

FOR 2419 PhD students' publications

Konietzny A, Gonzalez-Gallego J, Bar J, Perez-Alvarez A, Drakew A, Demmers JAA, Dekkers DHW, Hammer JA, 3rd, Frotscher M, Oertner TG, Wagner W, Kneussel M, Mikhaylova M (2019) Myosin V regulates synaptopodin clustering and localization in the dendrites of hippocampal neurons. *J Cell Sci* 132:jcs230177.

Richter M, Murtaza N, Scharrenberg R, White S, Johanns O, Walker S, Yuen RK, Schwanke B, Bedürftig B, Henis M, Scharf S, Kraus V, Dörk R, Hellmann J, Lindenmaier Z, Ellegood J, Hartung H, Kwan V, Sedlacik J, Fiehler J, Schweizer M, Lerch JP, Hanganu-Opatz I, Morellini F, Scherer SW, Singh KK, Calderon de Anda F (2019) Altered TAOK2 activity causes autism-related neurodevelopmental and cognitive abnormalities through RhoA signaling. *Mol Psychiatry* 24:1329-1350.

Roesler MK, Lombino FL, Freitag S, Schweizer M, Hermans-Borgmeyer I, Schwarz JR, Kneussel M, Wagner W (2019) Myosin XVI Regulates Actin Cytoskeleton Dynamics in Dendritic Spines of Purkinje Cells and Affects Presynaptic Organization. *Front Cell Neurosci* 13:330.

van Bommel B, Konietzny A, Kobler O, Bär J, Mikhaylova M (2019) F-actin patches associated with glutamatergic synapses control positioning of dendritic lysosomes. *EMBO J.* 2019 Jun 27:e101183.

Wagner W, Lippmann K, Heisler FF, Gromova KV, Lombino FL, Roesler MK, Pechmann Y, Hornig S, Schweizer M, Polo S, Schwarz JR, Eilers J, Kneussel M (2019) Myosin VI drives clathrin-mediated AMPA receptor endocytosis to facilitate cerebellar long-term depression. *Cell Rep* 28:11-20.e9

Meka DP, Scharrenberg R, Zhao B, Koenig T, Schaefer I, Schwanke B, Kobler O, Klykov S, Richter M, Eggert D, Windhorst S, Dotti CG, Kreutz MR, Mikhaylova M, Calderon de Anda F (2018) Radial F-actin organization during early neuronal development. *BioRxiv*. doi: <https://doi.org/10.1101/372813>

Mikhaylova M, Bär J, van Bommel B, Schatzle P, YuanXiang P, Raman R, Hradsky J, Konietzny A, Loktionov EY, Reddy PP, Lopez-Rojas J, Spilker C, Kobler O, Raza SA, Stork O, Hoogenraad CC, Kreutz MR (2018) Caldendrin Directly Couples Postsynaptic Calcium Signals to Actin Remodeling in Dendritic Spines. *Neuron* 97:1110-1125 e1114.

Wiegert JS, Pulin M, Gee CE, Oertner TG (2018) The fate of hippocampal synapses depends on the sequence of plasticity-inducing events. *Elife* 7:e39151

Drakew A, Maier U, Tippmann A, Frotscher M (2017) Single synapses control mossy cell firing. *bioRxiv* 188789; doi: <https://doi.org/10.1101/188789>

Heinz LS, Muhs S, Schiewek J, Grüb S, Nalaskowski M, Lin YN, Wikman H, Oliveira-Ferrer L, Lange T, Wellbrock J, Konietzny A, Mikhaylova M, Windhorst S (2017). Strong fascin expression promotes metastasis independent of its F-actin bundling activity. *Oncotarget* 8:110077-110091.

Konietzny A, Bär J, Mikhaylova M (2017) Dendritic actin cytoskeleton: structure, functions, and regulations. *Front Cell Neurosci* 11:147.

Zhao B, Meka DP, Scharrenberg R, König T, Schwanke B, Kobler O, Windhorst S, Kreutz MR, Mikhaylova M, Calderon de Anda F (2017) Microtubules modulate F-actin dynamics during neuronal polarization. *Sci Rep* 7:9583.

