

**Reports of Research Intern, February – March 2016**  
**Okinawa Institute of Science and Technology Graduate University (OIST)**

The following 6 students of Hokkaido University including 5 Nitobe College students participated in the Research Intern Program at OIST in February-March 2016:

KANEDA, Masashi:	3 <sup>rd</sup> year, Faculty of Engineering
KASUGA, Haruka:	3 <sup>rd</sup> year, Faculty of Engineering
KOMATSU, Koki:	2 <sup>nd</sup> year, Faculty of Engineering
NAGASAWA, Hiromi:	3 <sup>rd</sup> year, Faculty of Agriculture
OYAMADA, Nobuaki:	3 <sup>rd</sup> year, Faculty of Science
UEMURA, Marie:	3 <sup>rd</sup> year, Faculty of Agriculture.

The students spent 1-2 worthwhile months in the international environment of OIST at the warm southern Japan, Okinawa. The research intern program is originally designed for the graduate students but, this time, OIST did our undergraduate students a special favor. I would like to thank OIST for their special consideration.

I hope that these reports would help those who are planning to participate in the “overseas” internships in the future.

Hiko TAMASHIRO  
Hokkaido University Office of International Affairs  
27 April 2016

## Research Intern at OIST

Faculty of Engineering, Third grade  
Masashi Kaneda

### 1. Introduction

OIST, the Okinawa Institute of Science and Technology, is a graduate school involving a lot of academic areas of knowledge and offering a 5-year PhD program in Science. Over half of the faculty and students are recruited from outside Japan, and all education and research is conducted entirely in English. At that time, I participated in the research intern program provided by OIST for about 6 weeks in my spring vacation when I was a third year undergraduate student at Hokkaido University. Basically, one researcher in the unit will take care of one intern student.



*Taken from the bridge*

### 2. Motivation

I had mainly two reasons below to apply this program.

- ① Blush up my English
- ② Challenge a cutting-edge study

About first motivation, I have been not good at English since I entered college and I have been studying by myself after the final English class finished in first year. Since then I could hardly get a chance to use English in my student life. That's why I'd like to practice and improve my English through this research intern.

About second reason, I knew the OIST Graduate University conducted internationally outstanding education and research in science and technology. And before I choose my specific study area at my university, I wanted to prepare enough for it and expand my knowledge. So I've never narrowed down my focus but declare that I've suit any unit open to me considering my original filed Environmental Engineering background.

### 3. In the laboratory

My unit name was Micro/Bio/Nanofluidics Unit, Prof. Amy Shen. In general, they combine experiments, theory, and modeling to explore the dynamics and properties of flows involving nano- or micro-structures (i.e., DNA, surfactants, lipid vesicles, or bacteria, cells), in which

# OIST

~My Report~



Hokkaido University  
Engineering department  
Student ID: 02130910  
Haruka Kasuga

Period : 2016-02-15 to 2016-03-30

Research Unit : Biodiversity & Biocomplexity Unit

Supervising Professor : Evan P Economo

## <My Work at the Lab>



Fig.1 My work



Fig.2 the Appearance of my lab

Though lab studies Biodiversity, especially ants, I analyzed data of bird songs. “Bird song” is a social signal and often different from species to species. Birds also seems to recognize their species’ songs. Like other their morphological traits, bird songs as traits will tell us the history of the evolution of bird species. To test the idea, we analyzed bird songs and evaluate the differences of the songs over different species, over different genus and even over different families.

One of the goal of our research is the test of following prediction.

### <Prediction>

- The song of the genus whose color of plumages are less different from species to species, like Honeyeaters, would have more diversity.
- The song of the genus whose color of plumages are more different from species to species, like Australian Chats, would have less diversity.



Fig.3 Honeyeater



Fig.4 Australian Chat (Wikipedia)





Fig.8 seven characters (green) and 40 characters (blue)

During my day in OIST, I worked on three genus in family “*Meliphagidae*”: *Meliphaga*, *Acanthagenys* and *Lichenostomus*.

(Other my work at the Unit)

- Every Tuesday, I attended the lab meeting 16:00~17:00.
- I gave a presentation about my stay in OIST at my last lab meeting.
- I read two theses about bird songs.
- I went to the conference “The 63th ANNUAL MEETING OF THE ECOLOGICAL SOCIETY OF JAPAN”. Prof. Economo also went to the conference and he gave a presentation.

