

DEPARTMENT OF BIOTECHNOLOGY
INDIAN INSTITUTE OF TECHNOLOGY GUWAHATI



ANNUAL REPORT
APRIL 2012 to MARCH 2013

1. INTRODUCTION

Contributing to the fascinating and emerging areas of Science, Indian Institute of Technology Guwahati established Department of Biotechnology in the year 2002. The Department is one of its kinds in the north-eastern region of Indian and is dedicated for promoting goal-oriented interdisciplinary research by interfacing modern biology with applied engineering sciences, addressing problems affecting human health/welfare, and training students to be the next generation engineers and researchers. As of now, the department has 30 faculty members from diverse streams and specializations, eight well-trained scientific staff members, and two administrative staff members. The department has developed extensive research facility and infrastructure to support the ongoing teaching and research initiatives.

The major thrust of the department includes biochemical engineering, tissue engineering, plant biotechnology, nanobiotechnology, computational biology, cancer biology, infectious diseases and proteomics. The department has initiated efforts to establish advanced research laboratories in all the thrust areas. Apart from fundamental research, the department aims to meet the targeted demands to cater the requirements of biotechnology based industries.

2. ACADEMIC ACTIVITIES

The Department offers B. Tech., M. Tech., and PhD programmes. Time to time conferences; workshops are organized by the Department for manpower training along with provisions for summer internship programmes for external students.

3. STUDENT INTAKE

Total student intake for the year is as follows:
51 in B. Tech., 31 in M. Tech, and 35 in Ph. D (numbers as provided from BT office for 2012)

4. FACULTY STRENGTH

Thirty (30)

5. MAJOR EQUIPMENT AND FACILITIES

Atomic force microscope	Autotensiometer
Bioreactor	Trinocular phase contrast microscope
Trinocular stereo zoom microscope	Flowcytometer
Compact spectrofluorometer	FPLC System
Digital imaging system	Gradient PCR thermal cycler
HPLC System	Ion chromatography system
Gas chromatography system	Freeze dryer
Manual rotary microtome	Microplate reader
Real-Time PCR System	Ultracentrifuge
Etc....	

6. RESEARCH AND DEVELOPMENT ACTIVITIES

The major thrust of the department includes biochemical engineering, tissue engineering, plant biotechnology, environmental biotechnology, nanobiotechnology, molecular biology, stem cell biology and gene therapy, computational biology, cancer biology, infectious diseases and proteomics. Keeping in mind the demands of the modern biotechnological research, the plans for establishing advanced research facilities are underway. In 2012, the department has started two new elective courses open to all B-tech students and several departmental elective courses covering diverse areas of biology. In addition department is also involved in promoting science and education in the north east pertaining to the field of biotechnology by organizing workshops, symposium and seminar.

List of conferences and workshops in 2012 -2013:

- Brain storming session on biotechnology in North Eastern region.
- Workshop on "Analysis of Biological Networks" 6th -7th November 2012
- 13th Indo-US Cytometry Workshop on "Applications of Flow Cytometry in Nanotechnology and Plant Genomics" 8th - 10th October 2012

7. RESEARCH PROJECTS (In tabular format as given below)

a. New Sponsored Projects

Principal Investigator	Name of Project	Sponsoring Agency	Amount Sanctioned (Rs. in Lakh)	Co-Investigator	Duration (Years)
Anand, B.	Molecular Mechanism of Target Recognition and Cleavage by the CRISPR-Cas Bacterial Immune System	DBT	122.96	Prof. S. Ramaswamy (PI, inStem)	3
Anand, B.	Structural and Functional Characterization of Adaptation Stage of CRISPR-Cas System in <i>Mycobacterium tuberculosis</i>	DBT	59.182	Dr. Nitin Chaudhary	3
Biplab, B.	Integrative investigation on critical transcriptional modules involved in proliferation of malignant cells	DBT	37.2	Dr. Sudip Sen, AIIMS, New Delhi	3
Bora, U.	Identification and characterization of bio-active molecules from some indigenous plants of NE region of India with special references to antioxidant and hypolipidemic properties	DBT	78.42	Dr. Rajyalakshmi Devi (PI-1), Co-Ordinator, Dr.Ranjan Tamuli	3
Dubey, V.K.	X-ray crystallographic structure elucidation of key drug target enzymes of <i>Leishmania donovani</i> .	DBT	72.69	Dr. S. Patra	3
Goyal, A.	Cloning, expression, biochemical and structural studies of family 5 Glycoside Hydrolase (GH5) cellulase and its derivatives from <i>Clostridium thermocellum</i>	Department of Biotechnology– Cutting-edge Research Enhancement and Scientific Training (DBT-CREST)	14.5	None	1

Jaganathan, B.G.	Study of bone marrow microenvironment in patients with acute leukemia from north east India	ICMR	9.988	Dr. Jina Bhattacharyya Dr. Damodar Das, Dr. Anil Agarwal (GMCH)	1
Kanaujia, S.P.	Structural and functional studies of translation initiation factors from <i>Pyrococcus horikoshii</i> OT3.	DBT	52.9	Dr. Vikash Kumar Dubey	3
Kumar, M.	Characterization of immunogenic outer membrane proteins of <i>Leptospira interrogans</i> for vaccine and diagnostics	ICMR	10	None	3
Kumar, M.	Modulation of gene expression in <i>Leptospira interrogans</i> exposed to human catecholamine hormone	DST	23	None	3
Kumar, S.	INSPIRE faculty award for New castle disease virus	DST	35	None	5
Kumar, S.	Improved Infectious Bursal Disease Virus Vaccines Using Newcastle Disease Virus Vector	DBT	47.34	Dr N. Choudhury	3
Kumar, S.	Role of N-glycans of Newcastle disease virus fusion protein in the host immune signaling molecules	BRNS	16.8	None	3
Kunnumakkara, A.B.	“An Investigation of the Therapeutic Potential of Butein Isolated from <i>Toxicodendron vernicifluum</i> Against Human Oral Squamous Cell Carcinoma”	DST	23	None	2
Mandal, B.B.	Stimulation of stem cell differentiation on silk fiber reinforced composite with tunable strength and degradation towards enhanced osteogenesis	SERB-DST	23.00	None	3
Pakshirajan, K.	Strategy Development for the mitigation of heavy metals in surface waters around coal mining areas using native cyanobacterial strains	DBT	14.65	None	2
Ramakrishnan, V.	Design synthesis and Characterization of self-assembled molecular materials from heterotactic polypeptide constructs. Application in drug delivery and nanoscale energy storage devices.	DBT	60.00		3
Sahoo, L.	Molecular cloning and functional characterization of cowpea drought responsive transcription factor gene DREB2A	DBT	82.70	Prof. S.K. Panda (AUS)	3
Sahoo, L.	Generation of transgenic blackgram for aluminium tolerance in acidic soil	DBT	56.26 (Phase I)	Prof. S.K. Panda (AUS)	2
Sahoo, L.	Cloning and characterization of STOP1 transcription factor from cowpea and its functional analysis	DST Indo-Japan	22.50	Prof. H. Koyama, Gifu University, Japan; Prof. S.K. Panda (AUS)	3

Goud, V.V. (Chemical Engineering)	Development and establishment of efficient ultrasonic-assisted oil extraction process from microalgae for biodiesel production	CSIR	18.96	Sahoo, L.	3
Goud, V.V. (Chemical Engineering)	Super critical fluid extraction of natural antioxidants for food preservation from spices and non conventional fruits endemic in North eastern region	DBT	75.65	Sahoo, L.	3

b. Ongoing Sponsored Projects

Principal Investigator	Name of Project	Sponsoring Agency	Amount Sanctioned (Rs. in Lakh)	Co-Investigator	Duration (Years)
Anand, B.	Structural Basis for the Maturation of the Prokaryotic siRNA	DBT	38.48	-	3
Anand, B.	Dynamical Aspects of Era GTPase - 16S rRNA Interactions and its Implication in Ribosome Assembly	DAE-BRNS	16.85	-	3
Bora, U.	Silk Based scaffolds for Neural Tissue Engineering.	DBT	58.44	Dr.Ranjan Tamuli	3
	Establishment of Institutional Biotech Hubs (IBThubs) by DBT under special programme for North Eastern States of India.	DBT	27.00	Dr.Ranjan Tamuli	3
	Development of Aptamer- Based Molecular Diagnostics for Breast Cancer	DBT	154.85	Dr. Ranjan Tamuli	3
	Development of silk protein derived artificial nerve growth conduction for neural tissue engineering	Central Silk Board	45.3	Dr. Ranjan Tamuli	3
Chaudhary, N.	Understanding the role of cation-interaction in the self-assembly of amyloidogenic and <i>de novo</i> designed peptides	DBT	31.03	Dr. R. Nagaraj (PI) CCMB, Hyderabad	3
Chaturvedi, R.	Yield enhancement strategies for production of therapeutic compounds by cell and tissue cultures of <i>Tinospora cordifolia</i> (willd.) Miers ex Hook. F. & Thoms.	DBT-Twinning	82.52	Prof. B.K. Patel, IITG Prof. V.S. Bisaria, IIT Delhi Dr B.S. Bhau, NEIST, Jorhat	3
Das, D.	Process optimization for microbial synthesis of Hyaluronic Acid from new isolates: Development of structured kinetic model and experimental validation	CSIR, New Delhi	14.0	Dr. Arun Goyal	3
Dubey, V.K.	Betraying the parasite's redox system: Studies on spermidine synthase of <i>Leishmania donovani</i> .	DBT	82.18	Dr. V. Trivedi, BT, Dr. P.K.Iyer, Chem	3
	An integrated computational and biochemical approach to target ornithine decarboxylase, a key enzyme involved in synthesis of trypanothione for antileishmanial drug discovery"	ICMR	43.00	Dr. V. Trivedi	3
	Studies on Peptide conjugated Nanoparticles mediated	DBT	31.83	Dr. S. Patra	3

