

Curriculum Vitae

Personal information

Name: Olivia Andrea Masseck

Date and place of birth: 19.02.1981, Soest, Germany

Homepage: <https://www.uni-bremen.de/synbio/>

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Current positions

since 10/2018	Professor „Synthetic Biology“ University Bremen
since 01/2024	Handling Editor Journal of Neurochemistry
since 01/2021	Reviewer Nature Methods
since 10/2021	Chairwoman research funding committee for natural sciences and engineering at the University Bremen
since 05/2021	Vice-Chairwoman steering group „ Understanding animal experiments “
since 06/2020	Member high profile area Minds, Media, Machines University of Bremen
since 03/2020	HRK-representative Steering group „ Understanding animal experiments “
since 08/2019	Review Editor Frontiers in Behavioral Neuroscience – Learning and Memory
since 2019	Member committee for animal experiments of the senatorial authority of the free and hanseatic city Bremen
since 2019	Organizer lecture series „ MindTalks “
since 2017	Reviewer DFG

Previous positions

07/2018 – 12/2022	Board member Collaborative Research Center CRC 874 “Integration and representation of sensory processes”
05/2016 – 10/2018	Junior professor “Advanced Fluorescence Microscopy”, Ruhr University Bochum
06/2016 – 10/2018	Faculty member International Graduate School of Neuroscience (IGSN), Ruhr-University Bochum
09/2015 – 10/2018	Member Early Career Researchers Board of the Research School Ruhr-University Bochum
04/2014 – 10/2018	Principal Investigator Research Department of Neuroscience, Ruhr-University Bochum
11/2012 – 05/2016	Principal Investigator Department of General Zoology & Neurobiology, Ruhr-University Bochum
07/2015 – 05/2016	Board member International Graduate School of Neuroscience, Ruhr University Bochum

12/2009 – 11/2012	Postdoctoral researcher Department of General Zoology & Neurobiology, Ruhr-University Bochum
08/2009 – 12/2009	Postdoctoral researcher Laboratoire de Neurobiologie des Réseaux Sensorimoteurs, Université Paris Descartes,
10/2008 – 08/2009	Postdoctoral researcher Department of General Zoology & Neurobiology, Ruhr-University Bochum

Education

30/09/2008	PhD in Neuroscience „Studies of the evolution of visual and visuo-motor structures in vertebrates” (Summa cum laude), International Graduate School of Neuroscience, Ruhr-University Bochum
10/2000 – 11/2004	University studies Biology and Mathematics, Ruhr - University Bochum Degree: 1. Staatsexamen (1.0)

Scholarships, grants, honors and awards

09/2014	Preis von der Bayer Science Foundation “Schule trifft Wissenschaft – Wissenschaft trifft Schule”
08/2009 – 12/2009	Research fellowship DFG “Integration of central locomotor efference copies and visuo-vestibular sensory signals for gaze stabilization in larval Xenopus“
11/2006	Laureate Wolfgang-Seel-Preises der Ruhr-Universität Bochum
05/2005 – 05/2008	Scholarship holder International Graduate School of Neuroscience, Ruhr University Bochum

Advanced training

07/2016	Laserschutzbeauftragte -technische Laseranwendungen Erwerb der Sachkunde gemäß § 5 (2) OStrV und Abschnitt 5 TROS
06/2014	Fortbildungsveranstaltung zur Vermittlung der Sachkunde nach §15 Abs.2 S. 1 Nr. 3, Abs. 4 Gentechnik- Sicherheitsverordnung
10/2004	FELASA (Kategorie B) (äquivalent EU Funktion A)

Selected talks, organization of meetings and schools

Organisatorin eines Symposium auf dem 15th Göttingen Meeting of the German Neurosciences Society „Illuminating the brain- Current applications and future developments of next generation biosensors“, Göttingen, Germany (22.3 -24.3. 2023)

Coorganisatorin eines Symposium auf dem ISN-ESN Meeting in Porto „Next-generation tools to shine a new light on neurochemical dynamics“, Porto, Portugal (8.8.2023 – 11.8.2023)

Einladung zur Gordon Research Conference ”Optogenetic approaches to understanding neural circuits and behavior“, USA (16.07. -22.07. 2022)

Vortragende “Horizons in Neuroscience“, Ruhr Universität Bochum, Germany (28.9.2022)

Vortragende „Abschlußkonferenz SFB 874“, Ruhr Universität Bochum, Germany (30.11.2022)