**ESJ63 SENDAI**  
20-24 March 2016

THE 63<sup>RD</sup> ANNUAL MEETING OF THE ECOLOGICAL SOCIETY OF JAPAN  
**日本生態学会大会**  
第63回仙台大会 2016.3.20-24

日本生態学会第63回全国大会 (2016年3月、仙台) 講演要旨  
ESJ63 Abstract

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一般講演(口頭発表) I2-14 (Oral presentation)

沖縄からの新しい社会連携型環境モニタリングプロジェクト、「OKEON 美ら森プロジェクト」の始動

\*吉村正志, 芳田玲暲, 小笠原晶子, Evan Economo(OIST)

琉球列島は、小笠原諸島と並んで日本の生物多様性保全上最重要地域のひとつである。その一方で、琉球列島の中で最大面積を有する沖縄本島は、110万人以上の人口を抱え、県庁所在地の那覇市の人口密度は神奈川県横浜市に匹敵する。北部やんばる地域における森林地域の生物相の回復と並行して、中南部の都市圏における生物相の保全と持続的発展との両立は大きな課題である。しかし、その基礎資料となる島全体を網羅した生物相の情報と、その記録を担保する標本の蓄積は未だ限られたものにとどまっており、十分とはいえない。

そこで筆者らは、「OKEON 美ら森プロジェクト」と名づけた、沖縄本島全域を網羅した環境モニタリングネットワークの構築を始動した。採集される標本収蔵や遺伝子解析システム、そして地理情報システムの整備を2014年度に行い、2015年度からは野外調査システムと、その採集試料の処理システムの整備に取り組んでいる。全島24箇所を目標に半径100mの円形調査区を設定し、飛翔性昆虫用トラップを各調査区3基ずつ設置、年間を通して2週間毎にそれを回収する。2016年2月の段階で20調査区が順次稼働しており、すでに採集イベント数は500に達する。ソーティングシステムも同時進行で稼働を開始しており、採集試料のうち、ほぼ90%は目レベルまでのソートを完了した。

本プロジェクトでは、野外調査システムやそこから得たデータを活用した、社会ネットワーク構築も大きな目標のひとつとしている。その一環として、現在、地元高校との科学研究実践活動を通じた高大連携や、地元博物館との環境教育面での協力関係構築を進めている。

日本生態学会

Fig.9 the Abstract of Prof. Economo's Oral presentation



# < Other Activities >

## 1. SKILLPILLS

SKILL PILL is an intensive course which anyone can take. Most of its topics is learning useful mathematic idea or tool like software and programming languages to study participant's research more easily and efficiently.

I took a course about statistics with a software “Matlab” and CAD with a software “SOLIDWORKS”. In the statistics class, I solved problem sets about probability and then, using Matlab, I solved problem sets about statistical testing. In the class I also learned how to make the computer to recognize human's face with the idea of “Perceptron”. In the CAD course, I made two things such as Fig.11 and Fig.12.

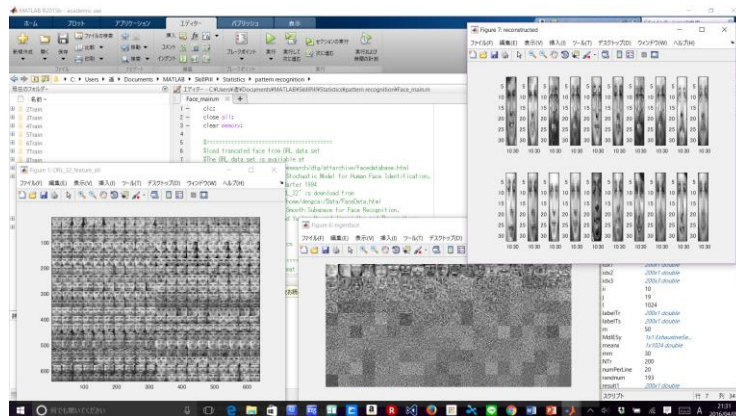


Fig.10 The facial recognition in Matlab

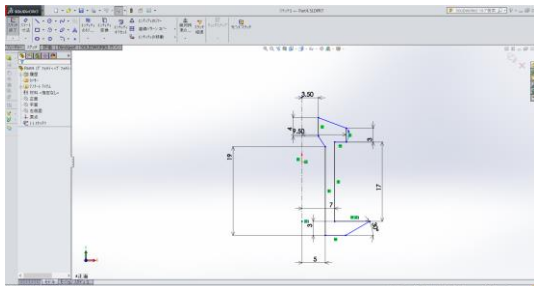


Fig.11 one of My works in SOLIDWORKS

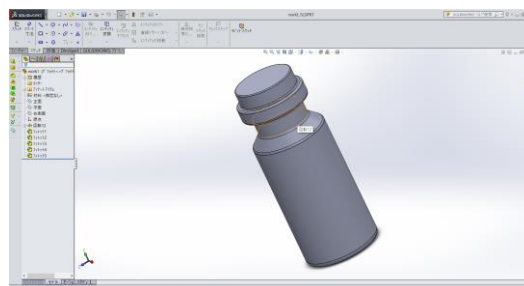


Fig.12 one of my works in SOLIDWORKS

## 2. Taking a course “Mathematic2”

I got acquaintance with the student in other lab. She introduced her professor’s course and I got interested in the class. The class is about the mathematics especially linear algebra in this term. In the class, the instructor (Prof. Sinclair) not only taught us the formulas but also introduced interesting applying the idea of linear algebra to biological interests.

