MADLEN STANGE

Postdoctoral Fellow

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EDUCATION

01/2014 – 05/2017 University of Zürich (CH)	**Dissertation. "Evolution in Northern Neotropical Catfishes – Integrating Genomics and Morphometrics"** (defended 15 May 2017) Research on the morphological and molecular evolution after habitat transition in Neotropical sea catfishes, supervised by Prof. M. Sánchez-Villagra, Paleontological Institute and Museum, and Prof. W. Salzburger, University of Basel
10/2010 – 06/2013 University of Potsdam (DE)	**Master studies** in Molecular Biology Master of Science; overall grade: 1.2, "with distinction" **Master thesis.** "A male color dimorphism in an African cichlid fish" in collaboration with the University of Basel (supervisors: Prof. W. Salzburger, Prof. R. Tiedemann, grade: 1.0, "excellent")
10/2006 – 09/2010 University of Potsdam (DE)	**Bachelor studies** in Life Sciences, focus in genome research Bachelor of Science; overall grade: 2.3, "good" **Bachelor thesis.** "Genetic variability of selected Calvin cycle genes in *Arabidopsis thaliana*", Evolutionary Biology, University of Potsdam (supervisors: Prof. R. Tiedemann, Prof. M. Lenhard, grade: 1.0, "excellent")

EMPLOYMENT HISTORY

04/2018 – 09/2019 McGill University (CA)	**Post-doctoral researcher (full-time)** with Prof. Andrew Hendry and Prof. Rowan Barrett working on genomics of ionic adaptation in sea catfishes and Canadian freshwater fishes
02/2018 – 03/2018 University of Basel (CH)	**Post-doctoral researcher (full-time)** with Prof. W. Salzburger working on the genomics of freshwater adaptation in sea catfishes
06/2017 – 01/2018 University of Zürich (CH)	**Post-doctoral researcher (full-time)** with Prof. M. Sánchez-Villagra working on morphological patterns of domestication in chicken
07/2013 – 12/2013 University of Zürich (CH)	**Research assistant (full-time)** Investigation of the possibility to conduct a research project on the habitat evolution in Neotropical sea catfishes, with Prof. M. Sánchez-Villagra
04/2012 – 10/2012 University of Basel (CH)	**Internship (full-time)** Introduction to next-generation sequencing – library preparation and computational analyses at the Evolutionary Biology unit, Zoological Institute with Prof. W. Salzburger

09/2007 – 03/2012 University of Potsdam (DE)	**Research assistant (9-19h/w)** Working on the genetic variability in photosynthesis genes in accessions of *Arabidopsis thaliana*, in the framework of *Go*FORSYS, Evolutionary Biology/Systematic Zoology with Prof. R. Tiedemann

PRIZES, AWARDS, FELLOWSHIPS

12/2018	**Two Awards** for whole genome sequencing and assembly of *Percina caprodes* and *Perca flavescens* genomes within the Canada 150 Sequencing Initiative (**CanSeq150**) executed by Canada's Genomics Enterprise (CGEn) (worth 4,500 CAD sequencing costs)
05/2018 – 07/2018	**STRI Short Term Fellowship**, Smithsonian Tropical Research Institute (4,500 USD), stipend, research and travel allowance to conduct fieldwork in Panama for my SNSF project
04/2018 – 09/2019	**Early Postdoc Mobility grant**, Swiss National Science Foundation (SNSF) (117,000 CAD), stipend + child allowance
02/2017	Best Talk **Award** in the section Bioinformatics and Phylogenomics, conference Biology17, Bern, Switzerland
11/2015 – 10/2016	**Forschungskredit** University of Zürich (55,821 CHF), salary
10/2013 – 11/2013	**Exchange visit grant**, European Science Foundation (3,500 EUR), for an international collaboration with Dr. Marta Barluenga, National Museum of Natural Sciences, Dept. Biodiversity and Evolutionary Biology, Madrid, Spain
05/2012 – 10/2012	**Scholarship** for a master thesis abroad (PROMOS), German Academic Exchange Service (1,125 EUR), for an external thesis at the University of Basel, Switzerland

