

Plasticity in the human cerebral cortex: From synaesthesia to sensory substitution in the blind

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Binding together of information within and between the senses plays an important role in normal perception of the world, and for such integration to cope with changing relationships between sensory stimuli, the neural mechanisms responsible must be plastic. In this project the phenomenon of synaesthesia will be studied, which can be viewed as "pathological" example of integrative processes. In addition to studies on normal and blind synaesthetes the work will be extended to "implicit" synaesthetes with highly reproducible idiosyncratic sensory association but no conscious experience of the associated stimulus. Psychophysical approaches will be used to discover whether new implicit synaesthetic linkages can be learned, and a full range of neuroimaging techniques (fMRI, MEG, EEG, TMS) to distinguish between the possible pathways that mediate both the normal cross-modal interactions and synaesthesia. The results should lead to a better understanding of normal and unusual functional connectivity in the human brain, and should contribute to our knowledge of cortical plasticity and its dynamics in the normal, the excessively cross-wired and the visually deprived brain.

Projektbeteiligte

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