**Doctor of Philosophy Programme (DBS)**

**Ph.D. advertisement for the Autumn 2024 semester**

Applications are invited from eligible candidates for admission to the Ph.D. program of the Department of Biological Sciences, IISER Kolkata. The details of the admission process are detailed below. Applicants are advised to go through the research areas available at the following link on the Institute website (https://www.iiserkol.ac.in/web/en/people/faculty/dbs) as well as the department page (http://bio.iiserkol.ac.in/?page_id=5624).

The fields of research open to application in this round of Ph.D. selections are given below, along with names of faculty members working in the respective fields:

**Biophysics, Biochemistry, and Structural Biology:** For students interested in Cellular Biophysics, Structural Biology, Molecular Biophysics, Biochemistry/Chemical Biology, Structural Proteomics, and Cell Signaling.

- Partha Pratim Datta (https://www.iiserkol.ac.in/web/en/people/faculty/dbs/partha_datta/)
- Rahul Das (https://www.iiserkol.ac.in/web/en/people/faculty/dbs/rahul-das/)
- Rituparna Sinha Roy (https://www.iiserkol.ac.in/web/en/people/faculty/dbs/rituparna/)
- Supratim Datta (https://www.iiserkol.ac.in/web/en/people/faculty/dbs/supratim/)
- Babu Sudhamalla (https://www.iiserkol.ac.in/web/en/people/faculty/dbs/s-babu/)
- Amit Kumar Mandal (https://www.iiserkol.ac.in/web/en/people/faculty/dbs/amitkm/)

**Developmental and Stem Cell Biology:** For students interested in Mesenchymal Stem cell biology, Actin Dynamics in Congenital Disorders, and Metazoan Morphogenesis.

- Malancha Ta (https://www.iiserkol.ac.in/web/en/people/faculty/dbs/malancha-ta/)
- Mohit Prasad (https://www.iiserkol.ac.in/web/en/people/faculty/dbs/mohitprasad/)
- Sankar Maiti (https://www.iiserkol.ac.in/web/en/people/faculty/dbs/spm/)

**Disease Biology:** For students interested in Virology, Immunology, Epigenetics and Chromatin Biology, Gene Regulation, Neural Cell Biology, Neuroscience, Lysosome Biology and related Diseases, Natural Killer cells, Immunotherapy, Cancer, Infectious Diseases, Ischemic Disease, Bleeding Disorder

- Amirul Islam Mallick (https://www.iiserkol.ac.in/web/en/people/faculty/dbs/amallick/)
- Arnab Gupta (https://www.iiserkol.ac.in/web/en/people/faculty/dbs/arnab-gupta/)
- Babu Sudhamalla (https://www.iiserkol.ac.in/web/en/people/faculty/dbs/s-babu/)
- Rituparna Sinha Roy (https://www.iiserkol.ac.in/web/en/people/faculty/dbs/rituparna/)
- Rupak Datta (https://www.iiserkol.ac.in/web/en/people/faculty/dbs/rupakdatta/)
- Rahul Das (https://www.iiserkol.ac.in/web/en/people/faculty/dbs/rahul-das/)
- Jayasri Das Sarma (https://www.iiserkol.ac.in/web/en/people/faculty/dbs/dassarmaj/)
- Amit Kumar Mandal (https://www.iiserkol.ac.in/web/en/people/faculty/dbs/amitkm/)

**Microbiology and Marine Biology:** For students interested in Marine Microbiology, Climate Change and Ocean Acidification, Microbial Ecology, Community and Ecosystem Ecology, Restoration Ecology, Biodiversity Conservation, Wildlife Habitat Management, and Bioremediation.

- Punyasloke Bhadury (https://www.iiserkol.ac.in/web/en/people/faculty/dbs/pbhadury/)
- Robert John Chandran (https://www.iiserkol.ac.in/web/en/people/faculty/dbs/robert-john/)
- Partha Pratim Datta (https://www.iiserkol.ac.in/web/en/people/faculty/dbs/partha_datta/)

**Synthetic Biology and Biotherapeutics:** For students interested in synthetic biology, Biotherapeutics, enzyme and protein engineering, Biochemical Engineering and Bioenergy, Bioinorganic chemistry

- Supratim Datta (https://www.iiserkol.ac.in/web/en/people/faculty/dbs/supratim/)
- Rituparna Sinha Roy (https://www.iiserkol.ac.in/web/en/people/faculty/dbs/rituparna/)

**Theoretical and Computational Biology**: For students interested in any branch of Theoretical Biology, including Theoretical and Computational Biophysics, Multiscale Molecular Simulations, Bioinformatics, and Computational Cell Biology.

