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R. Brehm · K. Steger

# **Regulation of Sertoli Cell and Germ Cell Differentiation**

# Regulation Of Sertoli Cell And Germ Cell Differentiation

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## **Regulation Of Sertoli Cell And Germ Cell Differentiation:**

*Regulation of Sertoli Cell and Germ Cell Differentiation* R. Brehm, Klaus Steger, 2005-12-12 Unwanted childlessness affects approximately one in six couples worldwide though the exact proportion of the predominant cause of the problem remains controversial according to the World Health Organization WHO in nearly 40% of cases the cause can be attributed to the female in 20% to the male in 25% to both and in 15% the cause remains unknown Based on these figures the incidence of male factor infertility in the general population is approximately 7% The majority of these men approximately 30% experience irreversible idiopathic infertility and cannot father children without some form of medical intervention Male factor infertility in addition may be caused by testicular germ cell cancer which is known to represent the most common cancer among young men aged 15 to 35 years in Western industrialized countries The number of affected men has increased dramatically over the past 50 years There is now growing evidence that human testicular germ cell cancer originates from fetal germ cells exhibiting an aberrant programme of gene expression and tumour progression may be favoured by an aberrant Sertoli cell germ cell communication

Regulation of Sertoli Cell and Germ Cell Differentiation R. Brehm, Klaus Steger, 2009-09-02 Unwanted childlessness affects approximately one in six couples worldwide though the exact proportion of the predominant cause of the problem remains controversial according to the World Health Organization WHO in nearly 40% of cases the cause can be attributed to the female in 20% to the male in 25% to both and in 15% the cause remains unknown Based on these figures the incidence of male factor infertility in the general population is approximately 7% The majority of these men approximately 30% experience irreversible idiopathic infertility and cannot father children without some form of medical intervention Male factor infertility in addition may be caused by testicular germ cell cancer which is known to represent the most common cancer among young men aged 15 to 35 years in Western industrialized countries The number of affected men has increased dramatically over the past 50 years There is now growing evidence that human testicular germ cell cancer originates from fetal germ cells exhibiting an aberrant programme of gene expression and tumour progression may be favoured by an aberrant Sertoli cell germ cell communication

Endocrine and Paracrine Regulation of Spermatogenesis - A Collection of Up to Date Research Contributions on Testis Formation and Function Erwin

Goldberg, Barry Zirk, Vassilios Papadopoulos, Polina V. Lishko, 2022-08-29

**Knobil and Neill's Physiology of**

**Reproduction** Ernst Knobil, 2006 The 3rd edition the first new one in ten years includes coverage of molecular levels of detail arising from the last decade's explosion of information at this level of organismic organization There are 5 new Associate Editors and about 2/3 of the chapters have new authors Chapters prepared by return authors are extensively revised Several new chapters have been added on the topic of pregnancy reflecting the vigorous investigation of this topic during the last decade The information covered includes both human and experimental animals basic principles are sought and information at the organismic and molecular levels are presented The leading comprehensive work on the physiology of

reproduction Edited and authored by the world's leading scientists in the field Is a synthesis of the molecular cellular and organismic levels of organization Bibliographies of chapters are extensive and cover all the relevant literature *Systemic Regulation of Organ Homeostasis and Implications of Hormones and Immunity* Premendu Prakash Mathur, Rajakumar Anbazhagan, Raghuveer Kavarthapu, Hridayesh Prakash, Tatjana S. Kostic, 2021-10-29 *Hormonal Regulation of Spermatogenesis* Frank French, 2012-12-06 The conference represented by this book was made possible by support from NICHD and a planning committee headed by Dr Richard Sherins Two general areas of research are included the first encompasses steroid hormone synthesis metabolism and transport in the testis and the second relates to hormonal regulation of the seminiferous tubule with special emphasis on the control of Sertoli cell function In addition there are sections on the purification of unique testicular proteins and morphological studies with particular emphasis on the Sertoli cell We would like to express our sincere thanks to Dr Sherins and his staff at NICHD and to all of the people at the University of North Carolina who participated in the Conference arrangements to Dr Judson J Van Wyk Chief of the Pediatric Endocrinology Division and Dr H Stanley Bennett Director of the Laboratories for Reproductive Biology Our very special thanks to Mrs Carolyn Jaros for her help in handling the local arrangements Mrs Martha Byrd and Mrs Linda Rollins typed the manuscripts Miss Leslie Wells and Mr Albert Smith kindly assisted in proof reading and Dr Elizabeth Wilson gave much help with the final editing process To all of these people we are most grateful *Biology and Regulation of Blood-Tissue Barriers* C. Yan Cheng, 2014-01-25 This book was written by many outstanding investigators who have spent decades to study different aspects of blood tissue barrier function They have summarized some of the latest and fascinating development in their fields of research including the blood brain barrier the blood retinal barrier the gut barrier the blood biliary barrier the blood follicle barrier the blood epididymis barrier the blood testis barrier the tight junction barrier in general as well as barriers in the female reproductive tract Included are also chapters that focus on topics that are physiologically applicable to all blood tissue barriers Many of these chapters also include information on specific human diseases such as pathological changes of the gut barrier that cause bowel disorders resulting from inflammation of the epithelial lining in the intestine and infertility in men as a result of disruption of the blood epididymal and or blood testis barriers and on new therapeutic approaches e.g drug delivery across the blood brain and the blood retinal barriers **Knobil and Neill's Physiology of Reproduction** Tony M. Plant, Anthony J. Zeleznik, 2014-11-15 The Fourth Edition of Knobil Neill continues to serve as a reference aid for research to provide the historical context to current research and most importantly as an aid for graduate teaching on a broad range of topics in human and comparative reproduction In the decade since the publication of the last edition the study of reproductive physiology has undergone monumental changes Chief among these advances are in the areas of stem cell development signaling pathways the role of inflammation in the regulatory processes in the various tissues and the integration of new animal models which have led to a greater understanding of human disease The new edition

