

REPORTS OF THE ILAE/AES JOINT TRANSLATIONAL TASK FORCE

2018

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

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Electroencephalography (EEG) recordings from immature rodents have been used to study physiological and pathological aspects of cortical development, including the developmental maturation of wake-sleep stages and EEG background, as well as the expression of seizures or specific epileptic patterns in developing rodents. Comparisons with experimental controls are essential to determine the significance of video-EEG patterns and behaviors seen in animal models of neurological diseases. This report of the TASK1-WG2 of the ILAE/AES Joint Translational Task Force describes the technical and methodological issues in video-EEG studies of immature rodents used as experimental controls, as well as summarizes the current state of knowledge on the video-EEG patterns expected to be seen in animals that are used as experimental controls during development.

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

Chris G. Dulla, Damir Janigro, Premysl Jiruska, Joseph V. Raimondo, Akio Ikeda, Chou-Ching K. Lin, Howard P. Goodkin, Aristeia S. Galanopoulou, Christophe Bernard, Marco de Curtis

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In vitro brain tissue preparations from both rodent and human postsurgical tissue have been utilized to generate in vitro electrical activity similar to electrographic activity seen in individuals with epilepsy. A great deal of knowledge about how brain networks generate various forms of epileptiform activity has been gained, but due to the multiple in vitro models and manipulations used, there is a need for a standardization across studies. Here, the authors describe epileptiform patterns generated using *in vitro* brain preparations, best practices pertaining to recording, reporting, and interpretation of the observed electrophysiologic patterns and discuss criteria for defining *in vitro* seizure-like patterns and interictal discharges. Unifying terminologies and definitions are proposed.

EPILEPSIA OPEN SPECIAL ISSUE: PRECLINICAL EPILEPSY COMMON DATA ELEMENTS OF THE ILAE/AES JOINT TRANSLATIONAL TASK FORCE

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Pages 1-103

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This special issue provides the first set of preclinical common data elements (CDEs) and case report forms (CRFs) created by the TASK3 group of the ILAE/AES Joint Translational Task

Force for preclinical studies in epilepsy research. CDEs are types of data that are common across studies (core CDEs) or across studies utilizing specific procedures, e.g. behavioral, pharmacological studies, physiological measurements, or video-EEG studies. The TASK3 group of the ILAE/AES Joint Translational Task Force created these CDEs and CRFs hoping to facilitate adoption of a common language across laboratories, promote collaborations and facilitate comparisons across studies. Each article in this special issue includes a companion paper explaining the use of each subset of CDEs/CRFs and offers the CDEs and CRFs that were created as supporting information, which can be downloaded by investigators interested in using them.

Special Issue on the TASK3 Preclinical epilepsy Common Data Elements (CDEs) of the ILAE/AES Joint Translational Task Force: Peer review process, acknowledgement to reviewers, and community feedback.

Aristea S. Galanopoulou and Dieter Schmidt

Epilepsia Open (2018) vol 3 (S1): 7-8

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Preclinical common data elements (CDEs) for epilepsy: A joint ILAE/AES and NINDS translational initiative

Helen E. Scharfman, Aristea S. Galanopoulou, Jacqueline A. French, Asla Pitkänen, Vicky Whittemore, Lauren C. Harte-Hargrove

Epilepsia Open (2018) vol 3 (S1): 9-12

<https://onlinelibrary.wiley.com/doi/10.1002/epi4.12235>

Common data elements (CDEs) for preclinical epilepsy research: Introduction to CDEs and description of core CDEs. A TASK3 report of the ILAE/AES joint translational task force

Lauren C. Harte-Hargrove, Aristea S. Galanopoulou, Jacqueline A. French, Asla Pitkänen, Vicky Whittemore, Helen E. Scharfman

Epilepsia Open (2018) vol 3 (S1): 13-23

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A companion to the preclinical common data elements on neurobehavioral comorbidities of epilepsy: a report of the TASK3 behavior working group of the ILAE/AES Joint Translational Task Force

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Epilepsia Open (2018) vol 3 (S1): 24-52

