

## In vivo whole-cell recordings from amygdalar neurons

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The basolateral amygdala (BLA) is a deep brain region that contributes to emotional processing and may be activated together with the prefrontal cortex. For example, the BLA and the dorsomedial prefrontal cortex are synchronized at 4-Hz during fear behavior. However, the neural basis of the synchronization has not been addressed, mainly because it is difficult to identify projecting neurons using extracellular recordings, which are widely used to record neuronal firing activity. Patch-clamp recordings, an intracellular recording technique, enable to record synaptic inputs and label the projection of the recorded neurons. However, there are few reports using in vivo whole-cell recordings from the BLA because impurities on pipette tips make it difficult to attain gigaseal, a critical step for the whole-cell configuration. In this study, we have developed a new method to achieve whole-cell recording from in vivo mice deep brain regions. We elaborated a double tube system; that is, a guide cannula for patch-clamp pipettes through which a tissue-boring stick is inserted in advance. Using them, we more easily achieved in vivo whole-cell recordings from deep brain regions because the pass length for which the pipettes needed to go through the brain parenchyma were reduced. We will present examples of recordings from BLA neurons which is located about 4 mm deep from the brain surface, together with recordings of local field potentials from the medial prefrontal cortex.