

Okinawa Institute of Science and Technology

Research Intern Report (6-31 March 2017)

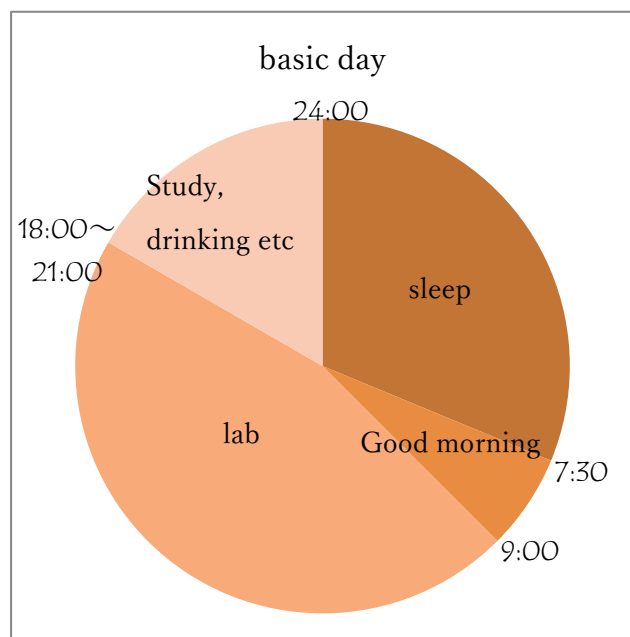
Nagisa YAMASHITA

Veterinary Medicine

Hokkaido University

1, Schedule

Recruit announcement	2017.2.3
Apply deadline	2017.2.10
Result informing	2017.2.17
Flight	2017.3.6
Intern	2017.3.7-2017.3.30
Final presentation	2017.3.30 (in Unit)
Flight	2017.3.31
Deadline for report	2017.4.10



▲ basically I went to lab at 9 am, and usually stayed until 20:00 if had no schedule in the night.

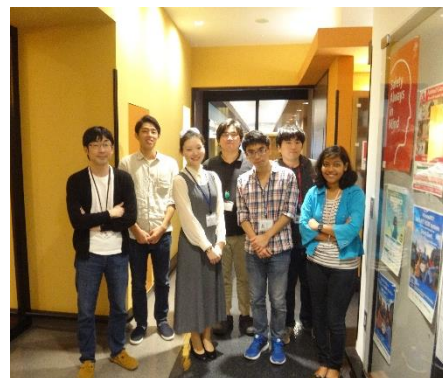
2, About Ishikawa Unit

Unit : Immune Signal Unit

PI : Prof. Hiroki ISHIKAWA

Member : Two postdoctoral scholars from Japan

Two students from Taiwan and India



▲ with lab members

A technician from Japan

Main theme : Pathogenicity deciding factor in Th17 which plays an important role in autoimmune disease. And what the factor does in other cells.

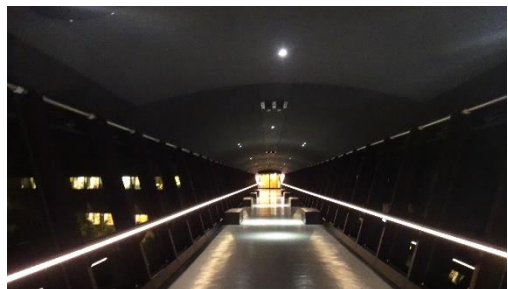
3, My works during the Intern

I was mainly involved into generating knockout mice (the mice which do not have specific gene) with CRISPR/Cas9 system. I also watched and experienced many other experiments done in the lab. Usually, I consulted my protocol schedule for the day with postdoc or student in the morning. In some spare times among experiments, I wrote down research lab notebook, read instruction for kit, and studied. The time to go home varied from 18:00 to 23:30 depending on protocol schedules. I really enjoyed my work in lab even though sometimes I did not have time to eat lunch, or it took until midnight to do surgery.

Experiencing the outside of my university faculty and work with foreign people were some of my purposes to come to research intern. First of all, I was surprised to see the building. It is completely different from usual universities I know, and it has unique distribution of each labs and study areas. Because study desks were placed in the room where experiments were conducted, I was able to observe what others were doing every day. I spent many hours in lab and mostly achieved my goal to get experienced in lab. I also found that the institute itself has a very relaxed atmosphere. And many students



▲room for both experiments and desk works. I mostly stayed at this room.



▲passage from lab to lab



▲many many capillary tubes after my practice.

