

Curriculum vitae

JULIA M.I. BARTH

Ph.D. | M.Sc.

PERSONAL INFORMATION

YEAR OF BIRTH | 1982

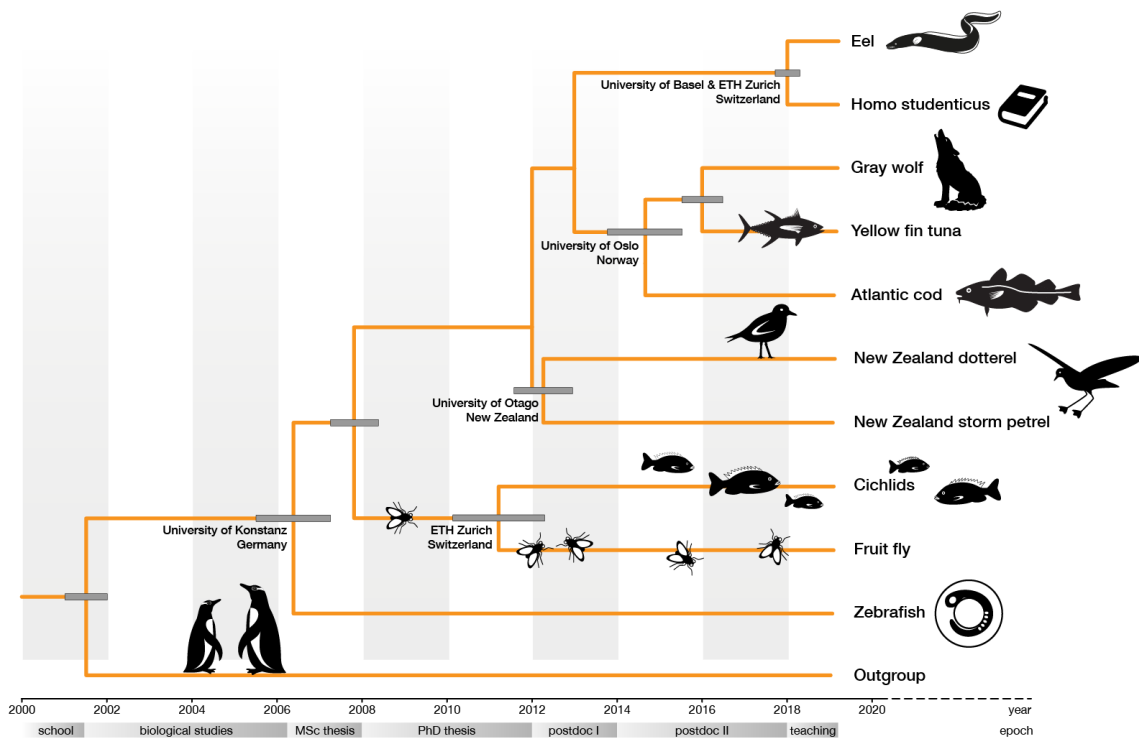
NATIONALITY | German

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I am a trained molecular biologist, with a broad spectrum of interests and experience in various research fields. I received my M.Sc. in developmental biology, my Ph.D in genetics and cell biology, and I pursued postdoctoral research in ecology and evolutionary biology including conservation, phylogenetic, population genetic, and genomic projects.



EDUCATION

UNIVERSITY STUDIES

- 2008 - 2011 **Ph.D. in Biology**, ETH Zurich, Switzerland. 'The role of autophagy during *Drosophila* oogenesis'. Supervisor: Prof. Dr. Ernst Hafen. Awarded Dr. Sc. ETH on November 10, 2011
- 2006 - 2007 **M.Sc. in Biology**, University of Konstanz, Germany. 'Characterization of gene regulation and neuronal transgene expression of prion protein in zebrafish'. Supervisor: Prof. Dr. Claudia A.O. Stürmer and Dr. Edward Málaga-Trillo. Awarded the *Diplom* (M.Sc.) on 17th April 2007
- 2004 - 2005 **Advanced study period**, University of Konstanz, Germany. Main subjects: Molecular Evolutionary Biology, Molecular Plant Physiology, Biochemical Pharmacology, Cell-Biochemistry
- 2001 - 2003 **B.Sc. in Biology**, University of Konstanz, Germany

