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# BRAIN & COGNITION SEMINAR

## Gilles Vandewalle

**Tuesday**  
**May 10, 2022**  
**12:15 to 13:15**

(University of Liège, Belgium)

“Multimodal investigation of the associations between sleep and Alzheimer's disease neuropathology in healthy individuals”

**Campus Biotech**  
**Auditorium H8-01&**  
**Zoom**

*Visio conférences*

**Zoom :**

<https://unige.zoom.us/j/68279722177?pwd=VEdGMDF2SzB1Z2JldUxPcWtJeVJqZz09>

**Meeting ID: 682 7972**  
**2177**

HUG

("salle visio") Salle des conférences  
de Neurologie et de Neurochirurgie  
2<sup>nd</sup> floor 2- 7A-2-744

*Abstract: Alterations in sleep are hallmarks of the ageing process and emerges as risk factors for Alzheimer's disease (AD). While the fine-tuned coalescence of sleep microstructure elements may influence age-related cognitive trajectories, its association with AD-related processes is not fully established. We investigated whether sleep arousals and the coupling of spindles and slow waves, key elements of sleep microstructure, are associated with early amyloid-beta (A $\beta$ ) brain burden, hallmark of AD neuropathology, and cognitive change at 2 years in 100 late-midlife healthy individuals. We first found that arousals interrupting sleep continuity were positively linked to A $\beta$  burden, while, by contrast, the more prevalent arousals upholding sleep continuity were associated with lower A $\beta$  burden and better cognition. We further found that young-like co-occurrence of spindles and slow-depolarisation slow waves is associated to lower burden of A $\beta$  over the medial prefrontal cortex and is predictive of memory decline at 2-year follow-up. We provide empirical evidence that arousals are diverse and differently associated with early AD-related neuropathology and cognition. We further show the altered coupling of sleep microstructure elements that are key to its mnemonic functions may contribute to poorer brain and cognitive trajectories. The presentation will end with preliminary data show that activity of the locus coeruleus, essential to sleep and showing some of the earliest signs of AD-related pathological processes, is associated with sleep quality. These preliminary findings are the first of a project aimed at link sleep and AD through the locus coeruleus.*

Host : Prof. Patrik VUILLEUMIER

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