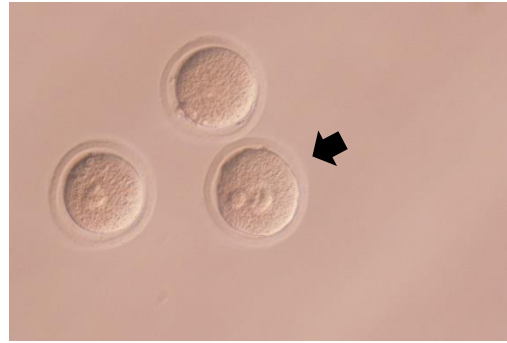
basically stay no longer than 17:30 nor work on the weekends, which are socially well accepted manners. It is so different from my faculty.

I have almost no knowledges in the area compared to lab members, but even I had some things to teach them, which is one of the most impressive events. They have different background and specialty from me. Therefore it could occur that they do not know what I know as a basic knowledge. This fact really surprised me. These told me that knowing well about my own specialty could help me effective learn even in other fields of research.

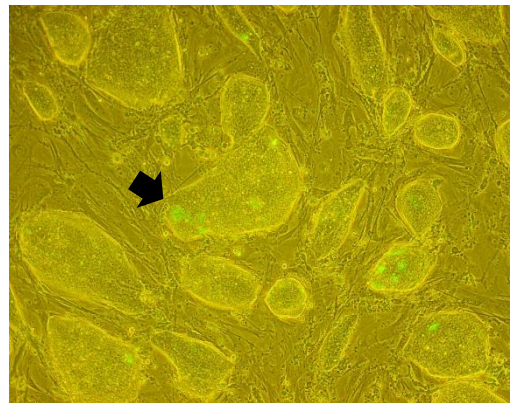
At the end of my intern, I made a presentation about my work. My work did not aim to get data and prove a hypothesis, then my presentation mainly focused around the introduction of my work as well as I had learned at Hokkaido University which are quite different from what the staff members have done. I received many compliments from the staff members on my presentation.

4, My life in OIST

I shared a residence with a girl also from Hokkaido University. Our residence had shared living and kitchen, and two private rooms. The room was big and clean enough to stay comfortable. It took only 7 to 8 minutes to go to lab from this residence on OIST campus. It was very good! However, living in OIST also brought us a problem. We had difficulty to go out



▲two pre-nuclear embryos. These embryos made me to wake up at 2 am and visit lab to see this period.



▲ES cell colony. You can see ES cells with GFP which is growing green.



▲Residence. It looks like a villa land.

of OIST without a car. Fortunately, Dr. Sasaki, a postdoc in the lab, took me everywhere and I did not have inconvenience.

5, Weekends

I had 3 weekends during my intern, but no weekends without any lab work. We looked after living things which requires us to visit lab constantly, even during the weekend. Though I did my works on weekends, I enjoyed Okinawa so much. Visiting aquarium, shuri-castle, Naha-city, neo-park, pineapple-park, and Taiwan, gave me a lot of fun. My short trip to Taiwan was so memorable. Taiwan is close to Okinawa but far from Hokkaido. There was no reason for me to miss such a good chance to visit Taiwan. One of lab members was from Taiwan, who helped me a lot together with other members. On the last weekend of my stay in Okinawa, Dr. Koizumi, Dr. Sasaki, postdocs in the lab, and I had much fun in neo-park where you can feed many birds, and pineapple-park. By the way, on that day, we worked in the morning before departure to theme parks, and returned to the lab to work in the evening.

5, In fine

It was so interesting and exciting days. I really enjoyed my stay, and had precious experiences. I would sincerely appreciate Prof. Tamashiro and Prof. Ishikawa, and many other people who gave me such an excellent opportunities and wonderful experiences.



▲a famous temple in Taiwan.



▲white peacock in neo-park

Reports of Research-Intern at OIST

Sophomore, Department of Oceanography, Hokkaido University

Unit: Marine Biophysics

Ryo Dobashi

I participated in Research-Intern in Okinawa Institute of Science and Technology (OIST) from March 2 to 17. The recruit was informed on February 3 and the deadline was very close, so I had to write the application form quickly. Also, the time for preparation was short. It would be better for students who want to participate in next year to collect information from the internet about OIST earlier.



Fig.1 OIST campus



Fig.2 OIST campus (1/120 scale)

[My motivation for application]

I applied for Research-Intern because I wanted to see advanced lecture and researches in OIST. I thought that if I join in the laboratory in OIST called Unit and study with the members, the experiences would give me good some key for my future study.

We could select the Unit which we want to join. The Unit which I joined studied the relationship of sea current and living things. I was interested in the

topic in the Unit because I also want to study about it.

[What I did in OIST]

I worked from 9:00 to 17:00 (lunch time: 12:00~13:00) every weekday. My Unit was punctual to this schedule, so we went back home at 17:00, even if we were doing something, and there were no people in the laboratory in the weekend.