	antileishmanial drug delivery to macrophages.				
	Deciphering the molecular mechanism underlying the activity of antitumor agents as antileishmanial agents and their potential for therapy.	DBT	40.68	None	3
	Studies on trypanothione synthetase, a key enzyme of redox metabolism of <i>Leishmania donovani</i>	DBT	27.73	None	3
	*Variation in proteome profile of legume plants in response to heavy metal toxicity	DST	23.5	Dr. Anil Verma, Chemical Engg	3
Ghosh, S.S.	Fundamental Molecular Investigations in Biotechnology (Core Project)	DBT	1133.68	Prof. P. Goswami Prof. L. Sahoo Dr. B. Bose Dr. A. Ramesh Dr. S. Patra	5 (2008-2013)
	Novel nanoscale materials targeted towards antimicrobial and anticancer activities.	DBT *Implemented at the Centre for Nanotechnology	169	Prof. A. Chattopadhyay (Chemistry) Dr. Biplab Bose (BT)	3
Goswami, P.	Studies and application of redox enzymes for bioelectronics devices	DBT India	98 lacs	Dr. S. Patra	5 (2008 - 2013)
Goyal, A.	Molecular and functional characterization of dextran production in <i>Weissella</i> spp. - Superior dextran producers for cereal applications	Indo-Finland Joint Project, DBT, New Delhi	77.03	None	3
	Development and application of recombinant and other cellulases for large scale recycling of cellulosic biomass	DBT	64.35	(Prof D. Goyal, Thapar Univ)	3
	Prebiotics and nutraceuticals production from Lactic acid bacteria.	Indo-Bulgarian Joint project, DST, New Delhi	16.0	None	2 (to be extended)
	Bioinformatics Infrastructure Facility	DBT, New Delhi	20.0	Co-coordinator: Dr. V. Dubey	Jul 2010-
	M. Tech. Program Support	DBT	170.0	Coordinator	3
Jaganathan, B.G.	Role of Rho GTPase RhoA on interaction between Human Mesenchymal Stem Cells and Hematopoietic Stem Cells	DBT	39.26	Dr. Anil M Limaye and Dr. Bosanta Boruah	3
	Cytoskeletal organization and migration potential of Mesenchymal Stem Cells (MSC) during different stages of differentiation	DST	24.2	None	3
	Isolation of Stem Cells from Human Limbal and Extra ocular muscle tissues and differentiation into retinal progenitor cells	ICMR	4.99	Dr. Damaris Magdalene (Sri Sankaradev Nethralaya Hospital)	2
	Study of Apoptotic Signalling Pathways in Mesenchymal Stem Cells during Normal and Differentiated State	DBT	91.05	Dr. Rajesh Singh (IAR) Dr. Chandramani Pathak (IAR)	3
Mandal, B.B.	Bioengineered silk vascular grafts for blood vessel engineering	DAE-BRNS	17.00	None	3
	Silk based biomimetic scaffolds for tissue engineering applications	IITG-Start up grant	5.00	None	2

	Mechanically strong silk composite matrices for bone tissue engineering	ICMR-NE seed grant	10.00	None	3
Patra, S.	Structure, Function, Dynamics and Inhibition of Matrix Metalloproteinases (MMPs)	DBT	60	Dr. V.K. Dubey	3
Ramakrishnan, V.	Computational engineering of protein folding pathways: Implication on stability, misfolding and aggregation	DBT India Scheme: Innovative Young Biotechnologist Award.	6.39		1
Ramesh, A.	Evaluation of probiotic attributes of lactic acid bacteria based on bacteriocinogenic activity and <i>in vitro</i> adhesion properties	CSIR	11.30	Dr. Biplab Bose	3 years (2010-2013)
Rangan, L.	Molecular and physico-chemical characterization of selected ginger species from North Eastern Region	DBT	52.75	Dr A Parida (MSSRF Chennai) Dr S Mitra (JNU New Delhi)	3
	DNAB (DNA Barcoding) based biodiversity inventory in Zingiberaceae of Northeast India	DIT, Ministry of Information Tech, Govt of India	71.18	Dr U Bora Dr L Sahoo	5 (2008-2013)
Sahoo, L.	Development of Transgenic Cowpea for Virus Resistance Using the Tool of RNA Interference (RNAi)	DBT	83.34	Dr. Sunil Kumar Mukherjee, ICGEB, New Delhi	3
	Development of Pod Borer Resistant Transgenic Pigeonpea and Chickpea	ICAR	58.0	Coordinator: Prof. S. K. Sen, BREF Biotech, IIT Khragpaur	3
	Development and evaluation of transgenic mungbean over expressing AtNHX1 and AVP1 for salt tolerance	DBT	78.75	-	3
	Molecular cloning and functional characterization of heavy metal stress specific phytochelatin synthase gene from <i>Eichhornia crassipes</i>	DBT	78.40	-	5
Saini, G.K.	Isolation, characterization and identification of natural pigments of food and industrial values from filamentous fungi	DBT	56.76	Dr. Suresh (PI, North east Institute(NERIST)) Dr. N.C. Talukdar (PI, Collaborating Institute (IBSD))	3
Swaminathan, R.	Single molecule fluorescence investigations on the mechanism of lysozyme aggregation and RNA helicase activity	DBT	60.50	Dr. B. Anand and Dr. S. Maiti (TIFR, Mumbai)	3
	Protein aggregation: Early molecular events, mechanisms and inhibition	DST	53.40	None	3
	Conjugating luminescent quantum dots to proteins: Consequences on protein function and development of sensitive assays.	CSIR	12.50	None	3
Tamuli, R.	Studies on the cellular roles of calcium signaling proteins in <i>Neurospora crassa</i> (NE-Twining project)	DBT	50.70	Dr. Utpal Bora	3
	Functional analysis of calcium signaling proteins in <i>Neurospora</i>	DST	15.352	None	3

	<i>crassa.</i>				
Trivedi, V.	Molecular Modeling, Design and Synthesis of Macrophage Phagosome-Lysosome Fusion Activators in Development of anti-malarials	BRNS	16.86	None	3
	Biochemical and Functional Characterization of RIO kinase (s) from Plasmodium falciparum as a Potential Drug Target	DBT	31.48	Dr. V.K. Dubey	3
	Winged Helix domain-oligonucleotide recognition as an axis to develop PfRIO-2 specific inhibitor: implication in anti-malarial drug development	DBT	82.10	Dr. Sanjukta Patra Dr. Chandra lata Bal (BIT Ranchi)	3
	Regulation Of Macrophage CD36 Mediated Immune Response During Malaria.	DST	24.41	None	3

c. Completed Sponsored Projects

Principal Investigator	Name of Project	Sponsoring Agency	Amount Sanctioned (Rs. in Lakh)	Co-Investigator	Duration (Years)
Bora, U.	Synthesis of Biodegradable Nanocarriers for Targeted Drug Delivery	DBT	14.686	Prof.Pranab Goswami	3
	Electrospun nanofiber Scaffolds For Hepatic Tissue Engineering	DBT	52.55	Dr. R R Bhonde, Prof.Pranab Goswami	3
	Nanoparticle mediated targeted siRNA delivery to cancer cell lines.	DST	12.96	None	3
	Ganga river basin management plan: Thematic group-Ecology and Biodiversity.	Ministry of Environment and Forests (MOEF)	1600.00 (Total)	Dr. Ranjan Tamuli and Dr. Mrinal Kanti Dutta	1
Dasu, V.V.	Process Development for the Production of Recombinant Cutinase	DST	33.49	None	4
Dubey, V.K.	Studies on effect of small molecule compounds on folding and amyloid formation of proteins	CSIR	23.50	Dr. S. Patra	3
	Studies on trypanothione Reductase from Leishmania Parasites: Structure, Function, Folding and Potential for Chemotherapy	DBT	35.76	Dr. S. Patra	3
Goyal, A.	Production of microbial carbohydrates and carbohydrate active enzymes for healthcare	DBT	11.74	None	3
	Probiotic fermentation as a platform for production of nutraceuticals.	CSIR	20.1	None	3
Rangan, L.	Cloning of fatty acid saturation genes and analysis of spatial and temporal expression from seeds of candidate plus tree Karanj (<i>P. pinnata</i> L.).	DST	22.64	Dr B.G. Jaganathan	3
Sahoo, L.	Molecular cloning and functional Analysis of Na ⁺ /H ⁺ antiporter gene in Cowpea (<i>Vigna unguiculata</i> L Walp)	DBT	44.88	Dr. S. K. Panda (AU, Assam)	3
	Amino acid polymorphism in conserved Motifs in HMA proteins and Heavy Metal Resistance in Plants	Indo-Japan DST Project	4.20	Prof. H. Koyama, Gifu University, Japan; Dr. Satoshi Iuchi, RIKEN BRC, Japan; Dr. S. K. Panda (AUS)	3
	Genetic engineering of Cowpea	DBT	11.62	Dr. L. Rangan	3

	(Vigna unguiculata) for resistance to pod borer and bruchid				
	Cloning of elite germplasm of Jatropha for large scale plantation	DRDO (Center for Energy)	9.98	None	3
	Genetic engineering of Cowpea (Vigna unguiculata L. Walp) for storage pest resistance	DST	4.92	None	3
	Development of micropropagation technology for Jatropha: A potential biofuel plant	NEDFi	4.0	None	3

8. CONSULTANCY

Principal Investigator	Name of Project	Sponsoring Agency	Amount Sanctioned (Rs. in Lakh)	Co-Investigator	Duration (Years)
Sahoo, L.	Oil analysis and DNA fingerprinting of Jatropha and Patchouli accessions	NEDFi	0.55	Prof. P. Mahanta	1.6

