

Neurobiology Commission (NBC) of the ILAE

Interim report

April 29, 2018

By: Aristeia Galanopoulou

NBC

Membership:

Chair: Aristeia Galanopoulou (USA)
Members: Marco de Curtis (Italy, ex-chair), Terence O'Brien (Australia), Kathryn Davis (USA), Marcio Moraes (Brazil)
Liaison to MC: Ed 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 NBC and the chairs of its TF regularly and also face to face meetings in the ECE at Barcelona 2017 and AES meeting in DC (December 2017). The membership of the NBC TFs has since been finalized through discussions between the NBC chair and the elected TF chairs (see below for details). Through this common meetings we have been trying to coordinate and synergize the activities of the various TFs and of the NBC. In addition, the following have been achieved and discussed:

1) Planning and organization of the NBC symposium in the ECE at Vienna 2018.

Topic: "Does coffee/caffeine consumption influence seizures and epilepsy?"

Date: August 26, 2018

Chairs: Astrid Nehlig and Aristeia 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) Planning and organization of the NBC symposium in the IEC in Thailand 2019.

Topic: "Biological rhythms that modulate the risk of seizures"

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

Chairs: Cristophe 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"*
- 3) We have recommended for funding by NBC 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 \$11,000. The approved budget approved \$6,000 for this meeting since parallel funding would be provided 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 discussed that if a high quality meeting application is submitted without this pre-requisite, NBC may consider instead to propose NBC-awarded funds for travel awards for applicants which will be decided through the NBC and named as NBC Travel awards.

4) EARA (European Animal Research Association): We have been approached by Kirk Leech from EARA with the invitation to have ILAE join EARA as a member. EARA is one of the European organizations that has been advocating for ethical use of animal experimentation and its benefit for progress in medical research. We have been in contact to find best ways of collaborating.

Budget: We have submitted a budget request for this year for \$15,000 for meetings of the NBC in Vienna and AES in 2018.

Planned face-to-face meetings: We are planning for a face-to-face meeting in Vienna (full day, August 26, 2018) and also at the AES meeting in New Orleans (date/time to be decided). ILAE representation is more than welcome to these meetings.

WONOEPTF

Membership:

Co-chairs: Terence O'Brien (Australia), Aristeia Galanopoulou (USA)

Members: Marco de Curtis (Italy, ex-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).

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, we have been in contact with Richard Holmes, Denes McEvoy and Philippa Scott from the congress. We have selected to have the WONOEP 2019 in Ayuthaya, in June 16-20 2019.

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.

ILAE/AES Joint Translational TF

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

AES co-chairs: Aristeia Galanopoulou and Greg Worrell
AES nominees: Richard Staba, Anne Anderson, Manisha Patel, Kevin Kelly
ILAE co-chairs: Terence O'Brien (Australia) and Matthew Walker (UK)
ILAE nominees: Gunther Sperk (Austria), Rudiger Koehling (Germany), Teresa Ravizza (Italy), 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. The following were agreed upon:

- (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.* We formed a steering committee to start addressing and formulate working groups (to be decided/invited) to complete the task. This will include:
 - 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).
 - *TASK1-WG for the creation of a public access online Atlas of Rodent EEGs.* We formed a steering committee to organize this. We plan to create a WG consisting of individuals with technical expertise in website construction as well as expertise in video-EEG studies to lead the process.
- (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, 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.

To achieve these, we plan to create sub-WGs to address each subtopic.

Continuation of activities from the previous cycle: The following activities are currently under way / finalized from the past cycle:

- (a) Special issue on preclinical CDEs to be published in *Epilepsia Open* (TASK3): This is underway and the manuscripts have either been accepted or are under revision following the first reviews. We anticipate the finalization of the special issue over the next couple of months. We have planned to proceed into a request for community feedback following publication to further optimize these documents, which will be offered as open access.
- (b) TASK1-WG4 report on “How do we use in vitro models to understand epileptiform and ictal activity?” (Dulla et al): The report has been approved by the TF and has been forwarded for approvals to both the AES and ILAE (decision pending).
- (c) TASK1 report on “Recording electrophysiological signals” (Williamson et al): The manuscript is in the last stages of preparation. It has been reviewed by the TF and authors have been requested to revise before sending forward for AES/ILAE approvals. This is planned as a technical manual on electrodes.
- (d) We have received requests to offer the TASK3 preclinical epilepsy CDEs by CURE (Traumatic Brain Injury (TBI) initiative) and the TBI WG of the NINDS/ Department of Defense. We have been collaborating with these group on these requests.

Budget: We have submitted a budget request for this year to both AES and ILAE with matching fund requests. The ILAE budget request (\$15,000) has been approved tentatively, pending the AES decision and approval of an equal amount. We have requested an equal amount from AES towards the planned meetings and workshops (see below). We also plan to utilize the existing balance (carryover of \$27,814) towards planning the above initiatives (e.g., databases / software, website construction for the Atlas).

Planned face-to-face meetings: We are planning for a face-to-face meeting in Vienna (full day, August 25, 2018) and also at the AES meeting in New Orleans (date/time to be decided). ILAE representation is more than welcome to these meetings.

Genetics / Epigenetics TF:

Membership:

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 Tata 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 proceeded to teleconferences to discuss the priorities and specifically manuscripts to prepare. Dr Petrou was proposed from the ILAE/AES Joint Translational TF as liaison to this TF to ensure that some of these activities will be in collaboration with the Translational TF, if the topic overlaps with the initiatives of the ILAE/AES Joint Translational TF.

Young neurobiologists TF:

Membership:

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).

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 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: The TF has proceeded in zoom conferences to discuss next steps as well as with discussions with the Next generation TF, Leadership, and YES society of the ILAE to coordinate and collaborate their initiatives. Actions decided include:

- Survey towards the young neurobiologists as well as established investigator to explore career opportunities and challenges for young neurobiologists.
- Created liaisons to other TFs: Vadym for the YNTF, Premek and Kathryn for the Leadership TF, Erwin for Next Generation TF.
- Joint meetings with the TFs at Vienna.
- Website construction

Networks TF:

Membership:

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), Ed Bertram (USA, liaison to MC).

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 so as best to integrate the expertise of this TF in the initiatives and goals of the NBC and its TFs.

Advocacy TF of the NBC:

Membership:

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), Ed Bertram (USA, liaison to MC).

Aims: To evaluate the current funding environment for neurobiology research in epilepsy. To advocate for the value of neurobiology research in improving knowledge on 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 will explore opportunities for collaboration with IBRO Global advocacy to build support for increasing resources and improving infrastructure for neurobiology epilepsy research. The advocacy TF will also advise and work with NBC on best ways of advocating for epilepsy research to the public, scientific organizations and policymakers.