

Curriculum Vitae



Personal Information

Born in Vienna, Austria (Sept 13, 1982), Swiss C Permit, married, 1 son (*2012)

Career Breaks

32 months 80% work load, Jul 2011 – Mar 2014

4 months maternity leave, Dec 2012 – Apr 2013

Expertise

Population genetics – microsatellites, RAD sequencing, genotyping by sequencing

Next generation sequencing – Illumina, Ion torrent, PacBio, MinION

RNA expression analysis – microarray, RNA sequencing, transcriptome assembly

Epigenetic profiling – MBD based DNA methylation analysis, ATAC sequencing

Diagnostics – DNA barcoding, environmental DNA

Molecular biology – transgenics, cloning, mutagenesis, biochemistry

Imaging – immunohistochemistry, confocal and light sheet microscopy, image analyses

Animal husbandry and field work – handling and maintenance of fish, *D. melanogaster*, *C. elegans*; electrofishing

Education

Sept 2018

Venia docendi and Dr. habil, University of Basel (CH)

Sept 2018

Certificate of Advanced Studies in Clinical Research, University Hospital Basel

Nov 2017

SEDA Supporting Learning Award / Didactics education

Dec 2012

Venture challenge Start-up training, VentureLab

May 2011

PhD in Genetics, Friedrich Miescher Institute, Basel (CH)

Apr 2006

Master in Molecular Biology, Universities of Vienna (AUT) and Bergen (NO)

2003–2006

Scandinavian Studies, Universities of Vienna (AUT) and Bergen (NO)

Positions and research projects

from Feb 2020

Professor for Fish and Wildlife Health

University of Bern, Vetsuisse Faculty, Department of Infections Diseases and Pathobiology

- ▶ *Molecular memory of disease and stress within and across generations*
- ▶ *Dealing with change: evolution of epigenetic pathways in wild species and stocks*
- ▶ *Fighting disease: evolution of immune system in wild species and stocks*

since Dec 2016

Marie Heim Vögtlin SNSF Research Fellow

University Basel, Department of Environmental Sciences

- ▶ *“Evolved for success” – genome analysis of the round goby*
- ▶ *Environment vs chromatin landscape in the adaptive round goby*
- ▶ *Early life experiences, brain DNA methylation and adult reproductive strategy in the **round goby***
- ▶ *Food web analyses in invaded ecosystems by PCR-based gut content assays*

Jul 2011–Nov 2016

Postdoctoral Fellow

University Basel, Department of Environmental Sciences, research group Prof. Dr. Patricia Holm

- ▶ *Maternal RNA as a non-genetic means of adaptation in the **round goby***
- ▶ *Signatures of recent evolution of the round goby mitogenome*
- ▶ *Population structure of bighead goby as shaped by commercial shipping vectors*
- ▶ *Detecting round goby from water samples by eDNA*

Jun 2006–May 2011

Böhringer Ingelheim PhD Fellow

Friedrich Miescher Institute Basel, research group Dr. Rafal Ciosk

- ▶ *Stem cell maintenance versus differentiation through Notch signaling to chromatin*
- ▶ *Cell cycle regulation by RNA binding proteins in the **C.elegans** germline*

Jan 2005–May 2006

Undergraduate researcher

Institute of Molecular Pathology, Vienna, research group Dr. Barry Dickson

- ▶ *Muscle development and muscle migration in **D.melanogaster***
- ▶ *SNP on chip mapping of muscle mutants*

