



# DEPARTMENT OF BIOLOGICAL SCIENCES





# DEPARTMENT OF BIOLOGICAL SCIENCES

## CONTENT

1. Message from the head of department	3
2. About the department	4
3. Technologies from the department	5
4. Areas of Research	6
5. Student achievements	7
6. Entrepreneurial activity	8
7. Collaborations	9
8. Laboratory facilities	10
9. Specialized equipment and facilities	12
10. Faculties	13
11. Prominent visitors to the department	32



# Message from the Head of department



On behalf of the faculty members and staff, I welcome you to the Department of Biological Sciences at the BITS-Pilani, Hyderabad campus. Our department offers various academic programs and research-oriented courses that have evolved into a perfect blend of theory and practical training. We are dedicated to make this department the best research and development facility in the country. Our students and research scholars are encouraged to not only do well in academics but also to find solutions to real-life problems. We provide our research scholars with avenues to develop inter-disciplinary projects and acquire industry-oriented skills. Our department faculty members are well recognized in their respective fields and have received prestigious fellowships such as DBT-Ramalingaswami Re-Entry fellowship, DST-Ramanujan fellowship, and DBT-Welcome trust fellowship to name a few. Our department is DST-FIST funded and has received highly coveted DST-PURSE and DBT-builder grants. Our faculties get funding from all the government funding agencies across India for performing research in different areas ranging from virology to plant biotechnology.

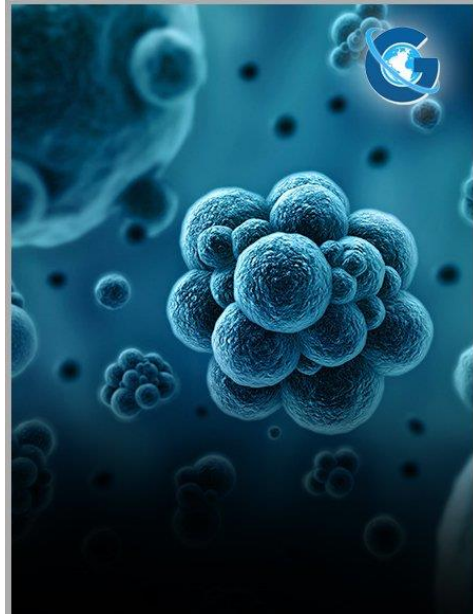


# ABOUT THE DEPARTMENT

The Biological Sciences department became operational in the year 2008 and offers Life Science education in all three tiers through the M. Sc Biological Sciences, M.E Biotechnology and Ph.D. programmes. Coursework for these degrees span the areas of modern biology such as cell biology, genetics, microbiology, biochemistry, environmental biology, plant and animal biology, molecular biology, structural biology etc. along with interdisciplinary areas such as bioinformatics, computational biology and biophysics.

The department comprises of 19 well qualified faculty members and state of art infrastructure to focus on the following major thrust areas of research, namely Molecular characterization of human diseases, Structural/Computational biology/Bioinformatics, Environmental and microbial biotechnology, and Plant Biotechnology.

High quality research with numerous funded projects and a repertoire of highly talented and motivated research scholars (Ph.D students/project staff) provide the department with a vibrant research environment. The faculty have high quality publications and patents to their credit. The department of Biological Sciences is a recipient of the FIST (Fund for Improvement of S&T Infrastructure) grant from the Department of Science and Technology, Govt. of India, DST-PURSE and DBT-builder grants.





**Technologies  
from the  
Department:**

**POC device for doing  
antibiogram of  
pathogens found in  
human urinary tract**

**POC device for  
blood glucose  
sensing**

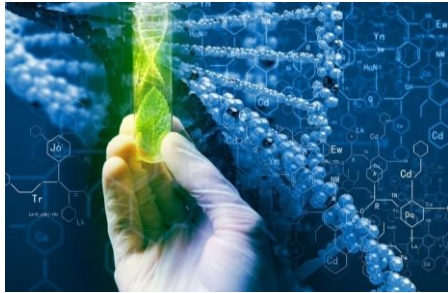
**DNA chip-based  
detection of MDR-  
TB**

**POC device for  
estimation of  
plasma cholesterol  
levels**

**Mechano-Opto-  
Biology**



# Areas of Research



**Human Diseases**  
**Diagnostics and Therapeutics**  
**Toxoplasmosis**  
**Malaria, Tuberculosis**  
**Schizophrenia, Autism**

