OMICS International
conferenceseries.com

G E Hoffman et al., J Steroids Hormon Sci 2015, 6:3
http://dx.doi.org/10.4172/2157-7536.S1.002

Global Summit on
Steroids

July 13-15, 2015 Baltimore, USA

Sex differences in reproductive neuro endocrine control: Neurons, pathways, and steroid receptor expression

G E Hoffman[1, 2], Kelley Murphy[2], T G Schulterbrandt[1], Flora Szabo[1], Ahmed Adetola[2], Michael N Selmanoff[1], Jessica A Mong[1], Sandra J Legan[3] and Ted Usdin[4]

[1]University of Maryland, USA
[2]Morgan State University, USA
[3]University of Kentucky, USA
[4]Bethesda, USA

Reflex ovulators use mating and vaginal cervical stimulation (VCS) to activate GnRH neurons, triggering an LH surge. While genital sensation plays an important role in both males and females, only in females does mating/VCS release gonadotropins. Thus, the pathways for reflex ovulation are likely sexually differentiated like the pathways serving spontaneous ovulation. In order to study this, we identified pathways stimulated to express Fos following VCS or mating and compared them to controls. Mating and VCS both evoked LH surges that were absent in controls and activated Fos in GnRH neurons and neurons of the anteroventral preoptic area (AVPV) known to participate in spontaneous LH surges. VCS/mating additionally activated neurons in the posterior pole of the ventrolateral ventromedial nucleus (pVNMvl) that project to the AVPV (only in females). This area also shows striking sexually dimorphic patterns of steroid receptors. Relay of the somatosensory stimulation from VCS reached the hypothalamus via a population of thalamic TIP39 neurons that project to the pVMNvl. The projection was sexually dimorphic. The stimulation of GnRH neurons and VCS-induced LH surges required an intact AVPV. Surges provoked by VCS required functional P receptors (PRs), and enkephalinergic transmission from the VMN to the AVPV (not used for spontaneous surges). Activation of the thalamic TIP39 neurons, like the hypothalamic components of the surge, predicted the magnitude of LH surges. Unlike the pVMNvl and AVPV, Fos in thalamic TIP39 neurons (which lack E2 and P receptors) was not blocked by PR antagonist treatment.

Biography

G E Hoffman received her PhD in Pharmacology (Univ. Illinois Med) and conducted Postdoctoral work in Anatomy/Neuroendocrinology (Univ. Rochester). She is a Professor of Biology at Morgan State University. She is Director of a Cooperative Centers Program for Increasing Diversity in Reproductive Sciences, a Core Director for Institutional Development on an NIH BUILD grant, and an Associate of the Faculty of 1000. She published more than 140 papers and her publications are cited more than 10,000 times. Her work encompasses the CNS control of endocrine/autonomic function and uses functional anatomical approaches to understand normal and pathological processes.

gloria.hoffman@morgan.edu

Notes: