NETHERLANDS INSTITUTE FOR NEUROSCIENCE
Master the mind

Neuroscience Symposium
Friday, 8 May 2020, 16.00 hrs
Netherlands Institute for Neuroscience, Meibergdreef 47, 1105 BA Amsterdam
Colloquium Room; host Eus van Someren e.van.someren@nin.knaw.nl

Optogenetic control of arousal state transitions

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Abstract
The arousal construct underlies a spectrum of behaviors that include sleep, exploration, feeding, sexual activity and adaptive stress. Pathological arousal conditions include stress, anxiety disorders, and addiction. In the past few years we have used optogenetics to interrogate neuronal circuits underlying transitions between arousal states. In particular, I will talk about how the hypocretin system, makes the decisions about when to mark the transition between sleep and wakefulness. The dynamics between arousal state transitions are also modulated by norepinephrine neurons in the locus coeruleus, histaminergic neurons in the hypothalamus, dopaminergic neurons in the mesencephalon and cholinergic neurons in the basal forebrain. I will talk about an attempt to model sleep/wake dynamics using probabilistic estimates of neurotransmitter function based on optogenetic stimulations. Examples of dysfunctional arousal circuits in the aging brain will also be presented and discussed.

Followed by drinks