

Fish Physiology

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Fish Physiology David J. Randall 1969
Fish Physiology: The Multifunctional Gut of Fish
2010-10-21 The Multifunctional Gut of Fish provides a comprehensive synthesis and an integrative overview of the range of gut functions and their implications for organismal physiology.

The highly diversified anatomy and functions of the gut, including nutrient uptake, immune barrier function, salt and water homeostasis and respiration, as well as neuroendocrine actions and control are covered in detail by leading authors. In addition, this volume explores the pronounced implications of gut function for whole

animal integrative physiology and compensatory demands for non-gastrointestinal organs. As the first comprehensive reference to discuss the diverse morphological and functional adaptations of the gut, this volume provides an excellent resource for comparative physiologists, aquaculturists and biomedical researchers employing fish as model organisms for mammalian physiology. Includes chapters dedicated to anatomical and functional features of the gastro-intestinal tract of fish as well as integrative aspects of gut organ function Includes in depth coverage of recently recognized implications of feeding on salt homeostasis and acid-base balance Provides syntheses of implications of gut function for homeostasis Essential text for those interested in the wide diversity of functions performed by the gut Fish Physiology: Sensory Systems Neuroscience Toshiaki J. Hara 2006-10-31 Fish sensory systems have been extensively studied not only because of a wide general interest in the behavioral and

sensory physiology of this group, but also because fishes are well suited as biological models for studies of sensory systems. Fish Physiology: Sensory Systems Neuroscience describes how fish are able to perceive their physical and biological surroundings, and highlights some of the exciting developments in molecular biology of fish sensory systems. Volume 25 in the Fish Physiology series offers the only updated thorough examination of fish sensory systems at the molecular, cellular and systems levels. Offers a comprehensive account of the present state of science in this rapidly expanding and developing field New physiological techniques presented to enable examining responses at the cellular and system levels Discusses fish sensory systems and how they have adapted to the physiological challenges presented by an aquatic environment *Fish Physiology: The Multifunctional Gut of Fish* 2010-10-05 The Multifunctional Gut of Fish provides a comprehensive synthesis and an

integrative overview of the range of gut functions and their implications for organismal physiology. The highly diversified anatomy and functions of the gut, including nutrient uptake, immune barrier function, salt and water homeostasis and respiration, as well as neuroendocrine actions and control are covered in detail by leading authors. In addition, this volume explores the pronounced implications of gut function for whole animal integrative physiology and compensatory demands for non-gastrointestinal organs. As the first comprehensive reference to discuss the diverse morphological and functional adaptations of the gut, this volume provides an excellent resource for comparative physiologists, aquaculturists and biomedical researchers employing fish as model organisms for mammalian physiology. Includes chapters dedicated to anatomical and functional features of the gastro-intestinal tract of fish as well as integrative aspects of gut organ function Includes in depth coverage of recently recognized

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Encyclopedia of Fish Physiology: The senses, supporting tissues, reproduction, and behavior 2011

Fish Physiology: Primitive Fishes 2011-09-21 Primitive fishes are a relatively untapped resource in the scientific search for insights into the evolution of physiological systems in fishes and higher vertebrates. Volume 26 in the Fish Physiology series presents what is known about the physiology of these fish in comparison with the two fish groups that dominate today, the modern elasmobranchs and the teleosts. Chapters include reviews on what is known about cardiovascular, nervous and ventilatory systems, gas exchange, ion and nitrogenous waste regulation, muscles and locomotion, endocrine systems, and reproduction. Editors provide a

thorough understanding of how these systems have evolved through piscine and vertebrate evolutionary history. Primitive Fishes includes ground-breaking information in the field, including highlights of the most unusual characteristics amongst the various species, which might have allowed these fishes to persist virtually unchanged through evolutionary time. This volume is essential for all comparative physiologists, fish biologists, and paleontologists. Provides an analysis of the evolutionary significance of physiological adaptations in "ancient fishes" Offers insights on the evolution of higher vertebrates The only single source that presents an in-depth discussion of topics related to the physiology of ancient fishes

