

Trp Channels As Therapeutic Targets From Basic Science To Clinical Use

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Ion Channels Down Under 2017-05-18 Ion Channels Down Under, Volume 79 provides up-to-date information on ion channel pharmacology, their pharmacological modulators, and role in a diverse range of poorly treated medical conditions. Contributors include prominent scientists and highly-recognized experts with major accomplishments in the field of ion channel pharmacology. Topics covered include the role of ion channels in health and disease, ion channels as therapeutic targets and the molecular pharmacology of ion channels. Provides a must read book on ion channel pharmacology
Contains up-to-date information on a number of ion channels, their pharmacological modulators, and their role in a diverse range of poorly treated medical conditions
Contains contributions from prominent scientists and highly-recognized experts with major accomplishments in the field
Frontiers in Clinical Drug Research - Hematology: Volume 4 Atta-ur-Rahman 2020-11-30 Frontiers in Clinical Drug Research - Hematology is a book series that brings updated reviews to readers interested in learning about advances in the development of pharmaceutical agents for the treatment of hematological disorders. The scope of the book series covers a range of topics including the medicinal chemistry, pharmacology, molecular biology and biochemistry of natural and synthetic drugs employed in the treatment of anemias, coagulopathies, vascular diseases and hematological malignancies. Reviews in this series also include research on specific antibody targets, therapeutic methods, genetic hemoglobinopathies and pre-clinical / clinical findings on novel pharmaceutical agents. Frontiers in Clinical Drug Research - Hematology is a valuable resource for pharmaceutical scientists and postgraduate students seeking updated and critically important information for developing clinical trials and devising research plans in the field of hematology, oncology and vascular pharmacology. The fourth volume of this series features 5 reviews: -TRP Channels: Potential Therapeutic Targets in Blood Disorders - Hypercoagulable States: Clinical Symptoms, Laboratory Markers and Management -Advanced Applications of Gene Therapy in the Treatment of Hematologic Disorders -Ferroptosis -Importance and Potential Effects in Hematological Malignancies -Clinical Application of Liquid Biopsy in Solid Tumor HCC: Prognostic, Diagnostic and Therapy Monitoring Tool.

Ion Channels in Health and Sickness Fatima Shad Kaneez 2018-10-10 Ion channels are proteins that make pores in the membranes of excitable cells present both in the brain and the body. These cells are not only responsible for converting chemical and mechanical stimuli into the electrical signals but are also liable for monitoring vital functions. All our activities, from the blinking of our eyes to the beating of our heart and all our senses from smell to sight, touch, taste and hearing are regulated by the ion channels. This book will take us on an expedition describing the role of ion channels in congenital and acquired diseases and the challenges and limitations scientist are facing in the development of drugs targeting these membrane proteins.

Frontiers in CNS Drug Discovery Atta-ur-Rahman 2013-09-10 "Frontiers in CNS Drug Discovery" is an eBook series devoted to publishing the latest and the most important advances in Central Nervous System (CNS) drug design and discovery. Eminent scientists write contributions on all areas of rational drug design and drug discovery including medicinal chemistry, in-silico drug design, combinatorial chemistry, high-throughput screening, drug targets, recent important patents, and structure-activity relationships. The eBook series should prove to be of interest to all pharmaceutical scientists involved in research in CNS drug design and discovery. Each volume is devoted to the major advances in CNS drug design and discovery. The eBook series is essential reading to all scientists involved in drug design and discovery who wish to keep abreast of rapid and important developments in the field.

TRP Channels in Health and Disease Alexander Dietrich 2019-06-25 Almost 25 years ago, the first mammalian transient receptor potential (TRP) channel was cloned and published. TRP channels now represent an extended family of 28 members fulfilling multiple roles in the living organism. Identified functions include control of body temperature, transmitter release, mineral homeostasis, chemical sensing, and survival mechanisms in a challenging environment. The TRP channel superfamily covers six families: TRPC with C for "canonical", TRPA with A for "ankyrin", TRPM with M for "melastatin", TRPML with ML for "mucolipidin", TRPP with P for "polycystin", and TRPV with V for "vanilloid". Over the last few years, new findings on TRP channels have confirmed their exceptional function as cellular sensors and effectors. This Special Book features a collection of 8 reviews and 7 original articles published in "Cells" summarizing the current state-of-the-art on TRP channel research, with a main focus on TRP channel activation, their physiological and pathophysiological function, and their roles as pharmacological targets for future therapeutic options.

