

Call for a Post-doctoral position in Nantes (FRANCE):

Molecular and functional aspects of developmental disorders

related to the signaling role of the notochord

Funded by the French Research Agency (ANR), the collaborative research project DISPHPE focuses on the notochord, a signalling structure, that plays a key role in the dorso-ventral regionalisation of the central nervous system and in the development of the spine. The secretion of the protein Sonic Hedgehog (SHH) by the notochord is essential for the coordination of cell fates of surrounding embryonic tissues and in particular of the ventral midline structures in the head. Genetics is the main component of forebrain midline defects, with alterations leading to a decrease in the SHH pathway. The inaccessibility of the affected tissues is a major obstacle to in-depth knowledge of pathophysiological mechanisms and improved molecular diagnosis in humans. Approaches to differentiating human induced pluripotent stem cells (hiPSCs) into physiologically relevant tissues offer a unique opportunity to overcome these limitations. Our work aims to recapitulate the developmental characteristics and function of tissues in order to model diseases related to a defect arising early during embryogenesis. To succeed the notochord, one of the embryonic tissues affected in brain midline defects, will be modelled using hiPSCs differentiated *in vitro*. The deleterious impact of variants in the DISP1 gene, which controls SHH secretion, will be investigated in this model. Signaling alterations will be recapitulated by modulating SHH pathway activity *in vitro* and by using genome editing technology on hiPSCs. The overall experimental design will reveal key molecular and functional aspects of developmental disorders related to the signaling role of the notochord. The project will involve pluripotent stem cell differentiation in 2D and 3D culture, characterization of cell phenotypes and signaling functions (molecular biology, quantitative expression analysis, high-throughput transcriptomic analysis, single cell technology, immunofluorescence, confocal imaging).

We are looking for a highly motivated postdoc researcher (PhD degree) to join the « Stem Cells and Axial Skeleton Development » group, <https://rmes.univ-nantes.fr/research-teams/rejoint> at the INSERM UMR 1229-Regenerative Medicine and Skeleton lab, in Nantes. Candidate should have **solid background and experimental skills in stem cell biology and /or developmental biology**. Good written and oral communication skills are essential, along with excellent teamwork skills. This 24 months-postdoctoral position is available from October 2023. Candidates are expected to have a competitive track record to apply for follow-up funding.

Interested candidates are invited to send a CV with skills and complete list of publications, a cover letter including a brief statement of research interests, past scientific experiences and achievements and name and email address of 2-3 references to Anne.Camus@univ-nantes.fr
Please contact us for informal enquiries if you have any questions about the job.