9. RESEARCH PUBLICATIONS (PLEASE USE SERIAL NUMBERS)

International Journal

- M. Gulati, N. Jain, **B. Anand**, B. Prakash, R.A. Britton. 'Mutational analysis of the ribosome assembly GTPase RbgA provides insight into ribosome interaction and ribosome -stimulated GTPase activation', *Nucleic Acids Res.* 41, 3217-3227, 2013.
- B. Anand**, S. Majumdar, B. Prakash. 'The Structural Basis Unifying Diverse GTP Hydrolysis Mechanisms', *Biochemistry*, 52, 1122-1130, 2013.
- P.J. Babu, P. Sharma, S. Saranya and **U. Bora**. 'UV Light mediated synthesis of gold nanoparticles using ethonolic leaf extract of *Bacopa monnieri*', *Materials Letters*, 93, 431-434, 2012.
- P.J. Babu, P. Sharma and **U. Bora**. '*Sapindus mukorossi* aqueous fruit extract as reducing, capping and dispersing agents in synthesis of gold nanoparticles', *Micro and Nano Letters*, (7)12, 1296-1299, 2012.
- P.J. Babu, P. Sharma, S. Saranya, R. Tamuli and **U. Bora**. 'Piper betle Mediated Green Synthesis of Biocompatible Gold Nanoparticle', *International Nano Letters*, 2, 18-28, 2012.
- P.J. Babu, S. Saranya, P. Sharma, R. Tamuli and **U. Bora**. 'Sonocatalytic Synthesis of Gold Nanoparticles Using Ethnolic Extract of *Andrographis paniculata* and Functionalization with Gelatin-Polycaprolactone Composites', *Front Mater Sci*, 6(3), 236-249, 2012.
- R.K. Das, N. Gogoi, P.J. Babu, P. Sharma, C. Mahanta and **U. Bora**. 'The synthesis of gold nanoparticles using *Amaranthus spinosus* leaf extract and study of their optical properties', *AMPC*, 2, 275-281, 2012.
- R.K. Das, P.J. Babu, N. Gogoi, P. Sharma and **U. Bora**. 'Microwave mediated rapid synthesis of gold nanoparticles using *Calotropis procera* latex and study of optical properties', *ISRN Nanomaterials*, 1-6, 2012.
- A. Kumar and **U. Bora**, 'Molecular docking studies on inhibition of Stat3 dimerization by curcumin natural derivatives and its conjugates with amino acids', *Bioinformation*, 8(20), 988-993, 2012.
- A. Kumar and **U. Bora**. 'In silico inhibition studies of Jun-Fos-DNA complex formation by curcumin derivatives', *International Journal of Medicinal Chemistry*, 2012, 8 pages, doi:10.1155/2012/316972, 2012.
- A. Sett, S. Das, P. Sharma and **U. Bora**. 'Aptasensors in Health, Environment and Food Safety Monitoring', *Open Journal of Applied Biosensor*, 1, 9-19, 2012.
- P. Nahar, **U. Bora**, G.L. Sharma and D.K. Kannoujia. 'Microwave-mediated enzyme-linked immunosorbent assay procedure', *Analytical Biochemistry*, 421(2), 764-766, 2012.

13. N. Kasoju and **U. Bora**. 'Silk fibroin based biomimetic artificial extracellular matrix for hepatic tissue engineering applications', *Biomed. Mater*, 7, 045004-16, 2012.
14. D. Moirangthem, N.C Talukdar, N. Kasoju, R.K Das and **U. Bora**. 'Antioxidant, antibacterial, cytotoxic and apoptotic activity of extracts of *Cephalotaxus griffithii* Hook. f. (stem bark)', *BMC Complementary and Alternative Medicine*, 12-30, 2012.
15. N. Kasoju and **U. Bora**. 'Silk fibroin in tissue engineering', *Advanced Healthcare Materials*, 1(4), 393-412, 2012.
16. N. Kasoju and **U. Bora**. 'Fabrication and characterization of curcumin releasing silk fibroin scaffold' *Journal of Biomedical Materials Research: Part B – Applied Biomaterials*, 100(7), 1854-1866, 2012.
17. A. Kumar and **U. Bora**. 'In silico inhibition studies of Jun-Fos-DNA complex formation by curcumin derivatives', *International Journal of Medicinal Chemistry*, 2012, 8 pages, (doi:10.1155/2012/316972), 2012.
18. A. Das, N Kasoju, **U. Bora** and L Rangan. 'Chemico-biological investigation of rhizome essential oil of *Zingiber moran*—native to Northeast India', (DOI 10.1007/s00044-012-0432-0), 2013.
19. D. Moirangthem, N.C. Talukdar, N. Kasoju and **U. Bora**. 'Differential effects of *Oroxylum indicum* bark solvent extracts: total phenolic and flavonoid content, antioxidant, antimicrobial, cytotoxic and apoptotic study', *Cytotechnology*, 65(1), 83-95, 2013.
20. A. Kumar and **U. Bora**. 'Interactions of curcumin derivatives and its metal complexes with nucleic acids and their implications', *Mini Reviews in Medicinal Chemistry*, 13(2), 256-64, 2013.
21. M. Singh and **R. Chaturvedi**. 'Extracts of dedifferentiated cultures of *Spilanthes acmella* Murr. possess antioxidant and anthelmintic properties and hold promise as an alternative source of herbal medicine', *Plant Biosystems*, <http://dx.doi.org/10.1080/11263504.2013.766278>, 2013.
22. R.R. Hazarika and **R. Chaturvedi**. 'Establishment of dedifferentiated callus of haploid origin from unfertilized ovaries of tea (*Camellia sinensis* (L.) O. Kuntze) as a potential source of total phenolics and antioxidant activity', *In Vitro Cell. Dev. Biol. – Plant*, 49: 60-69, 2013.
23. M. Singh and **R. Chaturvedi**. 'Evaluation of nutrient uptake and physical parameters on cell biomass growth and production of spilanthol in suspension cultures of *Spilanthes acmella* Murr', *Bioprocess Biosyst Eng*, 35(6), 943-951, 2012.
24. M. Singh and **R. Chaturvedi**. 'Screening and quantification of an antiseptic alkylamide, spilanthol from in vitro cell and tissue cultures of *Spilanthes acmella* Murr', *Industrial Crops Products*, 36, 321-328, 2012.
25. M. Singh and **R. Chaturvedi Rakhi**. 'Statistical optimization of media for enhanced azadirachtin production from redifferentiated zygotic embryo cultures of neem (*Azadirachta indica* A. Juss.)', *In Vitro Cell. Dev. Biol. – Plant*, 48, 92-98, 2012.
26. A.N. Singh, P.Yadav and **V.K. Dubey**. 'cDNA cloning and molecular modelling of Procerain B, a novel cysteine protease isolated from *Calotropis procera*', *PLOS ONE*, 8(3): e59806, 2013.
27. A.K. Shukla, S.Patra and **V.K. Dubey**. 'PEGylated nanospheres encapsulating antileishmanial drugs for their specific macrophage targeting, reduced toxicity and deliberate intracellular release', *Vector-Borne and Zoonotic Diseases*, 12, 953-60, 2012.
28. A.K. Shukla, S.Patra and **V.K. Dubey**. 'Iridoid glucosides from *Nyctanthes arbortristis* results in increased Reactive Oxygen Species and cellular redox homeostasis imbalance in *Leishmania parasite*', *European Journal of Medicinal Chemistry*, 54, 49-58, 2012.
29. N. Sharma, A.K. Shukla, M. Das and **V.K. Dubey**. 'Evaluation of plumbagin and its derivative as potential modulator of redox thiol metabolism of *Leishmania parasite*', *Parasitology Research*, 110, 341-348, 2012.
30. A. Grover, S.P. Katiyar, J. Jeyakanthan, **V.K. Dubey** and D. Sundar. 'Blocking protein kinase C signaling pathway: mechanistic insights into the anti-leishmanial activity of prospective herbal drugs from *Withania somnifera*', *BMC Genomics*, 13, 7, S20, 2012.
31. R. Bhardwaj, P. Saudagar and **V.K. Dubey**. 'Nanobiosciences: A contemporary line for Antiparasitic Drug', *Molecular and Cellular Pharmacology*, 4, 97-103, 2012.
32. D. Chakraborty, P. Saravanan, S. Patra and **V.K. Dubey**. 'Studies on ornithine decarboxylase of *Leishmania donovani*: Structure modeling and inhibitor docking', *Medicinal Chemistry Research*, 167, 439-61, 2012.

33. M. Kumar, N. Sarkar and **V.K. Dubey**. 'Evaluating quinacrine as a potential amyloid imaging compound: studies on hen egg white lysozyme as model system', *Protein and Peptide Lett.*, 19, 826-31, 2012.
34. A. Grover, S.K. Shakyawar, S. Prakash, **V.K. Dubey** and D. Sundar. 'Epitopic analysis of potential vaccine candidate in *Leishmania infantum* for development of human vaccine', *Letters in Drug Design and Discovery*, 9, 698-705, 2012.
35. A. Grover., S.P. Katiyar, J. Jeyakanthan, **V.K. Dubey** and D. Sundar. 'Mechanistic insights into the dual inhibition strategy for checking leishmaniasis', *Journal of Biomolecular Structure & Dynamics*, 30, 474-87, 2012.
36. S. Singh, A. Verma and **V.K. Dubey**. 'Aluminium induced oxidative stress in germinating chickpea (*Cicer arietinum L.*) seeds', *Brazilian Journal of Plant Physiology*, 24, 47-54, 2012.
37. A. Grover, S.P. Katiyar, S.K. Singh, **V.K. Dubey** and D. Sundar. 'A Leishmaniasis study: structure-based screening and molecular dynamics mechanistic analysis for discovering potent inhibitors of spermidine synthase', *Biochimica et Biophysica Acta - BBA: Proteins and Proteomics*, 1824, 1476-83, 2012.
38. S.K. Venkatesan and **V.K. Dubey**. 'Footprinting of Inhibitor Interactions of in silico identified inhibitors of trypanothione reductase of Leishmania parasite', *TheScientificWorldJOURNAL*, Article ID 963658, 13 doi:10.1100/2012/963658, 2012.
39. S. Singh, A.N. Singh, A. Verma and **V.K. Dubey**. 'A novel superoxide dismutase from *Cicer arietinum L.* seedlings: purification and characterization', *Protein and Peptide Letters*. 2013 (Accepted).
40. R. Khandelvia, A. Jaiswal, **S.S. Ghosh** and A. Chattopadhyay. 'Gold nanoparticle-protein agglomerates as versatile nanocarriers for drug delivery', *Small*, 10.1002/smll.201203095, 2013.
41. N. Chaubey and **S.S. Ghosh**. 'Molecular Cloning, Purification and Functional Implications of Recombinant GST Tagged hGMCSF Cytokine', *Applied Biochemistry Biotechnology*, 169(5):1713-26, 2013.
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1. A. Kumar and **B. Bose**. 'Truncated Diphtheria Toxin as a Novel Therapeutic Agent', *Carcinogenesis 2012*, New delhi, 19-21 November 2012.

