Report

ISN-APSN/ IBRO-APRC

Joint Advanced School

Daegu, Korea

September 14-September 20, 2015

Organized by

Korea Brain Research Institute

IBRO-APRC/ISN-APSN School - DAEGU 2015 Report

This School was the first Joint Advanced School between International Brain Research Organization (IBRO) and International Society for Neurochemistry (ISN) in Korea. The purpose of the School was to provide senior PhD students, junior researchers and graduate students with excellent opportunities to experience cutting-edge experimental methods by themselves.

The School focused on neurochemical aspects of nervous system development to make students learn a variety of techniques for neural connectomes and neural circuit reconstruction with multi-scale imaging techniques to make students independently run the CLARITY, Electron Microscopy (EM) or Array Tomography (AT) project.

The School operated two tracks of the research training depending on the students' interests. First track was a state-of-art techniques for the in vivo examination of the brain development. The other track was techniques for the electron microscope-based analysis of connectomes. The course of the School included discussions and presentations together with related lectures.

IBRO Asian-Pacific Region Committee (APRC) and ISN Asian-Pacific Society for Neurochemistry (APSN) as well as members of the local organizing committee would like to thank all those who contributed to the operation of the School in Daegu, Korea.

Finally, we would like to thank all the lecturers for being with us to make this school affluent and beneficial for all participants. It is hoped that the participants can continue to exchange on their research work and thus set up long-term relationship for brain science.

Kyungjin Kim, Ph.D., Chair of IBRO-APRC School and President of Korea Brain Research Institute &

Woong Sun, Ph.D., Chair of ISN-APSN School and Professor of Korea University

Outline

O Title: IBRO-APRO/ISN-APSN Joint Advanced School

O Date: September 14~20, 2015

O Place: Korea Brain Research Institute (KBRI), Daegu, Korea

O Host: IBRO, ISN and KBRI

O Theme: Neurochemical aspects of nervous system development to make students learn a variety of techniques for neural connectomes and neural circuit reconstruction with multi-scale imaging techniques to make students independently run an CLARITY, Electron Microscopy(EM), and Array Tomography(AT) project.

O Operation: Two tracks

- Tract I: State-of art techniques for the in vivo examination of the brain development.
- Tract II: Techniques for the electron microscope-based analysis of connectomes.

The School also included oral presentation and discussion and run practical experiences in the laboratory, together with related lectures.

O Participants: Total 55 students (18 students, 18 lectures and 19 assistants)

O Budget

- Income: USD70,000

IBRO	ISN	Total
USD40,000	USD30,000	USD70,000

- Expenditures: USD69,973

IBRO	ISN	Total
USD39,973	USD30,000	USD69,973

- Balance: USD27

O Operation responsibility: Dr. Sung-Jin Jeong, Director of Brain Research Policy Center, KBRI

○ Operation staff: Ms. Hyun CHOI, Senior Researcher of Brain Research Policy Center, KBRI

1. Program

Date Time	Sept. 14 (Mon)	Sept. 15 (Tue)	Sept. 16 (Wed)	Sept. 17 (Thu)	Sept. 18 (Fri)	Sept. 19 (Sat)
9:00~ 10:00		TL1/8	TL3/10	TL5/12	TL7/14	(AL) Session I
		- TL1: Prof. Sungoh Huh (Hallym Univ)	- TL3: Prof. Woong Sun (Korea Univ)	- TL5: Dr. Young shik Choe (KBRI)	- TL7: Prof. Hosung Jung (Yonsei Univ)	- AL1: Dr. Satoshi Kojima (KBRI)
		- TL8: Dr. Jong cheol Rah (KBRI)	- TL10 Prof. Minho Lee (Kyungpook Univ)	- TL12: Dr. Keajoo Lee (KBRI)	- TL14: Prof. Jiyoung Mun (Eulji Univ)	- AL2: Prof. Kihoon Han (Korea Univ)
10:00~ 12:00		M1 (Prof. Sun)	M3 (Prof. Huh)	M5 (Dr. Choe)	M7 (Prof. Jung)	(AL) Session II
		M8 (Dr. Rah)	* TL10 will be continued by 12:00 am	M12 (Dr. Lee)	M14 (Drs. Lee & Rah)	- AL1: Dr. Yoichi Kosodo (KBRI) - AL2: Prof. Sang Ki Park (POSTECH)
12:00~ 13:00		Lunch				
13:00~ 14:00		TL2/9	TL4/11	TL6/13	Discussion/ Presentation	
		- TL2: Prof. Jaesang Kim (Ewha Womans Univ)	- TL4 & TL11: Prof. Imjoo Rhyu (Korea Univ) * Place : 2F	- TL6: Prof. Woong Sun (Korea Univ)		
		- TL9: Prof. Sanghee Shim		- TL13: Dr. Yang hoon Huh		

