

Curriculum vitae

Contact data

Name: Dr. rer. nat. Marcel Jerome Beetz
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Biocenter – Zoology II
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Jobs & Academic Education

Since December 2017 Postdoc in the lab of Dr. Basil el Jundi (University Würzburg):
Working on the migration system of the monarch butterfly

December 2017 FENS Winter school, Neural control of Behaviour: Navigation,
Obergurgl University center, Austria

June-July 2017 Summer school, Neural systems & Behavior, Marine Biology
Laboratory Woods Hole, USA

PhD 2014 - 2017 Goethe-University Frankfurt, working group of Prof. Dr.
Manfred Kössl (**Dr. rer nat: Summa cum laude**) **Thesis:**
“Acoustic orientation in the dark: About how the brain
processes naturalistic echolocation sequences in the fruit-eating
bat *Carollia perspicillata*”

Master 2011-2013 Goethe-University Frankfurt (**MSc-interdisciplinary
Neuroscience: 1.2**)
Thesis: “Electrophysiological and morphological
characterization of visually sensitive interneurons of the
posterior protocerebrum from the desert locust *Schistocerca
gregaria*”. Working group of Prof. Dr. Uwe Homberg, Marburg
Modules: Neurophysiology and Behavior; Functional
Anatomy of the Retina; Adult neurogenesis in Hippocampus;
Auditory Neuroscience

August 2012-April 2013 Rearing solitary desert locusts in the working group of Prof.
Dr. Homberg (Philipps University Marburg)

Bachelor 2008-2011 Philipps-University Marburg (**BSc-Biology: 1.3**)
Thesis: “Topographic organization of the posterior optic
tubercle in the dessert locust *Schistocerca gregaria*”. Working
group of Prof. Dr. Uwe Homberg, Marburg
Modules: Animal physiology, Genetics, Cell Biology,
Ecology, Microbiology, Plant physiology, Organismic biology

Senior classes 2005-2008 Alfred-Delp school, 64807 Dieburg (**Abitur: 1.5**)
Comprehensive school 2001-2005 „Schule auf der Aue“, 64839 Münster

Grammar school 1999 -2001
Elementary school 1995 -1999

Friedrich-Dessauer grammar school, 63741 Aschaffenburg
Hefner-Alteneck-public school, 63743 Aschaffenburg

Teaching & Supervision

2012-2013	Bachelor thesis of Florian Dersch “Standardization of the posterior optic tubercle in <i>Schistocerca gregaria</i> ” (Philipps-University Marburg)
2013	Bachelor thesis of Eugen Adam (Philipps-University Marburg)
April 2013-May 2013	Teaching assistant in behavioral experiments on <i>Gnathonemus petersii</i> (Philipps-University Marburg)
2016	Bachelor thesis of Sebastian Kordes “Neuronal tuning to natural echolocation sequences in the inferior colliculus of the fruit-eating bat <i>Carollia perspicillata</i> “ (Goethe-University Frankfurt)
2018	Practical course Neuroethology: Eleonora Rovegno: Monarch butterfly: Color learning and spatial memory (University Würzburg)
2019	Master thesis of Milan Becker (University Würzburg)

Conference contributions

Chair

July 20th, 2018	Facets of brain mechanisms underlying spatial orientation Symposium 11 at the 13th Congress of International Society for Neuroethology Australia
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Talks

August 11th, 2019	Sun encoding in flying monarch butterflies M. Jerome Beetz, Martin Strube-Bloss, Basil el Jundi International conference on invertebrate vision, Sweden
July 20th, 2018	Acoustic orientation in the dark: About how the brain processes natural echolocation sequences in the fruit-eating bat <i>Carollia Perspicillata</i> M. Jerome Beetz, Francisco García-Rosales, Manfred Kössl, Julio Hechavarría 13th Congress of International Society for Neuroethology, Australia
July 15th, 2018	Minimizing signal interference in the fruit-eating bat <i>Carollia perspicillata</i>

M. Jerome Beetz, Francisco García-Rosales, Manfred Kössl,
Julio Hechavarría,
International animal biosonar symposium, Australia

January 13th, 2018

Listening in the dark: About how the brain processes natural echolocation sequences in the fruit-eating bat *Carollia Perspicillata*
M. Jerome Beetz, Francisco García-Rosales, Julio Hechavarría, Manfred Kössl
Tagung deutscher Fledermausforscher 2018 („Meeting of the german bat researchers“)

January 7th, 2017

Processing echolocation streams in the presence of masking noise
M. Jerome Beetz, Sebastian Kordes, Julio Hechavarría, Manfred Kössl
Tagung deutscher Fledermausforscher 2017 (“Meeting of the german bat researchers“)

January 11th, 2015

Tracking natural echolocation streams in the dorsal auditory cortex of bats: a trade-off between temporally accurate tracking and sharp delay tuning
M. Jerome Beetz, Julio C. Hechavarría, Manfred Kössl
Tagung deutscher Fledermausforscher 2015 (“Biennial meeting of the german bat researchers“)

March 18th, 2015

About how cortical neurons of bats cope with fast echolocation sequences: Multi-electrode and single-electrode recordings with natural echolocation stimuli.
M. Jerome Beetz, Julio C. Hechavarría, Manfred Kössl
11th Göttingen Meeting of the German Neuroscience Society

Posters

2019

Tetrode recordings from visual neurons in flying monarch butterflies
M. Jerome Beetz, Martin Strube-Bloss, Basil el Jundi
13th Göttingen Meeting of the German Neuroscience Society

