

«The Endocannabinoid system»

Prof. Alexandros Makriyannis

Northeastern University, Boston, MA

Alexandros Makriyannis is the George Behrakis Chair of Pharmaceutical Biotechnology at Northeastern University, Boston, MA, and is the Founder and Director of the Center for Drug Discovery. He is a highly successful medicinal chemist and is well recognized nationally and internationally for his important contributions in endocannabinoid research. This relatively newly characterized biochemical system, where he played an important role in its discovery, regulates many physiological functions including pain, neuroprotection, addiction, immunomodulation and cognition. Over the past four decades, his laboratory has designed and synthesized some of the key pharmacological endocannabinoid probes that are widely used and serve as leads for the development of new medications. He has also made important contributions aimed at understanding the molecular basis of cannabinoid activity. Some of his compounds are in advanced preclinical trials for the treatment of metabolic disorders and liver function, neuropathic pain, addiction and neurodegenerative diseases.

This talk will summarize some recent research highlights include the x-ray crystal structures of agonist and antagonist bound CB1 receptor as well as the crystal structure or cryo-EM structure of CB2 receptor in both its active and inactive form. The CDD has developed an extensive library of cannabinoid agonists including the development of more drug-like cannabinoids with variable durations of actions as well as the development of the first stable endocannabinoid analogs. Lastly, the Makriyannis lab was able to develop the first CB1 neutral antagonist which is currently in advanced preclinical trials for the treatment of addiction.