Doctor of Philosophy Programme (DBS)
Ph.D. Advertisement for the Autumn 2025 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 given 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:

Inter-disciplinary Biology: For students interested to work in the areas of One Health, Microplastic in food and environment, microbial engineering, applied microbiology and antimicrobial resistance

- Sunil Khare (https://bio.iiserkol.ac.in/?page_id=1949) **in collaboration with**
- Amirul Islam Mallick (https://www.iiserkol.ac.in/web/en/people/faculty/dbs/amallick/)
- Punyasloke Bhadury (https://www.iiserkol.ac.in/web/en/people/faculty/dbs/pbhadury/)

Extremophiles and enzyme technology:

- Sunil Khare (https://bio.iiserkol.ac.in/?page_id=1949) **in collaboration with**
- Supratim Datta (https://www.iiserkol.ac.in/web/en/people/faculty/dbs/supratim/)

Biophysics, Biochemistry, and Structural Biology: For students interested in Cellular Biophysics, Structural Biology, cryo-EM, Antimicrobial Resistance (AMR), Molecular Biophysics, Molecular Biology, Biochemistry/Chemical Biology, Structural Proteomics, Cell Signaling, Structure based Drug Designing, Drug Development, Drug Delivery, Molecular Medicine, Cancer Nanomedicine and Regenerative Nanomedicine

- Babu Sudhamalla (https://www.iiserkol.ac.in/web/en/people/faculty/dbs/s-babu/)
- Bidisha Sinha (https://www.iiserkol.ac.in/%7Ebidisha.sinha/)
- 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/)

Cell Biology and Protein Biochemistry: For students interested in Actin Binding protein in cell migration and diseases.

- Sankar Maiti (https://www.iiserkol.ac.in/web/en/people/faculty/dbs/spm/)

Developmental and Stem Cell Biology: For students interested in Mesenchymal Stem cell biology 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/)
- Sreeramaiah N. Gangappa (https://www.iiserkol.ac.in/web/en/people/faculty/dbs/ngsreeram/#gsc.tab=0)

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, Peptide based therapeutics against Cancer, Peptide-based Immuno-combination therapy, Ischemic Disease, Bleeding Disorder, Antimicrobial Resistance (AMR) and One Health, Molecular Basis of Stress Response, Drug Development, Drug Delivery, Molecular Medicine, Cancer Nanomedicine and Regenerative Nanomedicine

- Amirul Islam Mallick (https://www.iiserkol.ac.in/web/en/people/faculty/dbs/amallick/)
- Babu Sudhamalla (https://www.iiserkol.ac.in/web/en/people/faculty/dbs/s-babu/)

- Jayasri Das Sarma (https://www.iiserkol.ac.in/web/en/people/faculty/dbs/dassarmaj/)
- 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/)
- Rupak Datta (https://www.iiserkol.ac.in/web/en/people/faculty/dbs/rupakdatta/)
- Sumit Sen Santara (https://www.iiserkol.ac.in/web/en/people/faculty/dbs/sumit-santara/#gsc.tab=0)

Neurovirology, Neuroimmunology and Neurobiology of the Diseases and Cancer Biology

Nexus between Virus-induced neuroinflammation and gap junction intercellular communication to understand the mechanism of virus-induced Neurodegeneration and finding parallels between the human neurological disease multiple sclerosis and SARS-COv2 mediated neuropathogenesis, Therapeutic approaches to combating glioblastoma and cervical and ovarian cancers.

- Jayasri Das Sarma (https://www.iiserkol.ac.in/web/en/people/faculty/dbs/dassarmaj/)

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.

- Partha Pratim Datta (https://www.iiserkol.ac.in/web/en/people/faculty/dbs/partha_datta/)
- 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/)
- Amirul Islam Mallick (https://www.iiserkol.ac.in/web/en/people/faculty/dbs/amallick/)

Synthetic Biology and Biotherapeutics: For students interested in synthetic biology and Biotherapeutics in the area of cancer biology, Peptide based therapeutics against Cancer, Peptide-based Immuno-combination therapy, Regenerative medicine, Diabetic Wound Healing, Bleeding Disorder, Therapeutic Peptide Engineering

- 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, AI/ML based model development, Bioinformatics, and Computational Cell Biology and cryo-EM Image Processing

- Dipjyoti Das (https://www.iiserkol.ac.in/web/en/people/faculty/dbs/dipjyoti-das/)
- Partha Pratim Datta (https://www.iiserkol.ac.in/web/en/people/faculty/dbs/partha_datta/)
- Rituparna Sinha Roy (https://www.iiserkol.ac.in/web/en/people/faculty/dbs/rituparna/)

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.

