LMU LUDWIG-MAXIMILIANS-UNIVERSITÄT MÜNCHEN

Munich Center for Neurosciences – Brain and Mind

MCN LMU MUNICH CENTER FOR NEUROSCIENCES

Munich Center for Neurosciences – Brain & Mind

MCN Lecture – January 12, 2015

Prof. Dr. Sten Grillner

(The Nobel Institute for Neurophysiology, Dept. of Neuroscience, Karolinska Institute, Sweden)

"Evolutionary conserved forebrain mechanisms for selection of action"

The lamprey diverged from the vertebrate line of evolution leading up to mammals 560 million years ago. What is common in the organization of the nervous system of lamprey and mammals must have been present already very early in vertebrate evolution. We have previously shown that the basic organization of the brainstem spinal cord is conserved and also the midbrain control of eye and orienting movements. Recently we have shown in a series of studies that the detailed organization of the basal ganglia and related habenula complex is conserved with regard to transmitters, neuropeptides, expression of ion channel subtypes, neuronal activity pattern and connectivity (e.g. Stephenson Jones et al 2013). We now show that also the organization of pallium (corresponding to cortex) is similar in that we have specific projection neurons to the tectum/superior colliculus, the midbrain tegmentum and to reticulospinal neurons in the hindbrain. Moreover, stimulation of the pallial region can elicit eye, orienting, locomotor and oral movements and these effects are elicited by monosynaptic effects on the different motor centres. In conclusion, the basic features of the vertebrate motor system existed already at the dawn of vertebrate evolution.

Date: **Monday, January 12, 2015**
Time: **18:15**
Location: **B01.019, Biocenter, Großhaderner Str. 2, 82152 Martinsried**

The Board Members,

M. Dieterich S. Glasauer B. Grothe S. Hartmann M. Hübener H. Müller H. Potschka