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Regeneration of Vertebrate Sensory Receptor Cells ...

An international group of leading investigators discuss recent progress of sensory structures in lower and higher vertebrates. Experts in two relevant fields--the cell cycle and mitogenic growth factors--present insightful contributions in the search for precursors and/or stem cells in each sense organ plus the signals which regulate those precursors' differentiation both in normal development ...

~~Ciba Foundation Symposium 160 – Regeneration of Vertebrate ...~~

moreover although sensory receptor cells in the mammalian retina and inner ear show only limited or no regeneration in many nonmammalian vertebrates these sensory epithelia show remarkable regenerative potential in newts for example most parts of the eye regenerate in birds the sensory receptors in the auditory and vestibular balance organs regenerate almost completely after various

10+ Regeneration Of Vertebrate Sensory Receptor Cells ...

Symposium on Regeneration of Vertebrate Sensory Receptor Cells, held at The topic of the symposium was proposed by Professor Edwin W. Rubel Editors: Gregory R. Bock (Organizer) and Julie Whelan the Ciba Foundation, London 4-6 December 1990 E. W. Rubel Introduction 1 S. L. Palay The general architecture of sensory neuroepithelia 3

REGENERATION OF VERTEBRATE SENSORY RECEPTOR CELLS

Sep 05, 2020 regeneration of vertebrate sensory receptor cells novartis foundation symposia Posted By Enid BlytonLibrary TEXT ID c7877497 Online PDF Ebook Epub Library sensory receptor cells throughout life and coincidentally they all regenerate very well after a variety of types of damage

~~30 E-Learning Book Regeneration Of Vertebrate Sensory ...~~

REGENERATION OF VERTEBRATE SENSORY RECEPTOR CELLS The Ciba Foundation is an international scientific and educational charity. It was established in 1947 by the Swiss chemical and pharmaceutical company of ClBA Limited- now CIBA-GEIGY Limited.

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A process of ongoing sensory receptor cell replacement characterizes the sensory epithelia that show robust regeneration. This does not appear to be present in the retinas or cochleas of mammals. Therefore the main options for therapy will likely involve reinitiating the process of regulated reprogramming to a proliferative progenitor state in the glia and support cells.

~~Regulated reprogramming in the regeneration of sensory ...~~

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although sensory receptor cells in the mammalian retina and inner ear show only limited or no regeneration in many non mammalian vertebrates these sensory epithelia show remarkable regenerative potential we summarize the current state of knowledge of regeneration in the specialized sense organs in both non mammalian vertebrates and mammals and discuss possible areas where new advances in

20+ Regeneration Of Vertebrate Sensory Receptor Cells ...

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An international group of leading investigators discuss recent progress of sensory structures in lower and higher vertebrates. Experts in two relevant fields--the cell cycle and mitogenic growth factors--present insightful contributions in the search for precursors and/or stem cells in each sense organ plus the signals which regulate those precursors' differentiation both in normal development and regeneration.

Sensory hair cells are the specialized mechanosensory receptors found in vertebrate auditory, vestibular, and lateral line organs that transduce vibratory and acoustic stimuli into the sensations of hearing and balance. Hair cells can be damaged due to such factors as aging, ototoxic chemicals, acoustic trauma, infection, or genetic factors. Loss of these hair cells lead to deficits in hearing and balance, and in mammals, such deficits are permanent. In contrast, non-mammalian vertebrates exhibit the capability to regenerate missing hair cells. Researchers have been examining the process of hair cell death and regeneration in animal models in an attempt to find ways of either preventing hair cell loss or stimulating the production of new hair cells in mammals, with the ultimate goal of finding new therapeutics for human sensorineural hearing and balance deficits. This has led to a wide array of research on sensory hair cells- such as understanding the factors that cause hair cell loss and finding agents that protect them from damage, elucidating the cell signaling pathways activated during hair cell death, examining the genes and cellular pathways that are regulated during the process of hair cell death and regeneration, and characterizing the functional sensory loss and recovery following acoustic or ototoxic insults to the inner ear. This research has involved cell and developmental biologists, physiologists, geneticists, bioinformaticians, and otolaryngologists. In this Research Topic, we have collated reviews of the past progress of hair cell death and regeneration studies and original research articles advancing sensory hair cell death and regeneration research into the future.

The sensory receptors which belong to the vestibular and auditory systems of vertebrates are termed as hair cells. They are present within the ears. These cells are able to detect movement around them through mechanotransduction. In mammals, hair cells are located in the cochlea of the inner ear. These cells can be categorized into two types, the inner and outer hair cells. They are functionally and anatomically different from each other. The inner hair cells are responsible for converting the sound vibrations in the fluids of the cochlea into electrical signals which are then conveyed to the brain. They are unable to regenerate. Therefore, any injury or damage to them is permanent and can lead to a decrease in hearing sensitivity. This book covers in detail some existent theories and innovative concepts revolving around the regeneration, repair and death of hair cells. Its aim is to present researches that have transformed this discipline and aided its advancement. This book will help the readers in keeping pace with the rapid changes in this field.