FOR 2419 PhD students' conference talks

- 13th Göttingen Meeting of the German Neuroscience Society, March 2019
 - o Mauro Pulin (Hamburg) *Chemogenetic silencing: synaptic mechanisms and long-term effects at Schaffer collateral synapses*

September 11, 2019

- Margarita Anisimova (Hamburg) *Optogenetic spike-timing-dependent plasticity (OSTDP)*
- *MRC Laboratory of Molecular Biology in Cambridge, September 2018*
 - Mauro Pulin (Hamburg) *Information processing at identified Schaffer collateral synapses*
- *Young Investigator Research Symposium bonnbrain³ Conference – Synapses and Circuits, March 2018*
 - Mauro Pulin, Céline Dürst, Thomas Oertner and Simon Wiegert (Hamburg) *Synaptic mechanisms of DREADD-mediated silencing* (invited lecture)
- *Annual ZMNH Retreat, March 2018*
 - Mauro Pulin, Céline Dürst, Thomas Oertner and Simon Wiegert (Hamburg) *Synaptic mechanisms of DREADD-mediated silencing*
- *FOR 2419 Symposium “Uncovering Synaptic Plasticity: From Molecules to Memory” organized by the PhD students of the Research Unit FOR 2419, February 2018*
 - Jennifer Radwitz *The role of microtubule isoforms in neuronal transport processes*
 - Anja Konietzny *Calcium-dependent control of processive myosin motors by the post-synaptic protein caldendrin*
 - Mona Roesler *Myosin Id and myosin XVI as potential regulators of postsynaptic function and plasticity*
 - Sergei Klykov *Tracking of organelles in action: the new strategies for resolving crossing trajectories*
 - Mauro Pulin *Synaptic mechanisms and long-term effects of DREADD-mediated silencing*
 - Margarita Anisimova *Potentiation lasts days after optogenetic plasticity induction at Schaffer collateral synapses*

FOR 2419 PhD students' poster presentations

13th Göttingen Meeting of the German Neuroscience Society, March 2019

- Mona Roesler, Franco Lombino, Michaela Schweizer, Irm Hermans-Borgmeyer, Matthias Kneussel, Wolfgang Wagner (Hamburg) *Myosin XVI is a regulator of actin cytoskeleton dynamics in dendritic spines of Purkinje cells*

11th FENS Forum of Neuroscience, July 2018

- Mauro Pulin, Céline D. Dürst, Thomas G. Oertner, J. Simon Wiegert (Hamburg) *Long-term integration of plasticity and activity at identified Schaffer collateral synapses*
- Margarita Anisimova, Bas van Bommel, Thomas G. Oertner, Christine E. Gee (Hamburg) *Potentiation lasts days after optogenetic plasticity induction at Schaffer collateral synapses*

bonnbrain³ Conference, March 2018

- Mauro Pulin, Céline Dürst, Thomas Oertner and Simon Wiegert (Hamburg) *Synaptic mechanisms of DREADD-mediated silencing*

FOR 2419 Symposium "Uncovering Synaptic Plasticity: From Molecules to Memory" organized by the PhD students of the DFG-funded Research Unit FOR 2419, Hamburg, February 16, 2018.

- Margarita Anisimova, Bas van Bommel, Thomas G. Oertner, Christine E. Gee (Hamburg) *Potentiation lasts days after optogenetic plasticity induction at Schaffer collateral synapses*
- Sergei Klykov, Rene Werner, Irina Schäfer, Kira Brune, Marina Mikhaylova (Hamburg) *Tracking of organelles in action: the new strategies for resolving crossing trajectories*
- Anja Konietzny, Celine Alkemade, Rajeev Raman, Wolfgang Wagner, Jeroen Demmers, Gijsje Koenderink, Marina Mikhaylova (Hamburg, Amsterdam, Magdeburg, Rotterdam) *Calcium-dependent control of processive myosin motors by the post-synaptic protein caldendrin*
- Urban Maier, Michael Frotscher, Alexander Drakew (Hamburg) *Single mossy fiber synapses control hilar mossy cell firing owing to their previous activity*
- Mauro Pulin, Céline Dürst, Thomas G. Oertner, J. Simon Wiegert (Hamburg) *Synaptic mechanisms of DREADD-mediated silencing*
- Jennifer Radwitz, Torben Hausrat, Kira Gromova, Petra Breiden, Matthias Kneussel (Hamburg) *The role of microtubule isoforms in neuronal transport processes*
- Richter M, Murtaza N, Scharrenberg R, White S, Johanns O, Walker S, Yuen RK, Schwanke B, Bedürftig B, Henis M, Scharf S, Kraus V, Dörk R, Hellmann J, Lindenmaier Z, Ellegood J, Hartung H, Kwan V, Sedlacik J, Fiehler J, Schweizer M, Lerch JP, Hanganu-Opatz I, Morellini F, Scherer SW, Singh KK, Calderon de Anda F (2018) *Altered TAOK2 activity causes autism-related neurodevelopmental and cognitive abnormalities through RhoA signaling*
- Mona Roesler, Franco Lombino, Sarah Homann, Peggy Putthoff, Irm Hermans-Borgmeyer, Jürgen Schwarz, Matthias Kneussel and Wolfgang Wagner (Hamburg) *Myosin Id and myosin XVI as potential regulators of postsynaptic function and plasticity*

