

## Curriculum Vitae

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Prof. Dr. Markus Pfenninger

### AFFILIATIONS

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Senckenberg Biodiversity & Climate Research Centre  
Molecular Ecology Group  
Georg-Voigt Straße 14-16  
D-60325 Frankfurt am Main

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eMail: Markus.Pfenninger@senckenberg.de

### PERSONAL DATA

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Born 25. January 1967 in Frankfurt/Main, Germany, married to Anne Pfenninger

### PRIVATE ADDRESS

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Hintere Schloßgasse 3  
61462 Königstein im Taunus

### LANGUAGES

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German, English, French

### EDUCATION

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Aug. 1983 - Jun. 1986	Friedrich-Dessauer Gymnasium in Frankfurt-Höchst. Abitur with focus on Biology and History.
Sept. 1986 - Apr. 1988	Civil service in the Christophorus-parish in Frankfurt/Höchst.
Apr. – Oct. 1988	Enrolled for Chemistry at J.W. Goethe-Universität / Frankfurt.
Oct. 1988	Change to Biology.
Nov. – Dec. 1992	Diploma in Botany, Microbiology, Biochemistry. Additional subject Biophysics.
Jan. - Dec. 1993	Diploma thesis „Transcription of simple repetitive DNA-sequences in plants“ under supervision of Prof. Dr. Günther Kahl. Profound education in molecular techniques.

### PROFESSIONAL CAREER

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Jan. 1994 – Mar. 1997	Dissertation on „Dispersal of <i>Trochoidea geyeri</i> (Helicellinae, Gastropoda) on different spatial scales“ in the Abt. Ökologie und Evolution, J.W.Goethe-Universität, under supervision of Prof. Dr. Streit. Innovative combination of ecological fieldwork with genetic methods in a conservation biology context.
Apr. 1994 – Dec. 1996	Research position in the interdisciplinary „Forschungsverbund Isolation, Flächengröße und Biotopqualität (FIFB)“ initiated by

- the Bundesministerium für Forschung und Technologie (BMFT).
- Apr. 1995 – Jun. 1997 Repeated research stays for several weeks at the Institut Méditerranéen d'Ecologie et de Paléoécologie (IMEP) / CNRS Université d'Aix-Marseille III, France. Work on ecology and phylogeography of Helicellinae land snails.
- Oct. 1997 - Oct. 1998 NATO-funded postdoctoral stay at the Institute Méditerranéen d'Ecologie et de Paléoécologie / Marseille. Work on the genetic population structure of terrestrial gastropods.
- Dec. 1998 - 2008 Position as assistant professor C1 in the Abt. Ökologie & Evolution at J.W.Goethe-Universität. Installation of a working group and independent research in the fields of molecular ecology, phylogeography, speciation and phylogeny. Teaching of basic and advanced courses in ecology and evolution.
- Feb.-Mar. 2001 Research stay in the lab of Prof. Dr. Keith Crandall, Brigham Young University, Provo, Utah, USA with Dr. David Posada. Work on statistical phylogeography.
- Dec. 2003 Habilitation on "Speciation in terrestrial and limnic molluscs".
- Dec. 2004 Listed second for a regular chair in Molecular Ecology at the Leopold-Franzen Universität Innsbruck/Austria.
- Dec. 2005 Shortlisted for a W3 chair in Systematic Zoology at the Universität Rostock.
- Jun. 2006 Shortlisted for a W2 chair in Animal Ecology at the Universität zu Köln.
- Apr. 2007 Shortlisted for a W2/3 chair in Molecular Systematics at the Carl von Ossietzky Universität/Oldenburg
- Dec. 2007 Shortlisted for a research scientist position at IGB-Leibnitz Institut/Berlin.
- Jan. 2008 Shortlisted for a W2 chair in Ecology at the university Koblenz-Landau
- Jun. 2008 Shortlisted for a regular chair in Molecular Ecology at the Leopold-Franzen Universität Innsbruck/Austria.
- Aug. 2008 Head of Molecular Laboratory of the LOEWE research centre "Biodiversity and Climate"  
Responsible for the build-up and running of the high throughput service laboratory, Commissary for user requirements in the planning commission for the BiK-F building and establishment of the research fields ecological genomics, molecular taxonomic identification and molecular ecology.
- Juli 2010 Call received and accepted from J.W. Goethe University on a chair for Molecular Ecology at the LOEWE research centre "Biodiversity and Climate"
- Sept. 2010- Oct. 2016 Head of the Molecular Ecology Group at the Senckenberg Biodiversity and Climate Research Centre
- Since Oct. 2016
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## TRAVEL AND RESEARCH STAY FUNDING

