

BIOGRAPHICAL SKETCH

Provide the following information for the Senior/key personnel and other significant contributors in the order listed on Form Page 2.
Follow this format for each person. **DO NOT EXCEED FOUR PAGES.**

NAME Ritter (maiden name: Wobst), Petra	POSITION TITLE Principal Investigator / Group Leader		
eRA COMMONS USER NAME (credential, e.g., agency login)			
EDUCATION/TRAINING <i>(Begin with baccalaureate or other initial professional education, such as nursing, include postdoctoral training and residency training if applicable.)</i>			
INSTITUTION AND LOCATION	DEGREE <i>(if applicable)</i>	MM/YY	FIELD OF STUDY
Charité, University Medicine Berlin	M.D.	11/00	Medicine
Charité, University Medicine Berlin	Ph.D.	11/04	Medicine/Neuroscience
Charité, University Medicine Berlin	Priv.-Doz. (Habilitation =Assistant Professor)	01/10	Experimental Neurology

A. Personal Statement

The project will capitalize from the following research achievements by Petra Ritter's group:

- 1) Development of simultaneous ultrahigh-frequency (up to 600Hz) EEG-fMRI
- 2) Development of a setup that allows EEG-feedback during simultaneous fMRI
- 3) Development of a tool for the analysis of spatiotemporal nesting of neuronal dynamics
- 4) A comprehensive EEG-fMRI database
- 5) The ongoing development of intracranial EEG-fMRI in stroke patients in collaboration with the Center for Stroke Research Berlin and the COSBID study (Prof. Jens Dreier)

P. Ritter's is part of the Dept. of Neurology of Europe's largest University Hospital with several stroke units and a special Center for Stroke Research.

Specifically, the group aims contributing high-end multimodal neuroimaging data of healthy subjects and patients suffering from stroke or stroke-related epilepsy. The group's particular strength lies in simultaneous EEG-fMR-imaging: Hence they will feed the Virtual Brain with high quality multimodal data acquired under unconstrained (resting state) and various constrained (task) conditions. Data range from human population spike activity recorded noninvasively during fMRI to simultaneous intracranial EEG – fMRI recordings from stroke patients. P. Ritter is a physician at the Department of Neurology, Charité, Berlin holding Clinical Electrophysiology and Clinical Investigator qualifications. She is head of the Synchrony and Oscillations EEG-fMRI Group. This group combines experimental and computational methods to investigate the role of intrinsic brain activity for various brain functions. They maintain national and international interdisciplinary collaborations. P. Ritter has successfully coordinated grant applications for international and national research networks. As the coordinator of such networks and as co-organizer of international workshops (e.g. BrainModes, Brain Connectivity Workshop) she has proven scientific and management qualities. P. Ritter authored and co-authored original publications in Science, J. Neuroscience, Cerebral Cortex, Neuroimage and Human Brain Mapping. She was co-editor of a Special Issue on BrainModes that moves the focus towards the role of ongoing dynamics for understanding, diagnosis and treatment of brain pathologies.

B. Positions and Honors**Positions and Employment**

- 2009- Coordinator of the Bernstein Focus State Dependencies of Learning, Charité, Berlin
- 2009- PI at the Bernstein Center for Computational Neuroscience Berlin and Associated Researcher at the Berlin Graduate School of Mind and Brain, Berlin
- 2005– Group leader, "EEG-fMRI / Synchrony and Oscillations Group", Dept. Neurology Charité, Berlin

2002- Resident Dept. Neurology Charité, Berlin
2001-2002 Intern and Research fellow, Dept. Neurology, Charité, Humboldt University Berlin
1997-1999 Graduate fellow, functional neuroimaging group, Charité, Humboldt-University Berlin

Other Experience and Professional Memberships

2010 Co-organizer of the 'Intracranial EEG – fMRI' Workshop in Berlin (forthcoming)
2010- Member, German Academic Association
2010- Guest editor for the journal 'Progress in Biophysics and Molecular Biology'
2010 Co-organizer of the Brain Connectivity Workshop in Berlin
2009 Guest editor for the 'Journal of Neuroscience Methods'
2009 Scientific adviser for a German children's book, Publisher: Carlsen Verlag
2008-2009 Member of the Commission for the Integrated Research Institute of Life Sciences, Humboldt University Berlin
2007- Founding member and co-organizer of the BrainModes Workshop Series
2006- Member, German Society for Clinical Neurophysiology
2001- Member, German Society for Neurology
1999-2000 Medical Practical Trainings at UCLA, UCSD, Mount Sinai School of Medicine NY and Harvard Medical School
1998- Member, Society for Neuroscience
1998- Member, Organization for Human Brain Mapping
1998 United States Medical Licensing Exam Step-1