Annual SfN Meeting, Washington DC, November 2017

- Margarita Anisimova, Bas van Bommel, Thomas G. Oertner, Christine E. Gee (Hamburg) *Optogenetic induction of spike-timing-dependent plasticity at Schaffer collateral synapses in rat organotypic hippocampal slices*
- Mauro Pulin, Céline Dürst, Thomas G. Oertner, J. Simon Wiegert (Hamburg) *Long-term integration of plasticity and activity at identified Schaffer collateral synapses*
- Alexander Drakew, Urban Maier, Michael Frotscher (Hamburg) *Single mossy fiber synapses control hilar mossy cell firing owing to their previous activity*

2017 EMBL Workshop: Non-Neuronal Optogenetics, Heidelberg, September 2017

- Anja Konietzny, Celine Alkemade, Rajeev Raman, Wolfgang Wagner, Jeroen Demmers, Gijsje Koenderink, Marina Mikhaylova (Hamburg, Amsterdam, Magdeburg, Rotterdam) *Ca²⁺-dependent control of myosin functions*

BCDC (Biology conference of doctoral candidates), Hamburg, June 2017

- Mauro Pulin, Thomas G. Oertner, J. Simon Wiegert (Hamburg) *Chronic silencing of activity at identified synapses*

4th International Symposium on Protein Trafficking in Health and Disease, June 2017

- Sergei Klykov *Time matters: tracking organelle-organelle interactions in living cells*

37th Blankenese Conference, Joint scientific meeting of Research Unit FOR 2419 and Syn Signal, Hamburg, May 2017

- Margarita Anisimova, Bas van Bommel, Thomas Oertner, Simon Wiegert, Christine Gee (Hamburg) *Optogenetic induction of spike-timing-dependent plasticity at hippocampal synapses.*
- Julia Bär, Oliver Kobler, Bas van Bommel, Anja Konietzny, Marina Mikhaylova (Hamburg, Magdeburg) *Periodic actin rings shape the neck of dendritic spines.*
- Julia Bär, Bas van Bommel, Anja Konietzny, Ping An Yuan Xiang, Philipp Schätzle, Rajeev Raman, Casper Hoogenraad, Michael Kreutz, Marina Mikhaylova (Hamburg, Magdeburg, Utrecht) *Novel insights on regulation of F-actin dynamics and stability in dendritic spines.*
- Alexander Drakew, Urban Maier, Michael Frotscher (Hamburg) *Single synapses on mossy cells control the hippocampal network depending on their histories.*
- Judit González, Anja Konietzny, Bas Van Bommel, Urban Maier, Wolfgang Wagner, Alexander Drakew, Michaela Schweizer, Michael Frotscher, Marina Mikhaylova (Hamburg) *Targeting the spine apparatus to dendritic spines via synaptopodin and the actin cytoskeleton.*
- Sergei Klykov, Eugene Katrukha, Irina Schaefer, Bas van Bommel, Kira Brune, Antonio Virgilio Failla, Matthias Kneussel, Egor Loktionov, Marina Mikhaylova (Hamburg, Utrecht, Moscow) *Time matters: Tracking organelle-organelle interactions in living cells.*
- Mauro Pulin, Thomas Oertner, Christine Gee, Simon Wiegert (Hamburg) *Chronic manipulation of activity at identified synapses.*
- Jennifer Radwitz, Torben Hausrat, Kira Brune, Petra Breiden, Matthias Kneussel (Hamburg) *Biophysical mechanisms of the microtubule network in synaptic transport processes.*
- Mona Roesler, Franco Lombino, Sarah Homann, Peggy Putthoff, Irm Hermans-Borgmeyer, Jürgen Schwarz, Matthias Kneussel, Wolfgang Wagner (Hamburg) *Myosin Id and myosin XVI as potential regulators of postsynaptic function and plasticity.*
- Wolfgang Wagner, Sandra Freitag, Sönke Hornig, Kristina Lippmann, Martijn Schonewille, Franco Lombino, Mona Roesler, Irm Hermans-Borgmeyer, Chris De Zeeuw, Jens Eilers, Jürgen Schwarz, Matthias Kneussel (Hamburg, Leipzig, Rotterdam) *Myosin VI regulates AMPA receptor-mediated synaptic function and plasticity in Purkinje cells.*