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- 1997-1998 NATO/DAAD Postdoc at the Institute Méditerranéen d'Ecologie et de Paléoécologie Marseille, Frankreich.
- 2001 Research stay at Brigham Young University, Utah funded by Hermann-Willkomm-Foundation.
- 2007 Invited lectures for a biodiversity summer school in Jordania by the DAAD.
- 2015 Joint workshop with Tel Aviv University, DAAD.

## THIRD PART FUNDING (last 5 years, 2,239,000 € in total)

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- 2008-2013 LOEWE "Genomic basis of climate relevant fitness traits", 444,000€.
- 2008-2013 LOEWE „Development of high throughput resources for environmental barcoding“, 172,000 €.
- 2008-2013 LOEWE „Origin, invasion and demography of invading *Aedes albopictus* in Europe“, 10,000 €.
- 2013-2016 DFG "Experimental population genomics of local climate adaptation in *Chironomus riparius*", 207.100 €.
- 2014-2017 Leibniz SAW Verbundprojekt "(Reverse) Proteomics as novel tool for biodiversity research", 253,000 €.
- 2016-2019 DFG Schwerpunktprojekt "Rapid seasonal thermal adaptation in *Chironomus riparius*", 310,000 €.
- 2013-2016 HLNUG AJAP Projekt, 135,000 €

### Larger funding initiatives

- Co-speaker of LOEWE Initiative "Translational Biodiversity Genomics-Centre" (if funded, ~5 Mio / a from 2018 on)

## RESEARCH AWARDS

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- 1998 Environmental Preservation Award of J.W.Goethe-Universität for the dissertation funded by Procter & Gamble GmbH, Schwalbach. 3,000 €.
- 2002 A. Messer Project Award of J.W. Goethe-Universität. 25,000 €: "Proteomics of Biodiversity: The function of signal proteins for speciation and species cohesion in *Trichia*".

## NATIONAL & INTERNATIONAL RESEARCH COOPERATIONS

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- Dr. Frédéric Magnin, Marseille, France. – Ecology, Evolution and Systematics of the land snail genus *Candidula*. Taxonomy, Systematics and Biogeography of the genus *Tudorella*.
- Dr. Aline Dèpraz, Prof. Jacques Hausser, Lausanne, Switzerland, Magda Hrabdakova, Prag, Czechia, Dirk Steinke, Konstanz – Character evolution in *Trochulus*, Phylogeography, systematic and taxonomy of *Trochulus villosus/alpicolus*.
- Prof. Helmut Hillebrand, Oldenburg – Impact of climate change on benthos communities.
- Prof. Dr. Jörg Oehlmann, Dr. Klaus Schwenk, Frankfurt – Genetic impoverishment of invertebrates caused by environmental pollutants.
- Dr. Aris Parmakelis, Prof. Moysis Mylonas, Crete, Greece – Phylogeny and evolution of the genus *Mastus*.
- Dr. Jan Pinceel, Prof. Dr. Thierry Backeljau, Belgium – Phylogeography and biogeography of the genus *Arion*.
- Dr. David Posada, Vigo, Spanien, Prof. Dr. Keith Crandall, Provo, USA – Statistical phylogeography.
- Profs. Hankeln, Schmidt/Mainz – Ecological genomics of *Chironomus*.
- Dr. Marcos Perez-Losada, Porto, Portugal – Phylogeography of the Lumbricidae.
- Dr. Martin Jansen, Frankfurt – DNA taxonomy and speciation in Bolivian frogs.
- GenXpro, Frankfurt – Genomics of emerging ecological model organisms.
- Drs. Simon Rundle and Oliver Tills, Plymouth, GB – Genetic basis of heterochrony.
- Dr. Martin Plath, Yangling (China), Dr. Rüdiger Riesch (London) – Molecular basis of extremophile adaptation.
- Prof. Katrin Böhning-Gaese, Frankfurt – Macroecology of the thermal niche.

