

37th Blankenese Conference

Chairmen

Wolfgang Meyerhof, Dietmar Richter

Co-organizers: Maik Behrens, Matthias Kneussel and Kathrin Ohla



SYNAPTIC PLASTICITY VERSUS STABILITY INFORMATION UPTAKE, PROCESSING AND CODING

Joint conference of Syn Signal and Deutsche Forschungsgemeinschaft FOR 2419

Dedicated to

Wolfgang Meyerhof

Head of the Department of Molecular Genetics,
German Institute of Human Nutrition (DfE) Potsdam and
Professor of the University of Potsdam
on the occasion of his retirement 2017

SCIENTIFIC PROGRAM

Hamburg-Blankenese Elsa-Brändström-Haus

May 6th – 10th, 2017

Saturday, May 6th, 2017

10:00 Registration and check-in at the Elsa-Brändström Conference Center

14:00 **Opening session**

Chair

DIETMAR RICHTER (HAMBURG)

MATTHIAS KNEUSSEL (HAMBURG)

WALTER KNÖCHEL (BERLIN)

Former Director, Institute of Biochemistry, University of Ulm

HANS-GEORG JOOST (POTSDAM)

Former Director, German Institute of Human Nutrition, DIfE

MAIK BEHRENS (POTSDAM)

Department of Molecular Genetics, DIfE

FRANK ZUFALL (HOMBURG)

Director Department of Physiology, University of Saarland

Festvortrag

LINDA BUCK (SEATTLE)

Nobel Laureate, Fred Hutchinson Cancer Research Center

Deconstructing smell

coffee break

NOBUTAKA HIROKAWA (TOKYO)

Molecular motors, KIFs: regulation of activity-dependent trafficking, neuronal function, and development

VERONICA EGGER (REGENSBURG)

The vertebrate olfactory bulb granule cell: a confederation of mini-neurons

THOMAS OERTNER (HAMBURG)

How activity patterns shape hippocampal connectivity

Welcome reception

Sunday, May 7th, 2017

8:30 **Session 1**

Chair

MICHAEL FROTSCHER (HAMBURG)

JOSEF KITTLER (LONDON)

Membrane dynamics of GABAA receptors in synaptic health and disease

MATTHIAS KNEUSSEL (HAMBURG)

Cytoskeletal transport and protein turnover at neuronal synapses

Short communications

YOLANDA GUTIÉRREZ (MADRID)

Role of kinesin-3 molecular motors during synaptic plasticity in the hippocampus

NIRUPA CHAUDHARI (MIAMI)

Transcription factors to define taste vs somatosensory neurons of the geniculate ganglion

10:15 **Poster session 1**

12:30 lunch

14:00 **Session 2**

Chair

HANS-GEORG JOOST (POTSDAM)

RICHARD TSIEN (NEW YORK)

A presynaptic mechanism for redistribution of synaptic weights in a recurrent circuit

KAZUSHIGE TOUHARA (TOKYO)

Labeled-line organization of the vomeronasal sensory system for controlling pheromone-mediated behavioral output in mice

KATHRIN OHLA (POTSDAM)

Dynamic coding of taste features in the human brain

15:45 coffee break

Chair

KATHRIN OHLA (POTSDAM)

TAKAKI KOMIYAMA (LA JOLLA)

Imaging neural ensembles during learning

YUKIKO GODA (SAITAMA)

Controlling synapse variability and plasticity in single neurons

FRANK ZUFALL (HOMBURG)

Threat detection by the mammalian olfactory system

18:30 dinner

20:00 **Evening session**

Chair

THOMAS OERTNER (HAMBURG)

JAY GOTTFRIED (CHICAGO)

Electrophysiological correlates of sniffing and smelling in human piriform cortex

ANTONINA ROLL-MECAK (BETHESDA)

How cells read and write the tubulin code

ANNA AKHMANOVA (UTRECHT)

Regulation of microtubule organization by microtubule end-binding proteins

Monday, May 8th, 2017

8:30 **Session 3**

Chair

MICHAEL BLAUT (POTSDAM)