Before the class, I and other students discussed the assignment together. The assignment was that estimating the length of introns with the idea of Markov chain. The sequence of “GT” indicated the begin of an intron and “AG” indicated the end of the intron. I put the probability that A appeared as  $P(a)$ , and the probability that G appeared as  $P(g)$ . After drawing the figure, I generated the transition matrix and then, got the eigenvalues and eigenvectors. Finally, I got the formula which presented the probability of the length of introns. I wrote a code in C language to calculate the result and plotted a graph of the result.

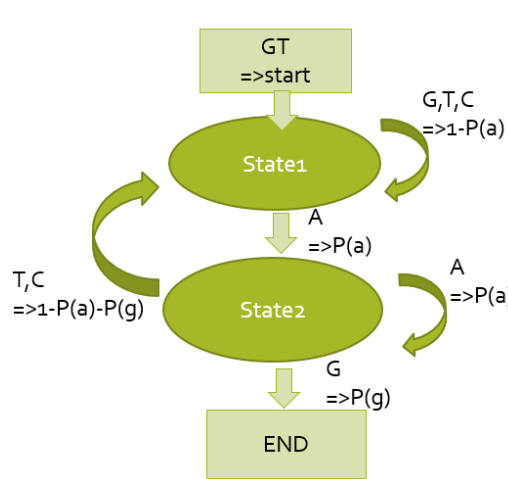


Fig.13 Figure I draw to introduce the idea of Markov chain to the assignment

I also learned the theory which seemed to be useful for my friend to study his projects. I introduced Prof. Sinclair to the friend’s project and then, he got interested in the study. It was one of the biggest achievement for me to introduce Prof. Sinclair to the friend. My friend also got interested in the internship in OIST.

When I left OIST, some of students who took Mathematics2 told me their E-mail address to keep in touch with me and continue to discuss the assignments in the course. In the morning of 31<sup>st</sup> of March, I visited Prof. Sinclair to say goodbye. At that time, he said that he would write recommendations for me because I made well in the course. I got impressed.



# < Daily Life >



Home





Public Facility



Cafeteria



Club Activity



## < Achievements >

- 1) I got acquaintance, especially in the math course.
- 2) I practiced coding in R language. During the ecological data, we used many available functions which were stranger to me. Usually, I use C language, so this was a good opportunity for me to learn R language.
- 3) I learned how to use new software, “Matlab” and “SOLIDWORKS”.
- 4) I felt ambiguity of ecology. For example, when I had to classify note shapes to several patterns, I had to categorized the note subjectively. The good instance of “easy” one is Fig.15. Contrary to the case of Fig.15, Fig.17 is difficult because there are two birds and I cannot separate the notes effectively.

