Monday, June 21		
09.00 - 09.10	Welcome / Opening	Klaus Peter Hofmann, Berlin
Session I	Biogenesis and Regeneration of Retinal Proteins	Chair: ~~NN~~ Tsuda M
09.10 - 09.35	Krzysztof Palczewski, Seattle	Non-invasive two-photon imaging reveals "retinosomes", vitamin A storage structures, in the eye
09.35 - 10.00	Zsolt Ablonczy, Charleston	Use of mouse models for the study of the retinoid visual cycle
10.00 - 10.25	Russel G. Foster, London	Non-rod, non-cone photoreception in the vertebrate eye
10.25 - 10.50	*Coffee Break*	
Session II	Structures of Visual Signalling Proteins	Chair: Johan Lugtenburg, Leiden
10.50 - 11.15	Jade Li, Cambridge	Structure of bovine rhodopsin in a trigonal crystal form
11.15 - 11.40	Yoshinori Shichida, Kyoto	Functional diversity of rhodopsin
11.40 - 12.05	Gebhardt Schertler, Cambridge	Structure of Metarhodopsin I obtained by cryo Electron Microscopy
12.05 - 12.30	Keith Moffat, Chicago	Time-resolved crystallographic studies of blue light photoreceptors
12.30 - 14.30	*Lunch and Poster Mounting*	
Session III	Structures of Bacterial Retinal Proteins	Chair: Judith Klein-Seetharaman, Pittsburgh
14.30 - 14.55	Brigitte Schobert, Irvine	Crystallographic description of the photointermediates of bacteriorhodopsin
14.55 - 15.20	Jörg Labahn, Jülich	Transmembrane signalling: sensory rhodopsin II-transducer complex
15.20 - 15.45	Hartmut Luecke, Irvine	Vision in microbes: photoreceptors and their transducers in Archaea and Cyanobacteria
15.45 - 16.10	*Coffee Break*	
Session IV	Primary Photochemistry	Chair: Lajos Keszthelyi, Szeged
16.10 - 16.35	Richard Mathies, Berkeley	Picosecond and femtosecond vibrational structural studies of rhodopsin activation
16.35 - 17.00	Josef Wachtveitl, Frankfurt	Primary Reactions of Proteorhodopsin
17.00 - 17.25	Shigehiko Hayashi, Kyoto	Molecular dynamics simulation of bacterio-hodopsin's photoisomerization using ab initio forces for the excited state chromophore
17.25 - 17.50	Tsutomu Kouyama, Nagoya	Water Translocation during the Photocycle of Bacteriorhodopsin and Morphological Changes in the Protein Cavities
18.30 - 20.00	*Dinner*	
Session V	Posters	Chairs: Norbert A. Dencher, Darmstadt; Ulrike Alexiev, Berlin
20.00 - 21.00	Short oral presentation of each poster	

Tuesday, June 22		
Session VI	Ion Translocation in Retinal Proteins	Chair: Sergej P. Balashov, Irvine
09.00 - 09.25	Jörg Tittor, Martinsried	A step towards understanding the conformational change in bacteriorhodopsins calatytic cycle
09.25 - 09.43	Andrei K. Dioumaev, Irvine	Photocycle and proton translocation in proteorhodopsin
09.43 - 10.00	Thomas Friedrich, Frankfurt	Electrophysiological analysis of wild-type and mutant Proteorhodopsin expressed in *Xenopus* oocytes
10.00 - 10.25	Jack Sullivan, New York	Exploiting Charge Motions to Probe Rhodopsin Activation and Regeneration
10.25 - 10.50	*Coffee Break*	
Session VII	Retinal Proteins	Chair: Akio Maeda, Kyoto
10.50 - 11.15	Georg Nagel, Frankfurt	Channelrhodopsins, a new class of sensory rhodopsins
11.15 - 11.40	Hideki Kandori, Nagoya	Proton transfer reactions in rhodopsins studied by low- temperature FTIR spectroscopy
11.40 - 12.05	Marilyn Gunner, New York	The role of clusters of ionizable residues in proton pumping proteins
12.05 - 12.30	Régis Pomès, Toronto	Molecular mechanisms of proton relay and blockage in membrane proteins
12.30 - 14.30	*Lunch*	
Session VIII	Signal Transduction by Retinal Proteins I	Chair: Naoki Kamo, Sapporo
14.30 - 14.55	John Spudich, Houston	Microbial Rhodopsins: Wide-Ranging Diversity in Phylogeny and Functional Mechanisms
14.55 - 15.20	Johann Klare, Dortmund	The NpSRII/NpHtrII complex: structure of the missing link
15.20 - 15.45	Oleg A. Sineshchekov, Moscow	Sensory rhodopsins of flagellates
15.45 - 16.10	*Coffee Break*	
Session IX	Signal Transduction by Retinal Proteins II	Chair: Tom Sakmar, New York
16.10 - 16.35	Reiner Vogel, Freiburg	Metarhodopsin III - a mystery solved
16.35 - 17.00	Oliver Ernst, Berlin	Signal transduction from rhodopsin to transducin
17.00 - 17.25	Peter Hegemann, Regensburg	The seven rhodopsin-like proteins from Chlamydomonas
17.25 - 17.50	David L. Farrens, Portland	Structural and dynamic factors controlling Rhodopsin stability and signaling
18.30 - 20.00	*Dinner*	
Session X	Signal Transduction III	Chair: Ernst Helmreich, Würzburg
20.00 - 20.25	Martin Lohse, Würzburg	RKIP - a switch between two different signalling pathways
20.25 - 20.50	King-Wai Yau, Baltimore	Signalling by Melanopsin-Associated Photodetection System in the Retina
20.50 - 21.15	Motoyuki Tsuda, Himeji	Origin of vertebrate eye and pineal characterized by Ci-opsins

