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Molecular and Cellular Changes in the Cancer Cell, the latest volume in the Progress in Molecular Biology and Translational Science series, includes a comprehensive summary of the evidence accumulated thus far on the molecular and cellular regulation of the various adaptations taking place in response to exercise. This volume examines some of the latest advances, highlighting some of the most important

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molecular and cellular alterations and environmental influences that collectively cause a normal cell to become cancerous.

Special emphasis is given to changes that take place at the molecular and cellular level.

Comprehensive and up-to-date survey of current knowledge on the cancer cell Includes the latest advances and the most important molecular and cellular alterations and environmental influences collectively causing cells to become cancerous

Written by leading experts in the field

Breast Cancer - From Biology to Medicine thoroughly examines

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breast cancer from basic definitions, to cellular and molecular biology, to diagnosis and treatment. This book also has some additional focus on preclinical and clinical results in diagnosis and treatment of breast cancer. The book begins with introduction on epidemiology and pathophysiology of breast cancer in Section 1. In Section 2, the subsequent chapters introduce molecular and cellular biology of breast cancer with some particular signaling pathways, the gene expression, as well as the gene methylation and genomic imprinting, especially

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the existence of breast cancer stem cells. In Section 3, some new diagnostic methods and updated therapies from surgery, chemotherapy, hormone therapy, immunotherapy, radiotherapy, and some complementary therapies are discussed. This book provides a succinct yet comprehensive overview of breast cancer for advanced students, graduate students, and researchers as well as those working with breast cancer in a clinical setting.

Understanding Cancer from a Systems Biology Point of View: From Observation to Theory and Back starts with a basic

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question, why do we sometimes observe accelerated metastatic growth after resection of primary tumors? Next, it helps readers understand the systemic nature of cancer and how it affects treatment approaches and decisions. The book puts together aspects of cancer that many readers have most likely never combined, using unfamiliar, novel methods. It is a valuable resource for cancer researchers, cancer biologists, mathematicians and members of the biomedical field who are interested in applying systems biology methodologies for understanding and treating

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*cancer. Explains the systemic nature of cancer and how it affects decisions on treatment
Brings a variety of methods together, showing, in detail, the logical approach to finding answers to complex questions
Discusses the theoretical underpinnings of cancer as a systemic disease, providing the reader with valuable information on applicable cases
This book addresses possible analogies between cancer and developmental biology. An international group of experts provides a multidisciplinary approach, allowing biological or clinical scientists involved with*

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cancer research to integrate specific information from diverse areas. Five concepts of cancer are presented, and developmental biology is reviewed at five levels. These are integrated in discussions of failure in organisation as a basis of cancer and its control. The book will be a valuable reference for both newcomers as well as experienced biological and clinical scientists. Features

Cancer and the New Biology of Water
Molecular Biology of the Cell
Systems Biology in Cancer
Research and Drug Discovery
Cellular Pathways for Clinical

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Discovery

The Biology of Cancer

Recent Advances May Elucidate

Past Paradoxes

Protocol Handbook for Cancer

Biology brings together a

comprehensive collection of

the methods used for cancer

assessment, diagnostics, and

therapeutics. Various

protocols are discussed

along with alternative

strategies, including the

advantages and limitations

of techniques that have been

used in labs globally. These

protocols are presented by

cancer biology experts based

on their real-world

experience. The protocols in

this book will be a valuable

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*resource for cancer
researchers and graduate
students, who can utilize
the techniques described to
conduct research more
efficiently and
successfully. Presents
comprehensive protocols used
for cancer assessment,
diagnostics, and
therapeutics all in one
place Encompasses
alternative strategies
considering the requirements
of the end user and taking
into consideration diverse
research settings Discusses
limitations and advantages
of each method in
experimental design and
execution, thus saving time
during the research process*

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Cancer, which has become the second-most prevalent health issue globally, is essentially a malfunction of cell signaling.

