Description for

SDC-Yanqihu 2019 Neuroscience-Challenge PhD-Course.

Module details
Brain information processing and behavior – BIB (3.6 ECTS)

Time frame
November 6-10, 2019. Course can be attended anytime during PhD-thesis work.

Module coordinator team
Chris Bailey, MSc, PhD, Center of Functionally Integrative Neuroscience, Department of Clinical Medicine, Aarhus University. (cjb@cfin.au.dk)

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Aim
The objectives of this course are 1) to give the student an overview of cutting-edge approaches for the study of neural function, brain information processing and behavior, and 2) to give the student the opportunity to get acquainted with international experts in these scientific fields. The format of the Course aims at facilitating scientific interactions between the international speakers and the participants.

This course provides an overview of current approaches to the study of the nervous system. Modern neuroscience is experiencing a very rapid expansion of the palette of methods for large-scale analysis of molecules, cells and neural networks. Examples of these include gene expression, proteomics and connectomics. At the same time, the physiological analysis of single molecules, cells and behavior continue apace. All of these approaches eventually link to the explanation of specific behaviors and overall principles for neural information processing. This symposium will provide an intense environment for interactions between students and an international panel of speakers, with the aim of fostering novel ideas, generating technical developments and laying the ground for future collaborations.

The symposium is targeted at students in fields such as neurobiology, omics, life science engineering, models of neurological diseases, and human brain imaging (fMRI, PET).

Number of participants: up to 25, seats allocated on a first-come, first-served basis.

Venue: Sino-Danish Center Building, Yanqihu UCAS Campus, Beijing.

Accommodation and travel: Accommodation during the course is free and there are travel grants available.

Learning objectives

	Learning objectives (Listed as in New Danish qualifications framework for higher education)
Knowledge	At the end of the course the student should be able to: • Identify molecular, genetic and physiological methods for measuring and manipulating brain function and behavior • Formulate relationships between the molecular, dendritic, cellular and circuit organization and physiology of the CNS, on the one hand, and the behavioral requirements and evolutionary adaptations of the organism, on the other. • Contrasts strengths and weaknesses of different animal models of human disease on the basis of their physiological and pathophysiological relevance, and formulate criteria for selecting the best animal model(s).
Skills	During the course the student will obtain the ability to • Evaluate results derived from experiments performed in animals and humans in neuroscience research. • Argue for the relative merits of the above methods, and suggest new developments of methods and new physiological experiments • Identify relevant animal and human models and experimental approaches to address a particular neuroscientific question • Find, evaluate and present relevant current scientific literature
Competencies	By the end of the course the student has acquired the capacity to: • Relate modern molecular, cellular and behavior-testing methods to the analysis of neural information processing and brain function in health and disease. • Perform transdisciplinary scientific projects using a variety of physiological methods for the analysis of brain function • Evaluate own and general knowledge and understanding of brain function, and indicate avenues for further improvements.

Recommended student requirements

Knowledge and understanding of neuroscience at a level *en par* with a Master's degree.

Module structure and teaching approach

Each subject will be covered by international scientists presenting their own research, followed by Question and Answer sessions led by students organized in study groups.

Literature
Current international original scientific papers and reviews.

Assignment and exam
None.