

2018 Annual Report - Neurobiology Commission

Chair

Aristea Galanopoulou (USA)

Members

Marco de Curtis (Italy), Past-Chair

Terence O'Brien (Australia)

Kathryn Davis (USA), Marcio Moraes (Brazil)

Management Committee Liaison

Edward Bertram (USA)

Purpose

To promote neurobiology research in epilepsy through advocacy, education, training, proposals of optimal methodologies, and infrastructure improvements.

Activities

We have had zoom conferences with the members of the Neurobiology Commission (NBC) and the chairs of its task forces (TF) regularly, and also held face-to-face meetings in the ECE at Vienna (August 26, 2018) and AES meeting in New Orleans (December 4, 2018). The membership of the NBC TFs has since been finalized through discussions between the NBC chair, the elected TF chairs, and the leadership of both the ILAE and the AES in regard to the ILAE/AES Joint Translational TF (see below for details). The following have been achieved and discussed:

NBC Symposia at ILAE congresses:

- 1) NBC symposium in the ECE at Vienna, 2018 (completed).

“Does coffee/caffeine consumption influence seizures and epilepsy?”

Date: August 26, 2018

Chairs: Astrid Nehlig and Aristea Galanopoulou

Speakers:

- *Detlev Boison (USA): “Mechanisms of action of caffeine in the brain and potential proconvulsant properties of caffeine”*
- *Astrid Nehlig (France): “Interindividual variability of caffeine metabolism and circulating levels”*
- *Christophe Bernard (France): “Consequences of early life caffeine exposure on brain development and susceptibility to seizures”*
- *Christian Samsonen (Norway): “Does coffee/caffeine consumption influence seizure activity in individuals with epilepsy?”*

- 2) NBC symposium in the IEC in Thailand, 2019 (planned).

“Biological rhythms that modulate the risk of seizures”

Date: June 23, 2019 from 12:00-14:00

Chairs: Christophe Bernard and Aristeia Galanopoulou

Speakers:

- *Maxime Baud (Switzerland): “Rhythms modulating seizure risk in human epilepsies”*
- *Philippa Karoly (Australia): “Circadian control of seizures and seizure forecasting”*
- *Christophe Bernard (France): “Circadian regulation in the pathophysiology and treatment of temporal lobe seizures”*
- *Judy Liu (USA): “Loss of CLOCK underlies focal epilepsies”*

Workshop funding through the NBC

NBC has co-sponsored the following two workshops:

- Gordon research conference: *“Mechanisms of epilepsy and neuronal synchronization”* (August 2018) by Drs Bernard and Brooks-Kayal, for the amount of \$6,000 due to parallel funding received by the North American Commission. The recommendation that workshop funding in the future would require ILAE participation in the topic selection was communicated to the organizers, per ILAE EC decision. Further, the NBC recommendation was that funds should preferably go towards applicants from low-income countries and a report was requested at the conclusion of the meeting.
- 2nd Latin-American Workshop on Neurobiology of Epilepsy: *“Cannabinoids and epilepsy, myths and realities”*. Organizer: Luisa Lilla Rocha Arrieta. Funding for \$6,200 was recommended by the NBC and further approved by the ILAE EC. The same recommendations were communicated to the organizer.

Further, we have revised the workshop application for funding to include the expectation that ILAE should be involved in topic selection of meetings for which support is requested.

We also proposed for budget approval for 2019 that *“ILAE bursaries of the NBC”* administered by the NBC may be given for travel awards for trainees or early career investigators with limited resources who apply to cover travel expenses to attend high quality scientific meetings, training opportunities, or workshops that are not sponsored or organized by the ILAE.

Statement regarding Professor Nikos K Logothetis:

The NBC discussed the case of Professor Nikos Logothetis in the context of its history and implications for the public perception of the way and purpose of animal use in biomedical research, and agreed to post the following statement on its website (<https://www.ilae.org/about-ilae/topical-commissions/commission-on-neurobiology>):

"The Neurobiology Commission of the International League Against Epilepsy (ILAE) supports and values the importance of the research that Professor Logothetis' group has been conducting to advance our understanding of brain function, and to develop better interventions that may eventually help to manage individuals with neurologic diseases. We also strongly support the international scientific efforts that advocate for the adoption of ethical and humane practices, and endpoints in animal biomedical research, as suggested for [Professor Logothetis' case by animal protection officers of the Max Planck Institute for Biological Cybernetics](#).

