TIGP-GSA NEWSLETTER

Taiwan International Graduate Program-Graduate Student Association (TIGP-GSA)

February, 2014 Volume 3, Issue 1

From The Editors

Dear readers,

The GSA Newsletter is back for its third volume with a wholly new editorial board. We sincerely hope you still enjoy this un-scientific journal at least as much as you enjoyed it under the previous board. We would like to thank Ferina, Pradeep, Tracy, and Christian for all the work they did for the Newsletter but it is now our turn to introduce ourselves.

The current newsletter team has several permanent members and one temporary member. First, in alphabetical order, is Feby who took the responsibility of gathering your opinions about various subjects. Our photographer, Joshua, will take official pictures of you and make recordings of interviews. Luis will interview the Student of the Month and the PI of the month. Naveen will make sure it is nicely packaged in the graphical style of the Newsletter. After proofreading by Wendy and Jonathan Evans, for which we are eternally grateful, I, took the responsibility of serving as temporary editor-in-chief but I will be replaced in the second issue of this year by Joshi Dhananjay.

What should you expect in this issue? We kept the traditional sections. Luis arranged interviews with Sandy Tung and Rex Chang as our two students of the month. Dr. Tien-Hsien Chang (張典顯) was interviewed as the PI of the month. Feby gathered students' answers about their Chinese zodiac sign and their opinions about Chinese New Year in general. I suggest that you read the whole Newsletter.

And what should we expect in the near future from GSA? March will be the election month for GSA. Students will vote for the new GSA representative committee, and will elect the GSA officers: President, Vice-President, and Treasurer/Secretary. If you feel that you have good organizational skills and you feel that you can contribute to other TIGP students, please come forward and become a candidate. Feel free to contact any of the current GSA reps to ask about any details. But for now, enjoy the first issue of the third volume of the Newsletter!

George
(Editor in-chief)

NEW NEWS LETTER TEAM

Jiří Koubek

Naveen Vankadari

Joshoua Esmenda

Dhananjay Joshi

Luís B. Gómez-Luciano

Feby Wijaya

In this issue:

Principal Investigator (P.I.) of the Month

Dr. Tien-Hsien Chang

Associate Research Fellow, Genomics Research Center, Academia Sinica

Honors

Dean's Award for Classroom Teaching, College of Biological Sciences, Ohio State University

Outstanding teacher, College of Biological Sciences, Ohio State University

Merck Sharp & Dohme Laboratories Postdoctoral Fellowship, California Institute of Technology

Genetic Graduate Group Predoctoral Fellowship, State University of New York at Buffalo

Official Website: http://www.genomics.sinica.edu.tw/en/chang-tien-hsien

Interviewed by: Luís B. Gómez-Luciano (TIGP-MBAS)

Which scientific questions do you plan to address in the future?

To answer that question I have to go back a little bit about my own background. I studied yeast viruses in graduate school. Then, I went to California Institute of Technology (Caltech) for a post-doc in John Abelson's lab, where I studied pre-messenger RNA splicing. At that time, pre-messenger RNA splicing was hot because that was a few years after of the discovery of the intron, and so, much of the effort at that time was to figure out how an intron can be cut off with such precision, and exons can be joined together to form the mature messenger RNA. During splicing, there are a lot of RNA interactions and machinery remodeling. RNA base paring will have to be opened up, etcetera. So, one key question was how this can be accomplished. So, in Abelson's lab, I independently started to work on the question and, eventually, I discovered that there is a group of enzymes called RNA helicases. When I finished my post-doc I joined Ohio State University as a faculty member. There I began to ask very specific questions regarding these RNA helicases. For example, how do these enzymes work, what are their roles in the cell, etc. So my graduate students and I used genetics, biochemistry, and gradually figured out some work in splicing, others on messenger RNA export, protein synthesis, and so forth. But one ultimate question is how any given RNA helicase functions at the mechanistic level to carry out its job. So, that became my passion. I wanted to know how an enzyme does its work on a very big molecular complex, such as the spliceosome that contains hundreds of proteins and five RNAs, and then remodel it. I always make an analogy to this process. You know the Rubik's cube, right? So you can imagine the spliceosome as a big machine with many, many parts; some are proteins, and some are RNA in there. Then spliceosome will have to be remodeled along the way. It's not a pre-built machine. It starts to assemble one by one and then goes through remodeling and remodeling until it forms the catalytic center to take out the introns. And this remodeling is done by RNA helicases that over the years we and others discovered. But how, exactly, they do their job? One of the things I want to do, after coming back to Academia Sinica, is take on that challenge. This is a very difficult problem, because these enzymes generally come in, and then do their job and then leave quickly. So it's very hard to capture how exactly they work on this molecular complex. So, we developed biochemical tools to capture these RNA helicases in action while doing their job and see what kind of parts they touch in sequence. So, hopefully, through this process we can know how this Rubik's cube gets played by these RNA helicases. So, these are the questions I want to carry out to the end. And the other line is that RNA helicases are involved in many other processes and are required in virus replication, etc. So we are also interested in those other themes and the relationships of RNA helicases to diseases.