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A companion to the preclinical common data elements for pharmacologic studies in animal models of seizures and epilepsy. A Report of the TASK3 Pharmacology Working Group of the ILAE/AES Joint Translational Task Force

Melissa Barker-Haliski, Lauren C. Harte-Hargrove, Teresa Ravizza, Ilse Smolders, Bo Xiao, Claudia Brandt, Wolfgang Löscher

Epilepsia Open (2018) vol 3 (S1): 53-68

<https://onlinelibrary.wiley.com/doi/10.1002/epi4.12254>

A companion to the preclinical common data elements for physiologic data in rodent epilepsy models. A report of the TASK3 Physiology Working Group of the ILAE/AES Joint Translational Task Force

Jan A. Gorter, Erwin A. van Vliet, Stefanie Dedeurwaerdere, Gordon F. Buchanan, Daniel Friedman, Karin Borges, Heidi Grabenstatter, Katarzyna Lukasiuk, Helen E. Scharfman, Astrid Nehlig

Epilepsia Open (2018) vol 3 (S1): 69-89

<https://onlinelibrary.wiley.com/doi/10.1002/epi4.12261>

A companion to the preclinical common data elements and case report forms for rodent EEG studies. A report of the TASK3 EEG Working Group of the ILAE/AES Joint Translational Task Force

Tomonori Ono, Joost Wagenaar, Filippo S. Giorgi, Petr Fabera, Ryosuke Hanaya, John Jefferys, Jason T. Moyer, Lauren C. Harte-Hargrove, Aristeia S. Galanopoulou

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2017

Epilepsia Special Issue: Harmonization in Preclinical Epilepsy Research

November 2017

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Pages 1–86

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Harmonization in preclinical epilepsy research: a joint AES/ILAE translational initiative.

Aristeia S. Galanopoulou; Jacqueline A. French; Terence O'Brien; Michele Simonato
(pages 7-9)

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The optimization and harmonization of research practices in preclinical epilepsy research has been considered as an important translational initiative as it would allow data comparisons across laboratories, encourage multicenter collaborations and systematic reviews of preclinical data, as well as allow cross-validation of findings before entering clinical testing. The AES/ILAE Translational Task Force, a joint task force formed of members elected from the American Epilepsy Society (AES) and the International League Against Epilepsy (ILAE) undertook several initiatives towards this goal. A large number of volunteer investigators were assigned into different topic-oriented working groups. This introduction to the special issue on the proceedings of this Task Force describes the first reports that were produced by some of these working groups towards the creation of improved standards for performing and interpreting rodent electroencephalography (EEG) and electrophysiological studies, systematic reviews of preclinical data, and preclinical common data elements.

Methodological standards and interpretation of video-EEG in adult control rodents. A TASK1-WG1 report of the AES/ILAE Translational Task Force of the ILAE

Shilpa D. Kadam; Raimondo D'Ambrosio, Venceslas Duveau, Corinne Roucard, Norberto Garcia-Cairasco; Akio Ikeda, Marco de Curtis, Aristeia S. Galanopoulou and Kevin M. Kelly
(pages 10-27)

<http://onlinelibrary.wiley.com/doi/10.1111/epi.13903/full>

The TASK1-WG1 group of the Joint American Epilepsy Society and International League Against Epilepsy (AES/ILAE) Translational Task Force was selected to address methodological and interpretation issues that relate to video electroencephalography (EEG) studies in preclinical research. Rodent models of human epilepsy have provided critical insights into mechanisms underlying epilepsy as well as reliable tools for validation of drugs developed as anti-seizure agents. EEG remains the gold standard by which both the documentation of spontaneous seizures and the effectiveness of drugs in seizure suppression can be assessed. Determination of the development of epileptic seizures in any given rodent model relies heavily on comparisons between EEGs from rodents with and without epilepsy. It is therefore critical that as we endeavor to establish and validate new animal models of human epilepsy and test new therapies, we need to be aware of the problems and pitfalls associated with EEG recordings in rodents. Insights gained from previous research are provided to establish practical guidelines and recommendations to assist researchers in the design, reporting, and interpretation of future EEG studies. This first report focuses on video EEG in experimental controls.