YUZO NINOMIYA (FUKUOKA)

Molecular, cellular and neural analysis of gustatory signaling pathways in the mouse periphery

ALFREDO FONTANINI (STONY BROOK)

Associative learning and anticipatory signals in the gustatory system

STEFAN REMY (BONN)

Neural circuits mediating the locomotor state dependent firing of neurons in the hippocampal formation

10:15 coffee break

Chair

ANNETTE SCHÜRDMANN (POTSDAM)

CARLOS DOTTI (MADRID)

Effect of age on the epigenetics of learning and memory genes

JOSÉ ESTEBAN (MADRID)

PI3K-PTEN signaling for synaptic plasticity

STEVEN MUNGER (GAINESVILLE)

Molecular and neural substrates of olfactory-dependent social learning

12:30 lunch

13:45 **Session 4**

Chair

MANUEL FRIESE (HAMBURG)

SCOTT SODERLING (DURHAM)

Molecular architecture of inhibitory synapses: implications for plasticity and disorders

RAINER FRIEDRICH (POTSDAM)

Deconstruction and reconstruction of olfactory computations

MAIK BEHRENS (POTSDAM)

Functional flexibility of the vertebrate bitter taste receptor family

15:30 coffee break

16:15 harbor boat tour with lecture by Reinhard Hohlfeld and dinner in Hotel Hafen Hamburg

REINHARD HOHLFELD (MUNICH)

The illusion of objective reality or plasticity versus stability of subjective reality

Tuesday, May 9th, 2017

8:30 **Session 5**

Chair

MAIK BEHRENS (POTSDAM)

ALAN CARLETON (GENEVA)

Neural coding and plasticity of representations in cell assemblies of the mammalian olfactory system

MARTIN FUHRMANN (BONN)

Synaptic correlates of learning and memory

YUICHI IINO (TOKYO)

*Molecular and neural circuit mechanisms for experience-dependent behavioral switching in *C. elegans**

10:15 **Poster session 2**

12:30 lunch

14:00 **Session 6**

Chair

FROYLAN CALDERON (HAMBURG)

HORST VOGEL (LAUSANNE)

Ligand-gated ion channels: from 3D structure to transmembrane signaling

DONALD KATZ (WALTHAM)

Dynamics and multi-modality in gustatory cortical function

Short communications

DIANE BISSEN (FRANKFURT)

GRIP1 and its interactions in dendritogenesis and synaptic plasticity

LUIS SARAIVA (DOHA)

The evolutionary transcriptome landscape of mammalian olfaction

15:45 coffee break

Chair

MARINA MIKHAYLOVA (HAMBURG)

WEN LI (TALLAHASSEE)

Short-term and long-term effects of olfactory learning

KLAUS-ARNIM NAVE (GÖTTINGEN)

Powering axons: novel functions of myelinating glial cells

Short communications

RICHARD HÖCHENBERGER (POTSDAM)

Quick and reliable estimation of taste sensitivity using adaptive methods

FRANK HEISLER (HAMBURG)

Muskelin regulates PrPC vesicle and membrane turnover in the context of prion disease

Farewell dinner

Wednesday, May 10th, 2017

8:30 **Session 7**

Chair

DIETMAR KUHL (HAMBURG)

DANIEL CHOQUET (BORDEAUX)

Nanoscale AMPA receptor organization and synaptic plasticity

DONALD WILSON (NEW YORK)

Behavior-dependent competition between bottom-up and top-down inputs to olfactory cortex

STEPHEN ROPER (MIAMI)

The puzzle of peripheral taste signals: breaking the code

10:15 coffee break

Chair

WOLFGANG MEYERHOF (POTSDAM)

ROBERT MARGOLSKEE (PHILADELPHIA)

Interrogating sweet taste cells

DMITRI CHKLOVSKII (NEW YORK)

Similarity matching: a new principle of neural computation

PETER JONAS (VIENNA)

