

Effects of Hypophysectomy and Urohypophysectomy on Fin Regeneration in (*Fundulus Heteroclitus*)¹

Richard A. Liversage
University of Toronto

Presence of the pituitary (presumably the pituitary-adrenal synergism or PAS) is essential for the initial stages of forelimb regeneration in the adult urodele *Triturus viridescens* Schotté et al. '55, '56, '57). Contrary to these findings, extirpation of the hypophysis in urodele larvae has no inhibitory effect whatever upon the various stages of forelimb regeneration (Schotté, '61; Liversage, '61).

Experiments were performed upon 149 killifish (*Fundulus heteroclitus*) followed by histological verification of the surgical procedures of hypophysectomy (Pickford & Atz, '57) and urohypophysectomy (a hypophysis-like endocrine gland in the tail - see Dahlgren, '14; Speidel, '19; '22; Enami, '59). In all cases de-differentiation and morphogenesis of the amputated left pectoral fin was studied.

The first group of experimental series involved: 1) simultaneous hypophysectomy and fin amputation; 2) hypophysectomy followed in 5 days (recuperation period) by fin amputation; and 3) fin amputation followed in 5 days by hypophysectomy.

The second experimental approach included: a) extirpation of the urohypophysis and hypophysis simultaneous with fin amputation; and b) urohypophysectomy followed in 5 days by fin amputation.

In these defect experiments hormonal imbalances were brought about; either by hypophysectomy resulting in an interruption of the pituitary-adrenal synergism and/or by a disturbance of osmoregulation through urohypophysectomy. However, normal fin regeneration ensued in all cases and appears to be completely independent of the hypophysis and urohypophysis and also independent of the combined influences of these endocrine organs.

1. This work was supported by a research grant from the National Research Council of Canada.

Interacting Flows in Diffusion Across the Cell Membrane of Sand Dollar Eggs

David B. Ludlum
New York University College of Medicine

Recent studies in freely diffusing systems by Gosting and coworkers have shown that interactions may occur between different solutes diffusing past an initially sharp boundary. The purpose of this investigation was to determine whether such effects are present in diffusion across biological membranes, and to determine their role in the interpretation of active transport.