Project 1.3 The role of somatostatin- and parvalbumin interneurons in the modulation of neuronal function and synaptic plasticity via the activation of GABAb receptors.

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Background:

The most interesting feature of inhibitory interneurons (GABAergic) is the fact that they are very diverse, thus, determining the specific roles of different subpopulations of inhibitory neurons is fundamental for understanding cortical function. Inhibitory interneurons release GABA (gamma-Aminobutyric acid) which is the main inhibitory neurotransmitter in the mammalian brain. GABA acts on several types of its receptors inhibiting the activity of target neurons. Our project will provide basic but fundamental knowledge about neuronal functions. In the future, our data will contribute to the progress of biomedical sciences that study brain pathologies, since the disturbance in the balance between excitation and inhibition has been recognized in many pathological stages, such as e.g. epilepsy, depression, schizophrenia, autism spectrum disorder, and Alzheimer and Parkinson diseases.

Aim:

Using electrophysiological methods and optogenetic tools in acute brain slices of the mice somatosensory cortex, we will study how GABAb receptor, which are responsible for slow inhibition, modulate synaptic transmission, neuronal excitability and synaptic plasticity in cortical network of a mouse brain.

Requirements:

- master's degree in biology, physics, biotechnology or related subject;
- very good knowledge of English;
- strong motivation and commitment to science;