- Dr. Robert Kofler, Wien – Transposable elements in *Chironomus*
- Drs. Inon Scharf and Roi Dor, Tel Aviv – Climatic adaptation in Wormlions.

#### SCIENTIFIC ASSOCIATIONS

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- Deutsche Zoologische Gesellschaft (DZG)
- European Society for Evolutionary Biology
- American Society for the Study of Evolution

#### SERVICE TO THE SCIENTIFIC COMMUNITY, UNIVERSITY ADMINISTRATION

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Editorial Board Member of *BMC Evolutionary Biology*

- Reviews for (selection)
  - *Nature Ecology & Evolution*
  - *Nature Communications*
  - *Molecular Biology and Evolution*,
  - *Ecology Letters*
  - *Trends in Ecology and Evolution*
  - *BMC Evolutionary Biology*
  - *BMC Genomics*
  - *Systematic Biology*
  - *American Naturalist*
  - *Proceedings B of the Royal Society of London*,
  - *Philosophical Transactions B of the Royal Society of London*,
  - *Molecular Ecology*,
  - *Heredity*,
  - *Evolution*,
  - *Journal of Biogeography*,
- Funding proposal or report reviews for:
  - *Irish Research Council for Science, Engineering and Technology*,
  - *Netherlands Council for the Earth and Life sciences*,
  - *National Science Foundation of the United States (NSF)*,
  - *Deutsche Forschungsgemeinschaft (DFG)*,
  - *Österreichischer Fonds zur Förderung der wissenschaftlichen Forschung (FWF)*,
  - *Environment Agency's Science Department, UK*,
  - *Humboldt Stiftung, D.*
- Radiation safety officer of the Zoological Institute (until 2003)
- Biological safety officer (S1, until 2008).
- Elected member of the general faculty board in 2005
- Member of the financial faculty board (1999-2006)

#### BIBLIOMETRICS Google Scholar April 2017

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RID: A-8230-2012

100 Publications    3324 Citations

*h-index* = 31 Google Scholar (7.4.2017)

#### PUBLICATIONS (last 5 years)

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- 1) Oppold AM, **Pfenninger M** (2017) Estimating the spontaneous mutation rate by short term mutation accumulation in *Chironomus riparius*. *Evolution Letters*, doi:10.1002/evl3.8.
- 2) Khaliq I, Böhning-Gaese K, Prinzing R, **Pfenninger M**, & Hof C (2017). The influence of thermal tolerances on geographical ranges of endotherms. *Global Ecology and Biogeography*, in press.