In this journey of discovery on how RNA helicases work, what is the your most important contribution to RNA biology?

Well, when I was in Ohio State University working on one RNA helicase involved in splicing, we carried out the genetic approach to understand its function. This special RNA helicase was known to be essential for yeast cells. Surprisingly, and unexpectedly, we found that, in fact, you can delete this so-called essential gene and the cell is still viable. When we first made this finding, I thought I had made a grave mistake, because it's so unexpected and so unconventional. You know, everyone believes that essential genes are "indispensable" because if you take them out the cell will die. Here we have a case that a particular essential gene was completely eliminated and somehow the cell managed to live with one mutation somewhere else in the genome. I told my graduate student, "Here is a gold mine; if you dig it, you're going to find gold". He didn't quite believe me, but anyway he reluctantly took on the project, continued it, and I guided him through. So, the task was to find out what is the mutation existing in the genome that keeps the cell alive and what is the corresponding gene. Then you would understand how that could happen, right? After a long struggle to get to that point, and as soon as the computer search told me exactly what that gene is, I got absolutely excited. My student was still wondering, why are you so excited, what is the big deal about that? I said: "Look! With the identification of this gene we know exactly how this RNA helicase works." So, without getting into a complicated explanation, let me put it this way: If there is a ball or a protein sitting on the RNA, and this protein binds
to this site, it normally needs RNA helicases to take it out. So, this RNA helicase is essential to remove this thing so that the process can go on. But, what we found is that you can make this protein bind less tightly, then you don't need this RNA helicase anymore. So, that kind of discovery, essentially, tells us how RNA helicase works and then points out a new paradigm. I was very excited because this discovery also brought a very intriguing line of thought; that is, how evolution designs essential genes and what exactly, essential genes are. Various questions were brought out by that particular discovery.

You developed most of your career in the United State. Would you like to comment on your experience as a researcher at Academia Sinica in Taiwan ?

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I went to US at a time that scientific research was not so mature in Taiwan. So, I went to the State University of New York at Buffalo for my PhD in Molecular Biology. Then I decided that I wanted to take a challenge and I went to Caltech. When I was in Caltech, it was the first time that I could feel the excitement of doing research because in the nearby labs, every month or so you would hear about some huge discoveries. Generally, they were so excited, and everybody loved doing research. And then, because people are so good there, you can talk to a lot of very smart people, you can get very good ideas and get a lot of help from them. It is a kind of cutting-edge research. As I said earlier, I then went to at Ohio State University as faculty member. One thing I found at Ohio State University that was different from Caltech is that, although we occasionally talked about science during lunch, spare time, and tea time, people there were seemingly not that excited to talk with each other about science, definitely not much as at Caltech. There, I took my graduate students, I guided them through it, and eventually they did good work. As the years moved along, my research in Ohio was doing fine, however the research environment in the US became so competitive. It was so hard to get money to pursue the projects I wanted to do. I wrote grants; they say those are good grants, but they ask you for lots of preliminary data, but without money to hire people you cannot do the work to get preliminary results. So, it's a dilemma! I got a little discouraged! Then Taiwan offered me the possibility to return to Taiwan with fine funding, as you know in Academia Sinica it is very good, and the facilities are world class here. So, I returned to Taiwan!

