2009 Young Investigator Award Winner

Susanne Brummelte, PhD
Department of Psychology, University of British Columbia
Vancouver, British Columbia, CANADA

Susanne Brummelte's research focuses on the effects of stressful early life experience on brain development and the subsequent behavioural changes in both males and females. She spearheaded the creation and refinement of an animal model of postpartum depression that enables studying both the mother and her offspring. In this model high levels of corticosterone (40 mg/kg) are administered to dams during the postpartum, which results in reduced maternal care (time spent on the nest) and increased depressive-like behaviour (increased immobility in the FST). The offspring from corticosterone treated dams was tested on the transfer of CORT through the breast milk, baseline and stress response corticosterone levels at different ages, subsequent maternal care (female offspring); locomotor activity, anxiety-like behaviour, depressive-like behaviour, impulsivity, learning and memory, sexual behaviour and adult hippocampal neurogenesis in both the adult male and female rats. Overall, the results suggest that the maternal hormonal state postpartum can crucially influence the behavioural, cognitive and neuroanatomical outcome of the offspring. Environmental enrichment during rearing could not counterbalance the negative effects of early corticosterone exposure, but an additional adolescent stressor might exacerbate the effects of maternal corticosterone treatment. Future work will entail investigating the effects of different types of antidepressants to alleviate the depressive symptoms in the dams and how these influence the offspring. Dr. Brummelte further works on the effects of chronic corticosterone treatment and chronic stress in adolescent and adult male and female rats and the effect on hippocampal neurogenesis. Taken together, the results underline the importance of understanding the influence of early adverse environments and how those affect the maturation of the offspring, as that may lead to the development of more effective treatments or early predictions of neuropsychiatric or developmental disorders.