

ACLS NEWS

● Honorary Professor Yoshinori Ohsumi of Institute of Innovative Research has been awarded the Nobel Prize in Physiology or Medicine 2016 for his discoveries of mechanisms for autophagy (more information at <http://www.titech.ac.jp/english/nobel/>).



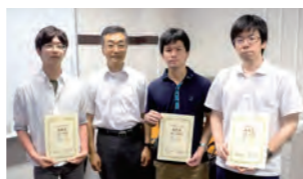
● Professor Hiroshi Iwasaki of Institute of Innovative Research has been awarded the 2016 Kihara Prize by the Genetics Society of Japan for his research on "Molecular Mechanism of Homologous Recombination". The Kihara Prize is awarded to researchers who make seminal contributions to the field of genetics.

● Nobuaki Yasuo, Doctoral student (D1), School of Computing, has received the 2015 SIGBIO Best Student Presentation Award from Bioinformatics and Genomics group, Information Processing Society of Japan, for his presentation at the 44th research conference. (The thesis title: Improvement of virtual screening accuracy by postprocess based on interaction energy)

● Digital Health Symposium was held at Ookayama Campus on the 24th of June. Actual cases of academic-industrial collaboration were taken and the outlook for pharmaceutical industry and drug creation was discussed in the symposium.

● The 3rd Computational Life Sciences Proposal Contest was held. Students wrote "proposal" documents describing

logical consistency of their experiment plans and scope for execution. Those documents were evaluated from a point of appropriateness of communication, and here are the winners.



1st place	Keisuke Yanagisawa (right) School of Computing, D1
2nd place	Hikaru Watanabe (second from right) School of Life Science and Technology, D1
3rd place	Yuya Nakamura (left) Graduate School of Bioscience and Biotechnology, M2

● Program for Leading Graduate Schools Forum 2016 was held at Odaiba on the 11th and 12th of November. Staff and students from 62 programs of 30 universities gathered at the forum and discussed doctoral education and its role in society.

● The 5th Bioscience and Biotechnology International Symposium is held on the 11th of January at Suzukake Hall. The theme is "Sense, Sensor, Sensation", and world-renowned scientists are invited as speakers. The report of the symposium will be featured in the next newsletter.

Personnel Changes

Resignation

2016.9.30 Shotaro Ayukawa
Specially Appointed Assistant Professor

Global Communication Contest 2016

The 4th Global Communication Contest was held at Suzukakedai Campus on the 10th of August. Among those who took global communication classes, there were 12 presenters in the contest this year. The audience enjoyed the presenters' free speech and lively Q&A with judges. Here are the 3 winners.



Judges and presenters (at Suzukake Hall)



3 winners and Prof Yamaguchi at Award Ceremony

Winners

The 1st Prize and Audience Award
Takashi Imada (second from left)
School of Life Science and Technology, M1

The 2nd Prize
Kazuhiro Hiratsuka (left)
School of Computing, M1

The 3rd Prize
Norwich Mungkalaton (right)
Interdisciplinary Graduate School of Science and Engineering, M1 (as of)

3 winners and Prof Yamaguchi at Award Ceremony

From Editor

This edition features ACLS Summer School 2016. There are so many photos and articles to put on that this edition has 2 more pages. How do you like it? It has been the 4th summer school held overseas, and ACLS landed in New York at last. Such a hot summer was over and now it's winter. Yet the preparation for next has begun. Next summer should be hotter. (YK)



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Tokyo Institute of Technology Education Academy of Computational Life Sciences (ACLS)
The Ministry of Education, Culture, Sports & Technology in Japan Program for Leading Graduate Schools
Suzukakedai Office
J3-141 (building J3, room 407) 4259 Nagatsuta-cho, Midori-ku, Yokohama, Kanagawa, 226-8501 JAPAN
Tel: +81-(0)45-924-5827 Fax: +81-(0)45-924-5930
office@acsls.titech.ac.jp <http://www.acsls.titech.ac.jp/>
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ACLS Newsletter

Tokyo Institute of Technology
Education Academy of Computational Life Sciences (ACLS)
The Ministry of Education, Culture, Sports & Technology in Japan
Program for Leading Graduate Schools

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Opening Essay

A Recipe for Success



Susi Sturzenegger Varvayanis

External Program Staff
International Cooperation Committee
ACLS Program
Tokyo Institute of Technology

Senior Director
BEST Program
Cornell University (USA)

I had the pleasure of participating in this fifth year of the Education Academy of Computational Life Sciences (ACLS) international summer school as an advisor, judge and enthusiastic supporter. This unique system comprises Tokyo Institute of Technology students as leaders to plan, organize and deploy a week-long series of activities geared towards engaged learning. The objective? Increased global communication, leadership education, and practice thinking about how to use interdisciplinary science to solve global healthcare issues. A tall order, but one which brought out the best in everyone.

