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Physiological events of hypophysation in fish

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The seasonal reproductive activity in fish is followed by gonadal recrudescence after the vernal equinox, particularly in the tropical countries. Out of all the environmental factors photoperiod and temperature plays a crucial role in enhancing the gonadal development and subsequent maturity. Environmental signals are received by brain through exteroceptor. Hypothalamus on being stimulated release a decapeptide hormone, GnRH (Gonadotrophin releasing hormone). GnRH in turn stimulates pituitary to release gonadotrophic hormone (GTH). GTH induces the synthesis and release of estradiol-17 β from ovarian follicular cells or 11-ketotestosterone from testicular Leydig cell at the initial stage. During maturation of germ cell, GTH induces 17 α , 20 β -dihydroxy-4-pregnene-3-one or maturation inducing hormone (MIH) from ovarian follicular cells, and testicular Leydig cells. MIH, as it is a non-genomic hormone, binds to the membrane receptor and induces the formation of maturation promoting factor (MPF) a complex between cdc 2 kinase and cyclin B protein. During pre-maturation period MPF remains inactive but in post-maturation phase MIH activates MPF by amino-phosphorylation. All these series of events in the physiology of fishes are so perfectly coordinated that release of germ cells of both the sexes are synchronized in such perfect way to ensure fertilization.

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