Department of Biotechnology, IIT Madras
PhD admissions Jan 2023
Tentative list of PhD Project titles

1) CB- Computational Biology Stream

Si.No	Faculty Name	Project title(s), Number of vacancies
1	N Manoj	Studies on the molecular evolution of membrane associated proteins (1 student)
2	M. Hamsa Priya	In silico investigation of peptide interactions during self-assembly (1 student)
3	Michael Gromiha	Machine learning techniques for identifying disease causing mutations in protein interfaces (1 student)
4	Richa Karmakar	Computational analysis of cell-cell interaction during chemotaxis To induce morphological changes, cell-cell signaling networks play a crucial role in the self-organization of multicellular tissue. Chemotaxis is the directed motion of cells in response to chemical cues. We try to understand how cell-cell interaction induces chemotaxis or vice versa. We will use *Dictyostelium discoideum* as a model organism. (1 student)
5	Srinivasa Chakravarthy	Modeling the hippocampus to understand Alzheimer's disease (1 student)

2) BS- Biological Sciences Stream

Si.No	Faculty Name	Project title(s), Number of vacancies
1	A Gopala Krishna	Structure-function relationship of calcium-binding proteins (1 student)
2	Nitish Mahapatra	Molecular/genetic basis of cardiometabolic disease (1 student)
3	Arumugam Rajavelu	Epigenetic mechanisms of virulence genes expression in malaria parasite (1 student)
4	R. Baskar	a) Mechanisms that prevent protein aggregation in Dictyostelium; b) Sensing the smell of bacteria: A study on volatile mediated chemotaxis in Dictyostelium; c) A study on serotonin biosynthesis and identification of novel serotonin receptors in Dictyostelium; d) Study on plant: protist interaction (4 students)
5	S. Mahalingam	a) RAS effectors: locking of metabolic reprogramming in cancer cells; b) Nucleolar GTPase and tumour metastasis; c) Role of Inflammasomes in Tumorigenesis (3 students)
6	Suresh Rayala	Investigating interplay between Inflammatory mediators and Tumor microenvironment in pancreatic cancer (1 student)
7	K.Subramaniam	Regulation of germline stem cells in C. elegans (1 student)
8	K. Chandraraj	Xylooligosaccharides production using xylanase immobilized on functionalized carbon materials (1 student)
9	V.Kesavan	Design, synthesis and evaluation of PROTACs (1 student)

3) BE- Biological Engineering Stream

Si.No	Faculty Name	Project title(s), Number of vacancies
1	M. Hamsa Priya	Molecular Modeling of peptide aggregation and self-assembly (1 student)
2	Athi Narayanan N	Biophysical Studies of Cancer-Associated Mutations in a Tumorigenic Protein (1 student)
3	Richa Karmakar	Lab-on-chip technology for biomedical applications A lab-on-a-chip is a device, mostly in the size of millimeters to a few square centimeters that integrates one or several laboratory functions on a single integrated chip. We plan to build microfluidic devices that we can use for biomedical applications. One example is diagnosing resistant bacteria or performing an antibiotic susceptibility test. (1 student)
4	M. S. Narayanan	Engineered property-enhanced antibodies for onco-theranostic applications (1 student)
5	Guhan Jayaraman	a) Metabolic and Process Engineering strategies for bioconversion of lignocellulosic biomass to value-added products b) Recombinant antibody engineering (2 students)
6	Satyanarayana Gummadi	Biochemical and biophysical studies of industrial enzymes