ADDITIONAL TRAINING

- 2015 **Programming with R** Workshop, University of Oslo, Norway, October 21-22
- 2015 **Transcriptomics** Workshop, University of Oslo, Norway, April 7-10
- 2015 **Marine Ecological & Environmental Genomics** Workshop, Roscoff, France, May 31-June 12
- 2014 **Bayesian inference using BEAST** ForBio Workshop, Oslo, Norway, May 26-30
- 2008 - 2011 **'LifeScience Zurich Graduate School'** Ph.D. program, ETH Zurich, Switzerland
- 2001 - 2007 Active member of the **student council**, University of Konstanz, Germany

WORKING EXPERIENCE

SCIENTIFIC WORKING EXPERIENCE

- from 2018 **Course developer and manager** for the ETH biology curriculum at the Center for Active Learning (CAL), Department of Biology, ETH Zürich, Switzerland
Guest researcher with Prof. Dr. Walter Salzburger, Zoological Institute, University Basel, Switzerland. 'Hybridization and speciation in Pacific eels'
- 2014 - 2017 **Postdoctoral fellow** with Prof. Dr. Nils Chr. Stenseth, Prof. Dr. Kjetill S. Jakobsen, and Dr. Sissel Jentoft, CEES, University of Oslo, Norway. 'Genomics of local adaptation in Atlantic cod', 'Genomic differentiation and demographic histories of yellowfin tuna'
- 2012 - 2013 **Research associate** with Prof. Dr. Bruce Robertson, Department of Zoology, University of Otago, New Zealand. 'Phylogenetic position and subspecies divergence of the New Zealand dotterel', 'Population structure and abundance of the New Zealand storm petrel'
- 2011 - 2012 **Research associate** with Prof. Dr. Ernst Hafen, ETH Zurich, Switzerland. 'The role of autophagy during *Drosophila* oogenesis'
- 2004 - 2007 **Research assistant** with Prof. Dr. Claudia A.O. Stürmer, University of Konstanz, Germany. 'Isolation, characterization and evolutionary comparison of prion-protein genes from lower vertebrates', 'Design and cloning of DNA constructs for the generation of knockout mice'

TEACHING EXPERIENCE

- 2018 & 2016 **Co-organizer and teacher** at the Workshop on Population and Speciation Genomics (2 weeks in January/February, Český Krumlov, Czech Republic)
- 2015 **Teaching assistant** at the Workshop on Molecular Evolution (January 25-February 7, Český Krumlov, Czech Republic)

FIELDWORK EXPERIENCE

- 2017 Fieldwork assistant with the 'Sparrow group' of Prof. Dr. Glenn-Peter Sætre, University Oslo, Norway. 'Mist netting, collection of blood samples and morphological data of the **Italian** and **Spanish sparrow** (*Passer italiae*, *P. hispaniolensis*)' at the the Gargano peninsula, Italy
- 2014 Collection of tissue samples and morphological measurements of **Atlantic cod** (*Gadus morhua*), University of Oslo, Norway
- 2013 Fieldwork assistant with Chris Gaskin and Dr. Matt Rayner, University of Auckland, New Zealand. 'Tracking of **New Zealand storm petrels** (*Fregetta maoriana*) and their breeding sites with telemetry triangulation' (resulting publication: Rayner MJ et al. (2015) Using miniaturized radiotelemetry to discover the breeding grounds of the endangered New Zealand Storm Petrel *Fregetta maoriana*. *Ibis*, 157, 754-766)
- 2012 Conservation volunteer with the New Zealand Department of Conservation, Dunedin, New Zealand. Selected projects: 'Monitoring and predator control of **fairy prions** (*Pachyptila turtur*)', and '**yellow-eyed penguin** (*Megadyptes antipodes*) monitoring, measuring and breeding sites localization'
- 2012 Fieldwork assistant with Prof. Dr. Ian Jamieson, University of Otago, New Zealand. 'Monitoring, banding and predator control of the **South Island robin** (*Petroica australis*)'
- 2012 Fieldwork assistant with Dr. Phil Battley, Rob Schuckard and David Melville, New Zealand. 'Cannon-netting, weighting, measuring and banding of **bar-tailed godwits** (*Limosa lapponica*)'
- 2005 Internship with Dr. Harold Greeney, Yanayacu Biological Station, Cosanga, Ecuador. Main project: '**Breeding ecology** of Ecuador's mainland avifauna' (resulting publication: Greeney HF et al. (2011), Notes on the breeding of high Andean birds in northern Ecuador. *Bull. B.O.C.*, 131)

SELECTED SKILLS

LANGUAGES

German (native), English (fluent), Spanish (good command), Norwegian (basic), French (basic)