- 3) Kumar V, Lammers F, Bidon T, Kotler L, **Pfenninger M**, Nilsson MA, Janke A (2017) The evolutionary history of bears is shaped by gene-flow across species. *Scientific Reports, in press*.
- 4) Schell T, Feldmeyer B, Schmidt H, Greshake B, Tills O, Truebano M, Rundle S, Paule J, Ebersberger I, **Pfenninger M** (2017) An annotated draft genome for *Radix auricularia* (Gastropoda, Mollusca). *Genome Biology and Evolution* 9: 585-592. doi:10.1093/gbe/evx032.
- 5) Dal Grande F, Sharma R, Meiser A, Rolshausen G, **Pfenninger M**, Mishra B, Otte J, Thines M, Schmitt I (2017) Adaptive differentiation in natural populations of a lichen-forming fungus along an elevation cline. *BMC Evolutionary Biology* 17:93
- 6) Oppold AM, Schmidt H, Rose M, Hellmann SL, Dolze F, Ripp F, Weich B, Schmitt-Ott U, Schmitt E, Kofler R, Hankeln T, **Pfenninger M** (2017) *Chironomus riparius* (Diptera) genome sequencing reveals the impact of minisatellite transposable elements on population divergence. *Molecular Ecology*, doi: 10.1111/mec.14111.
- 7) Rieder V, Blank-Landeshammer B, Stuhr M, Schell T, Biß K, Kollipara L, Meyer A, **Pfenninger M**, Westphal H, Sickmann A, Rahnenführer, J. (2017). DISMS2: A flexible algorithm for direct proteome-wide distance calculation of LC-MS/MS runs. *BMC bioinformatics*, 18(1), 148.
- 8) Romero P, **Pfenninger M**, Klussmann-Kolb A, Kano Y (2016) The molecular phylogeny of the Ellobiidae (Gastropoda: Panpulmonata) supports parallel and independent terrestrial invasions during the Paleogene. *Molecular Phylogenetics & Evolution* 97, 43-54. doi:10.1016/j.ympev.2015.12.014
- 9) Lerp H, Allgöwer S, Wronski T, **Pfenninger M**, Klaus S, Plath M (2016) Phylogenetic analyses of gazelles reveal repeated transitions of key ecological traits and provide novel insights into the origin of the genus *Gazella*. *Molecular Phylogenetics and Evolution* 98, 1-10, doi:10.1016/j.ympev.2016.01.012
- 10) Oppold AM, Pedrosa J, Diogo J, Balint M, **Pfenninger M** (2016) Support for the evolutionary speed hypothesis from intraspecific population genetic data in the non-biting midge *Chironomus riparius*. *Proceedings of the Royal Society of London, Series B Biological Sciences* 283, 10.1098/rspb.2015.2413
- 11) Romero P, Weigand A, **Pfenninger M** (2016) Positive selection in panpulmonate mitogenomes provide new clues on the adaptation to terrestrial life. *BMC Evolutionary Biology* 16, 164.
- 12) Bálint M, Bartha L, O'Hara RB,..., **Pfenninger M**, et al. (2015) Relocation, high-latitude warming and host genetic identity shape the foliar fungal microbiome of poplars. *Molecular Ecology* 24, 235-248.
- 13) **Pfenninger M**, Patel S, Arias-Rodriguez L, et al. (2015) Unique evolutionary trajectories in repeated adaptation to hydrogen sulphide-toxic habitats of a neotropical fish (*Poecilia mexicana*). *Molecular Ecology* 24, 5446-5459.
- 14) Feldmeyer B, Greshake B, Funke E, Ebersberger I, **Pfenninger M** (2015) Positive selection in development and growth rate regulation genes involved in species divergence of the genus *Radix*. *BMC Evolutionary Biology* 15, 164.
- 15) Patel S, Schell T, Eifert C, Feldmeyer B, **Pfenninger M** (2015) Characterizing a hybrid zone between a cryptic species pair of freshwater snails. *Molecular Ecology* 24, 643-655.
- 16) Römbke J, Aira M, Backeljau T, ..., **Pfenninger M** (2015) DNA barcoding of earthworms (*Eisenia fetida/andrei* complex) from 28 ecotoxicological test laboratories. *Applied Soil Ecology* doi:10.1016/j.apsoil.2015.02.010.
- 17) Bock F, Kuch U, **Pfenninger M**, Müller R (2015) Standardized Laboratory Feeding of Larval *Aedes japonicus japonicus* (Diptera: Culicidae). *Journal of Insect Science* 15, 144.
- 18) Khaliq I, Fritz SA, Prinzing R,..., **Pfenninger M**, et al. (2015) Global variation in thermal physiology of birds and mammals: evidence for phylogenetic niche conservatism only in the tropics. *Journal of Biogeography* 42, 2187-2196.
- 19) K. Koch, Searle J, **Pfenninger M**, Schwenk K (2015) A voyage to Terra Australis: human-mediated dispersal of cats. *BMC Evolutionary Biology* 15, 262.

