

## **Patterns of secretion of hypothalamic hormones**

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Since the 1970's there has been ongoing identification of hypothalamic peptides that are released into the hypophysial portal blood. Whereas peptides predominate as secretions of the hypothalamus, there is also release into portal blood of noradrenaline and dopamine. Releasing factors for all pituitary hormones except prolactin have been identified. The most well studied releasing factor is gonadotropin releasing hormone (GnRH) which drives the synthesis of gonadotropins and acts as a secretagogue for luteinising hormone (LH). The other gonadotropin, follicle stimulating hormone (FSH) does not require a secretagogue, but GnRH stimulates synthesis of this hormone that is co-localised with LH in gonadotropes. That the pulsatile secretion of GnRH is under the control of a 'pulse generator' within the brain has been a widely held notion, but only recently has the neural substrate been identified. There is now good evidence that the pulse generator is kisspeptin, originating from cells in the arcuate nucleus. Whereas somatostatin is known as an inhibitory peptide secreted from the hypothalamus to negatively regulate growth hormone secretion, no other inhibitory peptides were known to be secreted until recently. We have now shown that gonadotropin inhibitory hormone (GnIH), which is produced in the dorsomedial nucleus of the hypothalamus, is secreted into the hypophysial portal blood and negatively regulates gonadotropin secretion. Evidence for this new regulator of reproductive function as a hypophysiotropic factor has been obtained from novel sheep studies.