SOFTWARES & PROGRAMMING

Phylogenetic inference software, genomics software and pipelines, confocal image analysis software, Illustrator, Photoshop, HTML, Markdown, UNIX, R, Python (basic), Ruby (basic)

LABORATORY TECHNIQUES

Antibody generation, cell culture maintenance and experiments, confocal microscopy, DNA cloning, DNA/RNA extraction, electrophoresis, immunostaining, molecular hybridization, molecular transgenesis, PCR, real-time PCR, RNA interference, sequencing library generation, transmission electron microscopy

SELECTED PRESENTATIONS

- 2019 Biology19, Feb. 7-8, Zürich, Switzerland. Talk: 'Disentangling structural genomic and behavioral barriers in a sea of connectivity'
- 2017 Congress of the European Society for Evolutionary Biology (ESEB), Aug. 21-25, Groningen, Neatherlands. Poster: 'Chromosomal rearrangements as barriers to homogenization in highly mobile fish'
- 2016 7th World Fisheries Congress, May 23-27, Busan, South Korea. Invited talk: Ancient genomic variation separates Atlantic cod ecotypes; implications for management
- 2015 One day workshop on Connectivity in the ocean - Observing, modeling and assessing, May 28, Strömstad, Sweden. Invited talk: 'A genomic perspective on cod connectivity in the Skagerrak/Kattegat'
- 2015 Congress of the European Society for Evolutionary Biology (ESEB), Aug. 9-14, Lausanne, Switzerland. Poster: 'A genomic perspective on Atlantic cod connectivity'
- 2014 CEES Annual Student Conference, Oct. 21-22. Holmen, Norway. Invited talk: A genomic perspective on cod connectivity in the Skagerrak/Kattegat.
- 2012 Speciation in ancient lakes 6, Aug. 26-30, Bogor, Indonesia
- 2011 52nd Annual Drosophila research conference, Mar. 30-April 3, San Diego, CA, USA. P o s t e r : 'Autophagy in *Drosophila* ovaries is induced by starvation and required for oogenesis'.
- 2010 Swiss Apoptosis Meeting, Sept. 30-Oct. 1, Bern, Switzerland. Talk: 'Autophagy in *Drosophila* ovaries is induced by starvation and required for oogenesis'
- 2009 EMBO Autophagy, October 18-21, Ascona, Switzerland. Talk: 'Autophagy in *Drosophila* ovaries is induced by starvation and required for oogenesis'
- 2008 DBIOL Symposium, June 24, Davos, Switzerland. Poster: 'Establishment of a method to assess starvation induced autophagy during *Drosophila* oogenesis'
- 2006 Prion Meeting 2006, October 3-6, Turin, Italy. Poster: 'Conserved roles of vertebrate prion proteins'. E. Málaga-Trillo, GP Solis, L Luncz, JMI Barth, Y Schrock and CAO Stuermer

PUBLICATIONS

PUBLISHED (peer-reviewed)

Barth JMI, Villegas-Ríos D, Freitas C, Moland E, Star B, André C, Knutsen H, Bradbury I, Dierking J, Petereit C, Righthon D, Metcalfe J, Jakobsen KS & Olsen EM, Jentoft S (2019). Disentangling structural genomic and behavioral barriers in a sea of connectivity.

Molecular Ecology (Special issue), early view DOI: 10.1111/mec.15010

Langangen Ø, Färber L, Stige LC, Diekert FK, **Barth JMI**, Matschiner M, Berg PR, Star B, Stenseth NC, Jentoft S & Durant JM (2019). Ticket to spawn: Combining economic and genetic data to evaluate the effect of demographic structure on spawning distribution in cod.

Global Change Biology, 25 (1): 134-143

Svedäng H, **Barth JMI**, Taylor M, Svenson A, Jonsson P, Jentoft S, Knutsen H & André C (2018). Local cod (*Gadus morhua*) revealed by egg trawling and population genetic analysis after longstanding depletion on the Swedish Skagerrak coast.