- Dipjyoti Das (https://www.iiserkol.ac.in/web/en/people/faculty/dbs/dipjyoti-das/)
- Neelanjana Sengupta (https://www.iiserkol.ac.in/web/en/people/faculty/dbs/n-sengupta/)

**Behavior, Ecology, and Evolution**: For students interested in Animal Behaviour, Community Ecology, Biodiversity and Conservation, Marine Microbiology, Microbial Ecology, Chemical Ecology, and Plant-insect Interactions.

- Anindita Bhadra (https://www.iiserkol.ac.in/web/en/people/faculty/dbs/abhadra/)
- Anuradha Bhat (https://www.iiserkol.ac.in/web/en/people/faculty/dbs/anuradhabhat/)
- Punyasloke Bhadury (https://www.iiserkol.ac.in/web/en/people/faculty/dbs/pbhadury/)
- Robert John Chandran (https://www.iiserkol.ac.in/web/en/people/faculty/dbs/robert-john/)
- Radhika Venkatesan (https://www.iiserkol.ac.in/web/en/people/faculty/dbs/rv/)
- Annagiri Sumana (https://www.iiserkol.ac.in/web/en/people/faculty/dbs/sumana/)

Note: Only those faculty members whose names are given above will accept students through this round of Ph.D. admissions. Therefore, before applying, students should check this list carefully to ensure that labs of their interest are available for admission in this round.

**Minimum Eligibility Criteria**

**A1.** Masters' (or B.E., B.Tech., M.Tech., MBBS) degree holders or equivalent (with **minimum 55 % marks**) in any branch of science, including Physics, Chemistry, Mathematics, Biological Sciences, Ecology and Environmental Sciences, Pharmaceutical Sciences, Chemical Engineering or equivalent.

For applicants from SC, ST, or PwD category: Applicants must have a minimum of 55 % marks in aggregate (overall percentage and not just in the major subject) or an equivalent CGPA.

Students whose final results in Master's or equivalent are yet to be declared can also apply. However, if selected, the offer for these students will be provisional, subject to fulfilling the above criteria **at the time of admission**.

AND

**Applicants must have any one of the following qualifications.**

- Qualified a National Level Eligibility Examination that provides a 5-year PhD fellowship such as CSIR–JRF / UGC–JRF / DBT–JRF–A / ICMR–JRF / DBT–BINC–JRF / Rajiv Gandhi National Fellowship/ National Fellowship for Scheduled Caste Students by CSIR-UGC / National Fellowship for Higher Education of ST Students / National Fellowship for OBC Candidates / National Fellowship for persons with disabilities (NFPWD).
- **The aforementioned fellowships must be valid on August 31, 2024.**
- INSPIRE-PhD fellowship **(Should be in possession of provisional selection letter at the time of Interview)**.

**Institute-funded Ph.D. positions:**

**In the laboratory of Supratim Datta:** An Institute-funded Ph.D. position is available in the laboratory of Dr. Supratim Datta. The project involves the construction of biosynthetic pathways for green synthesis of important molecules, studying the mechanisms of enzymes, and further importing into genetically engineered microorganisms. The project uses enzyme engineering, biochemical and biophysical characterization, structural and computational biology, and genomic and proteomic discovery to identify enzyme targets. Collaboration with computational groups is routinely undertaken. Candidates are encouraged to be familiar with lab publications and contact the PI for any queries.
***Essential qualifications*:** Master's degree or equivalent (with minimum 60 % marks) in relevant branches of biology/Bioinformatics/ Engineering or other relevant fields. The candidate should have qualified for one of the National eligibility exams like GATE/NET-LS/ IIT-JAM, etc.
***Desirable skills*:** Candidates who can apply for Inspire fellowship will be preferred. The ability to develop complex experiments, strong problem-solving skills, and a commitment to research will be preferred. Experience in molecular biology, synthetic biology, and protein engineering would be an advantage.

**In the laboratory of Amit Kumar Mandal:** An Institute-funded Ph.D position is available in the laboratory of Dr. Mandal. The project involves omics-based studies of clinical samples isolated from patients with different diseases. The work involves wet lab-based experiments using mass spectrometry as an analytical platform. Besides mass spectrometry, other spectroscopic tools such as excitation and emission spectroscopy are also used to investigate the structural problems. Collaboration with practicing clinicians located at the medical school campus is an essential step of the project. Candidates are encouraged to be familiar with the publications and area of interest of the laboratory.
***Essential qualifications*:** Master's degree or equivalent (with minimum 60 % marks) in pure chemistry/biochemistry/biotechnology/biophysics/molecular biology/human physiology. The candidate should have qualified for one of the National eligibility exams like GATE/NET-LS/ IIT-JAM, etc.

