
Preface

Fishes are extremely diverse which mainly includes osteichthyes, the bony fishes, and chondrichthyes, the cartilaginous fishes. Osteichthyes (mainly includes teleosts), represent the largest and most diverse class of vertebrates in existence today, with about 32,400 species, which is more than the combined total of mammals, birds, amphibians and reptiles. Teleosts are sexually labile which can display an astonishing variety of reproductive modes such as gonochorism, protandry, protogyny, true hermaphroditism, gynogenesis and androgenesis. Successful reproduction of a species mainly depends on organized reproductive strategies including gonadal differentiation/development and gametogenesis. Gonadal development/differentiation is governed by a delicate balance of genetic, hormonal and environmental factors. On the other hand, efficient and regulated gametogenesis is critical for the quality seed production, which is a key area of aquaculture research and development.

This book represents collective version of review chapters contributed by eminent scientists all over the world including India. The demand for the fishes is in rise every day, with the improved aquaculture research on controlling gametogenesis and spawning has provided possible options to increase the production, yet, the equilibrium never met. The application of modern molecular biology techniques and tools facilitate scientists to delineate several fundamental questions of endocrinology and reproductive biology, and thus assist in sustainable aquaculture management. Amazing expansion in the number of quality publication and scientific congregation concerning fish reproduction is a witness for the growing importance for the aquaculture research. Our knowledge of sexual plasticity and gamete maturation has been expanded rapidly since the recent advances in sexual development research using model organisms ranging from fishes to mammals. Sexual development research is on the top priority because of its great potential in finding sex determining genes. The recent surge of interest in identifying the mechanisms pertaining to endocrine disruption makes fisheries research to progress in sexual development and gamete maturation studies, which are the two emerging multidisciplinary research fields with wide range of future prospects.

This book is a tribute to those investigators who work on sex determination, differentiation, gamete maturation and fish reproductive physiology, who inspired a whole generation of researchers in these fields. The subject matter of the book is on the research areas of endocrinology, reproductive biology, aquaculture and sexual development, which form a basic study material for young and aspiring fish biologists.

Several renowned scientists from India and abroad have contributed their research findings. I am grateful to all the contributors for their tremendous help in preparing the articles for this book and would like to thank their funding agencies for supporting their research.

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