Program of the 15th International Conference on Retinal Proteins

Sunday, September **30, 2012**	
15:00 to 19:30	**Opening**
15:00 to 17:30	Registration and Poster setup
17:30 to 18:40	Welcome drink
18:40 to 19:00	**Welcome Address** Gebhard Schertler and Ulrike Alexiev
19:00 to 19:30	**Title:** A look back: The microbial rhodopsins **Dieter Oesterhelt**, MPI of Biochemistry, Martinsried
19:30	*Buffet Dinner*

Monday, October 01, **2012**	
9:00 to 10:30	**Session I: Retinal Proteins in the Visual System** Chair: Seva Gurevich
9:00 to 9:30	**Title:** Thermal stability of rhodopsin **Elsa Yan**, Yale University, New Haven
9:30 to 9:50	**Title:** Rhodopsin evolution and structural plasticity: Absolutely conserved features are inessential **Douglas Theobald**, Brandeis University, Waltham
9:50 to 10:10	**Title:** Vibrational modes of the retinal Schiff base in primate color vision **Kota Katayama**, Nagoya Institute of Technology (poster talk)
10:10 to 10:30	**Title:** From molecular to cellular protein dynamics in visual rhodopsin function **Ulrike Alexiev**, Free University Berlin
10:30 to 11:00	*Coffee Break*
11:00 to 12:30	**Session II: Rhodopsin Structure and Function** Chair: Jörg Standfuss
11:00 to 11:30	**Title**: Vertebrate opsin: Active state and retinal channel **Peter Hofmann**, Charité Berlin
11:30 to 11:50	**Title:** Orientation of the retinal chromophore in metarhodopsin II revisited **Steven Smith**, Stony Brook University
11:50 to 12:10	**Title:** Understanding molecular signatures of GPCR conformational states **AJ Venkatakrishnan**, MRC-Laboratory of Molecular Biology, Cambridge (poster talk)
12:10 to 12:30	**Title:** Light-induced structural changes of rhodopsin probed by cysteine S-H stretching vibrations **Yasushi Imamoto**, Kyoto University (poster talk)
12:30 to 14:00	*Lunch break*

14:00 to 15:50	**Session III: Retinal Proteins and Disease** Chair: Elsa Yan
14:00 to 14:30	**Title:** Generation, degeneration, preservation: hypoxia as a retinal regulator **Christian Grimm**, University of Zürich
14:30 to 14:50	**Title:** Unraveling new correlations between rhodopsin mutations and retinal disease **Pere Garriga**, Universitat Politecnica de Catalunya, Barcelona
14:50 to 15:10	**Title:** The structural basis for congenital stationary night blindness caused by mutations in rhodopsin **Jörg Standfuss**, Paul Scherrer Institut, Villigen PSI
15:10 to 15:30	**Title:** Restoration of folding and function in rhodopsin ADRP mutants **Phil Reeves**, University of Essex
15:30 to 15:50	**Title:** In vitro and in vivo studies of the interaction of chlorin e6 with rhodopsin and its role in *retinitis pigmentosa* **Judith Klein-Seetharaman**, University of Pittsburgh
15:50 to 16:30	Coffee Break
16:30 to 18:20	**Session IV: Interacting Effector Proteins** Chair: David Farrens
16:30 to 17:00	**Title:** The mechanism of arrestin-1 binding to light-activated phosphorhodopsin **Seva Gurevich**, Vanderbilt University, Nashville
17:00 to 17:20	**Title:** Arrestin-rhodopsin binding at single amino acid resolution **Martin Ostermaier**, Paul Scherrer Institut, Villigen PSI (poster talk)
17:20 to 17:40	**Title:** Structural and functional insights into the arrestin-rhodopsin binding stoichiometry **Martha Sommer**, Charité Berlin
17:40 to 18:00	**Title:** GPCR signal transduction investigated by FTIR spectroscopy **Matthias Elgeti**, Charité Berlin (poster talk)
18:00 to 18:20	**Title:** Combined X-ray crystallographic, *in situ* UV-Vis and QM/MM studies highlight alternate retinal binding modes in CRALBP **Achim Stocker,** University of Bern
18:30 to 20:00	*Dinner Break*
20:00 -	**Bar and Poster Session**