Funding

CHF 5'500	Sequencing grant from the Center for Marine Evolutionary Biolgy, Univ. Gothenburg, 2018
CHF 215'000*	Cantonal and Federal Environmental Agencies, 2017
CHF 282'500	Marie Heim Vögtlin Fellowship, SNSF, 2016-2018
CHF 70'000	Research Grant, Freiwillige Akademische Gesellschaft Basel, 2015
CHF 80'000	Excellence Scholarship, Forschungsfonds University Basel, 2015
CHF 3'500	Mobility grant for visiting scientist Giulia Pellizzato, University of Padua, 2015
CHF 10'000	Stay on Track, University of Basel, 2014
CHF 240'000*	Swiss Federal Office for the Environment FOEN, 2013
CHF 50'000*	National Office for the Environment Basel Stadt, 2013
CHF 97'000*	Swiss Lottery Funds Solothurn, Aargau, Basel, 2013
CHF 100'000	Doctoral Fellowship, Böhlinger Ingelheim Research Foundation, 2007

*co-applicant with Prof. Dr. Holm

Awards

- > antelope professorship fellow, University of Basel, 2016
- > Summer School scholarship on Norwegian Language and Literature, Agder University, Norway, 2004
- > Erasmus scholarship, University of Bergen, Norway, 2003
- > Travel Grants from the University of Padua, the Swiss Society for Biochemistry, and the European *C.elegans* Meeting

Institutional responsibilities and services

- > EcoEvoRxiv Pre-Print Server Steering Committee Member, since 2018
- > Postdoc Representative to the Department of Environmental Science, 2015 – 2017
- > Curricular Commission of the MSc in Sustainable Development, 2014 – 2017
- > Invited participant to the "Round Table on career, gender and the creation of a Swiss Young Academy", sc|nat, 2017
- > Teaching Excellence Awards category "Modern Scholar", Member and spokesman of the Jury, 2016
- > Scientific Advisor to the Canton ZH on halting biological invasions in Pfäffikersee, 2015
- > Committee member on "Teaching Evaluation Standards Development", Faculty of Sciences, 2015

Staff

- > MSc Elisabeth Lutz, 60% research assistant, Jun 2017 – Dec 2018
- > Dr. Silvia Gutnik, 100% Postdoctoral fellow, Jun 2017 – Dec 2017
- > Dr. Michaela Schwaiger, 20% Bioinformatician, Jan 2017 – Dec 2017
- > Dr. Jean-Claude Walser, 20% Bioinformatician, Jan 2016 – Dec 2016
- > Lilian Röllin, 80% lab assistant, Jun 2015 – Dec 2015
- > Michael Beister, Giulia Pellizzatti, Vincent Somerville (research group field assistants)

Teaching and supervision

- > Principles and Processes of Ecosystems, 2011 - 2015 and 2018 - 2019; Lecture, 2 ECTS
- > Tools and Methods of Natural Sciences Research, 2018 - 2019; Seminar, 3 ECTS
- > Critical Reading, 2014 - 2015; Colloquium, 1 ECTS
- > Bioinvaders and global change, 2013 - 2014; Seminar, 3 ECTS
- > Modern Biomarkers, 2013 - 2017; Lab course, 2 ECTS, co-teaching
- > Introduction to Biology, 2008 - 2009; Tutorial, 5 ECTS, co-teaching
- > Ethics in Geosciences and Environmental Sciences, 2013 - 2018, invited lecture series speaker
- > The fish and its environment, 2013 - 2014, invited lecture series speaker
- > CAS Süswasserfische Europas, ZHAW Wädenswil, 2017, invited lecture series speaker
- > Supervision of 8 master theses since 2009

Memberships

- > Associated Member of CeMEB, the Linnaeus Centre for Marine Evolutionary Biology, Sweden
- > European Society for Evolutionary Biology ESEB
- > Life Sciences Switzerland LS2
- > Freiwillige Akademische Gesellschaft Basel, Switzerland
- > American Genetics Association, USA

Peer Review activities

Molecular Ecology, Molecular Ecology Resources, Genome Biology and Evolution, Nature Scientific Reports, Journal of Heredity, Biological Invasion Records, Mitochondrial DNA, Aquatic Invasions, Science of the Total Environment

