Miguel Fernandes

Postodoctoral work

September 2013 onwards
Max Planck Institute for Neurobiology, Martinsried
Dept. Genes - Circuits - Behavior
Advisor: Prof. Dr Herwig Baier
"Neural circuits underlying visual stimulus selection in zebrafish"

Doctoral Thesis

April 2009 - July 2013
Developmental Biology Unit, Department of Biology I , University of Freiburg
PhD Student (Doctoral thesis). Thesis advisor: Prof. Dr Wolfgang Driever
"Genetic analysis of development and behavioral roles
of neurons specified by the Orthopedia transcription factor"

PhD Thesis awarded the Hans-Grisebach Award 2014
by the University of Freiburg
Outstanding dissertation in the field of biochemistry and molecular biology

University studies

September 2003- September 2008
Science Faculty, University of Porto, Portugal
Diploma Degree in Biology

March 2008 – September 2008
Institute of Human Genetics, University of Freiburg, Germany
Diploma Thesis, Thesis Advisor: Prof. Dr. Werner Schempp
“Comparative DAZ and CDY mapping discloses recurrent
rearrangements on Y chromosomes of the common chimpanzee”

Additional

May 2014
NIG Collaboration Grant-NIG-JOINT (2014-A)
Visiting researcher at the laboratory of Prof. Dr. Koichi Kawakami
Screening of Gal4 enhancer and gene trap lines

January 2011- February 2011
Unit on Behavioral Neurogenetics, NICHD, USA
Visiting researcher at the laboratory of Dr. Harold Burgess
"High-throughput behavioral analysis in zebrafish"

October 2008 – April 2009
Research assistant (Wissenschaftliche Hilfskraft).
Laboratory of Prof. Dr. Wolfgang Driever
Developmental Biology Unit, Department of Biology I , University of Freiburg

April 2005 – January 2008
Volunteer Research assistant. Cytogenetics department
Laboratory of Prof. Dr. Isabel Malheiro
Salazar Biomedical Science Institute, University of Porto, Portugal

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Publications

Fernandes AM,..., Baier H
Submitted
Neuronal circuits for visual attention

Kölsch Y, ..., **Fernandes AM**, ...,Baier H
In preparation
Molecular Dissection of the Retinal Projectome

Mearns S., ...**Fernandes AM**,..., Baier H
Current Biology (2020)
Deconstructing hunting behavior reveals a tightly coupled stimulus-response loop

Kunst M, ..., **Fernandes AM**, ..., Baier H
Neuron (2019).
A Cellular-Resolution Atlas of the Larval Zebrafish Brain

Bernal Sierra YA, ..., **Fernandes AM**, ..., Schmitz D
Nature communications (2018)
Potassium channel-based optogenetic silencing

Haehnel-Taguchi M, **Fernandes AM**, ..., Driever W
Frontiers in neuroanatomy (2018)
Projections of the Diencephalospinal Dopaminergic System to Peripheral Sense Organs in Larv

Förster D, ..., **Fernandes AM**, ... , Kubo F
Scientific Reports (2017)
Genetic targeting and anatomical registration of neuronal populations
in the zebrafish brain with a new set of BAC transgenic tools

Fernandes AM, Beddows E, Filippi A, Driever W
PloS one (2013)
Orthopedia transcription factor otpa and otpb paralogous genes function
during dopaminergic and neuroendocrine cell specification in larval zebrafish

Fernandes AM, Fero K, Driever W, Burgess HA
Bioessays (2013)
Enlightening the brain: Linking deep brain photoreception with behavior and physiology

Fernandes AM*, Fero K*, Arrenberg AB, Bergeron
SA, Driever W, Burgess HA. Curr Biol. (2012). Deep
brain photoreceptors control light-seeking behavior in
zebrafish larvae.
* Equal contribution

Schaller F*, **Fernandes AM***, Hodler C, Münch C,
Pasantes JJ, Rietschel W, Schempp W. Y. Plos one
(2010). Chromosomal variation tracks the evolution of
mating systems in chimpanzee and bonobo.
* Equal contribution

Münch C, Kirsch S, **Fernandes AM**, Schempp W.
BMC Evol Biol (2008). Evolutionary analysis of the
highly dynamic CHEK2 duplicon in anthropoids.

