Stem Cells And Cancer Stem Cells Volume 9 Therapeutic Applications In Disease And Injury

Interaction of Immune and Cancer Cells **Molecular and Cell Biology of Cancer Molecular Biology of the Cell** Starving Cancer Cells: Evidence-Based Strategies to Slow Cancer Progression *?? T cells in Cancer Comparative Oncology* **Ions, Cell Proliferation, and Cancer Holland-Frei Cancer Medicine** Stem Cells and Cancer Stem Cells,Volume 3 *Stem Cells and Cancer in Hepatology* Cancer Cell Culture *Cancer Cell Metabolism: A Potential Target for Cancer Therapy* **Advances in Cancer Stem Cell Biology The Cheating Cell One Renegade Cell Cancer Stem Cells Essentials of Glycobiology** *Cancer Cell Lines Part 1* The Heterogeneity of Cancer Metabolism **The Immortal Life of Henrietta Lacks Cancer Stem Cells Cell Death Signaling in Cancer Biology and Treatment** Ecology and Evolution of Cancer **Physics of Cancer Cancer Stem Cells: New Horizons in Cancer Therapies The Genetics of Cancer** The Molecular Biology of Cancer **Cancer Cell Chemoresistance And Chemosensitization Systems Biology of Cancer Circulating Tumor Cells Cancer Stem Cells and Their Role in Tumor Dormancy and Immunosurveillance The Cell Cycle and Cancer Cancer Basics** Cancer Biology: How Science Works *Mesenchymal Stem Cells in Cancer Therapy* **Hyaluronan in Cancer Biology** *Multiple Myeloma and Other Plasma Cell Neoplasms Plasmonic Sensors and their Applications* Avoiding Cancer One Day at a Time **Rebel Cell**

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Cancer Cell Chemoresistance And Chemosensitization Jul 06 2020 Despite the significant advances in cancer therapy made through constant evaluation and analysis of treatment aftereffects, the disease still remains one of the foremost causes of mortality worldwide killing more than 12 million people annually. The prime reason behind the failure of conventional chemotherapeutics which are used as the chief regimen in the

comprehensive treatment of cancers is the development of chemoresistance. It can be either intrinsic or acquired and is primarily mediated via different key regulators like MDR, MAPK, NF-?B, PI3K/Akt, Wnt signaling pathways etc. Thus, agents which can target these regulatory elements or pathways and in turn sensitize cancer cells to chemotherapy holds immense prospect. However, there is barely such comprehensive work available in scientific literature that explains how chemosensitization of cancer cells functions using different drug combinations and exhibit synergism. This book provides a detailed description of chemoresistance and chemosensitization, targets for chemosensitization and various approaches adapted in the process of chemosensitization. Furthermore, the book explicates the role of various chemosensitizers, both natural and synthetic in sensitizing cancer cells and also details the current research findings on chemosensitization of different cancer types in both pre-clinical and clinical settings. Contents: Introduction and Basic Concepts of Cancer (Devivasha Bordoloi, Bethsebie Lalduhsaki Sailo, Nafiseh Manteghi, Ganesan Padmavathi and Ajaikumar B Kunnumakkara) Cancer Cell Chemoresistance: A Prime Obstacle in Cancer Therapy (Javadi Monisha, Aviral Jaiswal, Kishore Banik, Harsha Choudhary, Anuj Kumar Singh, Devivasha Bordoloi and Ajaikumar B Kunnumakkara) Bladder Cancer: Chemoresistance and Chemosensitization (Nand Kishor Roy, Anand Sharma, Anuj Kumar Singh, Devivasha Bordoloi, Bethsebie Lalduhsaki Sailo, Javadi Monisha and Ajaikumar B Kunnumakkara) Mechanism of Chemoresistance in Bone Cancer and Different Chemosensitization Approaches (Ganesan Padmavathi, Devivasha Bordoloi, Kishore Banik, Javadi Monisha, Anuj Kumar Singh and Ajaikumar B Kunnumakkara) Chemoresistance in Brain Cancer and Different Chemosensitization Approaches (Amrita Devi Khwairakpam, Javadi Monisha, Kishore Banik, Harsha Choudhary, Anand Sharma, Devivasha Bordoloi and Ajaikumar B Kunnumakkara) Phytochemicals as Chemosensitizers in Breast Cancer (Madhumita Roy, Ruma Sarkar, Apurba Mukherjee, Sutapa Mukherjee and Jaydip Biswas) Potential of Different Chemosensitizers to Overcome Chemoresistance in Cervical Cancer (Kishore Banik, Bethsebie Lalduhsaki Sailo, Krishan Kumar Thakur, Aviral Jaiswal, Javadi Monisha, Devivasha Bordoloi and Ajaikumar B. Kunnumakkara) Colon Cancer Chemoresistance and Chemosensitization (Muthu K Shanmugam, Arunasalam Dharmarajan, Frank Arfuso and Gautam Sethi) Cancer Cell Chemoresistance and Chemosensitization in Endometrial Cancer (Anuj Kumar Singh, Javadi Monisha, Kishore Banik, Harsha Choudhary, Amrita Devi Khwairakpam, Devivasha Bordoloi and Ajaikumar B Kunnumakkara) Different Approaches to Overcome Chemoresistance in Esophageal Cancer (Devivasha Bordoloi, Kishore Banik, Amrita Devi Khwairakpam, Anand Sharma, Javadi Monisha, Bethsebie Lalduhsaki Sailo and Ajaikumar B Kunnumakkara) Different Chemosensitization Approaches in Gastric Cancer (Harsha Choudhary, Devivasha Bordoloi, Jai Prakash, Nafiseh Manteghi, Ganesan Padmavathi, Javadi Monisha and Ajaikumar B Kunnumakkara) Chemoresistance and Chemosensitization in Hematological Malignancies (Ota Fuchs) Different Methods to Inhibit Chemoresistance in Hepatocellular Carcinoma (Anuj Kumar Singh, Nand Kishor Roy, Anand Anip, Kishore Banik, Javadi Monisha, Devivasha Bordoloi