The scientific community has experienced cases when unjustified accusations or attacks have negatively impacted the lives and work of colleagues, despite their adherence to the accepted standards of ethical animal experimentation. We therefore urge careful and impartial review of the facts and circumstances to reach a responsible and objective resolution of the case of Professor Logothetis, in a manner that respects individual human rights and our societal ethical standards."

Budget

We have submitted a budget request for this year for \$15,000 for meetings of the NBC in the IEC in Thailand (June 2019). We also requested funds for the proposal to create ILAE bursaries of the NBC to support trainees or early career investigators with limited resources who apply to cover travel expenses to attend high quality scientific meetings, training opportunities, or workshops that are not sponsored or organized by the ILAE.

Planned face-to-face meetings

We are planning a face-to-face meeting in Bangkok and at the AES meeting in Baltimore, MD.

WONOEP Task Force

Co-Chairs

Terence O'Brien (Australia)
Aristea Galanopoulou (USA)

Members

Marco de Curtis (Italy), Past-Chair
Ozlem Akman (Turkey)
Marcia Moraes (Brazil)
Tomonori Ono (Japan)
Raman Sankar (USA), liaison to Advocacy TF of the NBC

Aim

Organize the WONOEP meetings prior to the IECs. The next one planned is for Thailand (June 2019).

WONOEP 2019

The TF has selected the following topic for the next WONOEP: *"What is a seizure?"* The meeting will run as a workshop, with the plan to discuss current definitions, limitations, and proposals submitted with the intent of producing position papers to better define seizures across the lifespan, whether focal or

generalized or unclear, and attempt to define the borders between epileptic and nonepileptic paroxysmal disorders resembling seizures. Following a request for abstract submissions, we received numerous abstracts which have been scored by the WONOEP TF and NBC members, and invitations will be sent shortly. The programme of the WONOEP has been discussed at the AES meeting of the WONOEP TF and NBC. In parallel, we have been seeking additional funding to fill the needs for this meeting.

For the selection of the local resort and the negotiations with the candidate resorts, the TF has been working closely with the local organizers (Drs Oranee Sanmaneechai and Kanitpong Phabphal) recommended by Dr Anannit Visudtibhan from the local chapter. In addition, Richard Holmes, Philippa Scott, and Denis McEvoy from the congress bureau have been invaluable in representing us in the negotiations for the best contract terms for the resort that will accommodate the WONOEP participants. We have elected to have the WONOEP 2019 in Ayutthaya, the old capital of Thailand, at the Krungsri River Hotel, on June 16-20 2019, which offers the possibility to have a small-scale workshop (~60 people) encouraging informal interactions, in a historical and cultural location, with a more affordable budget.

The deliverables of the workshop will include position papers formulated by the discussions and presentations of the selected topic.

Budget

There is a budget of \$40,744, which includes the carryover from previous years (funds from ILAE as well as the Harinarayan family) as well as an additional \$15,000 donated by UCB for the WONOEP meeting. This budget is expected to also cover the Harinarayan Young Investigator awards. Thanks to Dr Raman Sankar, the Harinarayan family has graciously donated an additional sum of \$20,000 for the purpose of supporting the WONOEP meeting and the Harinarayan Young Investigator awards given by the NBC to young presenters of the best original science abstracts at the IEC meetings. Additional funds have been requested by ILAE to cover the expected costs of the meeting (to be decided).

ILAE/AES Joint Translational TF

Members

The membership of the ILAE/AES joint Translational TF has been confirmed and consists of the following:

AES Co-Chairs:

Aristea Galanopoulou (USA) and Greg Worrell (USA)

AES Nominees:

Richard Staba (USA), Anne Anderson (USA), Manisha Patel (USA), Kevin Kelly (USA)

ILAE Co-Chairs:

Terence O'Brien (Australia) and Matthew Walker (UK)

ILAE Nominees:

Gunther Sperk (Austria), Rudiger Koehling (Germany), Heidrun Potschka (Germany), Steven Petrou (Australia)

Liaison to MC:
Ed Bertram (USA)

Initiatives

We have had several zoom conferences to discuss the initiatives that our TF will undertake during the coming cycle, as well as the selection of new working group (WG) members to assist with these initiatives. The following were agreed upon as initiatives and new volunteer members for the WGs were proposed, approved, and invited by the ILAE/AES leadership:

- (a) Continue the work of the TASK1 group with the following goals during the upcoming cycle:
 - *TASK1-WG (working group) on classification of seizures and epilepsies in rodents*. These TASK1-WGs will include:
 - Creation of a public access online Atlas of Rodent EEGs through collaboration with our TF members, and TASK1-WG members and system analysts (Peter Shen).
 - Classification and interpretation of abnormal and epileptic EEG patterns, and behavioral seizures. Eventually, this will also help the organization and will provide content for the Atlas of Rodent EEGs (see below).
 - Working classification of rodent seizures and epilepsies in a manner that could translate to human seizures and epilepsies. In this effort, we will consider EEG, seizure phenotype, comorbidities, and other characteristics (pathology, imaging, genetics, etc.).
- (b) Continue the work of the TASK2 group, by extending the term of the existing TASK2 working group that aims to complete the systematic review of the animal epilepsy studies on outcome measures (led by Drs Simonato, Brooks-Kayal, and Jensen).
- (c) Continue the work of the TASK3 group on preclinical common data elements (CDEs) in epilepsy by:
 - (i) expanding the topics of the CDEs (e.g., on pathology, omics, epilepsy phenotyping of animal models, imaging, etc.)
 - (ii) considering methods to make these tools accessible to most labs (e.g., software or databases)
 - (iii) undertaking efforts to disseminate the preclinical CDEs and create a publicly available set of database modules with the existing CDEs through an agreement with LONI (U South California)

Publications and other initiatives from past cycle activities:

- (a) Special issue on preclinical CDEs by TASK3 has been published in *Epilepsia Open* (TASK3): The special issue has been published (*Epilepsia Open* 2018, vol3, S1) and has been placed online for community feedback that was invited with email blasts from ILAE, AES, NINDS, CURE, and the ILAE/AES Joint Translational Task Force: <https://www.ilae.org/cde-discussion>
- (b) “Methodologic recommendations and possible interpretations of video-EEG recordings in immature rodents used as experimental controls: A TASK1-WG2 report of the ILAE/AES Joint Translational Task Force” (Akman, Raol, Auvin et al): Published in *Epilepsia Open* (2018): <https://onlinelibrary.wiley.com/doi/10.1002/epi4.12262>

- (c) *TASK1-WG4 report on “How do we use in vitro models to understand epileptiform and ictal activity? A report of the TASK1-WG4 group of the ILAE/AES Joint Translational Task Force”* (Dulla et al): Published in *Epilepsia Open*: <https://onlinelibrary.wiley.com/doi/10.1002/epi4.12277>
- (d) We have been discussing with other organizations plans to share the CDEs with them for use by team science/consortia research groups, e.g., CURE (Traumatic Brain Injury (TBI) initiative).

Budget

We had received approval of a budget request for 2018 by both AES and ILAE, with matching fund requests (\$15,000 each) for face-to-face meetings. We have received approval to utilize the existing balance (carryover of \$27,814) toward planning the above initiatives (e.g., databases/software for TASK3 CDEs, website construction for the Atlas by TASK1). The TF’s 2019 budget request included a request to carry over the funds for the purpose of face-to-face meetings in 2019 (IEC, AES) and the above two planned projects.

Planned face-to-face meetings

We are planning for a face-to-face meeting in Bangkok and at the AES meeting in Baltimore.

Genetics / Epigenetics TF:

Chair

David Henshall (Ireland)

Members

Katsuhiko Yamakawa (Japan)

Albert Becker (Germany)

Chris Reid (Australia)

Alica Goldman (USA)

Erwin van Vliet (Netherlands)

Iscia Lopes-Cendes (Brazil)

Annapurna Poduri (USA)

Michael Johnson (UK)

Hela Mrabet (Tunisia)

Katja Kobow (Germany), liaison to Big Data TF

Steven Petrou (Australia), liaison to ILAE/AES Joint Translational TF

Aims

Discuss scientific and clinical research priorities of the TF and commission review(s) that would focus on promoting the TF; promote priority Genetics-Epigenetics topics at key epilepsy meetings; organize training, create infrastructure, and promote industry-academia research interactions and developments; and collaborate with the ILAE/AES Joint Translational TF on CDEs in genetics-epigenetics.

Activities

The TF has held teleconferences to discuss the priorities and manuscripts to prepare. Planned TF manuscripts include primers on epigenetics and genetics for the epilepsy community. Some of these will include educational material targeting an audience with a more general interest and for these there was a discussion to consider either the educational journal of the ILAE (Epileptic Disorders) and/or Wikipedia. The TF also has liaisons from other ILAE TFs and commissions to avoid overlap with initiatives planned from other sources.

