

Symposium 22: Information integration across the senses

Theme: Sensory and motor systems

Wednesday 12th April, 9:00 – 10:40

Our multisensory environment demands that the brain integrates signals from multiple senses. Traditionally, it was assumed that multisensory integration was deferred until later processing stages in higher-order association cortices. Over the past decade, accumulating evidence from neuroanatomy, electrophysiology and functional imaging has shown that multisensory integration emerges already at the primary cortical level. The ubiquity of multisensory interactions at all stages of cortical processing requires the reconsideration of current thinking about the functional organization of sensory processing.

This interdisciplinary symposium will provide an overview of the rapidly emerging field of multisensory integration by making translational connections between animal studies and functional imaging studies in humans. We will bring together recognized experts who use a diverse set of techniques, ranging from single-unit recording in carnivores to fMRI, EEG, psychophysics and computational modelling. First, we will explore where and when multisensory integration emerges at subcortical and cortical levels based on evidence from electrophysiology and functional imaging. Second, by spanning species and techniques, we will bridge the gap between neural mechanisms, computational operations and behaviour to explore the functional consequences of multisensory integration. We will demonstrate how fundamental computational principles govern information integration across the senses to guide perceptual decisions.

Chair: Professor Uta Noppeney (University of Birmingham)

Speaker 1: Professor Giandomenico Lannetti (University College London)

'A multimodal saliency-detection system for the body and the peripersonal space'

Speaker 2: Dr Julian Keil (Charité – Universitätsmedizin Berlin, Germany)

'Multiple Stages of Multisensory Perception: Evidence from Local Cortical Oscillations and Functional Connectivity'

Speaker 3: Dr Jennifer Bizley (University College London)

'Integrating sound and vision: can cross modal interactions in auditory cortex influence auditory scene analysis'

Speaker 4: Professor Uta Noppeney (University of Birmingham)

'To integrate or not to integrate: How the brain forms a representation of the world across audition and vision'