Honors

2009 Special award "Biomedical Business Idea 2009" by the Foundation Charité
2007-2009 Scholarship "Fast Track Program for young female scientists", Robert Bosch Trust
2007-2009 Scholarship "For Women in Science" Christiane Nüsslein-Volhard Trust, UNESCO and L'Oreal
2006-2009 Scholarship "Rahel Hirsch" for Habilitation at Charité, Berlin
2001-2002 Research Scholarship of the Dean for Research Charité, Berlin
1999-2000 Student Scholarship for practical training abroad, Vereinte Health Insurer

C. Selected Peer-reviewed Publications

Most relevant to the current application

1. Schultze-Kraft M, Becker F, Breakspear M, Ritter P, Exploiting the potential of three dimensional spatial wavelet analysis to explore the nesting of oscillations and spatial variance in simultaneous EEG-fMRI data. Progress in Biophysics and Molecular Biology (PBMB-D-10-00078 /under revision)
2. Freyer F, Becker R, Anami K, Curio G, Villringer A, Ritter P. (2009) Ultrahigh-frequency EEG during fMRI: Pushing the limits of imaging-artifact correction. Neuroimage 48(1):94-108
3. Ritter P, Moosmann M, Villringer A. (2009) Rolandic Alpha and Beta EEG Rhythms' Strengths are Inversely Related to fMRI-BOLD Signal in Primary Somatosensory and Motor Cortex. Human Brain Mapping. 30(4):1168-87
4. Freyer F, Aquino K, Robinson P, Ritter P, Breakspear M. (2009) Non-Gaussian statistics in temporal fluctuations of spontaneous cortical activity. Journal of Neuroscience 29(26): 8512-24
5. Ritter P, Freyer F, Curio G, Villringer A. (2008) High frequency (600Hz) population spikes in human EEG delineate thalamic and cortical fMRI activation sites. Neuroimage, 8/2008, 483-90 42(2)

Additional recent publications of importance to the field (in chronological order)

1. Reinacher M, Becker R, Villringer A, Ritter P. (2009) Oscillatory brain states interact with late cognitive components of the somatosensory evoked potential. J Neurosci Methods 183(1):49-56
2. Schubert R, Ritter P, Wüstenberg T, Preuschhof C, Curio G, Sommer W, Villringer A. (2008) Simultaneous EEG-fMRI reveals correlation of SEPs with BOLD signal in S1 during spatial attention. Cerebral Cortex 18(11):2686-700

3. Becker R, Ritter P*, Villringer A* (2008) Influence of Ongoing Alpha Rhythm on the Visual Evoked Potential. *Neuroimage*. 39(2):707-16 *Shared senior authorship
4. Ritter P, Becker R, Graefe C, Villringer A (2007) Evaluating gradient artifact correction of EEG data acquired simultaneously with fMRI, *Journal of Magnetic Resonance Imaging* 25(6):923-32
5. Becker R, Ritter P, Moosmann M, Villringer A (2005) Recording of visual evoked potentials during functional magnetic resonance acquisition periods. *Human Brain Mapping* 26(3):221-30
6. Blankenburg F, Taskin B, Ruben J, Moosmann M, Ritter P, Curio G, Villringer A (2003) Imperceptible stimuli and sensory processing impediment. *Science* 299: 1864
7. Moosmann M*, Ritter P*, Krastel I, Brink A, Thees S, Blankenburg F, Taskin B, Obrig H, Villringer A (2003) Correlates of alpha rhythm in functional magnetic resonance imaging and near infrared spectroscopy. *Neuroimage* 20: 145-158 *Shared first authorship
8. Wobst P (Ritter P), Wenzel R, Kohl M, Obrig H, Villringer A (2001) Linear Aspects of Changes in Deoxygenated Hemoglobin Concentration and Cytochrome Oxidase Oxidation during Brain Activation. *Neuroimage* 2001 Mar;13 (3):520 -530 13: 520-530
9. Wenzel R, Wobst P (Ritter P), Heekeren HH, Kwong KK, Brandt SA, Kohl M, Obrig H, Dirnagl U, Villringer A (2000) Saccadic suppression induces focal hypooxygenation in the occipital cortex. *J Cereb Blood Flow Metab* 7: 1103-1110
10. Obrig H, Wenzel R, Kohl M, Horst S, Wobst P (Ritter P), Steinbrink J, Thomas F, Villringer A (2000) Near-infrared spectroscopy: does it function in functional activation studies of the adult brain? *Int J Psychophysiol* 35: 125-142

D. Research Support

Ongoing Research Support

BMBF 01GQ0971 Ritter (PI) 09/2009-08/2014
Interplay between intrinsic dynamics and tactile perceptual learning
Role: PI

Completed Research Support

BMBF AUS 08/002 Ritter (PI) 2008
Non-linear dynamics and excited modes in large-scale brain signals
Role: PI

Faculty Resources Grant, Charité, Berlin 01/2006-02/2009
Role of intrinsic activity for cerebral information processing
Role: PI

BMBF Villringer (PI) 6/2005-5/2008
Rolandic Rhythms and Somatosensory Processing
Role: Co-Investigator