Membrane Receptors, Channels and Transporters in Pulmonary Circulation Jason X. -J. Yuan 2011-05-27 Membrane Receptors, Channels and Transporters in Pulmonary Circulation is a proceeding of the 2008 Grover Conference (Lost Valley Ranch and Conference Center, Sedalia, Colorado; September 3-7, 2008), which provided a forum for experts in the fields of those receptors, channels and transporters that have been identified as playing key roles in the physiology and pathophysiology of the pulmonary circulation. The book rigorously addresses: i) recent advances in our knowledge of receptors, channels and transporters and their role in regulation of pulmonary vascular function; ii) how modulation of expression and function of receptors, channels and transporters and their interrelationships contribute to the pathogenesis of pulmonary vascular disease; and iii) the therapeutic opportunities that may be revealed by enhancing our understanding of this area. The overall goal was to explore the mechanisms by which specific receptors, channels and transporters contribute to pulmonary vascular function in both health and disease, and how this knowledge may lead to novel interventions in lung dysplasia, pulmonary edema, lung injury, and pulmonary and systemic hypertension to reduce and prevent death from lung disease. Membrane Receptors, Channels and Transporters in Pulmonary Circulation is divided into six parts. Part I (Ion Channels in the Pulmonary Vasculature: Basics and New Findings) is designated for basic knowledge and recent findings in the research field of ion channels in pulmonary circulation. There are five chapters in Part I discussing the function, expression, distribution and regulation of various ion channels present in pulmonary vascular smooth muscle cells and how these channels are integrated to regulate intracellular Ca2+ and cell functions. Part II (TRP Channels in the Pulmonary Vasculature: Basics and New Findings) is composed of five chapters that are exclusively designed to discuss the role of a recently identified family of cation channels, transient receptor potential (TRP) channels, in the regulation of pulmonary vascular tone and arterial structure. Part III (Pathogenic Role of Ion Channels in Pulmonary Vascular Disease) includes four chapters that discuss how abnormal function and expression of various ion channels contribute to changes in cell functions and the development of pulmonary hypertension. Part IV (Receptors and Signaling Cascades in Pulmonary Arterial Hypertension) consists of five chapters devoted to the role of bone morphogenetic protein receptors, Notch receptors, serotonin receptors, Rho kinase and vascular endothelial growth factor receptors in the development of pulmonary arterial hypertension. Part V (Receptors and Transporters: Role in Cell Function and Hypoxic Pulmonary Vasoconstriction) includes four chapters designed to illustrate the potential mechanisms involved in oxygen sensing and hypoxia-induced pulmonary vasoconstriction and hypertension. Part VI (Targeting Ion Channels and Membrane Receptors in Developing Novel Therapeutic Approaches for Pulmonary Vascular Disease) consists five chapters which discuss the translational research involving on membrane receptors, channels and transporters, including their potential as novel drug targets. We hope that Membrane Receptors, Channels and Transporters in Pulmonary Circulation will allow readers to foster new concepts and new collaborations and cooperations among investigators so as to further understand the role of receptors, channels and transporters in lung pathophysiology. The ultimate goal is to identify new mechanisms of disease, as well as new therapeutic targets for pulmonary vascular diseases. An additional outcome should be enhanced understanding of the role of these entities in systemic vascular pathophysiology, since the conference will include researchers and clinicians with interests in both pulmonary and systemic circulations.

Ion Channel Signalling in Cancer: From Molecular Mechanisms To Therapeutics Elena Adinolfi 2021-08-02

TRP Ion Channel Function in Sensory Transduction and Cellular Signaling Cascades Wolfgang B. Liedtke, MD, PH.D. 2006-09-29 Since the first TRP ion channel was discovered in *Drosophila melanogaster* in 1989, the progress made in this area of signaling research has yielded findings that offer the potential to dramatically impact human health and wellness. Involved in gateway activity for all five of our senses, TRP channels have been shown to respond to a wide range of stimuli from both within and outside the cell body. How we sense heat and cold, how we taste food, how eggs are fertilized, how the heart expands and contracts is each dependent on the function of these channels. While no single book could possibly cover all the research being undertaken, TRP Ion Channel Function in Sensory Transduction and Cellular Signaling Cascades presents the most advanced compilation of work in this area to date. All 31 chapters are written by international pioneers working at the vanguard of TRP ion channel research. They explain much about the pivotal function and behavior of these channels, which are most exquisitely tuned to their specific tasks, and delve into how researchers are putting this knowledge to use in the development of novel pharmaceuticals, which may well prove effective in ameliorating treatment-resistant conditions including cancer, heart disease, inflammation, and immune system dysfunctions. Individual chapters shed light on selected topics of interest in the TRP arena, such as signal transduction in axonal path-finding, and in vascular, renal, and auditory functions, as well as pain. The text also covers subjects as diverse as mating and fertilization, inflammatory pain, and mechanisms of pheromone detection in mammals. While the book presents much new insight and explores findings that will be of interest to those involved with advanced research, it also includes significant background material for those looking to familiarize themselves with this exceptionally promising path of inquiry.

TRP Channels in Health and Disease Alexander Dietrich 2019 Almost 25 years ago, the first mammalian transient receptor potential (TRP) channel was cloned and published. TRP channels now represent an extended family of 28 members fulfilling multiple roles in the living organism. Identified functions include control of body temperature, transmitter release, mineral homeostasis, chemical sensing, and survival mechanisms in a challenging environment. The TRP channel superfamily covers six families: TRPC with C for "canonical", TRPA with A for "ankyrin", TRPM with M for "melastatin", TRPML with ML for "mucolipidin", TRPP with P for "polycystin", and TRPV with V for "vanilloid". Over the last few years, new findings on TRP channels have confirmed their exceptional function as cellular sensors and effectors. This Special Book features a collection of 8 reviews and 7 original articles published in "Cells" summarizing the current state-of-the-art on TRP channel research, with a main focus on TRP channel activation, their physiological and pathophysiological function, and their roles as pharmacological targets for future therapeutic options.

