

Thursday, January 11th
12h15, Petit Auditoire

"Neural circuits
of addiction"



Prof. Christian Lüscher

Université de Genève
Département des neuro-
sciences fondamentales
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CMU
Genève, Switzerland



Invited by
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dnf Seminar

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Abstract

I may talk I will discuss a model of addiction based on dopamine neuron self stimulation. I will argue that such reinforcement can go all the way to compulsion despite negative consequences. We will explore the neural mechanisms engaged in this behaviour and focus on differences between mice sensitive of a punishment versus those that are resistant. Manipulating the relevant circuits can help to establish links of causality and guide therapeutic approaches as well as research on the predisposing factors.

Biosketch

Christian Lüscher is professor of neuroscience and a attending neurologist at the University of Geneva. His research focuses on the neural basis of drug addiction.

After training as a MD in Lausanne and Berne, he was a postdoctoral fellow at the University of California San Francisco from 1996-1999. With a career development award of the Swiss National Science Foundation he established his lab in Geneva, where he was appointed associate (2003) and the full professor (2009).

His work have led to a classification of addictive drugs based on the cellular mechanism engaged by each substance to increase dopamine in the reward center of the brain. He has systematically tested the hypothesis that altered synaptic transmission evoked by addictive drugs causes adaptive behaviors, such as locomotor sensitisation or cue associated seeking behavior.

More recently he has provided a comprehensive description of the emerging circuit model of drug addiction. He uses optogenetic interventions to erase drug-adaptive behavior and has published several publications with stringent proofs of principle in rodents models, Last but not least he has translated this knowledge into a novel deep brain stimulation (DBS) protocol that was successful in mice and is now tested in other species. The idea of optogenetically inspired DBS has been the focus of two international conferences.

Christian Lüscher has published 60+ original articles, many in top journals such as Nature, Science or Neuron. His is a member of the senate of the Swiss Academy of Medical Sciences and the laureate of several prizes, including the Ott Prize (2017), the Koetzer Prize (2016) and the Cloëtta Prize (2010). He serves as a reviewing editor for Science and eNeuro.