I heard that each Research-Intern student had a supervisor who gave them

advices. My supervisor was a technician of the Unit. But it depends on the lab. Some Intern-students have researchers or graduate students for their supervisors.

On the first day I and my supervisor discussed on what I would do during my Research-Intern. We decided to study programming. It also depends on the situation of the Unit. Some students helped the research of their supervisor while others read many research papers.

Anyway, I studied programming during my Research-Intern. First, I studied fundamental programming referring to some Web sites of the internet. Next, I got data from the internet. I looked the data and their license. Finally, I made the programming of the track of one float. When I faced with problems which is too specific, I asked my supervisor for help.



Fig.3 Desk on that I worked

One day technicians of my laboratory took me to other places to checked up machines. I could see machines I used to see only in textbooks.



Fig.4, 5 Machines which we checked

Each member of the Unit has a different subject to study. For example, one researcher uses a technique of modeling and tracks larval of coral reef, while others study the classification of shells with embarking on a ship, and the relationship of nano-plastics and nutrient salts in the sea.

Before I applied for Research-Intern, I had already awarded to Science Challenge 2017. So, the organizer allowed

me to participate in some of its activities. 20~30 students from various universities participated in the activities. They could visit laboratories to look at what they do, hear the lectures of some professors and graduate students, and do fundamental studies. They finally made impressive presentations.

One student of our Unit took a class “nano-Fluidics”, and I contacted my professor and asked her to allow me to attend the lecture. I was surprised that the number of students were only 3 including myself, though they said it depends on each class. In the class, we can easily ask questions to the professor because students and professors are close each other.



Fig. 6 At class room

Basically, I tried to do programming, but when I asked my supervisor to participate in a lecture or Science Challenge 2017, they always allowed me

to do what I wanted to do. In addition, she kindly remade my schedule and the professor of my Unit lent me some textbooks. I found that I should not hesitate to say what I want to do there.

[Living in OIST]

Research-Intern students live in student houses with some roommates. I had a Chinese roommate and Research-Intern students are recruited from all over the world, according to him. Kitchen, toilet and bathroom was shared with him, but we could have a separate room. I made breakfast and dinner in the kitchen and buy lunchbox in lunchtime. There were knife, pan, pot and tableware, so I needed to buy only foods in a shopping center which staff taught me how to go on the first day. I could borrow wrap and seasonings from my roommate.





[Acknowledgement]

I would like to thank members of Marine Biophysics Unit for warm welcome and great assistance with my Research-Intern. I am grateful to Prof. Tamashiro for assistance and advice in Hokkaido. I would also like to thank OIST staff members for their many aspects of supports during my visit.



Fig7, 8, 9 Kitchen, bathroom and separate room in the dormitory where I stayed

[English]

In OIST, the number of foreign people are more than that of Japanese and conversations are ordinarily in English, but the number of foreign people and Japanese are almost same in our Unit. So it may depend on the Unit, but I recommend that those who think about joining Research-Intern at OIST in the next year should be prepared for such an English-speaking environment.

OIST research intern report

Name: Manami Goto

Affiliation: Applied chemistry, Engineering, Hokkaido University

Period: 03/02/17~03/30/17

Introduction

OIST (Okinawa Institute of Science and Technology) is a national graduate school. OIST is different from any other universities. This university is really international. For example, although this university is in Japan, 80 percent of the students are foreigners and official language is English.

1. Objectives

Generally, it is difficult to find the program, which allows undergraduate students to visit the laboratory in foreign countries. However OIST allows me to experience the daily life as a scientist in English-spoken environment. This is very attractive for me.

Concretely, I joined this program from the following reasons.

Experience the scientists' life

I would like to know what scientists' life is like. I'm thinking about becoming a scientist in the future. However, there are few opportunities to know the actual life of scientists. So, this is a good chance for me to experience the laboratory life not as a guest but as a member of the laboratory staff.

Try my English skills

I want to try my English skills. After graduating from Hokkaido University, I'm thinking about going to graduate school in a foreign country. So, I want to check how much I can make myself understood in English especially in terms of academic situations.

Learn many subjects as much as possible

I'm a sophomore, and I've not decided my research yet. So, it will be very useful to learn varieties of studies as much as possible now. Such experiences will help me to expand my interests. And also I will be able to consider the questions from several points of view.

2. Research

Theme of our research

I followed a Ph.D student and worked as his assistant. I joined the femtosecond spectroscopy unit, which did an experiment related to the laser.

Brief explanation of our research is below.

Recently, TMDCs (transition metal dichalcogenides) have been attracting tremendous attraction because of their

high optical and electronic performance per thickness. Especially our research focus on the monolayer MoS₂ (a family of the TMDCs) and PTB7 heterojunction charge transfer dynamics.