2. P. Loying, R. Chaturvedi and **B. Bose**. 'Design Principle of the Transcriptional Circuit of Human Cripto-1', *4th International Conference on Stem Cells and Cancer (ICSCC-2013)*, New Delhi, 19-22 October 2012.
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26. Md.S.K. Palashuddin, A. Jaiswal, A. Paul, **S.S. Ghosh** and A. Chattopadhyay. 'Food Caramel Originated Carbon Dots for Newer and Biofriendly Fluorescence Materials Applications', *National Conference on Frontiers in Chemical Sciences (FICS -2012)*, IIT Guwahati, 2-3 December 2012.
27. S. Chockalingam and **S.S. Ghosh**. 'Macrophage colony stimulating factor (CSF-1) expression potentiates 5-fluorouracil sensitization of drug resistant cancer cells', *UICC-World Cancer Congress 2012*, Montreal, Quebec, Canada, 27-30 August 2012.
28. S. Chockalingam and **S.S. Ghosh**. 'Overexpression of MCSF increases the sensitivity of human glioblastoma cells to 5-fluorouracil', *3rd International Conference on Stem Cells and Cancer (ICSCC-2012): Proliferation, Differentiation and Apoptosis*, New Delhi, 27-30 October 2012.
29. S. Banerjee, A.K. Sahoo and **S.S. Ghosh**. 'pH sensitive biodegradable hydrogel nanoparticles for functional delivery of GST-tagged I B as therapeutic agent', *World Congress on Biotechnology-2012*, Hyderabad, 4-6 May 2012.
30. S. Banerjee, A.K. Sahoo, A. Chattopadhyay and **S.S. Ghosh**. 'A novel protein therapeutic approach using recombinant I B loaded hydrogel nanocarrier in cancer therapy', *Frontiers in Chemical Science (FICS-2012)*, IIT Guwahati, 2-3 December 2012.
31. N. Chaubey and **S.S. Ghosh**. 'Cloning, Expression, Purification and Functional aspects of recombinant GST tagged GMCSF cytokine', *World Congress on Biotechnology-2012*, Hyderabad, 4-6 May 2012.
32. N. Chaubey and **S.S. Ghosh**. 'GST tagged IFN : Cloning, Expression, Purification and Functional aspects of recombinant cytokine', *Carcinogenesis 2012*, New Delhi, 19-21 November 2012.
33. N. Chaubey and **S.S. Ghosh**. 'Recombinant GST-tagged Human Granulocyte Macrophage Colony Stimulating Factor (GST-hGMCSF) In Combination Therapy', *Society of Biological Chemists 2012*, Kolkata, 8-11 November 2012.
34. M. Das, P. Das, L. Barbora and **P. Goswami**. 'Electroactive Nanomaterials based Alcohol Oxidase Bioanode and Laccase Biocathode for Biofuel cell development', *Indo-US workshop on Electrocatalytic Materials for Fuel and Biofuel Cells (Indo-US ECM 2013)*, jointly organised by Indo-US science and technology forum and Banaras Hindu University (BHU), 25-28 February 2013.
35. M. Das and **P. Goswami**. 'Development of nanocomposite based enzymatic bioanode and biocathode for biofuel cell application', *Advanced materials for Future Energy requirements. (WAMFER 2012)* jointly organized by Max Planck Institute for Polymer Research, Mainz, Germany and University of Delhi, New Delhi, 29th November-1st December 2012.

36. M. Chakraborty, M. Goel, S.S. Ghosh, **P. Goswami**. 'Molecular Characterization and Structure Function Relationship Studies of a Novel Alcohol Oxidase from *Aspergillus terreus* MTCC 6324', 'WORLD CONGRESS ON BIOTECHNOLOGY, Hyderabad, 4-6 May 2012.
37. S.S.R. Chinnadayala, M. Santhosh and **P. Goswami**. 'Bioengineering of Alcohol Oxidase by entrapping 1,1'-Ferrocene-di-carboxylate in the Protein Matrix Using Microwave Based Reversible Refolding Technique', *WORLD CONGRESS ON BIOTECHNOLOGY*, Hyderabad, 4-6 May 2012.
38. A.K. Verma and **A. Goyal**. 'Structural characterization and docking analysis of modeled CtXylGH30 protein family 30 glucuronoxylan xylanohydrolase of *Clostridium thermocellum*', *International Symposium on Bioengineering*, IIT Guwahati, 10 December 2012.
39. R. Shukla, I. Iliev, I. Ivanova and **A. Goyal**. '*Leuconostoc mesenteroides* NRRL B-1149 as probiotic and its dextran displaying anti-cancer properties', *6th Annual Convention of Association of Biotechnology and Pharmacy and International Conference on Environmental Impact on Human Health and Therapeutic Challenges*, ICEHT-2012, Sri Venkateswara University, Tirupati, Andhra Pradesh, 20-22 December 2012.
40. D. Kothrai and **A. Goyal**. 'Non-digestibility of glucan produced by *Leuconostoc mesenteroides* NRRL B-1426 glucansucrase', *6th Annual Convention of Association of Biotechnology and Pharmacy and International Conference on Environmental Impact on Human Health and Therapeutic Challenges*, ICEHT-2012, Sri Venkateswara University, Tirupati, Andhra Pradesh, 20-22 December 2012.
41. V. Bivolarski, T. Vasileva, R. Shukla, **A. Goyal** and I. Iliev. 'Physiological studies of strain *Leuconostoc mesenteroides* NRRL B-1149 during cultivation on glucose and fructose media', *National Youth Conference*, Plovdiv University, Plovdiv, Bulgaria, 19-20 October 2012.
42. N. Akhtar, D. Kaur, D. Goyal and **A. Goyal**. 'Ethanol production from agricultural waste biomass', *International Conference on Industrial Biotechnology*, Punjabi University, Patiala, 21-23 November 2012.
43. S. Singh, V.S. Moholkar and **A. Goyal**. 'Stability and specificity studies of cellulase produced from a facultative thermophilic and acidophilic *Bacillus amyloliquefaciens* SS35', *International Conference on Industrial Biotechnology*, Punjabi University, Patiala, 21-23 November 2012 (Received Best Poster Award).
44. A. Ghosh, A.K. Verma, C.M.G.A. Fontes and **A. Goyal**. 'Manno.-configured substrate specific family 35 carbohydrate binding module (CtCBM35) from *Clostridium thermocellum*', *International Conference on Industrial Biotechnology*, Punjabi University, Patiala, 21-23 November 2012.
45. A. Ghosh, A.K. Verma and **A. Goyal**. '3-D structure prediction and ligand docking analysis of family 35 carbohydrate binding module (CtCBM35) of *Clostridium thermocellum*', *International Conference on Industrial Biotechnology*, Punjabi University, Patiala, 21-23 November 2012.
46. T. J.M. Rao and **A. Goyal**. 'Purification and stability studies of dextransucrase isolated from *Weissella cibaria* (JAG8)', *81st Annual Meeting of Society of Biological Chemists, India*, Kolkata, 8-11 November 2012.
47. S. Chakraborty and **A. Goyal**. 'Biochemical characterization of family 1 Polysaccharide Lyase (CtPL1-CBM35) and its truncated derivative CtPL1 from *Clostridium thermocellum* showing activity towards pectic substrates', *81st Annual Meeting of Society of Biological Chemists, India*, Kolkata, 8-11 November 2012.
48. D. Das and **A. Goyal**. 'Structural analysis and effective purification of glucan produced by *Lactobacillus plantarum* DM5 isolated from fermented beverage Marcha of Sikkim', *81st Annual Meeting of Society of Biological Chemists, India*, Kolkata, 8-11 November 2012.
49. T.J.M. Rao and **A. Goyal**. 'Dextran from *Weissella cibaria* with potential application in gluten free cereal products', *V International Symposium on Sourdough - Cereal Fermentation for Future Foods*, Helsinki, Finland, 10-12 October 2012.
50. S. Shukla and **A. Goyal**. 'Potentials of dextran hyper-producing *Weissella confusa* Cab3 isolated from fermented cabbage for sourdough', *V International Symposium on Sourdough - Cereal Fermentation for Future Foods*, Helsinki, Finland, 10-12 October 2012.
51. S. Chakraborty and **A. Goyal**. 'Cloning and expression of family 1 polysaccharide lyase (CtPL1) and family 35 carbohydrate binding module (CtCBM35) from *Clostridium thermocellum* having specificity towards pectic substrates', *5th International Conference on Industrial bioprocesses*, National Taiwan University of Science and Technology, Taipei, Taiwan, 7-10 October 2012.

