

Robin Grob

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Biozentrum Zoology II (D141)
Am Hubland
97070 Würzburg



EDUCATION

**Biology -
Doctoral
Student**
since 04/2017

Julius-Maximilians-University of Würzburg, Germany

Doctoral Thesis: "The function of learning-walks of *Cataglyphis* ants: behavioral and neuronal analyzes"

Supervisors: Prof. Dr. Wolfgang Rössler, JMU Würzburg

Prof. Dr. Keram Pfeiffer, JMU Würzburg

Prof. Dr. Marie Dacke, Lund University

**"Sensory
Ecology"
Course**
09/2018-10/2018

Lund University, Sweden

Participation in the international course for postgraduate students "Sensory Ecology" 2018

Directors: Prof. Dr. Eric Warrant, Lund University

Prof. Dr. Almut Kelber, Lund University

Prof. Dr. Christer Löfsted

**MBL Course
"Neurobiology"**
05/2018-07/2018

Marine Biological Laboratory in Woods Hole, MA, USA

Participation in the MBL practical course "Neurobiology" 2018

Topics: Genomics, Electrophysiology, Imaging, and Neuronal Cell Biology

Directors: Prof. Dr. Diana Bautista, UC Berkeley

Prof. Dr. Mark Hammarlund, Yale University

Prof. Dr. Ellen Pumpkin, Columbia University

**FENS-Hertie
Winter School**
12/2017

Universitätszentrum Obergurgel, Austria

Participation in the FENS-Hertie Winter School "Neural control of behaviour - Series 1: Navigation" 2017

Directors: Prof. Dr. Henrik Mouritsen, Oldenburg University

Prof. Dr. Nachum Ulanovsky, Weizmann Institute of Science

Prof. Dr. Eric Warrant, Lund University

**Biology -
Master of
Science**
04/2015-03/2017

Julius-Maximilians-University of Würzburg, Germany

T h e s i s : "Experience-dependent behavioral changes and neuronal plasticity in visual pathways of *Cataglyphis* desert ants"

S u p e r v i s o r s : Prof. Dr. Wolfgang Rössler, JMU Würzburg

Prof. Dr. Flavio Roces, JMU Würzburg

**Biology –
Bachelor of
Science**
10/2011-02/2015

Julius-Maximilians-University of Würzburg, Germany

M a j o r s : Sociobiology and Behavioral Physiology

T h e s i s : "Orientierungsläufe der Wüstenameise *Cataglyphis fortis*/Learning Walks of the desert ant *Cataglyphis fortis*"

S u p e r v i s o r : Prof. Dr. Wolfgang Rössler, JMU Würzburg

M i n o r s : Clinical Neurobiology, Neurobiology

**"Abitur"
A-Levels**
Until 07/2011

Hochfranken-Gymnasium Naila

EXPERIENCE

**Research
Assistant**
since 04/2017

**Research Assistant in the Neuroethology Research
Group (Rössler Lab)**

Institute of Behavioral Physiology & Sociobiology, University of Würzburg

Field work
05/2019-09/2019

**Field work in Strophilia National Park, Kato Archea,
Greece and Schinias National Park, Marathonas, Greece
with the desert ants *Cataglyphis nodus***

T o p i c : "The function of learning-walks of *Cataglyphis* ants: behavioral and neuronal analyzes"

S u p e r v i s o r : Prof. Dr. Wolfgang Rössler, JMU Würzburg

C o o p e r a t i o n P a r t n e r s : Prof. Dr. Jochen Zeil, ANU Canberra

Prof. Dr. Rüdiger Wehner, University of Zürich

Prof. Dr. Keram Pfeiffer, JMU Würzburg

Dr. Christos Georgiadis, University of Athens

Institute of Behavioral Physiology & Sociobiology, University of Würzburg

Field work
05/2017-07/2017

**Field work in Schinias National Park, Marathonas,
Greece with the desert ants *Cataglyphis nodus***

T o p i c : "The function of learning-walks of *Cataglyphis* ants: behavioral and neuronal analyzes"

