

Postdoctoral Fellowship Programme in the Department of Biological Sciences

Applications are invited from the motivated and potential candidates for postdoctoral positions available in the Department of Biological Sciences (DBS), IISER Kolkata.

The following criteria need to be fulfilled (apart from the essential criteria mentioned in the main part of the advertisement) to apply for a postdoctoral position at DBS.

1. A candidate must have secured at least 55% marks (or equivalent CGPA) in MSc (or equivalent exam) and at least one first authorship peer-reviewed paper (related to her/his PhD work) published or accepted in a reputed journal.
2. The application should accompany (other than the detailed CV and copies of all certificates as mentioned in the main part of the advertisement) and fulfil other essential criteria mentioned in the main part of the advertisement.

i) A short research proposal (not exceeding 3 pages) on the project of interest.

ii) Two recommendation letters (to be sent by the referees directly to dbs.pdf@iiserkol.ac.in)

*A candidate may opt for up to three projects (details are given below) according to their preference.

Short-listed candidates will have to present her/his PhD work and appear for an interview

The final selection will be based on the presentation (open seminar) by the short-listed candidate and the performance of the candidates during the selection interview.

How to apply:

1. Write a cover letter mentioning the order of preference of the projects (up to three).
2. Detailed CV.
3. Short research proposal (one for each preferred project).
4. Copies of all essential documents (as mentioned in the main part of the advertisement).
5. At least two recommendation letters (to be sent by the referees to dbs.pdf@iiserkol.ac.in mentioning the candidate's name in the subject).
6. A candidate MUST mention the code of the most preferred project in the email's subject.

Last date of receiving applications (via e-mail to dbs.pdf@iiserkol.ac.in): 31.03.2024. Candidate MUST mention their preferred projects/mentors in the mail.

Project Title: *Deciphering the role of protein-protein interaction in functional regulation of Cytochrome in hypoxia* (Code P-1)

Principal Investigator: Dr. Sumit Sen Santara, IISER-Kolkata

Job Description: Exploring the interactome of cytochrome under hypoxic conditions

Essential/desirable experience and/or expertise: The ideal candidate will have a PhD in protein biochemistry/bioinformatics/computational biology. Experience in cloning, protein expression and purification. Can utilize computational modeling techniques to design and predict protein structures, including homology modeling and de novo design algorithms. Conduct in silico analysis to evaluate the binding interactions between proteins e.g., docking, molecular simulations. Employ bioinformatics tools and databases to analyze gene sequence and structure data. Collaborate with chemists, biologists.

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Project Title: *Urine metabolomics to identify potential metabolite markers in different phenotypes of polycystic ovarian syndrome* (Code P-2)

Principal Investigator: Dr. Amit Kumar Mandal, IISER-Kolkata

CO-Principal Investigator: Dr. Ipshita Mohapatra, AIIMS Kalyani

Job Description: Exploring metabolomics using mass spectrometry platform

Essential/desirable experience and/or expertise: Essential: i) Ph.D in the field of any subject in Biology; ii) The candidate must be trained in wet lab based experiments. iii) The candidate must have expertise in analytical Chemistry/Biochemistry techniques. **Desirable:** i) Experience in mass spectrometry-based omics research.

Project Title: *Mechanism of cell migration with Actin binding proteins* (Code P-3)

Principal Investigator: Dr. Sankar Maiti, IISER-Kolkata

Job Description: We are seeking a highly motivated individual for the characterization of actin binding proteins involved in cell migration, particularly in the context of cancer cell migration. The successful candidate will be responsible for conducting wet lab experiments to investigate the mechanisms underlying cell migration, utilizing techniques such as cell culture, imaging, and protein biochemistry. This position offers an exciting opportunity to contribute to cutting-edge research in the field of cell biology and cancer metastasis.

Essential Experience and Expertise: Ph.D. in Biology, Chemistry, or related field. Proficiency in wet lab-based experiments. Expertise in cell culture, imaging, and protein biochemistry techniques. Prior experience in the study of cell migration or cancer cell biology will be better.