52. D. Das and **A. Goyal**. 'In vitro analysis of probiotic properties of *Lactobacillus plantarum* DM5 isolated from fermented beverage Marcha of Sikkim', *5th International Conference on Industrial bioprocesses*, National Taiwan University of Science and Technology, Taipei, Taiwan, 7-10 October 2012.
53. S.P. Das, D. Deka, R. Ravindran, D. Das, M. Jawed and **A. Goyal**. 'Lignocellulosic fermentation of water hyacinth involving mixed pretreatment and different hydrolytic enzymes', *International Workshop and Conference on Renewable Energy and Climate Change*, Madurai Kamraj University, Madurai, 22-24 April 2012.
54. S.P. Das, R. Ravindran, D. Das, **A. Goyal**. 'Enhanced bioethanol production using mixed pretreatment along with mixed recombinant hydrolytic cellulase (GH5) and hemicellulase (GH43) from *Clostridium thermocellum*', *International Workshop and Conference on Renewable Energy and Climate Change*, Madurai Kamraj University, Madurai, 22-24 April 2012.
55. S. Khanna, **A. Goyal** and V.S. Moholkar. 'Bioconversion of biodiesel derived crude glycerol by immobilized *Clostridium pasteurianum*: Effect of temperature', *International Conference on Agricultural, Biotechnology, Biological, Biosystems Engineering*, ICABBE, Venice, Italy, 11-13 April 2012.
56. H. Sonowal, A. Kumar, D. Das, P.K. Gogoi and **B.G. Jaganathan**. 'Actin remodeling in MSC during differentiation', *EMBL conference on Stem Cells in Cancer and Regenerative Medicine*, Heidelberg, Germany, 29th August to 1st September 2012.
57. A., H. Sonowal, J. Bhattacharyya and **B.G. Jaganathan**. 'CD90 expression in Mesenchymal Stem Cells from hematologic malignancies', *EMBL conference on Stem Cells in Cancer and Regenerative Medicine*, Heidelberg, Germany, 29th August to 1st September 2012.
58. C. Somaiah, A. Kumar, J. Bhattacharyya, R. Singh and **B.G. Jaganathan**. 'Study of Apoptosis in Mesenchymal Stem Cells', *3rd International Conference on Stem Cells and Cancer (ICSCC -2012): Proliferation, Differentiation and Apoptosis*, New Delhi, 27-30 October 2012.
59. D. Mawrie, H. Vyas, D. Magdalene and **B.G. Jaganathan**. 'Isolation and characterization of stem cells from extra ocular muscle tissue', *3rd International Conference on Stem Cells and Cancer (ICSCC-2012): Proliferation, Differentiation and Apoptosis*, New Delhi, 27-30 October 2012.
60. S.K. Singh and **B.B. Mandal**. 'Cytocompatible silk scaffold-hydrogel matrix for controlled drug release', *International Conference on Design of Biomaterial*, BIND-12, IISc Bangalore, 9-11 December 2012.
61. **B.B. Mandal**, A. Grinberg, E.S. Gil, B. Panilaitis, D. L. Kaplan. 'High strength silk protein scaffolds for bone repair', *3rd TERMIS World Congress 2012*, Vienna, Austria, 05-08 September, 2012.
62. J. Rnjak-Kovacina, L.S. Wray, **B.B. Mandal**, E.S. Gil, A.S. Weiss, D.L. Kaplan. 'Versatile biomaterial scaffold platform for critical-sized tissue construct', *3rd TERMIS World Congress 2012*, Vienna, Austria, 05-08 September 2012.
63. P. Saravanan and **S. Patra**. 'Identification of potential multi-target inhibitors for tuberculosis' *International conference on Biomolecular forms and functions*, IISc Bangalore, 8-11 January 2013.
64. D. Charavorty and **S. Patra**. 'Enhancing thermostability of Bacillus lipases by increment of -turns', *Biomolecular forms and functions*, IISc Bangalore, 8 - 11 January 2013.
65. B. Das, T.K. Mandal, **S. Patra**. 'Phenol degradation by *Chlorella Pyrenoidosa*', *International conference on algal biorefinery: A potential source of food, feed, biochemicals, biofuels and biofertilizers*, IIT Kharagpur, 10-12 January 2013.
66. I. Ray, G.K. Sharma, P.K. Hazam and **V. Ramakrishnan**. 'Quantification of Local Vs Global effects in Protein Conformational Fold Selection', *International Conference on Biomolecular Forms & Functions*. IISc Bangalore, 8-11 January 2013.
67. D. Thiyagarajan, M. D. Adhikari, S. Goswami, C. Kar, G. Das and **A. Ramesh**. 'Membrane-targeting bactericidal activity of a Janus amphiphile', Abstract PD2 -624 (MVM). Presented in 53rd Annual Conference of Association of Microbiologists of India (AMI), Bhubaneswar, 22-25 November 2012.
68. U. S. Pallavi, S. Goswami, M. D. Adhikari, G. Das and **A. Ramesh**. 'Potential therapeutic applications of a membrane-acting bactericidal amphiphile', Abstract PD2 -510 (MVM). Presented in 53rd Annual Conference of Association of Microbiologists of India (AMI), Bhubaneswar, 22-25 November 2012.

69. **L. Rangan**, S. Basak, A.M. Ramesh. 'Ploidy levels of potential biodiesel crops determined by flow cytometry', *World Congress on In Vitro Biology*, Seattle, USA, 3-7 June 2012.
70. A.M. Ramesh, Tushar, **L. Rangan**. 'Next generation sequencing and selective analysis of non-coding DNA in *Pongamia pinnata*', *Industrial conference on industrial biotechnology*, Patiala, 21-23 November 2012.
71. S. Basak and L. Rangan. 'Genome size estimation for selected species of Zingiberaceae from NE India', *6th International symposium on the family Zingiberaceae*, Calicut, 10-13 September 2012.
72. S. Ghosh, U. Bora and L. Rangan. 'Phytochemical analysis and anticancer property of seed extracts of *Alpinia nigra* (Gaertn.) B.L.Burt', *6th International symposium on the family Zingiberaceae*, Calicut, 10-13 September 2012.
73. M.V.S. Kumar and **R. Swaminathan**. 'Human Lysozyme Amyloidosis: MD Simulations Reveal Increased Structural Destabilization in Disease Causing Mutants Compared to Wildtype', *2013 Biophysical Society Meeting Abstracts*, Biophysical Journal, Philadelphia, USA, 2-6 February 2013.
74. V. Laxmi and **R. Tamuli**. 'Cellular roles of calmodulin in *Neurospora crassa*', *4th Asian chromatin meeting on epigenetic mechanisms in development and disease*, CCMB, Hyderabad, 22-24 November 2012.
75. R. Kumar and **R. Tamuli**. 'Involvement of the *Neurospora crassa*Ca²⁺/ CaM-dependent protein kinases in full fertility, survival in exposure to heat shock and oxidative stress', *4th Asian chromatin meeting on epigenetic mechanisms in development and disease*, CCMB, Hyderabad, 22-24 November 2012.
76. K. Jagadeesh and **R. Tamuli**. 'Analysis of mitochondrial carrier proteins from *Bombyxmori* and *Neurospora crassa*', *International consultative meeting on seribiotechnology*, ICMS-2012, Institute of Bioresearches and Sustainable Development (IBSD), Manipur, 5-7 December 2012.
77. A. Barman and **R. Tamuli**. 'Comparative analysis of cell signaling pathways and methylation patterns in *Bombyxmori* and *Neurospora crassa*', *International consultative meeting on seribiotechnology*, ICMS-2012, Institute of Bioresearches and Sustainable Development (IBSD), Manipur, 5-7 December 2012.

National

1. S. Singh, V.S. Moholkar and **A. Goyal**. 'Statistical optimization of medium composition for cellulase production from an isolate *Bacillus amyloliquefaciens* SS35', *National Seminar on Recent Advances in Microbial Technology and Molecular Evolution*, Tezpur University, Assam, 1-4 March 2013.
2. V. Gupta and **A. Goyal**. 'Molecular cloning of family 39 glycoside hydrolase (GH39) from *Clostridium thermocellum*', *National Seminar on Micro- and Macro- resources in Biomolecular Technology*, North Bengal University, Siliguri, West Bengal, 25-26 February 2013.
3. S. Shukla, R. Baruah and **A. Goyal**. 'Biochemical characterization of dextransucrase from *Weissella confusa* Cab3', *National Seminar on Micro- and Macro- resources in Biomolecular Technology*, North Bengal University, Siliguri, West Bengal, 25-26 February 2013.
4. R.H.R. Juvonen, K. Katina, M. Tenkanen and **A. Goyal**. 'Production, purification and biochemical characterization of dextransucrase from *Weissella cibaria* VTT-072749', *National Seminar on Micro- and Macro- resources in Biomolecular Technology*, North Bengal University, Siliguri, West Bengal, 25-26 February 2013..
5. S. Khanna, **A. Goyal** and V.S. Moholkar. 'Comparative assessment of amberlite, polyurethane foam and silica as immobilization supports for glycerol utilizing *Clostridium pasteurianum* cells', *SECONE 2012*, Oil India Limited, Guwahati, 28 April 2012.
6. **A. Goyal**. 'Brainstorming Meeting', Guwahati Biotech Park and IIT Guwahati, 27 December 2012.
7. R. Choudhury, R. Swaminathan and **L. Rangan**. 'Comparative flow cytometric estimation of nuclear genome size of *Pongamia pinnata* and *in vitro* raised plants', *5th Annual Meeting of the Cytometry Society*, Kolkata, 12-13 October 2012.

Book, Chapter, etc.

