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 in 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. 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 send 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 Ph.D. work and appear for interview

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

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

Last date of receiving applications (via e-mail to dbs.pdf@iiserkol.ac.in): 20.03.2022. Candidate MUST mention their preferred projects/mentors in the mail.

Project Title: *Sequence variability and disulphide ordering in plant cyclic peptides: In silico exploration of stability and potential applications* **(Code P-1)**

Project Mentor and Co-Mentor: Dr. Radhika Venkatesan and Dr. Neelanjana Sengupta

Job Description: To study and understand sequence variability of cyclic disulphide rich peptides from Indian plants and understand disulphide ordering using in-silico as well as some experimental approaches; data analysis; modelling; report/manuscript writing.

Essential/Desirable experience and/or expertise: PhD in Chemistry/Physical Chemistry/Biophysics/or related subjects with expertise and experience in peptide/protein chemistry both in-silico and laboratory methods desirable; homology modelling; MD simulation methods and computer programming.

Title of the project: *Engineering Peptides based biomolecules as therapeutics against cancer and ischemic disease* **(Code P-2)**

Project Mentor: Dr. Rituparna Sinha Roy

Job responsibility: Need expertise in computational biology (computational modelling of proteins/peptides and MD simulations) /need expertise in peptide synthesis

Essential/Desirable experiences and/or expertise:

Essential: BSc in Chemistry / Chemical Biology / Biochemistry / Biotechnology / Biophysics / Bioinformatics / Chemical Engineering / Pharmaceutical Chemistry / Computational Biology,

MSc in Chemistry / Chemical Biology / Biochemistry / Biotechnology / Biophysics / Bioinformatics / Chemical Engineering / Pharmaceutical Chemistry / Computational Biology and

PhD in Chemistry / Biological Chemistry in the area of Peptide based therapeutics / Medicinal Chemistry / Pharmaceutical Chemistry / Bioinformatics / Biophysics / Biochemistry / Structural Bioinformatics / Computational Biology

Desirable: Having experience either in (peptide designing and synthesis) / Computational Biology. Needs to have paper on peptide-based therapeutics/ Computational Biology related to protein/peptide/nucleic acid.

Project Title: *Community ecology of hill-stream fish communities and impact of anthropogenic activities on ecosystem structure and function of aquatic ecosystems* **(Code P-3)**

Project Mentor: Dr. Anuradha Bhat

Job Description: Field-oriented study on the community structure of freshwater fishes in sub-East Himalayan hill-streams; Statistical analysis, predictive modeling; writing manuscripts; mentoring undergraduates in the lab.

Essential/desirable experience and/or expertise: Recent Ph.D. in the area of Ecological Sciences; Strong skills in mathematical and statistical analysis of data; field experience in fish sampling, fish taxonomy highly desirable.

Project Title: *Experiment-driven Modeling of a microbial ecology under environmental stress to quantify population number fluctuation* **(Code P-4)**

Project Mentor: Dr. Dipjyoti Das

Job Description: Statistical data analysis, Computational modeling, simple bacterial culture-based experiments (in vitro), mentoring undergraduates.

Essential/desirable experience and/or expertise: Recent Ph.D. in soft-matter physics (experiment), microbiology (experiment), Biotechnology, computational biology. Must have physics or mathematics (at least as subsidiary subjects) at B. Sc level. Familiarity with any programming language. Experience in handling bacterial culture is desirable (but not necessary).

Title of the project: *Studies on molecular biology, biochemistry, structural biology, computational biology, antibiotic resistance and microbiological aspects of different bacteria* **(Code P-5)**

Project Mentor: Dr. Partha P Datta

Qualifications: PhD in any branch of Life Sciences with background in molecular biology/ biochemistry/structural biology/microbiology/computational biology is desirable, but experience in other research areas may be considered as well.

Project Title: *Modelling habitat conversion, recovery, and restoration for a sustainable future: Empirical assessment of past changes and predictive analyses of future conservation and development in a large multi-use landscape in central India* **(Cod P-6)**

Project Mentor: Dr. Robert John Chandran

Job Description: The project is focused on the central Indian landscape (mostly within Madhya Pradesh) and involves multiple aspects - starting with landscape ecological analyses of past landcover changes in this ecologically-rich landscape, evaluating current scenarios of socio-economic development and conservation goals, and pulling all these together in a modelling framework (coupled equations describing changes in different sectors) to evaluate future options for development and conservation. The goal would be to develop a sustainability science framework to guide socioeconomic and land-use decisions viewing the landscape as a social-ecological system. The data needed would come from empirical work already being carried out a by team of junior researchers, extensive secondary data from government agencies, and other datasets that are available in public domain.

Essential/desirable experience and/or expertise: The candidate should have a PhD in ecological or mathematical sciences or relevant subjects that are appropriate for the job description above. The candidate should have experience in landscape ecological analyses (GIS/RS), working with ESRI Software, QGIS, and R (or Matlab). Skills with process-based analytical model building to study landcover change would be highly desirable.

Project Title: *Quantitative assessment of health of coastal oceans in a changing climate* **(Code P-7)**

Project Mentor: Prof. Punyasloke Bhadury

Job Description: Quantifying effects of multiple stressors originating from anthropogenic forcings (e.g. pollutants, microplastic, coastal developments) across biological scales in coastal Bay of Bengal of the Northern Indian Ocean; Field work in coastal biotopes and developing new approaches to quantify effects of anthropogenic forcings on organismal groups (e.g. microbial populations, 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 coastal Bay of Bengal highly desirable.

Project Title: *Dog-human interactions in the urban ecosystem* **(Code P-8)**

Project Mentor: Dr Anindita Bhadra

Job Description: The work involves extensive field work on streets in various habitats, and some wet lab work. The postdoctoral student will be involved in data analysis and mentoring of lab interns.

Essential/desirable experience and/or expertise: PhD in the area of ecology/ animal behaviour/ zoology/ physiology, with experience of field work and a good knowledge of statistics is essential. Knowledge of hormone analysis and genomics is desirable.