		(UNIST)		(KBSI)	※ Chair : Prof. Woong Sun, Chair of ISN-APRC School	Tour
14:00~ 17:30	Registration(2F)	M2 (Prof. Kim)	M4 (Prof. Rhyu)	M6 (Prof. Sun)		
	Opening Session					
	Special Lecture	M9 (Drs. Lee & Rah)	M11 (Drs. Lee & Rah)	M13 (Drs. Lee & Rah)		
17:30~ 19:00	Welcoming Reception	Dinner	Dinner	Dinner	Farewell Party	

2. School Participants and Host Laboratories

Students	Host Labs
Dr. Chew Ling(Linda) LAU Florey Institute of Neuroscience and Mental Health, The University of Melbourne, Kenneth Myer Building, 30 Royal Parade (corner Genetics Lane), Parkville, Victoria 3010, Australia linda.lau@florey.edu.au	**Prof. Philip Beart** Neurodegeneration Division Head, Florey Institute of Neuroscience and Mental Health, University of Melbourne
Ching Li Lee National University of Singapore, Department, National Univeristy of Singapore, Department of Pharmacology, 10 Medical Drive, Singapore a0038414@u.nus.edu	**Prof. Mitchell K.P. Lai** Dept. of Pharmcology, YongLooL in School of Medicine, National University of Singapore
Dr. Dhiraj Maskey Dept. of Anatomy, College of Medicine, Nepalese Army Institute of Health Sciences Sanobharyang, Bhandarkhal Kathmandu, Nepal dhiraj_mask@yahoo.com	**Prof. Myeung Ju Kim** Dept. of Anatomy, College of Medicine, Dankook University

Elham Amini Deprt. of Medicine, UKM Medical Centre (HUKM), Malaysia inspiration.8308@gmail.com	**Prof. Dato Dr Raymond Azman Ali** Dean of UKM Medical Centre (HUKM)
Gladwyn-Ng Ivan Australian Regenerative Medicine Institute, Faculty of Medicine Nursing and Health Sciences, Monash University, Australia ivan.gladwyn-ng@monash.edu.au	**Prof. Julian Heng** UWA School of Medicine and Pharmacology Group Leader, The Harry Perkins Institute of Medical Research Perth, Western Australia
Hoang Linh Ngo Harry Perkins Institute of Medical Research, QQ Block, QeII Medical Centre 6 Verdun Street, Nedlands, WA 6009, Perth, Western Australia linh.ngo@uwa.edu.au	**Prof. Julian Heng** UWA School of Medicine and Pharmacology Group Leader, Harry Perkins Institute of Medical Research, Australia
Hoyong Park Neurophysiology Lab, Dept. of Biological Sciences, Konkuk University, 120 Neungdong-ro, Gwangjin-gu, Seoul 143-701, Korea hoyongpark90@gmail.com	**Prof. Kyoung Sang Cho** Dept. of Biological Sciences Konkuk University
Dr. Hui Xuan Ng The Florey Institute of Neuroscience and Mental Health, 30 Royal Parade (corner Genetics Lane), Parkville Victoria 3051, Australia hx.ng@florey.edu.au	**Prof. Seong-Seng Tan** Division Head, Brain Development & Regeneration The Florey Institute of Neuroscience and Mental Health

richard.chawana@wits.ac.za	School of Anatomical Sciences, University of the Witwatersrand
Dr. Shahid Iqbal Dept. of Zoology/Neuroscience, Bahauddin Zakariya University, Pakistan shahid_mpk07@yahoo.com	**Prof. Furhan Iqbal** Institute of pure and applied biology, Bahauddin Zakariya University
Shampa Ghosh Endocrinology & Metabolism Division, National Institute of Nutrition, India g.shampa17@gmail.com	**Dr. Manchala Raghunath** Endocrinology & Metabolism Division, National Institute of Nutrition
Sinthuporn Maharan Department of Physiology, Faculty of Medicine, Khon Kaen University, Thailand sintupon@gmail.com	**Prof. Jintanaporn Wattanathorn** Khon Kaen University
Sorabh Sharma Dept. of Pharmacy, Birla Institute of Technology and Science, Pilani, India sharmasorabh88@gmail.com	**Dr. Rahul Deshmukh** Dept. of Pharmacology, ISF College of Pharmacy
Syeda Ridita Sharif Department of Anatomy, Dongguk University College of Medicine, Department of Anatomy, Dongguk University College of Medicine, Gyeongju, Korea ridita_sharif@yahoo.com	**Prof. Il Soo Moon** Vice Dean (Research) & Professor Dept. Anatomy, Graduate School of Dongguk University College of Medicine

