



International Society for Neurochemistry

ISN School @ Tohoku University, Sendai, JAPAN

1. Theme of School:

APSN-ISN-JSN Advanced School, Sendai 2017 in conjunction with the 60th Annual Meeting of the Japanese Society for Neurochemistry (JSN)

"Novel Dimensions in Neurochemical Research; from molecular biology to brain imaging "

2. Place and date of the school:

- **Venue** : Tohoku University, Graduate Schools of Medical Sciences and Pharmaceutical Sciences, Sendai 980-8578, Japan
- **Date** : To be held between September 2-6, 2017, followed by attending the 60th Annual Meeting of the Japanese Society for Neurochemistry (JSN) (September 7-9)

4. Objectives of the School:

The main objective of the APSN-ISN-JSN School (Sendai 2017) is to provide novel a collaborative platform enabling PhD students and postdoctoral fellows from various fields of neurochemical research to meet and exchange ideas and experiences. The school will be held in conjunction with the Annual Meeting of the JSN, so that the participants can enjoy the wide variety of leading edge neurochemical research. We will provide world-renowned researchers in Tohoku University Comprehensive Center For Brain Science Research and Education (Tohoku University Brain Science Center: TU-BSC) to train the attendees with updated knowledge of advanced brain imaging, optogenetic and neurochemical techniques, especially on the neuropsychiatry diseases such as depression, autism, schizophrenia and the neural circuits involved in memory and cognition. Therefore, the participants will acquire new ideas and learn new technology and methods that will be beneficial to their future research.

The School (Sendai, 2017) will be jointly sponsored by International Society for Neurochemistry (ISN) and Asian-Pacific Society for Neurochemistry (APSN), in partnership with the Japanese Society for Neurochemistry (JSN).

Applications for participation in the School will be made by Ph.D students or postdoctoral fellows who are within 5 years of graduating with their Ph.D. Applicants are also limited within the Asian-Pacific region and selected by a School Organizing Committee formed by members of APSN and the local organizing committee (LOC). The applicants will need to submit two letters of recommendation from faculties of department or university where the applicants are studying and their CVs. Decisions will be made according to merit of plus a first-in and last-out principle.

Tohoku University Comprehensive Center for Brain Science Research and Education (TU-BSC) is one of the most distinguished research centers in Japan and with more than 60 professors of various brain research fields. The TU-BSC faculties also belong to the graduate schools of medicine, medical technology, life sciences and pharmaceutical sciences in Tohoku University. To strengthen the friendship between the school faculties, students and host, the Local Organizing Committee will also arrange social activities and a cultural experience (for details see the preliminary program).

5. Name of body organising the school (if appropriate) and names of the members of the organising committee:

Organizers:

- Asian-Pacific Society for Neurochemistry (APSN)
- Japanese Society for Neurochemistry (JSN)
- Tohoku University Comprehensive Center for Brain Science Research and Education (TU-BSC)

School Organizing Committee:

Members from the APSN :

- Akio Wanaka, Japan (APSN President)
Ying-Shing Chan, Hong Kong (APSN Secretary)
Andrew Lawrence, Australia (APSN past president)
Chian Ming Low (APSN School Committee Chair)
Kazuhiro Ikenaka, Japan (ISN Treasurer)
Shinchi Hisanaga (ISN Council member)
- Members of Local Organizing Committee (LOC):
Kohji Fukunaga (Professor, Tohoku University Graduate School of Pharmaceutical Sciences)
Shozo Furumoto ((Professor, Tohoku University Graduate School of Pharmaceutical Sciences)
Toshio Iijima (Director of TU-BCS, Professor Emeritus, Tohoku University)
Hiroshi Inada (Senior Assistant Professor, Tohoku University Graduate School of Medicine)
Toru Ishizuka (Senior Assistant Professor, Tohoku University Graduate School of Life Sciences)
Ko Matsui (Associate Professor, Tohoku University Graduate School of Medicine)
Shigaki Moriguchi (Senior Assistant Professor, Graduate School of Pharmaceutical Sciences)
Hajime Mushiake (Professor, Tohoku University Graduate School of Medicine)
Katsuhiko Nishimori (Professor, Tohoku University Graduate School of Agricultural Science)
Noriko Osumi (Professor, Tohoku University Graduate School of Medicine)
Tetuya Teraski (Professor, Tohoku University Graduate School of Pharmaceutical Sciences)
Masanori Tachikawa (Associate Professor, Tohoku University Graduate School of Pharmaceutical Sciences)
Ken-Ichiro Tsutsui (Associate Professor, Tohoku University Graduate School of Life Sciences)
Daisuke Yamamoto (Professor, Tohoku University Graduate School of Life Sciences)
Kazuhiko Yanai (Professor, Tohoku University Graduate School of Medicine)
Yasushi Yabuki (Assistant Professor, Tohoku University Graduate School of Pharmaceutical Sciences)

6. School program (day by day activities):

The School will provide a 5-day program including both comprehensive lectures and hands-on techniques associated with neurochemical, electrophysiological, optogenetic studies and brain imaging.

<p>Participants from overseas countries shall arrive in Japan on September 1st, 2017. The lodging for these students will be provided by the LOC. Participants will get together at Lecture Room A of Tohoku University Graduate School of Pharmaceutical Sciences by noon of September 2nd.</p>	
<p>Day 1 : Saturday, September 2nd, 2017</p>	
13 :00-16 :00	<p><i>Lecture series of Hands-on techniques will be held at Room A.</i></p> <p><i>(1) Interactions between school faculties and students</i> <i>(2) Hands-on grouping (2 participants/group, only one module for each participant during the school period)</i></p> <p><i>30-minute lectures will be given by the module leaders (6 faculties) and 10-minute discussion will follow (Coffee breaks between lectures).</i></p> <p><u><i>Module 1: Brain imaging of Alzheimer disease and neuropsychological diseases (by Profs. Furumoto and Yanai)</i></u></p> <p><u><i>Module 2: Technique to determine the neural circuits involved in cognition and emotion in monkey (by Profs. Tsutui and Mushiake)</i></u></p> <p><u><i>Module 3: Molecular mechanisms of neurodegeneration and neuropsychiatry disease (by Profs. Inada and Fukunaga)</i></u></p>
16 :00-18 :00	<p><i>Poster presentation by participants</i> <i>Short oral presentations (6 min in each) will be chaired by School faculties.</i> <i>Faculties and students will discuss about the students' works.</i></p>
18 :00-20 :00	<p>Welcome Dinner (at the restaurant of Pharmaceutical Sciences)</p>
<p>Day 2 : Sunday, September 3rd, 2017</p>	
9 :00-18 :00	<p>One day trip to promote friendship between participants and foreign students studied in Tohoku University. The participants learn the Japanese history and culture with our students.</p>
18 :00-20 :00	<p>Dinner (at Lodging Hotel)</p>

<p>Day 3 : Monday, September 4th, 2017</p>	
9 :00-12 :00	<p><i>30-minute lectures will be given by the module leaders (6 faculties) and 10-minute discussion will follow (Coffee breaks between lectures).</i></p> <p><u><i>Module 4 : Neural function analyses using Optogenetics (by Profs. Matsui and Ishizuka)</i></u></p> <p><u><i>Module 5 : Molecular basis of blood brain barrier and neurovascular units (by Profs. Teraski and Han)</i></u></p> <p><u><i>Module 6 : Molecular basis of innate behaviors in Drosophila (by Prof. Yamamoto)</i></u></p>

