Contents

Preface .......................................................... v
Contributors ...................................................... ix

PART I  NOVEL APPROACHES FOR THE TREATMENT OF EPILEPSY

1 Inflammatory Cytokines as Targets for Epilepsy Drug Therapy ............. 3
   Maria-Leonor López-Meraz, Jesús-Servando Medel-Matus, and Jerome Niquet

2 The Use of Anti-inflammatory Drugs in Epilepsy ........................... 23
   Maria Guadalupe Valle-Dorado, Laura Elena Córdova-Dávalos,
   Daniel Pérez-Pérez, Rosalinda Guevara-Guzmán, and Luisa Rocha

3 Carbonic Anhydrase and Epilepsy ........................................ 37
   Luciana Gavernet

4 Synaptic Vesicle Protein 2A as a Novel Pharmacological Target with Broad Potential for New Antiepileptic Drugs ....................... 53
   Luz Adriana Pichardo-Macías, Itzel Jatziri Contreras-García,
   Sergio R. Zamudio, Edgar Mixcoha, and Julieta G. Mendoza-Torreblanca

5 Do Cannabinoids Represent a Good Therapeutic Strategy for Epilepsy? .... 83
   Cecilia Zavala-Tecuapetla and Luisa Rocha

6 Glutamate Receptors as Targets for Novel Antiepileptic Drug Therapy ...... 97
   Manola Cuéllar-Herrera, César E. Santana-Gómez,
   Francia Carmona-Cruz, Daruni Vázquez-Barrón, Francisco Velasco,
   and Ana L. Velasco

7 Neurosteroid Regulation of Seizures: Role of GABAA Receptor Plasticity . . 127
   Suchitra Joshi and Jaideep Kapur

8 Erythropoietin as Potential Neuroprotective and Antiepileptogenic Agent in Epilepsy and Refractory Epilepsy .......................... 147
   Amalia Marelli, Liliana Czornyj, Luisa Rocha, and Alberto Lazarowski

9 Caloric Restriction and Dietary Treatments of Epilepsy:
   Mechanistic Insights for Drug Discovery ................................ 163
   Karla G. Carvajal Aguilera and Bryan V. Phillips Farfán

10 Gene Therapy in Epilepsy .............................................. 181
    Miguel A. López-García, Iris A. Feria-Romero, Julia J. Segura-Uribe,
    David Escalante-Santiago, and Sandra Orozco-Suárez
## Part II Innovative Solutions for the Screening of New Antiepileptics Drugs and Addressing Multi-Drug Resistant Epilepsy

11 Human Brain Tissue as a Model for the Study of Epilepsy ................. 203  
*Leonardo Lara-Valderrábano, Ivette Bañuelos-Cabrera, Víctor Navarrete-Modesto, and Luisa Rocha*

12 The Blood–Brain Barrier and the Design of New Antiepileptic Drugs ...... 221  
*Gabriela Rogel-Salazar and Hiram Luna-Munguía*

13 Virtual Screening Applications in the Search of Novel Antiepileptic Drug Candidates ................................................. 237  
*Alan Talevi and Luis E. Bruno-Blanch*

14 Discovering New Antiepileptic Drugs Addressing the Transporter Hypothesis of Refractory Epilepsy: Ligand-Based Approximations ........ 259  
*Manuel Couyoupetrou, Mauricio Di Ianni, Melisa Gantner, Guido Pesce, Roxana Peroni, Alan Talevi, and Luis E. Bruno-Blanch*

15 Discovering New Antiepileptic Drugs Addressing the Transporter Hypothesis of Refractory Epilepsy: Structure-Based Approximations ........ 281  
*Pablo Palestro and Luciana Gavernet*

16 Nanoformulations of Antiepileptic Drugs: In Vitro and In Vivo Studies. .... 299  
*María E. Ruiz and Guillermo R. Castro*

## Part III Potential Contributions of Network Pharmacology and Drug Repurposing in Antiepileptic Drug Discovery

17 Side Effects of Antiepileptic Drugs ........................................ 329  
*Hana Kubova*

18 Network Pharmacology and Epilepsy ...................................... 351  
*Alan Talevi*

19 The Importance of Drug Repurposing in the Field of Antiepileptic Drug Development ................................................................. 365  
*Alan Talevi*

*Index* ..................................................................................... 379
Antiepileptic Drug Discovery
Novel Approaches
Talevi, A.; Rocha, L. (Eds.)
2016, XI, 386 p. 51 illus., 42 illus. in color., Hardcover
A product of Humana Press