If you asked me to contrast the US experience and the Taiwan experience, I think there is a crucial difference I found. In the US, when people get into science, they generally like to do science. They are interested in doing science. But in Taiwan, especially the Taiwanese students, they came to graduate school for different reasons. I have found that many young people, young Taiwanese, enter graduate school without knowing why. Maybe because their parents asked them to do it, their friends are doing it, or they found that they might not find a job, so they just decide to go to graduate school. That is somewhat disappointing to me because then people are not generally motivated from within. My style of running a research group in the US does not seem to work very well in Taiwan.

I wish that Taiwanese students knew why they wanted to come to graduate school and that they would be generally interested in doing science. Then they would have the passion to do good work, but so far I don't find too many of those. Of course they are some, but in the US there are many more. It's not too difficult to find this kind of person there. That is the major difference. But in terms of set up, physical conditions, Taiwan, at least in Academia Sinica, is world-class. No doubt of that! My lab in Ohio State University was never so well set up before. We have more money, we have much better facilities, but we need people who are committed to do good work.

You have published in the top journals. What is your recommendation to young scientists regarding the development of high quality research and good writing skills?

This question has two parts. Let me deal with the research part first: how to develop high quality research? One thing I always tell my graduate students is that during your training you need to develop a good taste for science. Many people would ask me, "what do you mean by good taste? You are not tasting wine. Why should scientists have good taste?" But, let me put it this way. If you go to the library, look into the journals; there are tens of thousands. But not all the papers are created equal; there are some papers that are fundamentally important, making big impact, moving the field a major step forward. But there are a lots of papers that are mediocre or even wrong. So, students need to cultivate a taste to know what the papers are that constitute good science and what the papers are that are just informational. So, once students cultivate that taste, they will know what is good research. They will aspire to do better research. So, that is an important way for students to be educated, trained, and mentored.

Now, coming to the second part, about writing. What I have learned is basically to learn from good people. When I was a postdoc, my advisor would make a few changes to my writing. Even with that small amount of input, I paid attention to how to change my way of writing. That's how I learned. And, when I read papers, I actually pay attention to how they were written. Most of the time when you read a paper you get bored. But sometimes you run into certain papers – you read them and you find that they were very well written, and the way that they were composed, the way they put out the story, they were so unique and creative that you have a sense of joy. When that happens, then I really pay attention to those papers and analyze how those papers were written. This is how I've learned. The bottom-line is that writing is very hard to be taught; the best way, I believe, is your conscientious effort. You know that is an important process, you want to learn, so you learn from the winners, you learn from good writers. Over time, you will gradually build up your writing skills. This is exactly how I learned my art.

You have organized novel classes and workshops focusing on career development (e.g. "To be a scientist", "Writing grant proposal," etc.) in Academia Sinica and in many other universities. What is your motivation and what do you expect from these activities?

The reason I want to do this is related to what I said earlier: few Taiwanese students enter graduate school knowing why they are here. So, I realized that there are some skills that they need to learn along the way, so that they can do better science. For example, when I first returned to Taiwan I was invited to watch over a lab journal club. Then, I sat in the journal club, and after a few times I got very, very unhappy. The talks were generally lousy, not good at all. Furthermore, when you look around the audience – most of the people are not listening. They are doing their own things! Some people pulled out their iPad, others pulled out their laptop. I thought that was really terrible. I called it a "collective waste of time;" not just the speakers wasting their time, but everybody was wasting their time. So much so I felt this unhappiness that I decided to volunteer to give a talk on "How to give an effective talk." Then I got invited to give other talks like this. I think this helps students know how to do presentations, to convey their ideas, to communicate to other scientists. Then, because I have reviewed grant proposals in Taiwan and I found that many of them are not written well, I began to give talks on how to write grant proposals. Then I realized that this is, actually, in general a whole package. As a scientist you not only have to know how to think and do science, you also have to learn how to communicate science. And you also need to learn how to get your grants funded. Not just writing proposals; the proposals have to be funded. These are essential skills for a professional person, but these areas are so little touched on in Taiwan; so, I'm glad that I can contribute a little bit to this area. You mentioned the "To be a scientist" course. The reason I opened this course was because I found that students in Taiwan tend not to have a historical perspective on science. But any good scientist will tell you that you need to know what happened before. If you run one experiment, that's just one experiment. You need to know why that experiment is important in the context of scientific history. One thing I did is to tell students, let's go back and look at the history, and look at the scientists in the center. For example, we started with Watson and Crick and why they wanted to ask those questions, how did they solve them, what kinds of problems did they run into and how did they contribute and collaborate with each other. How does science actually work to have a human face.