**Metabolic syndrome**  
**Cancer**  
**Infectious diseases**  
**Targeted drug/gene delivery**

**Environmental Biotechnology**  
**Microbial Biotechnology**  
**Plant Biotechnology**

**Structural Biology**  
**Computational Biology**  
**Molecular Parasitology**



# DEPARTMENT OF BIOLOGICAL SCIENCES

SP Medical College - Bikaner IICT, CCMB, ICAR-IIRR, Ronald Ross Institute of Infectious Diseases, CDFD, KIMS, Owaisi Hospital, Osmania University, University of Hyderabad LVPEI

JHPIEGO and Medici Hospital - Hyderabad AIIMS, ICGEB, Shiv Nadar University, NBRC - Delhi, Sankar Netralaya - Chennai, School of Innovation, Design and Engineering

## COLLABORATIONS

Mälardalens högskola, Sweden; Polish Academy of Sciences - Poland, IISER - Thiruvananthapuram, CSIR-NEIST - Jorhat, HHMI, NCL Pune, IISC-Bangalore, IISER-Bhopal, AIIMS Bhubaneswar, PGIMER-Chandigarh

Indiana University, The Ohio State University - USA, CNRS - France, Osaka University - Japan, Huazhong Agricultural University - Wuhan, China; University of Mainz - Germany





# DEPARTMENT OF BIOLOGICAL SCIENCES

## Student Achievements

- Mega Online Challenge - Samadhan, COVID -19, MHRD, GOI
- 3 Best Poster Awards in National Scientific Conferences
- 1 Best Oral Presentation in National Scientific Conference
- DST & ICMR International Travel Grant
- 4 Khorana Fellowships by IUSSTF
- 11 Best Paper Awards







## DEPARTMENT OF BIOLOGICAL SCIENCES

### Entrepreneurial Activity:

Start-up company Xcellence in Bio Innovations & Technologies Pvt. Ltd. (xBITS) to commercialize:

**RightBiotic - Fastest Antibiotic Finder**

**Promoter & Founder Faculty: Dr. Suman Kapur**





**BITS Pilani**  
Hyderabad Campus



## Laboratory Facilities

Cell and Tissue Culture  
Chronic Human Diseases  
Genetic Engineering  
Genomics  
Molecular biology laboratory  
Molecular Parasitology

Mechano-Opto-Biology  
Structural Biology  
Advanced and Applied Microbiology  
Stem Cell Technology  
Plant Biotechnology  
Environmental Biotechnology



## DEPARTMENT OF BIOLOGICAL SCIENCES

No. of Research Publications : >783

Research Funding : >₹ 39.55 Crores

Department receives funding from all Government Agencies in addition to the International and Industrial support along with hardware grants.





## DEPARTMENT OF BIOLOGICAL SCIENCES

### Specialized Equipments and Facilities:

RT-PCR, FPLC, HPLC, Gel documentation system, Bioreactors, CO<sub>2</sub> Incubators, Microfuges, Lyophilizers, Sonicators, Freezers(-80<sup>o</sup>C &-20<sup>o</sup>C), Deli-Case, Flow cytometer, Refractometer, Millipore and MilliQ Water System, Microscopes, Ultracentrifuges, Thermal cyclers, Spectrophotometers, Bio-safety cabinets, Laminar Air Flows, Fume Hood, Cold room, BSL2 lab, Electroporator, Plant Growth Chambers, Orbital Shaker Incubator, UV Crosslinker, Multimode Reader, ELISA Plate Reader, Servers, Autoclaves, Anaerobic reactors, COD Digester, Micro- and Moisture balance, Green House, Thermoscientific Nanodrop, PCR and many more.



# Faculties

Head of the Department : **Prof. Jayati Ray Dutta**



# Prof. Jayati Ray Dutta , PhD

## HOD, Associate Professor



### Research Area:

Industrial enzymology, Nano-based viral sensing, Antimicrobial biomaterials, Conjugate vaccine for Shigellosis, Enzymatic polymer degradation, Economic construction practice using bacterial inclusions in concrete to Improve its durability

Research Funding (in lakhs): > 40 from DST, CSIR, Aliens Pvt. Ltd. Hyderabad.

Number of Publications: 42 journals + 32 conferences + 3 book chapters + 1 patent

### Selected Publications:

1. Almas S. M., A. Balapure , Aleem A. Khan, M. N. Khaja, R. Ganesan\*, Jayati Ray Dutta\*, *Analyst*, 146, 2021, 4767.
2. Almas S. M., A. Balapure , M. N. Khaja, R. Ganesan\*, Jayati Ray Dutta\*, *Analyst*, 146, 2021, 1477.
3. N. Penta & Jayati Ray Dutta, *Biologicals*, 72, 2021, 1-9.
4. A. Balapure, Hemanjali M, Pranati T., Jayati Ray Dutta\*, R. Ganesan\*, *Journal of Environmental Chemical Engineering*, 9, 2021, 106065.
5. B. Aniket; N., Yamini; Boppudi, Naga Sai Sriteja; R. Ganesan\*; Jayati Ray Dutta\*, *ACS Applied Materials & Interfaces*, Apr, 12, 2020, 21481-21493.
6. N. Penta & Jayati Ray Dutta, *Current Microbiology*, 76(12), Oct 2019, 1398-1406.

