



Life Sciences Seminar

Motor skill learning and execution in a distributed brain network

Steffen Wolff (Harvard U)

Host: Sandra Siegert

Our daily activities are largely built from complex sequences of movements, whether it is tying our shoes, serving a tennis serve or playing the piano. The ability to perform such actions, often with little mental effort, depends on the distributed motor network in our brains. While many individual components of this network have been identified, less is known about their specific roles and how they interact during learning and execution of motor skills. I am addressing these questions by training rats in a timed lever-pressing task that produces complex and highly stereotyped movement sequences. I am probing the contributions of individual brain regions and their interconnections by recording and manipulating their activities. In my talk, I will show that the basal ganglia, specifically the dorsolateral striatum (DLS), play a central role in the acquisition and execution of motor skills. I will further describe the specific roles of cortical and thalamic input to the DLS in these processes and suggest a circuit level model of skill learning in which motor cortex guides plasticity at thalamo-striatal synapses. While these results provide fundamental insights into learning and execution of a single motor skill, real life is more complex. How does the motor network meet the challenge of learning many motor skills in parallel? Do individual skills influence each other? Does learning to play tennis affect my table-tennis skills? My previous results provide me with a foundation for studying these questions, and in my talk I will propose ways to study learning and memory in a broader and more realistic context.

Thursday, February 22, 2018 09:00am - 10:00am

IST Austria Campus Mondri Seminar Room 2, Central Building



This invitation is valid as a ticket for the IST Shuttle from and to Heiligenstadt Station. Please find a schedule of the IST Shuttle on our webpage: http://ist.ac.at/fileadmin/user_upload/pdfs/IST_shuttle_bus.pdf The IST Shuttle bus is marked IST Shuttle (#142) and has the Institute Logo printed on the side.