**In the laboratory of Babu Sudhamalla**: An Institute-funded Ph.D. position is available in the laboratory of Dr. Babu Sudhamalla in the broad area of chromatin biology and epigenetics employing multidisciplinary approaches that integrate protein engineering, unnatural amino acid mutagenesis, protein biochemistry, proteomics, and bioinformatics to interrogate cellular machineries towards molecular understanding of epigenetic mechanisms in human health and disease. Details about the research can be found on the laboratory website.
***Essential qualification*:** Master's degree (with minimum 60 % marks) in relevant branches of life sciences. The candidate should have qualified any one of the National eligibility exams like GATE/NET-LS/ etc.

**In the laboratory of Robert John Chandran:** One IISER Kolkata funded PhD position is available for research in the field of **terrestrial ecology**, in one of the following three projects:

**(1)** the influence of vegetation and land use and land cover matrix on the incidence of zoonoses in ecologically rich landscapes

**(2)** ecophysiology of drought stress and thermal tolerance and adaptive capacity for climatic changes in tropical dry forest tree species populations in central India, and

**(3)** decadal scale vegetation and land cover changes in the Terai-Duar Savanna and Grasslands Ecoregion and its influence on plant diversity and carbon cycling.

The prospective candidate may indicate interest in one or more of the above projects. All projects will involve significant field work, landscape ecological analyses, and statistical modeling. Projects **(2)** and **(3)** are already supported by MoE STARS and SERB Grants, with significant background research already carried out by the lab.
***Essential Qualifications:*** Master's Degree in any Basic Science, including Physical Sciences, but preferably in Ecology/Botany/ Forestry/ Environmental Sciences/ Life Sciences with a strong knowledge and orientation towards ecology. Candidates should have a strong academic background and should have at least qualified a National Exam such as CSIR/UGC NET-LS, GATE, JGEEBILS, or equivalents.
***Desirable Qualifications:*** Theoretical/experimental knowledge in ecophysiology, ecology, landscape ecology, statistical modeling.

**In the laboratory of Sankar Maiti:** Sankar Maiti's laboratory is offering a fully funded Ph.D. position supported by the institute. The research project focuses on investigating the regulation of actin-binding proteins in cancer cell migration. The work will entail tasks such as recombinant protein expression and purification, biochemical characterization of target actin-binding proteins, as well as utilizing imaging techniques, overexpression studies, and Crispr-Cas9 mediated knockdown to explore the role of these proteins in the mechanism of cell migration. Prospective candidates interested in actin cytoskeletal rearrangement in developmental biology are also encouraged to apply. Interested individuals are encouraged to contact the Principal Investigator for further inquiries.
***Essential qualifications*:** Applicants should possess a Master's degree or equivalent with at least 60% marks in relevant fields such as Chemistry, Biology, Engineering, Biochemistry, Biotechnology, Biophysics, Molecular Biology, or related disciplines. Additionally, candidates should have qualified in one of the national eligibility exams like GATE, NET-LS, IIT-JAM, etc.
***Desirable skills*:** Preferred skills include the ability to design and execute complex experiments, strong problem-solving abilities, and a dedicated commitment to research. Experience in molecular biology,

cell biology, and protein biochemistry would be advantageous. Interested individuals are encouraged to contact the Principal Investigator for further inquiries.

**In the laboratory of Mohit Prasad:** An Institute-funded Ph.D. position is available in the laboratory of Dr. Mohit Prasad. The project involves employing cell and molecular biology techniques coupled with High End Live cell Imaging, tissue immunohistochemistry and *Drosophila* genetics to understand how cells acquire different forms and function in metazoan development. Candidates are encouraged to check the laboratory website (https://sites.google.com/view/morphogenesis-lab-iiserkolkata/about-us) and contact the PI for any queries.

***Essential qualifications*:** Master's degree or equivalent (with minimum 60 % marks) in relevant branches of life sciences/ or other relevant fields. The candidate should have qualified any one of the National eligibility exams like GATE/NET-LS/ IIT-JAM, etc.

***Desirable skills*:** Candidates who can apply for Inspire fellowship will be preferred. The ability to design complex experiments, strong problem-solving skills, and a commitment to research will be preferred. Experience in cell and molecular biology and subject knowledge of developmental biology will be advantageous.

**In the Laboratory of Radhika Venkatesan:** An institute-funded position is available at the laboratory of Dr. Radhika Venkatesan. The project will involve understanding chemical interactions between plants and insects using various study systems. The project work will involve usage of instruments like HPLC, GCMS and basic chemical characterization. Interested candidates are encouraged to get familiar with ongoing lab projects and contact the PI for any queries.