Fish Physiology D. J. Randall 1969

Fish Physiology David J. Randall 1969

The Physiology of Developing Fish William Stewart Hoar 1988

Fish Physiology: Biology of stress in fish

William S. Hoar 1969

Fish Physiology William Stewart Hoar 1969

Fish Physiology: The Physiology of Tropical Fishes Adalberto Luis Val 2005-10-13

The Physiology of Tropical Fishes is the 21st volume of the well-known Fish Physiology series and consists of 12 chapters. The purpose of the book is to consolidate and integrate what is known about tropical fishes (marine and freshwater species). The twelve chapters focus on the physiological adaptations acquired during the evolutionary process to cope with warm and shallow hypoxic waters from tropical and neotropical hydrographic basins as well as with the intertidal and coral reef habitats which occur in abundance in tropical seas. The special characteristics of tropical fish fauna will be issued in order to explain the tropical fish radiation, which gave rise to such extreme fish diversity. This present volume, is a voyage through the tropical region reviewing the fish diversity of the main tropical freshwater sheds, including the major tropical rivers and lakes, the major dams,

and marine environments. State-of-the-art information on tropical fish physiology Written by specialists working in the Tropics Offers a diverse depiction of the various tropical fishes and the environment where they inhabit 12 innovative chapters covering a concise view of growth rate, biological rhythms, feeding plasticity, cardio-respiratory design and function, diversity of structure, and much more

Fish Physiology 1983-12-01 Fish Physiology

Fish Physiology 1971

Fish Physiology: Fish biomechanics William Stewart Hoar 1969

Fish Physiology William Stewart Hoar 1969

Water Pollution and Fish Physiology Alan G.

Heath 2018-02-06 This book provides a concise synthesis of how toxic chemical pollutants affect physiological processes in teleost fish. This Second Edition of the well-received Water Pollution and Fish Physiology has been completely updated, and chapters have been added on immunology and acid toxicity. The

emphasis, as in the first edition, is on understanding mechanisms of sublethal effects on fish and their responses to these environmental stressors. The first chapter covers the basic principles involved in understanding how fish respond, in general, to environmental alterations. Each subsequent chapter is devoted to a particular organ system or physiological function and begins with a short overview of normal physiology of that system/function. This is followed by a review of how various toxic chemicals may alter normal conditions in fish. Chapters covering environmental hypoxia, behavior, cellular enzymes, and acid toxicity are also included. The book closes with a discussion on the practical application of physiological and biochemical measurements of fish in water pollution control in research and regulatory settings.

Physiology of Elasmobranch Fishes: Internal Processes Robert E. Shadwick 2015-11-16 Fish Physiology: Physiology of Elasmobranch Fishes,

Volume 34B is a useful reference for fish physiologists, biologists, ecologists, and conservation biologists. Following an increase in research on elasmobranchs due to the plight of sharks in today's oceans, this volume compares elasmobranchs to other groups of fish, highlights areas of interest for future research, and offers perspective on future problems. Covering measurements and lab-and-field based studies of large pelagic sharks, this volume is a natural addition to the renowned Fish Physiology series. Provides needed comprehensive content on the physiology of elasmobranchs Offers a systems approach between structure and interaction with the environment and internal physiology Contains contributions by leading experts in their respective fields, under the guidance of internationally recognized and highly respected editors Highlights areas of interest for future research, including perspective on future problems

Fish Physiology: Behaviour and physiology

of fish William Stewart Hoar 1969
Fish Physiology: The physiology of developing fish. pt. B. Viviparity and posthatching juveniles
William Stewart Hoar 1969

Fish Physiology: Behaviour and physiology of fish William Stewart Hoar 1969

Fish Physiology 1979

Fish Physiology William S. Hoar 2007

Fish Physiology: Zebrafish 2010-05-28 This cutting-edge resource includes up-to-date information on zebrafish physiology and the tools used to study it, not only as a model species for studies of other vertebrates but with application for studies of human disease and aquatic toxicology. The utility of zebrafish for physiological research is based on several key features including i) a "fully" sequenced genome, ii) rapid (~3 month) generation times, iii) their capacity to produce large numbers of externally fertilized eggs, iv) optical transparency of embryos and larvae, and v) the applicability of reverse and forward genetics to assess gene

function. Gene knockdown in embryos and the production of transgenic strains are now standard techniques being used to assess physiology. This book will be of keen interest not only to the typical readers of Fish Physiology but also to biomedical researchers, toxicologists and developmental biologists. Integrates and synthesizes the biology of the zebrafish under one cover Features contributions from the leading researchers in their fields Reaches a wider audience of researchers and biologists with its broad inclusion of subjects relating to zebrafish physiology