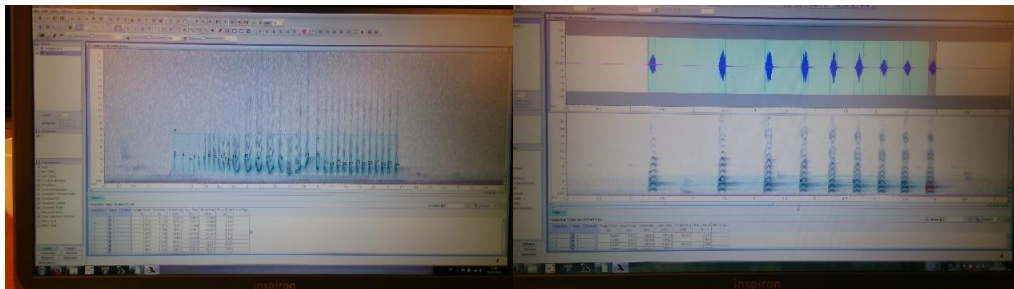


Fig.14

Fig.15

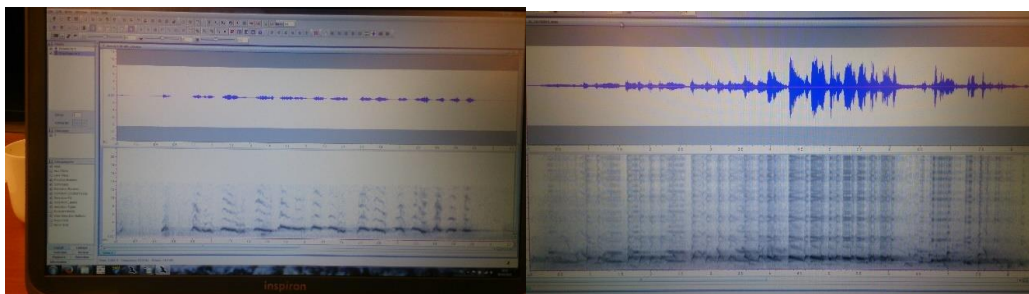


Fig.16

Fig.17

- 5) I made improved in my skill of house works.
- 6) I visited several labs, for example, Izawa Lab in University of Ryukyu, Sinclair Unit and Economo Unit. This experience told me my preference of atmosphere in workplaces.





Fig.18 photos of the University of Ryukyu

Student Support Session

Secretary of the Unit

One of the member in the Unit

My supervisor

お世話になった方々

The member of Club activities

My friend in other Unit

The instructor in Math2 course



## < To next student >

Because the way of internship and the air are different from Units to Units, you should consider thoroughly about your preference not only of the academic topics but also the policy of education and culture in the lab, and then you should tell your demands the staff in Student Support Session. For example, some Units will offer curriculums in which some instructors will teach you the useful means to study your future project. Other units will not offer the strict curriculums and give you some tasks. In some Units, members have a lunch together. On the other hand, in some units, they have a lunch individually.

<reference >

1)日本生態学会 HP

<http://www.esj.ne.jp/meeting/abst/63/I2-14.html>

## Report of the OIST research internship

Koki Komatsu, 3rd year

Department of Engineering

Faculty of Engineering, Hokkaido

University

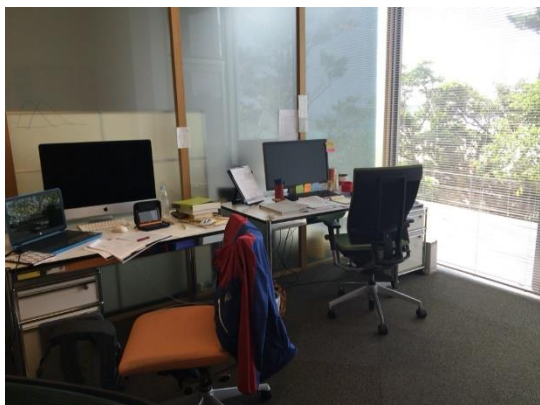
### Purposes

The purposes of the participation of this internship:

- to learn the scientific research methods
- to put myself in the international research environment
- to consider the interdisciplinary application of the brain science.

### Laboratory

The internship began at the day after the arrival in Okinawa at the laboratory that I had told I wanted to get into beforehand. While the main campus of OIST located on the high ground in the middle part of Okinawa, I was supposed to commute to the small facility along the National Highway 58.



▲ Interns can use a PC and a desk in Lab.

Human Developmental Neurobiology  
Unit the professor Gail Tripp heads is

the only off-campus laboratory. Its research is about ADHD (attention deficit hyperactivity disorder), which is one of the developmental disorders that mainly emerges in childhood. Almost every day, Japanese and foreign children and their families visited the lab to take part in the experiments.

### Program

The relationship between fields of study of the lab and my major is related remotely and I lacked sufficient knowledge of developmental disorders. I tried to absorb basic knowledge on ADHD by reading technical books, watching video and asking questions ought to understand what was studied in the lab. Through the experience of experiments, intelligence tests and interaction with children and their parents, I had gradually understood the whole contents of the study, the environment of the lab, the research methods and their purpose. Everything I saw was new.



▲ Onna village in which OIST locates is a beautiful seaside resort



What I acquire through my internship  
Surrounded by people who devote themselves to research, I had not a little time to think of the occupation in the future. Although I had never thought that I would be a researcher as a course after graduation, it was gain that I had not expected that I found the new choice. Also, I was accustomed to international environment and could get the specific image of studying and working abroad. However, of what this internship made me aware the most was my life as a student that I can study what I want to study is actually a thing that I cannot gain easily. It was not until I have a glimpse of the future that I could appreciate the value of what I do now.

### **Conclusion**

I remembered my major which I was about to forget after the return from Okinawa to daily life in Sapporo. Now that I finish my internship, what I should do is to apply knowledge I acquired this time interdisciplinary. I want to accomplish this at any cost. Also, I think that I can spend the rest of student life in nervousness.

Allow me to use this paper to offer my thanks for everyone to whom I was indebted.

## **OIST Research Internship Report**

Hiromi Nagasawa

I participated in OIST Research Internship from March 4 to 31. I will report my experiences and results at OIST.