***Essential qualifications*** include M.Sc/MS/MTech degree or equivalent Master's degree with good scores in subjects like chemistry, biochemistry, ecology and statistics is desirable. The candidate should be open to studying new research topics and learn new analytical techniques. Experience in analytical techniques would be desirable.

**In the laboratory of Rupak Datta**: An Institute-funded Ph.D. position is available in the laboratory of Dr. Rupak Datta in the broad area of disease biology employing tools/techniques of cell and molecular biology and protein biochemistry. Details about the research can be found on the laboratory website.

***Essential qualification*:** Master's degree (with minimum 60 % marks) in relevant branches of life sciences. The candidate should have qualified any one of the National eligibility exams like GATE/NET-LS/ etc.

***Desirable skills*:** Adequate knowledge in the area of Biochemistry/ Molecular Biology/ Cell biology is desirable. Preference will be given to candidates having previous work experience in protein purification, molecular cloning, cell culture, biochemical assays etc. The candidate should have strong analytical skills.

**In the laboratory of Dipjyoti Das:** An Institute-funded Ph.D. position is available in the lab of Dr. Dipjyoti Das. The project involves computational modeling of tissue mechanics and cell dynamics using the tools and concepts of Statistical physics, Phase-transition, Soft-matter physics, and Applied statistics. Collaboration with experimental groups and data analysis may also be involved.

***Essential qualifications:*** M.Sc/MS/ME/M.Tech or equivalent Master's degree in Physics (as major or honours subject) with **minimum 60% marks**, Qualification in National eligibility exams (like JEST, GATE, etc.).
***Required skills:*** Strong analytical and mathematical skills, and experience in computer programming with languages like FORTRAN and/or C++.

**In the laboratory of Rituparna Sinha Roy:** An Institute-funded Ph.D. position is available in the laboratory of Dr. Rituparna Sinha Roy. The projects are related to developing the peptide based regenerative medicine and peptide based cancer therapeutics . Candidates are encouraged to be familiar with lab publications and contact Dr. Rituparna Sinha Roy (e-mail: rituparna@iiserkol.ac.in) for details.

***Essential qualifications*:** Master's degree or equivalent (with minimum 60 % marks) in, Zoology/ Human Physiology/Physiology/Biochemistry/Microbiology/Biotechnology or other relevant fields. Candidates need to have BSc Hons in Zoology/ Human Physiology/Physiology/Biochemistry/Microbiology/Biotechnology or other relevant fields. Candidates need to have Chemistry as one of pass subjects in BSc. The candidate should have qualified for one of the National eligibility exams like GATE/NET-LS/ DBT-JRF category B etc or equivalent exam.

***Desirable skills*:** Candidates who can apply for Inspire fellowship will be preferred. The candidates need to have idea about solid phase peptide synthesis, cell based assays, in vivo experiment, molecular biology related works, protein engineering, histopathology and computational biology related works. Candidates need to have good knowledge in chemistry and chemical biology of peptides.

**Project-funded PhD position**

**In the laboratory of Punyasloke Bhadury**: A project-funded Ph.D. position is available in the Integrative Taxonomy and Microbial Ecology Research Group (PI- Professor Punyasloke Bhadury) to work on bioremediation and removal of contaminants (e.g. arsenic) using microbiome or nature based solutions approach.
***Essential qualifications:*** Master's degree in Life Science/Zoology/Fisheries/Natural Science/Biotechnology/Environmental Science or Agricultural Science from a recognized University or equivalent with minimum 55% marks. Preference will be given to NET-LS/GATE/ICAR-NET/JGEEBILS or any other national exam qualified candidates
***Additional criteria:*** Experience in field work, basic knowledge in bioremediation, highly desirable.

**Shortlisting and Interview Process**

Please note that fulfilling the minimum essential criteria does not ensure shortlisting for interviews. The PIs in DBS may set additional shortlisting criteria based on the candidates' academic records, experience, and research experience.

Only those candidates who have been shortlisted for the interview stages will be informed of further details. Therefore, all candidates are requested to check this page (https://apply.iiserkol.ac.in/phd/) regularly for updates.

**DBS Autumn 2024 Ph.D. Timeline:**

Ph.D. application portal opens: 01.03.2024
Application portal closes: 30.04.2024
Publication of shortlist for Interview: 08.05.2024
Selection Interview window: 24.05.2024 to 31.05.2024
Publication of Ph.D. interview results: 10.06.2024
Pre-registration portal opens: 10.06.2024
Pre-registration deadline: 15.07.2024
Ph.D. Registration (as per Academic Calendar): 28.07.2024