Trans-generational effects of maternal exposure to social stress on anxiety-like behaviour in rats

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particularly sensitive to the early environment, with adverse caregiving affecting the trajectory of later HPA activity. The current study will examine parenting behaviors impacted by IPC that are critical for proper infant biobehavioral regulation across caregiving contexts.

**Methods:** Couples with a 6 month old infant (n = 120) were randomized into a positive or conflict marital discussion followed by two mother-infant interactions, a freestyle session, and a post-stressor soothing episode. Infant saliva samples were collected in order to index cortisol's baseline, reactivity, and recovery to interactions. Using this dataset we examined the impact of maternal intrusion and detachment on infant biobehavioral regulation during mother-infant interactions.

**Results:** In the conflict condition, mothers expressed higher levels of withdrawal and hostility, which predicted later problematic parenting with her infant. In turn, problematic parenting influenced infant mood, and cortisol reactivity and recovery. During the play interaction, maternal detachment had the most potent effect on infant mood and physiology while following exposure to a stressor, maternal intrusion was more strongly related to infant's physiological recovery.

**Conclusion:** Findings illustrate the role of problematic parenting as a mechanism of spillover between interparental conflict and infant physiological and emotional regulation.

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**Posters**

**Abstracts considered for Poster Prize**

**PO1**

Examining the prospective relationship between anxiety symptoms and salivary immunoglobulin A levels from childhood to late adolescence: Evidence for a “vicious cycle”

Denise Ma*, Lisa Serbin, Dale Stack
Concordia University, Montreal, Quebec, Canada

Stress has been shown to have adverse effects on immunity, hindering the immune system's ability to effectively defend against foreign antigens. In children and adolescents, the experiences of psychological symptoms, in particular anxiety, can be extremely stressful. These symptoms disrupt the homeostasis of the system, resulting in distress and negative physical health outcomes. Little is known about transfer of this trait to the next generation. Here we examined whether the anxiogenic effects of PNS exposure and the associated alterations in central gene expression are transmitted to the second filial generation (F2) via the maternal line. Pregnant rats were exposed to social stress for during late pregnancy. To generate the F2 rats, adult PNS females were paired with control males. Anxiety-like behaviour in the adult F2 offspring was investigated using the light-dark box (LDB) and elevated plus maze (EPM). Differences in mRNA expression for corticotropin releasing hormone (Crh) and its receptors (Cthr1 and Cthr2) in the amygdala were analysed using situ hybridization. F2 males exhibited significantly greater anxiety-like behaviour in the LDB and EPM compared with control males. There was no difference in anxiety-like behaviour between control and F2 females during metestrus/diestrus. At proestrus/estrus, control females displayed a reduction in anxiety-like behaviour, but this effect was not observed in the F2 females. Crh mRNA expression was significantly greater in the central nucleus of the amygdala in F2 males compared with controls. Moreover, Cthr1 mRNA expression was significantly increased, whereas Cthr2 was significantly decreased in discrete regions of the amygdala in F2 males compared with controls. However there were no differences in Cthr1 and Cthr2 mRNA expression in the females. In conclusion, PNS effects can be transferred to the F2 generation in a sex-dependent manner.

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**PO2**

Trans-generational effects of maternal exposure to social stress on anxiety-like behaviour in rats

Natalia Grundwald*, Paula Brunton
The University of Edinburgh, Edinburgh, UK

Prenatal Stress (PNS) exposure is associated with increased anxiety-like behaviour in the first filial generation (F1). Little is known about transfer of this trait to the next generation. Here we examined whether the anxiogenic effects of PNS exposure and the associated alterations in central gene expression are transmitted to the second filial generation (F2) via the maternal line. Pregnant rats were exposed to social stress for during late pregnancy. To generate the F2 rats, adult PNS females were paired with control males. Anxiety-like behaviour in the adult F2 offspring was investigated using the light-dark box (LDB) and elevated plus maze (EPM). Differences in mRNA expression for corticotropin releasing hormone (Crh) and its receptors (Cthr1 and Cthr2) in the amygdala were analysed using situ hybridization. F2 males exhibited significantly greater anxiety-like behaviour in the LDB and EPM compared with control males. There was no difference in anxiety-like behaviour between control and F2 females during metestrus/diestrus. At proestrus/estrus, control females displayed a reduction in anxiety-like behaviour, but this effect was not observed in the F2 females. Crh mRNA expression was significantly greater in the central nucleus of the amygdala in F2 males compared with controls. Moreover, Cthr1 mRNA expression was significantly increased, whereas Cthr2 was significantly decreased in discrete regions of the amygdala in F2 males compared with controls. However there were no differences in Cthr1 and Cthr2 mRNA expression in the females. In conclusion, PNS effects can be transferred to the F2 generation in a sex-dependent manner.

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