Young Neurobiologists TF:

Co-Chairs

Premysl Jiruska (Czech)

Stephanie Schorge (UK)

Members

Joseph Raimondo (S. Africa)

Kathry Davis (USA)

Nigel Jones (Australia)

Liankun Ren (China)

Vadym Gnatkovsky (Italy)

Shilpa Kadam (USA)

Nihan Carcak (Turkey)

Erwin van Vliet (Netherlands)

Christos Panagiotis Lisgaras (Greece), liaison to Next Generation Task Force and Young Epilepsy Section (YES)

Aims

- To evaluate the current environment for attracting, sustaining, and advancing talented young neurobiologists in epilepsy research across regions, cultures, and genders, as well as to identify areas in need of improvement, challenges, and possible solutions.
- To promote opportunities that will cultivate leadership qualities and identify future young leaders among young epilepsy neurobiologists.
- To collaborate with the other members of the NBC and its TFs, so as best to integrate the expertise of this TF in the initiatives and goals of the NBC and its TFs.

Activities

Task 1: *To evaluate the current environment for attracting, sustaining, and advancing talented young neurobiologists in epilepsy research across regions, cultures, and genders, as well as identify areas in need of improvement, challenges, and possible solutions.*

Members involved: Kadam, Schorge, Raimondo

Proposed first-year deliverables

- (a) Definition of positive and negative factors which determine the career trajectory by the members of the TF. Definition of the regional differences.
- (b) Preparation and design of a survey to identify positive and negative factors amongst successful and failed epilepsy research fellows.

- (c) Contact of agencies, societies, and charities involved in epilepsy research to create a list of suitable candidates for the survey.

Progress in 2018

During the first year, the YNTF has designed two types of surveys based on repeated discussions. The first survey targets young investigators who are at the crossroads to becoming independent scientists. The survey questions focus on the identification of the critical parameters that determine the success or failure in securing long-term (or permanent) positions. The second survey aims at senior principal investigators (PIs) who are potential employers of young neurobiologists. **The goal of the survey is to identify key features which can be controlled or influenced by the activity of the ILAE.** We have performed the pilot survey amongst the junior participants at the Gordon Research Conference in 2018. Currently, the survey is being modified based on the feedback. We have negotiated with multiple agencies and organizations to distribute the survey amongst the research fellows and senior scientists. The pathways to distribute the surveys will include the ILAE website, ILAE newsletter, AES meeting web page, YES website, and YES database of young neurobiologists using Facebook and other social media. Organizations like the Epilepsy Foundation or Epilepsy Research UK, which provide fellowships, will be approached as well.

Second-year deliverables

- (a) The analysis of the survey results.
- (b) The identification of the factors that can be influenced by the ILAE to promote young neurobiologists. The proposal of strategies and specific steps how to influence the controllable factors.

Task 2. *To promote opportunities that will cultivate leadership qualities and identify future young leaders among young epilepsy neurobiologists.*

Members involved: Davis, Ren, Jones

Proposed first-year deliverables:

- (a) Definition of specific aspects and needs required for leadership training and career development for young epilepsy neurobiologists. Recommendations for their implementation into ongoing leadership and mentoring programmes. Explored needs for separate training programs targeting only neurobiologists.
- (b) Negotiated increased number of neurobiologists participating at Leadership programmes organized by ILAE (in collaboration with leadership TF).
- (c) Identification of possible sources for funding the career development programmes (EU, USA, regional).
- (d) Setup joint collaboration with other TFs and definition of the role of Young Neurobiologist TF in the activities of collaborating TFs.

Progress in 2018

To synergize the work with other TFs, we have liaised with the Next Generation TF, Leadership TF and YES. Liaisons from YNTF regularly participate at the teleconferences of these groups. Dr

Gnatkovsky participated at the kick-off meeting of the YES. The YNTF will become an advisory body for the initiative of other task forces, which aims at the larger epileptological community. YNTF provide advice and support for these initiatives from the perspective of basic science and experimental epileptology. These initiatives will include leadership and mentoring programmes, translational forums at the major ILAE meetings training. Based on multiple feedback, one of the key strategies to cultivate young neurobiologists is to teach them how to effectively communicate science to clinicians and increase the awareness of the translational potential of their research, and improve the communication with clinicians in general.

Second-year deliverables

- (a) Analysis of the feedback on the latest leadership training and mentoring programmes.
- (b) Increased promotion of the leadership and mentoring programmes amongst young basic scientists.
- (c) Increase the promotion of the sessions at which young neurobiologists will actively participate (in collaboration with YES).