Xin Du The Florey Institute of Neuroscience and Mental Health, Australia xin.du@florey.edu.au	**Dr. Rachel Hill** The Florey Institute of Neuroscience and Mental Health

3. Special Lecture

Time/Date	Lecture Title/Speaker
16:30, Sept.14 (Mon)	″The role of motor cortex in motor skill learning – insight from *invivo*extracellularmulti-electroderecording″ Prof. Wing Ho Yung, Chinese University of Hong Kong

4. Technical Lecture (Track I)

Lecture	Time/Date	Lecture Title/Speaker
1	09:00, Sept.15 (Tue)	″In utero electroporation″ Prof. Sungoh Huh, Hallym University
2	13:00, Sept.15 (Tue)	″Sox genes in transcriptional regulation of neural development″ Prof. Jaesang Kim, Ewha Womans University
3	09:00, Sept.16 (Wed)	″Active Tissue Clearing with improved efficacy″ Prof. Woong Sun, Korea University

4	13:00, Sept.16 (Wed)	″Understanding reality of the nervous tissue with HVEM and stereology″ Prof. Imjoo Rhyu, Korea University
5	09:00, Sept.17 (Thu)	″Histology in a 3 dimensional world″ Dr. Youngshik Choe, Korea Brain Research Institute
6	13:00, Sept.17 (Thu)	″Migration and differentiation of neural progenitors following brain injury in mice: An example of histology-based study″ Prof. Woong Sun, Korea University
7	09:00, Sept.18 (Fri)	*″Tissue Transplanation in Xenopus″* Prof. Hosung Jung, Yonsei University

5. Technical Lecture (Track II)

Lecture	Time/Date	Lecture Title/Speaker
8	09:00, Sept.15 (Tue)	″Array Tomo″ Dr. Jong-Cheol Rah, Korea Brain Research Institute
9	13:00, Sept.15 (Tue)	″Sox genes in transcriptional regulation of neural development″ Prof. Jaesang Kim, Ewha Womans University
10	09:00, Sept.16 (Wed)	″Introduction to image processing and its application to electron microscopic images″ Prof. Minho Lee, Kyungpook National University)

11	13:00, Sept.16 (Wed)	″Understanding reality of the nervous tissue with HVEM and stereology″ Prof. Imjoo Rhyu, Korea University
12	09:00, Sept.17 (Thu)	″Learning-induced multiple synapse formation in the cerebellar cortex: three-dimensional electron microscopy″ Dr. Keajoo Lee, Korea Brain Research Institute
13	13:00, Sept.17 (Thu)	″Three Dimensional Tilting Electron Tomography: An Ultimate Analytical Tool for TEM-Mediated Bio-Medical Research″ Dr. Yanghoon Huh, Korea Basic Science Institute
14	09:00, Sept.18 (Fri)	″TEM″ Prof. Jiyoung Mun, Eulji University

6. Advanced Lecture

- **Session I: Neural development**

Chair: Sung-Jin Jeong, KBRI

Lecture	Time	Lecture Title/Speaker
1	09:40 Sept.19(Sat)	″Physical forces control cellular behaviors and stemness during brain development″ Dr. Yoichi Kosodo, Korea Brain Research Institute
2	10:10 Sept.19(Sat)	″Disrupted-in-schizophrenia is a key regulator of intracellular calcium homeostasis″ Prof. Kihoon Han, Korea University

	10:10~11:20 Sept.19(Sat)	Q & A

- **Session II: Neurochemistry of brain diseases**

Chair: Sung-Jin Jeong, KBRI

Lecture	Time	Lecture Title/Speaker
1	09:40 Sept.19(Sat)	″Physical forces control cellular behaviors and stemness during brain development″ Dr. Yoichi Kosodo, Korea Brain Research Institute
2	10:10 Sept.19(Sat)	″Disrupted-in-schizophrenia is a key regulator of intracellular calcium homeostasis″ Prof. Sang Ki Park, POSTECH
	10:10~11:20 Sept.19(Sat)	Q & A

