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Interlaminar processing in auditory cortex before and after auditory trauma: spontaneous and evoked responses of independent sources

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The interaction of neural populations within the neocortex is mainly characterized by which layer they located in. For instance: thalamocortical input projects to layer 4 cells, which in turn project to layer 2/3 cell. Layer 2/3 cells then forward signals onto layer 5 cells [4]. However, it is difficult to see interactions within layers, or even which neural populations in one layer may be interacting with other layers. Very fast oscillations (VFOs, $>$80 Hz) have been associated with neocortical processing [1,3], and have distinct roles in different cortical layers [3]. Moreover, VFOs increase in temporal lobe epilepsy [2,6], which is associated with trauma [5]. In this study, we take a more detailed look at interlaminar interactions, VFOs, and the effects of trauma by applying independent component analysis (ICA) to recordings from rat auditory cortex.

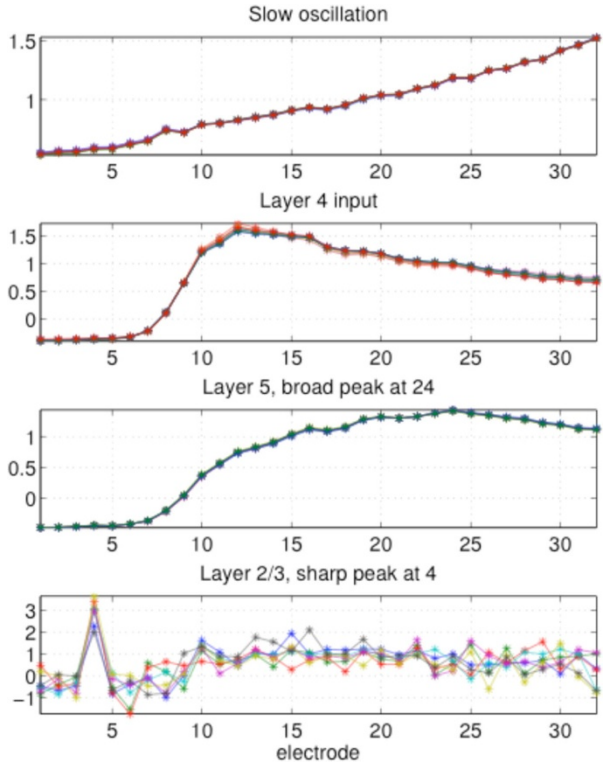

Figure 1

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References

1. Edwards E, Nagarajan SS, Dalal SS, Canolty RT, Krisch HE, Barbaro NM, Knight RT: **Spatiotemporal imaging of cortical activation during verb generation and picture naming.** *NeuroImage* 2010, **50(1)**:291-301.
2. Jacobs J, LeVan P, Chander R, Hall J, Dubeau F, Gotman J: **Interictal high-frequency oscillations (80-500 Hz) are an indicator of seizure onset areas independent of spikes in the human epileptic brain.** *Epilepsia* 2008, **49(11)**:1893-1907.
3. Jones MS, MacDonald KD, Choi B, Dudek FE, Barth DS: **Intracellular coreelates of fast electrical oscillations in rat somatosensory cortex.** *J Neurophysiol* **84(3)**:1505-1518.
4. Sakata S, Harris KD: **Laminar structure of spontaneous and sensory-evoked population activity in auditory cortex.** *Neuron* 2009, **64**:404-418.
5. Scharfman H: **The neurobiology of epilepsy.** *Curr Neurol Neurosci Rep* 2007, **7**:348-354.

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6. Traub R, Contreras D, Whittington MA: **Combined experimental/simulation studies of cellular and network mechanisms of epileptogenesis *in vitro* and *in vivo*.** *J Clin Neurophys* 2005, **22(5)**:330-342.

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