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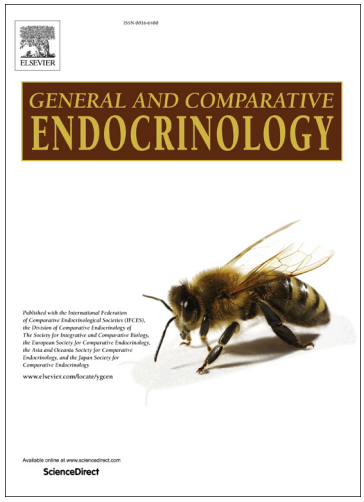

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Glucocorticoid programming of neuroimmune function.

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Abstract

Throughout life physiological systems strive to maintain homeostasis and these systems are susceptible to exposure to maternal or environmental perturbations, particularly during embryonic development. In some cases, these perturbations may influence genetic and physiological processes that permanently alter the functioning of these physiological systems; a process known as developmental programming. In recent years, the neuroimmune system has garnered attention for its fundamental interactions with key hormonal systems, such as the hypothalamic pituitary adrenal (HPA) axis. The ultimate product of this axis, the glucocorticoid hormones, play a key role in modulating immune responses within the periphery and the CNS as part of the physiological stress response. It is well-established that elevated glucocorticoids induced by developmental stress exert profound short and long-term physiological effects, yet there is relatively little information of how these effects are manifested within the neuroimmune system. Pre and post-natal periods are prime candidates for manipulation in order to uncover the physiological mechanisms that underlie glucocorticoid programming of neuroimmune responses. Understanding the potential programming role of glucocorticoids may be key in uncovering vulnerable windows of CNS susceptibility to stressful experiences during embryonic development and improve our use of glucocorticoids as therapeutics in the treatment of neurodegenerative diseases.

Key words: *Cytokines, developmental programming, Glucocorticoids, Microglia, Neuroimmune, Stress*