S u p e r v i s o r : Prof. Dr. Wolfgang Rössler, JMU Würzburg

C o o p e r a t i o n P a r t n e r s : Prof. Dr. Jochen Zeil, ANU Canberra

Prof. Dr. Rüdiger Wehner, University of Zürich

Dr. Christos Georgiadis, University of Athens

Institute of Behavioral Physiology & Sociobiology, University of Würzburg

Master Thesis
06/2016-09/2016

Field work in Schinias National Park, Marathonas, Greece with the desert ants *Cataglyphis nodus* and *Cataglyphis aenescens*

Topic: "Experience-dependent behavioral changes and neuronal plasticity in visual pathways of *Cataglyphis* desert ants"

Supervisor: Prof. Dr. Wolfgang Rössler, JMU Würzburg

Cooperation Partners: Prof. Dr. Jochen Zeil, ANU Canberra

Prof. Dr. Rüdiger Wehner, University of Zürich

Prof. Dr. Bernhard Ronacher, HU Berlin

Dr. Christos Georgiadis, University of Athens

Institute of Behavioral Physiology & Sociobiology, University of Würzburg

Research Assistant
07/2015-04/2016

Student Research Assistant in the Neuroethology Research Group (Rössler Lab)

Topic: "Learning walks of *Cataglyphis* desert ants"

Institute of Behavioral Physiology & Sociobiology, University of Würzburg

Field Work
07/2015-09/2015

Field work in Schinias National Park, Marathonas, Greece with the desert ants *Cataglyphis nodus*

Topic: "High Speed Analyzes of the Learning Walks in *Cataglyphis* Desert Ants"

Supervisor: Prof. Dr. Wolfgang Rössler, JMU Würzburg

Cooperation Partners: Prof. Dr. Jochen Zeil, ANU Canberra

Prof. Dr. Rüdiger Wehner, University of Zürich

Dr. Christos Georgiadis, University of Athens

Prof. Dr. Bernhard Ronacher, HU Berlin

Institute of Behavioral Physiology & Sociobiology, University of Würzburg

Research Assistant
10/2014-04/2015

Student Research Assistant in the Neuroethology Research Group (Rössler Lab)

Topic: "Learning walks of *Cataglyphis* desert ants"

Institute of Behavioral Physiology & Sociobiology, University of Würzburg

Bachelor Thesis
06/2014-08/2014

Field work in Menzel Chaker, Tunisia with the desert ants *Cataglyphis fortis*

Topic: "Orientierungsläufe der Wüstennameise *Cataglyphis fortis*/Learning Walks of the desert ant *Cataglyphis fortis*"

Supervisor: Prof. Dr. Wolfgang Rössler

Cooperation Partners: Prof. Dr. Jochen Zeil, ANU Canberra

Prof. Dr. Rüdiger Wehner, University of Zürich

Prof. Dr. Bernhard Ronacher, HU Berlin

Institute of Behavioral Physiology & Sociobiology, University of Würzburg

Field Work
02/2014-03/2014

Practical course at the Institute of Behavioral Physiology & Sociobiology: Field work at the Research Station “La Gamba”, La Gamba, Costa Rica

Topic: “Diplopoden - Zur chemischen Ökologie von Wehrsekreten/Diploids – Chemical Ecology of Defensive Secretion”

Supervisors: PD Dr. Johannes Spaethe, JMU Würzburg

Dr. Dieter Mahsberg, JMU, Würzburg

Cooperation Partner: Dr. Werner Huber, University of Vienna

Field Work
07/2013-08/2013

Research assistant: Field Work in Menzel Chaker, Tunisia with the desert ants *Cataglyphis fortis*

Institute of Behavioral Physiology & Sociobiology, University of Würzburg

Topic: “How does the desert ant *Cataglyphis fortis* acquire its solar ephemeris function?”