Understanding how the intricate signaling networks of cells and tissues allow cancer to thrive - and how they can be turned into potent weapons against it - is the key to managing cancer in the clinic and improving the outcome of cancer therapies. In their ground-breaking textbook, the authors provide a compelling story of how cancer works on the molecular level, and how targeted therapies using kinase inhibitors and other

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modulators of signaling pathways can contain and eventually cure it. The first part of the book gives an introduction into the cell and molecular biology of cancer, focusing on the key mechanisms of cancer formation. The second part of the book introduces the main signaling transduction mechanisms responsible for carcinogenesis and compares their function in healthy versus cancer cells. In contrast to the complexity of its topic, the text is easy to read. 32 specially prepared teaching videos on key concepts and pathways in cancer signaling are available online.

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A concise overview of the fundamental concepts of cancer biology, ideal for those with little or no background in the field. From cancer epidemiology and the underlying mechanisms, through to tumour detection and treatment, the comprehensive picture revealed will enable students to move into the cancer field with confidence.

An overview of the current systems biology-based knowledge and the experimental approaches for deciphering the biological basis of cancer.

*Molecular Biology of Cancer
Understanding Cancer*

*Understanding Cancer from a
Systems Biology Point of
View*

*Role of Cancer Stem Cells in
Cancer Biology and Therapy
Updates, Insights and New
Frontiers*

*Recent Developments in
Cancer Systems Biology*

Advances in molecular biology over the last several decades are being steadily applied to our understanding of the molecular biology of cancer, and these advances in knowledge are being translated into the clinical practice of oncology. This volume explores some of the most exciting recent advances in basic research on the molecular biology of cancer

and how this knowledge is leading to advances in the diagnosis, treatment, and prevention of cancer. * This series provides a forum for discussion of new discoveries, approaches, and ideas * Contributions from leading scholars and industry experts * Reference guide for researchers involved in molecular biology and related fields

The unprecedented amount of data produced with high-throughput experimentation forces biologists to employ mathematical representation and computation methods to glean meaningful information in systems-level biology. Applying

this approach to the underlying molecular mechanisms of tumorigenesis, cancer researchers can uncover a series of new discoveries. "Nuclear envelope (NE) defects have been linked to cancer biology since the mid-1800s, but it was not until the last few years that we have begun to understand these historical links and to realize that there are myriad ways that the NE impacts on tumorigenesis. The NE is a complex double membrane system that encloses the genome while providing structural support through the intermediate filament lamin polymer and regulating protein/ mRNA trafficking and signaling between the nucleus and

cytoplasm via the nuclear pore complexes (NPCs). These functions already provide some mechanisms for NE influences on cancer biology but work in the past few years has elucidated many others. Lamins and many recently identified NE transmembrane proteins (NETs) have been now shown to function in DNA repair, regulation of cell cycle and signaling, apoptosis, cell migration in metastasis and nuclear architecture and morphology. This volume presents a comprehensive overview of the wide range of functions recently identified for NE proteins and their relevance in cancer biology,

providing molecular mechanisms and evidence of their value as prognostic and diagnostic markers and suggesting new avenues for the treatment of cancer. Indeed some of these recent links are already yielding promising therapies, such as the current clinical trial of selective inhibitors of the nuclear export factor exportin in certain types of leukemia, melanoma and kidney cancer."

**Principles of Stem Cell Biology and Cancer: Future Applications and Therapeutics Tarik Regad,
The John van Geest Cancer Research Centre, Nottingham Trent University, UK, Thomas J.**

**Sayers, Centre for Cancer
Research, National Cancer
Institute, Frederick, USA and
Robert Rees The John van Geest
Cancer Research Centre,
Nottingham Trent University, UK**