PERSONAL COMPETENCIES

Computational skills	advanced skills in Unix/Command line interface, bash scripting, R and R packages as well as standalone software to analyse geometric morphometric data, single-nucleotide polymorphisms data, and transcriptome data for population and phylo-genetic analyses
Molecular techniques	e.g. primer design, nucleic acid isolation, amplification, cloning, library prep, Sanger and next-generation sequencing, DNA barcoding
General management	acquisition of project funding, permit applications, organisation for and execution of three fieldtrips to Panama to work at STRI for collection of bone and tissue material (2014,2018, 2019) and one to Venezuela (2014); participation in one fieldtrip to Venezuela (2013), and one to Zambia (2012)
Languages	German (native), English (fluent, UniCert III/2, working language), French (basic), Spanish (basic)

SUPERVISION OF JUNIOR RESEARCHERS

Supervision of graduate student Janay Fox, McGill University (on-going), for a BESS internship in Panama on the dietary adaptation of an invasive sea catfish species in the Panama Canal.

Co-supervision of Master student Manuela Fuchs, University of Zürich (2014-2015).

Project lead for course participants of BIO262 (Evolutionary Morphology of Vertebrates – Issues and Methods), University of Zürich, 2014-2017: Bengül Cetin, Patrick Rohner, Sandra Schneebeli, Michael A. Müller, Marina Stirnemann, Florian Randegger, Cheuk Ting Mo, and Nicola Djoric.

TEACHING ACTIVITIES

Teaching introductory and advanced geometric morphometrics to undergraduate and graduate students during BIO262 University of Zürich (2014-2017) and BESS Workshop, McGill University (2018).

ACTIVE COLLABORATIONS

Dr. Vincent Fugere, Université du Québec, on adaptive morphological divergence of fishes due to agricultural pollution

PhD candidate David Hunt, McGill University, on population genetics of an African cyprinid fish species diverging in hypoxia.

Visiting PhD scholar Bushra Sial, from University of Sargodha, Punjab, Pakistan, on DNA Barcoding of Pakistani marine and freshwater fishes.

REVIEWING ACTIVITIES

Journal of Fish Biology, Journal of Zoological Systematics and Evolutionary Research, PLOS ONE, Zootaxa, Interdisciplinary Sciences: Computational Life Sciences, Annals of the Brazilian Academy of Sciences, Annales Zoologici Fennici, Reviews in Fish Biology and Fisheries, Ecology and Evolution, Biological Invasions, PeerJ, Scientific Reports

MEMBERSHIPS IN SCIENTIFIC SOCIETIES, FELLOWSHIPS IN ACADEMIES

12/2018 – on-going	QCBS (Quebec Centre for Biodiversity Science) global representative
10/2018 – on-going	Postdoctoral fellow with the NSERC – CREATE in Biodiversity, Ecosystem Services, And Sustainability – BESS program at the Redpath Museum, McGill University and STRI fellow
04/2018 – on-going	Postdoctoral fellow with the QCBS, McGill University
05/2018 – 07/2018	Smithsonian Tropical Research Institute (STRI) fellow
11/2010 – 03/2013	Core Group member of the *Evolution Across Scales* Initiative funded by the Volkswagen foundation, University of Potsdam (DE)

PUBLICATIONS IN PEER-REVIEWED SCIENTIFIC JOURNALS

Stange M, Núñez D, Sánchez-Villagra MR, Jensen P, Wilson LAB. (**2018**) Morphological variation under domestication: how variable are chickens? *Royal Society Open Science*. 5: 180993. http://dx.doi.org/10.1098/rsos.180993.

Heck L, Wilson LAB, Evin A, **Stange M**, Sánchez-Villagra MR. (**2018**) Shape variation and modularity of skull and teeth in domesticated horses and wild equids. *Frontiers in Zoology.* 15:14. https://doi.org/10.1186/s12983-018-0258-9.

Stange M, Aguirre-Fernández G, Salzburger W, Sánchez-Villagra MR. (**2018**) Study of morphological variation of northern Neotropical Ariidae reveals conservatism despite macrohabitat transitions. *BMC Evolutionary Biology*. 18:38. https://doi.org/10.1186/s12862-018-1152-y.