	<u>Module 7 : Molecular basis of autism behaviors in oxytocin null mice (by Prof. Nishimori)</u>
12 :00-13 :00	Lunch
13 :00-17 :00	Hands-on techniques Module 1 : Brain imaging of Alzheimer disease and neuropsychological diseases (Two Labs) Module 2 : Neural circuits involved in cognition and emotion in monkey brain (Two Labs) Module 3 : Molecular mechanisms of neurodegeneration and neuropsychiatry disease (Two Labs) Module 4 : Neural function analyses using Optgenetics (Two Labs) Module 5 : Molecular basis of blood brain barrier and drug transport (Two Labs) Module 6 : Molecular basis of innate behaviors in Drosophila (One Lab) Module 7 : Molecular basis of autism behaviors in oxytocin null mice (One Lab)
18 :00-20 :00	Dinner (at Lodging Hotel)
Day 4 : Tuesday, September 5th, 2017	
9 :00-12 :00	Hands-on techniques Module 1 : Brain imaging of Alzheimer disease and neuropsychological diseases (Two Labs) Module 2 : Neural circuits involved in cognition and emotion in monkey brain (Two Labs) Module 3 : Molecular mechanisms of neurodegeneration and neuropsychiatry disease (Two Labs) Module 4 : Neural function analyses using Optgenetics (Two Labs) Module 5 : Molecular basis of blood brain barrier and drug transport (Two Labs) Module 6 : Molecular basis of innate behaviors in Drosophila (One Lab) Module 7 : Molecular basis of autism behaviors in oxytocin null mice (One Lab)
12 :00-14 :00	Lunch
14 :00-17 :00	Hands-on techniques Module 1 : Brain imaging of Alzheimer disease and neuropsychological diseases (Two Labs) Module 2 : Neural circuits involved in cognition and emotion in monkey brain (Two Labs) Module 3 : Molecular mechanisms of neurodegeneration and neuropsychiatry disease (Two Labs) Module 4 : Neural function analyses using Optgenetics (Two Labs) Module 5 : Molecular basis of blood brain barrier and drug transport (Two Labs) Module 6 : Molecular basis of innate behaviors in Drosophila (One Labs) Module 7 : Molecular basis of autism behaviors in oxytocin null mice (One Labs)
17 :00-18 :00	Advanced Lecture 1: Recent progress in Autism Spectrum Disorder Research (Tentative Title) (Prof. Noriko Osumi)
18 :00-19 :00	Dinner

Day 5 : Wenseday, September 6th, 2017	
9 :00-12 :00	Hands-on techniques Module 1 : Brain imaging of Alzheimer disease and neuropsychological diseases (Two Labs) Module 2 : Neural circuits involved in cognition and emotion in monkey brain (Two Labs) Module 3 : Molecular mechanisms of neurodegeneration and neuropsychiatry disease (Two Labs) Module 4 : Neural function analyses using Optgenetics (Two Labs) Module 5 : Molecular basis of blood brain barrier and drug transport (Two Labs) Module 6 : Molecular basis of innate behaviors in Drosophila (One Lab) Module 7 : Molecular basis of autism behaviors in oxytocin null mice (One Lab)
12 :00-13 :00	Lunch
13 :00-17 :00	Oral presentation by students in each module group 20 min presentation and discussion in each group Organized by Chian Ming Low (APSN School Committee Chair), Ying-Shing Chan (APSN Secretary), Akio Wanaka (APSN President) Advanced Lecture 2: Molecular mechanisms of drug addiction (Tentative Title) (Andrew Lawrence, APSN Past President)
18 :00-20 :00	Farwell party for APSN-ISON advanced shool members with staff
Day 6 : Thuthday, September 7th, 2017 : The participants join the 60th JSN annual meeting and present their own poster at the meeting	
9 :00-18 :00	The 60th JSN annual meeting will start. About 300 JSN members and invited foreign investgators will attend.
18 :00-21 :00	Exchange meeting with JSN Young Investigators selected in the 60th JSN annual meeting (in Sendai Kokusai Conference Center) Organised by Kazuhiro Ikenaka (ISON Treasurer) and Shinchi Hisanaga (ISON/JSN Council member) and JSN education readers.
Day 7 : Friday, September 8th, 2017	
9 :00-18 :00	The second day of 60th of JSN annual meeting.
18 :00-20 :00	The ISON-APSN school participants join the banquet for the JSN annual meeting.
Day 8 : Saturday, September 9th, 2017	
9 :00-16 :00	The final day of 60th JSN annual meeting
The participants leave from Sendai to back to home by own schedule.	

7. Names and affiliations of School Faculty:

Overseas Faculties (supported by ISON):

Professor Ying-Shing Chan

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8. Estimated number of students, estimated international and national distribution, and activities at the school (e.g. number of expected students, lectures, laboratory modules, posters, etc)

- Estimated number of students and distribution:
National (Japan) =8
Asian-Pacific region =12

- Activities at the school

The school includes ten 30-min lectures (12 technical lectures for hands-on modules and 2 advanced lectures), plus 10 laboratory hands-on modules. Each module lasts two days. Totally, lecture time=6 hours, laboratory hands-on module time=12 hours (during 2 days). For details see as follows:

Lectures for Modules :

Module 1: Brain imaging of Alzheimer disease and neuropsychological diseases (by Profs. Furumoto and Yanai)

