

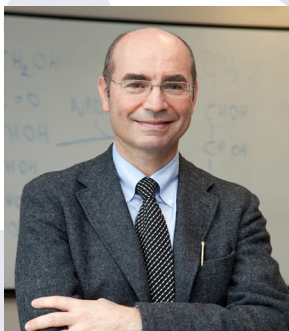
Thu 9. May 2019  
Time: 11:00 h

Institute of Biochemistry  
and Molecular Medicine  
(IBMM)

Seminar Room  
Gertrud-Woker-Str. 5,  
3012 Bern

Everybody is welcome

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This lecture is hosted by  
Prof. Jürg Gertsch  
(IBMM).

# NCCR TransCure Lecture in Drug Design by Mauro Maccarrone

## Endocannabinoids, Neuroinflammation and Beyond

Cannabis extracts have been used for centuries, but the main active principle  $\Delta^9$ -tetrahydrocannabinol (THC) was identified about 50 years ago. Yet, it is only 25 years ago that the first endogenous ligand of the same receptors engaged by the cannabis agents was discovered. This "endocannabinoid (eCB)" was identified as *N*-arachidonylethanolamine (or anandamide, AEA), and was shown to have several receptors, metabolic enzymes and transporters that altogether drive its biological activity. Shortly afterwards, a second eCB was identified as 2-arachidonoylglycerol (2-AG), and was shown to be under the metabolic control of additional enzymes. To date, eCBs have been demonstrated to reduce pain and inflammation, to modulate energetic homeostasis and appetite, and to have anticancer, anxiolytic, and neuroprotective effects through type-1 and/or type-2 cannabinoid receptors ( $CB_1$  and  $CB_2$ ), as well as via stimulation of transient receptor potential vanilloid channels, peroxisome proliferator-activated receptors, and yet additional targets. In addition, their biotransformation is catalysed by lipoxygenases or cyclooxygenase-2. Here, I shall discuss the latest advances about eCB signalling in neuroinflammation, adding a further level of complexity by addressing the possible cross-talk of eCBs with newly discovered bioactive lipids collectively termed "Specialized Pro-resolving lipid Mediators". The latter entities include E-series resolvins, D-series resolvins and maresins, and seem to be of paramount importance to drive resolution of acute and chronic inflammation.