Tuesday, October 02**, 2012**	
9:00 to 9:45	**Keynote Lecture**
9:00 to 9:45	**Keynote:** Channelrhodopsin: 140 years of research **Peter Hegemann**, Humboldt University Berlin
9:45 to 12:10	**Session V: Channelrhodopsin Structure and Function** Chair: Peter Hegemann
09:45 to 10:15	**Title:** Structural basis for light-gated cation conductance by channelrhodopsin **Osamu Nureki**, University of Tokyo
10:15 to 10:35	**Title:** Diversity and mechanisms of channelrhodopsins and homologous photosensors **John Spudich,** University of Texas, Houston
10:35 to 10:55	**Title:** Proton transfer reactions in channelrhodopsin-2 **Joachim Heberle**, Free University Berlin
10:55 to 11:10	*Coffee Break*
11:10 to 11:30	**Title:** Primary reactions of microbial rhodopsins **Josef Wachtveitl**, University Frankfurt
11:30 to 11:50	**Title:** On the photocycle of C128T step function in channelrhodopsin 2 **Franz Bartl**, Charité Berlin
11:50 to 12:10	**Title:** Tuning the light sensitivity of channelrhodopsin 2 **Christian Bamann,** MPI of Biophysics, Frankfurt (poster talk)
12:10 to 13:40	*Lunch break*
13:40 to 15:10	**Session VI: Application of Retinal Proteins** **Chair:** Peter Hofmann
13:40 to 14:10	**Title:** Exploring the optogenetic potential of metazoan opsins **Robert Lucas**, Manchester University
14:10 to 14:30	**Title:** Engineering genetically encoded high-performance photo-switchable ion channels **Kyoko Tsunoda**, Humboldt University Berlin (poster talk)
14:30 to 14:50	**Title:** A protein-based retinal prosthesis: Retinal stimulation via an ion gradient **Nicole Wagner**, University of Connecticut, Storrs (poster talk)
14:50 to 15:10	**Title:** Mechanism of voltage-sensitive fluorescence in Archaerhodopsin 3 **Dougal Maclaurin**, Harvard University, Boston (poster talk)
15:10 to 15:40	*Coffee Break*

15:40 to 16:50	**Session VII: Emerging Techniques** Chair: Ulrike Alexiev
15:40 to 16:10	**Title:** Probing GPCR Signaling with genetically-encoded non-natural amino acids **Thomas Sakmar**, Rockefeller University, New York
16:10 to 16:30	**Title:** Solution-State NMR studies of the seven-helix transmembrane protein sensory receptor II **Antoine Gautier**, Paul Scherrer Institut, Villigen PSI
16:30 to 16:50	**Title:** How activating mutations and allosteric modulators affect the structure, function and conformational dynamics in GPCRs: Insights gained from site-directed fluorescence labeling (SDFL) studies **David Farrens**, Oregon Health and Science University, Portland
16:50 to 20:00	*Wine tasting at local winery*
20:00 to	*Dinner Break*

Wednesday, October 03**, 2012**	
9:00 to 10:30	**Session VIII: Microbial Rhodopsins 1: Sensory Rhodopsins** Chair: Hideki Kandori
9:00 to 9:30	**Title:** Sensory rhodopsin signaling complex and its HAMP domain **Martin Engelhard**, MPI of Molecular Physiology, Dortmund
9:30 to 9:50	**Title:** Phototransduction cascade of *Anabaena* sensory rhodopsin – conformational changes of the receptor and the transducer **Leonid Brown**, University of Guelph
9:50 to 10:10	**Title:** Functional diversity of sensory rhodopsins from microbes **Yuki Sudo**, Nagoya University
10:10 to 10:30	**Title:** The proton circulation pathways in the two-photon cycle of sensory rhodopsin-I **Rob Bogomolni**, University of California, Santa Cruz
10:30 to 11:00	*Coffee Break*
11:00 to 12:30	**Session IX: Microbial Rhodopsins 2: Light-driven Ion Pumps** Chair: Klaus Gerwert
11:00 to 11:30	**Title:** Crystal structure of an M state of the azide complex of *pharaonis* halorhodopsin **Tsutomu Kouyama**, Nagoya University
11:30 to 11:50	**Title:** Secondary and tertiary structure of bacteriorhodopsin unfolded in SDS micelles and during in vitro refolding **Janos Lanyi**, University of California, Irvine
11:50 to 12:10	**Title:** Mixing potential energy surfaces of the ultrafast isomerization of retinal in bacteriorhodopsin **Oliver Ernst**, University of Toronto
12:10 to 12:30	**Title:** Initial conformation effects on primary events in retinal proteins - ASR and BR **Sandy Ruhman,** The Hebrew University of Jerusalem
12:30 to 16:00	*Free afternoon with hiking possibilities*