4th International Symposium on "Protein Trafficking in Health and Disease", Hamburg, June 2017

- Sergei Klykov, Eugene Katrukha, Irina Schaefer, Bas van Bommel, Kira Brune, Antonio Virgilio Failla, Matthias Kneussel, Egor Loktionov, Marina Mikhaylova (Hamburg, Utrecht, Moscow) *Time matters: tracking organelle-organelle interactions in living cells*

EMBO Conference: Cell Biology of the Neuron – Polarity, Plasticity and Regeneration, Heraklion, May 2017

- Bing Zhao*, Durga Praveen Meka*, Robin Scharrenberg, Theresa König, Birgit Schwanke, Oliver Kobler, Sabine Windhorst, Michael R. Kreutz, Marina Mikhaylova, Froylan Calderon de Anda (Hamburg, Magdeburg) *Microtubules instruct F-actin dynamics during neuronal polarization * Equal contribution*

12th Göttingen Meeting of the German Neuroscience Society, March 2017

- Mauro Pulin, Thomas Oertner, Simon Wiegert (Hamburg) *Chronic manipulation of activity at identified synapses*
- Alexander Drakew, Urban Maier, Michael Frotscher (Hamburg) *Hippocampal mossy fiber synapses represent individual computational units*

September 11, 2019

- Wolfgang Wagner, Sönke Hornig, Christopher Alexander, Kristina Lippmann, Martijn Schonewille, Sandra Freitag, Franco Lombino, Mona Roesler, John A. Hammer III, Chris I. De Zeeuw, Jens Eilers, Jürgen R. Schwarz, Matthias Kneussel (Hamburg, Bethesda, Leipzig, Rotterdam) *Unconventional myosins as regulators of synaptic function and development*

Dutch Biophysics Meeting, Eindhoven, October 2016

- Sergei Klykov, Bas van Bommel, Antonio Virgilio Failla, Egor Loktionov, Marina Mikhaylova (Hamburg, Moscow) *Time matters: tracking organelle-organelle interactions in living cells*

EMBO Meeting "Actin in Action: From Molecules to Cellular Functions", Heidelberg, September 2016

- Julia Bär, Oliver Kobler, Bas van Bommel, Anja Konietzny, Marina Mikhaylova (Hamburg, Magdeburg) *Periodic actin rings shape the neck of dendritic spines*
- Wolfgang Wagner, Sönke Hornig, Kristina Lippmann, Yvonne Pechmann, Martijn Schonewille, Sandra Freitag, Franco Lombino, Mona Roesler, Irm Hermans-Bormeyer, Chris de Zeew, Jens Eilers, Jürgen R. Schwarz, Matthias Kneussel (Hamburg, Leipzig, Rotterdam, Amsterdam) *Mechanism and physiological significance of myosin VI-dependent AMPA receptor trafficking.*

95th Annual Meeting of the German Physiological Society, February 2016

- Alexander Drakew, Urban Maier, Michael Frotscher (Hamburg) *Plasticity of individual hippocampal mossy fiber synapses involves intracellular calcium stores* *Winner – DPG poster prize 2016*