
Doctoral Networks (MSCA-DN) HORIZON – MSCA – 2022 – DN

**Fellow R5: 4D Optoacoustic tomography and optogenetic
control of cardiac arrhythmias**

Closed position

Supervisors: Prof. S. Luther and Prof. Ulrich Parlitz

Host institution: [Max-Planck-Institut für Dynamik und Selbstorganisation \(MPI\)](#),
Goettinge, Germany.

Duration: 36 months

PhD program: [Göttingen Graduate School for Neurosciences, Biophysics and
Molecular Biosciences](#)

Research group: [Research Group on Biomedical Physics](#)

Secondments (short visits) at: Universitätsmedizin Göttingen (**UMG**, Germany)

Universität Zürich (**UZH**, Switzerland) and company **iThera Medical GmbH**
(Germany).

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Objectives

The project aims to develop optogenetic feedback control of arrhythmias using advanced imaging and novel machine learning (ML) methods. Control schemes will be validated in numerical simulations and applied in experiments using intact optogenetic hearts enabling flexible real-time control strategies with different illumination patterns using fluorescence and optoacoustic imaging.

What is offered

To work within an interdisciplinary environment with a close-to-the-clinic approach, receiving training from leading experts in biomedical physics and nonlinear dynamics, in a full-time Ph.D. position for 36 months, in which living and mobility costs will be fully covered with a gross salary of 39,102.60 € per year.

Required skills

We are seeking an enthusiastic candidate that has **a strong foundation in biomedical physics, machine learning and nonlinear dynamics of excitable media**. The applicant must have **proficiency in designing and performing pre-clinical experiments (4D optoacoustic imaging, Langendorff perfusion)**, experimental biophysics, fluorescence imaging and ultrasound imaging. **Proven experience in scientific programming** (e.g., Python, C, Matlab, Julia) will be required.

Additional skills

Interdisciplinary skills, problem-solving skills, ability to work within a multidisciplinary team, good command of English, and ability to write scientific texts. In addition, it will be desirable that the candidate has effective communication skills and adaptability.