Essentials of Glycobiology Jun 16 2021 Sugar chains (glycans) are often attached to proteins and lipids and have multiple roles in the organization and function of all organisms. "Essentials of Glycobiology" describes their biogenesis and function and offers a useful

gateway to the understanding of glycans.

Cancer Cell Metabolism: A Potential Target for Cancer Therapy Nov 21 2021 This book illustrates various aspects of cancer cell metabolism, including metabolic regulation in solid tumours vs. non-solid tumours, the molecular pathways involved in its metabolism, and the role of the tumour microenvironment in the regulation of cancer cell metabolism. It summarizes the complexity of cancer cell metabolism in terms of the switch from anaerobic to aerobic glycolysis and how mitochondrial damage promotes aerobic glycolysis in cancer cells. The respective chapters provide the latest information on the metabolic remodelling of cancer cells and elucidate the important role of the signalling pathways in reprogramming of cancer cell metabolism. In addition, the book highlights the role of autophagy in cancer cell metabolism, and how metabolic crosstalk between cancer cells and cancer-associated fibroblasts promotes cancer cell progression. In closing, it summarizes recent advancements in drug development through targeting cancer metabolism.

The Immortal Life of Henrietta Lacks Mar 14 2021 #1 NEW YORK TIMES BESTSELLER • “The story of modern medicine and bioethics—and, indeed, race relations—is refracted beautifully, and movingly.”—Entertainment Weekly NOW A MAJOR MOTION PICTURE FROM HBO® STARRING OPRAH WINFREY AND ROSE BYRNE • ONE OF THE “MOST INFLUENTIAL” (CNN), “DEFINING” (LITHUB), AND “BEST” (THE PHILADELPHIA INQUIRER) BOOKS OF THE DECADE • ONE OF ESSENCE’S 50 MOST IMPACTFUL BLACK BOOKS OF THE PAST 50 YEARS • WINNER OF THE CHICAGO TRIBUNE HEARTLAND PRIZE FOR NONFICTION NAMED ONE OF THE BEST BOOKS OF THE YEAR BY The New York Times Book Review • Entertainment Weekly • O: The Oprah Magazine • NPR • Financial Times • New York • Independent (U.K.) • Times (U.K.) • Publishers Weekly • Library Journal • Kirkus Reviews • Booklist • Globe and Mail Her name was Henrietta Lacks, but scientists know her as HeLa. She was a poor Southern tobacco farmer who worked the same land as her slave ancestors, yet her cells—taken without her knowledge—became one of the most important tools in medicine: The first “immortal” human cells grown in culture, which are still alive today, though she has been dead for more than sixty years. HeLa cells were vital for developing the polio vaccine; uncovered secrets of cancer, viruses, and the atom bomb’s effects; helped lead to important advances like in vitro fertilization, cloning, and gene mapping; and have been bought and sold by the billions. Yet Henrietta Lacks remains virtually unknown, buried in an unmarked grave. Henrietta’s family did not learn of her “immortality” until more than twenty years after her death, when scientists investigating HeLa began using her husband and children in research without informed consent. And though the cells had launched a multimillion-dollar industry that sells human biological materials, her family never saw any of the profits. As Rebecca Skloot so brilliantly shows, the story of the Lacks family—past and present—is inextricably connected to the dark history of experimentation on African Americans, the birth of bioethics, and the legal battles over whether we control the stuff we are made of. Over the decade it took to uncover this story, Rebecca became enmeshed in the lives of the Lacks family—especially Henrietta’s daughter Deborah. Deborah was consumed with questions: Had scientists cloned her mother? Had they killed her to harvest her cells? And if her mother was so important to medicine, why couldn’t her children afford health insurance? Intimate in

feeling, astonishing in scope, and impossible to put down, The Immortal Life of Henrietta Lacks captures the beauty and drama of scientific discovery, as well as its human consequences.

