

GnRH neuronal stem cells in ascidians

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The embryonic origin of gonadotropin-releasing hormone-1 and -3 (GnRH-1 and -3) neurons in vertebrates is olfactory placode, the peripheral organ. In urochordate ascidians, GnRH neurons originate in the dorsal strand that is derived from the dorsal epithelium of the neural gland. The origin of GnRH neurons in the extracentral nervous system is a very conspicuous phenomenon, in contrast to the central origin of most neurons.

There are four common characteristics in GnRH neurons between those of vertebrates and urochordate ascidians. They are, production of GnRHs consisting of 10 amino acids, relation to sexual reproduction, origination in peripheral organ, and continuation of GnRH neurogenesis throughout the adult life. On the occurrence of GnRH neurons in ascidians, they are exclusively found in solitary ascidians that reproduce sexually as vertebrates.