The NIBB Internship Program

The NIBB Internship program, which started in 2009, is a hands-on learning course for overseas students designed to give high-quality experience in real world research and a focused education in biology. At the same time, this program aims to internationalize graduate students from The Graduate University for Advanced Studies, SOKENDAI, giving them the opportunity to get to know students and interns with differing cultural customs. Another goal of the program is to build connections through providing education to the people who will form the core of international research networks in the future.

To participate in this program, applicants who would like to experience research at NIBB must supply the name of the lab they would like to visit as well as their reasons for choosing it, and a letter of recommendation. Based on this information, applicants are chosen to spend set periods of time participating in specific research activities in the lab they applied for. Round trip airfare and housing expenses are provided by the NIBB Internship Program.

In FY2021, considering the situation of COVID-19, we called the applications from students attending universities abroad with the explicit understanding that the internship program might cancel if the COVID-19 situation worsened. Consequently, one student who belongs to a Vietnamese university was selected. However, due to border control by the Japanese Government, the student was unable to visit Japan. In contrast, four international students attending universities in Japan were accepted, and three of them came to NIBB during FY2021.

Report from a participant
Piyusha Mongia

I am Piyusha Mongia, a graduate student from Osaka University, Japan. I am grateful that I could take part in this internship program and be a part of Prof. Jun-Ichi Nakayama's laboratory. The lab works on epigenetics- how it regulates gene expression, the establishment of epigenetic markers and so on.

The bigger question was to understand how epigenetic information is inherited and what are the factors involved. Epigenetics refers to heritable changes- not coded by DNA. Eukaryotic chromosomes can be divided into 2 broad categories: euchromatin and heterochromatin. Euchromatin refers to the regions on chromosomes which are transcriptionally active. Heterochromatin, on the hand, is generally transcriptionally silent, present at repetitive sequences or transposons. Methylation of lysine 9 of histone H3 (H3K9me) is a hallmark of heterochromatin. I created and assessed the involvement of four candidate gene deletions in heterochromatin inheritance in fission yeast spores. Fission yeast is a simple eukaryote having three chromosomes, making its study relatively easier. I first replaced the 4 genes with nourseothricin by PCR and then visualized swi6-egfp localization by fluorescence microscopy. One of the candidate genes seems to be important for the inheritance of heterochromatin but more studies need to be done to conclude so. In a parallel project, I tried to express three of Tetrahymena proteins using a bacterial expression system. These proteins are involved in heterochromatin assembly. Producing recombinant proteins allows us to purify and biochemically analyze individual proteins activities and interactions in-vitro. In the end, I managed to express all, but purify one of the proteins due to time constraints. I learned many biochemical techniques, like Gel Filtration Chromatography and Ion Exchange Chromatography. I wish I could have had a longer time period to do more fun experiments.

Every day I was faced with challenges, and learnt something new. All the members were very patient with me and taught me something or the other. I'm extremely grateful to Dr. Hayashi and Dr. Kataoka, who guided me throughout the project. Prof. Nakayama was very supportive and encouraging. The research atmosphere in the lab is very exciting and it was truly an enriching experience for me.