Matthew Larkum

Charité - Universitätsmedizin Berlin
Neuroscience Research Center (NWFZ)
Charitéplatz 1 | D-10117 Berlin
Phone: +49 (0)30 450-539117
E-mail: matthew.larkum@gmail.com

Curriculum vitae

since 2011	Professor (W3), Neurobiology, Humboldt University of Berlin
2004 – 2011	SNSF Professor, Institute of Physiology, University of Bern
1997 – 2003	Postdoctoral fellow (Advisor: Bert Sakmann), Max Planck Institute for Medical Research, Heidelberg
1992 – 1996	PhD (supervisor: Hans-Rudolf Lüscher), Institute of Physiology, University of Bern
1991	First class honours in Physiology (supervisor: Max Bennett), University of Sydney
1987 – 1990	Bachelor of Science, University of Sydney

Research fields

Our group focuses on the processing of feedforward and feedback information in the cortex, and particularly, on the contribution of active dendritic properties to the computational power of neocortical pyramidal neurons. Recent topics include:

- Dendritic spikes in the tuft and basal dendrites of neocortical pyramidal neurons
- Inhibitory control of cortical microcircuits
- Memory consolidation with active dendritic mechanisms
- Cellular basis for interhemispheric inhibition in the cerebral cortex
- Effect of fetal alcohol syndrome on dendritic processing
- Effects of common anesthetics on single-cell computation in the cortex
- Development of state-of-the-art optical approaches for studying cortical dendritic activity

Activities in the scientific community, honors, awards

2010	Robert Bing Prize, Swiss Academy of Medical Sciences
2007	Pfizer Prize for the best neuroscience paper published by a Swiss group
2006	Theodor Kocher Prize
2004	Professorship, Swiss National Science Foundation (SNSF)
2003	Nikon Research Fellowship, Woods Hole Research Laboratories
2002	Woods Hole Research Fellowship
1999 – 2001	Max Planck Society Scholarship
1997 – 1998	Alexander von Humboldt Scholarship
1992 – 1995	Australian Postgraduate Research Award

Selected publications

Murphy SC, Palmer LM, Nyffeler T, Muri RM, Larkum ME. Transcranial magnetic stimulation (TMS) inhibits cortical dendrites. Elife. 2016;5.

Palmer LM, Shai AS, Reeve JE, Anderson HL, Paulsen O, Larkum ME. NMDA spikes enhance action potential generation during sensory input. Nat Neurosci. 2014;17(3):383-90.

Larkum M. A cellular mechanism for cortical associations: an organizing principle for the cerebral cortex. Trends Neurosci. 2013;36(3):141-51.

Palmer LM, Schulz JM, Murphy SC, Ledergerber D, Murayama M, Larkum ME. The cellular basis of GABA(B)-mediated interhemispheric inhibition. Science (New York, NY. 2012;335(6071):989-93.

Murayama M, Perez-Garci E, Nevian T, Bock T, Senn W, Larkum ME. Dendritic encoding of sensory stimuli controlled by deep cortical interneurons. Nature. 2009;457(7233):1137-41

Murayama M, Larkum ME. Enhanced dendritic activity in awake rats. Proceedings of the National Academy of Sciences of the United States of America. 2009;106(48):20482-6.

Murayama M, Larkum ME. In vivo dendritic calcium imaging with a fiberoptic periscope system. Nat Protoc. 2009;4(10):1551-9.

Larkum ME, Nevian T, Sandler M, Polsky A, Schiller J. Synaptic integration in tuft dendrites of layer 5 pyramidal neurons: a new unifying principle. Science (New York, NY. 2009;325(5941):756-60.

Perez-Garci E, Gassmann M, Bettler B, Larkum ME. The GABAB1b isoform mediates long-lasting inhibition of dendritic Ca2+ spikes in layer 5 somatosensory pyramidal neurons. Neuron. 2006;50(4):603-16.

Larkum ME, Zhu JJ, Sakmann B. A new cellular mechanism for coupling inputs arriving at different cortical layers. Nature. 1999;398(6725):338-41.