- 20) Frosch C, Dutsov A, Zlatanova D, ..., **Pfenninger M** (2014) Noninvasive genetic assessment of brown bear population structure in Bulgarian mountain regions. *Mammalian Biology-Zeitschrift für Säugetierkunde* 79, 268-276.
- 21) Khaliq I, Hof C, Prinzing R, Böhning-Gaese K, **Pfenninger M** (2014) Global variation in thermal tolerances and vulnerability of endotherms to climate change. *Proceedings of the Royal Society of London B: Biological Sciences* 281, 20141097.
- 22) Lerp H, Plath M, Wronski T, ..., **Pfenninger M** (2014) Utility of island populations in re-introduction programmes—relationships between Arabian gazelles (*Gazella arabica*) from the Farasan Archipelago and endangered mainland populations. *Molecular Ecology* 23, 1910-1922.
- 23) Merker S, Thomas S, Völker E, ..., **Pfenninger M** (2014) Control region length dynamics potentially drives amino acid evolution in tarsier mitochondrial genomes. *Journal of Molecular Evolution* 79, 40-51.
- 24) **Pfenninger M**, Lerp H, Tobler M, *et al.* (2014) Parallel evolution of cox genes in H<sub>2</sub>S-tolerant fish as key adaptation to a toxic environment. *Nature Communications* 5:3873, doi:10.1038/ncomms4873.
- 25) **Pfenninger M**, Weigand A, Bálint M, Klusmann-Kolb A (2014) Misperceived invasion: the Lusitanian slug (*Arion lusitanicus* auct. non-Mabille or *Arion vulgaris* Moquin-Tandon 1855) is native to Central Europe. *Evolutionary Applications* 7, 702-713.
- 26) Lerp H, Wronski T, Plath M, Schröter A, **Pfenninger M** (2013) Phylogenetic and population genetic analyses suggest a potential species boundary between Mountain (Gazella gazella) and Arabian Gazelles (G. arabica) in the Levant. *Mammalian Biology-Zeitschrift für Säugetierkunde* 78, 383-386.
- 27) Nemeč S, Patel S, Nowak C, **Pfenninger M** (2013) Evolutionary determinants of population differences in population growth rate × habitat temperature interactions in *Chironomus riparius*. *Oecologia* 172, 585-594.
- 28) Pauls SU, Nowak C, Bálint M, **Pfenninger M** (2013) The impact of global climate change on genetic diversity within populations and species. *Molecular Ecology* 22, 925-946.
- 29) Plath M, **Pfenninger M**, Lerp H, *et al.* (2013) Genetic differentiation and selection against migrants in evolutionarily replicated extreme environments. *Evolution* 67, 2647-2661.
- 30) Schmidt H, Greshake B, Feldmeyer B, Hankeln T, **Pfenninger M** (2013) Genomic basis of ecological niche divergence among cryptic sister species of non-biting midges. *BMC Genomics* 14, 384.
- 31) Cordellier M, Pfenninger A, Streit B, **Pfenninger M** (2012) Assessing the effects of climate change on the distribution of pulmonate freshwater snail biodiversity. *Marine Biology* 159, 2519-2531.
- 32) Haun T, Salinger M, Pachzelt A, **Pfenninger M** (2012) On the processes shaping small-scale population structure in *Radix balthica* (Linnaeus 1758). *Malacologia* 55, 219-233.
- 33) Nemeč S, Heß M, Nowak C, **Pfenninger M** (2012) Experimental evidence for niche segregation in a sister species pair of non-biting midges. *Hydrobiologia* 691, 203-212.
- 34) Nowak C, Vogt C, Oehlmann J, ..., **Pfenninger M**, *et al.* (2012) Impact of genetic diversity and inbreeding on the life-history of *Chironomus* midges over consecutive generations. *Chemosphere* 88, 988-993.
- 35) Pérez-Losada M, Bloch R, Breinholt JW, **Pfenninger M**, Domínguez J (2012) Taxonomic assessment of Lumbricidae (Oligochaeta) earthworm genera using DNA barcodes. *European Journal of Soil Biology* 48, 41-47.
- 36) **Pfenninger M**, Bálint M, Pauls SU (2012) Methodological framework for projecting the potential loss of intraspecific genetic diversity due to global climate change. *BMC Evolutionary Biology* 12, 224.
- 37) Slattery P, Eschenbrenner C, Arias-Rodríguez L, ..., **Pfenninger M**, *et al.* (2012) Twelve new microsatellite loci for the sulphur molly (*Poecilia sulphuraria*) and the related Atlantic molly (*P. mexicana*). *Conservation Genetics Resources* 4, 935-937.