Itch E. Carstens 2014-02-25 Advances in itch research have elucidated differences between itch and pain but have also blurred the distinction between them. There is a long debate about how somatic sensations including touch, pain, itch, and temperature sensitivity are encoded by the nervous system. Research suggests that each sensory modality is processed along a fixed, direct-line communication system from the skin to the brain. *Itch: Mechanisms and Treatment* presents a timely update on all aspects of itch research and the clinical treatment of itch that accompanies many dermatological conditions including psoriasis, neuropathic itch, cutaneous t-cells lymphomas, and systemic diseases such as kidney and liver disease and cancer. Composed of contributions from distinguished researchers around the world, the book explores topics such as: Neuropathic itch Peripheral neuronal mechanism of itch The role of PAR-2 in neuroimmune communication and itch Mrgprs as itch receptors The role of interleukin-31 and oncostatin M in itch and neuroimmune communication Spinal coding of itch and pain Spinal microcircuits and the regulation of itch Examining new findings on cellular and molecular mechanisms, the book is a compendium of the most current research on itch, its prevalence in society, and the problems associated with treatment.

Parasitic Flatworms Aaron G. Maule 2006 Parasitic flatworms include Cestodes (tapeworms) and trematodes (flukes, schistosomes, etc) and are the cause of a number of major diseases of medical and veterinary significance. Much recent research has focused on molecular biology and genomics. This book aims to review advances in our understanding of these and related topics such as flatworm biochemistry, immunology and physiology. Where appropriate, comparisons are made between different parasitic flatworms and between parasitic and free-living species. Contributors to the book include leading authorities from Europe, North and South America, and Australia.

Transient Receptor Potential Channels Md. Shahidul Islam 2011-02-04 Transient Receptor Potential Channels offers a unique blend of thoughtfully selected topics ranging from the structural biology of this fascinating group of ion channels to their emerging roles in human diseases. This single book covers TRP channels of yeasts, flies, fishes frogs and humans. And from the biophysics of primary thermo-sensory events in cells to the thermosensation at whole organism level, from physiology of pain to the development of pain-killers, from psychiatric illnesses to cancers, from skin cells to sperms, from taste buds to testes, from established facts to heated debates, this book contains something for every TRP enthusiasts, beginner and expert alike. It includes crucial background information, critical analysis of cutting edge research, and ideas and thoughts for numerous testable hypotheses. It also shows directions for future research in this highly dynamic field. It is a book readers will be just as eager to give to others as keep for themselves.

Calcium Entry Channels in Non-Excitable Cells Julius Ashot Kozak 2017-07-14 Calcium Entry Channels in Non-Excitable Cells focuses on methods of investigating the structure and function of non-voltage gated calcium channels. Each chapter presents important discoveries in calcium entry pathways, specifically dealing with the molecular identification of store-operated calcium channels which were reviewed by earlier volumes in the Methods in Signal Transduction series. Crystallographic and pharmacological approaches to the study of calcium channels of epithelial cells are also discussed. Calcium ion is a messenger in most cell types. Whereas voltage gated calcium channels have been studied extensively, the non-voltage gated calcium entry channel genes have only been identified relatively recently. The book will fill this important niche.

Membrane Receptors, Channels and Transporters in Pulmonary Circulation Jason X. -J. Yuan 2010-03-10 Membrane Receptors, Channels and Transporters in Pulmonary Circulation is a proceeding of the 2008 Grover Conference (Lost Valley Ranch and Conference Center, Sedalia, Colorado; September 3-7, 2008), which provided a forum for experts in the fields of those receptors, channels and transporters that have been identified as playing key roles in the physiology and pathophysiology of the pulmonary circulation. The book rigorously addresses: i) recent advances in our knowledge of receptors, channels and transporters and their role in regulation of pulmonary vascular function; ii) how modulation of expression and function of receptors, channels and transporters and their interrelationships contribute to the pathogenesis of pulmonary vascular disease; and iii) the therapeutic opportunities that may be revealed by enhancing our understanding of this area. The overall goal was to explore the mechanisms by which specific receptors, channels and transporters contribute to pulmonary vascular function in both health and disease, and how this knowledge may lead to novel interventions in lung dysplasia, pulmonary edema, lung injury, and pulmonary and systemic hypertension to reduce and prevent death from lung disease. Membrane Receptors, Channels and Transporters in Pulmonary Circulation is divided into six parts. Part I (Ion Channels in the Pulmonary Vasculature: Basics and New Findings) is designated for basic knowledge and recent findings in the research field of ion channels in pulmonary circulation. There are five chapters in Part I discussing the function, expression, distribution and regulation of various ion channels present in pulmonary vascular smooth muscle cells and how these channels are integrated to regulate intracellular Ca2+ and cell functions. Part II (TRP Channels in the Pulmonary Vasculature: Basics and New Findings) is composed of five chapters that are exclusively designed to discuss the role of a recently identified family of cation channels, transient receptor potential (TRP) channels, in the regulation of pulmonary vascular tone and arterial structure. Part III (Pathogenic Role of Ion Channels in Pulmonary Vascular Disease) includes four chapters that discuss how abnormal function and expression of various ion channels contribute to changes in cell functions and the development of pulmonary hypertension. Part IV (Receptors and Signaling Cascades in Pulmonary Arterial Hypertension) consists of five chapters devoted to the role of bone morphogenetic protein receptors, Notch receptors, serotonin receptors, Rho kinase and vascular endothelial growth factor receptors in the development of pulmonary arterial hypertension. Part V (Receptors and Transporters: Role in Cell Function and Hypoxic Pulmonary Vasoconstriction) includes four chapters designed to illustrate the potential mechanisms involved in oxygen sensing and hypoxia-induced pulmonary vasoconstriction and hypertension. Part VI (Targeting Ion Channels and Membrane Receptors in Developing Novel Therapeutic Approaches for Pulmonary Vascular Disease) consists five chapters which discuss the translational research involving on membrane receptors, channels and transporters, including their potential as novel drug targets. We hope that Membrane Receptors, Channels and Transporters in Pulmonary Circulation will allow readers to foster new concepts and new collaborations and cooperations among investigators so as to further understand the role of receptors, channels and transporters in lung pathophysiology. The ultimate goal is to identify new mechanisms of disease, as well as new therapeutic targets for pulmonary vascular diseases. An additional outcome should be enhanced understanding of the role of these entities in systemic vascular pathophysiology, since the conference will include researchers and clinicians with interests in both pulmonary and systemic circulations.