Project Title: *Chemical Ecology of tri-trophic Interactions: Understanding plant defences and Insect Immune Responses* (Code P-4)

Principal Investigator: Radhika Venkatesan

Job Description: The project aims to explore the role of plant metabolites especially those induced upon herbivory in modulating tri-trophic interactions. The impact of such plant defences on herbivore innate immunity will also be examined.

Essential/Desirable experience and/or expertise: PhD in Chemistry/Analytical Chemistry/Ecology/or related subjects with expertise and experience in chemical ecology-related fields. Experience in mass spectrometry and chromatographic techniques would be expected. Keen interest in plant-insect interactions, field-based study and enthusiasm to learn new research topics desirable.

Project Title: *Unravelling thermosensory signaling mechanisms in rice (Oryza sativa)* (Code P-5)

Principal Investigator: Dr. Sreeramaiah N. Gangappa

Job description: The candidate will be directly involved in screening diverse rice genotypes for temperature response under temperatures. He/She will try to understand the genetic and molecular basis of warm temperature response using genetic, genomic and biochemical tools.

Essential/desirable experience and/or expertise: The candidate should have a PhD in plant biology specialising in Rice functional genomics with at least one first-author publication. Candidates should have expertise in creating knock-out and gain-of-function lines through tissue culturing using agrobacterium-
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mediated transformation. Moreover, good communication skills are necessary. Also, the candidate should have very good written and oral communication skills.

Project Title: *Isolation of Phytomedicinal compounds from Neem Bark and Tinospora extracts to study their therapeutic potential against cancer and antiviral potential against β -coronaviruses* (Code P-6)

Principal Investigator: Jayasri Das Sarma, Department of Biological Sciences

Co-Principal Investigators: Parna Gupta & Alakesh Bisai, Department of Chemical Sciences

Essential Qualification: Ph.D. in Life science/Biology/Chemistry or associated field with a minimum of 55% marks in MSc or equivalent degree and at least one first-author publication in a peer-reviewed international journal.

Desirable Qualification: 1. Exposure to purification techniques of phytochemicals with sound knowledge of HPLC, GC Chromatographic processes along with MS and NMR. 2. Preferences will be given to candidates who have prior practical experiences in working with solvent-based extraction methods and handled instruments like fraction collectors and liquid chromatography. Comfortable in familiarizing oneself with new software tools. 3. Preferences will be given to candidates who are willing to learn cell biology, virology and molecular biology 4. Good communication skill for scientific writing and presentation is a must. Publications in reputed peer-review journals will be preferred. 5. The candidate will be expected to engage in interdisciplinary and collaborative research work. Pro-efficient in logical thinking and independent execution of the project, good writing, and oral English communication skills.

Title of the project: Studies on molecular mechanisms involved in bacterial swarming and biofilm formation. (Code P-7)

Principal Investigator: Prof. Tapas K Sengupta

Essential Qualifications: PhD in any branch of Life Sciences with a strong background in Microbiology/Molecular biology/Biochemistry with good communication skills.

Project Title: Quantitative assessment of health of aquatic ecosystems in a changing climate (Code P-8)

Principal Investigator: Punyasloke Bhadury

Job Description: Quantifying effects of multiple stressors originating from anthropogenic forcings (e.g. forms of pollutants, in particular microplastic) across biological scales from freshwater to coastal ocean; Field work across aquatic ecosystems and developing new approaches to quantify effects of anthropogenic forcings on organismal groups (e.g. microbiomes, plankton and metazoan communities).

Essential/desirable experience and/or expertise: PhD in the areas of Marine Science/Marine Biology/Biological Oceanography/Zoology/Microbiology/Environmental Science/Ecology and a proven publication record; Strong track record of field experience; Knowledge of biodiversity and ecosystem functioning of aquatic ecosystems highly desirable.

Title of the project: Studies on molecular biology, biochemistry, structural biology, computational biology, antibiotic resistance and microbiological aspects of different bacteria (Code P-9)

Principal Investigator: Dr. Partha Pratim Datta

Qualifications: PhD in any branch of Life Sciences with a background in molecular biology/biochemistry/structural biology/microbiology/computational biology is desirable, but experience in other [Type here]

research areas may be considered as well.

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