For the three Cornell University graduate students participating in the international summer school co-organized by the Tokyo Institute of Technology and Cornell's Broadening Experiences in Scientific Training (BEST) Program, the lessons on global communication were invaluable. Finding common ground to broaden experiences in scientific training, the two universities formed a week at Weill Cornell Medicine and around New York City to foster cross-cultural communication and teamwork across disciplines. Additional trainees from UCLA and Purdue University in the U.S. and the University of Strasbourg in France joined Tokyo Tech students to represent 17 different nationalities of origin in the endeavor. The select group hailed from everywhere from China to Capo Verde.

Their backgrounds were almost as varied, with students in computational sciences, physics, and life sciences. From Cornell, Aaron Joiner is a PhD candidate in Molecular Biology and Genetics, Mohammad Haft-Javaherian is a PhD candidate in Biomedical Engineering and Oude Gao is a Masters student in the Sloan Program in Health Administration. Prior to the event, they had to prepare a poster to present their research to colleagues. On the five-hour trip from Ithaca, New York they got to know each other, compared notes about their research, and discussed the importance of leadership, not necessarily as a dominating driver, but also as an inclusive listener. On arrival, like all the other participants, they delivered a flash talk about both their research and personal interests

so everyone could get to know them a little better. With their international colleagues, they fit right in at the United Nations where they toured exhibits and gained more background from experts on the Global Sustainable Development Goals.

So what is the recipe to create experts who can attack large global problems using their science backgrounds? Start with a solid foundation in basic research and poster session exchanges; sift in multiple nationalities, perspectives and cultural norms. Add some lofty inspiration from the United Nations, then mix it with inspirational and engaging faculty talks from well-known researchers from The Rockefeller University, Columbia University, Memorial Sloan Kettering Cancer Center, New York University, and the host institutions. Stir in intense group work and place under time and output pressure to write an article. Sprinkle heavily with entrepreneurship and expose to the Runway Postdoc Program at CornellTech. Release steam periodically with facility tours, good food, and NY entertainment. Constrain throughout to student organizers, facilitators, group leaders and presenters, and add advisors to taste. Cook and stir for a week. This recipe is worth saving!

It was amazing to observe the groups as they, shyly at first, slowly increased their confidence and came around to agree on which United Nations sustainable development goal to address with their research. They then interwove elements from the student research posters and faculty speakers to develop a project and prediction for publication in 'future' magazine, each issue created annually since 2013 by the ACLS International Summer School collective. Whatever the outcome, the process was by far more important, as the groups learned to communicate, disagree, share ideas, listen with respect, and work with each other. The participants received not only measured peer feedback, but also suggestions from a panel of referees from academia and industry who provided key insight into the process of developing an argument and a message for your manuscript that closes any logic loopholes. They learned how to avoid the peril of basing predictions on a single assumption, how to convince listeners the topic addressed is important, and finally how to present the information in an entertaining way.

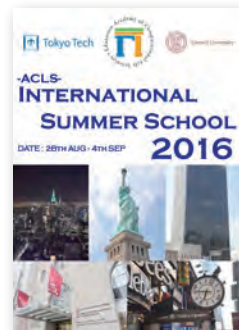
I was impressed by the leadership of the student organizers, and their thoughtful way to organize the event to increase communication between the participants. I was also rapt to see how the faculty were able to step aside and allow the students to truly lead the summer school activities, with full confidence that everything would turn out well. In short, I was honored to be a part of a very collaborative and successful undertaking and look forward to what next year has in store.



ACLS International Summer School 2016 in New York

The ACLS International Summer School 2016 was held at Cornell University, New York City, USA, from the 28th of August to the 2nd of September. This year was the 5th ACLS International Summer School and, thanks to the support of Susi Varvayanis, Senior Director of Cornell University BEST Program, the majority of activities were held at Belfer Research Building of Cornell University. Various activities such as group work, poster presentation, lectures and facility tours, were planned, organized and deployed by the student committee. 57 participants attended which were comprised of 23 ACLS students, 12 overseas students (3 from Cornell University, 1 from Purdue University, 5 from UCLA, 3 from University of Strasbourg), 11 invited speakers and faculty members, and 11 ACLS administrative

members. The ACLS International Summer School is a yearly event run by each year's student committee, whose members take initiative in program planning and communication with overseas counterparts. The aim of ACLS International Summer School is not only to boost students' skills in presentation but also to foster leadership and global communication skills through working with students from different cultural or academic backgrounds. All the presentation and discussion is conducted in English, and therefore the ACLS International Summer School is regarded as a preliminary opportunity for ACLS students to experience different cultures, that may lead to a chance of overseas internship in the future.



