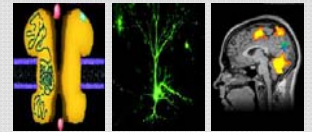


SFB 874 / IGSN

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Cortical and subcortical representation of sensory and cognitive memory

April 28 - 29, 2015 Ruhr University Bochum

Wednesday April 29, morning (9:15 – 12:15)

Session 3: Cortical plasticity as an orchestrator of sensory flexibility

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Tactile function and GABA spectroscopy; what can we learn about plasticity?

It has long been known that GABA, the main inhibitory neurotransmitter in the brain, plays an important role in the processing of touch in terms of shaping the brain's response to tactile stimuli, as well as plasticity. However, it is less clear how these neurophysiological processes in the somatosensory cortex (S1) underlie tactile behavioral measures. Recently, it has become possible to measure GABA concentration in vivo in the human brain using Magnetic Resonance Spectroscopy (MRS).

Using psychophysics it is possible to probe the inhibitory system on a behavioral level. I will discuss recent work showing strong correlations between brain GABA levels and behavioral measures related to inhibitory processes, including the ability to distinguish tactile stimuli. Moreover, I will discuss some recent work showing that S1 GABA levels are related to perceptual learning ability, as well as several other studies that have shown relationships between GABA (as measured by MRS), sensory processing, and learning.

Finally, somatosensory abnormalities, including abnormal behavioral adaptation, are a common feature of developmental disorders such as Autism (ASD) and Tourette Syndrome (TS). Both ASD and TS have been linked to GABAergic abnormalities as well. I will discuss our current work combining GABA MRS with behavioral assessments to investigate tactile dysfunction in ASD and TS.