Examines the progress of leading scientists working on various aspects of handedness in order to consider the occurrence of handedness in the biological world. Provides in-depth coverage of the origin and development of morphological asymmetry occurring in most types of living organisms.

This book provides a series of comprehensive views on various important aspects of vertebrate photoreceptors. The vertebrate retina is a tissue that provides unique experimental advantages to neuroscientists. Photoreceptor neurons are abundant in this tissue and they are readily identifiable and easily isolated. These features make them an outstanding model for studying neuronal mechanisms of signal transduction, adaptation, synaptic transmission, development, differentiation, diseases and regeneration. Thanks to recent advances in genetic analysis, it also is possible to link biochemical and physiological investigations to understand the molecular mechanisms of vertebrate photoreceptors within a functioning retina in a living animal. Photoreceptors are the most deeply studied sensory receptor cells, but readers will find that many important questions remain. We still do not know how photoreceptors, visual pigments and their signaling pathways evolved, how they were generated and how they are maintained. This book will make clear what is known and what is not known. The chapters are selected from fields of studies that have contributed to a broad understanding of the birth, development, structure, function and death of photoreceptor neurons. The underlying common word in all of the chapters that is used to describe these mechanisms is molecule. Only with this word can we understand how these highly specific neurons function and survive. It is challenging for even the foremost researchers to cover all aspects of the subject. Understanding photoreceptors from several different points of view that share a molecular perspective will provide readers with a useful interdisciplinary perspective.

The hagfishes comprise a uniform group of some 60 species inhabiting the cool or deep parts of the oceans of both hemispheres. They are considered the most primitive representatives of the group of craniate chordates, which - apart from the hagfishes that show no traces of verte brae -includes all vertebrate animals. Consequently the hagfishes have played and still playa central role in discussions concerning the evolution of the vertebrates. Although most of the focus on hagfishes may be the result of their being primitive, it should not be forgotten that, at the same time, they are specialized animals with a unique way of life that is interesting in its own right. It is now more than 30 years since a comprehensive treatise on hagfishes was published. The Biology of Myxine, edited by Alf Brodal and Ragnar Fange (Universitetsforlaget, Oslo, 1963), provided a wealth of information on the biology of hagfishes, and over the years remained a major source of information and inspiration to students of hagfishes.

Invertebrate animals represent a diversity of solutions to life's challenges. Success in a wide range of environments has been achieved by an almost bewildering range of invertebrate body forms. These body forms are reflected in the wonderful diversity of their nervous systems. Despite this apparent diversity, studies of the development of invertebrates and vertebrates are yielding common themes at the molecular level. Likewise, the phenome non of neural regeneration is based upon properties intrinsic to neurons and responses to a remarkably conserved chemical lan guage. This monograph focuses on the diversity and commonal ity of responses to neural injury. The rough and tumble of life may frequently damage some part of the body, particularly the appendages or sensory sys tems. The nervous system is usually involved in repair of other body systems and often may itself require repair. Some animals are particularly successful in regenerating the nervous system or body parts. We particularly marvel at these feats of regeneration because we human beings are not particularly successful, despite our relatively long life and the advantages that would seem to accrue from such repair. It is no wonder that we would hope to learn the secrets of the more successful animals and strive to emulate them! Mechanisms of neural regeneration are often more acces sible in invertebrates than in vertebrates because questions of specificity are more easily addressed using the identifiable neu rons of the relatively simpler nervous systems of some inverte brates.

"Who would believe that so small a space could contain the images of all the universe?" Leonardo da Vinci The last years of the 20th century have found the discipline of Developmental Biology returning to its original position at the forefront of biological re search. This progress can be attributed to the burgeoning knowledge base on molecules and gene families, and to the power of the molecular genetic ap proach. Topping the list of organ systems which have provided the most significant advances would have to be the eye. The vertebrate eye was one of the classic embryologic models, used to demonstrate many important prin ciples, including the concepts of inductive tissue interactions first put forth in the early 1900s. Within the last decade of this century, a return to some of the old questions with the new approaches has put eye development back into the limelight. I find this a highly appropriate topic for a book which aims to spark research for the new millennium. We begin with a chapter that discusses the anatomy of eye development, providing the basic reference information for the chapters that follow. A novel aspect of this introduction is the connection made between develop mental strategies and the eye's optical function. What also emerges from this chapter is the number of important eye structures that have barely been touched by the modern developmental biologist. Work on cornea and ante rior chamber development has lagged behind lens and retina.

Examines the establishment of the germ layers and other cell lineages in the early embryo including details of cell movements during the beginning stages of primitive streak formation. Discusses patterns of gene expression during the development of such tissues as the limb bud, skeletal, muscle and the central nervous systems placing special emphasis on commitment to particular cell types. Although it concentrates on the mouse as an example of mammalian development--chick, amphibian and

Drosophila embryogenesis are employed whenever these organisms are more applicable to the study of a particular problem.

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