

JAKE LEYHR - CV

Email: jake.leyhr@ebc.uu.se

Website: jakeleyhr.github.io

Twitter: @JakeLeyhr

ORCID: 0000-0003-1815-7818

Education

Uppsala University

2023

PhD, Evolutionary Developmental Biology

Thesis: "Musculoskeletal Development in Jawed Vertebrates: Gene Function, Cis-Regulation, and 3D Phenotypes in Zebrafish"

Uppsala University

2018

MSc, Biology (Evolutionary Biology)

Thesis: "Characterization of Transcription Factor Regulation During the Development of Zebrafish Craniofacial Structures"

University of Exeter

2016

BSc (Hons), 2:1, Biological Sciences

Thesis: "Development of a Cell-Free Alkane Biosensor"

Publications

- **Leyhr, J.**, Sanchez, S., Dollman, KN., Tafforeau, P., Haitina, T. (2023). Enhanced contrast synchrotron X-ray microtomography for describing skeleton-associated soft tissue defects in zebrafish mutants. *Frontiers in Endocrinology*, 14:1108916, doi: [10.3389/fendo.2023.1108916](https://doi.org/10.3389/fendo.2023.1108916)
- **Leyhr, J.***, Waldmann, L.*, Filipek-Górniok, B., Zhang, H., Allalou, A., Haitina, T. (2022). A novel cis-regulatory element drives early expression of Nkx3.2 in the gnathostome primary jaw joint. *eLife*, doi: [10.7554/eLife.75749](https://doi.org/10.7554/eLife.75749)
- Waldmann, L.*, **Leyhr, J.***, Zhang, H., Allalou, A., Öhman-Mägi, C., Haitina, T. (2022). The Role of Gdf5 in the Development of the Zebrafish Fin Endoskeleton. *Developmental Dynamics*, 251(9), p1535-1549, doi: [10.1002/dvdy.399](https://doi.org/10.1002/dvdy.399) (**Cover feature**)
- Waldmann, L.*, **Leyhr, J.***, Zhang, H., Öhman-Mägi, C., Allalou, A., Haitina, T. (2021). The Broad Role of Nkx3.2 in the Development of the Zebrafish Axial Skeleton. *PLoS ONE*, 16(8), e0255953, doi: [10.1371/journal.pone.0255953](https://doi.org/10.1371/journal.pone.0255953)
- Janssen, R., Andersson, E., Betnér, E., Bijl, S., Fowler, W., Höök, L., **Leyhr, J.**, Landström, E., Mannelqvist, A., Panara, V., Smith, K., Tiemann, S. (2018). Embryonic expression patterns and phylogenetic analysis of panarthropod sox genes: Insight into nervous system development, segmentation and gonadogenesis. *BMC Evolutionary Biology*, 18(88), doi: [10.1186/s12862-018-1196-z](https://doi.org/10.1186/s12862-018-1196-z)

* Equal contribution.

Conference Presentations

- **Leyhr, J.**, Leflaëc, E., Debais-Thibaud, M., Bird, NC., Dollman, K., Tafforeau, P., Sanchez, S., Haitina, T. DICE-PPC-SRμCT for describing anatomy, mutant phenotypes, and tissue organisation in three dimensions at near-histological resolution. Poster presentation delivered at the 82nd Annual Meeting of the Society for Developmental Biology (Chicago, USA - July 2023).
- **Leyhr, J.**, Haitina, T., Dearden, R., Johanson, Z., Debais-Thibaud, M., Tafforeau, P., Dollman, K., Marcellini, S., Boisvert, C., Clarac, F., Qu, Q., Bijl, S., Stundl, J., Soukup, V., Robertson, B., Grillner, S., Wallén-Mackenzie, Å., Smith, MM., Brazeau, M., Sanchez, S. A 3D Histological Survey of Vertebrate Jaw Cartilage with Implications for Chondrichthyan Skeletal Evolution. Oral

presentation delivered at the 16th *International Symposium on Early and Lower Vertebrates* (Valencia, Spain - June **2022**), and the 6th *International Symposium on Palaeohistology* (Online - March **2022**).