Methodological standards and functional correlates of depth in vivo electrophysiological recordings in control rodents. A TASK1-WG3 report of the AES/ILAE Translational Task Force of the ILAE

Amanda E. Hernan, Catherine A. Schevon, Gregory A. Worrell, Aristeia S. Galanopoulou, Philippe Kahane, Marco de Curtis, Akio Ikeda, Pascale Quilichini, Adam Williamson, Norberto Garcia-Cairasco, Rod C. Scott and Igor Timofeev

(pages 28-39)

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The TASK1-WG3 group of the Joint American Epilepsy Society and International League Against Epilepsy (AES/ILAE) Translational Task Force was selected to address methodological and interpretation issues that relate to depth electrophysiological recordings in rodents. In this report, which focuses on depth recordings in experimental controls, they describe and discuss advantages and limitations of multiple electrophysiological techniques and types of analysis that are currently used to study electrographic activities in the brain of rodents and other animals. This review is important for investigators looking for appropriate techniques that are most suitable to answer particular experimental questions.

Methodological standards for in vitro models of epilepsy and epileptic seizures. A TASK1-WG4 report of the AES/ILAE Translational Task Force of the ILAE

Joseph V. Raimondo, Uwe Heinemann, Marco de Curtis, Howard P. Goodkin, Chris G. Dulla, Damir Janigro, Akio Ikeda, Chou-Ching K. Lin, Premysl Jiruska, Aristeia S. Galanopoulou and Christophe Bernard

(pages 40-52)

<http://onlinelibrary.wiley.com/doi/10.1111/epi.13901/full>

The TASK1-WG4 group of the Joint American Epilepsy Society and International League Against Epilepsy (AES/ILAE) Translational Task Force was selected to address methodological

issues and best practices in preclinical studies utilizing *in vitro* electrophysiological experiments. *In vitro* brain preparations are a powerful means for exploring the mechanisms underlying seizures and epilepsy. In this paper, the investigators review the many techniques and technologies which are employed in the context of *in vitro* epilepsy research. The authors call for greater inclusion of detailed descriptions of techniques, including often ignored parameters with unpredictable yet significant effects on study reproducibility and outcomes. In addition, they discuss how recent developments in brain slice preparation affect their use as models of epileptic activity.

Standards for data acquisition and software-based analysis of *in vivo* electroencephalography recordings from animals. A TASK1-WG5 report of the AES/ILAE Translational Task Force of the ILAE

Jason T. Moyer, Vadym Gnatkovsky, Tomonori Ono, Jakub Otáhal, Joost Wagenaar, William C. Stacey, Jeffrey Noebels, Akio Ikeda, Kevin Staley, Marco de Curtis, Brian Litt and Aristeia S. Galanopoulou

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<http://onlinelibrary.wiley.com/doi/10.1111/epi.13909/full>

The TASK1-WG5 group of the Joint American Epilepsy Society and International League Against Epilepsy (AES/ILAE) Translational Task Force was selected to address methodological issues and best practices in data acquisition and software-based analysis in experiments utilizing electrophysiological recordings. Electroencephalography (EEG) is a technique for directly recording the electrical activity of the brain. EEG has proven to be an important tool for studying the brain, particularly in diseases like epilepsy. Acquiring and analyzing EEG data, however, can be complicated. This is particularly true for research in animal models of epilepsy, since no standards exist for collecting and analyzing EEG. This report addresses this issue in two ways. First, this report reviews current techniques for acquiring EEG and for using software to analyze EEG signals in animal models of epilepsy. Second, where appropriate, this manuscript suggests appropriate standards for acquiring EEG, for using software to analyze EEG, and for reporting research that utilizes EEG. This is important to do, because it will increase the quality, interpretability, and usability of data generated in animal models of epilepsy using EEG. In turn, this will help the scientific community to more rapidly and efficiently translate basic research findings from preclinical studies into new, usable treatments in humans.

