

# Epilepsia<sup>®</sup>

The Journal of the International League Against Epilepsy

## TABLE OF CONTENTS

Volume 58, Number 8, August 2017

### CRITICAL REVIEW AND INVITED COMMENTARY

**1305**

**How to record high-frequency oscillations in epilepsy: A practical guideline**

Maeike Zijlmans, Gregory A. Worrell, Matthias Dümpelmann, Thomas Stieglitz, Andrei Barborica, Marcel Heers, Akio Ikeda, Naotaka Usui, and Michel Le Van Quyen

doi: 10.1111/epi.13814; Published online: June 16, 2017

**1316**

**High-frequency oscillations: The state of clinical research**

Birgit Frauscher, Fabrice Bartolomei, Katsuhiko Kobayashi, Jan Cimbalnik, Maryse A. van 't Klooster, Stefan Rampp, Hiroshi Otsubo, Yvonne Höller, Joyce Y. Wu, Eishi Asano, Jerome Engel Jr., Philippe Kahane, Julia Jacobs, and Jean Gotman

doi: 10.1111/epi.13829; Published online: June 30, 2017

**1330**

**Update on the mechanisms and roles of high-frequency oscillations in seizures and epileptic disorders**

Premysl Jiruska, Catalina Alvarado-Rojas, Catherine A. Schevon, Richard Staba, William Stacey, Fabrice Wendling, and Massimo Avoli

doi: 10.1111/epi.13830; Published online: July 6, 2017

### FULL-LENGTH ORIGINAL RESEARCH

**1340**

**Early ictal and interictal patterns in FIRES: The sparks before the blaze**

Raquel Farias-Moeller, Luca Bartolini, Katelyn Staso, John M. Schreiber, and Jessica L. Carpenter

doi: 10.1111/epi.13801; Published online: May 26, 2017

**1349**

**Nonintravenous rescue medications for pediatric status epilepticus: A cost-effectiveness analysis**

Iván Sánchez Fernández, Marina Gaínza-Lein, and Tobias Loddenkemper

doi: 10.1111/epi.13812; Published online: June 16, 2017

**1360**

**Perisylvian, including insular, childhood epilepsy: Presurgical workup and surgical outcome**

Elena Freri, Sara Matricardi, Francesca Gozzo, Massimo Cossu, Tiziana Granata, and Laura Tassi

doi: 10.1111/epi.13816; Published online: June 23, 2017

# TABLE OF CONTENTS

Volume 58, Number 8, August 2017

## FULL-LENGTH ORIGINAL RESEARCH

**1370**

### **Prediction of specific depressive symptom clusters in youth with epilepsy: The NDDI-E-Y versus Neuro-QOLSF**

Tanja S. Kellermann, Martina Mueller, Emma G. Carter, Byron Brooks, Gigi Smith, Olivia J. Kopp, and Janelle L. Wagner

doi: 10.1111/epi.13808; Published online: June 9, 2017

**1380**

### **Photosensitivity is an early marker of neuronal ceroid lipofuscinosis type 2 disease**

Nicola Specchio, Marcello Bellusci, Nicola Pietrafusa, Marina Trivisano, Luca de Palma, and Federico Vigevano

doi: 10.1111/epi.13820; Published online: June 20, 2017

**1389**

### **Regulating drivers with epilepsy in Maryland: Results of the application of a United States consensus guideline**

Brandy B. Ma, John Bloch, Allan Krumholz, Jennifer L. Hopp, Perry J. Foreman, Carl A. Soderstrom, Mary A. Scottino, Martha Matsumoto, and Gregory L. Krauss

doi: 10.1111/epi.13804; Published online: June 1, 2017

**1398**

### **An economic evaluation of a multicomponent self-management intervention for adults with epilepsy (ZMILE study)**

Ben F. M. Wijnen, Loes A. M. Leenen, Reina J. A. de Kinderen, Caroline M. van Heugten, Marian H. J. M. Majoie, and Silvia M. A. A. Evers

doi: 10.1111/epi.13806; Published online: June 7, 2017

**1409**

### **Postictal generalized EEG suppression and respiratory dysfunction following generalized tonic-clonic seizures in sleep and wakefulness**

Weifeng Peng, Jessica L. Danison, and Masud Seyal

doi: 10.1111/epi.13805; Published online: May 28, 2017

**1415**

### **Use of the ketogenic diet to manage refractory epilepsy in CDKL5 disorder: Experience of >100 patients**

Zhan Lim, Kingsley Wong, Heather E. Olson, Ann M. Bergin, Jenny Downs, and Helen Leonard

doi: 10.1111/epi.13813; Published online: June 12, 2017

**1423**

### **Neuronal decanoic acid oxidation is markedly lower than that of octanoic acid: A mechanistic insight into the medium-chain triglyceride ketogenic diet**

