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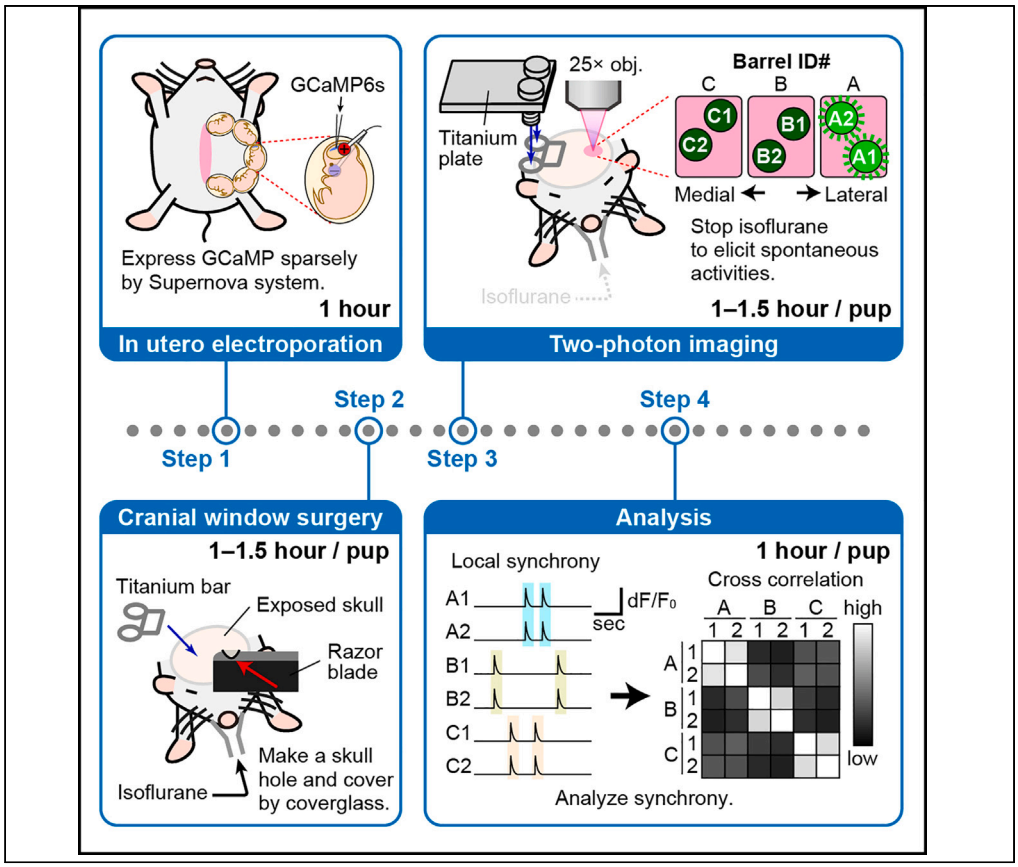
Protocol

In vivo two-photon calcium imaging of cortical neurons in neonatal mice



In vivo calcium imaging is essential to elucidate unique synchronous activities observed in the developing brain. Here, we present a protocol to image and analyze activity patterns in neonatal mouse neocortex in single-cell level. We describe steps for in utero electroporation, cranial window surgery, two-photon imaging, and activity correlation analysis. This protocol facilitates the understanding of neuronal activities and activity-dependent circuit formation during development.

Publisher's note: Undertaking any experimental protocol requires adherence to local institutional guidelines for laboratory safety and ethics.

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Highlights

Preparation of mice by labeling sparse cortical neurons using GCaMP

Cranial window surgery procedure for *in vivo* 2-photon imaging of neonatal brain

Single-cell level *in vivo* calcium imaging in neonatal brain

Quantitative analysis of activity correlation

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