- 38) Weigand AM, **Pfenninger M**, Jochum A, Klusmann-Kolb A (2012) Alpine crossroads or origin of genetic diversity? Comparative phylogeography of two sympatric microgastropod species. *PLoS One* 7, e37089.
- 39) **Pfenninger M**, Plath M (2016) Ist Evolution vorhersagbar? Anpassung von Fischen an Schwefelwasserstoff. *Biologie in unserer Zeit* 46, 42-48

#### POPULAR SCIENTIFIC ARTICLES (last 5 years)

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- 1) Oppold AM, Pfenninger M (2017) Die Suche nach dem Klima-Gen: Spuren der Temperaturanpassung im Genom von Zuckmücken. *Natur Forschung Museum* 147, 18-27.
- 2) **Pfenninger M**, Plath M (2016) Ist Evolution vorhersagbar? Anpassung von Fischen an Schwefelwasserstoff. *Biologie in unserer Zeit* 46, 42-48
- 3) Kuch U, **Pfenninger M**, Müller R (2013) Den Tigermücken auf der Spur–Von Hessen bis in den Himalaya: Gewinner des globalen Wandels unter der Lupe. *Natur Forschung Museum* 143, 74-79.

#### RESEARCHER TRAINING (last 5 years)

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Supervision of:

- 3 Postdoctoral researchers
- 18 PhD students
- 12 Master/Diploma students
- 3 Bachelor students
- Mentoring of three early to mid-career postdocs

#### TEACHING

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- 1998 – 2013 Biodiversity and Ecology of Animals (1<sup>st</sup> year course with taxonomic training, dissections and excursions)
- 1999 – 2012 various Master-modules in Evolutionary Ecology, including lectures, seminars, practical courses and excursions
- Since 2012 annual Master module in Molecular Ecology and Population Genetics, including lectures, seminars, practical courses and excursions
- Since 1998 various lectures in Molecular Evolution, Population Genetics and Evolutionary Biology

#### OUTREACH ACTIVITIES

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- Advisory scientific board member of “Spurensucher Naturerlebnisschule Taunus e.V.”

#### RESEARCH INTEREST

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The focus of my current research is the genomic basis of niche evolution, speciation and local adaptation with closely related species pairs and intraspecific variation in land and freshwater snails, non-biting midges and extremophile molly fishes. We take an integrative approach: field studies, ecological and evolutionary experiments, comparative (population) genomic approaches, computer

simulations and experimental evolution. The ultimate vision thereby is to relate ecological differences functionally to their genomic basis and monitor the genomics of rapid adaptive processes. My past and present research can be conveniently divided in five areas, however, most publications contribute to more than one of those aspects:

#### **Genomic basis of niche evolution**

While interested on the genomic basis of species differences, the work has recently centred on rapid adaptive processes, either among seasons or due to fast ecological (or anthropogenic) change.