Functional Studies of Thermosensitive Transient Receptor Potential (TRP) Ion Channel Regulation Jacob Kenneth Hilton 2019 All organisms need to be able to sense and respond to their environment. Much of this process takes place via proteins embedded in the cell membrane, the border between a living thing and the external world. Transient receptor potential (TRP) ion channels are a superfamily of membrane proteins that play diverse roles in physiology. Among the 27 TRP channels found in humans and other animals, TRP melastatin 8 (TRPM8) and TRP vanilloid 1 (TRPV1) are the primary sensors of cold and hot temperatures, respectively. They underlie the molecular basis of somatic temperature sensation, but beyond this are also known to be involved in body temperature and weight regulation, inflammation, migraine, nociception, and some types of cancer. Because of their broad physiological roles, these

channels are an attractive target for potential therapeutic interventions. This dissertation presents experimental studies to elucidate the mechanisms underlying TRPM8 and TRPV1 function and regulation. Electrophysiology experiments show that modulation of TRPM8 activity by phosphoinositide interacting regulator of TRP (PIRT), a small membrane protein, is species dependent; human PIRT attenuates TRPM8 activity, whereas mouse PIRT potentiates the channel. Direct binding experiments and chimeric mouse-human TRPM8 channels reveal that this regulation takes place via the transmembrane domain of the channel. Ligand activation of TRPM8 is also investigated. A mutation in the linker between the S4 and S5 helices is found to generally decrease TRPM8 currents, and to specifically abrogate functional response to the potent agonist icilin without affecting icilin binding. The heat activation thermodynamics of TRPV1 are also probed using temperature-controlled electrophysiology. The magnitude of the gating enthalpy of human TRPV1 is found to be similar to other species reported in the literature. Human TRPV1 also features an apparent heat inactivation process that results in reduced heat sensitivity after exposure to elevated temperatures. The work presented in this dissertation sheds light on the varied mechanisms of thermosensitive TRP channel function and regulation.

Transient Receptor Potential (TRP) Channels in Drug Discovery: Old Concepts & New Thoughts Arpad Szallasi 2018-06-22 This book is a printed edition of the Special Issue "Transient Receptor Potential (TRP) Channels in Drug Discovery: Old Concepts & New Thoughts" that was published in *Pharmaceuticals*

Dyspepsia Michael Curley 2013-11-06 This textbook is specifically written for clinicians involved in managing patients with dyspepsia. It is a practical guide with up-to-date suggestions on evaluation, diagnosis, and management from experts from around the world. Each chapter is a succinct review of current topics that play a role in the pathogenesis and management of this disorder. Special populations such as pediatric, those with cardiovascular disease and womens health are specifically examined.

Store-Operated Calcium Channels 2013-07-24 Store-operated calcium channels are found in most animal cells and regulate many cellular functions including cell division, growth, differentiation, and cell death. This volume provides a concise and informative overview of the principles of store-operated calcium entry and the key developments in the field from researchers who have led these advances. The overall goal of the volume is to provide interested students and investigators with sufficient information to enable a broad understanding of the progress and current excitement in the field. The volume contains a wealth of information that even experienced investigators in the field will find useful. The volume provides a comprehensive overview of the mechanisms and functions of store-operated calcium channels. Contributors are authoritative researchers who have produced important advances in the field. The volume is well-illustrated with cartoons and data to facilitate easy comprehension of the subject.

