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TEMASEK LIFESCIENCES LABORATORY

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18 April 2024 (Thur), 11am

Auditorium (Level 1)

Hosted by: Dr YU Fengwei

Targeting dementia by tackling Tau

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Synaptic dysfunction is an early pathological feature of neurodegenerative diseases associated with Tau, including Alzheimer's disease. Interfering with early synaptic dysfunction may be therapeutically beneficial to prevent cognitive decline and disease progression, but the mechanisms underlying synaptic defects associated with Tau are unclear. In disease conditions in patients and in mouse and fly Tau-disease-models, the protein mislocalizes into pre- and postsynaptic compartments and we show that presynaptic Tau induces synaptic defects. I will present work showing that interfering with this synaptic function of Tau prevents Tau-induced synaptic loss and cognitive decline and discuss future plans on how this same process is also used under normal conditions to sculpt and protect the brain. Our work not only identifies new presynaptic roles for Tau but it also opens a new therapeutic window to tackle early synaptic dysfunction and cognitive decline in neurodegenerative disease

Prof Patrik Verstreken studied Bioengineering at the university of Brussels and moved in 1998 to the medical center in Houston Tx for his PhD and postdoc under the mentorship of Hugo Bellen. He joined the faculty at KU Leuven and became VIB group leader in 2007, and director of the VIB-KU Leuven center for Brain & Disease research in 2017. Patrik's work has been recognized by several honors, including the AstraZeneca Award, the IBRO-Kemali prize in Neuroscience and he is an EMBO member. With support of 4 ERC grants, including a recent Advanced Grant, Patrik's lab investigates the underlying causes of neurodegenerative diseases including Parkinson's disease and dementia, and builds new tools and insight to counteract disease-induced dysfunction. Patrik authored numerous publications, patents and he is the founder of a biotech startup.

Recent Publications:

1. Praschberger R, Kuenen S, Schoovaert N, Kaempf N, Singh J, Janssens J, Swerts J, Nachman E, Calatauyd C, Aerts S, Poovatinghal S, Verstreken P (2023). Neuronal identity defines α-synuclein and tau toxicity. Neuron. 111(10):1577-1590.e11.
2. Bademosi AT, Decet M, Kuenen S, Calatayud C, Swerts J, Gallego SF, Schoovaerts N, Karamanou S, Louros N, Martin E, Sibarita J-B, Vints K, Gounko N, Meunier F, Economou A, Versées W, Rousseau F, Schymkowitz J, Soukup S-F, Verstreken P (2023). EndophilinA-dependent coupling between activity-induced calcium influx and synaptic autophagy is disrupted by a Parkinson-risk mutation. Neuron. S0896-6273(23)00079-X.
3. Balusu S, Praschberger R, Lauwers E, De Strooper B, Verstreken P (2023). Neurodegeneration cell per cell. Neuron. S0896-6273(23)00064-8.