Vortragende “Serotonin 20 years after“, Max Dellbrück Center Berlin, Germany (29.6 -1.7- 2023)

Vortragende “ISN-ESN Meeting“, Porto, Portugal (8.8.2023 – 11.8.2023)

Faculty member und Lehrende in der ISN Advanced School 2023 „ New challenges and opportunities in neurochemical studies- novel tools and approaches” , Caminha Portugal (3.8.-7.8.2023)

Vortragende „Jahrestagung der Deutsche Physiologische Gesellschaft“, Berlin Germany (21. - 23.9.2023)

Vortragende “European Behavioral Pharmacology Society Meeting“, Mannheim, Germany (23.8.- 25.8.2023)

Instructor Cajal School “Circuit Dissection 2024“, Bourdeaux, France (2.4. – 20.4. 2024)

Publication list

Article

Kubitschke M, Beck V, Masseck OA. Fluorescence lifetime imaging of sDarken as a tool for the evaluation of serotonin levels.

Gerdey J & **Masseck OA**. Linking serotonergic median raphe input to dorsal CA1 with mnemonic functions. *bioRxiv* 2023.09.04.556213 (2023); doi: <https://doi.org/10.1101/2023.09.04.556213>

M. Kubitschke, M. Müller, L. Wallhorn, M. Pulin, M. Mittag, S. Pollok, T. Ziebarth, S. Bremshey, J. Gerdey, KC Claussen, K. Renken, J. Groß, N. Meyer, S. Wiegert, A. Reiner, M. Fuhrmann, **Masseck OA**. *sDarken*: Next generation genetically encoded sensors for serotonin. **Nature Comm.** 13, 7525 (2022). <https://doi.org/10.1038/s41467-022-35200-w>

M. Pulin, K. Stockhausen, OA. Masseck, M. Kubitschke, B. Busse, J. Wiegert, and T. Oertner. (2022). Orthogonally-polarized excitation for improved two-photon and second-harmonic-generation microscopy, applied to neurotransmitter imaging with GPCR-based sensors- **Biomed. Opt. Express** 13, 777-790. <https://doi.org/10.1364/BOE.448760>

Joshi S, Hater F, Eirich J, Palovaara J, Ellinghaus H, Heinkow P, Doschke H, Callenius H, Peter A, Schweser O, Kubitschke M, Madduri MK, Mathew AJ, Furlani D, Colombi Ciacchi L, Kirstein J, Maedler K, **Masseck OA**, Finkemeier I, Radmacher M, Groß-Hardt R. A versatile mitochondria isolation- and analysis-pipeline generates 3D nano-topographies and mechano-physical surface maps of single organelles. *bioRxiv* 2021.10.31.466655; doi: <https://doi.org/10.1101/2021.10.31.466655>

Rook N, Tuff J., Isparta S, **Masseck OA**, Herlitze S, Güntürkün O, Pusch R. AAV1 is the optimal viral vector for optogenetic experiments in pigeons (*Columba livia*). **Commun. Biol.** 2021 Jan 22;4(1):100. doi: 10.1038/s42003-020-01595-9. PMID: 33483632; PMCID: PMC7822860.

Berg L, Gerdey J, **Masseck OA** (2020). Optogenetic manipulation of neuronal activity to modulate behavior in freely moving mice. **J. Vis Exp**. doi:10.3791/61023

Berg L, Eckardt J, **Masseck OA**. (2019.) Enhanced activity of pyramidal neurons in the infralimbic cortex drives anxiety behavior. **PLoS One.** 2019 Jan 24;14(1):e0210949. doi: 10.1371/journal.pone.0210949. eCollection 2019.

Hasegawa E, Maejima T, Yoshida T, **Masseck OA**, Herlitze S, Yoshioka M, Sakurai T, Mieda M. (2017) Serotonin neurons in the dorsal raphe nucleus mediate the anticataplectic action of orexin neurons by reducing amygdala activity. **Proc Natl Acad Sci USA** Apr 25;114(17):E3526-E3535. doi: 10.1073/pnas.1614552114. Epub 2017 Apr 10. PMID: 28396432

Spoida K, Eickelbeck D, Karapinar R, Eckhardt T, Mark MD, Jancke D, Ehinger BV, König P, Dalkara D, Herlitze S, **Masseck OA** (2016). Melanopsin Variants as Intrinsic Optogenetic On and Off Switches for Transient versus Sustained Activation of G Protein Pathways. **Curr Biol.** 2016 May 9;26(9):1206-12. doi: 10.1016/j.cub.2016.03.007. Epub 2016 Apr 7. PMID: 27068418

Lux V, **Masseck OA**, Herlitze S, Sauvage M. (2015). Optogenetic destabilization of the memory trace in CA1: insights into reconsolidation and retrieval processes. **Cerebral Cortex** Jan 1;27(1):841-851. doi: 10.1093/cercor/bhv282.

