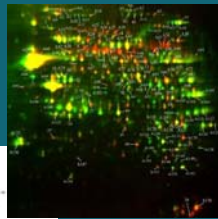
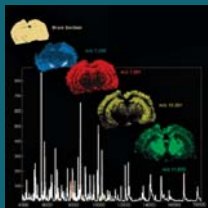




Central research topic

The molecular mechanisms of plasticity in mammalian neocortex

The development of the mammalian brain is driven by both genetic and environmental factors. An essential and unique feature of the sensory systems of mammals is the capacity to continuously adjust functionally and structurally to changes in sensory inputs throughout the animal's life. The main interest of the laboratory is to unravel and understand the molecular mechanisms that underlie developmental and lesion-induced plasticity of sensory neocortex. The visual system of mouse, cat and monkey is used as experimental model.



We explore the spatial and temporal impact of monocular deprivation, binocular deprivation as well as retinal lesions on the molecular expression patterns in mouse and cat visual cortex. We compare protein expression patterns in function of post-lesion survival time, and also at critical time points in development of the mouse and cat visual system like eye opening, and the peak or the ending of the critical period. Functional proteomics (2D DIGE, MS) is key in identifying (new) plasticity-related molecules. In-depth characterization studies of these potential plasticity-regulator molecules involve real-time PCR, in situ hybridisation, immunocytochemistry, Western blotting, ...

We advance the introduction of new technologies in neuroscience research. We currently optimise the use of imaging mass spectrometry to visualize specific protein patterns in brains of normal animals and disease mouse models.

The leading goal of our ongoing research is to improve our knowledge and understanding of new cellular mediators and central molecular mechanisms of cortical plasticity to boost future developments of novel pharmaceuticals and therapies to be used for treatment of sensory loss and brain damage.

PEOPLE

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