | PMRF | Ministry of Education, Govt. of India | Promising research proposal | Fellowship |
| 41 | Plaboni Sen | Ashima Chatterjee Memorial Award | 7th World Cancer Congress (Bangalore Healthcare summit) | Best Researcher | Certificate and Medal |
| 42 | Ashutosh Bandyopadhyay | SERB Travel grant | Science and Engineering Research Board, Department of Science and Technology, Govt. of India | Travel grant to attend TERMIS-EU 2023, Manchester, UK | Cash |
| 43 | Ashutosh Bandyopadhyay | SBAOI Bajpai-Saha Student Award | Society for Biomaterials & Artificial Organs India (SBAOI) | Best Oral Presentation | Certificate and Cash Prize |
| 44 | Ashutosh Bandyopadhyay | IOP Publishing Top Cited Paper Award for your article | IOP Publishing | Top 1% of the most cited papers in the category from 2019-2021 | Certificate |
| 45 | Ashutosh Bandyopadhyay | Wiley Top Downloaded Article | Wiley | Most downloaded publication in the first 12 months | Certificate |
| 46 | Bibrita Bhar | Springer In Vitro models Best Oral Presentation Award | Springer | Best Oral Presentation at BIOREMEDI-2022 | Certificate and Cash Award |
| 47 | Chitra Jaiswal | Springer In Vitro models Best Poster Presentation Award | Springer | Best Poster Presentation at BIOREMEDI-2022 | Certificate and Cash Award |
| 48 | Sayanti Shome | ACS Poster Presentation Award | American Chemical Society(ACS) | Best Poster Presentation at BIOREMEDI-2022 | Certificate and Cash Award |
| 49 | Bibrita Bhar | NEWGEN IEDC project grant | Industrial Interactions and Special Initiatives, IIT Guwahati | One year students' project | Cash |
| 50 | Kodieswaran M. | PMRF | Ministry of Education, Govt. of India | Promising research proposal | Fellowship |
| 51 | Kodieswaran M. | NEWGEN IEDC project grant | Industrial Interactions and Special Initiatives, IIT Guwahati | One year students' project | Cash |

**14. Any Other (Special Mention)**

**1. Prof. Rakhi Chaturvedi:**

| Sl. No. | Role of Prof. Rakhi Chaturvedi | Name of event | Place | Date | International/ National |
|---|---|---|---|---|---|
| 1. | Inaugural session and symposium deliberations | Indo-Japan Bilateral Symposium (IJBS-2023) on Technologies for Bio Economic Development of NER. Jointly organized by Indian Institute of Technology Guwahati and Gifu University, Japan, | IIT, Guwahati | March 03 -04, 2023 | International |
| 2 | Moderator in Panel Discussion on Future of | G20 - Youth 20 Inception Meeting | IIT Guwahati, | February 07, 2023. | National |

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| | work Industry 4.0 Innovation, And 21 st Century Skills, | | | | |
| 3. | Participated in Panel Discussion on- 1. Facilitating International Collaboration 2. Globalising local innovations and products | Indo-German Science & Technology Centre (IGSTC) Outreach Programme | IIT Guwahati | 30 Jan 2023 | International |
| 4. | Moderator in Panel Discussion: Brain Storming Session Conservation of Biodiversity through R&D Interventions | North-East Research Conclave (NERC) - Sustainable Science and Technology, Assam Biotech Conclave 2022 | IIT Guwahati | May 20-22, 2022 | National |