**Prof. Vidya Rajesh , PhD**  
**Professor & Associate Dean, Faculty Affairs Division**



**Research Area:**

**Malaria vaccine candidates, Analysis of candidate genes, pathways and interactomes for Autism Spectrum Disorder, Environmental bioremediation of heavy metals using micobe-biopolymer composite materials**

**Research Funding: > 1 Crore (> 5 grants)**

**Selected Publications:**

1. C.N.Rahul, K. Shiva Krishna, Atul P. Pawar, **Vidya Rajesh**, "In silico approach to ascertain the calcium dependent role of *Plasmodium falciparum* SERA 5", *Journal of Biomolecular Structure and Dynamics*, 35 (1), 17-25 (2017).
2. Mahesh Kumar Kalikiri, Madhu Poornima Mamidala, Ananth.N. Rao, **Vidya Rajesh** , "Analysis and Functional characterization of sequence variations in ligand binding domain of thyroid hormone receptors in Autism Spectrum Disorder (ASD) patients", *Autism Research*, 4, (2017).
3. Manasi, Sreedev Mohapatra, N. Rajesh and **Vidya Rajesh**, "Impact of heavy metal lead stress on polyamine levels in Halomonas BVR1 isolated from an industry effluent", *Scientific Reports - Nature*, 7, 13447, (2017).
4. Madhu Poornima Mamidala, N. Rajesh, **Vidya Rajesh**, " Mass Spectrometric evaluation of neurotransmitter levels in IMR 32 cell line in response to Ayurvedic medicines", *Rapid Communication in Mass Spectrometry*, 30, 1413 -1422, (2016).

# Prof. Kumar Pranav Narayan , PhD

## Associate Professor



### Research Area:

Targeted therapeutics for cancer, Phytotherapeutics,  
Vaccine adjuvant, Biofertilizer & Biopesticides.

Research Funding (in lakhs): 95 Lakhs (Two collaborative DBT grants  
of 223 Lakhs with IIT-H; & CSIR-IICT & ACDS, Secunderabad).

Number of Publications: 18

Awards Received: Dewang Mehta National Education Award (regional round) for “Best

### Selected Publications:

1. Elechalawar CK\* & Bhattacharya D\* et al (2019) Dual targeting of folate receptor-expressing glioma tumor associated macrophages and epithelial cells in brain using carbon nanosphere-cationic folate nanoconjugate, *Nanoscale Adv.*, (2019) DOI: 10.1039/C9NA00056A
2. Sharma P et al (2016) Mineralocorticoid receptor mediated liposomal delivery system for targeted induction of apoptosis in cancer cells.(2016) *BBA Biomembranes*. 1858 (2):415-21.
3. Mukherjee A\* & Narayan KP\* et al., (2009) Selective cancer targeting via aberrant behaviour of cancer cell-associated glucocorticoid receptor. *Molecular Therapy* 17(4):623-31.



# Prof. Ramakrishna Vadrevu , PhD

Professor



## Research Area:

**Protein Design, Engineering, and Peptide based Biomaterial Therapeutics for Neurodegenerative diseases**

**Research Funding: 1.3 Cr**

**Number of Publications: 21**

## Selected Publications:

1. Kadumuri RV, Gullipalli J, Subramanian S, Jaipuria G, Atreya HS, **Ramakrishna Vadrevu** (2016). Crowding interactions perturb structure and stability by destabilizing the stable core of the  $\alpha$ -subunit of tryptophan synthase. *FEBS Lett.* 590, 2096-105.
2. Rajasekhar Varma Kadamuri, Shivkumar Sharma Irukuvajjula & Ramakrishna Vadrevu (2019). bab Super Secondary Structural Motifs: Sequence, Structural Overview and Pursuit of Potential Autonomously Folding bab Sequences from (b/a)<sub>8</sub>/TIM Barrels. **Methods in Molecular Biology**, 1958, 221-236.
3. Palakurti R, **Ramakrishna Vadrevu** (2017). Identification of belsontyrosine kinase inhibitors as potential therapeutics for Alzheimer's disease using multiple e-pharmacophore modeling and molecular dynamics. *J. Biomol Struct Dyn.* 35,883-896.

