MAX PLANCK SCHOOL of cognition

Monday, November 10, 2025, 16:00 (CET)

Cognition Colloquium

Professor Christian Büchel

Universitätsklinikum Hamburg-Eppendorf

Mechanisms of Pain Modulation

Pain, a complex and subjectively experienced phenomenon, involves intricate processing mechanisms at both subcortical and cortical levels. This perceptual construct integrates peripheral input, or nociception, with the internal state of the organism shaped by current factors (e.g., expectations) and past experiences. The ascending pain system, encompassing the dorsal horn of the spinal cord, the periaqueductal gray (PAG), the thalamus, and midline/lateral cortical target areas, plays a pivotal role in pain perception. This system is intricately modulated by the descending pain modulatory system, with crucial hubs located in the anterior cingulate cortex, the PAG, and the rostral ventromedial medulla (RVM). Significantly, both systems converge at multiple points, such as the PAG and dorsal horn, facilitating intricate interactions. Advanced functional magnetic resonance imaging has now provided the means to investigate this processing system in its entirety, allowing for system-level inquiries in humans. This presentation aims to explore physiological pain processing, but also delve into the intriguing realm of agency, control and expectations, offering insights into the interconnected dynamics of pain perception.

Join online:
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Meeting ID: 935 2603 0034
Passcode: 250171

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