- **Leyhr, J.**, Leurs, N., Debais-Thibaud, M., Haitina, T. Functional divergence of a novel conserved cis-regulatory element of Mohawk homeobox transcription factor during evolution of vertebrates. Poster presentation delivered at the 8th *Meeting of the European Society for Evolutionary Developmental Biology* (Naples, Italy - June **2022**).
- **Leyhr, J.**, Haitina, T. Evolutionary conservation of cis-regulatory elements of craniofacial tendons and ligaments in Gnathostomes. Oral presentation delivered at the 15th *International Symposium on Early and Lower Vertebrates* (Quijing, China - August **2019**).
- Haitina, T., Waldmann, L., **Leyhr, J.** Identification of the evolutionary conserved regulatory element controlling the primary jaw joint formation in zebrafish. Poster presentation delivered at the 2nd *Joint Congress on Evolutionary Biology* (Montpellier, France - August **2018**)
- **Leyhr, J.**, Waldmann, L., Haitina, T. Using tissue-specific cell ablation to study the regeneration of the zebrafish jaw joint. Poster presentation delivered at the 7th *Meeting of the European Society for Evolutionary Development Biology* (Galway, Ireland - June **2018**)

Grants and Awards

| | |
|---|-------------|
| Yokogawa Spinning Disk Imaging Contest | 2023 |
| 1 st place award in the microscopy image competition run by the Yokogawa Corporation of America at the MBL Embryology Course - 100 USD | |
| Society for Developmental Biology Trainee Travel Assistance Grant | 2023 |
| Awarded for travel to attend the 82 nd Annual Meeting of the Society for Developmental Biology (Chicago, USA) - 500 USD | |
| Swedish Developmental Biology Organisation Travel Grant | 2023 |
| Awarded for travel to attend the "Embryology: Concepts and Techniques in Modern Developmental Biology" advanced research training course at the Marine Biological Laboratory (Woods Hole, USA) - 5,000 SEK | |
| European Synchrotron Radiation Facility Beamtime | 2021 |
| Award LS-3021 (highlighted proposal) - " <i>Evolution of the shark skeleton</i> ". Co-proposed with Dr. Sophie Sanchez, Dr. Tatjana Haitina, Dr. Zerina Johanson, Dr. Moya Meredith-Smith, Dr. Richard Dearden, Dr. Melanie Debais-Thibaud, Dr. Sylvain Marcellini, and Dr. Qingming Qu - 33,000 USD (equivalent) | |
| Helge Ax:son Johnsons Foundation Grant | 2021 |
| "RNA sequencing analysis of the developing zebrafish pectoral fin" - 40,000 SEK | |
| Anna Maria Lundin Foundation Travel Grant | 2020 |
| Awarded for travel and accommodation to present at the 8th European Society for Evolutionary Developmental Biology conference (Naples, Italy) - 12,232 SEK | |

Supervision

| | |
|---|----------------------------|
| Master's student - Elsa Leflaëc - <i>Diversity of the cartilage of vertebrates. A study of the Meckel's cartilage in chondrichthyans and osteichthyans</i> , Master's thesis project | 2023 2022 |
| Master's students - Paul Ideaser and Antoine Corne - <i>The evolution of jaw cartilage in gnathostomes</i> , Origin and Evolution of Vertebrates Course Research Project | |
| Bachelor's student - Branco Vanhaverbeke - <i>A potential nkx3.2 enhancer in zebrafish: deletion characterization and motif expression analysis</i> , Bachelor's Research Project | 2020 |

Teaching

Uppsala University (Master's level courses)

| | |
|---|--------------------|
| Teaching Assistant, <i>Evolution and Development</i> (1BG397) | 2017 - 2023 |
| Teaching Assistant, <i>Developmental Biology including the Development of the Nervous System</i> (1BG510) | 2017 - 2023 |
| Teaching Assistant, <i>Functional Genomics</i> (1BG322) | 2020 - 2021 |
| Teaching Assistant, <i>Toxicology</i> (1BG209) | 2019 |

Select Courses

| | |
|---|-------------|
| MBL Embryology: Concepts and Techniques in Modern Developmental Biology | 2023 |
| EMBO Practical Course 3D Developmental Imaging | 2022 |
| Digital Image Analysis for Scientific Applications - focus MAX IV | 2022 |
| Laboratory Animal Science for Researchers - Zebrafish | 2020 |

Technical Skills

| | |
|---|----------------------------|
| - Synteny and genomic conservation analysis | - Image analysis in ImageJ |
| - CRISPR/Cas9 genome editing | - Adobe Illustrator |
| - Tol2 transgenesis | - R, RMarkdown |
| - Confocal microscopy | - LaTeX |
| - Skeletal staining | - Git, GitHub |
| - 3D segmentation in VGStudio MAX | - 3D printing |

Referees

Dr. Tatjana Haitina

Associate Professor
Department of Organismal Biology
Uppsala University
tatjana.haitina@ebc.uu.se

Dr. Sophie Sanchez

Senior Lecturer
Department of Organismal Biology
Uppsala University
sophie.sanchez@ebc.uu.se

Dr. Melanie Debiais-Thibaud

Professor
Institut des Sciences de l'Evolution de
Montpellier, ISEM
Université de Montpellier
melanie.debiais-thibaud@umontpellier.fr