Organisation of meetings

- › Workshop "Schrödinger's Inheritance", University of Groningen, Netherlands, Feb 2019
- › Marine Evolution, Session organiser: Epigenetic processes and non-genetic inheritance, Sweden, May 2018
- › Co-organizer of annual stakeholder events on invasive goby research and management, University of Basel, 2012 – 2017
- › Discussion chair, Transdisciplinary dialogues on aquaristics and invasive species, University of Basel, Apr 2017

Invited keynotes

- › Gulbenkian Institute Lissabon, Monday Seminar, Jan 2018
- › Max Planck Institute Freiburg, Annual Postdoc Assembly, Sept 2106
- › Leibniz-Institute for Zoo and Wildlife Berlin, Institute Research Seminar, Nov 2015
- › Fishbase Symposium 2016 Stockholm, Plenary Speaker, Oct 2016
- › Zoological Society Lecture Series, Zurich, Nov 2014
- › Vertebrate Pest Management Conference Finland, Session Speaker, Sep 2013

Presentations selected from abstracts

- › Talking Evolution, MPI Plön Germany, Sep 2018. Why extra-genetic inheritance is a platypus.
- › ESEB, Netherlands, Aug 2017. Maternal RNA transmits temperature information across generations in wild fish.
- › Biology17, Switzerland, Feb 2017. Maternal RNA transmits temperature information across generations in wild fish.
- › NEOBIOTA, Luxemburg, Sep 2016. Detection of invasive gobies by probing freshwater samples for DNA traces.
- › EMBO Symposium, Germany, May 2016. Transgenerational adaptation in wild populations of *N. melanostomus*.
- › CeMEB Meeting, Sweden, Apr 2015. Evolution and adaptation of a globally invasive fish.
- › European Goby Meeting, Sweden, Feb 2015. European bighead goby populations display large scale homogeneity and small scale differentiation in correlation with shipping patterns.

Conference participations with poster

- › NEOBIOTA, Luxemburg, 2016
- › ESEB – European society for evolutionary biology 2015, Switzerland, 2015
- › SWIFCOB Biodiversität und Politik – Vielfalt bewegt, Switzerland, 2015
- › FINS – Freshwater Invasives Networking for Strategy, Ireland, 2013
- › NEOBIOTA – Halting biological Invasions: from Data to Decisions, Spain, 2012
- › Evolutionary Ecology and Management of Aquatic Ecosystems, EAWAG, Switzerland, 2012
- › Symposium Aquatische Invasive Arten, EAWAG, Switzerland, 2012
- › Fish diversity and conservation, UK, 2011
- › Cold Spring Harbour Conference on Stem cells, Cold Spring Harbour, USA, 2009
- › Joint PhD Meeting with the MRC London, Switzerland, 2009
- › Worm Development and Evolution Topic Meeting, Madison, USA, 2008
- › European Worm Meeting, Spain, 2008
- › EMBO Workshop on intracellular RNA localization and localized translation, Italy, 2007
- › European Life Sciences Organisation Conference, Germany, 2007
- › Life Science2 annual meeting, Switzerland, 2007
- › 19th European Drosophila Research Conference, Hungary, 2005

Media contributions

- › GEO magazine 07, Swiss edition, front feature: “Kleine Fische – grosse Bedrohung”, Jan 2017
- › Alumni Magazine University Basel, “Invasive Grundeln im Hafen Kleinhüningen”, May 2013
- › Personal portrait in Tageswoche, “Gefordert: Irene Kalchhauser”, Oct 2012
- › contribution to >10 newspaper articles and 3 TV features on invasive gobies since 2012

