

***Physiology of early fish
development: respiration
and metabolism***

SYMPOSIUM PROCEEDINGS

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PREFACE

Fish early life history is characterized typically by small body size, and rapid growth and development. There are a variety of physiological challenges for fish in early stages of development that are not encountered by more mature stages. For example, in oviparous (egg-laying) species, early patterns of nitrogen metabolism and excretion are influenced by the dominance of yolk proteins as the primary fuel, and the resulting toxic end-product, ammonia. Early development in viviparous (live-bearing) fishes is dependent on the maternal-fetal relationship which, in turn, is affected by the external environment. Gill structures are initially undeveloped and unventilated, thus, respiration and ion transport are primarily cutaneous. Consequently, the role of the early cardiovascular system in oxygen delivery may be somewhat different compared to adult stages. Homeostasis in adult fish requires a sophisticated endocrine system, whereas in early stages, these same systems are initially nonfunctional. Defining the unique aspects of early physiology will provide a valuable background for a more complete understanding of how mature fish respond to their changing environments.

The symposium, *Physiology of early fish development*, concerns the ontogeny of physiological processes in a diversity of fishes, from the well-studied rainbow trout, to the less understood African catfish and the evolutionarily ancient lamprey. In the papers to follow, the ontogeny of nitrogen metabolism and excretion, osmoregulation, ionoregulation, cardiovascular function, endocrine maturation, and growth and metabolism are discussed.

Symposium Organizers:

Pat Wright	Don MacKinlay
University of Guelph	Fisheries Canada

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Don MacKinlay
Congress Chair

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