Synaptic mechanisms of pattern completion

concluding remarks / departure

Poster presentations

1. Sherlley Amsellem and Kathrin Ohla (Potsdam) Taste-induced olfaction: taste-induced changes in odor perception.
2. Margarita Anisimova, Bas van Bommel, Thomas Oertner, Simon Wiegert and Christine Gee (Hamburg) Optogenetic induction of spike-timing-dependent plasticity at hippocampal synapses.
3. Jacek Biernat, Marcus Pickhardt, Sabrina Hübschmann, Thomas Timm, Annukka Aho, Eva-Maria Mandelkow and Eckhard Mandelkow (Bonn, Giessen, Hamburg) Tau toxicity and neurodegeneration: staging and pharmacological intervention in a cell model.
4. Diane Bissen, Julia Geiger, Eva Harde, Sylvia Pfennig, Franziska Foss and Amparo Acker-Palmer (Frankfurt) GRIP1 and its interactants in dendritogenesis and synaptic plasticity.
5. Marta Bromke, Alessandro Marchoiri, Kristina Lossow, Anne Brockhoff, Kristina Blank, Maik Behrens and Wolfgang Meyerhof (Potsdam) The generalists and the specialists – insight from an expanded screening of human bitter taste receptor agonists.
6. Julia Bär, Oliver Kobler, Bas van Bommel, Anja Konietzny and Marina Mikhaylova (Hamburg, Magdeburg) Periodic actin rings shape the neck of dendritic spines.
7. Julia Bär, Bas van Bommel, Anja Konietzny, Ping An Yuan Xiang, Philipp Schätzle, Rajeev Raman, Casper Hoogenraad, Michael Kreutz and Marina Mikhaylova (Hamburg, Magdeburg, Utrecht) Novel insights on regulation of F-actin dynamics and stability in dendritic spines.
8. Aida Cardona-Alberich, Tatyana Koledachkina, Jennifer Keim, Philipp Christoph Janiesch, Peter Šoba, Thomas Lingner, Martin Müller and Kent Duncan (Hamburg, Göttingen) eIF2D/Ligatin coordinates synaptic function in vivo by modulating translation of specific mRNAs.
9. Xuejun Chai, Lingzhen Song and Michael Frotscher (Hamburg) Respiratory acidosis induces neuronal migration defects in the neocortex and hippocampus.
10. Oana Constantin, Ulrike Scheib, Daniel Udvari, Peter Hegemann, Thomas Oertner and Christine Gee (Hamburg, Berlin) Optogenetic manipulation of cyclic nucleotides and hippocampal synaptic plasticity.
11. Sushma Dagar, Bernd van Stegen, Rebekka Ochs, Hermann Aberle and Kurt Gottmann (Düsseldorf) Activity-dependent compensatory endocytosis is controlled by N-cadherin at central synapses.
12. Frank Dennissen, Marta Anglada-Huguet, Astrid Sydow and Eva-Maria Mandelkow (Bonn, Hamburg) Synaptic degeneration in animal models of Tau pathology: toxicity with or without aggregation.
13. Alexander Drakew, Urban Maier and Michael Frotscher (Hamburg) Single synapses on mossy cells control the hippocampal network depending on their histories.
14. Céline Dürst, Christian Schulze, Simon Wiegert and Thomas Oertner (Hamburg) Imaging glutamate release at individual Schaffer collateral synapses.
15. André Friedrich, Hatmone Miroci, Claudia Schob, Susanne Fehr, Tassilo Jungenitz, Stephan Schwarzacher, Stefan Kindler and Evita Mohr (Hamburg) Makorin ring zinc-finger protein 1 (MKRN1), a novel PABP-interacting protein, stimulates translation in nerve cells.

