

Brain Mapping Center SEMINAR SERIES

Sponsored by the UCLA Brain Mapping Center Faculty

The focus of these talks is on advancing the use of brain mapping methods in neuroscience with an emphasis on contemporary issues of neuroplasticity, neurodevelopment, and biomarker development in neuropsychiatric disease.

Hosted By: Roger Woods, MD, Neurology, UCLA

BIL&GIN, a database for investigating human brain and behaviour lateralization. Design and preliminary findings.



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Hemispheric specialization (HS) is a fundamental characteristic of brain large-scale organization, the underpinnings and behavioural correlates of which are still largely unknown. Humans, in particular, exhibit specific prominent characteristics related to HS, including a high prevalence of right-handedness (RH) and a capacity to acquire language, a function claimed to be predominantly supported by the left hemisphere. Similar to other phenotypes, HS is characterized by between-subject variability as evidenced by the presence of normal individuals having ambilateral or even right-hemisphere dominant language representation (Pujol et al., 1999). But the factors explaining this variability are still to be discovered and the relationship between these two prominent characteristics remains under debate (Mazoyer et al., 2014). HS also exists, to various degrees, for other cognitive functions in the motor, visuo-spatial, face, non-verbal communication and emotional processing domains. But the knowledge on their intensities and mutual relationships is sparse and scattered. Advanced anatomical and functional neuroimaging methods coupled to databasing offer strong opportunities for making progress on HS understanding. The BIL&GIN (for Brain Imaging of Lateralization by the Groupe d'Imagerie Neurofonctionnelle) is, to our knowledge, the first endeavour aiming at an organized and multi-dimensional exploration of the behavioural and brain correlates of hemispheric specialization, and of the factors that control their between-subject variability. In this seminar, I will describe the design and content of the BIL&GIN that gathers genetic, behavioural, cognitive, neuroanatomical, and neurofunctional data, in a sample of 453 normal adults, enriched in left-handers (LH). I will also report on preliminary findings on how manual lateralization and hemispheric functional lateralization interplay in the language, motor and visual domains.

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**Neuroscience Research Building (NRB 132)
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