



## A very early window in Acute Myocardial Infarction using *in vivo* MR Imaging/Spectroscopy - A rat Model

Acute Myocardial Infarction (AMI) occurs when the flow of blood to the heart becomes blocked. AMI can cause tissue damage and can even be life threatening due to insufficient blood supply to the rest of the body. Many patients with diseases such as Diabetes Mellitus and Hypertension are prone to AMI.

Every year more than 10.000 people in Denmark are hospitalized with a suspected acute myocardial infarction (AMI). The first minutes of the AMI onset are very critical and a right treatment or drug invention as early as in the ambulance is essential for an effective therapeutic treatment.

The aim of this project is to explore the possibility of monitoring the very early stages in AMI, when the heart is malfunctioning due to an inadequate blood supply to itself.

### ***Material and methods***

AMI is induced in the rats following an open-chest procedure. The suture is then tightened around mid LAD (left anterior descending coronary artery) causing blood occlusion to the lower part of the left ventricle.

The animal will within seconds of the development of ischemia be placed in the MR scanner to online *in vivo* monitor the next 30 minutes of the myocardia ischemia development.

The experiment is running at the SUND NMR centre using a small animal Bruker BS 9.4 T MR scanner. Advanced MR imaging and spectroscopy technique is used to identify and characterize ischemic area and the metabolites of interest.

The candidate student will work with already developed rat myocardial infarct model and MR imaging and spectroscopy protocols in a highly interdisciplinary environment having the opportunity to collaborate with other researchers at the University of Copenhagen and at Rigshospitalet. A scholarship for the project might be possible.

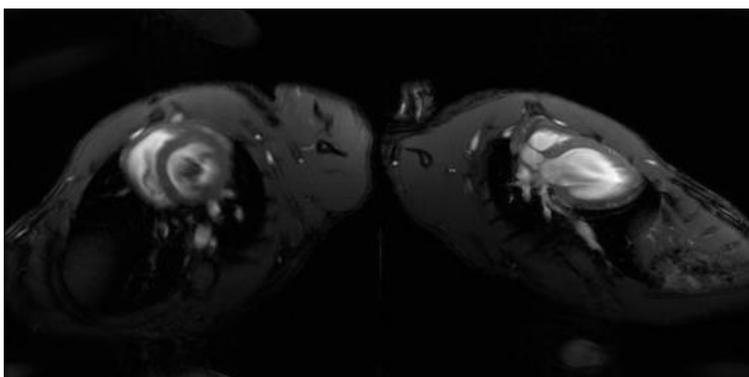


Figure1. An axial and a sagittal frame of the gated myocardial Imaging using 9.4 T MR Scanner are shown.

**Required qualifications:**

The project is suited for medical student (or equivalent) interested in research for one year. (Start of the project upon agreement)

**Responsible institution:**

Cardiovascular Research Group and Cell Metabolism Group, Department of Biomedical Sciences, SUND, UCPH.

The student will be a full member of the Cardiac Physiology Research Team ([http://bmi.ku.dk/english/research/Renal\\_and\\_Vascular\\_Research\\_Section/cardiac\\_physiology\\_laboratory](http://bmi.ku.dk/english/research/Renal_and_Vascular_Research_Section/cardiac_physiology_laboratory)), and be integrated in the MI-RISK consortium ([www.mi-risk.dk/](http://www.mi-risk.dk/))

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