**The field of cancer stem cells is
expanding rapidly, with many
groups focusing on isolating and
identifying cancer stem cell
populations. Although some
progress has been made
developing efficient cancer
therapies, targeting cancer stem
cells remains one of the important
challenges facing the growing
stem cell research community.
Principles of Stem Cell Biology
and Cancer brings together**

original contributions from international experts in the field to present the very latest information linking stem cell biology and cancer. Divided into two parts, the book begins with a detailed introduction to stem cell biology with a focus on the characterization of these cells, progress that has been made in their identification, as well as future therapeutic applications of stem cells. The second part focuses on cancer stem cells and their role in cancer development, progression and chemo-resistance. This section of the book includes an overview of recent progress concerning therapies targeting

cancer stem cells. Features: An authoritative introduction to the link between stem cell biology and cancer. Includes contributions from leading international experts in the field. Well-illustrated with full colour figures throughout. This book will prove an invaluable resource for basic and applied researchers and clinicians working on the development of new cancer treatments and therapies, providing a timely publication of high quality reviews outlining the current progress and exciting future possibilities for stem cell research. Therapeutic Strategies in Cancer Biology and Pathology

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**Mechanisms, Targets, and
Therapeutics**

**Oxford Textbook of Cancer
Biology**

**Protocol Handbook for Cancer
Biology**

Cancer Systems Biology

The Emperor of All Maladies

**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

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**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**

**Cell Surface GRP78, a New
Paradigm in Signal
Transduction Biology
presents a new paradigm
that has emerged in the
past decade with the**

discovery that various intracellular proteins may acquire new functions as cell surface receptors. Two very prominent examples are ATP synthase and GRP78. While the role of cell surface ATP synthase has been reviewed in various books, this book directs its attention to the story of cell surface GRP78. Edited by the researcher who identified cell surface expression of the molecular chaperone GRP78 as a major factor in prostate cancer and other malignancies Presents an in-depth treatment of the biological

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**underpinnings of GRP78 and
its connection to disease**

**Provides four-color
illustrations that facilitate
the narrative**

**Systems Biology in Cancer
Research and Drug**

**Discovery provides a unique
collection of chapters, by
world-class researchers,
describing the use of
integrated systems biology
and network modeling in the
cancer field where**

**traditional tools have failed
to deliver expected promise.**

**This book touches four
applications/aspects of
systems biology (i) in**

understanding aberrant signaling in cancer (ii) in identifying biomarkers and prognostic markers especially focused on angiogenesis pathways (iii) in unwinding microRNAs complexity and (iv) in anticancer drug discovery and in clinical trial design. This book reviews the state-of-the-art knowledge and touches upon cutting edge newer and improved applications especially in the area of network modeling. It is aimed at an audience ranging from students, academics, basic

researcher and clinicians in cancer research. This book is expected to benefit the field of translational cancer medicine by bridging the gap between basic researchers, computational biologists and clinicians who have one ultimate goal and that is to defeat cancer. The third edition of The Molecular Biology of Cancer: Mechanisms, Targets, and Therapeutics offers a fresh approach to the study of the molecular basis of cancer, by showing how our understanding of the defective mechanisms which

**drive cancer is leading to
the development of new
targeted therapeutic agents.**

**A Biography of Cancer
Systems and Network
Biology Approaches**

**New Aspects of Cancer Stem
Cell Biology**

**Computational Systems
Biology of Cancer**

**Molecular Biology of Cancer:
Translation to the Clinic**

Breast Cancer

"When President Nixon launched the War on Cancer with the signing of the National Cancer Act of 1971 and the allocation of billions of research dollars, it was amidst a flurry of promises that a cure was

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within reach. The research establishment was trumpeting the discovery of oncogenes, the genes that supposedly cause cancer. As soon as we identified them and treated cancer patients accordingly, cancer would become a thing of the past. Fifty years later it's clear that the War on Cancer has failed--despite what the cancer industry wants us to believe. New diagnoses have continued to climb; one in three people in the United States can now expect to battle cancer during their lifetime. For the majority of common cancers, the search for oncogenes has not changed the treatment: We're still treating with the same old triad of removing (surgery), burning out

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(radiation), or poisoning (chemotherapy). In *Cancer and the New Biology of Water*, Thomas Cowan, MD, argues that this failure was inevitable because the oncogene theory is incorrect--or at least incomplete--and based on a flawed concept of biology in which DNA controls our cellular function and therefore our health. Instead, Dr. Cowan tells us, the somatic mutations seen in cancer cells are the result of a cellular deterioration that has little to do with oncogenes, DNA, or even the nucleus. The root cause is metabolic dysfunction that deteriorates the structured water that forms the basis of cytoplasmic health. Despite mainstream medicine's failure to bring an end to