Physiology of Fish in Intensive Culture Systems

Gary Wedemeyer 1996-09-30 Fish culture in hatcheries and other aquacultural facilities is becoming much more intensive all over the world. The success of all kinds of fish rearing depends on the quality of management and this depends, in turn, on understanding the biology of fishes and the aquatic environment in which they live. This book directly addresses the relationship

between the aquatic environment and the fishes. An understanding of this by the reader will result in a reduction of disease outbreaks through improved management.

Fish Physiology: Hypoxia Jeffrey G. Richards 2009-03-10 Periods of environmental hypoxia (Low Oxygen Availability) are extremely common in aquatic systems due to both natural causes such as diurnal oscillations in algal respiration, seasonal flooding, stratification, under ice cover in lakes, and isolation of densely vegetated water bodies, as well as more recent anthropogenic causes (e.g. eutrophication). In view of this, it is perhaps not surprising that among all vertebrates, fish boast the largest number of hypoxia tolerant species; hypoxia has clearly played an important role in shaping the evolution of many unique adaptive strategies. These unique adaptive strategies either allow fish to maintain function at low oxygen levels, thus extending hypoxia tolerance limits, or permit them to defend against the metabolic

consequences of oxygen levels that fall below a threshold where metabolic functions cannot be maintained. The aim of this volume is two-fold. First, this book will review and synthesize the adaptive behavioural, morphological, physiological, biochemical, and molecular strategies used by fish to survive hypoxia exposure and place them within an environmental and ecological context. Second, through the development of a synthesis chapter this book will serve as the cornerstone for directing future research into the effects of hypoxia exposures on fish physiology and biochemistry. The only single volume available to provide an in-depth discussion of the adaptations and responses of fish to environmental hypoxia Reviews and synthesizes the adaptive behavioural, morphological, physiological, biochemical, and molecular strategies used by fish to survive hypoxia exposure Includes discussion of the evolutionary and ecological consequences of hypoxia exposure in fish

Fish Physiology, Fish Toxicology, and Fisheries Management Robert C. Ryans 1990
Fish Physiology: Homeostasis and Toxicology of Essential Metals 2011-08-11
Homeostasis and Toxicology of Essential Metals synthesizes the explosion of new information on the molecular, cellular, and organismal handling of metals in fish in the past 15 years. These elements are no longer viewed by fish physiologists as "heavy metals" that kill fish by suffocation, but rather as interesting moieties that enter and leave fish by specific pathways, which are subject to physiological regulation. The metals featured in this volume are those about which there has been most public and scientific concern, and therefore are those most widely studied by fish researchers. Metals such as Cu, Zn, Fe, Ni, Co, Se, Mo and Cr are either proven to be or are strongly suspected to be essential in trace amounts, yet are toxic in higher doses. The companion volume, Homeostasis and Toxicology of Non-Essential Metals, Volume 31B, covers

metals that have no known nutritive function in fish at present, but which are toxic at fairly low levels, such as Ag, Al, Cd, Pb, Hg, As, Sr, and U. In addition, three chapters in Volumes 31A and 31B on Basic Principles (Chapter 1, 31A), Field Studies and Ecological Integration (Chapter 9, 31A) and Modeling the Physiology and Toxicology of Metals (Chapter 9, 31B) act as integrative summaries and make these two volumes a vital set for readers. All major essential metals of interest are covered in metal-specific chapters. Each metal-specific chapter is written by fish physiologists/toxicologists who are recognized authorities for that metal. A common format is featured throughout this two volume edition.