Cont…..

Would you like to give some advice to graduate students in Academia Sinica?
My advice is as follows: Academia Sinica is one of the best research centers in the world. The physical environment to work here is terrific. It's world class! The students should take advantage of the opportunities. This is a place where you have pretty much everything you need to do great science. What students really need to have is genuine interest and do research with passion. I think that to succeed in science or in any other field requires inner passion. I think that is more important than anything else. If you're truly interested in doing it, then you will put in all the time and effort to achieve success and greatness and be very happy about it. So, doing science with passion and enjoying the process is my ultimate advice

TIGP/ GRC-Biotechnology Incubation Center Tour

April 11, 2014
The purpose of the TIGP/GRC-Biotechnology Incubation Center Tour is to help students explore various possibilities regarding career development in Bio-industry. TIGP would like to support this effort by planning a tour to the Biotechnology Incubation Center of The Genomics Research Center, Academia Sinica. The Incubation Center is located in the Nangang Software Park. The mission of the Incubation Center is to provide support to commercial entities that are advancing Academia Sinica's technologies, and to facilitate their commercialization endeavors. All TIGP students & staff are welcome to participate in this event.

2012 TIGP/ GRC-Biotechnology Incubation Centre Tour: Group photo taken by PPC

The Itinerary:
13:20 Gather at the lobby of the Nangang Software Park Building
13:30 - 14:30 Visit the GRC-Biotechnology Incubation Center on the 18th floor
14:30 - 15:30 Visit Protech Pharmaservices Corporation on the 11th floor
15:30 - 16:30 Visit CHO Pharma Inc. on the 18th floor
16:30 - 17:00 Coffee time
17:00 Return to Academia Sinica

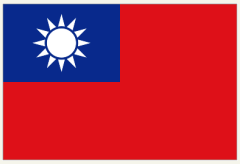
Please Note: You must pre-register before 31st March, Monday at 12:00 p.m. Register soon, as space is limited. (30 Slots)

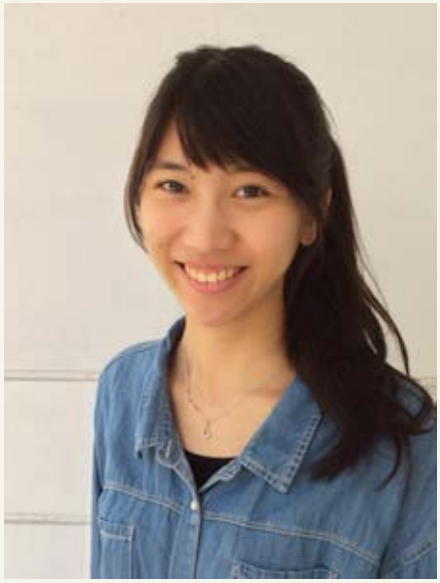
Fees: FREE

Contact: Ms. Julia Chan 02-2789-9906/ ej132313@gate.sinica.edu.tw

STUDENTs of the MONTH

Sandy, Hsuan Tung





Country of Origin:

Taiwan

Program:

Molecular and Biological Agricultural Sciences (MBAS)

What is your area of study?
My thesis research focuses on the gene regulation of one of the most important insect viruses, baculovirus. Specifically, I am studying baculovirus IE2 activator, which can strongly activate gene expression. We have found that the activation is achieved by forming a novel nuclear structure, IE2 nuclear cage, where the resource is concentrated for efficient expression of the target gene. This research is very important for basic transcription knowledge and also applicable for industry, as it is able to maximize protein production in mammalian systems.

