

Thyroid-pituitary System of the Dogfish Pup, *Squalus acanthias*

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Four types of studies were made of the dogfish thyroid-pituitary system. 1) To determine the length of time that the "candles" with young embryonic stages could be kept alive in plastic bags through which slowly circulated running sea water. There is reason to believe that with care they could be maintained and developing in this environment for long periods of time. Possibly the sole contribution of the female to the uterine young is protection. 2) The uptake of I^{131} by the thyroid of the pup was re-examined with tracer doses of the isotope injected intraperitoneally. The pups were also exposed to constant light, constant darkness, or diurnally varying illumination (normal summer day-night). Activity of the thyroid at this stage of development, is comparable quantitatively to that of the adult gland, and it is not readily modified by the factors experimentally tested. 3) Thyroid activity of adult nonpregnant females and females with small embryo (candle) or pup stages of development was compared following the subcutaneous injection (at the base of the pectoral appendage) of 20-30 microcuries of I^{131} . 4) Pups were implanted subcutaneously with carbowax pellets containing dl-thyroxin, or proylthiouracil, or triiodothyroacetic acid, or whole pituitary powder and they were subsequently maintained in screened glass dishes in running seawater aquaria for 6-9 days under three conditions: constant illumination, constant darkness, and diurnal cyclic conditions at laboratory temperatures. Twenty-four hours before sacrifice they were injected with I^{131} . Animals were sacrificed at the 6th or 9th day. The hypothalamic-pituitary territory was preserved for study of the neurosecretory system and thyroid activity determined under these experimental conditions. Uptake of the thyroid was compared with that of certain other tissues and organs, including the whole intestine, whole stomach, tail muscle, and the area from which the thyroid was taken.

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Analysis of Homograft Reaction in (*Fundulus Heteroclitus*)

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Homotransplantation of pigmented scales in *Fundulus* is normally followed by an inevitable immunological response by the host against the grafts. Manifested by the microscopically visible destruction of melano-phores in the foreign scales, this temperature dependent reaction occurs in 3 days at 28°C, 5 to 6 days at 21°C, and 14 to 16 days at 14°C. It is not adversely influenced by splenectomy or hypophysectomy of the host, nor by daily injections of 0.1 ml of 1% trypan blue.