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suffering or deliver on its promises, it remains illegal for physicians to prescribe anything other than the "standard of care" for their cancer patients, despite the fact that gentler, more effective, and more promising treatments exist"--

The cancer stem cell (CSC) paradigm represents one of the most prominent breakthroughs of the last decades in tumor biology. CSCs are that subpopulation within a tumor that can survive conventional therapies and as a consequence are able to fuel tumor recurrence. Nevertheless, the biological characteristics of CSCs and even their existence, remain the main topic among tumor biologists debates. The difficulty in

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achieving a better definition of CSC biology may actually be explained by the plasticity of such a cell subpopulation. Indeed, the emerging view is that CSCs represent a dynamic “state” of tumor cells that can acquire stemness-related properties under specific circumstances, rather than referring to a well-defined group of cells. Regardless of their origin, it is clear that designing novel antitumor treatments based on the eradication of CSCs will only be possible upon unraveling the biological mechanisms that underlie their pathogenic role in tumor progression and therapy resistance. The Special Issue on “New aspects of cancer stem cell biology:

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implications for innovative therapies” aims at highlighting recent insights into CSC features that can make them an attractive target for novel therapeutic strategies.

The future of cancer research and the development of new therapeutic strategies rely on our ability to convert biological and clinical questions into mathematical models—integrating our knowledge of tumour progression mechanisms with the tsunami of information brought by high-throughput technologies such as microarrays and next-generation sequencing. Offering promising insights on how to defeat cancer, the emerging field of systems biology captures the

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complexity of biological phenomena using mathematical and computational tools. Novel Approaches to Fighting Cancer Drawn from the authors' decade-long work in the cancer computational systems biology laboratory at Institut Curie (Paris, France), Computational Systems Biology of Cancer explains how to apply computational systems biology approaches to cancer research. The authors provide proven techniques and tools for cancer bioinformatics and systems biology research. Effectively Use Algorithmic Methods and Bioinformatics Tools in Real Biological Applications Suitable for readers in both the computational

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and life sciences, this self-contained guide assumes very limited background in biology, mathematics, and computer science. It explores how computational systems biology can help fight cancer in three essential aspects: Categorising tumours Finding new targets Designing improved and tailored therapeutic strategies Each chapter introduces a problem, presents applicable concepts and state-of-the-art methods, describes existing tools, illustrates applications using real cases, lists publically available data and software, and includes references to further reading. Some chapters also contain exercises. Figures from the text and

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scripts/data for reproducing a breast cancer data analysis are available at www.cancer-systems-biology.net.

Leading scientists argue for a new paradigm for cancer research, proposing a complex systems view of cancer supported by empirical evidence. Current consensus in cancer research explains cancer as a disease caused by specific mutations in certain genes. After dramatic advances in genome sequencing, never before have we known so much about the individual cancer cell--and yet never before has it been so unclear what to do with this knowledge. In this volume, leading researchers argue for a new theory framework for

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understanding and treating cancer. The contributors propose a complex systems view of cancer, presenting conceptual building blocks for a new research paradigm supported by empirical evidence. The contributors first discuss the new research framework in terms of theoretical foundations and then take up the relevance of a systems approach, reviewing such topics as nonlinearity, recurrence after treatment, the cellular attractor concept, network theory, and non-coding DNA--the "dark matter" of our genome. They address the temporality of cancer progression, drawing on evolutionary theory and clinical experience. Finally, they cover the dominant role of the

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tissue microenvironment in cancer, analyzing topics including altered metabolic pathways, the disease-defining influence on metastasis, and the interconnectedness of different environmental niches across levels of organization.