# **Prof. P. Sankar Ganesh , M.Phil, PhD**

**Associate Professor, Associate Dean**



## **Research Area:**

**Anaerobic Digestion, Nano (eco) toxicology, Composting, Vermicomposting, PHA production, Termigradation and Solid Waste Management**

**Research Funding (in lakhs): 800.66**

**Number of Publications: 19 Journals; 48 Conferences; 7 Chapters; 1 Book**

**Patent Filed: 1**

**Awards Received: Editor-in-Chief, GSTF Journal of Biosciences**

## **Selected Publications:**

1. Insight into microbial community diversity and composition of two-stage anaerobic digestion: Focusing methanogenic stage, Bioresource Technology Reports, Vol 15, 100764, 2021.
2. Detection of TiO<sub>2</sub> Nanoparticles in Municipal Sewage Treatment Plant and Their Characterization Using Single Particle ICP-MS. Bulletin of Environmental Contamination and Toxicology 98, 595–600 (2017). <https://doi.org/10.1007/s00128-017-2031-8>.
3. Thermophilic biomethanation of food waste for production of biogas and concomitant use of biogas as fuel supplement for cooking in Bioprocess Engineering for a Green Environment, ISBN: 9781138035973, Routledge, Taylor & Francis, 2018.
4. Escherichia Coli Fed Paper-Based Microfluidic Microbial Fuel Cell With MWCNT Composed Bucky Paper Bioelectrodes, IEEE Transactions on NanoBioscience, vol.18, no. 3, pp. 510-515, July 2019, doi: 10.1109/TNB.2019.2919930.

**Prof. Suman Kapur, PhD**  
**Senior Professor**



**Research Area:**

**Human diseases, early disease detection, disease prevention and point-of care diagnosis**

**Research Funding (in lakhs): 1000 Lakhs (current funding 140 Lakhs)**

**Number of Publications: 200 (Two Hundred)**

**Patents Filed: 17 (Seventeen)**

**Awards Received: 35 (Thirty Five from GOI and others)**

**Selected Publications:**

1. Free radicals and oxidative ..... diseases: relevance of dietary antioxidants, Singh et al 2004, J Indian Acad Clin Med 5 (3), 218-225 (Citations 326).
2. Role of probiotics on gut permeability & endotoxemia.....:controlled trial Sharma et al 2011, J. Clin. Gastro 45 (5), 442-48 (citations 87).
3. Immunosuppression: Role in Health and Disease, Edited by Dr. Suman Kapur & M. Barbosa Portela >55,868 downloads in 132 nations.

# Prof. Sridev Mohapatra, PhD

Associate Professor



**Research Area:**

**Plant-microbial interaction, Plant signal transduction and  
Mechanisms for enhancing Induced Stress Tolerance and Induced Stress  
Resistance in plants**

**Research Funding (in lakhs): 84 (DBT, SERB, BITS)**

**Number of Publications: 12**

## **Selected Publications:**

1. Daipayan Ghosh\*, Anshika Gupta\*, Sridev Mohapatra. 2019. A comparative analysis of exopolysaccharide and phytohormone secretions by four drought-tolerant rhizobacterial strains and their impact on osmotic-stress mitigation in *Arabidopsis thaliana*. World Journal of Microbiology and Biotechnology. 35:90. \* Equal contribution.
2. Sunetra Sen, Daipayan Ghosh, Sridev Mohapatra. 2018. Modulation of polyamine biosynthesis in *Arabidopsis thaliana* by a drought mitigating *Pseudomonas putida* strain. Plant Physiology and Biochemistry. 129:180-188.
3. Daipayan Ghosh, Sunetra Sen, Sridev Mohapatra. 2017. Modulation of proline metabolic gene expression in *Arabidopsis thaliana* under water-stressed conditions by a drought mitigating *Pseudomonas putida* strain. Annals of Microbiology. 67 (10): 655-668.

# **Prof. K.N. Mohan , PhD**

**Associate Professor**



**Research Area: Human and Molecular Genetics: Schizophrenia, Oral Cancer and Tuberculosis**

**Research Funding: > 4.0 Crores (Current + Completed)**

**Number of Publications: 26**

**Awards Received: OPERA, DST Travel Grant**

## **Selected Publications:**

1. Saxena S, Maraju PA, Choudhury S, Anne A, Mohan KN\*. Analysis of transcript levels of a few schizophrenia candidate genes in neurons from a transgenic mouse embryonic stem cell model overexpressing DNMT1 Gene (2020) 757: 144934.
2. Addepalli A, Kalyani S, Singh M, Bandyopadhyay D, Mohan KN\*. CalPen (Calculator of Penetrance), a web-based tool to estimate penetrance in complex genetic disorders PLoS One (2020) 15: e0228156.
3. Mohan KN\*, Cao Y, Pham J, Cheung SW, Hoffner L, Ou ZZ, Surti U, Cook EH, Beaudet AL. Phenotypic association of 15q11.2 CNVs of the region of breakpoints 1-2 (BP1-BP2) in a large cohort of samples referred for genetic diagnosis. J Human Genetics (2019) 64: 253-255.