16. Kira Gromova, Mary Muhia, Nicola Rothhammer, Irina Schaefer, Edda Thies, Olga Schevchuk and Matthias Kneussel (Hamburg, Braunschweig, Göttingen) Neurobeachin/KIF21B interactions regulate NMDA receptor endocytic recycling and participate in social behavior.
17. Yolanda Gutiérrez, Sergio López García, Argentina Lario, Cédric Delevoye and José Esteban (Madrid, San Francisco, Paris) Role of kinesin-3 molecular motors during synaptic plasticity in the hippocampus.
18. Fatemeh Hasani-Nia, Victoria Martens, Hans-Hinrich Hoenck and Hans-Jürgen Kreienkamp (Hamburg) Functional analysis of SHANK3 mutations associated with autism spectrum disorders.
19. Frank Heisler, Susanne Krasemann, Hermann Altmeppen, Yvonne Pechmann, Leonhard Veenendaal, Mary Muhia, Michaela Schweizer, Markus Glatzel and Matthias Kneussel (Hamburg) Muskelin regulates PrPC vesicles and membrane turnover in the context of prion disease.
20. Thu-Huong Hoang, Verena Aliane and Denise Manahan-Vaughan (Bochum) Novel exploration of discrete positional or directional spatial cues induces IEG mRNA expression in distinct hippocampal subregions.
21. Richard Höchenberger and Kathrin Ohla (Potsdam) Quick and reliable estimation of taste sensitivity using adaptive methods.
22. Nikolaos Karalis and Anton Sirota (Munich) Respiratory entrainment of prefrontal circuits.
23. Seiji Kitajima, Yutaka Maruyama, Kristina Lossow, Maik Behrens, Yutaka Ishiwatari and Wolfgang Meyerhof (Potsdam, Kawasaki) Characterization of CaSR-expressing taste cells in the mouse posterior tongue.
24. Malte Klüssendorf, Judith Koliwer and Hans-Jürgen Kreienkamp (Hamburg, Bielefeld) Functional relevance of the trans-Golgi associated protein PIST in the central nervous system.
25. Sergei Klykov, Eugene Katrukha, Irina Schaefer, Bas van Bommel, Kira Brune, Antonio Virgilio Failla, Matthias Kneussel, Egor Loktionov and Marina Mikhaylova (Hamburg, Utrecht, Moscow) Time matters: Tracking organelle-organelle interactions in living cells.
26. Laura Laprell, Ivan Tochitsky, Kuldeep Kaur, Michael Manookin, Marco Stein, David Barber, Christian Schoen, Stylianos Michalakis, Martin Biel, Richard Kramer, Martin Sumser, Dirk Trauner and Russell Van Gelder (Munich, Seattle, Berkeley, Hamburg) Photopharmacological control of bipolar cells restores visual function in blind mice.
27. André Lopes, Laura Ruschkies, Petra Breiden, Michaela Schweizer, Christian Lohr, Torben Hausrat and Matthias Kneussel (Hamburg) Spastin regulates microtubule dynamics and is required for normal motor and cognitive functions.
28. Kristina Lossow, Maik Behrens and Wolfgang Meyerhof (Potsdam) Molecular organization of taste cells.
29. Denise Manahan-Vaughan (Bochum) Qualitative and differentiated impact of sensory input on hippocampal information processing.
30. Victoria Martens, Fatemeh Hassani-Nia, Hans-Hinrich Hoenck, Igor Barsukov and Hans-Jürgen Kreienkamp (Hamburg, Liverpool) SHANK3 structure reveals a ras-association domain regulating integrin activation in neurons.