Molecular Diagnostics and
Treatment of Pancreatic Cancer

Biology of Oral Cancer

Sirtuin Biology in Cancer and
Metabolic Disease

Rethinking Cancer

Developmental Biology and Cancer
Lecture Notes and Mathematical
Modeling

The fourth edition of this classic text provides a thorough, yet concise review of the cellular and molecular mechanisms involved in

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the transformation of normal into malignant cells, the invasiveness of cancer cells into host tissues, and the metastatic spread of cancer cells in the host organism. It defines the fundamental pathophysiologic changes that occur in tumor tissue and in the host animal or patient. Each chapter discusses the historical development of a field, citing the key experimental advances to the present day, and evaluates the current evidence that best supports or rules out concepts of the molecular and cellular mechanisms regulating cancer cell behavior. For all the areas of fundamental cancer research, an effort has been made to relate

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basic research findings to the clinical disease states. The book is well written and well illustrated, with schematic diagrams and actual research data to demonstrate points made in the text. There is also an extensive, up-to-date bibliography, making the book valuable to scientists, and to physicians, students, and nurses interested in the field of cancer biology. The topics covered include pathologic characterization of human tumors, epidemiology of human cancer, regulation of cell proliferation and differentiation, cellular and molecular phenotypic characteristics of the cancer cell, mechanisms of carcinogenesis, tumor initiation and promotion,

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viral carcinogenesis, oncogenes and oncogene products, growth factors, chromosomal alterations in cancer, mechanisms of tumor metastasis, host-tumor interactions, fundamental aspects of tumor immunology, and the advances in cancer cell biology that will lead to improved diagnosis and treatment of cancer in the future.

' The book shows how mathematical and computational models can be used to study cancer biology. It introduces the concept of mathematical modeling and then applies it to a variety of topics in cancer biology. These include aspects of cancer initiation and progression, such as the

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somatic evolution of cells, genetic instability, and angiogenesis. The book also discusses the use of mathematical models for the analysis of therapeutic approaches such as chemotherapy, immunotherapy, and the use of oncolytic viruses. Contents: Cancer and Somatic

Evolution Mathematical Modeling of Tumorigenesis Cancer Initiation: One-Hit and Two-Hit Stochastic Models Microsatellite and Chromosomal Instability in Sporadic and Familial Cancers Cellular Origins of Cancer Costs and Benefits of Chromosomal Instability DNA Damage and Genetic Instability Tissue Aging and the Development of Cancer Basic

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*Models of Tumor Inhibition and
Promotion Mechanisms of Tumor
Neovascularization Cancer and
Immune Responses Therapeutic
Approaches: Viruses as Anti-Tumor
Weapons Readership: Researchers
and academics in bioinformatics,
biocomputing, biomathematics,
cell/molecular biology and cancer
biology, as well as clinicians.*

Keywords: Mathematics

*Models; Computational
Biology; Cancer Initiation; Cancer
Progression; Somatic
Evolution; Genetic*

*Instability; Therapy; Oncolytic
Viruses Key Features: Provides an
introduction to computational
methods in cancer biology Follows
a multi-disciplinary*

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*approach*Reviews: "This book adds aspects not covered by other books and, therefore, represents a valuable addition to the literature about mathematical models in cancer biology."Zentralblatt MATH

Incorporating the most important advances in the fast-growing field of cancer biology, the text maintains all of its hallmark features. It is admired by students, instructors, researchers, and clinicians around the world for its clear writing, extensive full-color art program, and numerous pedagogical features.

Currently, intensive effort is being directed toward the identification of molecular targets that can

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provide approaches to the development of novel therapeutic strategies in cancer management. This book focuses on metastasis-associated genes, metastasis promoter and suppressor genes, which relate specifically to behavioral alterations of cancer cells in epithelial mesenchymal transition, cancer stem cell maintenance and propagation, and to the acquisition of invasive and metastasis faculty. The function of these genes has implications for cell cycle regulation and cell proliferation and so constitute an essential element in cancer growth and dissemination. The emphasis in this book is on how appropriate these genes are as molecular

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targets and how practicable are the constituents of their signal transduction systems as potential candidates and how accessible they are to targeted therapy.

