Project 1.7 Mechanisms underlying ketamine-induced high frequency oscillations in the rodent olfactory system

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Background:

Subanesthetic doses of ketamine are used to treat depression and to model certain features of schizophrenia. Ketamine, and other NMDA receptor antagonists, are known to alter oscillatory activity in the brain of humans and rodents, however how ketamine produces its effects are unclear. Over the past fifteen years we have focused on understanding abnormal high frequency oscillations (around 150 Hz) that occur after ketamine injection, and how this activity may spread to different regions of the rodent brain. Our recent findings have highlighted the importance of olfactory networks in the generation of this abnormal rhythm. We are currently examining how sensory inputs can shape this activity.

Aim:

The PhD student will develop existing lines of in vivo electrophysiology research which focus on understanding the mechanisms of HFO generation in the olfactory bulb, and the interactions between the olfactory bulb and piriform cortex.

Requirements:

- Master of Science degree (or equivalent) in a biology-related field,
- this is an in vivo project using anesthetized and freely moving rats. Prior experience handling rats is desirable,
- the data generated can be complex to analyze and understanding of coding/script writing is also desirable,
- good spoken and written English