31. Alberto Perez-Alvarez, Shuting Yin, Christian Schulze, John Hammer II, Wolfgang Wagner and Thomas Oertner (Hamburg, Bethesda) Fast dynamics of endoplasmic reticulum in relation to spine plasticity.
32. Mauro Pulin, Thomas Oertner, Christine Gee and Simon Wiegert (Hamburg) Chronic manipulation of activity at identified synapses.
33. Jennifer Radwitz, Torben Hausrat, Kira Brune, Petra Breiden and Matthias Kneussel (Hamburg) Biophysical mechanisms of the microtubule network in synaptic transport processes.
34. Mona Roesler, Franco Lombino, Sarah Homann, Peggy Putthoff, Irm Hermans-Borgmeyer, Jürgen Schwarz, Matthias Kneussel und Wolfgang Wagner (Hamburg) Myosin Id and myosin XVI as potential regulators of postsynaptic function and plasticity.
35. Sivakumar Sambandan, Gueney Akbalik, Lisa Kochen, Josefine Kahlstatt, Caspar Glock, Jennifer Rinne, Georgi Tushev, Beatriz Alvarez-Castelao, Alexander Heckel and Erin Schuman (Frankfurt) Activity-dependent spatially localized miRNA maturation and protein translational repression in neuronal dendrites.
36. Luis Saraiva, Fernando Aguilera, Massimo Mezzavilla, Puthen Veetil Jithesh, Mona Khan, Laura Van Gerven, Mark Jorissen, Peter Mombaerts, John Marioni and Darren Logan (Doha, Cambridge, Frankfurt, Leuven, Philadelphia) The evolutionary transcriptomic landscape of mammalian olfaction
37. Christian Schulze, Céline Dürst, Simon Wiegert and Thomas Oertner (Hamburg) Glutamate dynamics in the cleft of Schaffer collateral synapses.
38. Lingzhen Song, Xuejun Chai, Shanting Zhao and Michael Frotscher (Hamburg, Shaanxi) Phosphorylation of focal adhesion kinase at Y925: role in radial neuronal migration.
39. Christina Strauch and Denise Manahan-Vaughan (Bochum) The descending pathway to the piriform cortex of freely behaving rats engages in synaptic plasticity in contrast to the ascending pathway.
40. Wolfgang Wagner, Sandra Freitag, Sönke Hornig, Kristina Lippmann, Martijn Schonewille, Franco Lombino, Mona Roesler, Irm Hermans-Borgmeyer, Chris De Zeeuw, Jens Eilers, Jürgen Schwarz and Matthias Kneussel (Hamburg, Leipzig, Rotterdam) Myosin VI regulates AMPA receptor-mediated synaptic function and plasticity in Purkinje cells.
41. Raphael Wallroth and Kathrin Ohla (Potsdam) Taste categorical information in the delta band predicts response behavior.
42. Shuichi Yanagi, Mai Uemura, Yuichi Iino and Hirofumi Kunitomo (Tokyo) Long-lasting memory of salt chemotaxis learning in *C. elegans*
43. Leena Williams and Anthony Holtmaat (Geneva) LTP in the mouse barrel cortex driven by cooperative lemniscal and paralemniscal pathway activity.
44. Claudia Schob, Fabio Morellini, Ora Ohana, Lidia Bakota, Roland Brandt, Marco Bockmann, Nicole Cichon, Henrike Hartung, Ileana Hanganu-Opatz, Irm Hermans-Borgmeyer, Michaela Schweizer, Dietmar Kuhl, Markus Wöhr, Karl Vörckel, Craig Carner, Hans-Jürgen Kreienkamp and Stefan Kindler (Hamburg, Marburg, Berlin) Cognitive impairment and autistic-like behaviors in SAPAP4 deficient mice.
45. Judit González, Anja Konietzny, Bas van Bommel, Urban Maier, Wolfgang Wagner, Alexander Drakew, Michaela Schweizer, Michael Frotscher and Marina Mikhaylova (Hamburg) Targeting the spine apparatus to dendritic spines via synaptopodin and the actin cytoskeleton.

46. Yingzhou Edward Pan, Frederike Harms, Kerstin Kutsche and Hans-Jürgen Kreienkamp (Hamburg) Functional characterization of CASK missense mutations.
47. Franco Lombino, Timo Fischer, Laura Ruschkies, Edda Thies, David Lutz, Michael Frotscher, Micheala Schweizer, Melanie Richter, Froylan Calderon de Anda, Christian Lohr and Matthias Kneussel (Hamburg) Genetic depletion of the catalytic subunit of katanin, p60.
48. Vanessa Kress, Yvonne Merkle et al. (Cologne) Regulation of GABA_A receptor clustering by gephyrin S-nitrosylation, dynein light chain and alternative gephyrin splicing.
49. Gennady Dvoryanchikov, Damian Hernandez and Nirupa Chaudhari (Miami) Transcription factors to define taste versus somatosensory neurons of the geniculate ganglion.

The 37th Blankenese Conference

Synaptic Plasticity versus Stability:

- Information Uptake, Processing and Coding -

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