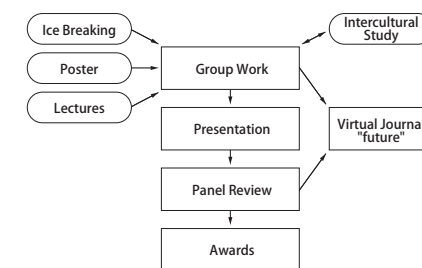
ACLS International Summer School 2016 Booklet

Group photo at the Weill Cornell Medical College, Cornell University Belfer Research Building

1: Belfer Research Building, Cornell University
 2: United Nations Headquarters
 3: New York University
 4: New York Genome Center
 5: Rakuten Marketing
 6: The Rockefeller University

(Visiting order)

Overview of Group Work



Flowchart of group work

The theme of group work this year was "Science to solve global healthcare issues". Based on the knowledge learned at the United Nations Headquarters on the 29th of August, each group chose a topic among "Sustainable Development Goals (SDGs)" and wrote an article predicting the situation of 2030 and the technical development up to that point. This year, 5 to 6 students formed a group and there were 6 groups, from group A to group F. Although the working time was limited, each group finished not only writing an article of 4 pages but also preparing for a presentation of 7 minutes and subsequent Q&A of 3 minutes. Their performance and achievement was discussed in Panel Review for 120 minutes and evaluated by the invited 7 judges.



Articles written by each group will be bundled in a fictitious magazine "future" published by ACLS.

Presentation titles under the theme of " Science to solve global healthcare issues "

- Group A : Community-Research Cycle for Crop Improvement (2nd place)
- Group B : Booze Clues: Genetic Predictors and Pathways Implicated in Alcohol Addiction
- Group C : Reduce Inequality by Universal Advanced Prosthetic Technology (1st place)
- Group D : Living Foods: Using Yeast and Its Bio-products to Address Poverty in Africa
- Group E : High-frequency Monitoring of the Microbiomes as Indicators to Evaluate Public Health
- Group F : Fighting Climate Change with Next Generation Cows (3rd place)

Invited speakers and their lecture titles (in lecturing order)

Invited speaker	Lecture title
Nadrian C. Seeman (New York University)	DNA: Not Merely the Secret of Life
Jef D. Boeke (New York University)	Synthesizing Genomes
Leslie B. Vosshall (The Rockefeller University)	Building a Mosquito Sensory System to Hunt Humans
Christopher E. Mason (Cornell University)	Single Cells, City-scale, and Space Station Genomics
Scott Keeney (Memorial Sloan Kettering Cancer Center)	Breaking and Chewing DNA in Meiosis
Harris H. Wang (Columbia University)	Engineering the Human Microbiome
Shotaro Ayukawa (Tokyo Tech)	Design, Modeling, and Construction of Synthetic Gene Circuits
Yuri Matsuzaki (Tokyo Tech)	Protein-protein Interaction Prediction by Exhaustive Rigid Docking
Shuli C. Shwartz (Cornell Tech)	Cornell and Technion: Pushing Academic Boundaries for the Digital Age

	Day 1 28th Aug (Sun)	Day 2 29th Aug (Mon)	Day 3 30th Aug (Tue)	Day 4 31st Aug (Wed)	Day 5 1st Sep (Thu)	Day 6 2nd Sep (Fri)	Day 7 3rd Sep (Sat)
8:00 am	NRT Ketsudan-shiki	Breakfast	Breakfast	Breakfast	Breakfast	Breakfast	Breakfast
9:00 am		Lecture & Facility tour (United Nations Headquarters)	Lecture session Dr. Leslie B. Vosshall Dr. Christopher E. Mason Dr. Scott Keeney	Group work	Group work	Facility tour (New York Genome Center) (Rakuten Marketing) (The Rockefeller University)	Bus to JFK
10:00 am	Departure						
11:00 am	Arrival at JFK						
12:00 pm	Bus to NYC	Lunch	Lunch	Lunch	Lunch	Lunch	
1:00 pm	Lunch		Poster Session	Lecture session Dr. Harris H. Wang Dr. Shotaro Ayukawa Dr. Yuri Matsuzaki Dr. Shuli C. Shwartz	Article perusal session		
2:00 pm		Lecture & Facility tour (New York University)			Group work presentation	Intercultural study	Departure
3:00 pm							
4:00 pm	Kick off	Dr. Nadrian C. Seeman Dr. Jef D. Boeke			Panel review		
5:00 pm	Flash talk & Ice breaking		Group Work	Group Work			
6:00 pm			Dinner			Dinner	4th Sep (Sun)
7:00 pm	Dinner	Dinner		Dinner			Arrival at NRT
8:00 pm		Poster session		Group Work	Cultural Exchange Dinner		
9:00 pm							