Outreach activities

- › Talk on invasive species, annual meeting Naturschutzverein Rheinfelden, Feb 2018
- › Annual strategy meeting of the Swiss Invasive Species Taskforce (AGIN), Olten, Jun 2016
- › Policy Meeting on Fighting Invasives, Federal Office of the Environment, Switzerland, Jan 2014
- › Invasive goby field event, Rhyfad series organized by the Life Science AG, Basel, Sep 2014
- › Talk on invasive goby, annual meeting of the Swiss Fisheries Society, Olten, Jun 2013
- › Childrens' course in fish biology coordinated by the Olten Natural Museum, May 2012
- › Stations at Science Open Doors days at IMP, Vienna, and FMI, Basel, 2006, 2008 – 2010

Collaborations

- **Sequencing, annotation and analysis of the round goby genome with focus on perception, immunity and plasticity.** Prof. Suzana Musilova, Monica Hongrö Solbakken, Claire Peart, Prof. Anders Blomberg, Prof. Joanna Wilson, Prof. Gene Myers, Siegfried Schloissnig, Martin Pippel, Tomas Larsson
- **NOD receptors in the round goby.** Prof. Maria Leptin, Jaanus Suurvali
- **Round goby fluorescence.** Prof. Nico Michiels

Continued education

Outreach, team and project management

- Basics of Leadership, University of Basel, 2018
- Coaching to lead, University of Basel, 2018
- Media training, camera and writing, SNSF / die tv-medientrainer, 2017
- Conflict management, University of Basel, 2016
- Peer Coaching, University of Basel, 2016
- Entrepreneurship Course “Venture Challenge”, VentureLab, 2012

Science

- Reproducibility in Animal Research, University of Zurich, 2018
- Advanced statistics: Statistical modeling, SIB, Lausanne, 2018
- Singularity containers, sciCORE, Basel, 2018
- NGS genome variant analysis, SIB, Bern, 2018
- RNA sequencing analysis pipelines, SIB, Basel, 2017
- Nagoya Protocol on Access and Benefit Sharing, sc|nat, 2016
- Galaxy Next Generation Sequencing Workshop, University of Freiburg, 2015
- Fundraising and proposal writing for PostDocs, University of Basel, 2014
- High Throughput Sequencing of Nonmodel Organisms, University of Bodö, 2014
- Electrofishing certificate, Canton Basel, 2014
- Continued education on animal experimentation, 2012 - 2016
- Introduction to Statistical Analysis and Programming in R, University of Heidelberg, 2009

Didactics education

- Supporting Learning Award, international certificate in University Didactics, 2017
- Sammelzertifikat PLUS, University of Basel, comprising
 - ▶ Designing lectures that are conducive to learning, 2013
 - ▶ Psychology of Learning in higher education: implications of Learning Theory, 2012
 - ▶ To foster and to challenge: how to deal with diversity, 2012
 - ▶ Reviewing the effectiveness of teaching: students' feedback, 2012
 - ▶ Reviewing the effectiveness of teaching: observation by peers, 2012
 - ▶ Planning and structuring courses, 2011
 - ▶ Leading discussions in teaching contexts, 2011
 - ▶ Examining in a just and fair way, 2011
 - ▶ Rhetorics: Explaining and narrating as fundamental teaching competencies, 2011

Languages

German (mother tongue), English, French, Norwegian, Swiss German

Skills

MS Office, Adobe Illustrator, Adobe Photoshop, Adobe Indesign, Structure, R, FigTree, Blast2Go, CLC Workbench, commandline sequence analysis, cluster computing using MobaXterm and the Slurm queuing system, Galaxy server environment, Image J, Omero, Citavi

List of publications

ResearcherID: O-7338-2017

In revision

Brain DNA methylation and territorial phenotype in the round goby. V Somerville, M Schwaiger, PE Hirsch, K Bussmann, J-C Walser, P Burkhardt-Holm, I Adrian-Kalchhauser. *Genes Special Issue on Epigenetics and Adaptation*