Recent papers:

Romero P, Weigand A, Pfenninger M (2016) Positive selection in panpulmonate mitogenomes provide new clues on the adaptation to terrestrial life. *BMC Evolutionary Biology* 16, 164.

Pfenninger M, Patel S, Arias-Rodriguez L, et al. (2015) Unique evolutionary trajectories in repeated adaptation to hydrogen sulphide-toxic habitats of a neotropical fish (*Poecilia mexicana*). *Molecular Ecology* 24, 5446-5459.

#### **Genetic diversity and climate change**

This research direction infers the direct and indirect impact of climate variation on the level of genetic diversity of populations.

Recent papers:

Oppold AM, Pedrosa J, Diogo J, Balint M, Pfenninger M (2016) Support for the evolutionary speed hypothesis from intraspecific population genetic data in the non-biting midge *Chironomus riparius*. *Proceedings of the Royal Society of London, Series B Biological Sciences* 283, 10.1098/rspb.2015.2413

Oppold AM, Pfenninger M (2017) Estimating the spontaneous mutation rate by short term mutation accumulation in *Chironomus riparius*. *Evolution Letters*, in press.

#### **Taxonomy and speciation**

Recently, this research focusses on the impact of the apparently ubiquitous impact of interspecies gene-flow on species borders and –evolution.

Recent papers:

Kumar V, Lammers F, Bidon T, Kotler L, Pfenninger M, Nilsson MA, Janke A (2017) The evolutionary history of bears is shaped by gene-flow across species. *Scientific Reports*, in press.

Pfenninger M, Patel S, Arias-Rodriguez L, et al. (2015) Unique evolutionary trajectories in repeated adaptation to hydrogen sulphide-toxic habitats of a neotropical fish (*Poecilia mexicana*). *Molecular Ecology* 24, 5446-5459.

Patel S, Schell T, Eifert C, Feldmeyer B, Pfenninger M (2015) Characterizing a hybrid zone between a cryptic species pair of freshwater snails. *Molecular Ecology* 24, 643-655.

#### **Microevolutionary Ecotoxicology**

This is the most applied or translational aspect of my work, analysing the impact of anthropogenic substances on genetic diversity and microevolution. Usually, this research is carried out as multigenerational experimental evolution with our labpet, *Chironomus riparius*.

Recent papers:

Römbke J, Aira M, Backeljau T, ..., Pfenninger M (2015) DNA barcoding of earthworms (*Eisenia fetida/andrei* complex) from 28 ecotoxicological test laboratories. *Applied Soil Ecology* doi:10.1016/j.apsoil.2015.02.010.

Nemec S, Patel S, Nowak C, Pfenninger M (2013) Evolutionary determinants of population differences in population growth rate × habitat temperature interactions in *Chironomus riparius*. *Oecologia* 172, 585-594.

Nowak C, Vogt C, Oehlmann J, ..., Pfenninger M, et al. (2012) Impact of genetic diversity and inbreeding on the life-history of *Chironomus* midges over consecutive generations. *Chemosphere* 88, 988-993.



### **Phylogeography**

In this, at the moment not very active field, I inferred the impact of past (climatic) events and rpesnet processes on the distribution of species and their genetic make-up.

Recent papers:

Haun T, Salinger M, Pachzelt A, Pfenninger M (2012) On the processes shaping small-scale population structure in *Radix balthica* (Linnaeus 1758). *Malacologia* 55, 219-233.

Lerp H, Plath M, Wronski T,..., Pfenninger M (2014) Utility of island populations in re-introduction programmes—relationships between Arabian gazelles (*Gazella arabica*) from the Farasan Archipelago and endangered mainland populations. *Molecular Ecology* 23, 1910-1922.