

Mitochondrial Ca²⁺ regulation in cardiac cells in health and disease

Summary

Wolfgang F. Graier, Gottfried Schatz Research Center, Molecular Biology and Biochemistry, Medical University of Graz, Austria

Supervisor:	Prof. Dr. Wolfgang Graier
Availability:	This position is available.
Offered by:	Medical University of Graz
Application deadline:	Applications are accepted between July 15, 2019 00:00 and September 15, 2019 23:59 (Europe/Zurich)

Description

Background:

Mitochondria are not only the power plants of the cell but they are also involved in multiple pivotal cellular phenomena, like the synthesis of biomolecules, energy metabolism, or the regulation of signal transduction. In cardiac cells, mitochondria are also very much engaged in the beat-to-beat delivery of ATP and the protection against arrhythmias by sheltering against hyperactivities in the local Ca²⁺ signaling (e.g. Ca²⁺ puffs).

Objectives and methodology:

In the present project, the PhD candidate will initially focus on the establishment of sub-cellular measurements of e.g. ions, ATP, metabolites, and membrane potential by genetically encoded fluorescent biosensors. Moreover, correlation microscopy of super-resolution structural illumination microscopy and transmission electron microscopy will be applied in order to verify potential differences in the mitochondrial organization within an individual cardiac cell. Molecular mechanisms of mitochondrial regulation and adaptations will be investigated and correlated with the particular location and function of each individual mitochondrion. Accordingly, the candidate should be very motivated, experienced in standard molecular biology techniques and fluorescence microscopy and understand the principles of signal transduction, ion regulation, and energy metabolism.

The PhD student will be embedded in a very interactive and highly motivated laboratory that is part of the Gottfried Schatz Research Center and will have access to cutting edge technologies to proceed her/his project. This project also includes international collaboration that offers the PhD student the opportunity to pursue a research stay abroad during her/his study.



To get more information or to apply online, visit <https://mug.glowbase.com/positions/149> or scan the the code on the left with your smartphone.