1. P. Srivastava, M. Singh, D. Gautami and **R. Chaturvedi**. 'Herbal Medicines and Biotechnology: Linking Pharmacology and Phytochemistry to Animal Health', *In: Ashish Verma and Anchal Singh (Editors) Animal Biotechnology: Models in Discovery and Translation*. Elsevier, Inc. 2012 (In Press).
2. M. Singh and **R. Chaturvedi**. 'Somatic Embryogenesis in neem (*Azadirachta indica* A. Juss.): Current status and biotechnological perspectives. *In: P.S. Srivastava (Editor) Somatic Embryogenesis and Plant Regeneration*. Kluwer Academic Publishers, 2012.
3. R.R. Hazarika, V.K. Mishra and **R. Chaturvedi**. 'In vitro haploid production- A fast and reliable approach for crop improvement', *In: N. Tuteja and S.S. Gill (Editors) Crop Improvement Under Adverse Conditions*. Springer, New York, NY, USA. 2012.
4. **N. Chaudhary** and R. Nagaraj. 'Tau fibrillogenesis', *Subcellular Biochemistry*, 65, 75-90, 2012.
5. N.K. Sahoo, A. Ramesh and **K. Pakshirajan**. 'Bacterial degradation of aromatics: An overview on metabolic pathways', *In: Microorganisms in Environmental Management*, Satyanarayana, T., Johri, B.N. and Anil Prakash (Eds), Springer, New York, pp 201 -220, 2012.
6. D. Chakravorty, A. Shreshtha, V.R. SarathBabu and **S. Patra**. 'Molecular evolution of extremophiles', *In: Extremophiles: Sustainable resources and Biotechnological Implications*. Ed. Singh OV; Wiley-Blackwell; USA. Page 1-28, 2012.
7. A. Sebastian and **V. Ramakrishnan**. 'Computational Biology Applications. *NutriHorti-culture*. Ed. K. V. Peter. DPH New Delhi. pp 123-142. ISBN 13: 9788170357766, 2012.
8. H. Upadhyaya, **L. Sahoo** and S.K. Panda. 'Molecular Physiology of Osmotic Stress in Plants', *Molecular Stress Physiology of Plants*, G.R. Rout and A.B. Das (eds.), Springer India (DOI 10.1007/978-81-322-0807-5_7), 2013.
9. Md. Z. Ansari and **R. Swaminathan**. 'Beyond the green fluorescent protein, tryptophan and kappa squared', *ISRAPS Bulletin*, Vol 25 (1&2), 25-28, 2013.
10. **R. Tamuli**, R. Kumar, D.A. Srivastava and R. Deka. 'Calcium signaling. *In Neurospora: Genomics and Molecular Biology* (ed. D. P. Kasbekar and K. McCluskey), Caister Academic Press, Norfolk, UK, pp 35-57, 2013.

10. CONFERENCES/WORKSHOPS/SYMPOSIA ATTENDED: INTERNATIONAL, NATIONAL (In tabular format as given)

Name of Faculty	Name of Conf./Workshop	Place	Date	International /National
Anand, B.	International Conference on Biomolecular Forms and Functions: A Celebration of Fifty Years of Ramachandran Map	IISC, Bangalore	Jan 8-11, 2013	International
	Young Scientist Research Award Meet	BARC, Mumbai	November 26-27, 2012	National
Bora, U.	Conference on 'International Consultative Meeting on SERIBIOTECHNOLOGY 2012' (ICMS 2012) held at, Imphal from 05-12-2012 to 07-12-2012.	Imphal	05-07 Dec, 2012	National
	National workshop cum training programme on Advanced techniques and technologies in sericulture' held at CMER&TI, Lahdoigarh, Assam from 19-03-2013 to 21-03-2013.	Jorhat	19-21 March, 2013	National
Dubey, V.K.	International Meeting on Emerging Diseases and Surveillance (IMED 2013).	Vienna, Austria	February 15-18, 2013.	International
	International Conference on Industrial Biotechnology,	Punjabi University, Patiala	November 21-23, 2012	International
	Interdisciplinary Science Conference 2012 on protein folding and Diseases.	Jamia Milia Islamia University, New Delhi	December 8-10, 2012.	International
	Integrated computational and Biochemical approaches. Workshop on "Basics of Molecular Modelling and Computer-Aided Drug Designing".	College of Veterinary Science, Assam Agricultural University, Guwahati	January 8-10, 2013	National

Goyal, A.	V International Symposium on Sourdough - Cereal Fermentation for Future Foods	Helsinki, Finland	October 10- 12, 2012	International
	5 th International Conference on Industrial Bioprocesses	National Taiwan University of Science and Technology Taipei, Taiwan	October 7-10 2012	International
Mandal, B.B.	3 rd TERMIS World Congress 2012	Vienna, Austria	05-08 September, 2012	International
	MIBISEM-2013 conference, North Bengal University (NBU)	Siliguri	February 25-26, 2013	National
	International Conference on Design of Biomaterial, BIND-2012, IISC	Bangalore	9-11 December 2012	International
Patra, S.	ECCB 2012 from Basel, Switzerland.	Basel, Switzerland	9-12 th September 2012.	International
Ramakrishnan, V.	Third International conference on Natural Polymers, Biopolymers ICNP 2012	Kottayam, Kerala	Oct 26-28 2012	International
	Workshop on modeling biological systems II. Mizoram University. Aizwal	Mizoram University, Aizwal	Aug 21-25, 2012.	National
Rangan, L.	Colloquium of DBT Associates of NER	Khanapara	20 th Dec 2012	National
	World Congress on In vitro Biology (SIVB-2012)	Seattle, USA	3-7 th June 2012	International
	National Academy of Biological Sciences (NABS 2012)	Chennai	13-15 th May 2012	National
Sahoo, L.	The 1st UGSAS Round table & Symposium 2012	Gifu University, Japan	19 – 21 July 2012	International
Saini, G.K.	National Seminar on “Current Perspectives of Fungi in Health Care and Environment” (KAVAASTHA) And 39 th Annual MSI (Mycological Society of India) Meeting	Bangalore	13.03.13 - 14.03.13	National
Swaminathan, R.	FCS 2012 National fluorescence workshop	Saha Institute of Nuclear Physics and Indian Institute of Chemical Biology, Kolkata	3-7 Dec 2012	National
	57 th Annual Meeting of Biophysical Society	Philadelphia, USA	2—6 Feb 2013	International
	1st International Symposium on Prion Chemical Biology and Enabling Technology - Towards a Cure for Alzheimer's Disease	University of Sheffield	9-10 July 2012	International
	National Symposium on Radiation and Photochemistry	North-Eastern Hill University, Shillong	20-22 March 2013	National
Tamuli, R.	Biology 2012 and Beyond (B12B)	CCMB, Hyderabad	25-27 November, 2012	International

11. INVITED LECTURES OF FACULTY: IN INDIA, ABROAD (In tabular format as given below)

Name of Faculty	Name of Lecture	Name of Inst./Org.	Place	Date
Bose, B.	Beyond data: understanding the story hidden in connections	All India Institute of Medical Sciences	New Delhi	16 th February 2013
Bora, U.	Silk in Tissue Engineering and Regenerative Medicine, Rangia College, 2012	Rangia College	Rangia	Jan, 2013
	Seribioresource Database, ISBD, Imphal, December, 2012	ISBD	Imphal	Dec, 2012
	Silkworm Related Database, Current and Future prospects, CMERTI, Jorhat, March, 2012	CMERTI,	Jorhat	19-21 March, 2013
	Interaction of curcumin with its molecular targets, Gauhati University	Gauhati University	Gauhati	-
Chaturvedi, R.	Androgenesis: an efficient in vitro	Department of	Patiala, India	November

	tissue culture technique to induce homozygosity in single step in cross pollinating and long generation woody plants	Biotechnology, Punjabi University		21-23, 2012
	In vitro haploid production and analysis of cell lines for metabolite accumulation using plant tissue culture techniques	International Centre for Biotechnology, Osaka University	Osaka, Japan	September 18, 2012
	Interventions of tissue culture techniques for sustainable development of plant resources	North East Centre for Research and Development (NECRD), IGNOU	Guwahati, Assam, India,	October 1-3, 2012
Dubey, V.K.	Discovery of novel anti-leishmanial compounds by targeting redox metabolism of the parasite: Integrated computational and Biochemical approaches.	College of Veterinary Science, Assam Agricultural University,	Guwahati	January 10, 2013
	The complexity in Biology derives from simple Biochemistry. 9th BRSI Convention & International Conference on Industrial Biotechnology,	Punjabi University	Patiala,	November 21, 2012
	Biomarkers: effect of pollutants on biological systems. Quality improvement programme (QIP) on "Green Chemistry and Clean Technology	IIT Guwahati	Guwahati	November 26-28, 2012
	Basics of Molecular Modelling and Computer-Aided Drug Designing	College of Veterinary Science, Assam Agricultural University	Guwahati	January 8-10, 2013
Ghosh, S.S.	Gene Therapy: prospects in combination therapy	5 th Annual Meeting of The Cytometry Society, India 12th-13th October , 2012, Organized by the Centre for Research in Nanoscience and Nanotechnology, Kolkata	Centre for Research in Nanoscience and Nanotechnology, JD -2, Sector -III, Salt Lake, Sector III, Kolkata -700 098, India	12 th October 2012
	Molecular Biology of Cancer Therapeutics	FICS-2012 (2 nd -3 rd December 2012) Organized by the Department of Chemistry, IITG	IIT Guwahati	2 nd December 2012
	Prospects of Nanobiotechnology	Indian Institute of Chemical Engineers, Organized by the IICChE Guwahati Regional Centre	IIT Guwahati	20 th October 2012
	Flow Cytometry for Potential Therapeutic Nanomaterials	13th INDO-US workshop on Flow Cytometry	IIT Guwahati	9 th October 2012
	Nanobiotechnology: an emerging area for detection, delivery and therapy	National workshop on nanoscience and nanotechnology	M.C College Barpeta	1 st September 2012
	Nanomedicine: Perspectives in Theranostics	National workshop on "Recent Advances in Nanomedicine (From bench to bedside)	IIT Roorkee	4 th June 2012
Goswami, P.	Biofuelcell	Tezpur University	Tezpur	23 rd Aug 2012
	Enzymatic Biofuelcell	Sibsagar College, , Assam,	Jaysagar	14th October, 2012.
	Microbial enzymes and their applications for developing biosensors and biofuelcell	National workashop on "Faculty training and motivation and adoption of school and colleges by	St. Edmund College, Shillong	22nd March 2013

