Advertisement for Postdoctoral Fellow in the School of Biological Sciences
NISER, Bhubaneswar

Applications are invited for Post Doctoral Fellow (PDF) positions in the School of Biological Sciences, National Institute of Science Education and Research, Bhubaneswar.

Educational Qualification: The candidates should have a Ph.D degree in biological science/computer science or related areas and interested in pursuing biological research in any of the following areas. Those who have submitted their Ph. D thesis in one of the fields mentioned below are also eligible.

Research areas: Molecular and Developmental Genetics; Cell biology of TRP channels; Molecular mechanism of eukaryotic translation initiation; Molecular Virology; Structural Biology; Structure based drug design; Stress, physiology and immunity-A systems approach; Cancer biology and Cancer genetics; Cellular Immune Regulation associated to Infection Immunity and Cancer Immunity; bioinformatics and computational biology; cell cycle regulation and nuclear remodeling; Membrane mediated antibiotic resistance mechanisms in bacterial pathogens; Plant biology; Neural circuits and neuroendocrine regulation.

Details of the research being undertaken in the labs is given as Annexure I.

Fellowship and Benefits: ₹32,000 - ₹38,000/- + HRA and Contingency as per DAE norms. The position is purely temporary, and appointment made for a year at a time and extendable to a maximum tenure of three years upon satisfactory academic performance. The postdoctoral fellows selected are expected to work with a specific research group at NISER depending on mutual research interest, however in exceptional cases they can also work independently if the infrastructural requirement supports such an arrangement.

Candidates should send in their applications and arrange for the recommendation letters to reach the Chairperson of the School of Biological Sciences through email: cpsbs@niser.ac.in . In addition, the candidate should send the application by email to the faculty with whom he/she intends to work.

The applications should have the following documents:
(a) A covering letter that mentions the specific research area outlined above they would like to be considered in.
(b) A detailed academic CV, list of publications and names of two academic referees.
(c) A statement of research interests.

The candidate should arrange for the letters of reference to reach the chairperson of the school by email within a week of the date of application. The candidates who are short-listed based on their CV, research statement and letters of recommendation could be interviewed either in person or through video/internet conferencing before the final selection is made. While the application wis will be processed as soon as received, the positions will remain open until suitable candidates are found.

Annexure I

Dr. Subhasis Chattopadhyay
Email: subho@niser.ac.in

Area of research: Cellular Immunology

Project outline: *Role of TLRs, TRPs and T cells along with Macrophages towards immune regulation: Implication in viral infection and cancer progression.*

The fundamental consequences of cellular responses during altered physiological processes associated to viral infection (e.g. CHIKV), cancer and/or tumor progression (mouse models and patients' samples), inflammation and immunogenic responses in various cases of altered host cell functions and phenotypes associated to TLRs, TRPs and T cells along with Macrophages are the prime interest of our ongoing research. [Abbreviations: TLR: Toll like receptor; TRP: Transient Receptor Potential; CHIKV: Chikungunya virus]

Please visit the website: http://subhasischattopadhyay.weebly.com

Dr. Ramanujam Srinivasan
Email: rsrini@niser.ac.in

Area of research: Baterial pathogenesis, cytoskeletal dynamics and function

Title: Cell division and Spatial organization in Bacteria

The candidate will work on research project on understanding Bacterial Cytokinetic ring assembly, dynamics, Regulation of cell division control in bacteria. The candidate will have ample research experience in protein expression and purification from E. coli as well as from any other useful systems like yeasts or Lemna. Knowledge of bacterial genetics and past work experience with bacterial cell division proteins is desirable. The candidate should also have a keen interest in developing his career on bacterial cytokinesis. During the course of the project he will further experience in imaging cellular organisation within bacterial cells and use of microfluidic devices.

Dr. Rudresh Acharya
Email: rudresh.acharya@niser.ac.in

Area of research: Structural Biology/Macromolecular Crystallography

Title: Mechanistic insights into the functioning of polysaccharide lyases (PLs), and Histidine kinases (HK) Sensors

Bacterial PLs are pathologically important enzymes that degrade anionic polysaccharides in the host extracellular matrix. Recent literature reports a PL that catalyzes different polysaccharides as a function of pH. Our research group aims to determine X-ray structures of the PL in apo, and substrate bound forms, and deduce mechanistic models for the pH dependent functioning.
HK sensors enable microorganisms to sense environmental changes. The structures of HK sensors and precise molecular mechanism of signaling are not fully understood. We aim to deduce the crystal structures of HK sensors at different functional states, and provide the mechanistic model for signaling.

Dr. Palok Aich
Email: palok.aich@niser.ac.in

Area of research:

Title: understanding role of microbiome on gut brain axis

Microbiome in the gut of mammals play important role in shaping up the physiology of the host. This fact, however, needs major research to understand the mechanism and pathways via which it is happening. A molecular high through-put understanding at genomic and metagenomics level is required. We plan to study effects of perturbation and restoration of gut microbiota in mouse model on host physiology with special emphasis on metabolism, innate immunity and gut-brain axis.

Dr. Asima Bhattachryya
Email: asima@niser.ac.in

Area of research: Cancer biology

Title: Understanding the interaction of gastric tumour cell with its microenvironment

Brief Description: *In vitro* assay systems are limited in their capacities with respect to understanding interaction of cancer with its microenvironment. We aim to study interaction of gastric cancer cells with tumour milieu. Development of gasteroid system is a part of this study.