### ✓ **Lab Training**

I joined in Plant Epigenetics Unit (Dr. Saze Unit). Fortunately, the professor of my laboratory at Hokkaido University and Dr. Saze have known each other. Therefore my research was very close to this unit's one. I could do a lot of experiments which will be useful to my graduate study.

Though it was unusual at OIST, about 80 % unit member were Japanese. So I was taught how to do experiments in Japanese, however, everyone discussed in English at the journal club. I did the last presentation as the report of my results of experiments also in English. These were challenging for me.

I appreciate that the unit members were very friendly and they taught me a lot of things. Thanks to them, I could experience wonderful lab training and



used 40 pages of the lab notebook!

### ✓ **Cross-cutting Research**

At OIST, there were some seminars every day. We could join them when we have enough time regardless of the working time. I participated in the seminars about cancer cells, marine mollusks, synthetic biology and job hunting for scientists. OIST aims Cross-cutting Research and collaboration and exchange between specialities is encouraged. I felt these seminar programs were effective way for this purpose.

### ✓ **Activities**

Working time was 9:00-17:30 in weekday. I had some free time, so I enjoyed activities. Running at OIST GYM and cycling was good way to get refresh. I joined OIST Badminton Club every Monday. Not only playing badminton, but also karaoke with friends of the club members was exciting.

In Weekend, I did volunteer of the opera concert at OIST. By these activities, I could talk with many peoples in spite of short research internship period.



✓ **Exoticism at OIST**

March 17 was the St. Patrick's Day and the party was held at the lounge in OIST. We wore green dresses, drunk beer colored green and ate green tea chocolates. The party is seldom held in Japan. Therefore I felt as if I was studying abroad while I was stay in Japan in fact.



✓ **OIST Science Challenge**

The Workshop 'OIST Science Challenge' was held from March 7 to 11. Through this event, the students from some universities in Japan could join the program of the graduate school at OIST. My friends were participated in this, so I listened the presentation by the participants and had a conversation with them during OIST Teatime positively. It



was really exciting to talk with students of the same age as me.

✓ **Summary**

OIST is more close to a research center than to a college. There were many researchers and technicians and of course they had deep knowledge. Add to that, almost all people working at OIST was bilingual or trilingual. I feel the research environment surrounded by these fantastic people was brilliant.

At last, I would like to recommend OIST because we can meet 'Fantastic Japanese'. We will not be able to experience that so much if we study abroad. Generally speaking, Japanese are not good at speaking English and also not good at do presentation because Japanese are shy. However, there were a lot of Japanese who could speak English fluently and succeeded at OIST. They motivated me very much.



OIST Research Intern Report :  
Unit: Energy Material and Surface Science (Prof. Yabing Qi)  
Nobuaki Oyamada  
Department of Chemistry, School of Science, Hokkaido University

**1. Term** [2016/2/9~3/11]

I asked the OIST office for intern since early February to middle May when I apply. As my request I could intern there. I wonder which there is still class but it is no need to worry about it because OIST has 3-semester which starts from September.

As long as I heard almost intern students was planning to stay OIST in three or four month and always about 20 interns still be there by turns.

**2. Motive**

I major Chemistry in Hokkaido University. So I show the more detail below

- To know atmosphere of another University
- To improve my academic knowledge
- To realize image of researcher
- To understand primary sense to become researcher
- To get more English skill

For me speaking English is still difficulty things, so OIST is best way to get above all.

**3. Research Intern Plan**

I joined to Qi Unit which study Energy Materials and Surface Science and my adviser is Mr. Taehoon. Especially, he pursue much better Li-ion battery so he told me anything about Li-ion battery and how to use current analysis devices. All of them are very expensive and also complicated system, so I can't use them in my university. I feel very lucky because of getting precious chance.

<Learned how to use>

SEM (Scanning Electron Microscopy),

EDX (Energy Dispersion X-ray)

XRD (X-Ray Diffraction),

FT-IR (Fourier Transform Infrared Spectroscopy)

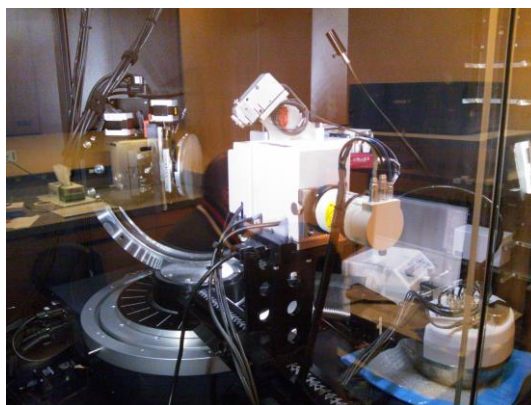
AFM (Atomic Force),

Xrf (X-Ray Fluorescence)

Raman Spectrometer,

XPS (X-ray Photoelectron Spectroscopy)

It is pity that I can't help Mr. Taehoon because I need to leave here in a month. I think at least two month is needed.