Written in a straightforward and clear style with background information supporting the new research, this book will be useful for students and researchers in cancer therapies. Identifies molecular targets and their accessibility for therapeutic intervention Provides information on biological features of tumor development and dissemination Background information provided for each topic

The Impact of Tumor Biology on Cancer Treatment and

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*Multidisciplinary Strategies
Systems Biology of Cancer
Principles of Cancer Biology
A New Paradigm for the
Postgenomics Era
Cell & Molecular Biology of
Prostate Cancer
Cancer Biology and the Nuclear
Envelope*

This book includes original research articles and reviews to update readers on the state of the art systems approach to not only discover novel diagnostic and prognostic biomarkers for several cancer types, but also evaluate methodologies to map out important genomic signatures. In addition, therapeutic targets and drug

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repurposing have been emphasized for a variety of cancer types. In particular, new and established researchers who desire to learn about cancer systems biology and why it is possibly the leading front to a personalized medicine approach will enjoy reading this book.

This volume covers classic and modern cell and molecular biology of prostate cancer, as well as novel biomarkers, inflammation, centrosome pathologies, microRNAs, cancer initiation novel biomarkers, inflammation, centrosome pathologies, microRNAs, cancer initiation and genetics, epigenetics, mitochondrial dysfunctions and apoptosis, cancer

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stem cells, angiogenesis and progression to metastasis, and treatment strategies including clinical trials related to prostate cancer. *Cell & Molecular Biology of Prostate Cancer* is one of two companion books comprehensively addressing the biology and clinical aspects of prostate cancer. *Prostate Cancer: Molecular & Diagnostic Imaging and Treatment Strategies*, the companion volume, discusses both classic and the most recent imaging approaches including analysis of needle biopsies, applications of nanoparticle probes and peptide-based radiopharmaceuticals for detection, early diagnosis and treatment of

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prostate cancer. Taken together, these volumes form one comprehensive and invaluable contribution to the literature. Molecular Biology of Cancer has been extensively revised and covers heredity cancer, microarray technology and increased study of childhood cancers. It continues to provide a detailed overview of the process which lead to the development and proliferation of cancer cells, including the techniques available for their study. It also describes the means by which tumor suppressor genes and oncogenes may be used in the diagnosis and in determining the prognosis of a wide variety of

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cancers, including breast, genitourinary, lung and gastrointestinal cancer.

Written for undergraduate students with diverse backgrounds and for members of the general readership interested in the "breakthroughs" announced so often, this well-illustrated text steps through basic principles of cancer biology, emphasizing the scientific evidence underneath them. Kleinsmith (molecular, cellular and developmental biology emeritus, U. of Michigan) refines what we image the word "cancer" means, then covers the profile of a cancer cell, the means by which cancer cells spread, the causes, chemicals,

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infectious agents, radiation,
heredity, oncogenes, tumor
suppression genes, screening and
diagnosis, treatment, and prevention.

Annotation :2006 Book News, Inc.,
Portland, OR (booknews.com).

From Observation to Theory and
Back

Future Applications and
Therapeutics

From Biology to Medicine

An Introduction to the Biology,
Medicine, and Societal Implications
of this Disease

Second International Student
Edition

From Molecular Biology to
Targeted Therapy

This book summarizes the

latest findings about the role of cancer stem cells (CSCs) in cancer biology and how this knowledge could be used for novel anticancer therapies. It provides an overview of CSCs in selected malignancies with particular emphasis on hematopoietic neoplasias. It then reviews the role of CSCs in metastasis formation and initiation of cancer relapses. It also examines the dark side of cancer therapy such as conventional cancer therapies that may lead to the origin of recurrence CSCs. Finally, it supplies a brief overview of current concepts that may allow for a selective

eradication of CSCs.

