International Society for Neurochemistry

Application for Support of ISN Schools

The application form should be returned to Dr. Yasuharu Shinoda by e-mail

1. Contact details of the applicant(s):

Chairperson: Professor Kohji Fukunaga
Address(s): Department of Pharmacology, Tohoku University Graduate School of Pharmaceutical Sciences, Sendai 980-8578, Japan
Tel No(s): +81-22-795-6836
Fax No(s): +81-22-795-6835

Or Local Organizer: Assistant professor Yasuharu Shinoda
E-mail address: yshinoda@tohoku.ac.jp

2. Theme of School:

ISN-APSN Advanced School, Sendai 2017 entitled

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

3. Place and date of the school:

- **Venue** : Tohoku University, Graduate Schools of Pharmaceutical Sciences and Life Sciences, Sendai 980-8578, Japan

- **Date** : To be held between September 2-6, 2017.

4. Justify why the school is relevant to advanced training of future neuroscientists in APSN and why ISN should support it:

The main objective of the APSN-ISN 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 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 postdoctral 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 Committe 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 Universirty. 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)
  Woong Sun (APSN Treasurer)
  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 (Drector of TU-BCS, Professor Emelitus, Tohoku University)
  Hiroshi Inada (Senior Assistant Professor, Tohoku University Graduate School of Medicine)
  Ko Matsui (Professor, Tohoku University Graduate School of Life Sciences)
  Shigeki 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)
  Ichiko Nishijima (Senior Assistant Professor, Tohoku University Graduate School of Medicine)
  Noriko Osumi (Professor, Tohoku University Graduate School of Medicine)
  Tetsuya Terasaki (Professor, Tohoku University Graduate School of Pharmaceutical Sciences)
  Masanori Tachikawa (Associate Professor, Tohoku University Graduate School of Pharmaceutical Sciences)
  Hiroaki Tomita (Professor, Department of Disaster Psychiatry, International Research Institute of Disaster Science, Tohoku University)

Ken-Ichiro Tsutsui (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)

Secretary : Yasuharu Shinoda (Assistant Professor, Tohoku Univeristy 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.

Participants from oversea 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 of Tohoku University Graduate School of Life Sciences by 9 :30 AM of September 2nd.	
Day 1 : Saturday, September 2，2017	
9:30-12 :00	*Lecture series of Hands-on techniques will be held at Lecture Room in* Graduate School of Life Sciences. *(1) Interactions between school faculties and students* *(2) Hands-on grouping (2 participants/group, only one module for each participant during the school period)* *30-minute lectures including 10 min discussion will be given by the module leaders (10 faculties) (Coffee breaks between lectures).* *Module 1: Brain imaging of Alzheimer disease and neuropsychological diseases (by Profs. Furumoto and Yanai)* *Module 2: Non-human primate neurophysiology for the investgation of higher cognitive functions (by Profs. KenichiroTsutui and Mushiake)*
12:00-13:00	Lunch (at the restaurant, Sakura Kitchen)
13 :00-18 :00	*Module 3: Molecular mechanisms of neurodegeneration and neuropsychiatry disease (by Profs.Inada and Fukunaga)* *Module 4 :* *・Optogenetic control of glial activity and animal behavior (by Prof. Ko Matsui)* *Coffee break* *Module 5 :* *・Recent Advances in Blood-Brain Barrier Transport*