Comparative Oncology May 28 2022

Cancer Cell Lines Part 1 May 16 2021 Continuous cell lines derived from human cancers are the most widely used resource in laboratory-based cancer research. The first 3 volumes of this series on Human Cell Culture are devoted to these cancer cell lines. The chapters in these first 3 volumes have a common aim. Their purpose is to address 3 questions of fundamental importance to the relevance of human cancer cell lines as model systems of each type of cancer: 1. Do the cell lines available accurately represent the clinical presentation? 2. Do the cell lines accurately represent the histopathology of the original tumors? 3. Do the cell lines accurately represent the molecular genetics of this type of cancer? The cancer cell lines available are derived, in most cases, from the more aggressive and advanced cancers. There are few cell lines derived from low grade organ-confined cancers. This gap can be filled with conditionally immortalized human cancer cell lines. We do not know why the success rate for establishing cell lines is so low for some types of cancer and so high for others. The histopathology of the tumor of origin and the extent to which the derived cell line retains the differentiated features of that tumor are critical. The concept that a single cell line derived from a tumor at a particular site is representative of tumors at that site is naïve and misleading.

The Heterogeneity of Cancer Metabolism Apr 14 2021 Genetic alterations in cancer, in addition to being the fundamental drivers of tumorigenesis, can give rise to a variety of metabolic adaptations that allow cancer cells to survive and proliferate in diverse tumor microenvironments. This metabolic flexibility is different from normal cellular metabolic processes and leads to heterogeneity in cancer metabolism within the same cancer type or even within the same tumor. In this book, we delve into the complexity and diversity of cancer metabolism, and highlight how understanding the heterogeneity of cancer metabolism is fundamental to the development of effective metabolism-based therapeutic strategies. Deciphering how cancer cells utilize various nutrient resources will enable clinicians and researchers to pair specific chemotherapeutic agents with patients who are most likely to respond with positive outcomes, allowing for more cost-effective and personalized cancer therapeutic strategies.

Cancer Stem Cells Feb 10 2021 Cancer Stem Cells: Targeting the Roots of Cancer, Seeds of Metastasis, and Sources of Therapy Resistance introduces the basic concepts and advanced understanding of cancer stem cells, covering general overviews, organ-specific identifications, and their characteristic mechanisms. The book also explores innovative therapeutic strategies in preclinical and clinical trials to target cancer stem cells, remove the roots of cancer, eliminate the seeds of metastasis, overcome the resistance of therapies, and contribute to the eradication of cancer. The book includes contributions from leading, worldwide experts in the field, helping readers embrace new hope in their quest to eradicate cancer with emerging clinical trials on treating cancer stem cells in combination with other therapies. Provides an authoritative and complete overview of cancer stem cells Includes comprehensive coverage of current therapeutic strategies targeting cancer stem cells Deepens a reader’s technical expertise in cancer stem cell biology

Multiple Myeloma and Other Plasma Cell Neoplasms Sep 27 2019 This book is a comprehensive source of up-to-date information on plasma cell neoplasms. Key features include the provision of new criteria for the diagnosis of symptomatic multiple myeloma requiring treatment and the description of novel therapies for myeloma and other plasma cell neoplasms that have only very recently been licensed by the U.S. Food and Drug Administration. Examples include lenalidomide as first-line therapy, panobinostat in combination with bortezomib plus dexamethasone for relapsed/refractory myeloma, ibrutinib for Waldenström's macroglobulinemia, and new therapeutic regimens for systemic amyloidosis and POEMS syndrome. Information is also provided on drug combinations that have shown encouraging results and are very near to approval. Other important aspects covered in the book are the role of different imaging modalities in workup and the significance of newly acquired data relating to prognosis and minimal residual disease. Readers will find Multiple Myeloma and Other Plasma Cell Neoplasms to be a rich source of knowledge that will be invaluable in improving patient management.

Ions, Cell Proliferation, and Cancer Apr 26 2022 Ions, Cell Proliferation, and Cancer present the credibility of ions as specific regulators of cell proliferation. This book provides an understanding of the control of cell proliferation and the deregulated proliferation of cancer cells. Organized into three sections encompassing 32 chapters, this book begins with an overview of the important role that ions in animal cells play in a variety of fundamental processes associated with essential cell functions. This text then examines the relationship between ionic events and cellular production, specifically in mammalian cell systems. Other chapters consider the development of atomic absorption spectrophotometry as a method for measuring inorganic cations. This book discusses as well the two widely applicable methods for measuring free concentrations of ions inside cells. The final chapter deals with magnesium ion as the most abundant divalent action in living cells. This book is a valuable resource for animal cell biologists, molecular biologists, and research workers.