How did you learn about the TIGP program?
My thesis advisor was one of the professors in my department when I was an undergraduate student in National Taiwan University. When I consulted with him about my career plans, he was very kind to provide me with information about the TIGP program.

How did you come up with the idea of organizing the TIGP consulting club? How does it influence your PhD life?
It all started with a small study group between my classmate Kevin Tsai and me. We are both interested in becoming strategy consultants in the future. Upon identifying the need to develop business skills among PhD students to meet the fast-growing Taiwan bioindustry, we co-founded the TIGP Consulting Club. Our objective is to gather PhD entrepreneurs and develop business skills by practicing and performing strategy consulting based on our own professions. We hold weekly meetings with an average of 10+ people in attendance. We successfully co-hosted a seminar for a McKinsey consultant with the Biotechnology Incubation Center. More than 60 people attended this event. Kevin and I established an official website and a Facebook group with 70+ members.

What do you want to do after PhD graduation?
Even before I joined the PhD program, I knew I wanted to be involved in upon completion of my PhD. My goals have become clearer with the establishment and growth of the TIGP Consulting Club. I want to be a professional strategy consultant who can engage in decision making processes at the business management level, and make a global difference in the direction of both businesses and society.

The TIGP offers the opportunity for Taiwanese students to get to know new people from different countries. Has this changed your perspectives on science or life in general? How would you describe your experience studying in the TIGP?
While studying in the TIGP, one of the most valuable experiences is to work with international students. The interaction not only improves my English, but also helps me to cultivate an international perspective, to be open-minded and flexible about scientific concepts, and to develop communication skills. By getting involved in activities and by interacting with other students, we always encourage each other We share in the joy of achievements as well as in the struggles coming from obstacles. The incomparable friendship developed during these years is something I will cherish forever.

Opinion Pool

The 15-day celebration of Chinese New Year has been start on 1st February, with the first new moon of the calendar year. The day marks the end of the year of the water snake and welcomes the start of the year of the wooden horse. People who are born under the horse zodiac are touted as very active and energetic. So, which Chinese Year Animal are you? What do you like the most from Chinese New Year festival?

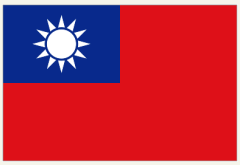
- I like holidays. Chinese zodiac: rabbit. **Lai wen Cha (MST)**
- Lantern festival, because in that festival, the sky will be lightening by lantern and its really wonderful. Chinese zodiac: rabbit. **Feby (Nano)**
- Lantern Festival. Chinese zodiac: Rabbit. **Sasikala Muthusamy(MBAS)**
- I think as a festival it has quite a new experience for me, so i am looking forward to celebrate it with my chinese friends since i have lot of respect for Chinese culture and the authenticity of it. More over i am Muslim and follow the lunar calendar like my Chinese friends. Chinese zodiac: Ox. **Syed Ali Abbas(Nano)**
- Fireworks!!!Chinese zodiac: Dragon. **Saborni C (MM)**

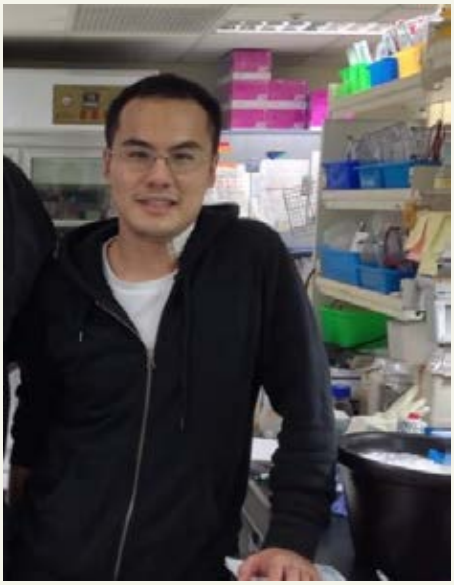
Cont….