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Talks

Selected talk
Champalimaud Research Symposium, 25 October 2018
"Neuronal circuitry for stimulus competition in the visual system"

FENS Satellite Symposium
DFG-funded Priority Programs 1665, 1926 & 2041
Resolving the brain circuitry:
a story of tools, experiments and models
Highlight SPP 1926 Talk: "Potassium channel-based optogenetic silencing"
6 July 2018

SPP1926 Annual Meeting
10 October 2017
"Fishing for next generation optogenetic tools"

SPP1926 Annual Meeting
26 September 2016

DFG-Forschergruppe 1279 Meeting + Kickoff SPP1926 meeting
30 March 2016
"Fishing for attention and next generation optogenetic tools"

Attended scientific meetings (with poster presentation)

SFB 870 Retreat 2018
10 December - 11 December, 2018
Poster title: "Neuronal circuitry for stimulus competition in the visual system"

SPP 1926,Third Annual Meeting and Summer School
3rd place Poster Prize
24 September - 26 September 2018
Poster title: "Stimulus competition in the zebrafish visual system:
Behavior and neuronal circuit dynamics"

11th FENS Meeting
7-11 July, 2018
Poster title: "Stimulus competition in the zebrafish visual system:
Behavior and neuronal circuit dynamics"

SFB 870 Retreat 2017
12 December - 13 December, 2017
Poster title: "Visual object recognition: neural substrate of bottom-up attention"

MAPS 2015
7-9 December 2015
Poster title: "Selection of salient stimuli by zebrafish midbrain networks"

10th International Conference on Zebrafish
Development and Genetics. 20-24 June 2012
Poster title: Otp-dependent deep
brain photoreceptors control dark photokinesis
behavior in zebrafish larvae.

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Attended scientific meetings (with poster presentation)

1st Champalimaud Neuroscience Symposium.
18-21 September 2011. Poster
title: Behavioral role of far-projecting A11-type
Dopaminergic neurons in zebrafish larvae

3rd International Symposium of the SFB 592
"Signaling Mechanisms in Embryogenesis and
Organogenesis" and the GRK 1104 "From Cells to
Organs: Molecular Mechanisms in
Organogenesis". October 7-8, 2010 in Freiburg. Poster
Title : Targeted gene expression for characterizing
dopaminergic development and behavioral circuits

Teaching

Zebrafish course
TUM PhD program 'Life Science and Technology'
May 2019
"Behavior and neural network dynamics during stimulus selection"

Practical course Tutor
Molecular neurobiology practical course (GSN-LMU)
June 2018
"Molecular and behavioral approaches for neuronal circuit analysis in zebrafish"

Practical course Tutor
Molecular Neurobiology course, GSN-LMU
July 2017
"Molecular and behavioral approaches for neuronal circuit analysis in zebrafish"

Workshop "Introduction to zebrafish as a model system"
Technical University of Munich (zoology deparment)
20 January 2015

Seminars and training courses

Workshop
Making a Lasting Impression in Science through Communication
"Assessment Center" and "Practice Lab"
3- 4 September

Workshop
Faculty recruitment at German Universities
13-14 June 2017

Workshop
Applied Statistics in Basic Life Science Research
14-15 November 2016

Workshop
Communicate - Negotiate - Resolve.
1-2 June 2016.

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Training Course on Genetic Engineering Security
"Fortbildungsveranstaltung Sicherheit in der Gentechnik"
11-12 September 2012

Sequencing (Oberseminar). Title of presentation:
Exome Sequencing
8 July 2010

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Grants writing
(successful applications)

Co-writing with Prof. Dr. Herwig Baier SPP1926
Next generation optogenetics
Mechanism, engineering and application of Rhodopsin-guanylyl cyclases

Co-writing with Prof. Dr. Herwig Baier DFG 870
Assembly and Function of Neuronal Circuits
Visual object recognition: neural substrate of bottom-up attention

Competences

IT

Experience with Photoshop, Adobe Illustrator, GIMP and ImageJ
Programming in Python and R
Microprocessor Arduino
Experience with Windows, Mac and Linux operative systems

Languages

Portuguese (mothertongue)
English (advanced)
German (advanced)

Organization skills

Active member of the Max Planck of Neurobiology Postdoc association.
Organizer of several Seminars, group discussions
and contact person for postdocs from the institute
Postdoc association representative (MPIN)

Active member of "Nucleus of Biology Students from the University of Porto (NEBUP)" since January 2004 to January 2008: Non-profit organization with the goal of organizing scientific conferences, workshops and field expeditions.

Member of the Committee responsible for organizing the X National Meeting of Biology Students in Portugal (X ENEB April 2006 in Porto). Around 400 participants from all over the country.

Interests

Music, cooking and reading. All kinds of sport,
particularly football, cycling and swimming.

Extra activities

Martial art practitioner (Musado RSD)
Crossing guard (Schülerlotse)

Reference contacts

Prof. Dr. Herwig Baier
Dept. Genes - Circuits - Behavior
Max Planck Institute of Neurobiology
Martinsried, Germany
Website:
https://www.neuro.mpg.de/baier

Prof. Dr. Wolfgang Driever
Department of Developmental Biology, Institute Biology I, at the Albert-Ludwigs-University of

Freiburg, Germany
Contact:
driever@biologie.uni-freiburg.de
Website:
http://www.bio.uni-freiburg.de/groups/driever-en?set_language=en

Dr. Harold A. Burgess
Unit on Behavioral Neurogenetics, NICHD, USA
Contact:
haroldburgess@mail.nih.gov
Website:
http://neuroscience.nih.gov/Lab.asp?Org_ID=567