**4. Facilities**

I believe the most good point is the seminar is held by each Unit or Office EVERY DAY. There are so many chance to know special knowledge or introduction of any field science.

Second unique point is that most members of OIST are Postdoctoral Scholar, PhD and Research Intern. This means researchers or students has certain level knowledge. I think this factor make good atmosphere for researchers.

**5. Life**

Almost all student live in dormitory which OIST provide us with no fee and no need to bring furniture.

Usually work-time is 9:00-17:30, so everyday I have to worry about my dinner. It is most difficult issue to get no food in OIST campus. I have to plan my dinner and go supermarket by bus.



## 6. Research

Most of Units are related to Science and technology. In general I think they divided to “Material”, “Energy”, “System Engineering”, “Neuro-Science”, “Ecosystem” and “Applied Biology”. Due to OIST was established in 2011, there are a lot of young researcher and also creative Postdoctoral scholars come here.

## 7. Mentions

- About conversations

As all student worry about it for Japanese people to speak English is very difficult. The one reason of this is that we don't know how to tell our feeling and how deal we should tell our opinion. In OIST, however, the anxiety is less necessary because there



researchers and student have high educated level and they take care about us. Of course I feel difficult to understand all technical terms or some special words but at least about conversation you can adapt to them. Moreover for almost member of OIST English is second language. So Japanese people will make confidence to speak without fluent English.

While there are many opportunity to speak English, actual chance to communicate is depends on your intention. It is same as in dairy life conversation. I mean if you want to make you better than now, you just need courage to try to communicate with others. And also I learned from this intern that for any situation positiveness is best way to solve problem

- Role on Laboratory.

After belong to Unit, what do you do completely depends on Unit. While I can't talk the role of laboratory, but I realize in every Unit you need more than two month for playing a part of Unit. If you have to stay short it is also not bad. I think most Unit have over than one intern-student every term, so you don't worry about your short stay.

## • Acknowledgement:

I really appreciate this chance and want to say thank you for;

Dear OIST Dean's Office

Dear Prof. Hiko Tamashiro

Dear OIST Graduate Office

Dear Prof. Yabing Qi and Mr. Luis Katsuya Ono

Special thanks for

Dear Mr. Taehoon Kim.



## OIST Research Intern Report

Marie Uemura  
Hokkaido Univ.  
Department of Agriculture  
2016 Feb. - Mar.

### 1. Introduction

OIST (Okinawa Institute of Science Technology Graduate University) is an advanced and international institute. It is organized with 50 Units, example Chemistry, Physics, Mathematical, Molecular Biology, Ecological Sciences, Marine Sciences, Neuroscience, etc. Each units are not been divided and some research has been work in few units.

Half of stuff and students are came from outside of Japan. So every class and research are been doing with English.

Doctor's course student usually graduate in 5 years. Also research interns come from all over the world, which usually stays 3-6 months.



Fig.1, View from OIST

### 2. Motive of my entry

There are three reasons that I wanted to join this program.

- What it is like to research at an international institute?
- I want to experience and feel other university environment.
- Is it able for me to adapt to English-speaking world?

There are not so much place in Japan like OIST, which it is English-speaking place. So I thought this is a great opportunity for me and I would like to thank to join this wonderful program.

### 3. Unit

I joined in 'Ecology and Evolution Unit'. In this unit they are researching about ants and wasps' ecology and genetic analysis, mechanism of the distinction of sex, evolutionary genetics, community ecology, etc. The unit professor is Prof. Alexander Mikheyev, and other members are doctor's course students, research interns, collaborator, technical staff. Each ones' nationality are different, example Russia, Germany, Australia, China, India, etc. Japanese was only me. Members are gathered from all over the world.

Prof. Alexander Mikheyev supervised me. Unfortunately, I could not be able to meet professor in person, because he was not staying in Japan at that time. Though, he get in touch with me frequently so I didn't have difficulty in



that. Also there was a robot in office, that can able to speak with prof. online with seeing each face. Sometime I had speak with prof. through that robot.



Fig.2, Office



Fig.3, Robot

#### 4. Project

My research program title was 'Comparative phylogenetics of insects'. I have researched about phylogenetic tree of insects using publicly available genomic data. The reference document was Misof et al 2014 (Science). They made insect phylogeny, but there are still

missing points. So the purpose of my research was make a more complete phylogeny tree of insects. To create it I used a Sango cluster, which is OIST's super computer. I downloaded a protein alignment data from Misof's archive to Sango. Compared the data with the data on BUSCO (genome database) and figure out which Misof's data match to BUSCO data.