Wednesday. June 23		
Session XI	Controversies on Retinal Protein Mechamisms	Chairs: E. Bamberg, ~~G. Büldt,~~ K.P Hofmann
09.00 - 09.10	Introduction	~~G. Büldt, Jülich~~
09.10 - 10.00	Bacteriorhodopsin	J. Lanyi, 8; K. Gerwert, 6; N.A. Dencher, 6; W. Zinth, 6; R. Mathies, 6; R. Neutze, 6; P. Tavan, 6 ; M. Stockburger, 6
10.00 - 10.30		Contributions from the audience
10.30 - 10.45	*Coffee Break*	
10.45 - 11.20	Rhodopsin	K.P. Hofmann, 8; F. Siebert, 6; ~~D. Oprian, 6;~~ M. Sheves, 6; ~~T. Sakmar, 6;~~ K. Foster, 6
11.20 - 11.50		Contributions from the audience
11.50 - 12.00	*Coffee Break*	
12.00 - 12.35	Seven transmembrane helices and the retinal: How to make pumps, sensors and channels	E. Bamberg 8; J. Spudich, 6; M. Engelhard, 6; M. Gutman, 6
12.35 - 13.00		Contributions from the audience
13.00 - 14.30	*Lunch*	
		the numbers indicate the time (min.) provided for the discussants

The purpose of this session is to distill from current controversies a more generally accepted picture of how retinal proteins work. Three questions should be answered:

- What is the generally accepted view?
- What is in debate?
- What is unknown?

In the first part of each topic, senior colleagues will outline their views in short talks (*numbers following names denote maximum time for contribution*). In the second part, members of the audience will give comments and present own views. In order to be efficient in time for illustrations, transparencies for overhead projectors can be used, power point presentations are not allowed. Transparencies and pencils for quick drawings will be provided. The chairmen expect a lively but harmonious discussion. Violations against this rule will be punished by a fine of 10 Euro or Dollar for beer in the evening get-together

Wednesday afternoon and evening are free for discussions and/or excursions

Excursions can be done individually or on organized trips. We plan to offer organized excursions to Salzburg, Munich or Herrenchiemsee.

Ferry 3,35

Thursday, June 24		
Session XII	Recent Progress in Techniques I	Chair: Pal Ormos, Szeged
09.00 - 09.10	Judith Herzfeld, Waltham	Introduction
09.10 - 09.35	Robert Griffin, Cambridge	Solid state NMR Studies of bR and its Photocycle Intermediates with Dipolar Recoupling and Dynamic Nuclear Polarization
09.35 - 10.00	Hartmut Oschkinat, Berlin	Protein Structure Determination by Solid State MAS NMR
10.00 - 10.25	Willem DeGrip, Leiden	Probing the retinal binding pocket in visual pigments: Mapping of major interaction sites by spectroscopic techniques in combination with retinal analogs
10.25 - 10.50	*Coffee Break*	
Session XIII	Recent Progress in Techniques II	Chair: ~~Koji Nakanishi, Columbia N.Y.~~
10.50 - 11.15	Ehud Landau, Galveston	The role of lipids in elucidating the structure-function relationship in retinal proteins
11.15 - 11.40		
11.40 - 12.05	Mordecai Sheves, Rehovot	Binding of retinal to apomembrane of retinal proteins: implication to protein structure
12.05 - 12.30	Donald Bashford, Memphis	Non-equilibrium modeling of proton flow in the bacteriorhodopsin photocycle
12.30 - 14.30	*Lunch*	
Session XIV	Related Photosensors	Chair: Esteve Padrós, Barcelona
14.30 - 14.40		Introduction
14.40 - 15.05	Carl Bauer, Bloomington	Analysis of AppA; a member of the newly identified family of blue-light absorbing photoreceptors
15.05 - 15.30	Joachim Heberle, Jülich	Vibrational spectroscopy explores the photoreaction of LOV proteins
15.30 - 15.55	Masakatzu Watanabe, Myodaiji	Photoactivated adenylyl cyclase (PAC), a novel blue-light receptor flavoprotein with an intrinsic effector function
15.55 - 16.20	*Coffee and cake*	
Session XV		~~Dieter Oesterhelt, Martinsried~~
16.30	Hartmut Michel, Frankfurt	Cytochrome *C* oxidase - a controversial enzyme
	Ernst Bamberg, Frankfurt	Good bye / Closing
19.00 - 22.00	*Conference Dinner and End of Conference*	