2017

Processing spatial depth in the auditory cortex of the fruit-eating bat *Carollia perspicillata* in the presence of natural acoustic jamming noise
M Jerome Beetz, Julio C Hechavarría, Manfred Kössl
12th Göttingen Meeting of the German Neuroscience Society

2016

Benefits of cortical forward suppression for coding natural echolocation streams in bats
4th Biennial Meeting in Oberwesel

2016
Precise target-distance coding during cortical suppression in echolocating bats
M. Jerome Beetz, Julio C. Hechavarría, Manfred Kössl
12th Congress of International Society for Neuroethology
Uruguay

2013
Topographic organization of the posterior optic tubercle in the locust brain: Possible role in the generation of an internal sky compass
Jerome M. Beetz, Basil el Jundi, Stanley Heinze, Uwe Homberg
10th Göttingen Meeting of the German Neuroscience Society

Guest Talks

March 2013
Seminar talk in working group of Prof. Dr. Wolfgang Rössler
University of Würzburg

April 2013
Seminar talk in the vision group at Lund University

Memberships

since 2016
Member of the International Society for Neuroethology (ISN)

since 2013
Member of the German Neuroscience Society (NWG)

Stipends

July 2018
Travel grant from the International Society for Neuroethology to attend the 13th International Congress of Neuroethology in Brisbane, Australia

July 2018
Travel grant from DAAD (German Academic Exchange Service) to attend the 13th International Congress of Neuroethology in Brisbane, Australia

June 2017
Stipend from Surdna Foundation Scholarship to attend the summer school "Neural systems and Behavior" in Woods Hole, MA, USA

June 2017
Travel stipend from the Boeringer Ingelheim Fonds to attend the summer school "Neural systems and Behavior" in Woods Hole, MA, USA

Publications

2019

Adaptations in the call emission pattern of frugivorous bats when orienting under challenging conditions. **Beetz MJ**, Kössl M, Hechavarría JC. *J Comp Physiol A*. 2019, 205:457-467

2018

Neuronal coding of multiscale temporal features in communication sequences within the bat auditory cortex García-Rosales F, **Beetz MJ**, Cabral-Calderin Y, Kössl M, Hechavarría JC. 2018, *Commun Biol* 1:200

Low-Frequency Spike-Field Coherence Is a Fingerprint of Periodicity Coding in the Auditory Cortex. García-Rosales F, Martin LM, **Beetz MJ**, Cabral-Calderin Y, Kössl M, Hechavarría JC. *iScience* 2018, 9:47-62

Insect Orientation: stay on course with the sun. **Beetz MJ**, el Jundi B. *Curr Biol* 2018, 28: R933-R936.

Robustness of cortical and subcortical processing in the presence of natural masking sounds. **Beetz MJ**, García-Rosales F, Kössl M, Hechavarría JC. *Sci Rep*. 2018 8:6863.

2017

Processing of natural echolocation sequences in the inferior colliculus of Seba's fruit eating bat, *Carollia perspicillata*. **Beetz MJ**, Kordes S, García-Rosales F, Kössl M, Hechavarría JC. *eNeuro* 2017 4:ENEURO.0314-17.

Processing of temporally patterned sounds in the auditory cortex of Seba's short-tailed bat, *Carollia perspicillata*. Martin LM, García-Rosales F, **Beetz MJ**, Hechavarría JC. *Eur J Neurosci*. 2017, 46:2365-2379.

Activity monitoring of bats in a laboratory flight tunnel using a 24 GHz FMCW radar system. Moll J, Malzer M, Krozer V, Pozdniakov D, Salman R, **Beetz MJ**, Kössl M. 11th European Conference on Antennas and Propagation (EuCAP) 2017

2016

Vocal sequences suppress spiking in the bat auditory cortex while evoking concomitant steady-state local field potentials. Hechavarría JC, **Beetz MJ**, Macias S, Kössl M. *Sci Rep*. 2016, 6:39226.

Cortical neurons of bats respond best to echoes from nearest targets when listening to natural biosonar multi-echo streams.

Beetz MJ, Hechavarría JC, Kössl M, *Sci Rep*. 2016, 6:35991.

Neurons in the brain of the desert locust *Schistocerca gregaria* sensitive to polarized light at low stimulus elevations. **Beetz MJ**, Pfeiffer K, Homberg U. *J Comp Physiol A*. 2016, 202:759-781.

Temporal tuning in the bat auditory cortex is sharper when studied with natural echolocation sequences. **Beetz MJ**, Hechavarría JC, Kössl M, *Sci Rep*. 2016, 6:29102.

Distress vocalization sequences broadcasted by bats carry redundant information. Hechavarría JC, **Beetz MJ**, Macias S, Kössl M. J Comp Physiol A 2016, 202:503-15.

Radar-based detection of bats: Experiments in a laboratory flight tunnel. Moll J, Malzer M, Scholz N, Krozer V, Pozdniakov D, Salman R, Zimmermann R, Hechavarría JC, **Beetz MJ**, Kössl M. 10th European Conference on Antennas and Propagation (EuCAP) 2016

2015

Topographic organization and possible function of the posterior optic tubercles in the brain of the desert locust *Schistocerca gregaria*. **Beetz MJ**, El Jundi B, Heinze S, Homberg U. J Comp Neurol. 2015, 523:1589-607.