During my research, I also study about computing methods and how to use genetic information. One of the reason of coming OIST was to study about another field from mine. So it was a great opportunity for me studying new things and acquiring skills or knowledge. My staying time at OIST was little bit short, so I couldn't research deeply, still I gained a lot of experiences.

#### 5. Living environment

In weekday, we worked 9:00-17:30 usually. About research interns, we could live on campus housing. There are very close to university so it was convenient to go. In the housing we live together with 2-3 peoples. I lived with girls from India and America. Sometimes we cooked together and have dinner with. Kitchen, bathroom and toilet are common space, but there are single room so we can have private time.



Fig.4, Housing room

There are shop at the housing area, so you can buy simple things at there. If you want to buy grocery, you have to go to supermarket by car about 10 minute drive. You have to use OIST shuttle bus or local bus or asking someone to drive to go somewhere. Also you can reserve and use OIST car or bicycle for free, but you should book forward because there are limit on number.

The worked day while the intern, you can receive 2,400 yen per day. And the payment will be transferred into your bank account in each month. Airfare and housing expense will be paid by OIST, so you have to pay only your living expenses.

## 6. Conclusion

OIST has leading edge research facility, superior researcher from all over the world, great living conditions and welfare, complete health and mental care. I felt that OIST is a wonderful place for researcher to focus in their investigation.

Each unit's border are low, so people could be able to collaborate frequently and have interchange or discussion with other field people. There are tea time in once a week, and you can talk freely with other unit people. It is a good opportunity to listen other field research or take in different areas' researchers' comments in your own research. Sometimes you can find your collaborator. I think looking from another point can make your mind flexible.

OIST held workshop like a seminar every day. Instructor are not only OIST stuff but also from outside teacher. And these theme are various type. Students and stuff at OIST can join in these freely, so you can participate in various fields talks every time. It is a good point that you can join in a workshop flexible, even if it is outside of your area.

Through this research intern, I could experience what it is like to research in an international educational institute. At OIST, not only like tea time or workshop, but also there are many events or chance to interchange with peoples. Most of them are friendly and cheerful so you don't have to hesitate to talk with them. And also I thought, they tend to take an interest in topic of research that it is outside of their own research field. In fact I had an opportunity to talk with other units' professor. I want to thank to these valuable meeting.

About conversation in English, I thought we don't have to feel nervous and just have to relax. So you can understand what you want to say, and also the partner can receive it.

There are people who aren't native speakers of English, so it is okay, not all to catch it. The important thing is tell the thing you want to tell and receive the thing that your partner want to tell.



Fig.5, Sunset view from OIST

## 7. Acknowledgements

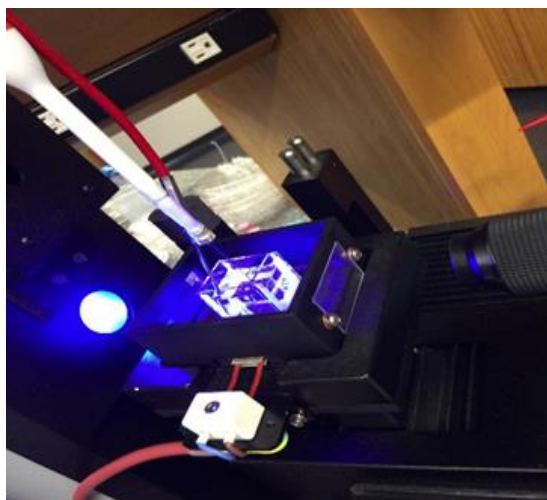
Through this research intern program, I had received many peoples care. I would like to profoundly grateful to Prof. Hidehiko Tamashiro, Prof. Alexander Mikheyev, Ms. Rie Ishikawa, Student Support section and all members of Ecology and Evolution Unit.

intermolecular/particle forces give rise to time- and length-scale distributions that are important in many biophysical and technological processes.

In the unit, there were 15 members of more than 10 different countries including me and there was no Japanese except a secretary and me. All researchers worked in the same room, and a professor's and a secretary's office were separated. In my first week, my desk was apart from the main room, but I moved there to replace the former's desk after one week. That made me easy to listen to and have many kinds of conversation.

#### 4. Research theme

My main research was to measure the surface and interfacial tension of various liquids with temperature. Speaking of the surface tension, many people could come up with an attractive tension working only between liquid and



*During measuring the Interfacial tension between 5CB and Glycerol*

air. In fact, not only that, the tension will act between two different liquids. And these effect are dominant in many processes in chemical industries and microscale engineering.

Before I arrived at OIST, prof. Amy, Micro/Bio/Nanofluidics Unit, introduced me Dr. Doojin Lee who would take care of me very much during my intern. As I wasn't familiar with this theme about droplet microfluidics, he would give me some relevant papers, and they helped me a lot. Thanks to these documents beforehand, he could explain me specific procedures smoothly as soon as I joined the unit.