Te rapidly changing concepts in radiation oncology with the development of more precise - instrumentation for delivery of radiation therapy and a greater emphasis on hypofractionation technologies require a very intimate knowledge of tumor biology and the influence of various biologic factors on dose distribution within the tumor in terms of homogeneity as well as prevention of any late effects on normal tissue surrounding the tumor itself. Not only are these major factors in clinical practice but also the known factors of inhomogeneity of cancer cells,

the impact of microenvironment in terms of radiation effect, and host factors make it mandatory to design therapeutic strategies to improve the outcome and to diminish any potential short-term or long-term risks from the radiation therapy. The authors have developed an outstanding text that deals with these strategies and how they would impact on established and emerging new technologies and treatment. The context of the presentations within a multidisciplinary combined modality therapy program is incredibly important. In this volume, various topics are

**reviewed including tumor
genesis, cell proliferation, -
giogenesis, the physiologic
characteristics of malignant
tissues, invasion and adhesion,
the route and role pursued in
the development of metastasis,
and the role of the human
immune system in cancer
prevention and development.
Understanding Cancer is a
brand-new undergraduate
textbook that uses simple
language and well-chosen
examples to explain the
biological processes that
underlie cancer and inform our
methods for the diagnosis and
treatment of this disease. The
book has been carefully**

designed to provide key information relevant for students seeking a broad and accessible introduction to the cancer problem, even if they have no prior training in biology or chemistry.

Molecular Diagnostics and Treatment of Pancreatic Cancer describes the different emerging applications of systems biology and how it is shaping modern pancreatic cancer research. This book begins by introducing the current state of the art knowledge, trends in diagnostics, progress in disease model systems as well as new treatment and

palliative care strategies in pancreatic cancer. Specific sections are dedicated to enlighten the readers to newer discoveries that have emerged from gene expression profiling, proteomics, metabolomics and systems level analyses of pancreatic cancer datasets. First of a kind and novel network strategies to understand oncogenic Kras signaling in pancreatic tumors are presented. The attempts to computationally model and prioritize microRNAs that cause pancreatic cancer resistance are also highlighted. Addressing this important area, Molecular

Diagnostics and Treatment of Pancreatic Cancer provides insights into important network evaluation methodologies related to pancreatic cancer related microRNAs targetome. There are dedicated chapters on critical aspects of the evolving yet controversial field of pancreatic cancer stems cells. The work concludes by discussing the applications of network sciences in pancreatic cancer drug discovery and clinical trial design. Encompasses discussion of innovative tools including expression signatures in cell lines, 3D models, animal

xenograft models, primary models and patient derived samples, aiding subversion of traditional biology paradigms, and enhancing comprehension across conventional length and temporal scales Coverage includes novel applications in targeted drugs, polypharmacology, network pharmacology and other related drug development arenas - helping researchers in pancreatic cancer drug discovery Summarizes many relevant computational and clinical references from fast-evolving literature Comprehensive glossary helps newer readers understand

**technical terms and
specialized nomenclature**
Introduction to Cancer Biology
**Principles of Stem Cell Biology
and Cancer**
**Cancer Signaling, Enhanced
Edition**
**Computational Biology of
Cancer**
Key Apoptotic Regulators
**Molecular and Cellular
Changes in the Cancer Cell**
The study of the biology of
tumours has grown to become
markedly interdisciplinary,
involving chemists,
statisticians,
epidemiologists,
mathematicians,
bioinformaticians, and
computer scientists

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alongside biologists,
geneticists, and clinicians.
The Oxford Textbook of
Cancer Biology brings
together the most up-to-date
developments from different
branches of research into
one coherent volume,
providing a comprehensive
and current account of this
rapidly evolving field.
Structured in eight
sections, the book starts
with a review of the
development and biology of
multi-cellular organisms,
how they maintain a healthy
homeostasis in an
individual, and a
description of the molecular
basis of cancer development.
The book then illustrates,

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as once cells become neoplastic, their signalling network is altered and pathological behaviour follows. It explores the changes that cancer cells can induce in nearby normal tissue, the new relationship established between them and the stroma, and the interaction between the immune system and tumour growth. The authors illustrate the contribution provided by high throughput techniques to map cancer at different levels, from genomic sequencing to cellular metabolic functions, and how information technology, with its vast amounts of data, is