# Prof. Debashree Bandyopadhyay , PhD

Associate Professor



**Research Area:**

Computational Structural Biology

**Research Funding (in lakhs): 41 ((UGC, DST-SERB, CSIR, DST-MATRICS (COVID-19 special call))**

**Number of Publications: 19 journal publications; 32 conference**

**Awards Received: DST International Travel (2019)**

## Selected Publications:

1. Vamsi Nallapareddy, Shubham Bogam, Himaja Devarakonda, Shubham Paliwal, Debashree Bandyopadhyay, "DeepCys: structure-based multiple cysteine function prediction method trained on deep neural network: case study on Domains of Unknown Functions (DUFs) belonging to COX2 domains" Proteins: Structure Function and Bioinformatics 2021; 89, 745-761 DOI: [10.1002/prot.26056](https://doi.org/10.1002/prot.26056)
2. Debashree Bandyopadhyay, Akshay Bhatnagar, Shobhit Jain and Prabhav Pratyaksh, "Selective stabilization of aspartic acid protonation state within a given protein conformation occurs via specific 'molecular association'" J. Phys. Chem. B. 2020, 124, 5350-5361, <https://dx.doi.org/10.1021/acs.jpcc.0c02629>
3. Akshay Bhatnagar and Debashree Bandyopadhyay, "Characterization of cysteine thiol modifications based on protein microenvironments and local secondary structures", Proteins; Structure, Function and Bioinformatics (2018), **86(2)**, 192-209 DOI:10.1002/prot.25424,
4. Akshay Bhatnagar, Marcin Apostol, Debashree Bandyopadhyay "Amino acid function relates to its embedded protein microenvironment: A study on disulphide-bridged cystine", Proteins: Structure Function Bioinformatics (2016) **84**, 1576-1589.

# **Dr. Vivek Sharma , PhD**

## **Assistant Professor**



### **Research Area:**

**RNA biology of health and disease: understanding the role of non-coding RNAs in maintenance of genome stability, regulation of gene expression in Cancer,**

**Neuroinflammation and modulation of host pathogen interaction upon infection with Neurotropic Viruses**

**Research Funding: > 1 crore (3 grants)**

**Number of Publications: 25**

**Patents Filed: 1**

**Awards Received: 2 (DBT RLS Fellowship, OPERA)**

### **Selected Publications:**

1. Shree B and Sharma V. Linc'ing' RNA to DNA Repair. Proc Indian Natn Sci Acad 84 No. 2 June; 2018 pp. 521-529.
2. Rajappa A, Banerjee S, Sharma V and Khandelia P Circular RNAs: Emerging role in Cancer Diagnosticsand Therapeutics. Front. Mol. Biosci, 2020.
3. Sharma V , Khurana S, Kubben N, Abde Imohsen K, Oberdoerffer P, Gorospe M, Misteli T\*. A BRCA1 - interacting lncRNA regulates homologous recombination. EMBO reports. 2015, 16(11): 1520 - 1534.

**Dr. Trinath Jamma , PhD**  
**Assistant Professor**



**Research Area:**

**Cell Signaling & Inflammation: signaling networks and associated immune cell metabolites**

**Research Funding (in lakhs): 72 Lakhs (SERB,CSIR,BITS)**

**Number of Publications: 15**

**Awards Received:**

**Early Career Research Award (2018), DST-International Travel Award (2020)**

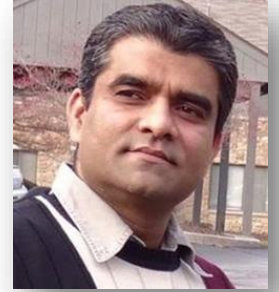
**Selected Publications:**

1. Bile acid metabolites control TH17 and Treg cell differentiation. Hang S, Paik D, Yao L, Kim E, **Trinath J**, Lu J, Ha S, Nelson BN, Kelly SP, Wu L, Zheng Y, Longman RS, Rastinejad F, Devlin AS, Krout MR, Fischbach MA, Littman DR, Huh JR. *Nature*. 2019; 576(7785):143-148.
2. Current trends with FOXP3+ regulatory T cell immunotherapy to contest autoimmunity and inflammation. **Trinath J**, Bayry J. *Immunotherapy*. 2019; 11(9):755-758.
3. Implication of homocysteine in protein quality control processes. Reddy VS, **Trinath J**, Reddy GB. *Biochimie*. 2019; 165:19-31.



