Research Highlights 2013 / Outlook 2014
The main research approaches and topics of the Department of Neurology are shown in the figure below. Additional research groups are active in the areas of multiple sclerosis, muscle disorders, autonomic disorders, headache, and vestibular disorders. The main research platforms include the Center for Experimental Neurology (Zentrum für experimentelle Neurologie; ZEN), Human Neurophysiology Laboratories, Perception and Eye Movement Laboratory, and the newly created Neuro-Clinical Trial Unit (NCTU).

Highlights 2013
- Prof. Adamantidis was selected by the Faculty of Medicine for the newly created tenure track assistant professorship in system neurophysiology and joined the department in December 2013, where he now directs the ZEN. The main goal of his research is to understand the dynamics of the neural circuit controlling sleep and wake states, to delineate brain wiring and functions. To achieve this, molecular tools are combined with in vitro and in vivo electrophysiology to optogenetically control genetically targeted cell populations in the mouse brain.
- The renovation and enlargement of the ZEN was completed. It now includes a new molecular laboratory, rat and mice sleep recording facilities, and an animal functional assessment room.
- The Sleep and Epilepsy Group founded a research network (“Bern Network for Epilepsy Sleep and Consciousness”, BENESCO), which currently includes teams from Bern, Fribourg, Solothurn, and Lugano. The group received two new SNF grants.
- The Stroke Group published a multicentre international randomised trial on stroke prevention in patent foramen ovale in the *N Engl J Med*. The Stroke Unit was opened and the Stroke Center was certified in the field of highly specialised medicine. The first animal stroke experiments were performed. The group received one new SNF grant.
- Dr. Schüpbach of the Movement/Motor Disorders Group published a study in the *N Engl J Med* on the favourable effect on outcome of deep brain stimulation also in patients with early-stage Parkinson’s disease. A new human electroneuromyography (ENMG) laboratory/centre was opened.
- The Neurehabilitation/Cognitive and Behavioral Disorders Group started two new projects in the framework of the Center for Cognition, Memory, and Learning (CCLM). They intensified their collaboration with the ARTORG Gerontotechnology and Rehabilitation Group in the field of higher visual functions.

Outlook 2014
- Prof. Kaelin was selected as the new director of the Neurocenter of Southern Switzerland. His experimental animal group studying levodopa-induced dyskinesias in rats will move with him. Dr. Schüpbach will replace him as group leader.
- The ZEN will be enlarged by two additional rooms for optogenetics research.
- The NCTU team will hire a clinical study coordinator and a biostatistician.
- The new Human Sleep-Wake and Epilepsy Center should be completed. A multichannel near-infrared-spectroscopy (NIRS) and a high density EEG machine will be acquired.
Group Members

**Sleep-Wake Mechanisms/Disorders and Epilepsy Group**
- Prof. Dr. Claudio L. Bassetti, Group Leader
- Prof. Dr. Antoine Adamantidis, Group Leader (since Dec.)
- Prof. Dr. Kaspar Schindler, Senior Consultant, Group Leader (since July)
- Prof. Dr. Johannes Mathis, Senior Consultant
- Dr. Heidemarie Gast, Consultant
- PD Dr. Arto Nirkko, Consultant
- Dr. Lino Nobili, External Consultant
- Dr. Thomas Horvath, Research Assistant
- Dr. Andreas Steimer, Physicist
- Dr. Francesca Baracchi, Postdoctoral Fellow
- Dr. Ertugrul Cam, Postdoctoral Fellow
- Dr. Bo Gao, Postdoctoral Fellow
- Dr. Svitala Palchykova, Postdoctoral Fellow
- Dr. Frédéric Zubler, Postdoctoral Fellow
- Aleksandra Hodor, PhD Student
- Maria Pace, PhD Student

**Movement/Motor Disorders Group**
- Prof. Dr. Alain Kaelin, Group Leader
- Prof. Dr. Kai Rösler, Senior Consultant
- Prof. Dr. Mathias Sturzenegger, Senior Consultant
- Dr. Michael Schüpbach, Consultant
- Prof. Dr. Claudio L. Bassetti, Consultant
- Dr. Niklaus Meier, Consultant
- Prof. Dr. Jean-Marc Burgunder, External Consultant
- Dr. Christine Capper-Loup, Postdoctoral Fellow
- Susanne Sgroi, PhD Student

**Stroke Group**
- Prof. Dr. Heinrich Mattle, Group Leader
- Prof. Dr. Marcel Arnold, Senior consultant, Group Leader
- Prof. Dr. Claudio L. Bassetti
- Prof. Dr. Werner Z’Graggen, Senior Consultant
- PD Dr. Urs Fischer, Consultant
- Dr. Oliver Findling, Consultant
- Dr. Aikaterini Galimanis, Consultant
- Dr. Simon Jung, Consultant
- Dr. Marie-Louise Mono, Consultant
- Dr. Barbara Goeggel Simonetti, Research Assistant

