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EU contributes $15.5 million to international epilepsy consortium

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- Framework Program 7
- EpimiRNA Consortium
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The European Union, through its Framework Program 7, has contributed 11.5 million euros (approximately $15.5 million) to the EpimiRNA Consortium, an international initiative that will research molecular mechanisms, diagnostics and treatments for epilepsy. The consortium brings together 16 partners from eight European countries, the United States and Brazil.

Prof. David Henshall of the Royal College of Surgeons in Ireland will coordinate the consortium, with Prof. Felix Rosenow from Philipps University Marburg serving as co-coordinator. Other partners will hail from the University Medical Center Utrecht, University College London, the University of Verona, Friedrich-Alexander Universität Erlangen/Nuernberg, Duke University, University of Campinas, Aarhus University and University of Southern Denmark. Several companies will be joining the consortium as well, including DIXI Microtechniques, Cerbomed GmbH, InteRNA Technologies, Bicoll GmbH, BC Platforms and GABO:mi.

Epilepsy currently affects more than 50 million people worldwide, making it the most common serious neurological disorder with no cure. Not enough is known about the causes of epilepsy, and current treatments fail to offer significant benefits. Recent research, however, has discovered that microRNA may play a significant role in controlling the changes in brain chemistry associated with epilepsy. The financial burden of epilepsy is roughly 14 billion euros (approximately $18.9 billion) in the European Union alone. Epilepsy presents with recurring, unprovoked seizures, and patients with this disorder have a two- to three-fold increase in mortality. Temporal lobe epilepsy is the most common type in adults, and can result from brain trauma, infection or status epilepticus (prolonged seizure).

MicroRNAs play a role in controlling the protein levels of signaling pathways, and research by EpimiRNA consortium members has revealed that microRNA changes are a feature of the pathophysiology of temporal lobe epilepsy. They are responsible for controlling synaptic strength, ion channel levels, neuroinflammation, apoptosis and glial function, all of which are dysregulated in epileptogenesis. In addition, unique microRNA profiles in biofluids have been documented in seizures in animal models, which means microRNAs might also serve as potential biomarkers of epileptogenesis in humans as well. Members of the EpimiRNA consortium have also discovered brain-specific microRNAs and that altering microRNA function can significantly suppress epileptic seizures and resultant damage.

With its team of experts in neurobiology, the genetics of epilepsy and leaders in microRNA target detection, proteomics and systems biology, EpimiRNA will seek to define the mechanism by which microRNAs contribute to epileptogenesis, characterize genetic variation of microRNA in patients, evaluate microRNAs' effectiveness as seizure suppressants, identify novel microRNA modulatory molecules as potential therapeutics and develop microRNAs as prognostic markers to determine which patients will respond to non-pharmacological interventions.

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