**2 PhD positions / Early Stage Researchers (ESR) available in biomedical research and technology**

Do you want to work in the growing sector of biomedical technology? Do you want to start your career in a European network of leading universities, hospitals and industry?

The Cardiovascular Research Institute Maastricht (CARIM) is one of the institutions in the new EU-project “Personalised In-silico Cardiology” (PIC), with 15 young researchers divided between 10 different European research institutions and companies. We are looking for excellent candidates to fill our two fellowships for 3-year Early Stage Researcher (ESR) positions (PhD-students) at CARIM in the topic of computer simulation and preclinical validation of novel sensors for heart function. The PhD projects will be part of the PIC project, which is an Innovative Training Network funded through the Marie Skłodowska-Curie actions of the EU.

**CARIM** contains all research performed in the field of cardiovascular diseases at Maastricht University and the Maastricht University Medical Center. CARIM has an annual budget of ~20 M€, employs 200 fte of researchers and 70 fte of technical and supporting staff, divided over 13 departments/disciplines. In 2015 CARIM investigators (co-)authored more than 500 scientific articles. Within CARIM Frits Prinzen is professor of Physiology and the leader of the theme “electro-mechanics of the heart” and Tammo Delhaas is chairman of the dept. of Biomedical Engineering. Within the department of cardiology all state-of-the-art technologies regarding electrophysiological and imaging facilities are available. The department of Physiology has a renowned large animal lab for preclinical studies and the department of Biomedical Engineering is one of the world-leading centers on cardiac computer modeling. Moreover, the Bakken Research Center of Medtronic is located literally across the street, facilitating collaboration with the worlds’ largest device company.

**PIC** will educate young researchers (biomedical engineers) to become international experts in key areas of medical technology through a coordinated plan of individual research projects addressing specific topics in sensor+device technology and cardiac computer models to monitor function, guide therapy and aid in the diagnosing process. Multi-disciplinary dialogue and work between clinicians and biomedical engineers is crucial to address the challenges in this emerging field. By providing researchers with knowledge and training from specific topics in sensor+device technology, computational biology, biomedical engineering, research methodologies, innovation and entrepreneurship, the link between academic research and industry will be strengthened. The scientific and clinical goal of PIC is to improve methods for monitoring heart function and controlling pacemaker devices by miniaturized motion sensors as well as develop better diagnostic methods through personalised computer models incorporating anatomical and electrical data from each patient. For a more information of the PIC-project see: <http://picnet.eu>.

**The two ESR positions at CARIM**.

The F2 position within PIC relates to computer simulations for better understanding of the signals derived from cardiac sensors. Phonocardiographic and motion sensor signals during synchronous and dyssynchronous heart failure are simulated in the well-known CircAdapt model of the heart and complete (pulmonary and systemic) circulation. The CircAdapt model allows to derive signals that mimic either sounds (from the closure/opening of valves) or motion from cardiac strains (deformation). Diseased situations, as well as interventions by means of pacing therapies, will be simulated. Results will guide optimization of sensor configuration and therapy delivery (collaboration with F9), and will thus serve as basis for biosensor development (in F5) and for an efficient pre-clinical testing (F7, also in Maastricht) and clinical evaluation (by F12).

The F7 position is dedicated to develop and investigate independent hypotheses of the electro-mechanical cardiac physiology in large animal models. This project will build and use models of synchronous and dyssynchronous heart failure and investigate therapies for resynchronization and valvular repair. These models will be used to test hypotheses as well as the usefulness of sensors, developed in other workpackages (F6, F10 and F12. Measurements will include electrophysiological mapping, echocardiography, MRI and hemodynamics.

**Qualifications**

* Must have a Master of science degree in one of the following fields: F2: electronics, computer science/informatics, medical cybernetics, mathematics or related disciplines. F7: Master of science degree in medicine, medical biology or related discipline, biomedical engineering.
* F2: Good programming knowledge / experience with at least Matlab or similar. F6: good capability to use spread sheet and/or database software.
* Knowledge and experience with data acquisition, signal processing and analysis is advantageous.
* Strong academic record with a weighted average grade of master’s or equivalent education with a grade of B or higher.
* Advantageous to have a special interest and competence within medicine or medical technology and research methods, in pre-clinical or clinical studies
* Emphasis on teamwork, innovation, being dynamic and enthusiastic as well as collaborating well with other members of a team.
* **Special rule for eligibility of ESR candidates: Early-Stage Researchers (ESRs)** shall, at the time of recruitment by the host organization, be in the first four years (*full-time equivalent research experience*) of their research careers and have not been awarded a doctoral degree. **Mobility Rule**: at the time of recruitment by the host organization, researchers must not have resided or carried out their main activity (work, studies, etc.) in the country of their host organization for more than 12 months in the 3 years immediately before the reference date. Compulsory national service and/or short stays such as holidays are not taken into account. As far as international European interest organizations or international organizations are concerned, this rule does not apply to the hosting of eligible researchers. However, the appointed researcher must not have spent more than 12 months in the 3 years immediately prior to their recruitment at the host organization.

Relevant certificates, including all grades, credits and marks and recommendation letters must be submitted along with the application. Certified copies of study credits with grades will be needed from those called to an interview.

For further information about position F2 please contact Senior Scientist Tammo Delhaas ([tammo.delhaas@maastrichtuniversity.nl)](mailto:tammo.delhaas@maastrichtuniversity.nl)) and for F7 Frits Prinzen (frits.prinzen@[maastrichtuniversity.nl)](mailto:tammo.delhaas@maastrichtuniversity.nl)).

Application deadline: 1st October 2017.