Published in peer reviewed journals

1. **Fishing for profit or food? Socio-economic drivers and fishers' attitudes towards sharks in Fiji.** Glaus KBJ, Adrian-Kalchhauser I, Piovano S, Appleyard SA, Brunnschweiler JM, Rico C. *Marine Policy* 2018; 100:249-257. <https://doi.org/10.1016/j.marpol.2018.11.037>
2. **Long-read sequencing of Benthophilinae mitochondrial genomes reveals the origins of round goby mitogenome re-arrangements.** Gutnik S, Walser JC, Adrian-Kalchhauser I. *Mitochondrial DNA Part B* 2018; 4(1):408-409. <https://doi.org/10.1080/23802359.2018.1547133>
3. **RNA sequencing of early round goby embryos reveals that maternal experiences can shape the maternal RNA contribution in a wild vertebrate.** Adrian-Kalchhauser I, Walser JC, Schwaiger M, Burkhardt-Holm P. *BMC Evolutionary Biology* 2018; 18:34. <https://doi.org/10.1186/s12862-018-1132-2>
4. **Colonizing islands of water on dry land – on the passive dispersal of fish eggs by birds.** Hirsch P, N'Guyen A, Muller R, Adrian-Kalchhauser I, Burkhardt-Holm P. *Fish and Fisheries* 2018; 1:9. <https://doi.org/10.1111/faf.1227>
5. **A dynamical model for invasive round goby populations reveals efficient and effective management options.** N'Guyen A, Hirsch PE, Bozzuto C, Adrian-Kalchhauser I, Horkova K, Burkhardt-Holm P. *Journal of Applied Ecology* 2018; 55:342–352. <https://doi.org/10.1111/1365-2664.12934>
6. **The invasive round goby may attach its eggs to ships of boats – but there is no evidence.** Adrian-Kalchhauser I, N'Guyen A, Hirsch PE, Burkhardt-Holm P. *Aquatic Invasions* 2017, 12(2):263-267. <https://doi.org/10.3391/ai.2017.12.2.13>
7. **The mitochondrial genome sequences of the round and the sand goby reveal patterns of recent evolution in gobiid fish.** Adrian-Kalchhauser I, Svensson O, Kutschera VE, Alm Rosenblad M, Pippel M, Winkler S, Schloissnig S, Blomberg A, Burkhardt-Holm P. *BMC Genomics* 2017, 18:177 <https://doi.org/10.1186/s12864-017-3550-8>
8. **Increased Notch signaling antagonizes PRC2-mediated silencing to promote reprogramming of germ cells into neurons.** Seelk S*, Adrian-Kalchhauser I*, Hargitai B, Hajduskova M, Gutnik S, Tursun B, Ciosk R. *eLife* 2016;10.7554/eLife.15477 <https://doi.org/10.7554/eLife.15477.001>
9. **The invasive bighead goby *Ponticola kessleri* displays small scale genetic differentiation and large scale genetic homogeneity in relation with shipping patterns.** Adrian-Kalchhauser I, Hirsch PE, Behrmann-Godel J, N'Guyen A, Watzlawczyk S, Gertzen S, Borcherdig J, Burkhardt-Holm P. *Molecular Ecology* 2016 May; 25(9):1925-43 <https://doi.org/10.1111/mec.13595>
10. **An eDNA assay to monitor a globally invasive fish species from flowing freshwater.** Adrian-Kalchhauser I, Burkhardt-Holm P. *PLOS ONE* 2016 Jan 27; 11(1):e0147558. <https://doi.org/10.1371/journal.pone.0147558>.
11. **A tough egg to crack: recreational boats as vectors for invasive goby eggs and transdisciplinary management approaches.** Hirsch PE, Adrian-Kalchhauser I, Flämig S, N'Guyen A, Defila R, Di Giulio A, Burkhardt-Holm P. *Ecology and Evolution* 2016 Jan 11; 6(3):707-15. <https://doi.org/10.1002/ece3.1892>
12. **What do we really know about the impacts of one of the 100 worst invaders in Europe? A reality-check.** Hirsch PE, N'Guyen A, Adrian-Kalchhauser I, Burkhardt-Holm P. *Ambio* 2016 Apr; 45(3):267-79 <https://doi.org/10.1007/s13280-015-0718-9>
13. **Improving invasive species management by integrating priorities and contributions of scientists and decision makers.** N'Guyen A, Hirsch PE, Adrian-Kalchhauser I, Burkhardt-Holm P. *Ambio* 2016 Apr; 45(3):280-9. <https://doi.org/10.1007/s13280-015-0723-z>