Fish Physiology: Behaviour and Physiology of Fish
Katherine A. Sloman 2005-12-27 Traditionally, behaviour and physiology have been considered two separate fields of biology with the majority of available literature focusing on one or the other. Recently the need for a multidisciplinary approach to these topics has been realised,

highlighted by some of the sessions to be held at the 2003 annual meeting of the Society for Integrative and Comparative Biology such as 'regulation of behaviour' and 'mechanisms of behaviour'. The proposed volume aims to bring together these disciplines in a comprehensive review of the available literature. Fish Physiology: Behaviour and Physiology of Fish will be novel in actively bridging these two areas of fish biology together and considering them as inextricably linked. The progression of chapters focuses on different aspects of the life history of a fish, from predator avoidance through to reproduction, each written by scientists currently bridging the gap between behaviour and physiology in their own specialised subdiscipline. Multidisciplinary and integrative research in fish biology. Written by internationally recognized researchers. Encompasses the whole life span of fish. A wide variety of inter-related topics presented in a cohesive format.

Encyclopedia of Fish Physiology 2011-07-27 Fish

form an extremely diverse group of vertebrates. At a conservative estimate at least 40% of the world's vertebrates are fish. On the one hand they are united by their adaptations to an aquatic environment and on the other they show a variety of adaptations to differing environmental conditions - often to extremes of temperature, salinity, oxygen level and water chemistry. They exhibit an array of behavioural and reproductive systems. Interesting in their own right, this suite of adaptive physiologies provides many model systems for both comparative vertebrate and human physiologists. This four volume encyclopedia covers the diversity of fish physiology in over 300 articles and provides entry level information for students and summary overviews for researchers alike. Broadly organised into four themes, articles cover Functional, Thematic, and Phylogenetic Physiology, and Fish Genomics. Functional articles address the traditional aspects of fish physiology that are common to all areas of

vertebrate physiology including: Reproduction, Respiration, Neural (Sensory, Central, Effector), Endocrinology, Renal, Cardiovascular, Acid-base Balance, Osmoregulation, Ionoregulation, Digestion, Metabolism, Locomotion, and so on. Thematic Physiology articles are carefully selected and fewer in number. They provide a level of integration that goes beyond the coverage in the Functional Physiology topics and include discussions of Toxicology, Air-breathing, Migrations, Temperature, Endothermy, etc. Phylogenetic Physiology articles bring together information that bridges the physiology of certain groupings of fishes where the knowledge base has a sufficient depth and breadth and include articles on Ancient Fishes, Tunas, Sharks, etc. Genomics articles describe the underlying genetic component of fish physiology and highlight their suitability and use as model organisms for the study of disease, stress and physiological adaptations and reactions to external conditions. Winner of a 2011 PROSE Award Honorable

Mention for Multivolume Science Reference from the Association of American Publishers The definitive encyclopedia for the field of fish physiology Three volumes which comprehensively cover the entire field in over 300 entries written by experts Detailed coverage of basic functional physiology of fishes, physiological themes in fish biology and comparative physiology amongst taxonomic Groups Describes the genomic bases of fish physiology and biology and the use of fish as model organisms in human physiological research Includes a glossary of terms

Fish Physiology: Nitrogen Excretion 2001-09-07 This book provides a comprehensive collection of timely reviews of our current understanding of the fundamental principles of nitrogen metabolism and excretion in fish. Emphasis is placed on critical assessment of how new studies impact these topics, and the articles reflect the diversity of current research approaches.

Fish Physiology: Homeostasis and

Toxicology of Non-Essential Metals

2011-08-15 Homeostasis and Toxicology of Non-Essential Metals synthesizes the explosion of new information on the molecular, cellular, and organismal handling of metals in fish in the past 15 years. These elements are no longer viewed by fish physiologists as "heavy metals" that kill fish by suffocation, but rather as interesting moieties that enter and leave fish by specific pathways, which are subject to physiological regulation. The metals featured in this volume are those about which there has been most public and scientific concern, and therefore are those most widely studied by fish researchers. Metals such as Ag, Al, Cd, Pb, Hg, As, Sr, and U have no known nutritive function in fish at present, but are toxic at fairly low levels. The companion volume, Homeostasis and Toxicology of Essential Metals, Volume 31A, covers metals that are either proven to be or are strongly suspected to be essential in trace amounts, yet are toxic in higher doses. Metals such as Cu, Zn,