Ecology and Evolution of Cancer Dec 11 2020 Ecology and Evolution of Cancer is a timely work outlining ideas that not only represent a substantial and original contribution to the fields of evolution, ecology, and cancer, but also goes beyond by connecting the interfaces of these disciplines. This work engages the expertise of a multidisciplinary research team to collate and review the latest knowledge and developments in this exciting research field. The evolutionary perspective of cancer has gained significant international recognition and interest, which is fully understandable given that somatic cellular selection and evolution are elegant explanations for carcinogenesis. Cancer is now generally accepted to be an evolutionary and ecological process with complex interactions between tumor cells and their environment sharing many similarities with organismal evolution. As a critical contribution to this field of research the book is important and relevant for the applications of evolutionary biology to understand the origin of cancers, to control neoplastic progression, and to prevent therapeutic failures. Covers all aspects of the evolution of cancer, appealing to researchers seeking to understand its origins and effects of treatments on its progression, as well as to lecturers in evolutionary medicine Functions as both an introduction to cancer and evolution and a review of the current research on this burgeoning, exciting field, presented by an international group of leading editors and contributors Improves understanding of the origin and the evolution of cancer, aiding efforts

to determine how this disease interferes with biotic interactions that govern ecosystems Highlights research that intends to apply evolutionary principles to help predict emergence and metastatic progression with the aim of improving therapies

Rebel Cell Jun 24 2019 Why do we get cancer? Is it our modern diets and unhealthy habits? Chemicals in the environment? An unwelcome genetic inheritance? Or is it just bad luck? The answer is all of these and none of them. We get cancer because we can't avoid it—it's a bug in the system of life itself. Cancer exists in nearly every animal and has afflicted humans as long as our species has walked the earth. In Rebel Cell: Cancer, Evolution, and the New Science of Life's Oldest Betrayal, Kat Arney reveals the secrets of our most formidable medical enemy, most notably the fact that it isn't so much a foreign invader as a double agent: cancer is hardwired into the fundamental processes of life. New evidence shows that this disease is the result of the same evolutionary changes that allowed us to thrive. Evolution helped us outsmart our environment, and it helps cancer outsmart its environment as well—alas, that environment is us. Explaining why "everything we know about cancer is wrong," Arney, a geneticist and award-winning science writer, guides readers with her trademark wit and clarity through the latest research into the cellular mavericks that rebel against the rigid biological "society" of the body and make a leap towards anarchy. We need to be a lot smarter to defeat such a wily foe—smarter even than Darwin himself. In this new world, where we know that every cancer is unique and can evolve its way out of trouble, the old models of treatment have reached their limits. But we are starting to decipher cancer's secret evolutionary playbook, mapping the landscapes in which these rogue cells survive, thrive, or die, and using this knowledge to predict and confound cancer's next move. Rebel Cell is a story about life and death, hope and hubris, nature and nurture. It's about a new way of thinking about what this disease really is and the role it plays in human life. Above all, it's a story about where cancer came from, where it's going, and how we can stop it.

Holland-Frei Cancer Medicine Mar 26 2022 Holland-Frei Cancer Medicine, Ninth Edition, offers a balanced view of the most current knowledge of cancer science and clinical oncology practice. This all-new edition is the consummate reference source for medical oncologists, radiation oncologists, internists, surgical oncologists, and others who treat cancer patients. A translational perspective throughout, integrating cancer biology with cancer management providing an in depth understanding of the disease An emphasis on multidisciplinary, research-driven patient care to improve outcomes and optimal use of all appropriate therapies Cutting-edge coverage of personalized cancer care, including molecular diagnostics and therapeutics Concise, readable, clinically relevant text with algorithms, guidelines and insight into the use of both conventional and novel drugs Includes free access to the Wiley Digital Edition providing search across the book, the full reference list with web links, illustrations and photographs, and post-publication updates

Plasmonic Sensors and their Applications Aug 26 2019 Plasmonic Sensors and their Applications A practically-focused reference and guide on the use of plasmonic sensing as a faster and cheaper alternative to conventional sensing platforms Plasmons, the collective oscillations of electrons occurring at the interface between any two materials, are sensitive to changes in dielectric properties near metal surfaces. Plasmonic sensors enable the real-time study of unique surface properties by monitoring the effect of the material interaction

at the sensor surface. Plasmonic sensing techniques offer fast, label-free analysis, and hold advantages over labelling techniques such as ELISA (enzyme-linked immunosorbent assay). Plasmonic Sensors and their Applications examines the development and use of highly sensitive and selective plasmonic sensing platforms in chemistry, biotechnology, and medicine. Contributions by an international panel of experts provide timely and in-depth coverage of both real-world applications and academic research in the dynamic field. The authors describe advances in nanotechnology, polymer chemistry, and biomedicine, explore new and emerging applications of plasmonic sensing, discuss future trends and potential research directions, and more. This authoritative volume: Demonstrates why plasmonic sensing is a profitable method for easy and label-free analysis in real-time Covers a variety of applications of plasmonic sensors, such as disease diagnostics, vitamin detection, and detection of chemical and biological warfare agents Includes a brief introduction to the history and development of plasmonic sensors Provides concise theory and background for every application covered in the text Plasmonic Sensors and their Applications is an invaluable resource for analytical chemists, biochemists, biotechnologists, protein and surface chemists, and advanced students of biotechnology.