		CSIR lab"		
Goyal, A.	Hyper dextran producing Weissella confusa isolated from fermented cabbage	University of Helsinki,	Helsinki, Finland	Oct 18, 2012
	In vitro analysis of probiotic properties of Lactobacillus plantarum DM5 isolated from fermented beverage Marcha of Sikkim	National Taiwan University of Science and Technology	Taipei, Taiwan	Oct 7-10 2012
Kanaujia, S.P.	In Silico Characterization of Proteins from Sequences and Molecular Modelling Approaches	Assam Agricultural University, Khanapara, Guwahati, Assam	Guwahati, Assam	November 07-09, 2012
Kunnumakkara, A.B.	Research Methodology for Science	Handique's College	Guwahati	05/12/2012
	Curcumin as a Potential chemsensitising agent for cancer cells	5 th International Symposium on Human Health Effects of Fruits and Vegetables, University of Agricultural Sciences	Dharwad, Karnataka	10/01/2013
	Understanding the Mechanism of Drug delivery, Action and Resistance	"Perspectives of Chemoinformatics for Drug Discovery" Pondichery University	Pondichery	21/01/2013
	Dietary Agents- Potential Chemosensitizing Agents for Cancer Cells	"Perspectives of Chemoinformatics for Drug Discovery" Pondichery University	Pondichery	22/01/2013
Mandal, B.B.	Silk a versatile biomaterial for tissue engineering	Nanyang Technological University (NTU)	Singapore	December 21, 2012
	Silk based regenerative medicine	Sastra University	Thanjavur	March 28, 2013
	Silk biomaterials: A versatile platform for human tissue engineering	Indian Institute of Science	Bangalore	December 10, 2012
Pakshirajan, K.	Microbial surfactants and their role in environmental applications	Centre for Petroleum Biotechnology, Department of Molecular Biology and Biotechnology, Tezpur University	Tezpur	24/08/2012
	Waste Management in Business Organizations	Bureau of Indian Standards (BIS), Guwahati	Guwahati	16/11/2012
	Microbial Removable of Metal Ions	Department of Chemical Engineering, IIT Madras	Chennai	16/03/2013
Ramakrishnan, V.	Ying-yang hypothesis for conformational fold selection and its implications in designing peptide assemblies	Mahathma Gandhi University	Kottayam, Kerala	Oct 26-28 2012.
	Topology based prediction of Protein folding pathways.	Indian Statistical Institute, Kolkata & Mizoram University	Aizwal, Mizoram, India	Aug 21-25, 2012
Rangan, L.	Versatility of P. pinnata	TERI	New Delhi	13.03.2013
	Genome mining in Zingiberaceae	AAU	Guwahati	20.12.2012
Sahoo, L.	Translational Agriculture Research – Avenues for International Collaboration	The United Graduate School of Agricultural Science Gifu University, Japan	Gifu, Japan	19 th July 2012
	Translational Agriculture Research in India	To Graduate students of Gifu University	Gifu University, Japan	19 th July 2012
	Enhancing sustainable development, management and utilization of bioresources of Northeast India	RIKEN Biological Resource Center	Tsukuba, Japan	23 rd July 2012
	Plant functional genomics for crop improvement	Tezpur University	Tezpur, Assam	2 nd August 2012
	Plant biotechnology – applications in agriculture	Tezpur University	Tezpur, Assam	1 st & 2 nd Sept. 2012
	Application of molecular techniques	College of Veterinary	Khanapara,	19 th Feb 2013

	in crop biotechnology research	Science, Assam Agricultural University	Guwahati	
	Plant Genetic Improvement for Crop Improvement	North-Eastern Hill University (NEHU)	Shillong, Meghalaya	7 th March 2013
Swaminathan, R.	Controlling the Self-assembly of Hen Lysozyme Nanostructures	FCS 2012 National Fluorescence Workshop, Saha Institute of Nuclear Physics	Kolkata	7 Dec 2012
	Investigating hen lysozyme aggregation at alkaline pH	Cambridge University	Cambridge, United Kingdom	24 July 2012
	Engineering Size-restricted Polycationic Hen Lysozyme Protein Nanoparticles by Exploiting Protein Aggregation	University of Sheffield	Sheffield, United Kingdom	19 July 2012
	Effect of SDS micelles on the absorption and fluorescence spectrum of Thioflavin T	National Symposium on Radiation and Photochemistry 2013, North_eastern Hill University	Shillong	22 March 2013
	Fluorescence Spectroscopy and its Applications in Biology	Student Chapter, Optical Society of America	IIT Guwahati	15 Nov 2012
Tamuli, R.	Biological data base(theory) and Hands on Training Session on Biological data base in the workshop titled Basics of Bioinformatics	IASST	Guwahati-35	19.09.2012

12. VISITORS FROM OTHER INSTITUTES/UNIVERSITIES/ORGANISATIONS / INVITED LECTURES (In tabular format as given below) (Only distinguished visitors invited by appropriate authority)

Name	Name of Inst./Univ./Org.	Purpose/ Name of Lecture	Date	Remarks
Malcolm J. Fraser, Jr.	University of Notre Dame, USA	Piggy Bac Technology and Spider Silk	25 March, 2013	
Prof. Hiroyuki Koyama	Gifu University, Japan	How Arabidopsis activates malate excretion for protecting root tips? -AI sensing and promoter regulation	28 th Sept 2012	
Dr. Kazuhiko Sugiura	Senior Manager, R&D Group, Nutrition Division, Taiyo Kagaku Co., Ltd., Japan	Functional food and worldwide venture of Taiyo Kagaku	8 th Dec 2012	
Dr. Varsha Pardesi	National Chemical Laboratory, Pune	Understanding flax (Linum usitatissimum L.) seed biology: An unique source of functional foods	21st Jan 2013	
Mr. K. K. Roy	Sr. Manager of FITT (the industry interface unit of IIT Delhi)	To discuss the opportunities to incubate the ideas/concepts/proof of concepts on biotechnology for commercialization for funding from BIRAC	15 th Jan 2013	
Dr. Raj Kumar	CEO of a Biotech Company, Chennai	Interaction meeting	21 st Feb 2013	
Dr. Suman Govil	Advisor (DBT), Govt. of India, New Delhi	To attend Executive Committee Meeting and visit the biotechnology department facilities	1 st March 2013	
Dr. P.K. Seth,	CEO, Biotech Park, Former Director, Indian Institute of Toxicology Research, Lucknow	To visit the biotechnology department facilities and interact with faculties	8 th March 2013	
Prof. B.N.Dhawan	Former Director, CDRI, Lucknow			
Dr. V. P. Khamboj	Former Director, CDRI, Lucknow			

13. SEMINARS/WORKSHOPS/CONFERENCES /SHORT-TERM COURSES ORGANISED (In tabular format as given below)

Name of Faculty	Name of Sem./Wor./Con.	Funded By	Date	International/National
Bose, B.	Workshop on Analysis of Biological Networks	DBT	6 th November, 2012	National
Bora, U.	International symposium entitled "BIOENGINEERING 2012" (ISBE 2012) Organized by Biotech Hub on 10 th December 2012	DBT	10 th Dec, 2012	National
Rangan, L.	13th INDO-US Cytometry Workshop on "Applications of Flow cytometry in Nanotechnology and Plant Genomics"	DBT	8-10 October 2012	International
Sahoo, L.	Sustainable Entrepreneurship Development in Biotechnology and Allied Areas through Industry-Academia Partnership	Biotech Park, Guwahati	27 th Dec 2012	Brainstorming Meeting (National)
	Fostering Research, Collaboration and Innovation in Translational Bioresources in Northeast India	DBT Program Support Project	1 st Oct 2012	Indo-Japan workshop (International)

14. PATENT FILED

1. **Dasu, V.V.** and Krishnamoorthy, H. (2012): Development of Bioprocess for production of novel cutinase from *Thermobifida fusca* in *E. coli* BL21(DE3) (1416/KOL/2012) .

15. AWARDS AND HONOURS (Only awards/honours at national/international level from reputed organizations)

1. **Dasu, V.V.:** Talented Industrial Biotechnologist Award for 2012 by Association of Biotechnology and Pharmacy, India [The award consists of a citation and Gold medal].
2. **Dubey, V.K.:** Malviya Memorial Award (Young Faculty) for 2011 by Biotech Research Society of India (Nov., 2012).
3. **Dubey, V.K.:** Editorial Board member: Dataset Papers in Biology [Biotechnology section and Biophysics section] (Hindawi Publication .
4. **Dubey, V.K.:** Editorial Board member: ISRN Structural Biology (Hindawi Publication)
5. **Goyal, A.:** Awarded FIFIB (Fellow, International Forum on Industrial Bioprocesses) Taipei, Taiwan, Oct. 7, 2012.
6. **Goyal, A.:** DBT- Cutting edge Research Enhancement and Scientific Training (DBT-CREST) Award for 2011-2012 for visiting Faculty of Veterinary Medicine, Lisbon, Portugal.
7. **Goyal, A.:** Nominated as a distinguished member for consultative programme to prepare a "Draft Biotechnology Policy" for the state of Assam by Assam Science Technology & Environment Council (ASTECC) to submit the Draft Biotechnology Policy to the Department of Science & Technology, Government of Assam for necessary approval and implementation, 2012.
8. **Goyal, A.:** Mentor, DBT-MSc teaching program, Department of Biotechnology, University of North Bengal, Siliguri, West Bengal, 2012.
9. **Goyal, A.:** Nominated by DBT (GOI) as representative for Institutional Bio-safety Committee (ISBC) at North Eastern Hill University, Shillong Meghalaya. (Nov 2012) .
10. **Goyal, A.:** Invited as a member "Expert Committee for North Eastern Region Biotechnology Programmes" by DBT, New Delhi, May 2, 2012.
11. **Goyal, A.:** Member, Editorial Advisory Board, Journal of Bioscience and Biotechnology, Bulgaria.
12. **Kumar, S.:** 2012 Young Scientist Research Award, Board of Research in Nuclear Sciences, Department of Atomic Energy.
13. **Kumar, S.:** 2012 Inspire Faculty Fellowship Award, Department of Science and Technology, Government of India.

