Stéphane Zaffran

I am Research Director at INSERM, specializing in developmental biology and genetics. My lab investigates congenital heart defects (CHDs), focusing on how disruptions in cardiac progenitor cells impact heart development.

Since 2008, my team has employed in vivo and in vitro models, including mouse models, organoids, embryonic stem cells (ESCs), and human induced pluripotent stem cells (hiPSCs), to study candidate genes linked to CHDs. To unravel cellular interactions in cardiovascular development, my lab uses advanced technologies such as single-cell RNA sequencing (scRNAseq), spatial transcriptional analysis, and self-organizing gastruloid models. In collaboration with clinicians, we work to identify disease-associated genes involved in embryonic development and cardiovascular disorders. Recently, my lab developed a novel in vitro model to explore genetic and environmental susceptibility factors for aortic disorders related to ACTA2 mutations.

Our objective is to advance our understanding of heart formation and uncover the underlying causes of CHDs, with the aim of translating discoveries into clinical applications.