Advances in Cancer Stem Cell Biology Oct 21 2021 In recent years, cancer stem cells have been recognized as important component in carcinogenesis and they seem to form the basis of many (if not all) tumor types. Cancer stem cells or "cancer cell like stem cells" have been isolated from various cancers of different origin (blood, breast, brain, skin, head and neck, thyroid, cervix, lung, retina, colon, pancreas and so on). Cancer stem cells - rare cells with indefinite proliferative potential that drive the formation and growth of tumours- seem to show intriguing relationships with physiological stem cells. Specifically, these cancer cells show significant similarities in the mechanisms that regulate self-renewal of normal stem cells. Moreover, tumour cells might directly arise from normal stem cells. Further, the cellular biology of cancer stem cells show a lot of similarities with normal stem cells.

Starving Cancer Cells: Evidence-Based Strategies to Slow Cancer Progression Jul 30 2022 Starving Cancer Cells: Evidence-Based Strategies to Slow Cancer Progression — A Selection of Readings for Health Services Providers presents an edited and annotated collection of recent medical journal publications and abstracts illustrating new approaches to treatment derived from the metabolic theory of cancer. It intends to shed an early light on a relatively new approach to our understanding of the cancer cell idiosyncratic metabolic dysfunction, and on evidence-based new treatment strategies derived from that understanding. The book discusses topics such as tumor starvation by L-arginine deprivation; L-canavanine depriving tumors of L-arginine in pancreatic, multiple myeloma and breast cancer; glucose deprivation and intermittent fasting; glutamine uptake in cancer; the relation of oxygen-starved cancer cells with aspartate; and reducing tolerance of tumor cells to nutrition starvation. The content is presented in a contextualized and practical way in order to facilitate the transition from bench to bedside. This is a valuable resource for practitioners, oncologists and other members of healthcare chain who are interested in learning more about the most recent tumor cell starvation strategies and how they can improve overall treatment outcome. Provides extensive comments on scientific publications detailing recent findings about tumor cell auxotrophy applied to tumor cell starvation strategies Helps the reader to find relevant and practical information on cancer cell

starvation, otherwise spread through niched specialized journals, in one single place Comments on the recent findings putting them in context of clinical practice in order to provide the reader with means of translating high level research to the clinics

Cancer Stem Cells Jul 18 2021 A new therapeutic strategy could break the stalemate in the war on cancer by targeting not all cancerous cells but the small fraction that lie at the root of cancers. Lucie Laplane offers a comprehensive analysis of cancer stem cell theory, based on an original interdisciplinary approach that combines biology, biomedical history, and philosophy.

Cell Death Signaling in Cancer Biology and Treatment Jan 12 2021 A key goal in the treatment of cancer is to achieve selective and efficient killing of tumor cells. The aim of Cell Death Signaling in Cancer Biology and Treatment is to describe state-of-the-art approaches and future opportunities for achieving this goal by targeting mechanisms and pathways that regulate cancer cell death. In this book, molecular defects in cell death signaling that characterize cancer cells, including dysregulation of cell death due to overexpression/hyperactivation of oncoproteins, as well as the loss of tumor suppressor proteins will be described. The potential for targeting microRNAs will be discussed. Multiple chapters will describe preclinical and clinical approaches that are currently being used to target epigenetic modifications, DNA repair pathways, and protein chaperones, as a means of provoking tumor cell death. Finally, the development and application of novel agents and approaches for targeting specific components of cell death signaling pathways and machinery will be reviewed.

Molecular and Cell Biology of Cancer Oct 01 2022 This textbook takes you on a journey to the basic concepts of cancer biology. It combines developmental, evolutionary and cell biology perspectives, to then wrap-up with an integrated clinical approach. The book starts with an introductory chapter, looking at cancer in a nut shell. The subsequent chapters are detailed and the idea of cancer as a mass of somatic cells undergoing a micro-evolutionary Darwinian process is explored. Further, the main Hanahan and Weinberg “Hallmarks of Cancer” are revisited. In most chapters, the fundamental experiments that led to key concepts, connecting basic biology and biomedicine are highlighted. In the book’s closing section all of these concepts are integrated in clinical studies, where molecular diagnosis as well as the various classical and modern therapeutic strategies are addressed. The book is written in an easy-to-read language, like a one-on-one conversation between the writer and the reader, without compromising the scientific accuracy. Therefore, this book is suited not only for advanced undergraduates and master students but also for patients or curious lay people looking for a further understanding of this shattering disease

The Genetics of Cancer Sep 07 2020 It has been recognized for almost 200 years that certain families seem to inherit cancer. It is only in the past decade, however, that molecular genetics and epidemiology have combined to define the role of inheritance in cancer more clearly, and to identify some of the genes involved. The causative genes can be tracked through cancer-prone families via genetic linkage and positional cloning. Several of the genes discovered have subsequently been proved to play critical roles in normal growth and development. There are also implications for the families themselves in terms of genetic testing with its attendant dilemmas, if it is not clear that useful action will result. The chapters in The Genetics of Cancer illustrate what has already been achieved and take a

