

COLLOQUIA IN MEMBRANE TRANSPORT

Venue: Medical University Vienna, Center for Physiology and Pharmacology,

Department of Physiology,

Schwarzspanierstraße 17, 1090 Vienna, **Small Lecture Hall Physiology**

(Harald Sitte, Tel.: (01) 40160 31323, harald.sitte@meduniwien.ac.at;

Daniela Pollak, Tel.: 40160 31270, Daniela.pollak@meduniwien.ac.at)

Friday 9.11.2012 14:00 c.t. (host: Daniela Pollak)

Department
Charles B.G. Murphy Professor of Psychiatry,
Neurobiology and Pharmacology
Yale School of Medicine
333 Cedar Street
New Haven, CT 06510

"Role of nicotinic acetylcholine receptors in circuits underlying complex behaviors in brain"

Marina Picciotto (marina.picciotto@yale.edu)

Abstract:

Nicotinic acetylcholine receptors (nAChRs) are critical mediators of the effects of ACh in the brain. Although we know a lot about the role of nAChRs in circuits underlying reward and addiction, nAChRs are expressed throughout the brain and are important for many behavioral processes, including those related to affect and appetite. Importantly, there are differences in the nicotinic receptor subtypes, the role of receptor activation and inactivation and the brain areas responsible for distinct behavioral functions of nAChRs. For example, both activation and desensitization of high affinity alpha4/beta2* nAChRs and activation of presynaptic alpha7 nAChRs in the ventral tegmental area is necessary for nicotine reward. In contrast, inhibition of acetylcholine signaling through beta2* nAChRs appears to be antidepressant-like and activation of beta4* nAChRs in the arcuate nucleus of the hypothalamus can decrease food intake and body weight. Overall, the identification of these diverse central effects of nAChRs provides new avenues for understanding the role of these receptors in brain function, and may contribute to the development of novel medications for addiction, depression and obesity.