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INMED Conference Room

Friday, 2nd June 2017 - 2 p.m



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Invited by: R. COSSART

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State-dependent cognitive intervention in epilepsy

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Cognitive effort is known to play a role in healthy brain state organization, but little is known about its effects on pathological brain dynamics. When cortical stimulation is used to map functional brain areas prior to surgery, a common unwanted side effect is the appearance of afterdischarges. Because afterdischarges can progress to a clinical seizure, it is desirable to suppress this activity. I will discuss our work showing that a cognitive intervention (thinking about and answering a math question) can be successful in stopping epileptiform afterdischarges, but that the success of the intervention hinges on the brain state immediately prior to the intervention. We show that the spatial organization of afterdischarges with respect to coherent brain regions relates to the success of the cognitive intervention: if afterdischarges are mainly localized within a single stable brain region, a cognitive intervention is likely to suppress the afterdischarges. These findings show that cognitive effort is a useful tactic to modify unstable pathological activity associated with epilepsy, and suggest that the success of therapeutic interventions to alter activity may depend on an individual's brain state at the time of intervention.