# Dr. Giresha T. Mohannath , PhD

Assistant Professor



## Research Area:

Epigenetics, Plant molecular biology/ biotechnology,

Development of new plant molecular breeding approaches

Research Funding (in lakhs): ~175 (ongoing/approved) (SERB, DBT)

Number of Publications: 12 research papers and 1 book chapter

Awards Received: Ramanujan Fellowship (SERB, GOI), Ramalingaswamy Reentry Fellowship

(DBT, GOI), Molecular Genetics Graduate Teaching Award (OSU, USA)

## Selected Publications:

1. **Giresha Mohannath**, Frederic Pontvianne and Craig S. Pikaard. (2016). Selective nucleolus organizer inactivation in Arabidopsis is a chromosomal position-effect phenomenon. *Proc. Natl. Acad. Sci. USA* 137(47): 13426-13431.
2. Chinmayi Chandrasekhara, **Giresha Mohannath**, Todd Blevins, Frederic Pontvianne and Craig S. Pikaard. (2016). Chromosome-specific NOR inactivation accounts for selective rRNA gene silencing and dosage control in Arabidopsis. *Genes & Development* 30:177-190. - Highlighted as an “Editor’s Choice” in the journal Science. For rRNAs, its location, location, location. *Science*, 22 Jan 2016: Vol. 351, Issue 6271, pp. 351.
3. Aaron N. Bruns\*, Sizhun Li\*, **Giresha Mohannath** and David M. Bisaro. (2019). Phosphorylation of Arabidopsis eIF4E and eIFiso4E by SnRK1 Inhibits Translation. *FEBS Journal*. 286(19): 3778-3796. (\* Equal contribution). - Highlighted as the Editor’s choice: (2019) *FEBS Journal*. 286(19).

**Dr. Ruchi Jain Dey , PhD**  
**Assistant Professor**



**Research Area:**

**Tuberculosis and other infectious Diseases (Therapeutics & Diagnostics)**

**Research Funding: 2.63 Crore (7 grants- DBT, DRDO), 2 ICMR, (Indo-USA DBT, DST) (ongoing and approved)**

**Number of Publications: 12 Research articles + 6 Book chapters**

**Patents Filed: 2 US patents (granted) + 1 Indian patents (filed)**

**Awards Received: DBT-Ramalingaswami Fellowship, DST International Travel awards,**

**5 Global Scholarships awarded by Keystone Symposium**

**Selected Publications:**

1. **Dey RJ et al.** .BCG overexpressing an endogenous STING agonist provides enhanced protection against pulmonary tuberculosis. **The Journal of Infectious Diseases**; 221(7) <https://doi.org/10.1093/infdis/jiz116>., 1048-1056, **2020. (Impact Factor: 5.186).**
2. **Dey RJ, et al.** Inhibition of innate immune cytosolic surveillance by an M. tuberculosis phosphodiesterase. **Nat Chem Biol.** **2017** Feb;13(2):210-217. doi: 10.1038/nchembio.2254. Epub 2016 Dec 12. PubMed PMID: 28106876. **(Impact Factor- 12.587).**
3. Dey B, **Dey RJ et al.** A bacterial cyclic dinucleotide activates the cytosolic surveillance pathway and mediates innate resistance to tuberculosis. **Nat Med.** **2015** Apr;21(4):401-6. doi: 10.1038/nm.3813. Epub 2015 Mar 2. PubMed PMID: 25730264; PubMed Central PMCID: PMC4390473. **(Impact Factor-53.44).**

**Dr. Piyush Khandelia, PhD**  
**Assistant Professor**



**Research Area:**

**Cellular RNA transactions in development and human disease**

**Research Funding (in lakhs): 78 lakhs**

**Number of Publications : 11**

**Patents Filed: 1**

**Selected Publications:**

1. Karthiya R and **Khandelia P\*** (2020) m6A RNA methylation: Ramifications for gene expression and human health. *Molecular Biotechnology*, 62(10): 467-84. doi.org/10.1007/s12033-020-00269-5.
2. Anuva R, Banerjee S, Sharma V\* and **Khandelia P\*** (2020) Circular RNAs: Emerging role in Cancer Diagnostics and Therapeutics. *Frontiers in Molecular Biosciences*, doi: 10.3389/fmolb.2020.577938.
3. \*Yap K, \*Lim ZQ, **\*Khandelia P**, Friedman B, Makeyev EV (2012) Coordinated regulation of neuronal mRNA steady-state levels through developmentally controlled intron retention. *Genes and Development*, 26(11): 1209-23.

