

Dr. Alexandra Weyrich

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Employment

2022 - 2025	Principle investigator "Interspecies Epigenetics" at German Center of integrative Biodiversity Research (iDiv), Funding DFG
2018 - 2022	Principle investigator Leibniz SAW Project " Epigenetic stability and plasticity of social environmental effects ", Dept. of Evolutionary Genetics, Institute for Zoo and Wildlife Research (IZW)
Since 2018	Group Leader of the group " Wildlife Epigenetics " at the Dept. of Evolutionary Genetics, Institute for Zoo and Wildlife Research (IZW)
Since 2015	Scientist and head of Epigenetic laboratory , Dept. of Evolutionary Genetics, Institute for Zoo and Wildlife Research (IZW), Epigenetic effects and gene expression in Wildlife
2011 - 2014	Post-doctoral fellow and Head of Epigenetic laboratory , Dept. of Evolutionary Genetics, Institute for Zoo and Wildlife Research (IZW), Funding SAW " Paternal epigenetic effects in Wild guinea pig "
2010 - 2011	Guest scientist and Lab assistant, Breeding Biology and Molecular Genetics, Dept. for Crop and Animal Sciences, Humboldt-University Berlin, Germany, Funding: German Science Foundation (DFG) " Glycogen, lactate and candidate gene expression studies of diverse muscles of <i>Mus musculus</i> "
2007 - 2009	Post-doctoral fellow , Evolutionary Genetics, Institute for Zoo and Wildlife Research (IZW); " Immune gene expression in Pallid Atlantic Forest Rat (<i>Delomys sublineatus</i>) " (Funding: BMBF); " <i>Seasonal gene expression changes of the roe deer (<i>Capreolus capreolus</i>)</i> " (Funding: DFG)

Higher Education

- 2004 – 2007 **Doctor rerum naturalium**, Johannes Gutenberg University Mainz, processed at the Chinese Academy of Biological Sciences, Shanghai, China, Funding: Max Planck Scholarship, Dissertation topic: **“DNA methylation and histone modifications in the spermatogenesis of the fruit fly (*Drosophila*)”**
- 2002 - 2003 **Diploma**, Johannes Gutenberg University Mainz, Germany, processed at the Chinese Academy of Biological Sciences, Shanghai, China, Funding: Max Planck Scholarship, Thesis topic: **“Expression of mammalian methylases in the male germ line of the fruit fly (*Drosophila melanogaster*)”**
- 1998 - 2003 **Diploma student** in Biology, Johannes Gutenberg University Mainz, Germany

Editorial and Scientific Advisor Activities

Reviewer for Journal of Epigenomics, Nature Communications, Molecular Ecology, BMC Genomics, Heredity - Nature, Scientific Reports, Human Frontier Science Program (HFSP), Journal of Applied Ichthyology

Reviewer for the funding agency Human Frontier Science Program (HSFP), Swiss National Science Foundation (SNSF), Graduate Woman in Science Fellowship Program (GWIS)

Commission member in defenses to obtain doctoral and master degree at Humboldt-Universität zu Berlin and University of Potsdam

Teaching and Supervision

- Since 2008 **Lecturer of practical master course**, faculty of Molecular Ecology, Evolution and Conservation, Potsdam University, WS (5 days)
- 2018 **Co-Supervisor PhD thesis**, Humboldt University Berlin and Leibniz Institute for Zoo and Wildlife Research
- Since 2014 **Supervisor Master Thesis in Wildlife Epigenetics (9)**, of Students graduating at Potsdam University, Universität Freiburg, Technical University of Berlin, University of Central Lancashire- School of Forensic and investigative Science
- Since 2011 **Supervisor Bachelor thesis in Wildlife Epigenetics (3)**, of Students graduating at Freie Universität Berlin, Potsdam University
- 2006 **Assistance in EMBO-Workshop**, in Manila, Philippines, Topic: Gene Expression Analysis in Diagnostic Medicine; Manila, Philippines
- 2004 **Assistance in EMBO-Workshop**, in Wuhan, China, Topic: Proteomics and human diseases
- 2002-2003 **Tutor in Plant Physiology**, Scientific assistant of Plant Physiology, practical work and colloquium, Johannes Gutenberg University of Mainz