Membrane Protein Complexes: Structure and Function J. Robin Harris 2018-02-20 This edited book contains a compilation of 14 advanced academic chapters dealing with the structure and function of membrane protein complexes. This rapidly advancing important field of study closely parallels those on soluble protein complexes, and viral protein and nucleoprotein complexes. Diverse topics are included in this book, ranging from membrane-bound enzymes to ion channels, proton pumps and photosystems. Data from X-ray crystallography, cryo-electron microscopy and other biophysical and biochemical techniques are presented throughout the book. There is extensive use of colour figures of protein structures. Throughout the book structure and function are closely correlated. The two editors, Egbert Boekema and J. Robin Harris, have worked on aspects of membrane and soluble proteins throughout their scientific careers and also have much publishing experience. The Subcellular Biochemistry series has expanded considerably in recent years, including several related volumes. The theme of protein complexes will be continued within several future volumes, thereby creating encyclopaedic coverage. The chapter topics within this book are particularly relevant to those involved in the biological and biomedical sciences. It is aimed at the advanced undergraduates, postgraduates and established researchers within this broad field. It is hoped that the book will be of interest and use to those involved with the study of cellular membranes and their associated proteins.

Mammalian TRP Channels as Molecular Targets Derek J. Chadwick 2004-04-16 This book brings together contributions from key investigators in the area of Transient Receptor Potential (TRP) channel structure and function. It covers the structure, function and regulation of mammalian TRP channels and mechanisms of signal transduction. The discussions indicate research that would improve understanding of the role of TRP channels in normal cellular physiology, the involvement of TRP channels in disease states and their potential use as molecular targets for novel therapeutic agents.

Ion Channels as Therapeutic Targets 2016-03-31 This volume is the second part of the thematic on Ion Channels as Therapeutic Targets. The popular *Advances in Protein Chemistry and Structural Biology* series, an essential resource for protein chemists, brings forth new information about protocols and analysis of proteins, with each thematically organized volume guest edited by leading experts in a broad range of protein-related topics. Provides cutting-edge developments in protein chemistry and structural biology Discusses the use of ion channels as therapeutic targets Chapters are written by authorities in their field Targeted to a wide audience of researchers, specialists, and students

Vanilloid Receptor TRPV1 in Drug Discovery Arthur Gontsyan 2010-02-12 Examines the emerging therapeutic role of TRPV1 TRPV1 is considered an integrator of noxious stimuli and therefore may be at a crossroads for pain transmission pathways. Because of its potential for managing multiple pain types, including osteoarthritis, chronic low back pain, neuropathic pain, and cancer pain, some consider it "the holy grail" of pain management. This dedicated reference summarizes available data related to the potential therapeutic utility for TRPV1 ligands. With contributions from many of the world's leading experts on TRP channels, Vanilloid Receptor TRPV1 in Drug Discovery covers the important TRPV1 target for drugs to treat painful conditions such as inflammation, arthritis, and cancer pain. The book discusses: Recent advances in biology, chemistry, and pharmacology at both the preclinical and clinical stage of the dynamic area of TRPV1 drug discovery research The potential for drugs targeting TRPV1 in painful conditions such as inflammation, arthritis, and cancer The development of analgesic drugs Other applications for TRPV1, including the treatment of respiratory disease and diabetes Featuring data relevant to the therapeutic potential of TRPV1 and the medicinal chemistry involved in designing TRPV1 antagonists, Vanilloid Receptor TRPV1 in Drug Discovery is a key tool for researchers in the pharmaceutical industry and academia involved in pain, ion channels, and analgesic drug development.

Reviews of Physiology, Biochemistry and Pharmacology Vol. 169 Bernd Nilius 2015-11-25 Leading researchers are specially invited to provide a complete understanding of the key topics in these archetypal multidisciplinary fields. In a form immediately useful to scientists, this periodical aims to filter, highlight and review the latest developments in these rapidly advancing fields.

Ion Channel Drug Discovery Brian Cox 2014-09-03 Ion channel drug discovery is a rapidly evolving field fuelled by recent, but significant, advances in our understanding of ion channel function combined with enabling technologies such as automated electrophysiology. The resurgent interest in this target class by both pharmaceutical and academic scientists was clearly highlighted by the over-subscribed RSC/BPS 'Ion Channels as Therapeutic Targets' symposium in February 2009. This book builds on the platform created by that meeting, covering themes including advances in screening technology, ion channel structure and modelling and up-to-date case histories of the discovery of modulators of a range of channels, both voltage-gated and non-voltage-gated channels. The editors have built an extensive network of contacts in the field through their first-hand scientific experience, collaborations and conference participation and the organisation of the meeting at Novartis, Horsham, increased the network enabling the editors to draw on the experience of eminent researchers in the field. Interest and investment in ion channel modulation in both industrial and academic settings continues to grow as new therapeutic opportunities are identified and realised for ion channel modulation. This book provides a reference text by covering a combination of recent advances in the field, from technological and medicinal chemistry perspectives, as well as providing an introduction to the new 'ion channel drug discoverer'. The book has contributions from highly respected academic researchers, industrial researchers at the cutting edge of drug discovery and experts in enabling technology. This combination provides a complete picture of the field of interest to a wide range of readers.

