

PROJECT SUMMARY – EPIBIOS4RX OVERALL

The **Epilepsy Bioinformatics Study for Antiepileptogenic Therapy (EpiBioS4Rx)**, a CWOW proposal in response to RFA-NS-16-012, is designed to facilitate the development of antiepileptogenic therapies by removing barriers and promoting large-scale collaborative research efforts by multidisciplinary teams of basic and clinical neuroscientists with access to extensive patient populations, well-defined and rigidly standardized animal models, and cutting-edge analytic methodology. We focus our proposal on antiepileptogenesis in post-traumatic epilepsy (PTE) following traumatic brain injury (TBI), as this condition offers the best opportunity to determine the time of onset of the epileptogenic process in patients.

The EpiBioS4Rx Scientific Premise is: Epileptogenesis after TBI can be prevented with specific treatments; the identification of relevant biomarkers and performance of rigorous preclinical trials will permit the future design and performance of economically feasible full-scale clinical trials of antiepileptogenic therapies. Based on the work from a P20 planning grant, our program will consist of the following: (1) identify biomarkers of epileptogenesis in our animal model and in patients, (2) Develop and utilize a standardized platform for preclinical trials of potential antiepileptogenic (AEG) drugs, (3) Identify 1 or more lead antiepileptogenic drugs for a future interventional clinical trial, (4) Establish a network of advanced TBI centers capable of carrying out future clinical trials featuring our lead antiepileptogenic drugs used in the context of a personalized, medicine-based approach utilizing our panel of biomarkers, and (5) Develop and incorporate a public engagement program involving the mutual education and collaboration of consumers, consumer organizations and professionals to design and execute future large-scale interventional clinical trials of antiepileptogenic therapies.