**Neurorehabilitation/Cognitive Disorders Group**
- Prof. Dr. René Müri, Group Leader
- PD Dr. Klemens Gubrrod, Senior Research Associate
- Dr. Manuel Bertschi, Postdoctoral Fellow
- Dr Tim Vanbellingen, Postdoctoral Fellow
- Diego De Leon Rodriguez, PhD Student
- Noémi Eggenberger, PhD Student
- Simone Hopfner, PhD Student
- Matthias Lüthi, PhD Student
- Basil Preisig, PhD Student
- Rahel Schumacher, PhD Student

**Selected Collaborators**
- Annoni J-M, Albrecht U, University of Fribourg, Switzerland
- Baumann C, University Hospital Zurich, Switzerland
- Bloch J, Hirt L, University Hospital of Lausanne, Switzerland
- Bousser MG, Chabriat H, CHU Lariboisière, France
- Burdakov D, National Institute for Medical Research, UK
- Deuschl G, University of Kiel, Germany
- Diniz Behn C, Colorado School of Mines, USA
- Hamel E, Jones B, Seguela P, Williams S, McGill University, Canada
- Henke K, Mast F, Mosimann UP, Nef T, University of Bern, Switzerland
- Korotkova T, Ponomarenko P, NeuroCure, Germany
- Lammers GJ, Leiden University Medical Centre, The Netherlands
- Luppi PH, University Lyon 1, France
- Manconi M, Fulda S, Cereda C, Galati S, Neurocenter of Southern Switzerland
- Mormannn F, University Hospital of Bonn, Germany
- Nedeltchev K, Remonda L, Khatami R, Cantonal Hospital Aarau/Barmelweid Clinic, Switzerland
- Nobili L, Niguarda Hospital, Italy
- Nyffeler T, Bohlhalter S, Lucerne Cantonal Hospital, Switzerland
- Ptak R, University of Geneva, Switzerland


Prof. Dr. René Müri
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Prof. Dr. Kaspar Schindler
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Medical school at University of Bern (1989-1995); National MD-PhD programme, Institute of Neuroinformatics, ETH Zurich and University of Zurich (1996-1999); Doctorates at Faculty of Mathematics/Natural Sciences (PhD) and Medical Faculty (MD), University of Zurich (1999). Research Fellow (2006-2007) at Epileptology Center, University of Bonn (DE). Venia docendi (2010). Since 2013, Associate Professor and Head of Epilepsy Center, Department of Neurology, Inselspital.

Thaler D, Kent D, Tufts Medical Center, USA
Tafti M, Franken P, University of Lausanne, Switzerland

Grants
Amounts allocated for 2013:
(SNF grants only)
- SNF: Sleep apnea and stroke, human (C. Bassetti) CHF 200,000
- SNF: Restless leg and cardiovascular risk, human/animal (M. Manconi, C. Bassetti) CHF 100,000
- SNF: Swiss study of initial decompressive craniectomy versus best medical treatment of spontaneous supratentorial intracerebral hemorrhage (SWITCH), human (U. Fischer) CHF 174,000
- SNF: Cerebral perfusion, vasospasm, subarachnoid hemorrhage, human (J. Beck, W. Z’Graggen) CHF 120,000
- SNF: Aphasia and co-speech gestures, human (R. Müri) CHF 146,000
- SNF: Bilingualism, human (J.-M. Annoni, R. Müri) CHF 100,000
- SNF: Fatigue in autoimmune diseases, animal (A. Fontana, H. Gast) CHF 50,000
- SNF: Motion and spatial neglect, human (T. Nyffeler, R. Müri) CHF 108,000
- SNF: Enhancement of sensory processing by attention, human (R. Ptak, R. Müri) CHF 110,000
- SNF: Neural basis of praxis production, human (S. Bohlhalter, R. Müri) CHF 110,000
- SNF: Etiology, diagnosis, treatment of cervicocerebral artery dissections, human (M. Arnold) CHF 650,000
- SNF: Imaging large scale neuronal networks in epilepsy, human (M. Seeck, K. Schindler) CHF 115,000

Five Selected Publications
Factors that determine penumbral tissue loss in acute ischaemic stroke. Junq, S; Gilgen, M; Slotboom, J; El-Koussy, M; Zübeler, C; Kiefer, C; Luedi, R; Mono, ML; Heldner, MR; Weck, A; Mordasini, P; Schroth, G; Mattle, HP; Arnold, M; Gralla, J; Fischer, U (2013) in: Brain, 136(12), p. 3554-3560.
Neurostimulation for Parkinson’s disease with early motor complications. Schuepbach, WM; Rau, J; Knudsen, K; Volkman, J; Krack, P; Timmermann, L; Halbig, TD; Hesekamp, H; Navarro, SM; Meier, N; Falk, D; Mehdorn, M; Paschen, S; Mauroff, M; Barbe, MT; Fink, G; Kupsch, A; Gruber, D; Schneider, GH; Seigneuret, E; Kistner, A; Chaynes, P; Ory-Magne, F; Brefel, C; Vesper, J; Schnitzler, A; Wojtecki, L; Houeto, JL; Bataille, B; Mattle, D; Dameri, P; Roaul, S; Sixel-Doering, F; Hellwig, D; Gharabaghi, A; Kruger, R; Pinsker, MO; Hartmann, A; Oertel, WH; Post, B; Speelman, H; Agid, Y; Amtage, F; Deuschl, G (2013) in: N Engl J Med, 368(7), p. 610-622.

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