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### MEETING ABSTRACT

#### A4.11

##### Functional neuroanatomy of prodynorphin

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**Background:** Dynorphins (Dyn) and  $\kappa$  opioid receptors (KOR) are abundantly expressed throughout limbic brain areas and were shown to be involved in the regulation of anxiety and stress control. Moreover, the Dyn/KOR system is implicated in the pathophysiology of depression, anxiety and addiction. However, the organization of the Dyn/KOR system is highly complex. Understanding and potentially interfering with this complex system to target specific functions depends on a detailed understanding of specific functional roles of individual dynorphinergic neurons as well as neuronal population.

**Methods:** In order to investigate the specific functional implication of distinct dynorphinergic projections in emotional control, we implemented independent, yet complementary strategies. based on restricted prodynorphin (pDyn) knock-out—achieved so far in the bed nucleus of the stria terminalis (BNST), the central nucleus of the amygdala (CeA) or neurokinin B (NKB)-expressing cells—or re-expression (BNST and CeA). These mice underwent behavioural testing related to anxiety (open-field, elevated plus maze, light–dark choice test) and stress-coping behaviour (tail suspension test). We also employed the cocaine-induced conditioned place preference paradigm to investigate the extinction and stress-induced reinstatement of the place-conditioned response.

**Results:** Behavioural tests related to anxiety and stress-coping did not show any significant differences between the investigated groups. By contrast, behaviour in the cocaine-induced conditioned place preference paradigm was altered. Mice with deletion of pDyn in NKB-positive cells displayed no stress-induced reinstatement, whereas control mice did.

**Discussion:** Our data so far revealed first indications for regional differences in Dyn functions. These are in line with the known role of Dyn in fear and anxiety and stress control. Further studies on the role of Dyn in specific brain areas in addictive process and fear extinction are in progress.

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