	Research (by Prof. Tetsuya Terasaki) *Module 6 : Molecular basis of innate behaviors in Drosophila (by Prof. Yamamoto)*
18 :00-20 :00	Welcome Dinner (at the restaurant, Sakura Kitchen)
Day 2 : Sunday September 3, 2017	
9 :00-12 :00	*Module 7 : Molecular basis of autism behaviors in oxytocin null mice (by Profs. Nishimori and Yabuki)* *Coffee break* *Module 8:* *・Psychological Impact of the Great East Japan Earthquake How Science can contribute the recovery (by Prof Hiroaki Tomita)* *・Construction of biobank in Tohoku Medical Megabank Organization for a part of reconstruction from Great East Japan Earthquake (by Prof Ichiko Nishijima)*
12 :00-13 :00	Lunch (Lunch box)
13 :00-16 :00 16 :00-17 :00	Five min poster presentation with a 5-min discussion by 20 students. Organized by Andrew Lawrence, Australia (APSN past President), Akio Wanaka, Japan (APSN President), Ying-Shing Chan (APSN Secretary), Chian Ming Low (APSN School Committee Chair). *Advanced Lecture 1: Impact of maternal fatty acids on brain development and behavior in the oddspring (Prof. Noriko Osumi)*
18:00-19:00	Dinner (at Lodging Hotel)
19:00-21:00	Meet the speaker *(Prof. Noriko Osumi)*
Day 3 : Monday, September 4，2017	
9 :30-18 :00	One day trip to promote friendship between participants and foreign students studing in Tohoku University. Participants will learn how peoples come back from the Great East Japan Earthquake in Sendai. Participants will visit Ishinomaki Community and Infomation Center and talk with Richard Halberstadt, Chief of the Center. He will talk that working together for a new Ishinomaki after the Earthquake.
18:00-19:00	Dinner (at Lodging Hotel)
19:00-20:00	Group meeting for hands-on techniques for days 5 and 6
Day 4 : Tuesday, September 5，2017	
9 :30-12:00	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 (One Lab) 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) Module 8: Mental health promotion and life sciences in Tohoku Medical Megabank after the Great East Japan Earthquake (One Lab)
12 :00-14 :00	Lunch
14 :00-18 :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 (One Lab) 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) Module 8: Mental health promotion and life sciences in Tohoku Medical Megabank after the Great East Japan Earthquake (One lab)
17:00-18:00	
18:00-19:00	Dinner In Local food restaurant (Japanese)
19:00-21:00	*Advanced Lecture 2 : How do ISN and APSN succeed in Neurochemical Research (Prof, Andrew Lawrence APSN past president).* Free talk with Andrew Lawrence, Australia (APSN past President), Akio Wanaka, Japan (APSN President), Ying-Shing Chan (APSN Secretary), and Chian Ming Low (APSN School Committee Chair).
Day 5 : Wenseday, September 6，2017	
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) Module 8 : Module 8: Mental health promotion and life sciences in Tohoku Medical Megabank after the Great East Japan Earthquake (One Lab)
12 :00-13 :00	Lunch
13 :00-17 :00	*Advanced Lecture 3: Structural and functional characterization of alpha-synuclein assemblies in Parkinson's disease and related synucleinopathies (Prof Ronald Melki, Paris-Saclay Institute of Neuroscience).* And join to International meeting of "Protein misfolding disease and Therapy 2017 in Sendai" to discuss with leading neuroscientists in the world.
18 :00-20 :00	Farwell party for APSN-ISN advanced shool members with staffs

7. Names and affiliations of School Faculty:

Overseas Faculties (supported by ISN):

Professor Chian Ming Low
Department of Pharmacology and Anaesthesis, National Univeristy Hospital Singapore, Singapore
e-mail : phclowcm@nus.edu.sg

Professor Ying-Shing Chan
School of Niomedical Sciences The University of Hong Kong (APSN Secretary) e-mail: yschan@hku.hk

Professor Andrew J. Lawrence
NHMRC Senior Research Fellow
Howard Florey Institute
Centre for Neuroscience
University of Melbourne
Tel: 03 90356692; Mobile: 0431 267795
e-mail: andrew.lawrence@florey.edu.au

LOC faculties (supported by ISN)

Professor Akio Wanaka
Department of Anatomy and Neuroscience
Nara Medical University School of Medicine
e-mail: akiow@naramed-u.ac.jp

Professor Shin-ichi Hisanaga
Department of Molecular Neuroscience
Graduate School of Sciences
Tokyo Metropolitan University
e-mail: hisanaga-shinichi@tmu.ac.jp

LOC faculties (supported by LOC)

Kohji Fukunaga, Professor, Tohoku University Graduate School of Pharmaceutical Sciences
E-mail :kfukunaga@m.tohoku.ac.jp
Shozo Furumoto, Professor, Tohoku University Graduate School of Pharmaceutical Sciences

