



Statement of Research Interests

My long-term research interest is a comprehensive understanding of brain networks and their development in healthy children and adolescents as well as patients suffering from child psychiatric disorders. I am particularly interested in comparing typically developing children with child-psychiatric populations, using non-invasive, child-friendly neuroimaging techniques such as electroencephalography (EEG), functional (fMRI) and structural (sMRI) magnetic resonance imaging or combined EEG-fMRI (sequential or simultaneous). My research targets different **child psychiatric disorders** with a special emphasis on **developmental dyslexia** aiming to i) clarify and delineate dysfunction and illness trajectories of specific cognitive brain networks; ii) characterize trajectories for typical and atypical functional and structural brain development; iii) identify neuroimaging measures suited to advance prediction, diagnosis and treatment response; iv) evaluate and track learning-related or therapy-induced changes in the brain during specific interventions; and v) advance the combination of child-friendly neuroimaging techniques and analyses.

Education, Positions and Employment

- 12/2015 **Venia Legendi** in Child and Adolescent Psychiatry, Neuroimaging (Electroencephalography and Magnetic Resonance Imaging). Medical faculty, *University of Zurich (UZH)* „Plasticity of the Reading Brain from the Child to the Adult: Development, Training and Prediction of Reading Outcome“
- since 2013 **Group leader at the Neuroscience Centre Zürich (ZNZ)** of the *Swiss Federal Institute of Technology (ETH)* and UZH, Switzerland
- since 2011 **Principal Investigator** of a Swiss National Science Foundation Research Grant (“Neuronal markers of grapheme-phoneme training response for prediction of successful reading acquisition in children at familial risk for developmental dyslexia”) and **Group leader for Developmental Neuroimaging** at the *Department of Child and Adolescent Psychiatry and Psychotherapy (CAPS)*, UZH, Switzerland
- 2010-2012 Participation in the Postdoc mentoring program at the UZH
- 2009-2010 **Research assistant and Postdoctoral researcher** at the CAPS, UZH, Switzerland
- 2005-2009 **Postdoctoral researcher** at the Agora Center, University of Jyväskylä, Finland and the CAPS, University of Zurich. Projects:
- “Training grapheme-phoneme correlations with a child-friendly computer game in preschool children with familial risk of dyslexia (GRAPHOGAME: U. Richardson, Jyväskylä, Finland)”
 - “Developing neural specialization for print and dyslexia” (D. Brandeis, Zurich, CH)
- 2002-2005 **PhD thesis** at the ETH and CAPS Zurich („Brain Plasticity of Visual Print Processing during Development and Visual Training“)
- 2002-2005 International PhD Program in Neuroscience, Neuroscience Center Zurich (ZNZ)
- 2000-2010 Studies of Educational Science, Biology, ETH Zurich
- 1997-2001 **Studies in Biology (Neuroscience)**, the ETH Zurich

Selection of representative publications on reading and developmental dyslexia

Karipidis, I.I., Pleisch, G., Röthlisberger, M., Hofstetter, C., Dornbierer D., Stämpfli, P., **Brem, S.** (2016). Neural initialization of audiovisual integration in prereaders at varying risk for developmental dyslexia. *Human Brain Mapping*.

Brem, S. Bach, S. Kujala, J. V., Maurer, U., Lyytinen, H., Richardson, U., Brandeis, D., (2013). An Electrophysiological Study of Print Processing in Kindergarten: The Contribution of the Visual N1 as a Predictor of Reading Outcome. *Developmental Neuropsychology* 38 (8), 567-594.

Bach, S., Richardson, U., Brandeis, D., Martin, E., & **Brem, S.** (2013). Print-specific multimodal brain activation in kindergarten improves prediction of reading skills in second grade. *Neuroimage* 82: 605-615.

Brem S., Bach S., Kucian K., Kujala J., Guttorm TK., Martin E., Lyytinen H., Brandeis D., Richardson U. (2010). Brain sensitivity to print emerges when children learn letter-speech sound correspondences. *Proc Natl Acad Sci U S A* 107(17): 7939-44.

Brem, S., Halder, P., Bucher, K., Summers, P., Martin, E., & Brandeis, D. (2009). Tuning of the visual word processing system - distinct developmental ERP and fMRI effects. *Hum Brain Mapp* 30(6), 1833-1844.

Maurer, U., **Brem, S.**, Kranz, F., Bucher, K., Benz, R., Halder, P., Steinhausen, H. C., and Brandeis, D. (2007). Impaired tuning of a fast occipito-temporal response for print in dyslexic children learning to read. *Brain* 130(Pt 12): 3200-10.

Links to Full Publication List

<http://www.researcherid.com/rid/M-7130-2016>

<http://www.kjpd.uzh.ch/de/multimod/neuroimaging/team/brem.html>