synthesizes all of this new information at the molecular cellular and organismal levels of organization and present modern physiology a more understandable and comparative context The Fourth Edition has been extensively revised reflecting new fundamental advancements in this rapidly advancing field Provides a common language for researchers across the fields of physiology endocrinology and biology to discuss their understanding of reproduction Saves academic researchers time in quickly accessing the very latest details on reproductive physiology as opposed to searching through thousands of journal articles

*Molecular Biology of the Male Reproductive System* David de Kretser, 2012-12-02 Written by experts in their respective fields this book reviews the expanding knowledge concerning the mechanisms regulating male reproduction at the molecular and cellular levels It covers the development of the testes and regulatory controls for spermatogenesis and steroidogenesis and it considers aspects of Sertoli cell function Areas of emphasis include communication between the various cell types involved in reproduction by hormone and growth factors and the mechanisms by which these factors regulate gene expression A number of mammalian systems including humans are covered The carefully selected authors provide a clear synopsis of the concepts in each area as well as the latest references enabling the reader to investigate the topic further This book is of interest to those seeking an understanding of the regulatory mechanisms in male reproduction and is written for the graduate and postgraduate levels Provides up to date reviews of the molecular and cellular biology of male reproduction Includes chapters on the developmental biology of the testes Links conventional hormonal control of testicular function with the evolving role of growth factors and proto oncogenes

**Urologic Principles and Practice** Christopher R. Chapple, William D. Steers, Christopher P. Evans, 2020-01-02 This book fulfils the need for a general urology text primarily urologists in training It has a novel format by having a clinical chapter always preceded by a scientific foundation chapter The scientific chapter is geared toward answering questions for boards and understanding pathophysiology is concise and relevant The clinical chapter is written around evidence based medicine and in how to format with algorithms with reference to AUA EAU guidelines well illustrated

**Cumulated Index Medicus**, 1989 Proteomics of Spermatogenesis G. S. Gupta, 2006-07-02 Recent developments of experimental techniques in cellular and molecular biology have made it possible to understand the molecular biology of male gametogenesis in greater detail This book focuses on the description of specialized proteins which are dominantly and or specifically expressed in germ cells and localized in spermatozoa There is an urgent need to classify proteins of spermatogenic cells with a view of their functions and their applications in the regulation of fertility and in understanding infertility The understanding of structural properties of male germ cell specific proteins can offer vulnerable points for targeted intervention in testis without generalized effects on stages of spermatogenesis Besides targeted action in male germ cells sperm specific proteins and polypeptides may also offer potential application in the development of a contraceptive vaccine

Principles of Toxicology Stephen M. Roberts, Robert C. James, Phillip L. Williams, 2015-01-12 A fully updated and expanded edition of the bestselling guide on toxicology and its

practical application Covers the diverse chemical hazards encountered in the modern work and natural environment and provides a practical understanding of these hazards New chapters cover the emerging areas of toxicology such as omics computational toxicology and nanotoxicology Provides clear explanations and practical understanding of the fundamentals necessary for an understanding of the effects of chemical hazards on human health and ecosystems Includes case histories and examples from industry demonstrate the application of toxicological principles Supplemented with numerous illustrations to clarify and summarize key points annotated bibliographies and a comprehensive glossary of toxicological terms **Biomedical Index to PHS-supported Research** ,1993 Biochemistry of Andrology Marco G. Alves,Pedro F. Oliveira,2017-07-04