Innovative Medicine Kazuwa Nakao 2015-10-13 This book is devoted to innovative medicine, comprising the proceedings of the Uehara Memorial Foundation Symposium 2014. It remains extremely rare for the findings of basic research to be developed into clinical applications, and it takes a long time for the process to be achieved. The task of advancing the development of basic research into clinical reality lies with translational science, yet the field seems to struggle to find a way to move forward. To create innovative medical technology, many steps need to be taken: development and analysis of optimal animal models of human diseases, elucidation of genomic and epidemiological data, and establishment of "proof of concept". There is also considerable demand for progress in drug research, new surgical procedures, and new clinical devices and equipment. While the original research target may be rare diseases, it is also important to apply those findings more broadly to common diseases. The book covers a wide range of topics and is organized into three complementary parts. The first part is basic research for innovative medicine, the second is translational research for innovative medicine, and the third is new technology for innovative medicine. This book helps to understand innovative medicine and to make progress in its realization.

Membrane Receptors, Channels and Transporters in Pulmonary Circulation Jason X. -J. Yuan 2010-03-10 Membrane Receptors, Channels and Transporters in Pulmonary Circulation is a proceeding of the 2008 Grover Conference (Lost Valley Ranch and Conference Center, Sedalia, Colorado; September 3-7, 2008), which provided a forum for experts in the fields of those receptors, channels and transporters that have been identified as playing key roles in the physiology and pathophysiology of the pulmonary circulation. The book rigorously addresses: i) recent advances in our knowledge of receptors, channels and transporters and their role in regulation of pulmonary vascular function; ii) how modulation of expression and function of receptors, channels and transporters and their interrelationships contribute to the pathogenesis of pulmonary vascular disease; and iii) the therapeutic opportunities that may be revealed by enhancing our understanding of this area. The overall goal was to explore the mechanisms by which specific receptors, channels and transporters contribute to pulmonary vascular function in both health and disease, and how this knowledge may lead to novel interventions in lung dysplasia, pulmonary edema, lung injury, and pulmonary and systemic hypertension to reduce and prevent death from lung disease. Membrane Receptors, Channels and Transporters in Pulmonary Circulation is divided into six parts. Part I (Ion Channels in the Pulmonary Vasculature: Basics and New Findings) is designated for basic knowledge and recent findings in the research field of ion channels in pulmonary circulation. There are five chapters in Part I discussing the function, expression, distribution and regulation of various ion channels present in pulmonary vascular smooth muscle cells and how these channels are integrated to regulate intracellular Ca2+ and cell functions. Part II (TRP Channels in the Pulmonary Vasculature: Basics and New Findings) is composed of five chapters that are exclusively designed to discuss the role of a recently identified family of cation channels, transient receptor potential (TRP) channels, in the regulation of pulmonary vascular tone and arterial structure. Part III (Pathogenic Role of Ion Channels in Pulmonary Vascular Disease) includes four chapters that discuss how abnormal function and expression of various ion channels contribute to changes in cell functions and the development of pulmonary hypertension. Part IV (Receptors and Signaling Cascades in Pulmonary Arterial Hypertension) consists of five chapters devoted to the role of bone morphogenetic protein receptors, Notch receptors, serotonin receptors, Rho kinase and vascular endothelial growth factor receptors in the development of pulmonary arterial hypertension. Part V (Receptors and Transporters: Role in Cell Function and Hypoxic Pulmonary Vasoconstriction) includes four chapters designed to illustrate the potential mechanisms involved in oxygen sensing and hypoxia-induced pulmonary vasoconstriction and hypertension. Part VI (Targeting Ion Channels and Membrane Receptors in Developing Novel Therapeutic Approaches for Pulmonary Vascular Disease) consists five chapters which discuss the translational research involving on membrane receptors, channels and transporters, including their potential as novel drug targets. We hope that Membrane Receptors, Channels and Transporters in Pulmonary Circulation will allow readers to foster new concepts and new collaborations and cooperations among investigators so as to further understand the role of receptors, channels and transporters in lung pathophysiology. The ultimate goal is to identify new mechanisms of disease, as well as new therapeutic targets for pulmonary vascular diseases. An additional outcome should be enhanced understanding of the role of these entities in systemic vascular pathophysiology, since the conference will include researchers and clinicians with interests in both pulmonary and systemic circulations.

TRP Channels as Therapeutic Targets Arpad Szallasi 2015-04-09 TRP Channels as Therapeutic Targets: From Basic Science to Clinical Use is authored by experts across academia and industry, providing readers with a complete picture of the therapeutic potential and challenges associated with using TRP channels as drug targets. This book offers a unique clinical approach by covering compounds that target TRP channels in pre-clinical and clinical phases, also offering a discussion of TRP channels as biomarkers. An entire section is devoted to the novel and innovative uses of these channels across a variety of diseases, offering strategies that can be used to overcome the adverse effects of first generation TRPV1 antagonists. Intended for all researchers and clinicians working toward the development of successful drugs targeting TRP channels, this book is an essential resource chocked full of the latest clinical data and findings. Contains comprehensive coverage of TRP channels as therapeutic targets, from emerging clinical indications to completed clinical trials Discusses TRP channels as validated targets, ranging from obesity and diabetes through cancer and respiratory disorders, kidney diseases, hypertension, neurodegenerative disorders, and more Provides critical analysis of the complications and side effects that have surfaced during clinical trials, offering evidence-based suggestions for overcoming them

New Tools to Interrogate Endocannabinoid Signalling Mauro Maccarrone 2020-11-13 Legalization of cannabis extracts around the world has led to a resurgence of interest into research surrounding endocannabinoids (eCBs) and the endocannabinoid system. This system is formed of a complex array of receptors, metabolic enzymes and transporters that finely tune the manifold biological activities of eCBs and there is an urgent need for the development of selective drugs to dissect the contribution of eCBs to the aetiology of various diseases. New Tools to Interrogate Endocannabinoid Signalling comprehensively covers the innovative research into both natural and synthetic compounds that affect this pathway and taking a target-based approach, assesses their potential for therapeutic use. With contributions from global leaders in the field, this timely volume will be a valuable resource to pharmaceutical researchers and medicinal chemists working in natural products and endocannabinoid drug discovery in academia and industry.