Identification and characterization of outcome measures reported in animal models of epilepsy. Protocol for a systematic review of the literature. A TASK2 report of the AES/ILAE Translational Task Force of the ILAE

Michele Simonato, Sloka Iyengar, Amy Brooks-Kayal, Stephen Collins, Antoine Depaulis, David W. Howells, Frances Jensen, Jing Liao, Malcolm R. Macleod, Manisha Patel, Heidrun Potschka, Matthew Walker, Vicky Whittemore and Emily S. Sena

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The TASK2 group of the Joint American Epilepsy Society and International League Against Epilepsy (AES/ILAE) Translational Task Force was selected to create to perform systematic reviews of preclinical epilepsy research studies. In this report, the authors describe the strategies utilized and the protocol that was developed to initiate the first systematic review

on identifying and characterizing outcome measures in preclinical studies utilizing animal models of epilepsy. This initiative has been done in collaboration with the CAMARADES group (Collaborative Approach to Meta Analysis and review of Animal Data from Experimental Studies).

Common data elements for preclinical epilepsy research: standards for data collection and reporting. A TASK3 report of the AES/ILAE Translational Task Force of the ILAE

Lauren C. Harte-Hargrove, Jacqueline A. French, Asla Pitkänen, Aristeia S. Galanopoulou, Vicky Whittemore and Helen E Scharfman

(pages 78-86)

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The TASK3 group of the Joint American Epilepsy Society and International League Against Epilepsy (AES/ILAE) Translational Task Force was selected to develop preclinical common data elements (CDEs) and case report forms (CRFs) for preclinical epilepsy research. Despite extensive efforts, there has been difficulty developing new treatments for epilepsy based on preclinical research. It has been suggested that these efforts would be more likely to succeed if there was increased transparency, rigor and reproducibility. Of the many ways to address this need, the TASK3 group of the AES/ILAE Translational Research Task Force of the ILAE developed common data elements (CDEs) for preclinical epilepsy research. These include core, behavioral, physiology, pharmacology, video electroencephalography (vEEG) CDE and CRF modules. The advantages of CDEs and the approaches to developing preclinical epilepsy CDEs are described in this introductory report.

2013

SPECIAL EPILEPSIA SUPPLEMENT ON THE PROCEEDINGS OF THE FIRST JOINT AES/ILAE INTERNATIONAL TRANSLATIONAL WORKSHOP (LONDON, UK, SEPTEMBER 2012)

<http://onlinelibrary.wiley.com/doi/10.1111/epi.2013.54.issue-s4/issuetoc>

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Abstract **Full Article (HTML)** **Enhanced Article (HTML)** **PDF(198K)** **References**

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Issues related to symptomatic and disease-modifying treatments affecting cognitive and neuropsychiatric comorbidities of epilepsy (pages 44–60) Amy R. Brooks-Kayal, Kevin G. Bath, Anne T. Berg, Aristeia S. Galanopoulou, Gregory L. Holmes, Frances E. Jensen, Andres M. Kanner, Terence J. O'Brien, Vicky H. Whittemore, Melodie R. Winawer, Manisha Patel and Helen E. Scharfman

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Article (HTML) Enhanced Article (HTML) PDF(160K) References

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Jerome Engel Jr., Asla Pitkänen, Jeffrey A. Loeb, F. Edward Dudek, Edward H. Bertram III, Andrew J. Cole, Solomon L. Moshé, Samuel Wiebe, Frances E. Jensen, Istvan Mody, Astrid Nehlig and Annamaria Vezzani

Article first published online: 1 AUG 2013 | DOI: 10.1111/epi.12299 **Abstract Full**

Article (HTML) Enhanced Article (HTML) PDF(343K) References

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Terence J. O'Brien, Elinor Ben-Menachem, Edward H. Bertram III, Stephen D. Collins, Merab Kokaia, Holger Lerche, Henrik Klitgaard, Kevin J. Staley, Elisabetta Vaudano, Matthew C. Walker and Michele Simonato

Article first published online: 1 AUG 2013 | DOI: 10.1111/epi.12300 **Abstract**

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2012

Identification of new epilepsy treatments: Issues in preclinical methodology

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