16:00 to 17:50	**Session X: Diversity in retinal proteins** Chair: Yoshinori Shichida
16:00 to 16:30	**Title:** New microbial rhodopsins from the ocean **Hideki Kandori,** Nagoya Institute of Technology
16:30 to 16:50	**Title:** Molecular and functional properties of non-visual opsins **Akihisa Terakita**, Osaka City University
16:50 to 17:10	**Title:** Crystal structure of a blue proteorhodopsin **Hartmut Luecke**, University of California, Irvine
17:10 to 17:30	**Title:** Temperature-dependent solid-state electron transport through bacteriorhodopsin: comparison to other proteins **Mordechain Sheves**, Weizmann Institute of Science, Rehovot
17:30 to 17:50	**Title:** Molecular properties of vertebrate non-visual opsins, Opn5 and Opn5-like protein **Takahiro Yamashita**, Kyoto University
18:00 to 20:00	*Dinner Break*
20:00 -	**Bar and Poster Session**

Thursday, October 04**, 2012**	
9:00 to 10:30	**Session XI: Structure and Function of 7TM receptors** Chair: Gebhard Schertler
9:00 to 9:30	**Title:** Structure of the agonist-bound neurotensin receptor NTS1 **Reinhard Griesshammer**, National Institutes of Health, Rockville
9:30 to 9:50	**Title:** Structural insights into opioid receptor function **Sebastian Granier**, Stanford University
9:50 to 10:10	**Title:** Crystal structure of the lumi intermediate of squid rhodopsin **Midori Murakami**, Nagoya University
10:10 to 10:30	**Title:** Prediction of ligand-induced activation of a human olfactory receptor by combining site-directed mutagenesis with dynamic homology modeling **Steffen Wolf**, CAS–MPPI for Computational Biology, Shanghai, Ruhr University Bochum (poster talk),
10:30 to 11:00	*Coffee Break*
11:00 to 12:10	**Session XII: Conformational changes in 7TM proteins** Chair: Oliver Ernst
11:00 to 11:30	**Title:** The structure and function of GPCRs studied by computational tools **Leonardo Pardo**, Universitat Autònoma de Barcelona
11:30 to 11:50	**Title:** Light induced structural changes of photoreceptor membrane proteins as revealed by *in situ* photo-irradiated solid-state NMR **Akira Naito**, Yokohama National University
11:50 to 12:10	**Title:** The long-range interaction between EF-loop and retinal binding pocket in proteorhodopsin characterized by solid-state NMR **Michaela Blum**, Goethe University Frankfurt (poster talk)
12:10 to 14:00	*Lunch break/International Advisory Board meeting*

14:00 to 16:00	**Session XIII: Theoretical aspects and structural water molecules,** Chair: Xavier Deupi
14:00 to 14:20	**Title:** Photoabsorption of ultraviolet cone pigments regulated by active site water molecules **Victor Batista**, Yale University, New Haven
14:20 to 14:40	**Title:** Proton-transfer via protein-bound water molecules in microbial rhodopsins **Klaus Gerwert**, Ruhr University, Bochum
14:40 to 15:00	**Title:** Inter-helical hydrogen bonds and water dynamics in microbial rhodopsins **Nicoleta Bondar**, Free University Berlin
15:00 to 15:20	**Title:** The mechanism of photoisomerization in ASR – Insights from QM/MM simulations **Igor Schapiro**, Bowling Green State University (poster talk)
15:20 to 15:40	**Title:** Classical and mixed quantum mechanical/molecular mechanical **Ursula Roethlisberger**, EPFL, Lausanne
15:40 to 16:00	**Title:** Classical Force Field and QM/MM simulations of retinal proteins **Marcus Elstner**, Karlsruhe Institute of Technology
16:00 to 16:30	*Coffee Break*
16:30 to 17:30	**Closing Keynote Lecture**
16:00 to 16:45	**Keynote**: Rod and cone visual pigments: Molecular properties and functional diversity **Yoshinori Shichida,** Kyoto University
16:45 to 17:00	**Closing Remarks:** Gebhard Schertler and Ulrike Alexiev
18:30 to 20:30	*Conference Dinner*
Friday, October 05**, 2012**	
7:00 to 10:00	*Breakfast and Departure*