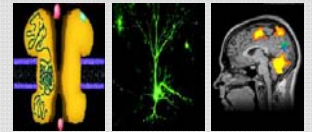


SFB 874 / IGSN

CONFERENCE



Cortical and subcortical representation of sensory and cognitive memory

April 28 - 29, 2015 Ruhr University Bochum

Wednesday

April 29, afternoon (13:15 – 16:15)

Session 4:**Cognition relevant information processing
at the subcortical level**

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Subcortical pathways of episodic memory: decoding signal processing in anterior thalamus

A major tool in understanding how information is processed in the brain is the analysis of neuronal output at each hierarchical level through which neurophysiological signals are propagated. One of the main information streams, vital for episodic memory formation arises from thalamo-hippocampal projections, as there is extensive connectivity between these structures. This connectivity can sometimes be overlooked by theories of memory formation by the brain, in favour of theories with a cortico-hippocampal bias.

Here, I address some of the complexity of the signals processed within this circuitry. Recent findings elucidating the integration of different signal modalities by single thalamic neurons reveal the complex propagation of two prominent signals: head directionality and theta rhythm. These data suggest that thalamo-hippocampal processing provides a centrally-important substantive and dynamic input that modulates and moderates hippocampal spatial and mnemonic processing.