# Dr. Pragya Komal , PhD

## Assistant Professor



### Research Area:

Ligand-gated ion channel function in health and neurodegenerative diseases; nicotine addiction, Neuro-nanosciences

Research Funding (in lakhs): 14 lakhs (RIG, Additional RIG, IBRO); 90 lakhs from DBT Builder grant grant (2020) with sole expertise to set up central whole-cell electrophysiology facility in BITS

Number of Publications: 12 research articles; 22 conferences

Awards Received: 2; International Brain Research organization (IBRO) world congress

### Selected Publications:

1. Chronic AdipoRon treatment mimics the effects of physical exercise on restoring hippocampal neuroplasticity in diabetic mice; Thomas H Lee, Ahadullah, Brian R Christie, Kangguang Lin, Parco Ming-fai Siu, Li Zhang, Tifai Yuen, Pragya Komal , Aimin Xu, Kwok-fai So, Suk-yu Yau; *Molecular Neurobiology* (2021)
2. Vitamin D intake enhances vitamin D receptor expression in the striatum and rescues memory and motor dysfunction in mouse model huntington's disease; SKV Manjari, PG Satwik, S Srinivas, Pragya Komal *Clinical neurophysiology*, conference proceedings; e1-e130, 1757-2002 (2021)
3. Recent Trends in Noble Metal Nanoparticles for Colorimetric Chemical Sensing and Micro-Electronic Packaging Applications (2021) Anurag Gautam, Pragya Komal , Prabhat Gautam, Ashutosh Sharma, Neeraj Kumar and Jae Pil Jung *Metals*, 11(2), 329
4. Anurag Gautam, Pragya Komal , Ram Sevak Singh, Prabhat Gautam, S. K. V. Manjari, R. S. Ningthoujam (2021); Hardcore producer of polyvinyl alcohol as reducer for the formation of gold nanoparticles *Journal of molecular Liquid* 334 (116112)

# Dr. Shuvadeep Maity, M.Phil, PhD

## Assistant Professor



### Research Area:

ER stress, motor neuron disease (ALS), Organellar cross talk

Localized translation and Post-translational control during ER stress, aging

Research Funding (in lakhs): 22 Lakhs

Number of Publications: 19

Awards Received: Intramural (OPERA, RIG)

### Selected Publications:

1. Rendleman J\*, Cheng Z\*, Maity S\*, Kastelic N, Munschauer M, Allgoewer K, Teo G, Zhang YBM, Lei A, Parker B, Landthaler M, Freeberg L, Kuersten S, Choi H, Vogel C. New insights into the cellular temporal response to proteostatic stress. **Elife**. 2018 Oct 12;7. pii: e39054. doi: 10.7554/eLife.39054.
2. Maity S, Rajkumar A, Matai L, Bhat A, Ghosh A, Agam G, Kaur S, Bhatt NR, Mukhopadhyay A, Sengupta S, Chakraborty K. Oxidative Homeostasis Regulates the Response to Reductive Endoplasmic Reticulum Stress through Translation Control. **Cell Rep**. 2016 Jul 19;16(3):851-65. doi: 10.1016/j.celrep.2016.06.025. Epub 2016 Jun 30. PubMed PMID: 27373166.
3. Maity S, Basak T, Bhat A, Bhasin N, Ghosh A, Chakraborty K, Sengupta S. Cross-compartment proteostasis regulation during redox imbalance induced ER stress. **Proteomics**. 2014 Aug;14(15):1724-36. doi: 10.1002/pmic.201300449. Epub 2014 Jun 17. PubMed PMID: 24838640.

# Dr. Kirtimaan Syal , PhD, PGDMLE

Assistant Professor



## Research Area:

Host-Pathogen interaction - Second messenger signaling and its role in the emergence of multiple drug resistance, Vaccine Design and Protein Engineering

Research Funding (in lakhs): > 60 lakhs (DBT, RIG, Seed grant)

Number of Publications: 33 research publications, >25 conference, 1 patent filed

Awards Received: DBT Ramalingaswami Re-entry Fellowship award-2021, Ranbaxy Award-2016,

DST- International Travel and 5 others

## Selected Publications:

1. Syal K., Neethu RS, MVN Janaradhan Reddy (2021) The Extended (p)ppGpp family, New Dimensions in Stress response. *Current Research in Microbial Sciences*-Companion Title of *Current Opinion in Microbiology (Elsevier)* In Press.
2. Nemec, Singh, Ali, Tseng, Syal K. et al. (2019) Novel CTD-kinases mediate gene-class specific regulation of RNA polymerase II. *Nature Chem Biology*
3. Syal K. et al. (2017) Synthetic (p)ppGpp analogue is an inhibitor of stringent response in mycobacteria. *Antimicrobial Agent Chemotherapy (ASM)*.
4. Syal K. et al. (2015) Novel pppGpp binding site at the C-terminal region of the Rel enzyme from *Mycobacterium smegmatis*. *The FEBS Journal*.