Outreach

- 2020-2023 **Epigenetic exhibition** at Zoo Rostock Zoo "**Epigeneum**" (<https://www.zoo-rostock.de/forschen-entdecken/epigeneum.html>)
- 2018-2019 **Translation of Epigenetics Comic** into **French, Spanish, Chinese**; funded by ESEB Outreach grant
- 2018 **me-Convention**, Stockholm, Sweden, invited presentation, "**Epigenetics – Treat yourself well**" (short video <http://www.izw-berlin.de/de/vergleichende-umwelt-epigenetik-bei-wildtieren.html>)
- 2018 **Public presentation**, Garbicz Festival, invited presentation on topic: "**Madame Epi and the Genetics**"
- 2016 **Science Comic: Epigenetics – Bridge between genome and environment**, Weyrich A, Nowacki O, Köhn A, funding: BMBF, publisher: JaJa-Verlag (<https://www.jajaverlag.com/epigenetik-und-epigenetics/>)
- 2016 **RBB Kulturradio – Interview**: What is epigenetics and why is it important?
- 2011-2019 **Girly Day** and the **Long Night of Sciences**

Scholarships and Awards

- 2023 **Associate Member of iDiv**
- 2020 Nomination for **AcademiaNet – Expert Database of Outstanding Women Academics**
- 2020 **DEAL Open Access Publication Fund**
- 2016, 2018 **Leibniz Open Access Publication Fund** of the Leibniz Association
- 2016 **COST Travel Grants (2x)**, European Cooperation of Science and Technology (COST), financed two travels to EpiConcept conferences, the 1st in Velingrad, Bulgaria and the 2nd in Giardini Naxos, Sicily, Italy
- 2014-2015 **Fellowship for Leibniz-Mentoring Program** - Women in Leadership positions
- 2002-2007 **Max Planck Scholarship** at the Chinese Academy for Biological Sciences for Diploma and PhD Thesis

Grants and fund raising

- 2022-2025 German Center of integrative Biodiversity Research (iDiv); sDiv Postdoc; **Title: "Inter-species Epigenetics"**, PI, € 210K
- 2023 - 2024 Female Scientist Fund, pending
- 2018–2022 Leibniz Association SAW Project; **Title: Epigenetic stability and plasticity of social environmental effects**, (SAW-2018-IZW-3-EpiRank); PI, € 966K
- 2018–2019 **ESEB Outreach grant**, Translation of Science Comic, Epigenetics – Bridge between genome and environment, Weyrich A, Nowacki O, Köhn A; PI, € 1.5K
- 2011-2013 Leibniz Competitive Fund (SAW): **Paternal Epigenetic Effects in Male Wild guinea pig** (SAW-2011-IZW-2), Partner, € 1.2M