Prof. Shozo Furumoto

PET IMAGING TRACERS FOR TAU PATHOLOGY IN ALZHEIMER DISEASE

Prof. Kazuhiko Yanai

PET IMAGING AGENT THAT BINDS TO AMYLOID PLAQUES FOR THE POTENTIAL DETECTION OF ALZHEIMER'S DISEASE

Module 2: Neural circuits involved in cognition and emotion in monkey brain (by Profs. Tsutsui and Mushiake)

Prof. Ken-ichiro Tsutsui

TRANS-CRANIAL MAGNETIC STIMULATION (TMS): A NEW TOOL FOR ANIMAL RESEARCH IN SYSTEMS NEUROSCIENCE

Prof. Hajime Mushiake

BEHAVIORAL UPDATING AND MAINTENANCE IN THE MEDIAL FRONTAL AREAS

Module 3: Molecular mechanisms of neurogeneration and neuropsychiatry disease (by Profs. Osumi and Fukunaga)

Prof. Noriko Osumi

SIGNIFICANT IMPACT OF FATTY ACID SIGNALS ON PRE- AND POST-NATAL BRAIN DEVELOPMENT AND THEIR OUTCOME

Prof. Kohji Fukunaga

POST-TRAUMATIC STRESS DISORDER (PTSD)-LIKE BEHAVIORS WITH IMPAIRED CINGULATE CORTEX IN FABP3 NULL MICE

Module 4 : Functional analyses of Optogenetic studies (by Profs. Matsui and Ishizuka)

Prof. Ko Matsui

OPTOGENETIC CONTROL OF ASTROCYTIC ACTIVITY

Prof. Toru Ishizuka

OPTOGENETIC SILENCING OF NEURONAL ACTIVITY USING A LIGHT-DRIVEN SODIUM ION PUMP IN MARINE BACTERIA

Module 5 : Molecular basis of blood brain barrier and neurovascular units (by Profs. Terasaki and Han)

Prof. Tetsuya Terasaki

QUANTITATIVE TARGETED ABSOLUTE PROTEOMICS OF RAT BLOOD-CEREBROSPINAL FLUID BARRIER TRANSPORTERS : COMPARISON WITH A HUMAN SPECIMEN

Prof Feng Han

RESOLUTION THE INFLAMMATORY RESPONSE DURING NEUROVASCULAR DAMAGE: CROSS-TALK BETWEEN MICROVESSELS AND NEURONS

Module 6 : Molecular basis of innate behaviors in Drosophila (by Prof. Yamamoto)

Prof Daisuke Yamamoto

THE NEURAL BASIS FOR EXPERIENCE-DEPENDENT MODIFICATIONS OF MALE COURTSHIP IN DROSOPHILA

Module 7 : Molecular basis of autism behaviors in oxytocin null mice (by Prof. Nishimori)

Prof. Katsuhiko Nishimori

OXYTOCIN CONTROLS SOCIAL BEHAVIORS THROUGH ITS RECEPTOR EXPRESSED IN GABAERGIC NEURONS DISTRIBUTED IN MEDIAL AMYGDALA AND LATERAL SEPTUM

Laboratory hands-on modules (2 day's modules):

Module 1: Brain imaging of Alzheimer disease and neuropsychological diseases (Labs of Profs. Furumoto or Yanai)

Module 2: Neural circuits involved in cognition and emotion in monkey brain (Labs of Profs. Tsutsui and Mushiake)

Module 3: Molecular mechanisms of neurodegeneration and neuropsychiatry disease (Labs of Profs. Osumi and Fukunaga)

Module 4 : Functional analyses of Optogenetic studies (Labs of Profs. Matsui and Ishizuka)

Module 5 : Molecular basis of blood brain barrier and neurovascular units (Labs of Profs. Teraaski and Han)

Module 6 : Molecular basis of innate behaviors in Drosophila (Lab of Prof. Yamamoto)

Module 7 : Molecular basis of autism behaviors in oxytocin null mice (Lab of Prof. Nishimori)

- School students' oral presentations

In the Afternoon session on the school Day 1, students will present orally their experimental results using posters. Each oral presentation will be limited to 6 min. These presentations will be chaired by School Faculties. Three of the presentations will be awarded as gold, silver and bronze medals.



Kohji Fukunaga, PhD

Chairperson

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