E-mail :furumoto@cyric.tohoku.ac.jp
Toshio Iijima, Drector of TU-BCS, Professor Emelitus, Tohoku University
E-mail :t-iijima@m.tohoku.ac.jp
Hiroshi Inada, Senior Assistant Professor, Tohoku University Graduate School of Medicine
E-mail :hinada@med.tohoku.ac.jp
Ko Matsui, Professor, Tohoku University Graduate School of Life Sciences
E-mail : matsui@med.tohoku.ac.jp
Shigaki Moriguchi, Senior Assistant Professor, Graduate School of Pharmaceutical Sciences
E-mail : shigeki@m.tohoku.ac.jp
Hajime Mushiake, Professor, Tohoku University Graduate School of Medicine
E-mail : hmushiak@med.tohoku.ac.jp
Ichiko Nishijima, Senior Assistant Professo, Tohoku University Tohoku Medical Megabank Organization. E-mail : nishijii@med.tohoku.ac.jp
Katsuhiko Nishimori (Professor, Tohoku University Graduate School of Agricultural Science)
Noriko Osumi, Professor, Tohoku University Graduate School of Medicine
E-mail : osumi@med.tohoku.ac.jp
Tetsuya Teraski, （Professor, Tohoku University Graduate School of Pharmaceutical Sciences）
E-mail : terasaki@mail.pharm.tohoku.ac.jp
Masanori Tachikawa (Associate Professor, Tohoku University Graduate School of Pharmaceutical Sciences) E-mail:tachikaw@m.tohoku.ac.jp
Hiroaki Tomita (Professor, Department of Disaster Psychiatry, International Research Institute of Disaster Science, Tohoku University) E-mail:htomita@med.tohoku.ac.jp
Ken-Ichiro Tsutsui, Associate Professor, Tohoku University Graduate School of Life Sciences
E-mail :tsutsui@m.tohoku.ac.jp
Daisuke Yamamoto, Professor, Tohoku University Graduate School of Life Sciences
E-mail : daichan@m.tohoku.ac.jp
Kazuhiko Yanai, Professor, Tohoku University Graduate School of Medicine
E-mail : yanai@med.tohoku.ac.jp
Yasushi Yabuki, Assistant Professor, Tohoku Univeristy Graduate School of Pharmaceutical Sciences
E-mail :yabukiy@m.tohoku.ac.jp

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) =5
  Asian-Pacific region =15

- 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 beheviors 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

Module 8 : Mental health promotion and life sciences by the Medical Megabank in Tohoku University after the Great East Japan Earthquake (by Profs. Nishijima and Tomita)

Prof. Nishijima
Title :

Prof Hiroaki Tomita
Title :

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 Prof. Matsui)

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)

Module 8 : Mental health promotion and life sciences by the Medical Megabank in Tohoku University after the Great East Japan Earthquake (Lab of Profs Nishijima and Tomita)

School students' oral presentations

In the Afternoon session on the school Day 2, students will present orally their experimental results using posters. Each oral presentation will be limited to 10 min. The presentation will be chaired by School Faculties. Three of the presentations will be awarded as gold, silver and bronze medals.

10. Previous applications for ISN support by the applicant(s) (organiser, group of organisers or the organising society)

The LOC have not previously been funded from the ISN-SC; however APSN schools are regularly funded under this scheme.

Chairperson of the organising committee, agree:

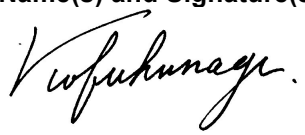
1. to acknowledge ISN support in all publicity (conference announcements, website, abstract book and other publications, etc) pertinent to the school.

2. to publicly announce the availability of application forms for ISN membership on The World's Neurochemistry Portal (http://www.neurochem.org) and to support the effort of ISN to recruit new members.

3. to submit my report on the school plus photographs (as specified in Guidelines), within one month of the end of the school.

4. to spend the ISN funds in accordance with the ISN Schools Guidelines.

Name(s) and Signature(s) of applicant(s):



Kohji Fukunaga, PhD
Professor,
Department of Pharmacology
Tohoku University Graduate School of Pharmaceutical Sciences

Sendai 980-8578, Japan
E-mail : kfukunaga@m.tohoku.ac.jp

Date: January 7, 2016