Neurobiology of TRP Channels Tamara Luti Rosenbaum Emir 2017-08-09 During the last two decades, there has been an explosion of research pertaining to the molecular mechanisms that allow for organisms to detect different stimuli that is an essential feature for their survival. Among these mechanisms, living beings need to be able to respond to different temperatures as well as chemical and physical stimuli. Thermally activated ion channels were proposed to be present in sensory neurons in the 1980s, but it was not until 1997 that a heat- and capsaicin- activated ion channel, TRPV1, was cloned and its function described in detail. This groundbreaking discovery led to the identification and characterization of several more proteins of the family of Transient Receptor Potential (TRP) ion channels. Intensive research has provided us with the atomic structures of some of these proteins, as well as understanding of their physiological roles, both in normal and pathological conditions. With chapters contributed by renowned experts in the field, Neurobiology of TRP Channels contains a state-of-the-art overview of our knowledge of TRP channels, ranging from structure to their functions in organismal physiology. Features: • Contains chapters on the roles of several TRP ion channels with a diversity of physiological functions, providing a complete picture of the widespread importance of these proteins. • Presents an overview of the structure of TRP channels, including the roles of these proteins in different physiological processes. • Discusses the roles of TRP channels in pathophysiological processes, further highlighting their importance. • Features several full color illustrations to allow the reader better comprehension of TRP channels. A volume in the Frontiers in Neuroscience series

Ion Channels as Therapeutic Targets, Part A 2016-02-23 Ion Channels as Therapeutic Targets is the latest volume in the popular *Advances in Protein Chemistry and Structural Biology* series, an essential resource for protein chemists. Each volume brings forth new information about protocols and analysis of proteins, with each thematically organized volume guest edited by leading experts in a broad range of protein-related topics. Provides cutting-edge developments in protein chemistry and structural biology Discusses the use of ion channels as therapeutic targets Chapters are written by authorities in their field Targeted to a wide audience of researchers, specialists, and students

Involvements of TRP Channels, Oxidative Stress and Apoptosis in Neurodegenerative Diseases Mustafa Naziroglu 2021-05-03

Mammalian TRP Channels as Molecular Targets Derek J. Chadwick 2004-08-11 This book brings together contributions from key investigators in the area of Transient Receptor Potential (TRP) channel structure and function. It covers the structure, function and regulation of mammalian TRP channels and mechanisms of signal transduction. The discussions indicate research that would improve understanding of the role of TRP channels in normal cellular physiology, the involvement of TRP channels in disease states and their potential use as molecular targets for novel therapeutic agents.

Emerging Roles of TRP Channels in Brain Pathology Bilal Çiğ 2021-08-02

Transient Receptor Potential (TRP) Channels Veit Flockerzi 2007-02-07 This volume provides up-to-date information on the molecular and functional properties and pharmacology of mammalian TRP channels. Leading experts in the field have written 35 essays which describe properties of a single TRP

protein/channel or portray more general principles of TRP function and important pathological situations linked to mutations of TRP genes or their altered expression.

Handbook of Cannabis Roger G. Pertwee 2014 In addition it also examines the complex morphology, cultivation, harvesting, and processing of cannabis and the ways in which the plant's chemical composition can be controlled. As well as offering a raft of scientific information there is extensive coverage of cannabinoid-based medicines. Helping readers to identify and evaluate their benefits, chapters explore pharmacological actions and the effects that seem to underlie approved therapeutic uses, how they are currently used to treat certain disorders, and the ever-growing number of wide-ranging potential clinical applications. There is also coverage of both the legal and illegal sources of cannabis, including 'coffee shops' and 'cannabis dispensaries'. The complex issue of 'recreational cannabis' is also tackled.

Voltage-Gated Ion Channels as Drug Targets David J. Triggle 2006-08-21 Edited by the most prominent person in the field and top researchers at US pharmaceutical companies, this is a unique resource for drug developers and physiologists seeking a molecular-level understanding of ion channel pharmacology. After an introduction to the topic, the authors evaluate the structure and function of ion channels, as well as related drug interaction. A section on assay technologies is followed by a section each on calcium, sodium and potassium channels. Further chapters cover genetic and acquired channelopathies, before the book closes with a look at safety issues in ion channel drug development. For medicinal and pharmaceutical chemists, biochemists, molecular biologists and those working in the pharmaceutical industry.

Transient Receptor Potential (TRP) Channels in Drug Discovery: Old Concepts & New Thoughts Susan M. Huang (Ed.)