critical look at the future directions of this research and its potential clinical applications.
Systems Biology of Cancer Jun 04 2020 An overview of the current systems biology-based knowledge and the experimental approaches for deciphering the biological basis of cancer.
One Renegade Cell Aug 19 2021 Cancer research has reached a major turning point. The quality and quantity of information gathered about this disease in the past twenty years has revolutionized our understanding of its origins and behavior. No one is better qualified to comment on these dramatic leaps forward than molecular biologist Robert A. Weinberg, director of one of the leading cancer research centers in the world. In One Renegade Cell , Weinberg presents an accessible and state-of-the-art account of how the disease begins and how, one day, it will be cured. Weinberg tells how the roots of cancer were uncovered in 1909 and when the first cancer-causing virus was discovered. He then moves forward to the discovery of the role of chemical carcinogens and radiation in triggering cancer, and relates the remarkable story of the discoveries of oncogenes and tumor suppressor genes, the master controllers of normal and malignant cell proliferation. This book, which presumes little prior knowledge of biology, describes the revolution in biomedical research that has finally uncovered the forces driving malignant growth. Drawing on insights that simply were not available until recently, the discoveries presented in One Renegade Cell have already begun to profoundly alter the way that we diagnose and treat human cancers.
Physics of Cancer Nov 09 2020 This revised second edition is improved linguistically with multiple increases of the number of figures and the inclusion of several novel chapters such as actin filaments during matrix invasion, microtubuli during migration and matrix invasion, nuclear deformability during migration and matrix invasion, and the active role of the tumor stroma in regulating cell invasion.
Cancer Biology: How Science Works Dec 31 2019 Cancer is a collection of diseases that can affect basically every organ of our body, all of which have in common uncontrolled cellular growth. The cells forming our body have the potential to grow in the context of wound healing or for the constant replacement of cells in our blood, skin or intestine. Behind every newly diagnosed malignant tumor in adulthood there is an individual history of probably 20 or more years of tumorigenesis. Therefore, malignant tumor formation often takes time making cancer in most cases to an aging-related disease that we seem not to be able to evade. However, tumorigenesis is dependent on multiple environmental influences, many of which we have under control by lifestyle decisions, such as retaining from smoking, selecting healthy food and being physically active. Thus, cancer preventive interventions are the most effective way to fight against cancer. This textbook wants not only to describe basic mechanisms leading to cancer but also to provide the readers with a more holistic view including cancer surveaillance mechanisms of the immune system. We will place these insights in the context of the personal consequences of everyone’s lifestyle decisions. The content of the book is linked to the lecture course in “Cancer Biology”, which is given by Prof. Carlberg since 2005 at the University of Eastern Finland in Kuopio. Moreover, biological processes explained in this book will be set into a clinical context using the experience of Dr. Velleuer in the daily care in oncology. This book also relates to the textbooks “Mechanisms of Gene Regulation: How Science Works” (ISBN 978-3-030-52321-3), “Human Epigenetics: How Science Works” (ISBN 978-3-030-22907-8) and “Nutrigenomics: How Science Works” (ISBN 978-3-030-36948-4), the studying of which

may be interesting to readers who like to get more detailed information.
Interaction of Immune and Cancer Cells Nov 02 2022 The tumor environment is a dynamic network that includes cancer cells, immune cells, fibroblasts, endothelial cells, extracellular matrix, cytokines and receptors. The aim of this book is to summarize the role of these components, especially immune cells, in tumor suppression and/or progression and describe in detail why tumor cells can survive and spread in spite of the antitumor response of immune cells. Since immunotherapy is an attractive approach to cancer therapy, this book also provides information on the two main strategies: monoclonal antibodies and adaptive T cell immunotherapy, with a focus on recent human clinical trials. The book provides a state-of-the-art, comprehensive overview of immune cells in cancer and is an indispensable resource for scientists and medical doctors working and/or lecturing in the field of cancer research and immunology. ?
The Molecular Biology of Cancer Aug 07 2020 This comprehensive text provides a detailed overview of the molecular mechanisms underpinning the development of cancer and its treatment. Written by an international panel of researchers, specialists and practitioners in the field, the text discusses all aspects of cancer biology from the causes, development and diagnosis through to the treatment of cancer. Written by an international panel of researchers, specialists and practitioners in the field Covers both traditional areas of study and areas of controversy and emerging importance, highlighting future directions for research Features up-to-date coverage of recent studies and discoveries, as well as a solid grounding in the key concepts in the field Each chapter includes key points, chapter summaries, text boxes, and topical references for added comprehension and review Supported by a dedicated website at www.blackwellpublishing.com/pelengaris An excellent text for upper-level courses in the biology of cancer, for medical students and qualified practitioners preparing for higher exams, and for researchers and teachers in the field
Stem Cells and Cancer Stem Cells,Volume 3 Feb 22 2022 It is pointed out that cancer stem cell is a cell type within a tumor that possesses the capacity of cell-renewal and can give rise to the heterogeneous lineages of cancer cells that comprise the tumor. It is emphasized that a cancer stem cell is a tumor initiating cell. That conventional chemotherapy kills most cells in a tumor, but cancer stem cells remain intact is discussed. Vast applications of stem cells, cancer stem cells, mesenchymal stem cells, and human pluripotent stem cells are discussed. Because human embryonic stem cells possess the potential of producing unlimited quantities of any human cell type, considerable focus is placed on their therapeutic potential in this volume. Because of the pluripotency of embryonic stem cells, this volume discusses various applications such as tissue engineering, regenerative medicine, pharmacological and toxicological uses. The role of these cells in cell differentiation is also included. The role of cancer stem cells of breast, colon, and melanoma tumors in response to antitumor therapy is detailed. The role of cancer stem cells, specifically in the deadliest brain cancer, glioblastoma multiforme, is explained. Transplantation of bone marrow-derived stem cells for myocardial infarcation and use of mesenchymal stem cells in orthopedics are described.
Cancer Stem Cells: New Horizons in Cancer Therapies Oct 09 2020 This book discusses the recent developments in the therapeutic implications of cancer stem cells for the effective diagnosis, prognosis, and treatment of cancer. It summarizes the various stem cells of