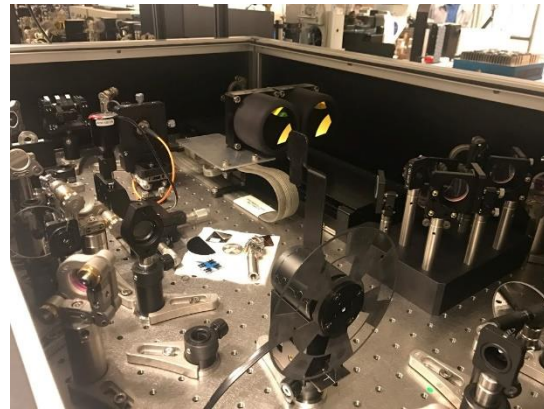
There has been growing interest in vdW p-n heterojunction with organic/inorganic semiconductors. The merits of organic/inorganic solar cells are like this. First, both organic polymer and TMDCs lack dangling bonds. So, they can form 'ideally' clean interfaces. When you are trying to make p-n heterojunctions by epitaxy, there are some challenges. For example, high temperature, lattice mismatch, and interdiffusion of atoms. Another good point is that optoelectronic properties of organic and TMDC semiconductors are highly tunable. That means by changing the molecular structure of the semiconductors, you can control their properties.

Impressions

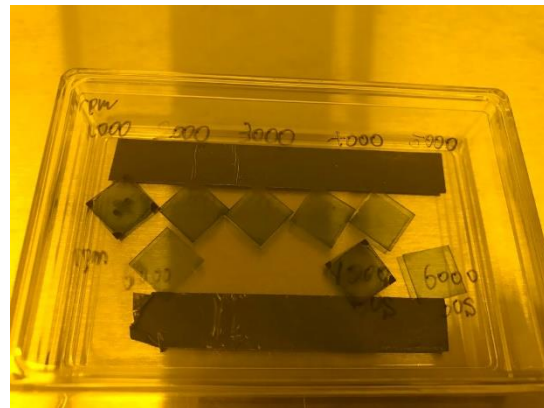
To be honest, it was hard for me to do the experiment because I didn't have enough knowledge and research experiences. And we use class 4 laser (It is the most dangerous laser. Even the scattered light harm you), which makes me difficult to do the experiment alone. Although it was difficult, those experiences were interesting for me. I really appreciate my supervisor to give me chances to do an experiment as much as possible.

It was my first time to do such experiences. For example, reading papers in English and analyzing the data by using the software by myself. Those experience is really useful for me.

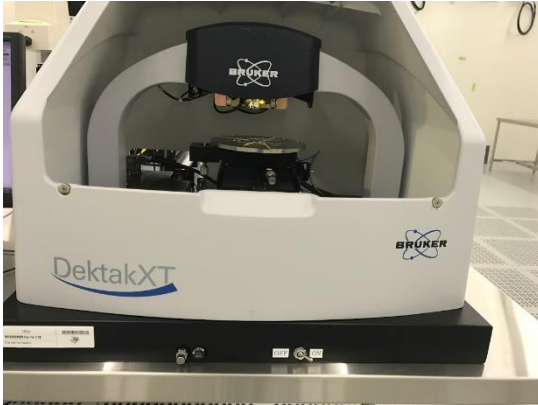
Pictures of my experiment



TAS



samples for measuring the thickness per spin speed



Surface profiler

3. International interaction

English

There were many chances to use English. That is because there was only one Japanese in my unit and I always tried to communicate with foreign people. During this stay, somehow I could make myself understood in English. However, the problem is that I am terrible at listening. This leads to the problem that I could enjoy conversation in one to one, but I could not join the group conversation. When I talk with a few people, I can stop the conversation and ask questions where I cannot listen well and understand. On the other hand, in group conversation, it is difficult to interrupt it.

Weekends

I went out with my friends at OIST. There were many events every weekend. For example playing cricket, whale watching, birthday party (3 times!), Holi, camping... and so on.

Toughness

I was surprised that OIST students are really tough. For example, the day after cycling more than 100 km, they can start research early in the morning!

4. Achievement

Importance of studying English

I was just thinking about going to graduate school in a foreign country before. From this experience, I know that how much English level is required to work as a researcher and lead a life in English-spoken environment. And also I understood that what the surroundings will be if I go to graduate school in a foreign country. Now I'm getting used to use English. So I want to try to continue this feelings even though I went back to my university.

Toughness

I want to challenge many things like OIST students!

Motivation

I realize that I have few knowledge and it is required to study harder.

5. Acknowledgements

Thank you for organizing this project and giving me such a precious experience. I am really grateful for Prof. Tamashiro, Prof. Dani and staffs at OIST.