7. Financial Report

Description	Income (USD)	Expenditure (USD)
Sponsorship from IBRO	40,000(=KRW47,680,000) ※ USD1=KRW1,192.00	39,973(=KRW47,647,750)
Sponsorship from ISN	30,000(=KRW34,959,000) ※ USD1=KRW1,165.30	30,000(=KRW34,958,928)
Travel - Students - Speakers & Assistants		 KRW24,613,109 KRW7,005,090

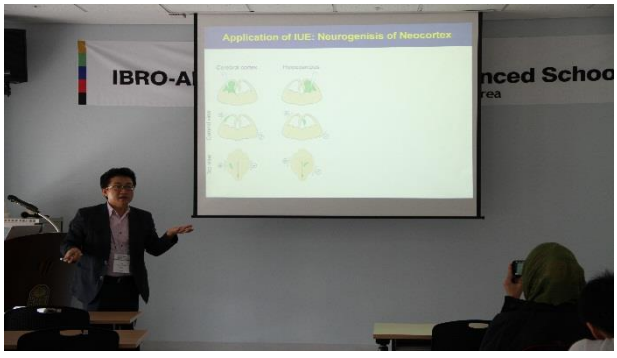
Food & Beverages - Breakfast, Lunch, Tea & Dinner - Banquet Dinner		 KRW4,791,420 KRW2,620,000
Miscellaneous - Experimental Materials - Backpack, T-shirt and protect coat - Culture tour - Car rent - Textbook, print materials, certificate, etc. - Sundries		 KRW18,920,820 KRW14,146,000 KRW2,161,300 KRW1,430,000 KRW2,713,170 KRW1,209,400
Bank transfer fees		(IBRO) KRW2,961,401 (ISN) KRW34,968
Total	70,000 (=KRW82,639,000)	69,973 (=KRW82,606,678)

8. Students' testimonial

The schedule of school was very good. Along with lecturer, we have hands on practical experience of advanced imaging techniques. Thank you for everything, KBRI-IBRO-ISN.
This very nice place to learning the high technology to learn about brain research-both all lectures and practices. Duration may be good if lengthen to 10~15 days for all courses.
Detailed, step-by-step guidance on cutting-edge in vivo brain imaging. International researcher friends made. Technical lectures first before demonstration were useful in learning techniques.
The practical sessions were excellent and absolutely enjoyable. The bag, T-shirt and snacks are

very nice. Accommodation and hospitality were of very high standard.
I like the practical sessions more interesting. School was very well organized, as per my expectations.
I truly enjoy the place of the class. The hands on experiment and lab works during the school less lectures but put them more in practice is truly great. I really like the things that everything was in a same place, classes and lab. No need to put ourselves in trouble to more difficult places. The equipment in labs and methods that they used are good. I personally like to work and have a chance to work here as a collaboration in this situation.
It was having a bulk of knowledge and fun during the school.
I really like to attend in school with more molecular work in the nearest future school in KBRI.

9. Photos

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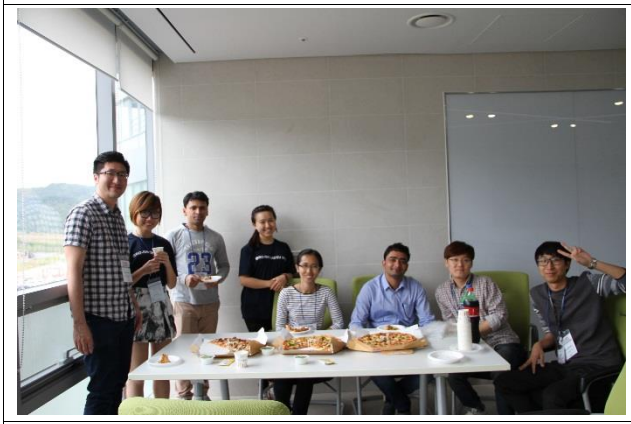
September 14-20, 2015, KBRI, Daegu, Korea
Summary


Image Processing


Counting of PP-GC Synapses
Reference section
Look-up section




Lessons from KBRI
• Strengthened the foundational understanding of many techniques


What keeps me up all night...
(also known as Research Interests)
Neurogenesis & Neuronal motility
Plasticity of neuronal processes & synapses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