

Quantitative 3D imaging

Om kurset

Teachers Roskilde University: Pia Nyeng

Other: invited guest speakers.

Uddannelse ph.d.
National_online Kurset vises på den nationale database
Undervisningssprog English
Vært Ph.d.-skolen for Naturvidenskab og Miljø

Deadline for registration October 15, 2022

Minimum number of participants: 10

Tilmelding Maximum number of participants: 20

At the home page of Danish Diabetes Academy www.danishdiabetesacademy.dk under 'Events'

ECTS 5 ECTS

Pass/fail based on attendance and one written assignment with oral presentation.

Deltagelseskrav for opnåelse af ECTS Preparation: 73 hours (reading, online tutorial and preparation of presentation)
Attendance: 32 hours (4x 8 hours) Analyzing data, writing and presenting report: 30 hours
A total of 135 hours

Eksterne samarbejdspartnere Danish Diabetes Academy (DDA) and the biotech company Gubra

Evaluering Pass/fail based on attendance and one written assignment with oral presentation.

The course is designed for PhD students interested in 3D imaging and quantitative analysis of biomedical images. Students with PhD projects requiring confocal or light sheet imaging and/or image analysis will be prioritized.

Forudsætninger A basic knowledge of biomedical sciences is a prerequisite, at a level corresponding to Danish graduates within biology, molecular biology, biochemistry, biotechnology, molecular medicine, veterinary medicine, environmental sciences, nutrition, dentistry and similar fields with relations to Life Science. PhD students within health sciences (i.e.MDs) would also qualify.

Previous experience with basic light microscopy and fluorescence microscopy will be an advantage.

To introduce the use of 3D confocal and light sheet imaging to answer basic and pre-clinical research questions in a quantitative manner, and teach tools for quantitative imaging analysis

The course includes lectures, inspirational talks and demo workshops in microscopy and image analysis. The format includes 4 days on-campus teaching and workshops and a post-course assignment and online presentation seminar.

Students are expected to read provided material, complete an image analysis tutorial and prepare a 2-5 minute presentation of their PhD project in preparation for the course. During the 4 days on-campus course students will be introduced to different 3D bioimaging modalities and learn how to choose the right instrument and analysis methods for their research question. Inspirational talks by leading scientists in exploratory biomedical research, medical imaging, corporate preclinical development, and AI based image analysis will illustrate different implementations of 3D imaging and analysis.

Indhold

Students will have a choice between two microscopy demo workshops with some possibility for hands-on operation: Light sheet microscopy (Miltényi's UltraMicroscope Blaze) or confocal microscopy (Olympus FV1200).

During the data analysis workshop we will introduce the open-source image analysis software ImageJ/Fiji and the commercial software Imaris, and assist students with setting up their own analysis pipeline in small groups. Students will learn how to preprocess, render, and segment images. Students already in the possession of 3D imaging data will be able to get started on the analysis of own data. Students without data will be provided with image data. Within one week after the course, students need to submit a written report presenting the analysis pipeline and results. The course will conclude with oral presentations in an online session.

Kursusdage

Monday November 21, Tuesday November 22, Wednesday November 23 and Thursday November 24, 2022

Day 1: Student presentations, introduction to 3D quantitative imaging, inspirational scientific talks on quantitative imaging in biomedical research, dinner and networking

Day 2: Microscopy demo workshops, practical implementation of quantitative imaging and analysis, inspirational scientific talk on AI assisted image analysis, dinner and networking

Kursusform

Day 3: Image analysis workshop, dinner and networking

Day 4: Image analysis workshop continued, evaluating published imaging results, dinner and goodbye

Online presentation seminar

Address: Roskilde University, Department of Science and Environment, Universitetsvej 1, Building 28, Room number 28B.0-05 (lille teori), DK-4000 Roskilde, Denmark.

Maksimum antal deltagere 20

Pris PhD students must register themselves at the Danish Diabetes Academy (which is free).
www.danishdiabetesacademy.dk

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