Stange M, Sánchez-Villagra MR, Salzburger W, Matschiner M. (**2018**) Bayesian Divergence-Time Estimation with Genome-Wide SNP Data of Sea Catfishes (Ariidae) Supports Miocene Closure of the Panamanian Isthmus. *Systematic Biology*, syy006. https://doi.org/10.1093/sysbio/syy006.

Stange M, Aguirre-Fernández G, Cooke RG, Barros T, Salzburger W, Sánchez-Villagra MR (**2016**) Evolution of opercle bone shape along a macrohabitat gradient: species identification using mtDNA and geometric morphometric analyses in Neotropical sea catfishes (Ariidae). *Ecology and Evolution*, 6(16):5817-5830. http://dx.doi.org/10.1002/ece3.2334

Fuchs M, Geiger M, **Stange M**, Sánchez-Villagra MR (**2015**) Growth trajectories in the cave bear and its extant relatives: an examination of ontogenetic patterns in phylogeny. *BMC Evolutionary Biology*, 15:239. https://doi.org/10.1186/s12862-015-0521-z

Mateus CS*, **Stange M***, Berner D, Rösti M, Quintella BR, Alves MJ, Almeida PR, Salzburger W (**2013**) Rad-seq reveals strong genetic divergence between sympatric European river and brook lampreys, *Current Biology* 23(15):R649-R650. (* shared first authorship) http://dx.doi.org/10.1016/j.cub.2013.06.026

SUBMITTED BUT NOT YET ACCEPTED ACRTICLE

Heck L, Sánchez-Villagra MR, **Stange M**. Why the long face? Comparative shape analysis of miniature, pony, and other horse skulls reveals changes in ontogenetic growth. **In revision**.

UNPUBLISHED WORK

Stange M, Barrett R, Hendry A. Genomics of ecosystem services and nature's contribution to people. Invited Review for *Nature Review Genetics*. **In preparation**.

Fox J, Torchin M, **Stange M**. Life history evolution of a marine sea catfish species after invasion of the Panama Canal. **In preparation**.

Stange M (2013) A male color dimorphism in an African cichlid fish. Master thesis.

Stange M (2010) Genetic variability of selected Calvin cycle genes in *Arabidopsis thaliana*. Bachelor thesis.

ORAL CONTRIBUTIONS TO INTERNATIONAL CONFERENCES

08/2017 Groningen, NL	**Stange M**, Sánchez-Villagra MR, Salzburger W, Matschiner M (presenter). *Bayesian divergence-time estimation with genome-wide SNP data.* 16th Congress of the European Society for Evolutionary Biology.
08/2017 Gothenburg, SE	**Stange M** (presenter), Matschiner M, Aguirre-Fernández G, Salzburger W, Sánchez-Villagra MR. *Phylogenetic Bayesian inference and geometric morphometrics in Neotropical sea catfishes: new species, support for Miocene closure of the Panamanian isthmus, and conservation of skull shape*, conference BioSyst.EU.
02/2017 Bern, CH	**Stange M** (presenter), Matschiner M, Aguirre-Fernández G, Salzburger W, Sánchez-Villagra MR. *Bayesian divergence time estimation and skull shape evolution in sea catfishes (Ariidae)*, conference Biology17 (awarded with the Best Talk Award in the section Bioinformatics and Phylogenomics).
06/2016 Austin, TX, USA	**Stange M** (presenter), Matschiner M, Aguirre-Fernández G, Salzburger W, Sánchez-Villagra MR. *Morphological evolution in Neotropical Ariidae*, conference Evolution 2016.

OUTREACH ACTIVITIES

05/2019	Interactive talk, *Adaptation and Evolution.* Partners in Research Canada, Live Event. Link
12/2016	Talk, *Von Knochen und Genen mariner Welse*. Öffentliche Museumsvorträge HS16, Paläontologisches Museum der Universität Zürich
09/2014	Talk, *Welse in Südamerika - urtümliche Fische aus Venezuela*. Lange Nacht der Zürcher Museen, Paläontologisches Museum der Universität Zürich

CAREER BREAKS

27/06/2015 – 17/10/2015 Maternity leave

Montréal, 7. August 2019