

## **General information about the Internship Projects**

The Animal Facility (AF) at IISER Kolkata is organizing " Internship Projects" on the Fundamentals of Laboratory Techniques involving a wide range of interesting projects, which include Neurovirology, Cancer and many more. The main goals of this internship program are to enhance a student's proficiency as a researcher, understand and comprehend ethical issues, grasp the fundamental concepts of research and learn to ask the basic questions in research that marks the beginning of any novel project. This internship program will lead to the exploration of various research methodologies pertaining to animal studies, mammalian cell culture techniques, molecular biology techniques, Histopathology and different Imaging techniques. The internship tenure can be decided based on the available project positions. One can opt for three months tenure, six months tenure or one year tenure.

This program is really intriguing as it offers not only the chance to become accustomed to diverse research methodologies but also provides the opportunity to participate in original research projects actively. Each student will be paired with highly qualified doctoral candidates, giving them a chance to collaborate with their mentors and even potentially get engaged in other thoughtful projects. Through sincere and dedicated effort, participants may even earn authorship on publications stemming from these projects in reputed international peer-reviewed journals. Pursuing this internship will encourage the participants to ask brainstorming questions and engage in a holistic experimental approach. Each participant would receive a certificate after submitting their dissertation thesis on internship projects. This program will offer a genuine laboratory experience and facilitate an understanding of the fundamental principles of research in a broader sense. This will prepare them for future pursuits in multidisciplinary research opportunities.

### **Scope of the Internship training**

#### **1. Molecular Biology Techniques**

1) RNA isolation, 2) cDNA preparation, 3) semi-quantitative PCR, 4) Protein isolation and quantification, 5) RT PCR, 6) Western Blot, 7) Flow Cytometry,

#### **2. Animal Handling Techniques**

1) Laboratory Animal Handling (Mice), 2) Care, 3) Ethics, 4) Basics of Animal House Maintenance & Management, 5) ABSL2 Facility Access & Training, 6) Various Animal Models 7) General Anatomy (Demonstration) & Physiology (Theory) 8) Anesthesia 9) Euthanasia 10) Dissection (Mice), 11) Different Routes of Administration (Theory & Demonstration) 12) Instrumentation (Demonstration & Access).

#### **3. Histopathology Techniques**

1) Tissue Processing, 2) Tissue embedding, 3) Tissue sectioning and Staining ( H&E and LFB)

#### **4. Different Imaging Techniques**

1) In-vivo imaging, 2) Microscopy

## 5. Mammalian cell culture

1) Cell culture media preparation, 2) Filtration, 3) Introduction to the cell culture reagents and plastic wares, 4) Basic introduction to cell culture covering topics such as cell culture laboratory set-up, safety, and aseptic techniques, cell culture management (generate track) and, 5) maintain cell lines through the entire cell culture processed (Cell passaging, cell splitting by trypsinisation, cell seeding for experimentation), 6) Transfection (protein expression), 7) immunofluorescence and microscopy, 8) cryopreservation of cells (systems and accessories), 9) Drug treatment and identification of IC50 values, 10) Viral infection and Viral Titre.

### Remuneration

The registration fee for participants is Rs 10,000/- per month. If one registers for 3 months, then their registration fee is 30,000; for 6 months, then it is Rs 60,000/- and if one registers for 12 months, then the remuneration would be Rs 1,05,000/-. If any participant is interested in working with Nude mice model then extra remuneration may be charged based on duration of the study.

### **Bank Account Name:**

**Indian Institute of Science Education and Research Kolkata**

**Bank Account Number: 913010056011865**

**Bank Name: AXIS BANK**

**Branch Name: KALYANI**

**IFSC Code: UTIB0000481**

**Swift Code: AXISINBB277**

**Branch Address: B-9/276(CA), Near Central Park, Dist- Nadia, West Bengal-741235.**

### Broad- areas of Research Projects

- Neurovirology
- Neuroimmunology
- Neural cell biology and neurobiology of diseases
- Glial cell biology
- Cell-cell communication
- Virus-induced Demyelination studies
- Ovarian cancer model
- Cervical cancer model
- Glioblastoma model
- Cancer metastasis
- Inter-disciplinary studies( in collaboration with chemistry department)
- Bioinformatics studies
- Virology
- Lung cancer model
- Oncolytic virus model
- In-vitro cell culture model
- In-vivo mice model

### **The training procedure for the internship**

After joining the program, the participants will go through rigorous training in all the research techniques as stated above. Then, each participant can select an ongoing project under the guidance of project supervisor. There are many openings for Project positions in studying Neurodegenerative diseases, Virus-induced Demyelination studies, Immunological studies, Virology, along with many open positions available in Cancer biology and therapeutic approaches, including Ovarian cancer, Cervical cancer and Glioblastoma. After the training period, each participant is also encouraged to come up with brain storming ideas pertaining to the above-mentioned topics. This would help them gain immense experience in the field of research. As mentioned above, each participant would also receive Certificate after submitting project by thesis. This would not only give them an excellent opportunity to experience original and interesting research projects but also learn to deal with different challenges. experimental troubleshoots, and thus helping them gain knowledge for facing future research endeavours.

**Please send your registration submission notification of Module-5 through an email to [animalfacility@iiserkol.ac.in](mailto:animalfacility@iiserkol.ac.in) or call at the below mentioned mobile no. 9748642423 / 9830195225 for any help.**

#### **Contact Info**

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**Mobile: 9748642423**

**Dial 033-61360000 and then provide the extension number 1202 when asked**