ICES Journal of Marine Science, 76, (2) :418-429

- Barth JMI**, Berg PR, Jonsson PR, Bonanomi S, Corell H, Hemmer-Hansen J, Jakobsen KS, Johannesson K, Jorde PE, Knutsen H, Moksnes P, Star B, Stenseth NC, Svedäng H, Jentoft S, André C (2017). Genome architecture enables local adaptation of Atlantic cod despite high connectivity. *Molecular Ecology*, 26 (17): 4452-4466
- Bernatchez L, Wellenreuther M, Araneda C, Ashton DT, **Barth JMI**, Beacham,TD, Maes GE, Martinsohn JT, Miller KM, Naish KA, Ovenden JR, Primmer CR, Suk HY, Therkildsen NO, Withler RE (2017). Harnessing the power of genomics to secure the future of seafood. *Trends in Ecology & Evolution*, 32 (9): 665-680
- Barth JMI**, Damerou M, Matschiner M, Jentoft S, Hanel R (2017). Genomic differentiation and demographic histories of Atlantic and Indo-Pacific yellowfin tuna (*Thunnus albacares*) populations. *Genome Biology and Evolution*, 9 (4): 1084-1098
- Matschiner M, Muzilová Z, **Barth JMI**, Starostová Z, Salzburger W, Steel M, Bouckaert R (2017). Bayesian phylogenetic estimation of clade ages supports trans-atlantic dispersal of cichlid fishes. *Systematic Biology*, 66 (1): 3-22
- Berg PR, Star B, Pampoulie C, Sodeland M, **Barth JMI**, Knutsen H, Jakobsen KS, Jentoft S (2016). Three chromosomal rearrangements promote genomic divergence between migratory and stationary ecotypes of Atlantic cod. *Scientific Reports*, 6: 23246
- Barth JMI**, Köhler K (2014). How to take autophagy and endocytosis up a notch. *BioMed Research International*, Article ID 960803
- Barth JMI**, Matschiner M and Robertson BC (2013). Phylogenetic position and subspecies divergence of the endangered New Zealand dotterel (*Charadrius obscurus*). *PLoS ONE* 8 (10): e78068
- Barth JMI**, Hafen E, Köhler K (2012). The lack of autophagy triggers precocious activation of Notch signaling during *Drosophila* oogenesis. *BMC Developmental Biology*, 12 (1): 35
- Barth JMI**, Szabad J, Hafen E, Köhler K (2010). Autophagy in *Drosophila* ovaries is induced by starvation and is required for oogenesis. *Cell Death & Differentiation*, 18 (6): 915-924
- Köhler K, Brunner E, Guan XL, Boucke K, Greber UF, Mohanty S, **Barth JMI**, Wenk MR, Hafen E (2009). A combined proteomic and genetic analysis identifies a role for the lipid desaturase Desat1 in starvation-induced autophagy in *Drosophila*. *Autophagy*, 5 (7): 980-990
- PUBLISHED (preprints, reports, theses)
- Barth JMI***, Gubili C*, Matschiner M*, Tørresen OK, Watanabe S, Egger B, Han Y-S, Feunteun E, Sommaruga R, Jehle R, Schabetsberger R. Stable species boundaries despite ten million years of hybridization in tropical eels (*equal contribution). *bioRxiv*, doi.org/10.1101/635631
- Skage M, **Barth JMI**, Jentoft S, Øverli, Ø & Jakobsen KS (2017). Genetisk bakgrunn hos ulv (*Canis lupus*) i Norge og Skandinavia (in Norwegian with English Materials & Methods). *UiO research report*, <http://urn.nb.no/URN:NBN:no-61588>
- Barth JMI** (2011). The role of autophagy during *Drosophila* oogenesis. *Ph.D. thesis*, Swiss Federal Institute of Technology (ETH), Switzerland
- Barth JMI** (2007). Characterization of gene regulation and neuronal transgene expression of prion protein in zebrafish. *M.Sc. thesis*, University of Konstanz, Germany

SUBMITTED

Weist P, Schade FM, Damerau M, **Barth JMI**, Dierking J, André C, Petereit C, Reusch T, Jentoft S, Hanel R, & Krumme U. Discriminating between Baltic cod populations using a minimum panel of genetic markers. *PLoS ONE* (accepted pending revision)

IN PREPARATION

Barth JMI, Briec MS, Star B, Berg PR, Jentoft S & Jakobsen KS. Demographic modeling from genomic data identifies gene flow and hybridization of Baltic cod populations.

Barth JMI and Robertson BC. The population structure and effective population size of the rediscovered New Zealand storm petrel (*Fregetta maoriana*)

PEER REVIEW SERVICE

Axiom Review, BMC Genomics, Evolutionary Applications, Heredity, IBIS, Molecular Ecology, Proceedings of the National Academy of Sciences of the United States of America (PNAS), Scientific Reports