Supervisor: Prof. Dr. Wolfgang Rössler, JMU Würzburg

Cooperation Partner: Prof. Dr. Rüdiger Wehner, University of Zürich

Institute of Behavioral Physiology & Sociobiology, University of Würzburg

TEACHING

since 2018

Co-Supervision of Bachelor thesis projects

since 2017

4th Semester Bachelor Practical Course “**Behavioral Physiology**” (SS)

Topic: “Olfactory orientation and communication: Trail pheromone of *Lasius niger*”

since 2015

5th Semester Bachelor Practical Course “**Integrative Biology II**” (WS)

Topic: “Learning walks of *Cataglyphis* desert ants”

GRANTS

2019

Scientific Meeting Grant by The Company of Biologists (for NeuroDoWo19).

2018

Boehringer Ingelheim Fonds - Travel Grant.

Graduate School of Life Sciences - Travel Fellowship (University of Würzburg).

Kurt and Rhoda Isselbacher Endowed Scholarship Fund - Scholarship

Helmsley Charitable Trust – Neurobiology - Scholarship

PUBLICATIONS

Peer-reviewed Articles

- 2021 **Grob, R.**, Jundi, B., Fleischmann, P. N. (2021).
Towards a common terminology for arthropod spatial orientation. *Ethol. Ecol. Evol.* 00, 1–21. doi:10.1080/03949370.2021.1905075.
- Grob, R.**, Tritscher, C., Grübel, K., Stigloher, C., Groh, C., Fleischmann, P. N., Rössler, W. (2021).
Johnston’s organ and its central projections in *Cataglyphis* desert ants. *J. Comp. Neurol.* 529, 2138–2155. doi:10.1002/cne.25077.
- 2020 Fleischmann, P.N., **Grob, R.**, and Rössler, W. (2020).
Magnetoreception in Hymenoptera: importance for navigation. *Animal Cognition.* doi: 10.1007/s10071-020-01431-x.
- 2019 **Grob, R.**, Fleischmann, P.N., and Rössler, W. (2019).
Learning to navigate – how desert ants calibrate their compass systems. *Neuroforum.* doi: 10.1515/nf-2018-0011.
- 2018 Fleischmann, P.N.*, **Grob, R.***, Müller, V.L., Wehner, R., and Rössler, W. (2018).
The Geomagnetic Field Is a Compass Cue in *Cataglyphis* Ant Navigation. *Curr. Biol.* 28 :9, 1440–1444 doi: 10.1016/j.cub.2018.03.043.
- 2017 **Grob, R.***, Fleischmann, P.N.*, Grübel, K., Wehner, R., and Rössler, W. (2017).
The Role of Celestial Compass Information in *Cataglyphis* Ants during Learning Walks and for Neuroplasticity in the Central Complex and Mushroom Bodies. *Front. Behav. Neurosci.* 11:226. doi: 10.3389/fnbeh.2017.00226.
- Fleischmann, P. N., **Grob, R.**, Wehner, R., and Rössler, W. (2017).
Species-specific differences in the fine structure of learning walk elements in *Cataglyphis* ants. *J. Exp. Biol.* 220, 2426–2435. doi:10.1242/jeb.158147.

Talks and Poster Presentations

- 2021 **Grob, R.**, Tritscher, C., Grübel, K., Stigloher, C., Groh, C., Fleischmann, P. N., Rössler, W. (2021)
The Johnston’s organ of desert ants and its central projections. 14th Göttingen Meeting of the German Neuroscience Society, Göttingen (Germany), 22nd – 30th of March. (Poster)
- Grob, R.** (2021)
The Johnston’s organ of desert ants and its central projections. 14th Göttingen Meeting of the German Neuroscience Society, Göttingen (Germany), 22nd – 30th of March. (Talk)
- 2019 **Grob, R.**, Fleischmann, P. N., Wehner, R., and Rössler, W. (2019).
Setting Your Compass – how desert ants learn to navigate. 14th Eureka! International Symposium, University of Würzburg, Würzburg, 9th – 10th of October. (Poster)
- Grob, R.**, Fleischmann, P. N., Wehner, R., and Rössler, W. (2019).
Learning to navigate – how desert ants calibrate their compass systems. 30th NeuroDoWo19, University of Würzburg, Würzburg, 28th – 31th of August. (Talk)