This book is a concise textbook of iatrogenic pathology Chapters cover iatrogenesis relevant to a broad range of medical subspecialties cardiology gastroenterology gynecology neurology endocrinology and much more The book presents an introduction to iatrogenesis which is followed by chapter wise descriptions of iatrogenic lesions lesions due to adverse drug reactions lesions occurring during diagnosis and consequences of various therapeutic interventions of the organs and systems of the body This textbook is a handy resource on iatrogenic pathology for medical students and working professionals clinical and nursing staff involved in a range of medical subspecialties **Modulators of**

**hypothalamic-pituitary-gonadal axis for the control of spermatogenesis and sperm quality in vertebrates** Gilda Cobellis,SILVIA FASANO,Riccardo Pierantoni,Rosaria Meccariello,2014-12-01 Spermatogenesis is a process highly conserved throughout vertebrate species and is mainly under hypothalamic pituitary control It occurs in the testis in a stepwise fashion so that committed spermatogonia develop into spermatocytes and enter meiosis to produce round spermatids These undergo a morphological transformation spermiogenesis into mature spermatids i e spermatozoa which are differentially released from Sertoli cells spermiation depending on the species In mammals further transformations are necessary to form mature spermatozoa suitable for fertilization Gonadotropins mainly responsive to gonadotropin releasing hormone control spermatogenesis through specific receptors located at the gonadal level However besides the endocrine route the chemical mediators may also act locally in the gonad Indeed it is documented that testis physiology including steroidogenesis and spermatogenesis does not fully account for traditional endocrine control but an intragonadal network of autocrine and or paracrine regulators also exists whose activity via cell to cell communication regulates germ cell progression and development of qualitatively mature spermatozoa Of note a number of testicular modulators such as gonadotropin releasing hormone Kiss peptin endocannabinoids has been early isolated in the brain and latest in the gonads To fully understand precise mechanisms underlying the functional interaction of this intricate network needless to say it is crucially required to have detailed information about modulators and target cells Through synergy between the respective specializations of all the authors this topic reviewed emerging knowledge about neuroendocrine and local mediators controlling germ cell progression and maturation **Testis, Epididymis and Technologies in the Year 2000** B. Jegou,C. Pineau,J.

Saez,2013-06-29 A number of chapters present the most novel research on testicular and epididymal functions or on more general fields of hormone action and molecular cell biology as it is now a tradition However exceptionally the book also contains several chapters dealing with the Approaches and Tools in the Third Millenium The unusual inclusion of technologies as such in the 2000 edition of the workshop was an absolute necessity as these technologies are revolutionizing the fields of biology and medicine and in many instances how to do research This volume gives the scientific community essential information about the very latest technical developments and their potential for future progress

**Cell and Molecular Biology of the Testis** Claude Desjardins,Larry L. Ewing,1993 This book is a comprehensive multi authored work on the structure and function of the mammalian testis The approach emphasizes gene expression translation and production of specific gene products and the cellular and molecular regulation of these fundamental processes Rather than provide a global survey of all aspects of male reproduction this book stresses specific mechanisms that underscore the structure and function of the testis It explains old and new concepts from a cellular and molecular perspective This novel approach allows the authors to forge links between cell and molecular biology and well established aspects of spermatogenesis and steroidogenesis The result is a well focused comprehensive and synthetic analysis of testicular biology

Intercellular Signaling in Development and Disease Edward A. Dennis,Ralph A. Bradshaw,2011-04-05 Required reading for anyone involved in cell signaling research with articles written and edited by experts in the field This title covers disease states such as lymphoid leukemia breast cancer pulmonary fibrosis systemic sclerosis and inflammatory bowel disease along with up to date research on signaling systems and mutations in transcription factors that provide new targets for treating disease Articles written and edited by experts in the field Thematic volume covering disease states such as lymphoid leukemia breast cancer pulmonary fibrosis systemic sclerosis and inflammatory bowel disease Up to date research on signaling systems and mutations in transcription factors that provide new targets for treating disease

**Encyclopedia of Reproduction** ,2018-06-29 Encyclopedia of Reproduction Second Edition Six Volume Set comprehensively reviews biology and abnormalities also covering the most common diseases in humans such as prostate and breast cancer as well as normal developmental biology including embryogenesis gestation birth and puberty Each article provides a comprehensive overview of the selected topic to inform a broad spectrum of readers from advanced undergraduate students to research professionals Chapters also explore the latest advances in cloning stem cells endocrinology clinical reproductive medicine and genomics As reproductive health is a fundamental component of an individual s overall health status and a central determinant of quality of life this book provides the most extensive and authoritative reference within the field Provides a one stop shop for information on reproduction that is not available elsewhere Includes extensive coverage of the full range of topics from basic to clinical considerations including evolutionary advances in molecular cellular developmental and clinical sciences Includes multimedia and interactive teaching tools such as downloadable PowerPoint slides video content and interactive elements

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