Mammalian Transient Receptor Potential (TRP) Cation Channels Bernd Nilius 2014-06-24 In this fast moving field the main goal of this volume is to provide up-to-date information on the molecular and functional properties and pharmacology of mammalian TRP channels. Leading experts in the field describe properties of a single TRP protein/channel or portray more general principles of TRP function and important pathological situations linked to mutations of TRP genes or their altered expression. Thereby this volume on Transient Receptor Potential (TRP) Channels provides valuable information for readers with different expectations and backgrounds, for those who are approaching this field of research as well as for those wanting to make a trip to TRPs.

Handbook of Ion Channels Jie Zheng 2015-02-25 The New Benchmark for Understanding the Latest Developments of Ion Channels Ion channels control the electrical properties of neurons and cardiac cells, mediate the detection and response to sensory stimuli, and regulate the response to physical stimuli. They can often interact with the cellular environment due to their location at the surface of cells. In nonexcitable tissues, they also help regulate basic salt balance critical for homeostasis. All of these features make ion channels important targets for pharmaceuticals. Handbook of Ion Channels illustrates the fundamental importance of these membrane proteins to human health and disease. Renowned researchers from around the world introduce the technical aspects of ion channel research, provide a modern guide to the properties of major ion channels, and present powerful methods for modeling ion channel diseases and performing clinical trials for ion channel drugs. Conveniently divided into five parts, the handbook first describes the basic concepts of permeation and gating mechanisms, balancing classic theories and the latest developments. The second part covers the principles and practical issues of both traditional and new ion channel techniques and their applications to channel research. The third part organizes the material to follow the superfamilies

of ion channels. This part focuses on the classification, properties, gating mechanisms, function, and pharmacology of established and novel channel types. The fourth part addresses ion channel regulation as well as trafficking and distribution. The final part examines several ion channel-related diseases, discussing genetics, mechanisms, and pharmaceutical advances.

Membrane Receptors, Channels and Transporters in Pulmonary Circulation Jason X. -J. Yuan 2010-03-10 Membrane Receptors, Channels and Transporters in Pulmonary Circulation is a proceeding of the 2008 Grover Conference (Lost Valley Ranch and Conference Center, Sedalia, Colorado; September 3-7, 2008), which provided a forum for experts in the fields of those receptors, channels and transporters that have been identified as playing key roles in the physiology and pathophysiology of the pulmonary circulation. The book rigorously addresses: i) recent advances in our knowledge of receptors, channels and transporters and their role in regulation of pulmonary vascular function; ii) how modulation of expression and function of receptors, channels and transporters and their interrelationships contribute to the pathogenesis of pulmonary vascular disease; and iii) the therapeutic opportunities that may be revealed by enhancing our understanding of this area. The overall goal was to explore the mechanisms by which specific receptors, channels and transporters contribute to pulmonary vascular function in both health and disease, and how this knowledge may lead to novel interventions in lung dysplasia, pulmonary edema, lung injury, and pulmonary and systemic hypertension to reduce and prevent death from lung disease. Membrane Receptors, Channels and Transporters in Pulmonary Circulation is divided into six parts. Part 1 (Ion Channels in the Pulmonary Vasculature: Basics and New Findings) is designated for basic knowledge and recent findings in the research field of ion channels in pulmonary circulation. There are five chapters in Part I discussing the function, expression, distribution and regulation of various ion channels present in pulmonary vascular smooth muscle cells and how these channels are integrated to regulate intracellular Ca²⁺ and cell functions. Part II (TRP Channels in the Pulmonary Vasculature: Basics and New Findings) is composed of five chapters that are exclusively designed to discuss the role of a recently identified family of cation channels, transient receptor potential (TRP) channels, in the regulation of pulmonary vascular tone and arterial structure. Part III (Pathogenic Role of Ion Channels in Pulmonary Vascular Disease) includes four chapters that discuss how abnormal function and expression of various ion channels contribute to changes in cell functions and the development of pulmonary hypertension. Part IV (Receptors and Signaling Cascades in Pulmonary Arterial Hypertension) consists of five chapters devoted to the role of bone morphogenetic protein receptors, Notch receptors, serotonin receptors, Rho kinase and vascular endothelial growth factor receptors in the development of pulmonary arterial hypertension. Part V (Receptors and Transporters: Role in Cell Function and Hypoxic Pulmonary Vasoconstriction) includes four chapters designed to illustrate the potential mechanisms involved in oxygen sensing and hypoxia-induced pulmonary vasoconstriction and hypertension. Part VI (Targeting Ion Channels and Membrane Receptors in Developing Novel Therapeutic Approaches for Pulmonary Vascular Disease) consists five chapters which discuss the translational research involving on membrane receptors, channels and transporters, including their potential as novel drug targets. We hope that Membrane Receptors, Channels and Transporters in Pulmonary Circulation will allow readers to foster new concepts and new collaborations and cooperations among investigators so as to further understand the role of receptors, channels and transporters in lung pathophysiology. The ultimate goal is to identify new mechanisms of disease, as well as new therapeutic targets for pulmonary vascular diseases. An additional outcome should be enhanced understanding of the role of these entities in systemic vascular pathophysiology, since the conference will include researchers and clinicians with interests in both pulmonary and systemic circulations.