Task 3. *To collaborate with the other members of the NBC and its TFs so as best to integrate the expertise of this TF in the initiatives and goals of the NBC and its TFs.*

Members involved: Gnatkovsky, van Vliet, Carcak, Lisgaras

First-year deliverables

- (a) Defined paths and strategies to increase the advocacy of neurobiology at international and regional levels.
- (b) List of key factors which are required to increase the involvement of young neurobiologists at the international meetings and definition of strategies how to communicate better, as well as increase the attractiveness of, and advocate the importance of, basic and translational epilepsy research to the wider epileptological community at the meetings. Identification of positive and negative aspects of how the basic science is perceived from a clinical perspective.
- (c) Paths and plan for wider utilization of social media to effectively communicate important information and recommendations amongst the young neurobiologists (Facebook, Twitter, webinars).

Progress in 2018

Based on multiple feedback, one of the key strategies to cultivate young neurobiologists is to teach them how to effectively communicate science to clinicians, and increase the awareness of the translational potential of their research and improve the communication with clinicians in general. In collaboration with other task forces, we coordinated the strategies for the increased involvement of young epileptologists at conferences and workshops organized by ILAE.

Second-year deliverables

- (a) The elaboration of steps on how to improve communication between basic scientists and clinicians.

Networks TF:

Chair

Christophe Bernard (France)

Members

Serge Vulliemoz (Switzerland)
Liset Menendez de la Prida (Spain)
John Terry (UK)
Alon Friedman (Canada/Israel)
Chou-ching Lin (Taiwan)
Joao Pereira Leite (Brazil)
Ivan Soltesz (USA)
Patrick Forcelli (USA)
Greg Worrell (USA)

Management Committee Liaison

Ed Bertram (USA)

Aims

To evaluate the current infrastructure, strategies, and advances in knowledge on understanding epilepsies as network disease(s) so as to best integrate them in efforts to accelerate and optimize research towards understanding the neurobiology of epilepsies and comorbidities and the development of better therapies. To collaborate with the other members of the NBC and its TFs, to integrate the expertise of this TF in the initiatives and goals of the NBC and its TFs.

Advocacy TF of the NBC:**Co-Chairs**

Raman Sankar (USA)
Solomon (Nico) L. Moshé (USA)

Members

Terence O'Brien (Australia)
Vicky Whittemore (USA)
Akio Ikeda (Japan)
Janet Mifsud (Malta)
Kathryn Davis (USA)

Management Committee Liaison

Ed Bertram (USA)

Aims

- To evaluate the current funding environment for neurobiology research in epilepsy.
- To advocate for the value of neurobiology research in improving knowledge of epilepsy and translating basic science discoveries to better therapies.
- To advocate for initiatives that will improve research infrastructure and the initiatives of the NBC and its TFs, including research, educational, and training initiatives.
- To advise the NBC and the Research Advocacy TF on matters related to advocating for neurobiology research.

Activities

The advocacy TF along with the NBC have explored opportunities for collaboration with other ILAE or external organizations of task forces/committees to build support for neurobiology epilepsy research. The advocacy TF will also advise and work with NBC on identifying best ways for advocating for epilepsy research to the public, scientific organizations, and policymakers. In summary, the following has been done:

Initial work has focused on giving the epilepsy patient and caregiver community access to translational neurobiology research. The task force decided to work with *Living Well with Epilepsy*, a blog run by Jessica Kennan Smith.

Thus far we have:

1. Met with Jessica Keenan Smith on multiple occasions to plan the most effective Neurobiology blog.
2. Established an ILAE Neurobiology Commission email to be used for the blog.
3. Determined that we will aim to post monthly blogs on the *Living Well with Epilepsy* website from 400-1000 words. We will focus on the following:
 - a. Given that the typical user is a woman, aged 25-45, living well with epilepsy or caring for a person with epilepsy, we will ensure that women are focused in videos in addition to focusing on diversity
4. Potential initial topics:
 - a. Caffeine (first topic – we have reached out to Dr Nehlig with interview questions)
 - b. Bone health
 - c. Biological rhythms: menstrual cycle, multidien research
 - d. Plan to engage other task forces:
 - i. Genetics/Epigenetics TF
 - ii. Networks TF
 - iii. Young Neurobiology TF – highlight work of young neurobiologists
 - iv. ILAE/AES Joint Translational TF – plan to engage

In the coming year, we plan to start the blog posts as detailed above. We will track “hits” and readership interest. We plan to repost the blogs on the ILAE and other websites as appropriate.

Aristea Galanopoulou
Chair, Neurobiology Commission