**Conference proceedings presented by Prof. Rakhi Chaturvedi's lab:**

| Sl. No. | Authors | Paper Title | Name of Conference/Workshop/ Seminar/Symposia Proceedings | Year | Page no. |
|---|---|---|---|---|---|
| 1. | Adak R. and Chaturvedi Rakhi | High-throughput screening and quantification of various secondary metabolites in Neem (*Azadirachta Indica* A. Juss.) tissues, for phytopharmaceuticals applications | 5th National Students' Research Convention, on Healthcare and MedTech (NSRC'23), Indian Institute of Technology Kanpur, Kanpur, Uttar Pradesh, India | March 3-5, 2023 | 10 |
| 2. | Pachauri K. K. and Chaturvedi Rakhi | Optimization of culture parameters for enhanced production of antimalarial N-alkylamides from *Spilanthes paniculata* root biomass | 5th National Students' Research Convention, on Healthcare and MedTech (NSRC'23), Indian Institute of Technology Kanpur, Kanpur, Uttar Pradesh, India | March 3-5, 2023 | 11 |
| 3. | Sharma C. and Chaturvedi Rakhi | Factor affecting bipolar germination of embryos and in vitro plantlet development in *Camellia* sp. | International Conference on Biotechnology for Sustainable Bioresource and Bioeconomy (BSBB-2022), Indian Institute of Technology Guwahati, Guwahati, | December 7-11, 2022 | 214 |
| 4. | Srivastava V., Baruah H, and Chaturvedi Rakhi | Influence of Plant Growth Regulators in Initiation of In Vitro Cell Cultures of *Tinospora cordifolia* for Biosynthesis of Silver Nanoparticles | Society for In Vitro Biology (SIVB) Meeting 2022, , San Diego, California, USA | June 4 – 7, 2022 | 32 |
| 5. | Imnanaro and Chaturvedi Rakhi | Determination of Rutin in *Musa* Leaves by High Performance Liquid Chromatography - A Step Towards Sustainability | Society for In Vitro Biology (SIVB) Meeting 2022, June San Diego, California, USA | June 4 – 7, 2022 | 33 |

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| 6. | Adak R. and Chaturvedi Rakhi | Tissues-wide Distribution of Azadirachtin Content in Neem (*Azadirachta Indica* A. Juss.), a Miraculous Medicinal Tree Species | Society for In Vitro Biology (SIVB) Meeting San Diego, California, USA | June 4 – 7, 2022 | 33 |
| 7. | Pachauri K. K. and Chaturvedi Rakhi | In Vitro Production of Adventitious Root Biomass and Important N-alkylamides Using Bioreactor Cultivation of Medicinally Important Plant *Spilanthes paniculata* Wall. ex DC | Society for In Vitro Biology (SIVB) Meeting, San Diego, California, USA | June 4 – 7, 2022 | 20 |
| 8. | Imnanaro and Chaturvedi Rakhi | Determination of Rutin in *Musa* Leaves by High-Performance Liquid Chromatography- A Step Towards Sustainability | North-East Research Conclave & Assam Biotech conclave (NERC & ABC-2022), Indian Institute of Technology Guwahati, Science, Technology and Climate Change Dept. & Dept. of Education, Govt. of Assam, India | May 20-22, 2022 | 40 |
| 9. | Debbarma A. and Chaturvedi Rakhi | In vitro callus induction from endosperms of Indian black rice (*Oryza sativa* L) | North-East Research Conclave & Assam Biotech conclave (NERC & ABC-2022)Indian Institute of Technology Guwahati, Science, Technology and Climate Change Dept. & Dept. of Education, Govt. of Assam, India | May 20-22, 2022 | 56 |
| 10. | Pachauri K. K. and Chaturvedi Rakhi | Mass production of N-alkylamides in the stirred tank reactor by in vitro cultivation of adventitious roots of *Spilanthes paniculata* | North-East Research Conclave & Assam Biotech conclave (NERC & ABC-2022), Indian Institute of Technology Guwahati, Science, Technology and Climate Change Dept. & Dept. of Education, Govt. of Assam, India | May 20-22, 22 | 20 |
| 11. | Adak R. and Chaturvedi Rakhi | Systemic screening and selection of unique source for extraction and commercialization of bio-insecticides from neem plant (*Azadirachta indica*) | North-East Research Conclave & Assam Biotech conclave (NERC & ABC-2022), Indian Institute of Technology Guwahati, Science, Technology and Climate Change Dept. & Dept. of Education, Govt. of Assam, India | May 20-22, 2022 | 8 |
| 12. | Adak R. and Chaturvedi Rakhi | HPLC reveals different tissues specific accumulation of Nimbin from neem plant (*Azadirachta indica*) | 43rd Annual Meeting of Plant Tissue Culture Association (India) & International Symposium on Advances in Plant Biotechnology and Nutritional Security (APBNS-2022), ICAR-National Institute for Plant Biotechnology, New Delhi, India | April 28-30,2022 | 235 |