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Fish Physiology: Sensory Systems

Neuroscience Toshiaki J. Hara 2006-10-31 Fish sensory systems have been extensively studied not only because of a wide general interest in the behavioral and sensory physiology of this group, but also because fishes are well suited as biological models for studies of sensory systems. Fish Physiology: Sensory Systems Neuroscience describes how fish are able to perceive their

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optimal conditions for growth under intensive culture (including in Recirculating Aquaculture Systems), enhancing immune function and fish health during culture, identifying and managing maladaptive physiological responses to aquaculture stressors, establishing welfare guidelines for farmed fish, phenotypic and physiological responses to genetic modification, Zebrafish as a research tool, and the aquaculture of air-breathing fish. Contains contributions from an international board of authors, each with decades of aquaculture expertise Provides the most up-to-date information on the fundamental role that physiology plays in optimizing fish performance in aquaculture Provides the latest release in the Fish Physiology series that tackles how the manipulation of biological processes can be used to maximize the expression of beneficial production traits in fish aquaculture

Water Resources Research Catalog 1966

Fish Physiology, Toxicology, and Water Quality Management Rosemarie C. Russo 1993

Encyclopedia of Fish Physiology 2011-06-01
Fish form an extremely diverse group of vertebrates. At a conservative estimate at least 40% of the world's vertebrates are fish. On the one hand they are united by their adaptations to an aquatic environment and on the other they show a variety of adaptations to differing environmental conditions - often to extremes of temperature, salinity, oxygen level and water chemistry. They exhibit an array of behavioural and reproductive systems. Interesting in their own right, this suite of adaptive physiologies provides many model systems for both comparative vertebrate and human physiologists. This four volume encyclopedia covers the diversity of fish physiology in over 300 articles and provides entry level information for students and summary overviews for researchers alike. Broadly organised into four themes, articles cover Functional, Thematic, and Phylogenetic Physiology, and Fish Genomics Functional articles address the traditional aspects of fish physiology

that are common to all areas of vertebrate physiology including: Reproduction, Respiration, Neural (Sensory, Central, Effector), Endocrinology, Renal, Cardiovascular, Acid-base Balance, Osmoregulation, Ionoregulation, Digestion, Metabolism, Locomotion, and so on. Thematic Physiology articles are carefully selected and fewer in number. They provide a level of integration that goes beyond the coverage in the Functional Physiology topics and include discussions of Toxicology, Air-breathing, Migrations, Temperature, Endothermy, etc. Phylogenetic Physiology articles bring together information that bridges the physiology of certain groupings of fishes where the knowledge base has a sufficient depth and breadth and include articles on Ancient Fishes, Tunas, Sharks, etc. Genomics articles describe the underlying genetic component of fish physiology and highlight their suitability and use as model organisms for the study of disease, stress and physiological adaptations and reactions to external conditions.

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Fish Physiology: Reproduction and growth, bioluminescence, pigments, and poisons
William Stewart Hoar 1969
Fish Physiology: Sensory Systems Neuroscience
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the neotropical realm. It provides the most updated systematics, classification, anatomical, behavioural, genetic, and functioning systems information on freshwater neotropical fish species. This book begins by analysing the differences in phylogeny, anatomy, and behaviour of neotropical fish. Systems such as cardiovascular, respiratory, renal, digestive, reproductive, muscular, and endocrine are described in detail. This book also looks at the effects of stress on fish immune systems, and how color and pigmentation play into physiology and species differentiation. *Biology and Physiology of Freshwater Neotropical Fish* is a must-have for fish biologists and zoologists. Students in zoology, ichthyology, and fish farming will also find this book useful for its coverage of some of the world's rarest and least-known fish species. Features chapters written by top neotropical fish researchers and specialists Discusses environmental effects on neotropical fishes, including climate change and pollution

Details the phylogenetic occurrence of

electroreceptors and electric organs in fish