Kmieć *et al.: Intrinsic Activity*, 2019; **7**(Suppl.1):A3.28
doi:10.25006/IA.7.S1-A3.28
published online: 11 September 2019

INTRINSIC ACTIVITY

Joint Meeting of the Austrian Neuroscience Association (16th ANA Meeting) and the Austrian Pharmacological Society (25th Scientific Symposium of APHAR)

Innsbruck, 25–27 September 2019

MEETING ABSTRACT

A3.28

Functional neuroanatomy of prodynorphin

Iwona KMIEĆ[1,*], Mario MIETZSCH[2], Luca ZANGRANDI[1], Lill ANDERSEN[3], Thomas RÜLICKE[3], Gerald ZERNIG[4], Regine HEILBRONN[2] and Christoph SCHWARZER[1]

[1]Department of Pharmacology, Medical University of Innsbruck, Austria; [2]Institute of Virology, Charité – Universitätsmedizin Berlin, Germany; [3]Institute of Laboratory Animal Science, University of Veterinary Medicine, Vienna, Austria; [4]Experimental Psychiatry Unit, Department of Psychiatry I, Medical University of Innsbruck, Austria

Background: Dynorphins (DYN) and κ opioid receptors (KOR) are abundantly expressed throughout limbic brain areas and were shown to be involved in stress-induced behavioural alterations, including increased aversion, dysphoria, and anxiety. In line with this, the DYN/KOR system is implicated in the pathophysiology of depression and addiction. Understanding the highly complex organization of the DYN/KOR system is a prerequisite for potential therapeutic intervention.

Methods: To gain deeper insight into the functional neuroanatomy of the DYN/KOR system, we implemented independent, yet complementary strategies based on restricted prodynorphin (PDYN) knockout or PDYN re-expression within the extended amygdala. Such mice were tested in paradigms related to anxiety and stress-coping behaviour and cocaine-induced conditioned place preference.

Results: Stress-induced reinstatement of the conditioned place-preference was observed in wild-type animals and several control groups. By contrast, no reinstatement was observed in animals deficient for PDYN expressed in the central amygdala, the bed nucleus of the stria terminalis or neurokinin B (NKB)-expressing neurons. Still, these animals re-expressed place preference upon cocaine challenge. Interestingly, no differences in trait anxiety or stress coping behaviour was observed applying standard tests.

Discussion: Our findings suggest a critical involvement of specific populations of dynorphinergic neurons in stress-induced relapse of drug abuse.

Acknowledgements: Austrian Science Fund FWF (SPIN W1206-B18)

Keywords: dynorphins – extended amygdala – stress – addiction

*Corresponding author e-mail: *iwona.kmiec@i-med.ac.at*