

DSV Seminars 2019



PhD Program in Neural and Cognitive Sciences

Monday, February 11, 2019 - 10:00am

Room 1C, H3 Building – Via Alfonso Valerio, 12/2

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&
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Sensory processing and decision making in dynamic environments

A fundamental question in systems neuroscience is how the sensory information about the surrounding environment is encoded in the activity of neurons, how this activity is read out by downstream neurons and ultimately how it gives rise to perception and behaviour. We chose to investigate this question in the whisker-mediated touch system of rodents because of its well-established anatomy and exquisite functionality. The whisker system is one of the major channels through which rodents acquire sensory information about their surrounding environment. The response properties of neurons dynamically adjust to the dynamics of the environment and prevailing diet of sensory stimulation. Here, we investigate what are the neuronal computations and underlying mechanisms governing this adaptive information processing, and how in turn how dynamic changes in the environment affects the behaviour. We combine a variety of techniques ranging from in vivo extracellular array recording, loose-cell patch clamp recording/labelling, optogenetics, behavioural and computational approaches to address this question in rodent model system.

