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Autore	Marie Moftah
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Sommario/riassunto

There is an assumption that environmental threats could cause important damages in central nervous system. As a consequence, several forms of brain structural plasticity could be affected. The environmentally mediated risks include generally physical (such as brain and spinal cord injury) and psychological / psychosocial influences (e.g. stress). In general, the response of the organism to these environmental challenges passes via adaptive responses to maintain homeostasis or functional recovery. These processes engage the immune system, the autonomic nervous system (ANS) besides the hypothalamo-hypophyseo-adrenal (HPA) axis via specific hormones, neurotransmitters, neuropeptides and other factors which participate, in several cases, in structural remodeling in particular brain areas. To what extent a brain and / or spinal cord recovery after structural and / or physiological / psychological damage could occur and by which mechanisms, this is the goal of this Research Topic. It concerns neurogenesis, growth factors and their receptors, and morphological plasticity. On the other hand, it is well known that stress experienced an obvious impact on many behavioral and physiological aspects. Thus, environmental stress affects neuroendocrine structure and function and hence such aspects may influence brain development. Knowing normal organization of neurotensin receptors' system during postnatal development in human infant will help understanding the dysfunction of this neuropetidergic system in "sudden infant syndrome" victims.

Stress could affect also other non-neuroendocrine regions and systems. GABA is one of the classical neurotransmitter sensitive to stress either when applied acutely or repetitively as well as its receptor GABAA. Furthermore, the modulation of this receptor complex notably by neurosteroids is also affected by acute stress. These steroids seem to play a role in the resilience retained by the stressed brain. Their modulatory role will be studied in the context of chronic stress in rats. Finally, one of the major impacts of stress besides changes in psychological behavior is the alteration of food intake control causing in final eating disorders. This alteration is the result of changes occurring in activity of brain regions involved in stress responses (principally HPA and ANS) and which are also involved in food intake control. The series of studies presented here, will try to explain how different stress paradigms affect this function and the eventual interactions of glucocorticoids with orexigenic (neuropetide Y: NPY/Agouti Related Peptide: AgRP) and anorexigenic peptides (Pre-opiomelanocortin peptide: POMC/Cocaine Amphetamine regulatory Transcript peptide: CART).