- Annagiri Sumana (https://www.iiserkol.ac.in/web/en/people/faculty/dbs/sumana/)
- 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/)
- Radhika Venkatesan (https://www.iiserkol.ac.in/web/en/people/faculty/dbs/rv/)
- Robert John Chandran (https://www.iiserkol.ac.in/web/en/people/faculty/dbs/robert-john/)

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

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, Agricultural Sciences, Ecology and Environmental Sciences, Pharmaceutical Sciences, Chemical Engineering or equivalent.

A relaxation of 5% marks or its equivalent grade may be allowed for those belonging to SC/ST/OBC (non- creamy layer)/Differently-Abled, Economically Weaker Section (EWS) and other categories of candidates.

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 (Category I) / UGC–JRF (Category I) / 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 December 31, 2025.**
- INSPIRE-PhD fellowship **(Should be in possession of provisional selection letter at the time of Interview)**.
- **Students with 4 Years bachelor's degree with 75% marks and having their own fellowship (CSIR, UGC etc.) now are eligible for the PhD Programme of IISER Kolkata.**
- **INSPIRE candidates having provisional certificate are eligible to apply for PhD program.**

Institute-funded Ph.D. positions:

In the laboratory of Sumit Sen Santara: An Institute-funded Ph.D. position is available in the laboratory of Dr. Sumit Sen Santara. The project involves the genetic modification of Natural killer cells to enhance its activity against cancer cells. The project uses CRISPR techniques for gene knockout, immunological and cellular assay, RNAseq data analysis. Collaboration with computational groups is routinely undertaken. Candidates are encouraged to be familiar with lab publications and contact the PI for any queries (**E-mail:sumit.santara@iiserkol.ac.in**)

***Essential qualifications*:** Master's degree or equivalent (with minimum 60% marks) in relevant branches of biology/Bioinformatics or other relevant fields. The candidate should have qualified for one of the National eligibility exams like GATE/NET-JRF (Category II or III)/ IIT-JAM/DBT-JRF (Category B) 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 bioinformatics techniques, public database analysis,

computer coding (python, R) molecular biology, and mammalian cell culture would be an advantage.

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 computational and experimental approaches for developing the peptide and protein 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, Biochemistry/Microbiology/Bioinformatics/Zoology/ComputationalBiology/Biotechnology /Interdisciplinary Biology/Integrated Biology. Candidates having MSc degree in Physical Chemistry, BSc in Chemistry Hons and having exposure in Computational Biology work, especially in the area of peptides and proteins based therapeutics/structural biology can also apply. Candidates from Biology background need to have BSc Hons in Zoology/Biochemistry/Microbiology/Computational Biology/Bioinformatics or other relevant fields. Candidates from Biology background 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-JRF (Category II or III)/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 (MD simulations, related works. Computational work will involve MD simulations with CHARMM36 all atom force-fields using GROMACS, post MD simulation trajectory analysis and force-field development of unnatural amino acids. Candidates need to have good knowledge in chemistry and chemical biology of peptides.

In the laboratory of Sreeramaiah N Gangappa: An institute-funded PhD position is available in my lab**.** The project will involve understanding the genetic and epigenetic basis of light and temperature-mediated regulation of plant growth and disease resistance using Arabidopsis and Rice as model systems. The project involved cutting-edge tools such as genetics, genomics, biochemical and biotechnological tools to understand the molecular mechanisms that control growth and reproduction, as well as disease resistance in response

to varying climatic conditions. The larger goal of the lab is to develop climate-resilient crop varieties for better yield and disease resistance. Interested candidates are encouraged to apply. Interested candidates can also PI (**E-mail: ngsreeram@iiserkol.ac.in**) to know more about the ongoing projects in the lab.

Essential qualifications include an M.Sc/M.Sc(Agri.)/MS/MTech degree with a specialization in Genetic and Plant Breeding, Biotechnology, Botany, Plant Pathology, Plant Physiology, etc., or an equivalent Master's degree with good scores in subjects like Botany, Agriculture, Biotechnology, and statistics desirable. Candidates need to qualify for NET-LS/NET-JRF (category II/III)/GATE/ICAR-NET/IIT-JAM/DBT-JRF (category B) or any other national exam,

Desirable skills**:** The candidates should have very good communication skills. Should have a basic understanding of plants. Experience in restriction and gate-way-based molecular cloning is desirable. Knowledge of working with bacteria and yeast is highly desirable. Working with genetics and molecular biology techniques such as PCR, qRT-PCR, protein-protein interaction, and western blotting would be highly desirable. Candidates should also have a basic understanding of research data analysis and applying statistical tools to draw conclusions. Additionally, candidates should be open to learning new analytical techniques/tools.

In the laboratory of Dipjyoti Das: An Institute-funded Ph.D. position is available in the laboratory of Dr. Dipjyoti Das. Projects involve mathematical and computational modeling of biological processes using the tools of Statistical physics, Non-equilibrium phase transitions, and Computer coding. Interested candidates are encouraged to contact the PI for any queries (**Email: dipjyoti.das@iiserkol.ac.in**).

