BITS Pilani
Hyderabad Campus

DEPARTMENT OF BIOLOGICAL SCIENCES

PLACEMENT BROCHURE: 2019-2020

BITS Pilani Hyderabad Campus

About the Department

- The Biological Sciences department became operational in the year 2008. 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, for an amount of more than Rs. 1 crore for the development of research and teaching infrastructure.

Message from Head of the Department

The Department of Biological Sciences at BITS Pilani, Hyderabad Campus offers broad-based and up to date curriculum with an equal emphasis on theory and on hands on laboratory experiments to the M.E. students. The students also do either a semester thesis or practice school (engagement with industry) which makes them highly competent for industry jobs. The Department takes pride in 100% placement of students graduated in the past two years (2018 and 2017).

Programs offered by the Department

- POST GRADUATE

✓ M.Sc. Biological Sciences

✓ M.E Biotechnology

✓ Ph.D.

Important Courses for M.E

- Advanced & Applied Microbiology
- Plant Biotechnology
- Advanced cell & Molecular Biology
- Genetic Engineering
- Environmental Biotechnology
- Animal Cell Technology
- Molecular mechanism of gene expression
- Human Genetics
- Immunology
- Protein & Enzyme Bioengineering

Facilities in Department

- Academic Laboratories

✓ Genetic engineering
✓ Microbiology
✓ Biology Research lab
✓ Cell and Tissue culture
✓ Environmental Biotechnology
✓ Plant Biotechnology
✓ Genomics

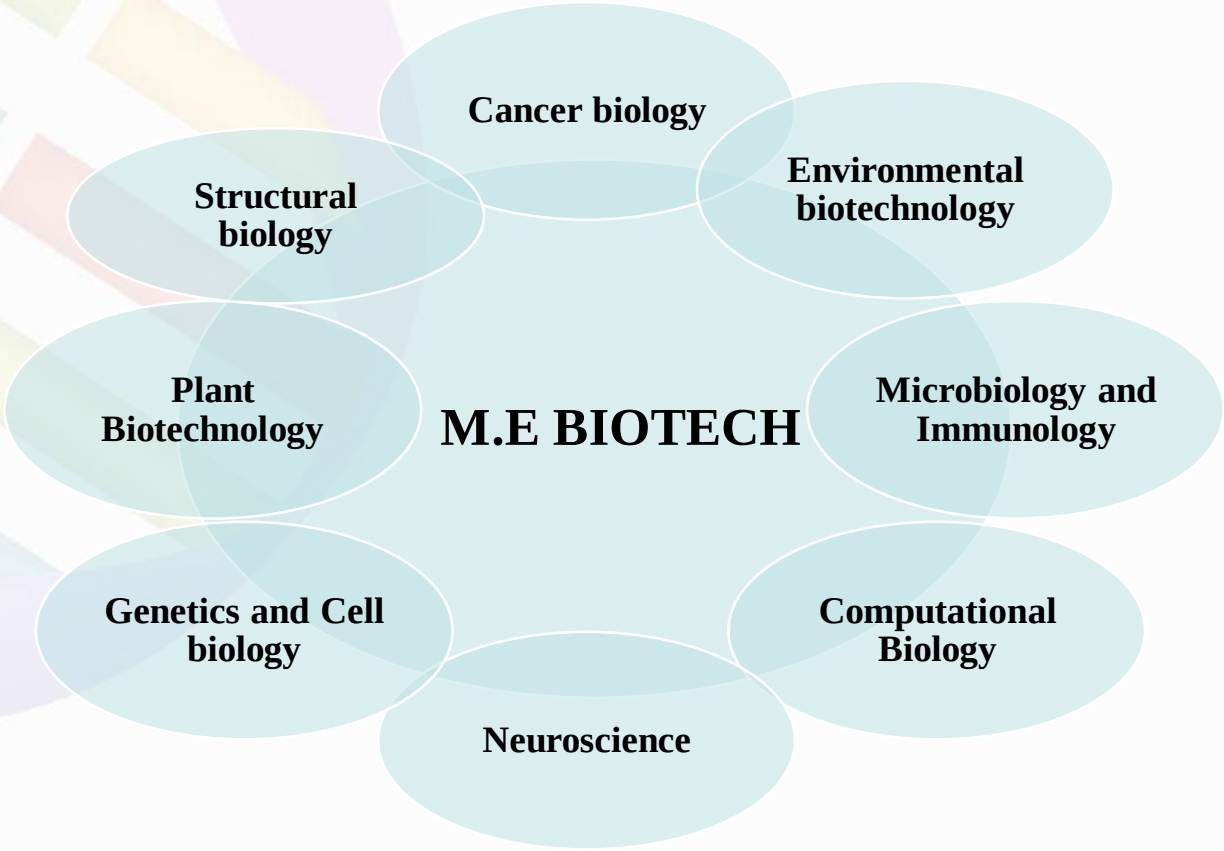
- **Research Laboratories**

✓ Molecular characterization of human diseases

✓ Structural/Computational biology/ Bioinformatics

✓ Environmental, plant and microbial biotechnology

Thrust Areas of Research



Funded projects:

- Protein structure and stability modulation due to In-Cell and In-Vitro Crowding: Molecular insights on the origin of the effects of crowding.
- Mechanistic basis of abnormal neurogenesis due to HSSN1E-assicuated DNA Methyl transferase 1 (Dnmt1) mutation and pharmacological intervention for phenotypic correction.
- Polymorphism studies and molecular characterization of plasmodia Rhoptry neck protein 2 (RON-2) from Indian fields isolates.
- Combined genetic and epigenetic analysis of oral cancer for prognosis of patients.
- Understanding the role of long non coding RNA's (lncRNA's) I transforming growth factor - beta (TGF-B) pathway in Glioblastoma.
- Identification of the regulatory mechanisms executed by bile acids during inflammation induced colon cancer.

- Harnessing mucosal immunity towards improved resistance against tuberculosis.
- Identification and characterization of long non-coding RNA's involved in Genome stability.
- Conditional pathogenesis: understanding why potentially beneficial rhizobacteria turn pathogenic under certain environmental conditions.
- Novel approach to develop computational pipeline to predict functions of cysteine in Proteins of Unknown Function (PUFs) and Domains of Unknown Function (DUFs), based on protein microenvironments.

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M.E. Thesis projects:

- Correlation of Urinary Biomarkers with the physiological States of Body i.e. fasting and feeding in subjects with different BMIs.
- Lipase mediated polymer degradation derived from probiotic microbes.
- Metabolite profiling for the evaluation of urinary biomarkers in Autism Spectrum Disorder patients from India.
- Examining the role of circular RNAs in skeletal muscle atrophy.
- Manipulating flowering with the use of Gibberellins in Huanglongbing- affected sweet orange.
- Role of chromatin assembly factor-1 (CAF-1) in maintaining genomic stability in *Arabidopsis thaliana*.
- Understanding the effect of *Mycobacterial* proteins on immunological functions of macrophages.
- To establish a novel role for chromatin assembly factor-1 (CAF-1) in ribosomal DNA instability mediated rRNA gene regulation in *Arabidopsis thaliana*.

Faculty Publications:

- Ms. Srikrupa Natarajan, **Suman Kapur**, N. Soumitra Genetic Profile and Mutation Spectrum of Leber Congenital Amaurosis in an Indian Cohort using High Throughput Resequencing.Clinical Genetics (2018) doi:10.1111/cge.13159.
- Rupak Kumar, Yasmin Raizner, Lilach Iasur Kruh, Ofir Menashe, Hassan Azaizeh, **Suman Kapur**, Eyal Kurzbaum.Grasas Aceites 2018, 69(1): e231. 0776171.
- Imran Khan, Ravikiran Nagarjuna, **Jayati Ray Dutta*** and R. Ganesan*****, Enzyme embedded degradation of Poly(ε-caprolactone) using lipase derived from probiotic *Lactobacillus plantarum*. ***ACS Omega, 4, 2019, pp. 2844-2852*.**
- Imran Khan, Nivetha Sivasankaran, Ravikiran Nagarjuna, R. Ganesan* and **Jayati Ray Dutta*** , Extracellular probiotic lipase capped silver nanoparticles as highly efficient broad spectrum antimicrobial agents. ***RSC Advances, 8, 2018, pp. 31358-65.***
- 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 $(b/a)_8$/TIM Barrels**. Methods in Molecular Biology**, vol 1958.

- Rajashekar Varma Kadumuri, Ramakrishna Vadrevu (2018). Diversity in αβ and βα loop connections in TIM Barrel Proteins: Implications for Stability and Design of the Fold. **Interdiscip Sci.** 10, 805-812
- B. Arunraj, Sathvika Talasila, **Vidya Rajesh** and N. Rajesh (2018): Removal of Europium from aqueous solution using *Saccharomyces cerevisiae* immobilized in glutaraldehyde cross-linked chitosan, ***Separation Science and Technology***, DOI: 10.1080/01496395.2018.1556303, (2019)
- B. Arunraj, Talasila Sathvika, **Vidya Rajesh** and N. Rajesh, "Cellulose and *Saccharomyces cerevisiae* Embark To Recover Europium from Phosphor Powder", ***ACS Omega***, DOI:10.1021/acsomega.8b02845, (2019).
- Reddy VS, Madala SK, **Trinath J**, Reddy GB. Extracellular small heat shock proteins: exosomal biogenesis and function. Cell Stress Chaperones. 2018 May;23(3):441-454.
- 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.

- Daipayan Ghosh, Anshika Gupta, Sridev Mohapatra. 2018. Dynamics of endogenous hormone regulation in plants by phytohormone secreting rhizobacteria under water-stress. Symbiosis.https://doi.org/10.1007/s13199-018-00589-w.
- Daipayan Ghosh*, Sunetra Sen*, Sridev Mohapatra. 2018. Drought-mitigating *Pseudomonas putida* GAP-P45 modulates proline turnover and oxidative status in *Arabidopsis thaliana* under water stress. Annals of Microbiology. 68 (9): 579–594. * Equal contribution.
- 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.

Faculty contacts

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