- Frankly speaking, I like the long term holidays as well as traditional Chinese clothing. Chinese zodiac: Dragon. **Moorthy (Nano)**
- You get leave to go home :) **Prabha (MM)**
- When I was young I was very happy to receive the red envelopes. Now I would hope I can go abroad for the new year vacation. Chinese zodiac: Dragon. **Tracy Yu (MBAS)**
- CNY Vacation...so I can go somewhere and have a break. **Near (Nano)**
- Nobody in the lab so I can have it all for myself. Chinese zodiac: Tiger. **Goerge (CBMB)**

STUDENTs of the MONTH

Rex Chang





Country of Origin:

Taiwan

Program:

Molecular Cell Biology (MCB)

Please tell us about the scientific questions that motivate your graduate studies.

I am working in Dr. Hsou-min Li's lab in IMB now. We are interested in the translocation process of chloroplast proteins from cytosol of plant cells to the stroma of chloroplasts. Chloroplast has two membranes and you can imagine that there would be holes or pores on the membranes so that a protein can be "imported " into the chloroplasts, and some other components together help the whole process. My graduate studies focus on the molecular mechanisms of these translocons such as, how they recognize the chloroplast proteins, how they cooperate with each other, how they evolve, etc. What fascinates me more is how they got transported from cytosol to the surface of chloroplasts. Let's say a chloroplast protein is an ant, and the whole cytosol would be something like a football field for the ant (the scale is not correct but try to imagine please). Now the chloroplast protein has to find its way to the surface of the chloroplast, it's like to ask the ant to find a particular seat in the field. Amazingly, the protein (s) can accomplish this mission! IS THERE ANYONE helping the protein to do it? WHO is helping it? How do they find each other? That would be something I am dying to know.

How do you envision you career in ten years?

Do I really have to answer this? Well, I dare not to "envision" my career but just "expect" my own attitude in ten years. I guess the most important expectation would be that I wish I won't lose my appetite for science, or say, the appetite for "to survive in the academic field in Taiwan". I love steaks, but if you kept feeding me steaks for more ten years, my soul (if I had one) would fade in the end. Of course you can say, "The steaks are cooked in different ways! Try to feel the tiny difference of the flavors!" I doubt if I can bear with that.

You have coordinated the organization of the *IMB discussion club*. What do you think about these kinds of activities ?

The initial purpose of this club is to build up connections among all the students through idea sharing, so I'll say the fun is hidden beneath everyones' ideas, the fun is about people. You have no idea that this Indian understands so many about human anatomy once he leaves his biochemical experiments; or that Taiwanese girl's IQ is actually ten-times higher than yours if her boss is not around. To dig them out from their daily life is to talk with them. I find myself enjoying the discussions with all the international students and 98% appreciate the different backgrounds of ours that make everyone think in unexpected ways.

Can you please share with us your experience as a member of the committee organizing the GSA Distinguished Lecture?

Delightful! BUT I guess the reason is that I did the easy part of the job. The whole procedure of inviting BIG SHOT PIs to give a talk here is hell-complicated and like a centry-long especially when you are not paid to do this. I have to (and you guys have to) appreciate the committee members, George, Luis, Bernhard, Wendy, and Emmanuel who made everything possible (well, not everything but the major ones). They did so many jobs to organize it. And of course there are more anonymous helpers behind it. It's because of them so we could enjoy the lecture. I am just a new guy in the committee, so, my experience? SO FAR SOOOO GOOD.

From your perspective, what are the advantages of being an international student in your own country?

Oh, the most significant one is that I can read the menus in the restaurants without any further trainings. The second one is that I don't need to face the cultural shock as some of the foreign students do but just deal with the *Academia Sinica shock*. I am pretty sure you know what I am talking about.