Essential qualifications**:** Master's degree or equivalent (with minimum 60% marks) in Physics/Mathematics/Computer Science or other quantitative fields. The candidate must have qualified for one of the National eligibility exams like JEST/GATE/CSIR/UGC (category II or III)/ NET-LS/DBT-JRF (Category B)/IIT-JAM, etc.

Desirable skills**:** Candidates who can apply for Inspire fellowships will be preferred. Experience in coding using any advanced language C/C++/FORTRAN would be desirable.

In the laboratory of Prof. Anindita Bhadra's Dog Behaviour Research Lab : An institute-funded PhD position is available in the research group of Prof. Anindita Bhadra.

Projects will involve extensive field work in the streets, on dogs and/or langurs, interaction with local people and elaborate statistical analysis. Interested candidates are encouraged to contact the PI for any queries (**Email: abhadra@iiserkol.ac.in**)

Essential qualification: BSc and MSc in Zoology, with an excellent academic record. The candidate should have qualified CSIR/UGC NET (Category II or III)/ NET-LS and have experience of at least 6 months in carrying out field work in animal behaviour.

Desirable skills: Experience of working with free-ranging dogs and/or langurs will be preferred. Knowledge of observation methods, video decoding and data curation is desirable.

Project-funded PhD Position

Sponsored positions that do not require own fellowship:

Project-Sponsored Ph.D. Position Available in Dr. Sankar Maiti's Laboratory

The **Actin Cytoskeleton Dynamics Lab** (PI: **Dr. Sankar Maiti**) at **IISER Kolkata** invites applications for a **project-funded Ph.D. position** to investigate:

"*Unraveling the Regulatory Mechanism of FNBP4-Mediated FMN1 Regulation and Actin Cytoskeleton Remodeling during Cell Migration."*

Essential Qualifications:

- A **Master's degree** (or equivalent) with a minimum of **60% marks** in relevant disciplines, including **Life Sciences, Chemistry, Biology, Biochemistry, Biotechnology, Biophysics, Molecular Biology, Microbiology, Pharmacology, Medical Sciences, or Zoology.**
- Candidates need to qualify **NET-JRF (catagory II/III)/ ICMR/ BET/GATE/ NET-LS/ DBT-JRF (Category B)** or equivalent national-level examinations.

Desirable Skills & Qualifications:

- Strong experimental design and analytical skills.
- Dedication to research with a problem-solving mindset.
- Hands-on experience in **molecular biology, cell biology, and protein biochemistry** is highly preferred.

Interested candidates are encouraged to e-mail to Dr. Sankar Maiti (E-mail: spm@iiserkol.ac.in)

Project-Sponsored Ph.D. Position Available in Prof. Punyasloke Bhadury's Laboratory

A project-funded Ph.D. position is available in the Integrative Taxonomy and Microbial Ecology Research Group (PI- Professor Punyasloke Bhadury) to work on emerging pollutants (e.g. microplastic), in addition to nitrogen based pollutants and their effects on functional biodiversity (e.g. microbiome, fish) across aquatic ecosystems (e.g. freshwater wetlands, rivers and lagoons).

Essential qualifications: Master's degree in Life Science/Zoology/Fisheries/Natural Science/Biotechnology/Environmental Science/Microbiology or Agricultural Science from a recognized University or equivalent with minimum 55% marks. Candidates need to qualify NET-LS/NET-JRF (catagory II/III)/GATE/ICAR-NET/ DBT-JRF (Category B) or any other national exam.

Additional criteria: Experience in aquatic ecology, field work exposure on aquatic ecosystems,previous experience working with emerging pollutants (e.g. microplastic), and basic knowledge in genomics highly desirable.

Interested candidates are encouraged to e-mail to Prof. Punyasloke Bhadury (E-mail: pbhadury@iiserkol.ac.in)

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.

Few important points:

1. PhD Candidates can select only those faculty members as potential supervisors whose names are given in the advertisement.

2. Candidates are requested to provide their personal cell no. and personal e-mail address while filling up the PhD application form. It cannot be your guardian's cell no. or e-mail address.

3. Candidates are requested to send their queries to "PhD Helpdesk for DBS <dbs.phd.application@iiserkol.ac.in>" with a copy to potential supervisor.

4. Candidates can request for online PhD interview with justification. Such request should be sent to the potential supervisor with a copy to "PhD Helpdesk for DBS <dbs.phd.application@iiserkol.ac.in>". Candidates appearing for online PhD interview can request their referees to e-mail the recommendation letters to potential supervisor.

DBS Autumn 2025 Ph.D. Timeline:

PhD application portal opens: 9.3.2025
Application portal closes: 19.5.2025
Publication of shortlist for the Interview: 26.5.25
Selection Interview window: June 9– 20, 2025
Publication of PhD interview results by: 26.6.2025
Pre-registration portal opens: 26.6.2025
Pre-registration deadline: 28.07.2025