JAKE LEYHR - CV

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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
- **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
- 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 (**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
- 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

* Equal contribution.

Conference Presentations

- **Leyhr, J.**, Leflaëc, E., Debiais-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., Debiais-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., Debiais-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**
1st 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 82nd 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) – "*Evolution of the shark skeleton*". Co-proposed with Dr. Sophie Sanchez, Dr. Tatjana Haitina, Dr. Zerina Johanson, Dr. Moya Meredith-Smith, Dr. Richard Dearden, Dr. Melanie Debiais-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 – *Diversity of the cartilage of vertebrates. A study of the Meckel's cartilage in chondrichthyans and osteichthyans,* **Master's thesis project** **2023**

Master's students - Paul Ideaser and Antoine Corne - *The evolution of jaw cartilage in gnathostomes*, Origin and Evolution of Vertebrates **Course Research Project** **2022**

Bachelor's student - Branco Vanhaverbeke - *A potential nkx3.2 enhancer in zebrafish: deletion characterization and motif expression analysis*, **Bachelor's Research Project** **2020**

Teaching

Uppsala University (Master's level courses)

Teaching Assistant, *Evolution and Development* (1BG397)	**2017 - 2023**
Teaching Assistant, *Developmental Biology including the Development of the Nervous System* (1BG510)	**2017 – 2023**
Teaching Assistant, *Functional Genomics* (1BG322)	**2020 - 2021**
Teaching Assistant, *Toxicology* (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
- CRISPR/Cas9 genome editing
- Tol2 transgenesis
- Confocal microscopy
- Skeletal staining
- 3D segmentation in VGStudio MAX
- Image analysis in ImageJ
- Adobe Illustrator
- R, RMarkdown
- LaTeX
- Git, GitHub
- 3D printing

Referees

Dr. Tatjana Haitina
Associate Professor
Department of Organismal Biology
Uppsala University
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Dr. Sophie Sanchez
Senior Lecturer
Department of Organismal Biology
Uppsala University
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Dr. Melanie Debiais-Thibaud
Professor
Institut des Sciences de l'Evolution de Montpellier, ISEM
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