



From phrenology to the study of brain integration

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Functional specialisation — the idea that different parts of the brain serve different functions — represented a brilliant insight that sparked interest in the study of the brain in the early 19th century and was the driving force in development of modern brain imaging methods and tools in late 20th century. While many studies have confirmed functional specialisation as an important principle of organisation in the human brain, it is important to recognise that disparate brain regions do not work in isolation, but rather interact in processing the relevant information. The ability to flexibly integrate information from various brain regions is believed to underly fluid intelligence, whereas breakdown in connectivity among brain regions has been proposed as a probable cause of cognitive dysfunctions in a number of disorders. In recent years we are witnessing a fundamental shift in brain imaging studies towards the study of functional integration as a complementary principle of brain organisation. Employing technical, theoretical and analytical advances, functional connectivity studies have provided us with an informative insight into the organisation of the brain, its ability to integrate information as well as possible mechanisms of cognitive dysfunctions in brain diseases. The aim of the talk is to review the background, methods and key insights offered by functional connectivity studies today.

Using functional connectivity to understand emotion, cognition and neuropsychiatric disease

Alan Antičević, PhD
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Since the development of functional magnetic resonance imaging (fMRI) - a tool that measures blood flow in the brain as a proxy for neural activity - we have substantially advanced our understanding of neural function in both health and disease. One specific and evolving application of fMRI has been to investigate functioning of distributed circuits in the brain and how they malfunction in neuropsychiatric conditions. In this talk I will first present results from a number of studies investigating distributed functional circuits during both cognition and emotion in healthy adults. I will present the argument that even across cognitive tasks and conditions, the distributed circuits are not static but changing as a function of cognitive/emotional demands. Next, I will outline two recent studies where we employed functional connectivity to understand neuropsychiatric disease - namely schizophrenia. One aim of this talk to elucidate that functional relationships between distributed circuits in the brain are dependent of the nature of the function that the brain is engaged in. Furthermore, this talk will focus on novel work using functional connectivity and how it can advance our understanding of the abnormalities underlying schizophrenia.

Moderator: izred. prof. dr. **Maja Bresjanac**

Čas: **15. junij, 18:00 - 20:00**

Kraj: **Seminar Nevološke klinike**, Zaloška 2, Ljubljana

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SINAPSINI NEVROZNAJSTVENI SEMINARJI ...

so redna strokovna srečanja, na katerih svoje delo predstavljajo že uveljavljeni strokovnjaki, na kratko pa o aktualnih raziskavah spregovorijo tudi raziskovalci, ki so znanstveno pot začeli šele pred kratkim.

Seminarji ponujajo pregled zanimivih raziskovalnih področij, predstavljajo aktualne nevroznanstvene dosežke iz Slovenije in tujine ter odpirajo vpogled v tekoče raziskovalne projekte v Sloveniji.

Seminarji so namenjeni širši zainteresirani strokovni javnosti in spodbujanju novih sodelovanj. Za usmerjanje in spodbujanje razprave po predavanjih skrbi vabljeni strokovnjak - moderator.

Kadar nastopajo tuji predavatelji, potekajo seminarji v angleškem jeziku.

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