common cancers including colon, pancreas, lungs, prostate, melanoma, and glioblastoma, and reviews the potential role of cancer stem cells in tissue aggressiveness, examining the functional contribution of cancer stem cells in the establishment and recurrence of cancerous tumors. Further, it explores the potential of cancer stem cells as novel therapeutic targets for the treatment and prevention of tumor progression. The book also discusses the various approaches for detecting, isolating, and characterizing different cancer stem cells and signaling pathways that control their replication, survival, and differentiation. Lastly, it explores the key features and mechanisms of drug resistance, chemo-resistance, and radio-resistance in cancer stem cells to improve therapeutic rationale.

Hyaluronan in Cancer Biology Oct 28 2019 Hyaluronan biology is being recognized as an important regulator of cancer progression. Paradoxically, both hyaluronan (HA) and hyaluronidases, the enzymes that eliminate HA, have also been correlated with cancer progression. Hyaluronan, a long-chain polymer of the extracellular matrix, opens up tissue spaces through which cancer cells move and metastasize. It also confers motility upon cells through interactions of cell-surface HA with the cytoskeleton. Embryonic cells in the process of movement and proliferation use the same strategy. It is an example of how cancer cells have commandeered normal cellular processes for their own survival and spread. There are also parallels between cancer and wound healing, cancer occasionally being defined as a wound that does not heal. The growing body of literature regarding this topic has recently progressed from describing the association of hyaluronan and hyaluronidase expression associated with different cancers, to understanding the mechanisms that drive tumor cell activation, proliferation, drug resistance, etc. No one source, however, discusses hyaluronan synthesis and catabolism, as well as the factors that regulate the balance. This book will offer a comprehensive summary and cutting-edge insight into Hyaluronan biology, the role of the HA receptors, the hyaluronidase enzymes that degrade HA, as well as HA synthesis enzymes and their relationship to cancer. * Offers a comprehensive summary and cutting-edge insight into Hyaluronan biology, the role of the HA receptors, the hyaluronidase enzymes that degrade HA, as well as HA synthesis enzymes and their relationship to cancer * Chapters are written by the leading international authorities on this subject, from laboratories that focus on the investigation of hyaluronan in cancer initiation, progression, and dissemination * Focuses on understanding the mechanisms that drive tumor cell activation, proliferation, and drug resistance

Stem Cells and Cancer in Hepatology Jan 24 2022 Stem Cells and Cancer in Hepatology: From the Essentials to Application offers basic scientists and clinicians in the fields of stem cells, hepatology and oncology an overview of the interaction between liver biology, stem cells and cancer. It discusses how the liver performs regeneration and repair, the role stem cells play in these processes, and the mechanisms by which liver cancers are initiated and developed. As the field of stem cells and cancer stem cells in hepatology is new and dynamic, thus making it difficult for researchers and clinicians to understand the most relevant historic and novel studies, this volume addresses that challenge. Addresses both the basic and clinical perspectives of the topic, including sections on normal and cancer stem cells of the liver Provides coverage of the molecular mechanisms of liver development, the proliferation of hepatic progenitor cells during development, epithelial cell plasticity, generation of hepatocytes by transdifferentiation, liver tissue engineering, and more