Peer-reviewed publications

- Grunau C, **Weyrich A** (2023) "Explique moi l'épigénétique" Livre, "Epigenetique et Evolution", Chap. 10, accepted
- Weyrich A**, Guerrero-Altamirano TP, Yasar S, Czirják GA, Wachter B, Fickel J, First Steps towards the Development of Epigenetic Biomarkers in Female Cheetahs, *Life* 2022, 12(6), 920; <https://doi.org/10.3390/life12060920>.
- Westbury MV, Le Duc D, Duchêne DA, Krishnan A, Prost S, Rutschmann S, Grau JH, Dalen L, **Weyrich A**, Norén K, Werdelin L, Dalerum F, Schöneberg T, Hofreiter M (2021) Ecological specialisation and evolutionary reticulation in extant Hyaenidae, *Molecular Biology and Evolution*, msab055, <https://doi.org/10.1093/molbev/msab055>
- Li K#, Zhang S#, Song X#, **Weyrich A**#, Wang Y, Liu X, Wan N, Iovly M, Cui H, Frenkel V, Titievsky A, Panov J, Brodsky L, Nevo E (2020) Genome evolution of blind subterranean mole rats: Adaptive peripatric *versus* sympatric speciation, #shared first author, *Proc Natl Acad Sci USA* Dec 22, 2020 117 (51) 32499-32508, <https://doi.org/10.1073/pnas.2018123117>
- Wahedi A, Günther A, **Weyrich A**, Sondheimer N (2020) The mitochondrial genome of *Cavia aperea*, *Mitochondrial DNA Part B: Resources*, 5:3, 2147-2148, DOI: 10.1080/23802359.2020.1768918
- Weyrich A**, Yasar S, Lenz D and Fickel J (2020) Tissue-specific epigenetic inheritance after paternal heat exposure in male Wild guinea pigs, invited to special issue in *Mammalian Genome*, Springer, <https://rdcu.be/b3ytT>
- Guerrero TP, Fickel J, Benhaiem S, **Weyrich A** (2020) Epigenomics and gene regulation in mammalian social systems. Invited to special issue on "Social behavior and evolution in the omics era" in *Current Zoology*, <https://doi.org/10.1093/cz/zoaa005>
- Al Klifeh E, Balard A, Jarquín-Díaz VH, **Weyrich A**, Wibbelt G, Heitlinger E (2019) *Eimeria falciformis* BayerHaberKorn1970 and novel wild derived isolates from house mice: differences in parasite lifecycle, pathogenicity and host immune reactions, *BioRxiv*, Preprint
- Somerville V, Schwaiger M, Hirsch PE, Walser JC, Bussmann K, **Weyrich A**, Burkhardt-Holm P & Adrian-Kalchhauser I (2019) DNA methylation patterns in the round goby hypothalamus support an on-the-spot decision scenario for territorial behavior. Invited to special issue on "Epigenetics and Adaptation" in *Genes* 10(3), 219
- Weyrich A**, Lenz D and Fickel J (2019) Environmental change-dependent transgenerational epigenetic response. Invited to special issue on "Epigenetics and Adaptation" in *Genes* 10(1), 4, doi: 10.3390/genes10010004
- Weyrich A**, Jeschek M, Schrapers KT, Lenz D, Chung TH, Rübensam K, Yasar S, Schneemann M, Ortman S, Jewgenow K & Fickel J (2018) Diet changes alter paternally inherited epigenetic pattern in male wild guinea pigs. Invited to *Environmental epigenetics*, 4(2), dvy011
- Weyrich A**, Benz S, Karl S, Jeschek M, Jewgenow K, Fickel J (2016) Paternal heat exposure causes DNA methylation and gene expression changes of *Stat3* in wild guinea pig sons. *Ecology and Evolution*, doi: 10.1002/ece3.1993
- Weyrich A**, Lenz D, Jeschek M, Chung TH, Rübensam K, Göritz K, Jewgenow, K, Fickel J (2016) Paternal intergenerational epigenetic response to heat exposure in male wild guinea.

Invited to special issue on "Epigenetic Studies in Ecology and Evolution" in *Molecular Ecology*, doi: 10.1111/mec.13494

- Weyrich A**, Schüllermann T, Heeger F, Jeschek M, Mazzoni CJ, Chen W, Schumann K, Fickel J (2014) Whole genome sequencing and methylome analysis of the wild guinea pig, *BMC Genomics* 15:1036, doi: 10.1186/1471-2164-15-1036
- Hennig W and **Weyrich A** (2013) Histone Modifications in the Male Germ Line of *Drosophila*; *BMC Developmental Biology* 13:7, doi: 10.1186/1471-213X-13-7
- Kärst S, Strucken EM, Schmitt AO, **Weyrich A**, de Villena FPM, Hyuna Yang, Brockmann GA (2013) Effect of the myostatin locus on muscle mass and intramuscular fat content in a cross between mouse lines selected for hypermuscularity, *BMC Genomics* 16;14(1):16, doi.org/10.1186/1471-2164-14-16
- Weyrich A**, Preparation of Genomic DNA from Mammalian Sperm. *Curr Protoc Mol Biol.* 2012; 2:2.13.1-3. doi: 10.1002/0471142727.mb0213s98
- Fickel J and **Weyrich A** (2010) Female mate choice in rodents, in: Kaoru Hashimoto, From gene to animal behaviour, *Springer-Verlag* (Japan) 4(19), ISBN 978-4-431-53892-9
- Weyrich A**, Axtner J, Sommer S (2010) Selection and validation of reference genes for real-time RT-PCR studies in the non-model species *Delomys sublineatus*, a Brazilian rodent. *Biochemistry and Biophysical Research Communications* 392:145-149, doi: 10.1016/j.bbrc.2009.12.173
- Weyrich A**, Mahr JA, Jauernig O, Göritz F, Fritzenkötter A, Blottner S, Fickel J (2010), Seasonal changes of gene expression in roe deer (*Capreolus capreolus*) testis measured by expression microarray analysis, *Trends in Animal & Veterinary Sciences Journal* 1(2):49-64
- Weyrich A**, Tang X, Xu G, Schratzenholz A, Hunzinger C, Hennig W (2008) Mammalian DNMTs in the male germ line DNA of *Drosophila*. *Biochemistry and Cell Biology* 86(5):380-5, doi: 10.1139/o08-096