Aziza Khabbush, Michael Orford, Yi-Chen Tsai, Tricia Rutherford, Maura O'Donnell, Simon Eaton, and Simon J. R. Heales

doi: 10.1111/epi.13833; Published online: July 6, 2017

**1430**

### **Abnormal $\gamma$ -aminobutyric acid neurotransmission in a *Kcnq2* model of early onset epilepsy**

Taku Uchida, Christoph Lossin, Yukiko Ihara, Masanobu Deshimaru, Yuchio Yanagawa, Susumu Koyama, and Shinichi Hirose

doi: 10.1111/epi.13807; Published online: June 2, 2017

# TABLE OF CONTENTS

Volume 58, Number 8, August 2017

## FULL-LENGTH ORIGINAL RESEARCH

**I 440**

### **Synergistic protection against acute flurothyl-induced seizures by adjuvant treatment of the ketogenic diet with the type 2 diabetes drug pioglitazone**

Timothy A. Simeone, Stephanie A. Matthews, and Kristina A. Simeone

doi: 10.1111/epi.13809; Published online: May 28, 2017

**I 451**

### **Overexpressing wild-type $\gamma 2$ subunits rescued the seizure phenotype in *Gabrg2*<sup>+/*Q390X*</sup> Dravet syndrome mice**

Xuan Huang, Chengwen Zhou, Mengnan Tian, Jing-Qiong Kang, Wangzhen Shen, Keliene Verdier, Aurea Pimenta, and Robert L. MacDonald

doi: 10.1111/epi.13810; Published online: June 6, 2017

**I 462**

### **Increased expression of (immuno)proteasome subunits during epileptogenesis is attenuated by inhibition of the mammalian target of rapamycin pathway**

Diede W. M. Broekaart, Jackelien van Scheppingen, Karlijne W. Geijtenbeek, Mark R. J. Zuidberg, Jasper J. Anink, Johannes C. Baayen, Angelika Mühlebner, Eleonora Aronica, Jan A. Gorter, and Erwin A. van Vliet

doi: 10.1111/epi.13823; Published online: June 23, 2017

**I 473**

### **Predictive factors of long-term outcomes of surgery for mesial temporal lobe epilepsy associated with hippocampal sclerosis**

Bertrand Mathon, Franck Bielle, Séverine Samson, Odile Plaisant, Sophie Dupont, Anne Bertrand, Richard Miles, Vi-Huong Nguyen-Michel, Virginie Lambrecq, Ana Laura Calderon-Garcidueñas, Charles Duyckaerts, Alexandre Carpentier, Michel Baulac, Philippe Cornu, Claude Adam, Stéphane Clemenceau, and Vincent Navarro

doi: 10.1111/epi.13831; Published online: June 28, 2017

## BRIEF COMMUNICATION

**Online only:** The following articles can be accessed in the electronic version of this issue at [onlinelibrary.wiley.com](http://onlinelibrary.wiley.com)

**e96**

### **Quality of Life in Childhood Epilepsy in pediatric patients enrolled in a prospective, open-label clinical study with cannabidiol**

Evan C. Rosenberg, Jay Louik, Erin Conway, Orrin Devinsky, and Daniel Friedman

doi: 10.1111/epi.13815; Published online: June 15, 2017

In this study, we measured the Quality of Life of Childhood Epilepsy (QOLCE) in a pediatric patient population enrolled in a prospective, open-label clinical study with cannabidiol (CBD). Caregivers of 48 patients noted an improvement in overall QOLCE, as well as improvements in subscores: energy/fatigue, memory, control/helplessness, other cognitive functions, social interactions, behavior, and global QOL following 12 weeks of CBD treatment. These changes were uncorrelated to changes in seizure frequency or adverse events. Overall, our findings predict that CBD may positively affect patient QOL, however further studies in placebo-controlled, double-blind trials are indicated.

# TABLE OF CONTENTS

Volume 58, Number 8, August 2017

## BRIEF COMMUNICATION

**e101**

### **Risk of angioedema associated with levetiracetam compared with phenytoin: Findings of the observational health data sciences and informatics research network**

Jon D. Duke, Patrick B. Ryan, Marc A. Suchard, George Hripscak, Peng Jin, Christian Reich, Marie-Sophie Schwalm, Yuriy Khoma, Yonghui Wu, Hua Xu, Nigam H. Shah, Juan M. Banda, and Martijn J. Schuemie

doi: 10.1111/epi.13828; Published online: July 6, 2017

Recent adverse event reports have raised the question of angioedema risk associated with exposure to levetiracetam. The Observational Health Data Sciences and Informatics research network conducted a retrospective study across 10 databases examining angioedema events in seizure patients exposed to levetiracetam (n=276,665) compared with patients exposed to phenytoin (n=74,682). No significant increase in angioedema risk with levetiracetam was seen in any of the 10 databases (hazard ratios ranging from 0.43 to 1.31) and meta-analysis showed a summary hazard ratio of 0.72 (95% CI 0.39 – 1.31). No increased risk of angioedema was seen in levetiracetam compared with phenytoin.