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| 13. | Debbarma A. and Chaturvedi Rakhi | In vitro callus induction from seeds of Indian black rice (*Oryza sativa* L.) | 43rdAnnual Meeting of Plant Tissue Culture Association (India) & International Symposium on Advances in Plant Biotechnology and Nutritional Security (APBNS-2022, ICAR-National Institute for Plant Biotechnology, New Delhi, India | April 28-30, 2022 | 295 |
| 14. | Kumar V. and Chaturvedi Rakhi | Eco-friendly approaches towards synthesis and characterization of silver nanoparticles derived from leaves of in vitro grown *Stevia rebaudiana* | 43rdAnnual Meeting of Plant Tissue Culture Association (India) & International Symposium on Advances in Plant Biotechnology and Nutritional Security (APBNS-2022, ICAR-National Institute for Plant Biotechnology, New Delhi, India | April 28-30, 2022 | 295 |

**2. Dr. Shirisha Nagotu:**

1. Inducted Council Member – Association of Gerontology, India
2. Session chair for the session Health and Medical Biotechnology at BSBB 2022 conference at IIT Guwahati
3. Session chair – 20th Biennial meeting of Association of Gerontology (Varanasi, India)

**3. Prof. Latha Rangan:**

1. Latha Rangan inducted to NASI Council Member, NASI Allahabad, for two years starting 2023 onwards.
2. Latha Rangan served as Sectional President, Biological Sciences, National Academy of Sciences (NASI) in the 92 Anuual Session held from 4-6 Dec 2022 at Praygaraj.
3. Latha Rangan relected to Council Board Member, BRSI starting 2023 onwards.
4. Latha Rangan inducted to Council Board Member, NIPER Guwahati for three years starting 2022 onwards.
5. Latha Rangan inducted to National Council of Science Museum, North East Zone as Executive committee member for two years starting 2022 onwards.

**15. Faculty Members (In alphabetical order according to <u>surnames</u>)**

| 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 |

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| 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 |

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| 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, Groningen, The Netherlands | Assistant Professor | Organelle biology and Cellular Ageing |
| 22 | Pakshirajan Kannan | Indian Institute of Technology 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 | Ramesh Aiyagari | CSIR-CFTRI, Mysuru (Degree awarded by University of Mysore) | Professor | Antibacterials, Nanobiotechnology |
| 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 | Genetic engineering and functional genomics of plants |
| 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, Bioprocess Engineering, Biochemical Engineering |
| 32 | Senthilkumar S | Central Leather Research Institute, Chennai | Professor | Bioprocess Analytical Technology (BioPAT), Metabolic Engineering |

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| 33 | Singh Kusum K | Institute of Molecular Medicine, Heinrich-Heine University of Duesseldorf, Germany | Assistant Professor | Posttranscriptional gene regulations |
| 34 | Swaminathan Rajaram | Tata Institute of Fundamental Research, Mumbai | Professor | Proteins, Spectroscopy and Biochemistry |
| 35 | Tamuli Ranjan | Centre for Cellular and Molecular Biology (CCMB), Hyderabad (Degree awarded by the Jawaharlal Nehru University, New Delhi) | Professor | Calcium signaling, Neurospora genetics, DNA repair |
| 36 | Thummer Rajkumar P | University of Groningen, Groningen, The Netherlands | Assistant Professor | Stem Cell Engineering and Regenerative Medicine |
| 37 | Trivedi Vishal | Central Drug Research Institute, Lucknow | Professor | Intracellular Signaling in Plasmodium falciparum |