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Electrophysiological Study of the Anterior Cingulate

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Poster Presentation P47

ELECTROPHYSIOLOGICAL STUDY OF THE ANTERIOR CINGULATE

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Theta EEG activity has been well-characterized in the hippocampus, a medial temporal lobe structure essential for learning and memory. For instance, it is known that the medial septal area (MSA) drives hippocampal theta rhythmicity. However, comparatively little is known about the neuroanatomical substrates behind theta activity in other brain areas, such as the anterior cingulate region of the prefrontal cortex. One aim of this study is to address this question by determining whether or not the MSA drives theta rhythmicity in the anterior cingulate as it does in the hippocampus. To meet this aim, EEG recording electrodes will be surgically implanted into the right anterior cingulate (AC) region and a guide cannula will be placed in the MSA of male Long-Evans rats. Once the rats have fully recovered from surgery, the investigators will monitor the electrophysiological behavior of the AC. Once theta rhythmicity is established and recorded, the investigators will induce a temporary lesion in the MSA while simultaneously recording AC theta to determine whether a lesion to the medial septal area abolishes the AC theta rhythm. Experimental results will be discussed at the conference.