14. **Characteristics of the shark fisheries of Fiji.** Glaus K*, **Adrian-Kalchhauser I***, Burkhardt-Holm P, White W, Brunnschweiler J. *Nature Scientific Reports* 2015 Dec 2; 5:17556 <https://doi.org/10.1038/srep17556>
15. **The complete mitochondrial genome of the invasive Ponto-Caspian goby *Ponticola kessleri* obtained from high-throughput sequencing using the Ion Torrent Personal Genome Machine.** **Kalchhauser I***, Kutschera V*, Burkhardt-Holm P. *Mitochondrial DNA* 2014 Oct 20:1-3. <https://doi.org/10.3109/19401736.2014.971272>
16. **Arrival of round goby *Neogobius melanostomus* (Pallas, 1814) and bighead goby *Ponticola kessleri* (Günther, 1861) in the High Rhine (Switzerland).** **Kalchhauser I**, Mutzner P, Hirsch PE, Burkhardt-Holm P. *Biological Invasion Records* 2013; 2(1):79-83. <http://doi.org/10.3391/bir.2013.2.1.14>
17. **FBF represses the Cip/Kip cell-cycle inhibitor CKI-2 to promote self-renewal of germline stem cells in *C. elegans*.** **Kalchhauser I**, Farley BM, Pauli S, Ryder SP, Ciosk R. *EMBO Journal* 2011 Aug 5; 30(18):3823-9. <https://doi.org/10.1038/emboj.2011.263>
18. **Translational repression of cyclin E prevents precocious mitosis and embryonic gene activation during *C. elegans* meiosis.** Biedermann B, Wright J, Senften M, **Kalchhauser I**, Sarathy G, Lee MH, Ciosk R. *Developmental Cell* 2009 Sep; 17(3):355-64. <https://doi.org/10.1016/j.devcel.2009.08.003>
19. **High-resolution, high-throughput SNP mapping in *Drosophila melanogaster*.** Chen D, Ahlford A, Schnorrer F, **Kalchhauser I**, Fellner M, Viràgh E, Kiss I, Syvänen AC, Dickson BJ. *Nature Methods* 2008 Apr; 5(4):323-9. <https://doi.org/10.1038/NMETH.1191>
20. **The transmembrane protein Kon-tiki couples to Dgrip to mediate myotube targeting in *Drosophila*.** Schnorrer F, **Kalchhauser I**, Dickson BJ. *Developmental Cell* 2007 May; 12(5):751-66. <https://doi.org/10.1016/j.devcel.2007.02.017>

Non-reviewed contributions

- > Monthly author of scientific contributions to Dental News, *Swiss Dental Journal*, Nov 2016 - Dec 2018
- > Fremde Fische in Flüssen und Seen. Holm P, Kalchhauser I, Hirsch P., 2014. *Biologie in unserer Zeit* (44) 392-399
- > Invasive Grundeln erobern den Rhein. Jermann HP, Zopf D, Kalchhauser I., 2012, Informationsbroschüre, Hrsg. Amt für Umwelt und Energie Basel-Stadt / Veterinär-, Jagd- und Fischereiwesen Basel-Land
- > Grundeln: Gebietsfremde Fische in Bayern. Biologie und Verbreitung, 05/2013, Hrsg. LFV Bayern E.V.

Patents

- > Treating cancer by modulating MEX-3. Kalchhauser I, Ciosk R, PCT/EP2010/063802