

Press release

Please fill in this form and return it to graduateschoolhealth@au.dk in Word format no later than three weeks prior to your defence.

Basic information

Name: Rasmus Stilling Tougaard

Email: rstougaard@clin.au.dk Phone: +4540811383

Department of: Clinical Medicine

Main supervisor: Henrik Wiggers

Title of dissertation: Investigation of cardiac metabolism in heart failure using hyperpolarized magnetic resonance

Date for defence: 9. May 2019 at (time of day): 14:00 Place:

Konferencerummet, Hjertesygdomme, Entrance F, level 2, crosspoint F202,
Aarhus University Hospital, Palle Juul-Jensens Boulevard, 8200 Aarhus N

Press release (Danish)

Ny teknologi kan kaste lys over kompleks hjertesygdom

En ny teknologi kaldet hyperpolariseret MR kan kaste lys over vigtige aspekter af sygdommen hjertesvigt, som har forvirret forskerne i årtier, det viser et nyt ph.d.-projekt fra Aarhus Universitet, Health. Projektet er gennemført af læge Rasmus Stilling Tougaard, der forsvare det d. 9/5.

Hjertesvigt er en alvorlig og invaliderende sygdom, der plager tusindvis af danskere. På trods af nye behandlinger er prognosen stadig alvorlig. Forskere på området har længe ment at nøglen til sygdommen skal findes i den måde hjertecellerne omsætter næringsstoffer - deres metabolisme. Undersøgelser af metabolismen i det svigtende hjerte har dog vist modstridende resultater, og det er ikke lykkedes at løse gåden om hjertesvigts metabolisme på trods af stor opmærksomhed fra den videnskabelige verden. Dette kan skyldes, at de metoder der bruges til at studere metabolisme er for upålidelige og at hjertesvigt er en meget kompleks sygdom, der opfører sig forskelligt afhængigt af sygdommens stadie og hvad den udløsende årsag er.

En helt ny teknologi, hyperpolariseret MR, som nu er tilgængelig på Aarhus Universitet, kan studere metabolisme på en helt ny måde, og forventes at blive et kraftfuldt værktøj i behandlingen af bl.a. kræftsygdom. På Aarhus Universitet har man undersøgt metodens anvendelse i forskningen af hjertesvigt og resultaterne har vist sig at være lovende. I projektet har forskerne foretaget dyreforsøg for at vurdere metodens påvirkelighed af forskellige faktorer, heriblandt blodtryk og indtag af føde og hjertesvigtsmedicin. Metoden er nu godkendt til brug på mennesker på Aarhus Universitet og forskerne planlægger at udføre forsøg på hjertesvigtpatienter i en nær fremtid.

Forsvaret af ph.d.-projektet er offentligt og finder sted den 9/5 kl. 14:00 i Konferencerummet, Hjertesygdomme, Indgang F, niveau 2, krydspunkt F202, Aarhus Universitetshospital, Palle Juul-Jensens Boulevard, 8200 Aarhus N. Forsvaret gennemføres som et led i et symposium om hjertesvigt, metabolisme og hyperpolariseret MR, som findes sted fra kl. 09:30 til 17:00, samme sted. Titlen på projektet er "Investigation of cardiac metabolism in heart failure using hyperpolarized magnetic resonance". Yderligere oplysninger: Ph.d.-studerende Rasmus Stilling Tougaard, e-mail: rstougaard@clin.au.dk, tlf. 40811383.

Bedømmelsesudvalg:

Professor Craig Malloy, The University of Texas Southwestern Medical Center, Dallas, Texas, USA.

Ass. professor Oliver Rider, University of Oxford, United Kingdom.

Professor Per Løgstrup, Diabetes og Hormonsygdomme, Aarhus Universitetshospital

Press release (English)

A new technology may shed light on complex heart disease

A new technology, hyperpolarized MR, may shed light on important aspects of the disease heart failure, which has confounded researchers for decades, a new phd project from Aarhus University demonstrates. The project was carried out by Rasmus Stilling Tougaard, M.D., who is defending his dissertation on 9/5.

Heart failure is a serious and debilitating disease, which affects many thousand Danes. Despite advances in treatment, the prognosis remains poor. Researchers have long believed, that the key to heart failure lies in the manner in which heart cells metabolize available nutrients - their metabolism. Investigation into the failing heart's metabolism have nonetheless produced conflicting results and the enigma of metabolism in heart failure remains unsolved despite considerable interest from the scientific community. This may be due to unreliable available methods to study metabolism as well as the fact that heart failure is a complex disease, which behaves differently depending on the stage of the disease and its underlying cause.

A new technology, hyperpolarized MR, now available at Aarhus University, can study metabolism in new and different way, and is widely believed to become a powerful tool in the treatment of e.g. cancer. At Aarhus University, the applicability of the method in the study of heart failure has been investigated, and results are promising. In the project, the researchers conducted animal experiments to determine the method's susceptibility to various factors, such as blood pressure, and ingestion of food and heart failure medication. The method is now approved for use in humans, and the researchers are planning studies on heart failure patients in the near future.

The defence is public and takes place on 9/5 at 2 PM in Konferencerummet, Hjertesygdomme, Entrance F, level 2, crosspoint F202, Aarhus University Hospital, Palle Juul-Jensens Boulevard, 8200 Aarhus N. The defence is carried out as part of a symposium on heart failure, metabolism and hyperpolarized MR, taking place from 9:30 to 5 PM, at the same location. The title of the project is "Investigation of cardiac metabolism in heart failure using hyperpolarized magnetic resonance". For more information, please contact PhD student Rasmus Stilling Tougaard, email: rstougaard@clin.au.dk, Phone +45 4081 1383.

Assessment committee:

Professor Craig Malloy, The University of Texas Southwestern Medical Center, Dallas, Texas, USA.

Ass. professor Oliver Rider, University of Oxford, United Kingdom.

Professor Per Løgstrup, Department of Endocrinology and Metabolism, Aarhus University Hospital

Permission

By sending in this form:

- I hereby grant permission to publish the above Danish and English press releases.
- I confirm that I have been informed that any applicable inventions shall be treated confidentially and shall under no circumstances whatsoever be published, presented or mentioned prior to submission of a patent application, and that I have an obligation to inform my head of department and the university's Patents Committee if I believe I have made an invention in connection with my work. I also confirm that I am not aware that publication violates any other possible holders of a copyright.