**e107**

### **The prevalence of anxiety and associated factors in persons with epilepsy**

Tram Pham, Khara M. Sauro, Scott B. Patten, Samuel Wiebe, Kirsten M. Fiest, Andrew G. M. Bulloch, and Nathalie Jetté

doi: 10.1111/epi.13817; Published online: June 9, 2017

Persons with epilepsy often experience psychiatric symptoms that complicate disease management and lead to more negative outcomes. The purpose of this study was to estimate the prevalence of anxiety and associated factors in epilepsy. Data from a cross-sectional study including 250 participants were used. The study revealed a high prevalence of anxiety in persons with epilepsy. Additionally, anxiety was strongly associated with both clinical and socio-demographic factors.

**e111**

### ***Cacna1g* is a genetic modifier of epilepsy in a mouse model of Dravet syndrome**

Jeffrey D. Calhoun, Nicole A. Hawkins, Nicole J. Zachwieja, and Jennifer A. Kearney

doi: 10.1111/epi.13811; Published online: May 28, 2017

Mouse models with deletion of *Scn1a* recapitulate Dravet syndrome phenotypes, including spontaneous seizures, susceptibility to seizures induced by elevated body temperature, and elevated risk of sudden unexpected death due to epilepsy. We previously identified *Cacna1g* as a modifier in the *Scn2a*<sup>Q54</sup> epilepsy model. In this study, we asked whether transgenic alteration of *Cacna1g* expression modifies severity of the *Scn1a*<sup>+/-</sup> Dravet phenotype. *Scn1a*<sup>+/-</sup> mice with decreased *Cacna1g* expression exhibited improved survival and reduced spontaneous seizure frequency. These results provide support for *Cacna1g* as a genetic modifier of epilepsy in a mouse model of Dravet syndrome.

**e116**

### **Inherent vulnerabilities in monoaminergic pathways predict the emergence of depressive impairments in an animal model of chronic epilepsy**

Jesús-Servando Medel-Matus, Don Shin, Raman Sankar, and Andrey Mazarati

doi: 10.1111/epi.13822; Published online: June 9, 2017

# TABLE OF CONTENTS

Volume 58, Number 8, August 2017

## BRIEF COMMUNICATION

We examined whether the emergence depression comorbid with epilepsy can be predicted based on inherent premorbid patterns of monoaminergic transmission. Using fast scan cyclic voltammetry in vivo, we established that specific asymptomatic signatures existed in serotonergic raphe nucleus-pre-frontal cortex, and dopaminergic ventral tegmental area-nucleus accumbens pathways, in subsets of Wistar rats. Upon the development of epilepsy, these animals invariably developed respectively despair- and anhedonia-like states. We suggest that epilepsy triggers decompensation in already vulnerable depression-relevant neuronal circuits, which culminates in depression. These findings may help in understanding causes of comorbidity, and in developing its early biomarkers.

**e122**

### **Regulation of kindling epileptogenesis by hippocampal Toll-like receptors 2**

Jesús-Servando Medel-Matus, Ashley Reynolds, Don Shin, Raman Sankar, and Andrey Mazarati

doi: 10.1111/epi.13826; Published online: June 20, 2017

We examined whether toll-like receptors 2 (TLR2) contribute to kindling epileptogenesis. Rats were intrahippocampally administered with lipoteichoic acid (TLR2 agonist, LTA), LTA-antibody (LTA-A) or saline during three days. Post-treatment, they were subjected to rapid kindling. Afterdischarge threshold (ADT) and duration (ADD) were gauged before treatment, post-treatment prior to kindling, and 24 h post-kindling. Before kindling, LTA reduced ADT; ADD was not affected. On kindling progression, LTA accelerated occurrence of generalized seizures while LTA-A delayed this effect. One day post-kindling, LTA group showed increased hippocampal excitability, but LTA-A decreased both excitability and inflammatory response. These findings support TLR2 involvement in epileptogenesis.

## GRAY MATTERS

**1486**

### **How long for epilepsy remission in the ILAE definition?**

Robert S. Fisher, Carlos Acevedo, Alexis Arzimanoglou, Alicia Bogacz, J. Helen Cross, Christian E. Elger, Jerome Engel Jr, Lars Forsgren, Jacqueline A. French, Dale C. Hesdorffer, Byung-In Lee, Gary W. Mathern, Solomon L. Moshe, Emilio Perucca, Ingrid E. Scheffer, Torbjörn Tomson, Masako Watanabe, and Samuel Wiebe

**1487**

### **Is brain-responsive neurostimulation in eloquent cortex without symptoms?**

Dorien van Blooijis, Geertjan J. M. Huiskamp, and Frans S. S. Leijten

**1488**

### **Response: Therapeutic brain-responsive neurostimulation in eloquent cortex can be delivered without symptoms**

Barbara C. Jobst, Tara L. Skarpaas, and Martha J. Morrell

**1489**

### **Announcements**