Summer School Experience

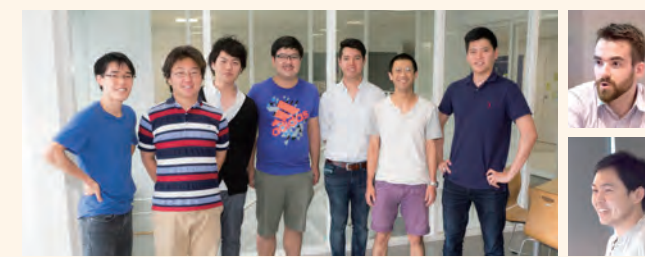
Wei Ming Lim Chairperson
 Graduate School of Bioscience and Biotechnology,
 Doctoral student (D2)

It would have been almost unthinkable – some 6 months ago – that I would be tasked to lead and coordinate 22 outstanding students in organizing this year's summer school at Cornell University. With such diverse academic backgrounds and myriad personalities, it was both a challenging yet exhilarating experience to work together in planning this event down to the finest details. Nevertheless, with the continuous support, encouragement and guidance from the ACLS faculty members, we have managed to pull off this event with great satisfaction. I would like to thank all the faculty members for giving me their utmost trust and for the abundance of tutelage in leading this summer school. I would like to also extend my gratitude to my academic supervisors for their ever-encouraging support. Last but not least, my appreciation to my committee members for their dedication in making this summer school a fulfilling and rewarding experience for all.

2016 Student Committee Members (9 students)

*The academic year is as of Summer School

Wei Ming Lim	Graduate School of Bioscience and Biotechnology, D2 Chairperson
Hitoyoshi Yamashita	Graduate School of Bioscience and Biotechnology, M2 Vice-chairperson
Aleksandar Zdravković	Graduate School of Bioscience and Biotechnology, D1 Group Work Session
Shohei Kitano	Graduate School of Bioscience and Biotechnology, D3 Poster Session
Kei Hanafusa	School of Life Science and Technology, D1 Booklet
Yuichi Yokochi	Graduate School of Bioscience and Biotechnology, M2 Lecture Session
Iou Ven Chang	Graduate School of Bioscience and Biotechnology, D2 Overseas Communication
Maierdan Palihati	Graduate School of Bioscience and Biotechnology, D1 Facility Tour
Alfredo Esquivel Chavez	School of Life Science and Technology, D1 Cultural Exchange



Departure



Gathered at Narita

Kick Off



Chairperson Lim



Introducing oneself



Game for ice-breaking

Facility Tour (United Nations Headquarters)



Tour starts



Time for global issues



Group photo in front of the building

Facility Tour (New York University)



Dr. Nadrian C. Seeman



Dr. Jef D. Boeke

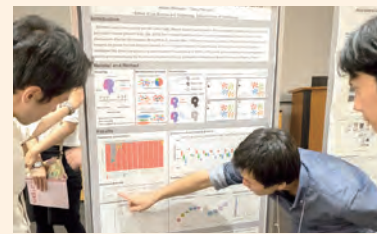


Immersed in lecture

Poster Session



It is not easy to describe one's research field concisely to someone whose field is different. Each student needs to be a skillful communicator.



Lecture Session



Dr. Leslie B. Vosshall



Dr. Christopher E. Mason



Dr. Scott Keeney



Dr. Harris H. Wang



Dr. Shotaro Ayukawa



Dr. Yuri Matsuzaki



Dr. Shuli C. Shwartz

Group Work



Theme setting



Hot discussion



Scribbles turn into a super idea?



Working on articles and slides



Done, finally!

Group Presentation



Presentation starts



Judges are also serious

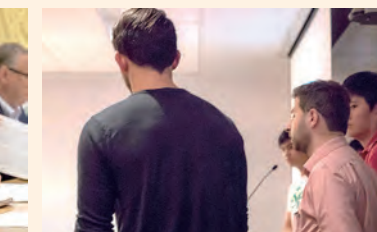


Looks so confident

Group Presentation



Questions from a judge



Answers from students

Panel Review



Under such pressure



Waiting for the results



Review starts from Group A



Peer comments from students



A lot to learn from judges' comments

Award Ceremony



Group F wins the 3rd place



Group A wins the 2nd place and ...



Group C wins the 1st place!

Cultural Exchange Dinner



Introducing Japanese culture at the party



Wow, Susi!

Facility Tour



New York Genome Center



Rakuten Marketing



The Rockefeller University