Grob, R. (2019)
Calibrating the celestial compass. 2nd Retreat of the Institute of Behavioral Physiology & Sociobiology, University of Würzburg, Würzburg, 10th of Mai. (Talk)

Grob, R., Fleischmann, P. N., Müller, V. L., Wehner, R., and Rössler, W. (2019).
The earth's magnetic field is an early compass in desert ants. 10th Royal Institute of Navigation Conference on Animal navigation (RIN19), Royal Holloway College, London (UK), 10th – 12th of March. (Poster)

Grob, R., Fleischmann, P. N., Grübel, K., Wehner, R., and Rössler, W. (2019).
Compass Systems During Ant Learning Walks: The Role of Celestial Cues for Initial Compass Calibration in *Cataglyphis* Ants. 13th Göttingen Meeting of the German Neuroscience Society, Göttingen (Germany), 20th – 23th of March. (Talk)

2018

Grob, R., Fleischmann, P. N., Müller, V. L., Wehner, R., and Rössler, W. (2018).
Navigating with the sixth sense - how desert ants set their compass systems. 13th Eureka! International Symposium, Würzburg (Germany), 10th – 11th of October. (invited Talk)

Grob, R., Fleischmann, P. N., Müller, V. L., Wehner, R., and Rössler, W. (2018).
The role of a geomagnetic compass during learning walks of *Cataglyphis* desert ants. "Sensory Ecology" 2018, Lund (Sweden), 23th of September–07th of October. (Poster)

Grob, R., Fleischmann, P. N., Müller, V. L., Wehner, R., and Rössler, W. (2018).
The role of a geomagnetic compass for early learning behavior in desert ants. Annual meeting of the german zoological society (DZG), Greifswald, Germany, 11th – 14th of September. (Talk)

Grob, R., Fleischmann, P. N., Grübel, K., Wehner, R., and Rössler, W. (2018).
Setting Your Compass - Behavioral and Neuronal Effects of Skylight Manipulation during the Learning Walks of *Cataglyphis* Ants. ANN Spring Meeting 2018, Altleiningen (Germany), 27th–29th of March. (Talk)

2017

Grob, R., Fleischmann, P. N., Grübel, K., Wehner, R., and Rössler, W. (2017).
Skylight-dependent behavioral changes and neuronal plasticity in visual pathways of *Cataglyphis* desert ants. FENS-Hertie Winter School: Neural control of behaviour - Series 1: Navigation, Obergurgl (Austria), 10th – 16th of December. (Poster)

Grob, R., Fleischmann, P. N., Grübel, K., Wehner, R., and Rössler, W. (2017).
Learning walks are crucial – Behavioral and Neuronal Effects of Skylight Manipulation. Frontiers in Insect Navigation, Würzburg (Germany), 16th – 17th of November. (Talk)

Popular Scientific Articles

2020

Fleischmann, P. N., **Grob, R.,** and Rössler, W. (2020).
Kompass im Kopf - Wie Wüstenameisen lernen heimzukehren (Ant compass – how desert ants learn to navigate). *Biol. Unsere Zeit* 2/2020:50, 100–109. doi: 10.1002/ biuz.202010699.

SCIENTIFIC MEETINGS

- 2019 Co-Organization of the 30th Neurobiology Doctoral Students Workshop “**NeuroDoWo19**”, Residence Würzburg, JMU Würzburg, Germany
- 2017 Co-Organization of the Symposium “**New Frontiers in Insect Navigation**”, Biocenter, JMU Würzburg, Germany (with Dr. Pauline Fleischmann)

Würzburg, 04/05/2021