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Protocol for obtaining rodent brain slices for electrophysiological recordings or neuroanatomical studies

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Protocol Information

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Summary: Patch clamp recording performed in vitro using brain slice preparations is a standard technique used in cellular biophysics and neurophysiology to study the electrical activity of neurons. In particular, our research group is interested in obtaining patch clamp recordings from neurons in the CA1, CA3, and dentate gyrus regions of the hippocampal formation to investigate how the excitability of neurons change during development and aging. To carry out these experiments, we must first dissect out the brain and obtain slices, all while keeping the brain healthy so that the neurons survive and can later be recorded. Here we outline our procedures for anesthetizing, perfusing, dissecting out the brain, and finally obtaining slices. This protocol can also be used as a teaching tool to train students in the handling and dissection of rodents, and the preparation of brain tissue. The slices obtained can also be used for neuroanatomical studies or in training students to identify different brain structures. Our goals in sharing this protocol are to be transparent about our scientific methodology and to help other researchers performing similar experiments. Funding: This work was supported by DGAPA-UNAM-PAPIIT IA209817 and UNAM-DGAPA-PAPIIME PE213219 awarded to Erin C. Mckiernan. This work was also supported by DGAPA-UNAM-PAPIIT IA208618 and DGAPA-UNAM-PAPIIME PE114919 awarded to Marco A. Herrera-Valdez.

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