



OIST SEMINAR

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Columbia University, U.S.A.

DATE: Thursday, November 21

TIME: 10:0 – 11:00

VENUE: Seminar Room C700, Level C, Lab 3

“The Many Layers of Touch”

Abstract:

The neocortex mediates all of human and animal cognition—breathtakingly encompassing sensation, perception, decision making, and movement. These diverse functions are achieved by highly stereotyped circuitry that nature appears to have iterated across the entire surface of the brain. Recently we discovered that ascending signals from thalamus are copied separately to the superficial and deep layers of sensory cortex. Despite dense connections between layers, ascending thalamic signals account for all the sensory-driven activity of the deep layers. I will present our latest anatomical and physiological results demonstrating independence of these two sets of layers as well as possible mechanisms for gating their interactions. We are presently investigating the necessity of the primary somatosensory cortex and its constituent layers in tactile object recognition. I will show how modern optogenetic and older lesion approaches can lead to radically different conclusions about necessity of a brain structure to a behavior. We have found that sensory cortex is dispensable for learning and performing some of the field’s most widely used behavioral paradigms. This underscores the competency of subcortical systems at basic behavioral tasks and suggests alternative mechanisms for how cortex contributes to complex behavior.

Please contact Bernd Kuhn (bkuhn@oist.jp), if you are interested in meeting the speaker.