

ANR funded PhD position in Marseille to define the environmental factors influencing and affecting neonatal cardiac health through epigenome profiling

Congenital heart disease, defined as a gross structural abnormality, is the most common type of human birth defect, occurring in app. 9 per 1000 live births and at significantly greater incidence in miscarriage and still births. The complexity in understanding the etiology of congenital heart diseases is heightened by disease variability influenced by genetic, epigenetic and/or environmental modifiers. Environmental factors are known to contribute to CHDs, but the pathophysiology and associated gene-environment interactions are not well-known. Well-recognized nongenetic causes of CHDs include environmental teratogens, such as excess maternal exposure to Vitamin A and its retinoid derivatives (e.g. isotretinoin). The molecular mechanisms underlying these lethal effects are not well understood. In this project, innovative approaches will be used to investigate the impact of Vitamine A signaling on heart development. To achieve this objective, this project integrates single cell epigenomic profiling with spatial phenotyping, to understand the molecular changes in response to Vitamine A/retinoid derivatives that are conserved during human and murine heart development.

This project will allow the PhD student to acquire diverse skills ranging from molecular biology (generation of transgenic iPS cells by Crispr, single cell multi-omics, epigenetic profiles), developmental biology (phenotypic characterization), imaging (multiplex fluorescent RNA-FISH).

Candidates should send a Curriculum Vitae and 3 referees to:
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Name of Supervisor: Sonia Stefanovic (CRCN INSERM)
Co-supervisor: Stéphane Zaffran (DR2 INSERM)

Selected references: STEFANOVIC S *et al.* Elife. 2020 PMID: 32804075; van Eif VWW*, STEFANOVIC S* *et al.* Development. 2019 PMID: 30936179; STEFANOVIC S *et al.* Nat Commun. 2014 PMID: 24770533.

Lab webpage: <https://www.marseille-medical-genetics.org/s-stefanovic/>

Location: INSERM, MMG, U1251, Aix Marseille University, Marseille, France

Starting date: September 2021

Ecole doctorale: <https://ecole-doctorale-62.univ-amu.fr/>

Funding: ANR-ERA-NET and ANR-JCJC