# Prof. Nishith Gupta , PhD, DSc

Professor



**Research Area:**

**Host-Pathogen Interactions, Signaling, Metabolism, Mechano-Opto-Biology,  
Multi-Omics**

**Research Funding: 4.8 Crore (current), 40+ Crore (cumulative)**

**Publications and Patents: 44 peer-reviewed journal articles, 1 EU Patent**

**Number of Awards: 8 (National and International)**

**Selected Publications:**

1. Chen K, Günay-Esiyok Ö, Klingeberg M, Marquardt S, Günther-Pomorski T, **Gupta N\*** (2021) Aminoglycerophospholipid flipping and P4-ATPases in *Toxoplasma gondii*. *Journal of Biological Chemistry*, 296, 100315.
2. Ren B, Schmid M, Scheiner M, Mollenkopf HP, Lucius R, Heitlinger E, **Gupta N\*** (2021) *Toxoplasma* and *Eimeria* co-opt the host cFos and its network proteins in mammalian cells. *Computational & Structural Biotechnology Journal*, 19, 719-31
3. Vo KC, Günay-Esiyok Ö\*, Liem N, **Gupta N\*** (2020) The protozoan parasite *Toxoplasma gondii* encodes a gamut of phosphodiesterases during its lytic cycle in human cells. *Computational & Structural Biotechnology Journal*, 18, 3861-76
4. Ren B, Kong P, Hedar F, Brouwers JF, **Gupta N\*** (2020) Phosphatidylinositol synthesis, its selective salvage, and inter-regulation of anionic phospholipids in *Toxoplasma gondii*. *Communications Biology*, 3(1), 750

# Dr. Supratim Ghosh, PhD

## Assistant Professor



### Research Area:

Algal Biorefineries, Halophilic Biorefineries for Bioplastics (PHA) production, Pulsed Electric Fields (PEFs) for extraction of value added products, Technology development for biofuel production (Biohydrogen, Biodiesel, Biobutanol), Hydrothermal Carbonisation/Liquefaction, Microplastic pollution

Research Funding (in lakhs): NA

Number of Publications: 16    Number of Patents: 1

### Selected Publications:

1. **Supratim Ghosh\***, Jim Coons, Chris Yeager, Peter Halley, Alexander Chemodanov, Bogdan Belgorodsky, Michael Gozin, Guo-Qiang Chen, Alexander Golberg. Halophyte biorefinery for polyhydroxyalkanoates production from *Ulva* sp. hydrolysate with *Haloferax mediterranei* in pneumatically agitated bioreactors and ultrasound harvesting. **Bioresource Technology**. 2022; 344: 125964.
2. **Supratim Ghosh**, Amichai Gillis, Julia Sheviriyov, Klimentiy Levkov, Alexander Golberg. Towards waste meat biorefinery: Extraction of proteins from waste chicken meat with non-thermal pulsed electric fields and mechanical pressing. **Journal of Cleaner Production**. 2019; 208: 220-231.
3. **Supratim Ghosh**, Shantonu Roy. Novel integration of biohydrogen production with fungal biodiesel production process. **Bioresource Technology**. 2019; 288: 121603
4. **Supratim Ghosh**, Srijoni Banerjee, Debabrata Das. Process intensification of biodiesel production from *Chlorella* sp. MJ 11/11 by single step transesterification. **Algal Research**. 2017; 27: 12-20.



# Prominent Visitors to the Department:

- Dr. J. Gowrishankar, JC Bose fellow, Padmashree awardee, CDFD, Hyderabad
- Dr. Imran Siddiqi, JC Bose Fellow, CCMB, Hyderabad
- Dr. Vasudevan Seshadri, NCCS, Pune
- Dr. Sharmistha Banerjee, University of Hyderabad
- Dr. Y. Sreelakshmi, University of Hyderabad
- Prof. K. V. Rao, Osmania University, Hyderabad
- Dr. Eoin Syron, University College Dublin, Ireland
- Dr. Rashna Bhandari, CDFD, Hyderabad
- Dr. Raman M. Sundaram, ICAR-IIRR, Hyderabad
- Dr. Rajakumara Eerappa, IIT Hyderabad
- Prof. L.S.Shashidhara, JC Bose fellow, IISER, Pune

# DEPARTMENT OF BIOLOGICAL SCIENCES