Spoida K, **Masseck OA**, Deneris ES, Herlitze S. (2014). Gq/5-HT2c receptor signals activate a local GABAergic inhibitory feedback circuit to modulate serotonergic firing and anxiety in mice. **Proc Natl Acad Sci U S A** 111(17):6479-84.

Masseck OA, Spoida K, Dalkara D, Maejima T, Rubelwoski JM, Wallhorn L, Deneris ES, Herlitze S. (2014) Vertebrate cone opsins enable sustained and highly sensitive rapid control of Gi/o signaling in anxiety circuitry. **Neuron** 81 (6): 1263-1273.

Gutierrez DV, Mark MD, **Masseck OA**, Maejima T, Kuckelsberg D, Hyde RA, Krause M, Kruse W, Herlitze S (2011). Optogenetic control of motor coordination by Gi/o protein-coupled vertebrate rhodopsin in cerebellar Purkinje cells. **J Biol Chem** 286: 25848-58.

Masseck OA, Förster S, Hoffmann KP (2010). Sensitivity of the goldfish motion detection system revealed by incoherent random dot stimuli: Comparison of behavioural and neuronal data. **PLoS One** 5(3):e9461.

Masseck OA, Hoffmann KP (2009). A question of reference frames: Visual direction-selective neurons in the accessory optic system of goldfish. **J Neurophysiol** 102: 2781-2789.

Masseck OA, Hoffmann KP (2008). Responses to moving visual stimuli in pretectal neurons of the small-spotted dogfish (*Scyliorhinus canicula*). **J. Neurophysiol.** 99: 200-207.

Masseck OA, Röhl B, Hoffmann KP (2008). The optokinetic reaction in foveate and afoveate geckos. **Vision Res** 48: 765-772.

Book chapters and Reviews

Bremshey, S, Groß, J, Renken, K, & **Masseck, OA** (2024). The role of serotonin in depression-A historical roundup and future directions. *Journal of neurochemistry*, 10.1111/jnc.16097. Advance online publication. <https://doi.org/10.1111/jnc.16097>

Otanuly M, Kubitschke M, **Masseck OA**. (2024). A bright future? A perspective on class C GPCR based genetically encoded biosensors. *ACS Chemical Neuroscience*.

Kubitschke M, **Masseck OA**. (2023). Illuminating the brain- genetically encoded single wavelength fluorescent biosensors to unravel neurotransmitter dynamics. Invited Review for the Special Issue "Horizons in Neuroscience -Organoids, Optogenetics and remote control". *Journal of Biological Chemistry*. <https://doi.org/10.1515/hsz-2023-0175>

Masseck OA A guide to optogenetic applications, with special focus on behavioral and in vivo electrophysiological experiments. In *Handbook of In Vivo Neural Plasticity Techniques: A Systems Neuroscience Approach to the Neural Basis of Memory and Cognition*. Book Chapter. Elsevier.

Masseck OA, Spoida K, Herlitze S. (2015). Optogenetics. In *Biotechnology*. De Gruyter 1.Auflage 313-346. Book Chapter.

Masseck OA, Mark MD, Herlitze S (2014) Use of Optogenetic Approaches to Control Intracellular Signaling of G Protein-Coupled Receptors. *G-Protein Copuled Receptor Genetics. Methods in Pharmacology and Toxicology* pp. 149-160. Springer Verlag Book Chapter.

Maejima T, **Masseck OA**, Mark MD, Herlitze S. (2012) Modulation of firing and synaptic transmission of serotonergic neurons by intrinsic G protein-coupled receptors and ion channels. *Front Integr Neurosci.* 2013;7:40. Review.

Masseck OA, Rubelowski JM, Spoida K, Herlitze S (2011). Light- and Drug-activated G-Protein coupled Receptors to control intracellular Signaling. *Exp. Physiol* 96:51-6. Review.

Masseck OA, Hoffmann KP (2009). Comparative neurobiology of the optokinetic reflex. *Ann N Y Acad Sci* 1164: 430-439. Review.

