PhD student in Molecular Regulation and 3D Cell Organization

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PhD student in Molecular Regulation and 3D Cell Organization of the Musculoskeletal Tissues

The Department of Organismal Biology is an international environment with staff and students from all over the world. Our research and teaching is focused on developmental biology, evolution, systematics, and physiology of living organisms. For more information, see www.iob.uu.se.

A PhD student position in Molecular Regulation and 3D Cell Organization of the Musculoskeletal Tissues is available at the Department of Organismal Biology, Evolution and Development program in Haitina lab. The research group is studying cis- regulation, molecular evolution and 3D cell organization of the musculoskeletal tissues during development and evolution of vertebrates. The group is using a zebrafish model and applying a number of cutting-edge techniques including transgenesis, CRISPR/Cas9 genome editing, advanced microscopy and X-ray synchrotron microtomography imaging in order to link genetic, molecular and cellular components during the normal skeletal development and in the models of skeletal disease. For more information, see https://www.iob.uu.se/research/evolution-and-development/tatjana-haitina/.

Duties

The PhD project is focused on the investigation of skeletal joint and ligament development in the zebrafish model. Joints and ligaments are essential for the integrity and movement of our skeleton. During embryological development the formation of the joint starts with the interzone, which, together with the surrounding tissue, forms all components of the adult joint, including the ligaments. Molecular
markers of the early interzone formation are associated with congenital and age-related joint diseases.

PhD student will compare three models of zebrafish joint development: 1. - disrupted joint development resulting in joint loss, 2.- delayed joint development, which is later recovered; and 3.- normal joint development. The heterogeneity in the joint interzone cell layers will be investigated by combining single-cell RNA sequencing and spatial analysis of interzone cells. The key differences will be further identified between these three models for 3D cell organization, 3D morphology, and subcellular structures by using genetically-tagged enzymes in combination with X-ray synchrotron microtomography and advanced electron microscopy imaging. This project will generate new ground-breaking discoveries of the cellular and molecular mechanisms during normal and altered joint and ligament development that have important biomedical implications.

The successful candidate will devote most of the time towards the research project and own graduate studies. Other service activities within the department, such as teaching and administrative work, can be included within the framework of the employment (maximum 20%). The position will be extended with the time devoted to teaching to allow four years of full-time graduate studies.

Requirements
To meet the entry requirements for doctoral studies, you must

- hold a Master’s (second-cycle) degree in Biology, or
- have completed at least 240 credits in higher education, with at least 60 credits at Master’s level including an independent project worth at least 15 credits, or
- have acquired substantially equivalent knowledge in some other way.

Previous experience from molecular biology techniques, and/or histology and microscopy imaging is a requirement.

The applicant is expected to be able to teach in English. Fluency in spoken and written English is a requirement.

Great emphasis will be placed on personal suitability and collaborative skills.
Additional qualifications
Previous experience from the zebrafish model, flow cytometry, single cell transcriptomics, imaging analysis, CRISPR/Cas9 genome editing is a strong merit.

Rules governing PhD students are set out in the Higher Education Ordinance chapter 5, §§ 1-7 and in Uppsala University's rules and guidelines.

The application should be written in English and should contain:

1. Personal letter, including justification of completion of the doctoral programme (max. 1 page)
2. CV
3. copy of the thesis, copies of diplomas and certificates (including list of courses and grades), documents proving English proficiency, as well as other relevant documents
4. if available contact information (e-mail and telephone number) of reference persons or letter of recommendation.

About the employment
The employment is a temporary position according to the Higher Education Ordinance chapter 5 § 7. Scope of employment 100 %. Starting date February 1, 2024 or as agreed. Placement: Uppsala

For further information about the position, please contact: Docent Tatjana Haitina, tatjana.haitina@ebc.uu.se, +46 18 4716120.

Please submit your application by 29 December 2023, UFV-PA 2023/4586.

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Please do not send offers of recruitment or advertising services.

Submit your application through Uppsala University's recruitment system.

**Placement:** Department of Organismal Biology  
**Type of employment:** Full time, Temporary position  
**Pay:** Fixed salary  
**Number of positions:** 1  
**Working hours:** 100%  
**Town:** Uppsala  
**County:** Uppsala län  
**Country:** Sweden  
**Union representative:** ST/TCO tco@fackorg.uu.se  
Seko Universitetsklubben seko@uadm.uu.se  
Saco-rådet saco@uadm.uu.se  
**Number of reference:** UFV-PA 2023/4586  
**Last application date:** 2023-12-29

Apply for position