14. **Mandal, B.B.:** Received MAHE Award 2012 for Best Scientist Presentation at BIND International Conference, IISc, December 9-11, 2012 Bangalore.
15. **Mandal, B.B.:** Department of Science and Technology (DST) travel grant award 2012 for attending TERMIS World Congress in Vienna, Austria.
16. **Rangan, L.:** NABS WOMEN SCIENTIST AWARD in the area of Biological Sciences for the year 2011-2012.
17. **Swaminathan, R.:** visited University of Sheffield, UK during 1-30 July 2012, under the UK-India Staff Exchange Programme under the Enhancing Mobility Strand of UK India Education and Research Initiative (UKIERI).
18. **Trivedi, V.:** National Academy of Sciences-India (NASI) Platinum Jubilee Young Scientist Award (2011) in the field of Biological sciences.

16. ANY OTHER (SPECIAL MENTION)

1. **Mr. S. Prakash (Dr. V.K. Dubey)**, a PhD student received travel award from DBT and DST Govt of India to attend International Meeting on Emerging Diseases and Surveillance (IMED 2013, Vienna, Austria, 15–18 February 2013).
2. **Mr. Mitun Chakraborty (Prof. P. Goswami and Prof. S.S. Ghosh)**, doctoral student received best Poster Presentation Award for presenting his paper ‘Molecular Characterization and Structure Function Relationship Studies of a Novel Alcohol Oxidase from *Aspergillus terreus* MTCC 6324’ at WORLD CONGRESS ON BIOTECHNOLOGY, Hyderabad, 4-6 May 2012.
3. Research Highlight of the article: **M. Das and P. Goswami:** Direct electrochemistry of alcohol oxidase using multiwalled carbon nanotube as electroactive matrix for biosensor application. *Bioelectrochemistry* 89: 19-25 (2013) published as: Alcohol Sniffer *Nature India*: Doi:10.1038/nindia.2012.142; Published online 26 September 2012.
4. **Mr. Chockalingam S (Prof. S.S. Ghosh)**, a PhD student has received the “Best Oral presentation award” in the 3rd International Conference on Stem Cells and Cancer (ICSCC -2012): Proliferation, Differentiation, and Apoptosis in New Delhi, India.
5. **Ms. V. Kohila (Prof. S.S. Ghosh)**, a PhD student has received the “Best Poster presentation award” in the 3rd International Conference on Stem Cells and Cancer (ICSCC -2012): Proliferation, Differentiation, and Apoptosis in New Delhi, India.
6. **Mr. S Ghosh (Dr. L. Rangan)**, doctoral student participated in the Training Course on "Extraction and modification of bioactive components and specialty chemicals from plants" held from 23 to 27 April 2012, at Anadolu University in Eskisehir -Turkey, Organized by ICS-UNIDO. He received full travel support and assistance from ICS-UNIDO to participate in this training program.
7. **Mr. A. Sadhukhan (Prof. L. Sahoo)**, doctoral student availed a fellowship from Gifu University to carry out part of his PhD work at Gifu University, Japan for a year (Jan -Dec 2013). The Department of Biotechnology and Center for Nanotechnology, IIT Guwahati signed MOU with the United Graduate School of Agricultural Science, Gifu University, Japan on 19th July 2012 for bilateral exchange of doctoral and master students, faculties between the signatories departments of both Institutes.
8. **Ms. A. Barman (Dr. R. Tamuli)**, a doctoral student, has been awarded “Best Poster Presentation Award” for presenting her poster titled ‘Comparative analysis of cell signaling pathways and methylation patterns in *Bombyx mori* and *Neurospora crassa*’, in International consultative meeting on seribiotechnology (ICMS-2012), Institute of Bioresearches and Sustainable Development (IBSD), Takyelpat Institutional Area, Imphal-795001, Manipur, India, 5-7 December 2012.

17. LIST OF FACULTY MEMBERS ALONG WITH PhD, DESIGNATION, AND AREAS OF INTEREST (In alphabetical order according to surname)

S. No.	Faculty Member	Designation	Areas of Interest
1.	Anand B., Ph.D.	Assistant Professor	Structural Biology, Bioinformatics & Computational Biology, RNA Biology, Molecular Evolution
2.	Bora U., Ph. D.	Associate Professor	Biomaterials, Nanotechnology, Drug Delivery and Tissue Engineering
3.	Bose B., Ph. D.	Assistant Professor	Cell Signaling, Computational Biology, Recombinant Proteins
4.	Chaturvedi R., Ph. D.	Associate Professor	Plant Cell, Tissue & Organ Culture, Protoplast Isolation and Regeneration, Isolation, Purification and Characterization of Plant Secondary Metabolites
5.	Chaudhary N., Ph. D.	Assistant Professor	Peptide self-assembly and amyloid aggregates, Peptide-membrane interactions, Curvature inducing proteins
6.	Das D., Ph. D.	Assistant Professor	Metabolic engineering, Biochemical engineering, Modelling of fermentation process, Biofuel
7.	Dasu V. V., Ph. D.	Associate Professor	Bioprocess Development (upstream to downstream), Metabolic Engineering, Bioenergy
8.	Dubey V. K., Ph. D.	Associate Professor	Protein Biochemistry; Parasite Biochemistry
9.	Ghosh S. S., Ph. D.	Professor	Gene Therapy, Expression Cloning (Mammalian Systems), Nanobiotechnology
10.	Goswami P., Ph. D.	Professor	Biocatalysis, Biosensor, Enzymatic Biofuel cell, and Biotransformation
11.	Goyal A., Ph. D.	Professor	Molecular Biology, Protein Engineering, Structural and Functional Proteomics of Carbohydrate active enzymes and other industrial microbial enzymes
12.	Jaganathan B.G., Ph. D.	Assistant Professor	Mesenchymal Stem Cells (Biology, For Tissue repair, In health and disease), Cell Therapy, Rho GTPases and Haematopoietic Stem Cells
13.	Kanaujia S. P., Ph.D.	Assistant Professor	Structural and Computational Biology
14.	Kumar M., Ph.D.	Assistant Professor	Molecular interaction of host-pathogen-vector of infectious diseases, Gene expression analysis of Spirochete, <i>Leptospira interrogans</i> and <i>Borrelia burgdorferi</i> , Development of vaccine against outer membrane protein of <i>Leptospira interrogans</i> and <i>Borrelia burgdorferi</i> , Vector borne diseases of Zoonotic importance.
15.	Kumar S., Ph.D.	Assistant Professor	Identification of molecular determinants of avian paramyxovirus virulence, Reverse genetics study of avian paramyxoviruses: Newcastle disease virus as a model, Vaccine development against avian paramyxoviruses using reverse genetics system, Viral vector study - Avian paramyxoviruses and adenoviruses.
16.	Kunnumakkara A.B., Ph.D.	Assistant Professor	Role of inflammatory pathways in cancer development, Identification of novel biomarkers for cancer diagnosis and prognosis, Cancer drug discovery, Development of transgenic and gene knockout mouse models for biomedical research
17.	Limaye A. M., Ph. D.	Assistant Professor	Molecular endocrinology, Cancer biology, Gene expression and regulation in Eukaryotic and Prokaryotic systems
18.	Mandal B. B., Ph.D.	Assistant Professor	Cell based tissue engineering, Biomaterials, Stem cells, Drug delivery systems
19.	Pakshirajan K., Ph. D.	Associate Professor	(a) Environmental Biotechnology: biological removal of organic and inorganic pollutants from water and wastewaters (b) Biotechnological Products and Process Engineering: production, characterization and properties, process design, kinetics and optimization (c) Biohydrometallurgy and (d) Biofuels
20.	Patra S., Ph. D.	Assistant Professor	Enzymes - applications in pharma and food industry
21.	Ramakrishnan V., Ph.D.	Assistant Professor	Computational Biology, Bioinformatics, Biophysics, Bio -Organic Chemistry, Bionanotechnology

22.	Ramesh A., Ph. D.	Associate Professor	Nanobiotechnology, Biological Activity of Synthetic Amphiphiles and Metal Complex, Probiotics and Antimicrobial Peptides
23.	Rangan L., Ph. D.	Associate Professor	Molecular systematics, Biofuel, IPR
24.	Sahoo L., Ph. D.	Professor	Genetic engineering and functional genomics of plants
25.	Saini G. K., Ph. D.	Associate Professor	Fungal Biotechnology, Biological Control, DNA fingerprinting and Transformation studies, Studies on extracellular enzymes and toxic metabolite production, Development of a potent biopesticide
26.	Sivaprakasam S., Ph.D.	Assistant Professor	Bioprocess Analytical Technology (BioPAT), Biocalorimetry, Bioprocess Monitoring and Control Environmental Bioprocess Sytems
27.	Sukumar P., Ph.D. University of Leeds, UK	Assistant Professor	Smooth muscle and endothelial cell function, Cardiovascular diseases, Diabetes, Obesity
28.	Swaminathan R., Ph. D.	Professor	Spectroscopic and computational approaches to investigate the following: Intrinsically Disordered Proteins: Their identity and prevalence in the Proteome, Protein Aggregation: Their mechanisms and approaches to inhibit aggregation, Biochemical consequences of Macromolecular Crowding inside living cells.
29.	Tamuli R., Ph. D.	Assistant Professor	Calcium signaling, DNA repair
30.	Trivedi V., Ph. D.	Assistant Professor	Intracellular Signaling in <i>Plasmodium falciparum</i> .

LIST OF Office Staff Members

S. No.	Staff Member	Designation
1.	Barah Niranjan	Junior Technical Superintendent
2.	Barman Dipankar, Diploma in Electronics & Telecommunication Engg.	Junior Technical Superintendent
3.	Baruah Rashmi , M.Sc. Botany, BEd	Junior Technical Superintendent
4.	Das Anita, M.Sc. Biotechnology	Junior Technical Superintendent
5.	Islam Nurul, M.Sc. Agril. Biotech.	Junior Technical Superintendent
6.	Swargari Prarthana, M.Sc. Biochemistry	Junior Technical Superintendent
7.	Nath Chandan Kumar, M.Sc. Computer Science	Junior Technical Superintendent
8.	Yadav, P. Raghuveer, M.Sc. Biotechnology	Junior Technical Superintendent
9.	Kalita, Pranita	Junior Assistant
10.	Gogoi, Bidyut Kr.	Junior Assistant
11.	Bhuyan, Pankaj	Attendant