In my first week, I had a guidance of laboratory and learned mainly about basic knowledge of experiments and how



*In the laboratory*

to use some instruments. Then came my second week, I measured actually the surface and interfacial tension of several samples without temperature, and put the data together to upload the file shared by him. Once I updated the data,

he would provide some comments about it carefully. During third and fourth weeks, Dr. Doojin taught me new more difficult idea and the experiments would be getting complicated. So I was afraid I made a mistake more frequently than before. But my teacher was a very kind researcher and when I didn't work successfully, he would never let it go but help and discuss seriously with me about why the experiment failed. And I was told to have a presentation at least one time during my period at OIST. So I decided to focus on the data for that presentation from then on. Came my fifth week, I stopped working in the lab to concentrate on making slides and its script. He also looked after preparation and gave me a lot of tips. In my last week, I didn't have to work something new but only practice and practice having my presentation. Looking back, if I were someone who would be used to make a speech in front of audience, I could learn much more new things. Finally I have a presentation in the group meeting for about 20 minutes and I named the title "An investigation of interfacial tension between Liquid crystal."

## 5. Living in OIST

Basically research intern students will have their house shared by two or three other students. I stayed with Indian and Canadian PhD students. Housing was located a short walk from

amenities and close to the laboratory buildings. Apartments were all brand new with stunning sea views only a 5-minute walk from a beautiful beach. Away from work, there were bicycles and electric cars available for researchers and students to borrow, so we could go for a drive and buy something in supermarket without walking distance.



*Apartments on Campus*

## 6. Discussion

I'd like to provide my feedback about my research intern for about 6 weeks according to following three topics.

- Staying as a researcher

Everyone in my unit was very kindness and friendly each other. Dr. Doojin invited me to have a lunch with unit members on my first day. And on





*Nice Beach very close to Campus*

Fridays we sometimes went for drink together at Okinawan Izakaya. Actually I thought researchers were working on a very specific problem day and night, and they said very little. However I was impressed to see everyone looked happy during working. So I felt very comfortable at the room and also the laboratory.

OIST accepted PhD and intern students, and apparently all students finished their bachelor at the very least except for us from Hokkaido university. Under disadvantages, I could realize how little under graduate students like me had productive knowledge. And this experience alone should be enough to make me study hard about my original field at my university.

I had enough free time in the lab, and I felt I needed to do something actively. I thought it was not good to just depend on my teacher Dr. Doojin at all points about what I should have done. So I focused on the moment in the lab, and

kept on seeking to understand more about droplet microfluidics. I recognized research intern students should prepare enough to make their own intern meaningful beforehand. In fact, I felt sometimes I could have learned more about this theme before beginning the program.

- English

I thought when I spoke to foreigners in English, it was enough to make them roughly understood what I meant, regardless of the grammar. And as a target through this intern, I hoped I could good at speaking “Broken” English. However an outsider person who was born not in English-speaking countries said to me “I’m trying to correct my English listening to native speakers.” At this moment, I recognized I had totally the wrong idea about second language English. And I was fully satisfied with the fact that when I use a language to someone, I needed to speak and write contents as correctly as possible.

Also I’d like to mention about the difference in intonation. There were members of many different countries and only a few of them were from English-speaking countries. Then I noticed each person had a different accent from country to country. And it seemed second language was easily affected by first language. So I think it is natural for Japanese to speak English with original



Japanese accent, and we don't have to feel disgraced.

- International Environment

OIST provided us plenty of chances to communicate with other unit members, and they not only talked about technical subjects but have a casual conversation. There were many unique topics under international environment, and I could exchange unusual opinions in Japan about vegetarian, military service and religions.

When I think of staying with people from many other countries, I tend to worry about my English. But spending my time with outsiders at OIST, I realized there should be another matter. It is a big difference of culture and history from one country to another. I felt this factor could badly influence the way of thinking and their basic point of view. And I also recognized the difference was very sensitive and we should respect other cultures and histories carefully.

## 7. Conclusion

It was only 6 weeks staying at OIST as a research intern student, but I could gain not only technical knowledge in the lab but a different view of the world. I'm convinced it would be a very meaningful experience to pursue my work every day under really nice international environment. And I'd like to express the deepest appreciation to Senior Adviser (Professor) Hokkaido University Office of International Affairs Dr. Hiko Tamashiro, OIST Academic Exchange coordinator Makoto Higasa, Student Support Section Rie Ishikawa, Micro/Bio/Nanofluidics Unit Head Professor Amy Shen, Postdoctoral Scholar Dr. Doojin Lee and all the team members.