Presents a study of hepatic stem cells that will help readers understand critical events during development, stem cell differentiation towards functional liver cell fate, and tumor initiation Cancer Cell Culture Dec 23 2021 This volume describes easy to follow methods to guide both the novice and more experienced researcher seeking to use new techniques for the culture of cancer cells. The first section of the book introduces the rationale behind the selection of specific materials to help the reader choose culture conditions appropriate to their studies and the general techniques operating in many culture facilities. The second section covers the specific requirements of the individual cancer cell types for optimal growth and maintenance. A wide range of procedures encompassing many of the key functional features of cancer cells are then described in section three. These include assays to evaluate proliferation, viability, cytotoxicity, apoptosis, migration, invasion, and angiogenesis. Techniques of gene transfer and the development of drug resistance are also described. Finally the book concludes with methods of co-culture of different cell types.
Circulating Tumor Cells May 04 2020 The analysis of circulating tumor cells (CTCs) as a real-time liquid biopsy approach can be used to obtain new insights into metastasis biology, and as companion diagnostics to improve the stratification of therapies and to obtain insights into the therapy-induced selection of cancer cells. In this book, we will cover all the different facets of CTCs to assemble a huge corpus of knowledge on cancer dissemination: technologies for their enrichment, detection, and characterization; their analysis at the single-cell level; their journey as CTC microemboli; their clinical relevance; their biology with the epithelial-to-mesenchymal transition (EMT); their stem-cell properties; their potential to initiate metastasis at distant sites; their ex vivo expansion; and their escape from the immune system.
Cancer Stem Cells and Their Role in Tumor Dormancy and Immunosurveillance Apr 02 2020
Cancer Basics Jan 30 2020 From the foundations of cancer to issues of survivorship, this book provides all the details and information needed to gain a true understanding of the 'basics' of cancer.
Molecular Biology of the Cell Aug 31 2022
Mesenchymal Stem Cells in Cancer Therapy Nov 29 2019 With the thorough understanding of stem cell biology and the advent of targeted therapeutics for cancer, stem cell-based therapeutic strategies are being increasingly explored for the treatment of various cancer types. Mesenchymal Stem Cells in Cancer Therapy sheds light on current stem cell based targeted therapies for cancer, by focusing on the application of mesenchymal stem cells (MSC) in various cancers with emphasis on a number of aspects that are critical to the success of future stem cell based therapies for cancer. Sections of this publication are devoted to developing stem cell based therapies for cancer with the main focus on tumoritrophic properties of stem cells, engineering targeted therapeutics, utilization of imaging techniques and the recent combination studies utilizing currently employed therapeutics with stem cells. Mesenchymal Stem Cells in Cancer Therapy informs readers about critical and cutting edge stem cell therapies for cancer and also enables them to appreciate the vast plain of unresolved questions in stem cell research for cancer therapeutics. Includes biological foundation on key sources of mesenchymal stem cells and the various ways they can be utilized to treat cancer. Provides examples of current MSC

based cancer therapies and prospects for the future with insights from the leading lab on cancer cell therapies. Technically advanced topic written for widespread understanding for clinical and research audiences.

Avoiding Cancer One Day at a Time Jul 26 2019 The mortality rate from cancer hasn't changed in 60 years despite the billions invested to find a cure. Avoiding Cancer One Day At A Time provides solid, practical advice for preventing cancer by avoiding carcinogens and implementing lifestyle/dietary practices that modify cancer causing factors. Combining their experience in family medicine and epidemiology with their passion for disease prevention, the authors provide the most up to date and effective advice for preventing cancer from developing in ourselves and our loved ones. Many ?how to? examples for preventing cancer by being environmentally aware, avoiding infections, living the proper lifestyle and getting the proper nutrition are provided. Chapter by chapter summaries and listings of the latest cancer prevention web sites are great references. Worksheets assist readers in implementing the advice in very tangible ways, and the recipe collection of cancer avoiding meals is a winner!

The Cell Cycle and Cancer Mar 02 2020

?? T cells in Cancer Jun 28 2022 We acknowledge the initiation and support of this Research Topic by the International Union of Immunological Societies (IUIS). Dr. Dieter Kabelitz currently serves as the chairman for the IUIS Education Committee. Topic Editor Prof. Ilan Bank is Chief Scientific Officer of GammaCell Bio-Technologies Ltd. Topic Editor Prof. Jurgen Kuball is co-founder and scientific advisor of GADETA. Topic Editor Prof. Bruno Silva-Santos is co-founder of Lymphact S.A., a company now owned by GammaDelta Therapeutics. All other Topic Editors declare no competing interests with regards to the Research Topic subject.

The Cheating Cell Sep 19 2021 A fundamental and groundbreaking reassessment of how we view and manage cancer When we think of the forces driving cancer, we don’t necessarily think of evolution. But evolution and cancer are closely linked because the historical processes that created life also created cancer. The Cheating Cell delves into this extraordinary relationship, and shows that by understanding cancer’s evolutionary origins, researchers can come up with more effective, revolutionary treatments. Athena Aktipis goes back billions of years to explore when unicellular forms became multicellular organisms. Within these bodies of cooperating cells, cheating ones arose, overusing resources and replicating out of control, giving rise to cancer. Aktipis illustrates how evolution has paved the way for cancer’s ubiquity, and why it will exist as long as multicellular life does. Even so, she argues, this doesn’t mean we should give up on treating cancer—in fact, evolutionary approaches offer new and promising options for the disease’s prevention and treatments that aim at long-term management rather than simple eradication. Looking across species—from sponges and cacti to dogs and elephants—we are discovering new mechanisms of tumor suppression and the many ways that multicellular life-forms have evolved to keep cancer under control. By accepting that cancer is a part of our biological past, present, and future—and that we cannot win a war against evolution—treatments can become smarter, more strategic, and more humane. Unifying the latest research from biology, ecology, medicine, and social science, The Cheating Cell challenges us to rethink cancer’s fundamental nature and our relationship to it.