Requirements: Extensive knowledge in cell culture techniques, microbiological techniques, cell signalling, mouse dissection, histopathology, cell characterization and imaging.

Dr. Manjusha Dixit
Email: manjusha@niser.ac.in

Area of research: Cancer biology and Genetics

My lab's broad research interest is to understand the genetics and molecular biology of various human genetic diseases, especially cancer. We are specifically interested in finding out the novel angiogenic regulators and their role in cancer.
Intratumoral angiogenesis triggers tumor growth and progression. Current therapeutic strategies, targeting mostly one molecule may not be enough to suppress the intratumoral angiogenesis. Till date, complex interactome of angiogenic-switch is not completely understood. My research group has identified a few candidate genes and has established their role in angiogenesis by *in vitro* experiments. Currently we are working on role of these putative angiogenic regulators *in vivo* and it's molecular mechanism in various types of cancers.

Dr. Kishore Panigrahi
Email: panigrahi@niser.ac.in

Area of research: Plan biology

Title: Plant development and Signalling

Plant biology group tries to understand the light, hormone and stress tolerance mechanism using *Arabidopsis* and *Physcomitrella* as model systems. We employ, molecular genetics, Cell biology and Biochemical techniques. Currently our work involves generation of transgenics in Arabidopsis and diurnal sampling of seedlings followed by QRT and proteomic analysis. At the same time we use targeted gene disruption in physcomitrella. We wish to optimize recently revolutionized crispar cas technology in our work for targeted gene disruption and over-expression with special reference to GIGANTEA in crop plants such as wheat and Tomato, in order to understand their possible role in Disease resistance.

Dr. Chandan Goswami
Email: chandan@niser.ac.in

Area of research: Cell biology

We work on thermosensitive ion channels (TRP channels) which are involved in critical sensory and physiological functions. These channels are expressed in neuronal cells as well as in a number of non-neuronal cells such as in immune cells, keratinocytes, retinal cells, sperm cells and bone cells. In most cases, TRP channels regulate diverse cellular organelles including cytoskeleton, mitochondria, lysosomes and vesicles affecting cellular structure, function and signalling events. Using, cell biological, biochemical, and genetic approach we explore the structure-function and regulation of these channels.
We use high-end imaging techniques to address many of our questions.
(For more details visit: http://biology.niser.ac.in/~chandan/index.html)

Dr. Abdur Rahaman
Email: arahaman@niser.ac.in

Area of research: Cell biology, protein structure and function

Title: Mechanism and Regulation of Nuclear Remodeling

Our research focuses on understanding the mechanism and regulation of nuclear expansion using *Tetrahymena* as a model system. We are also addressing the regulation of lipid homeostasis and membrane biogenesis in this organism. The candidate is expected to work on an independent project related to the laboratory objective. Candidate with prior experience in Cell Biology or Biochemistry or Biophysics is preferable but not essential.

Dr. Debasmita Alone
Email: debasmita@niser.ac.in

Area of research: Molecular and Ocular Genetics

Title: Molecular pathogenesis of age-related neurodegenerative disorders

With the shifting demographics towards older age, there is a major concern for age-related disorders. 90% of individuals dying each year are due to age-related causes. Understanding the genome, epigenome and proteome between healthy and diseased state of these individuals pave a way for unravelling bio-markers for early diagnosis and/or therapeutics for various diseases. Our goal is to find these underlying players that change the micro-environmental niche differently in a diseased state during the developmental process of aging and hence are responsible for these age related-disorders. We are currently focusing on understanding the pathomechanism of two neurodegenerative eye disorders (Glaucoma and Corneal Endothelial Dystrophies) as well as Cancer using a pleothora of cellular, biochemical, genetics, genomics and molecular biology techniques involving human samples, *Drosophila* models as well as *in vitro* cell lines.
Interested candidates are encouraged to visit homepage (http://debasmitau.wix.com/debasmitalab) to get detailed information about current projects and/or write to debasmita@niser.ac.in

Dr. Praful Singru
Email: pssingru@niser.ac.in

Area of research: Neuroscience

Title: Neural circuits and neuroendocrine regulation:

We are exploring the molecular determinants driving mesolimbic dopamine pathway for specific reward and the cross talk between the neural circuits regulating food intake and reproduction. Using various tools of neuroscience and imaging, our aim is to understand: (i) how the neural circuits controlling these functions are organized in the brain, (ii) neurotransmitters/neuromodulators employed by the neurons in the neural circuitry, (iii) the ion channels recruited on the neurons in these pathways and their role in modulating the neuronal function, and (iv) how these circuits operate to control behavior.

Dr. Pankaj Alone
Email: pankaj@niser.ac.in [http://home.niser.ac.in/~pankaj/index.html]

Area of research: Molecular mechanism of eukaryotic translation initiation

The position is available to understand the intricacies of non-AUG codon selection in the eukaryotic translation initiation process. The role of various translation initiation factors (eIF1, eIF5, eIF2-ternary complex), 40S ribosome and cis-acting elements in the mRNA that cooperatively engaged in non-AUG codon selection will be explore. Special emphasis is given to understand the changes in the proteome cause due to defective initiation process and identification proteins and molecular pathways that affects normal cellular physiology. This project involves uses of yeast molecular genetic, biochemical-biophysical and proteomics techniques.