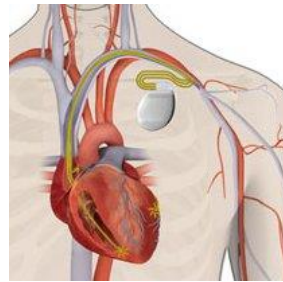
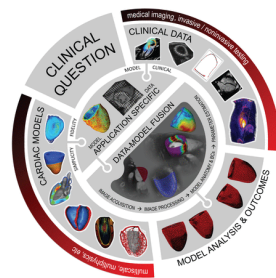


6 Months MSc Internship on 3D Cardiac Electromechanical Modelling *from Clinical Data to Personalised Simulation*

Clinical Context

Heart failure (HF) is one of the major health issues in Europe affecting 6 million patients and growing substantially because of the ageing population and improving survival following myocardial infarction. The poor short to medium term prognosis of these patients means that, treatments such as cardiac resynchronisation therapy and mitral valve repair can have a considerable impact. However, these therapies, are ineffective in up to 50% of the treated patients and involve significant morbidity and substantial cost.

The aim of this project is to optimise a 3D electromechanical model of the heart in order to improve therapy selection and treatment optimisation in HF. Such 3D models are often hindered by their complexity and their computational cost, which makes parameter estimation, and therefore personalisation, very challenging in a clinical timeframe.



Position Description

The objective of this Master internship is to develop a reduced computational model that both captures the important phenomena in cardiac mechanics and electrophysiology for heart failure, and enables robust personalisation in a timeframe compatible with clinical applications. This will be done in collaboration with clinicians experts in heart failure and resynchronisation therapy.

This work could lead to the discovery of important factors for patients' management, in particular for patient selection and therapy optimisation.

This internship position will be at [Inria](https://www.inria.fr), the French Institute for Research in Computer Science and Mathematics, in the [Epione](https://www.epione.fr) research team of the [Inria Sophia Antipolis - Méditerranée](https://www.inria.fr/sophia-antipolis) Research Centre, located on the French Riviera.

Searched profile

- Biomedical engineering, computer science, applied mathematics (MSc level)
- Eager to work in the medical field, to learn and take initiatives
- Fluent in English (Reading, Writing, Speaking)

Job location: Inria Sophia Antipolis, 2004 route des Lucioles, 06 902 Sophia Antipolis, France

Contract: 6 months

Start: ASAP

Salary: gross remuneration of 1445 Euros/month (net is about 1182 Euros)

Send resume & motivation letter: maxime.sermesant@inria.fr, herve.delingette@inria.fr