## Characterization of Sleep and Seizures in a Knockout Mouse Model of Lafora Disease

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***Abstracts will be considered for both poster and platform presentations***

***Epilepsy/Brain metabolism***

Lafora disease (LD) is a highly severe form of progressive myoclonic epilepsy, for which there is no cure. The development of treatments for LD would therefore provide inestimable relief from suffering. Animal models such as the Laforin KO (LKO) mouse have been used to study LD and its response to therapy. A major impediment to investigation is that the spontaneous seizures in LKO mice are subtle and infrequent. Investigators have used chemical convulsants to induce acute seizures in LKO mice and test the therapeutic potential of drugs. However, the targets/pathways impacted acutely by convulsants may be completely unrelated to those involved in seizure generation in LKO mice. We therefore set out to detect and characterize spontaneous seizures and sleep patterns in LKO mice using a noninvasive piezoelectric motion sensor (Signal Solutions, LLC). We have previously used this “piezo” sensor for noninvasive sleep scoring and in vivo detection of spontaneous seizures the pilocarpine mouse, a chronic epilepsy model. Here, we monitored six male LKO mice (6-8 months old) for eight weeks each using the “piezo” sensor. In addition, we implanted three LKO mice (2M/1F; 1-12 months old) with EEG/EMG headmounts and monitored them for several weeks with simultaneous piezo and video. The data thus collected were analyzed using automated algorithms. Using this approach, several brief myoclonic events of varying duration have been detected and verified. This establishes the feasibility of analyzing behavior in LKO mice for weeks at a time, a prerequisite to testing novel therapeutic interventions aiming to reduce seizures.