

## David Oswald

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Institute of Neurophysiology  
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### Curriculum vitae

- Since 2016 Emmy Noether Independent Junior Research Group Leader, Behavioral and Physiological Neurogenetics, Institute of Neurophysiology, Charité, Berlin
- 2011 – 2016 Postdoctoral fellow, University of Oxford, UK
- 2010 – 2011 Postdoctoral fellow, Neuroscience Research Center (NWFZ), Charité, Berlin
- 2006 – 2010 PhD (Dr. rer. nat.) in Neurosciences, Georg-August-Universität Göttingen; Max Planck Institute for Biophysical Chemistry, Göttingen; Universität Würzburg, and Charité, Berlin
- 2005 – 2006 Master studies in Neurosciences, Georg-August-Universität Göttingen
- 2002 – 2005 Bachelor of Science in Molecular Biotechnology, Universität Heidelberg

### Research fields

Our research focuses on understanding the neurophysiological underpinnings of behavior. We study the model organism *Drosophila melanogaster* and make use of both the intermediate complexity of its brain and the genetic access to identified single neurons in the behaving animal. We are primarily interested in:

- Structural and functional modification of identified synapses following learning; synaptopathies
- Network activity patterns during memory consolidation and recall, information transfer and gating through GABAergic (dis)inhibition; behavior selection
- Dopaminergic signaling: reinforcement, reward and punishment, motivation; dopaminergic signals in addiction
- Memory-storage capacity of nicotinic cholinergic synapses; disruption of cholinergic signals
- Dendritic integration, connectivity and computation in convergent cerebellum-like circuits

### Activities in the scientific community, honors, awards

- 2017 Schilling Research Award, German Neuroscience Society (NWG)
- 2013 Junior Research Fellow, Wolfson College Oxford, UK
- 2013 James Martin Fellow, Mind and Machine, Oxford Martin School, UK
- 2013 Otto Creutzfeldt PhD Award, Georg-August-Universität Göttingen
- 2012 Sir Henry Wellcome Postdoctoral Fellow, The Wellcome Trust, UK
- 2011 Long-Term Fellowships, European Molecular Biology Organization (EMBO)
- 2010, 2011 Teaching assistant/lecturer 'Neurobiology of *Drosophila*', Cold Spring Harbor, US
- 2005 Student scholarship, International Max Planck Research Schools (IMPRS)

## Selected publications

- Perisse E\*, Oswald D\*, Barnstedt O, Talbot CB, Huetteroth W, Waddell S. Aversive Learning and Appetitive Motivation Toggle Feed-Forward Inhibition in the *Drosophila* Mushroom Body. *Neuron* 2016; 90:1086-1099 | \*equal contribution
- Barnstedt O, Oswald D\*, Felsenberg J, Brain R, Moszynski JP, Talbot CB, Perrat PN, Waddell S\*. Memory-Relevant Mushroom Body Output Synapses Are Cholinergic. *Neuron* 2016; 89:1237-1247 | \*corresponding authors
- Owald D, Waddell S. Olfactory learning skews mushroom body output pathways to steer behavioral choice in *Drosophila*. *Curr Opin Neurobiol* 2015; 35:178-184
- Owald D, Felsenberg J, Talbot CB, Das G, Perisse E, Huetteroth W, Waddell S. Activity of defined mushroom body output neurons underlies learned olfactory behavior in *Drosophila*. *Neuron* 2015; 86:417-427
- Lin S, Oswald D, Chandra V, Talbot C, Huetteroth W, Waddell S. Neural correlates of water reward in thirsty *Drosophila*. *Nat Neurosci* 2014; 17:1536-1542
- Owald D\*, Khorramshahi O\*, Gupta VK\*, Banovic D, Depner H, Fouquet W, Wichmann C, Mertel S, Eimer S, Reynolds E, Holt M, Aberle H, Sigrist SJ. Cooperation of Syd-1 with Neurexin synchronizes pre- with postsynaptic assembly. *Nat Neurosci* 2012; 15:1219-1226 | \*equal contribution
- Burke CJ, Huetteroth W, Oswald D, Perisse E, Krashes MJ, Das G, Gohl D, Silies M, Certel S, Waddell S. Layered reward signalling through octopamine and dopamine in *Drosophila*. *Nature* 2012; 492:433-437
- Owald D\*, Fouquet W\*, Schmidt M, Wichmann C, Mertel S, Depner H, Christiansen F, Zube C, Quentin C, Korner J, Urlaub H, Mechtler K, Sigrist SJ. A Syd-1 homologue regulates pre- and postsynaptic maturation in *Drosophila*. *J Cell Biol* 2010; 188:565-579 | \*equal contribution
- Banovic D\*, Khorramshahi O\*, Oswald D, Wichmann C, Riedt T, Fouquet W, Tian R, Sigrist SJ, Aberle H. *Drosophila* neuroligin 1 promotes growth and postsynaptic differentiation at glutamatergic neuromuscular junctions. *Neuron* 2010; 66:724-738 | \*equal contribution
- Fouquet W\*, Oswald D\*, Wichmann C, Mertel S, Depner H, Dyba M, Hallermann S, Kittel RJ, Eimer S, Sigrist SJ. Maturation of active zone assembly by *Drosophila* Bruchpilot. *J Cell Biol* 2009; 186:129-145 | \*equal contribution