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integrated with traditional cell biology to provide a global view of the disease. The effect of the different types of treatments on the biology of the neoplastic cells are explored to understand on the one side, why some treatments succeed, and on the other, how they can affect the biology of resistant and recurrent disease. The book concludes by summarizing what we know to date about cancer, and in what direction our understanding of cancer is moving. Edited by leading authorities in the field with an international team of contributors, this book is an essential resource for

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scholars and professionals working in the wide variety of sub-disciplines that make up today's cancer research and treatment community. It is written not only for consultation, but also for easy cover-to-cover reading. Despite a decline in developed countries, cancer has consistently maintained its status as one of the top killers since time immemorial. Exploring cancer management and treatment at the molecular level, *Biology of Oral Cancer: Key Apoptotic Regulators* presents a key molecular event—apoptosis—in relation to genesis and progression of oral cancer. Th

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An assessment of cancer addresses both the courageous battles against the disease and the misperceptions and hubris that have compromised modern understandings, providing coverage of such topics as ancient-world surgeries and the development of present-day treatments. Reprint. Best-selling winner of the Pulitzer Prize. Includes reading-group guide.

The Molecular Biology of Cancer discusses the state of progress in the molecular biology of cancer. The book describes the effects of anticancer agents on nucleolar ultrastructure; the role of chromosomes in

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the causation and progression of cancer and leukemia; the replication, modification, and repair of DNA. The text also describes the metabolism and utilization of messenger RNA and other high molecular weight RNA and low molecular weight nuclear RNA; the characteristics, structures, and functions of nuclear proteins; and the process of protein synthesis.

Nucleotides are reviewed with regard to its biosynthesis, inhibition of synthesis, and development of resistance to inhibitors. The book further tackles the biochemical mechanisms of chemical carcinogenesis; the

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oncogenic viruses; and the molecular correlation concept. The text also demonstrates phenotypic variability as a manifestation of translational control; and plasmacytomas. Molecular biologists, virologists, pathologists, cell biologists, oncologists, pharmacologists, and students taking related courses will find the book useful.

Implications for Innovative
Therapies

Hyaluronan in Cancer Biology
Cell Surface GRP78, a New
Paradigm in Signal
Transduction Biology
Cancer Biology

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The Molecular Biology of Cancer

Sirtuin Biology in Cancer and Metabolic Disease: Cellular Pathways for Clinical Discovery offers a compelling and thought-provoking perspective for the examination of the intriguing biology of sirtuins that ties cancer and metabolic disease together and provides a critical platform for the development of sirtuin-based novel therapeutic strategies to effectively treat cancer and metabolic disorders with precision in order to minimize any potentially detrimental clinical outcomes. An exciting prospect for the development of innovative therapeutics for cancer and metabolic disorders involves sirtuins. Sirtuins are histone deacetylases that have an intricate role in the onset and development of cancer and metabolic

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disease. Implementing a translational medicine format, this innovative reference highlights the ability of sirtuins to oversee critical pathways that involve stem cell maintenance, cellular proliferation, metabolic homeostasis, apoptosis, and autophagy that can impact cellular dysfunction and unchecked cellular growth that can occur during cancer and metabolic disease. Each chapter offers an intuitive perspective of advances on the application of sirtuin pathways for cancer and metabolic disease that will become a "go-to" resource for a broad audience of scientists, physicians, pharmaceutical industry experts, nutritionists, and students. Chapters are authored by internationally recognized experts who elucidate the intimate relationship between cancer and metabolic

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disease that intersects with sirtuin pathways Presents the basic and clinical role of sirtuins in regard to cancer and metabolic disease

Summarizes the multidiscipline views and publications for this exciting field of sirtuins for the development of new clinical treatments for cancer and metabolic disease Provides a vital foundation for a broad audience of healthcare providers, scientists, drug developers, and students in both clinical and research settings

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

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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

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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

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dissemination * Focuses on understanding the mechanisms that drive tumor cell activation, proliferation, and drug resistance
Accompanying CD-ROM contains ...
"figures from text--in PowerPoint and JPEG formats; supplementary sidebars; mini-lectures; movies."--CD-ROM label.