Press release

Basic information

Name: Christopher J. Bailey Email: cjb@cfin.au.dk Phone: 26 74 99 27

Department of: Clinical Medicine

Main supervisor: Prof. Albert Gjedde

Title of dissertation: Interpretation of BOLD fMRI signals: lessons from the visual stimulation of anaesthetised rats

Date for defence: 22 March 2019 at (time of day): 2 pm Place: Merete Barker Auditorium

Press release (Danish)

Fortolkning af BOLD fMRI målinger

Funktionel magnetisk resonans billeddannelse (fMRI) benyttes hos mennesker og forsøgsdyr til at måle ændringer af blodets gennemstrømning af hjernen, og dets afiltning grundet hjernevævets optagelse af ilt—dette kaldes BOLD fMRI. Forsøgene i afhandlingen er motiveret af et behov for yderligere at afdække, hvordan arbejde udført af neuronale netværk afspejler sig i BOLD signalet, en proces kendt som neurovaskulær kobling. Afhandlingen introducerer gnaverens visuelle system som en yderst velegnet præklinisk model til undersøgelser af neurovaskulær og neurometabolsk kobling. Resultaterne understreger behovet for yderligere udforskning af dette emne, inden fMRI kan anvendes som en diagnostisk metode hos patientpopulationer, hvor neuroner eller vaskulatur/metabolisme muligvis ikke fungerer, som de gør hos raske mennesker. Et nyt ph.d.-projekt fra Aarhus Universitet, Health. Projektet er gennemført af Christopher Bailey, der forsvarer det d. 22/3 2019.

Forsvaret af ph.d.-projektet er offentligt og finder sted den 22/3 2019 kl. 14 i Merete Barker Auditorium, Aarhus Universitet, Bartholins Allé 3, 8000 Aarhus C. Titlen på projektet er ”Interpretation of BOLD fMRI signals: lessons from the visual stimulation of anaesthetised rats”. Yderligere oplysninger: Ph.d.-studerende Christopher Bailey, e-mail: cjb@cfin.au.dk, tlf. 26749927.

Bedømmelsesudvalg:

Lektor Mai Marie Holm (formand), Institut for Biomedicin, Aarhus Universitet
Principal Investigator Dr. Zhifeng Liang, Institute of Neuroscience, Chinese Academy of Sciences, Shanghai, Kina
Klinisk Professor Troels Wesenbjerg Kjær, Neurologisk Afdeling, Sjællands Universitetshospital og Institut for Klinisk Medicin, Københavns Universitet

Press release (English)

Interpretation of BOLD fMRI signals

Using blood oxygenation level-dependent (BOLD) functional magnetic resonance imaging (fMRI), researchers can non-invasively monitor changes in blood flow and in tissue oxygen extraction within the brain of human and animal subjects while they perform an active task or merely ‘rest’. The studies presented in the dissertation are motivated by the need to further elucidate the properties of neurovascular coupling, *i.e.*, how and to what extent the BOLD signal reflects the work being performed by networks of neurons. The dissertation introduces the rodent visual system as a highly suitable pre-clinical model for studies of the detailed nature of neurovascular and neurometabolic coupling. The results presented emphasise the need for targeted research into this topic as a prerequisite for the application of fMRI to human patient populations, in which neuronal processing or vascular/metabolic responses, or both, may be compromised. The project was carried out by Christopher Bailey, who is defending his dissertation on 22/3 2019.

The defence is public and takes place on 22/3 2019 at 2 pm in Merete Barker Auditorium, Aarhus University, Bartholins Allé 3, 8000 Aarhus C. The title of the project is “Interpretation of BOLD fMRI signals: lessons from the visual stimulation of anaesthetised rats”. For more information, please contact PhD student Christopher Bailey, email: cjb@cfin.au.dk, Phone +45 2674 9927.

Assessment committee:

Associate Professor Mai Marie Holm (chairman), Department of Biomedicine, Aarhus University
Principal Investigator Dr. Zhifeng Liang, Institute of Neuroscience, Chinese Academy of Sciences Shanghai, China
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