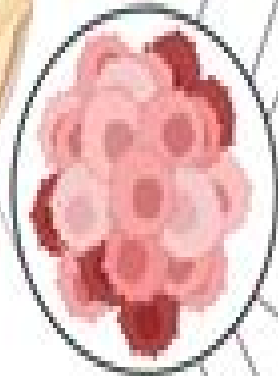
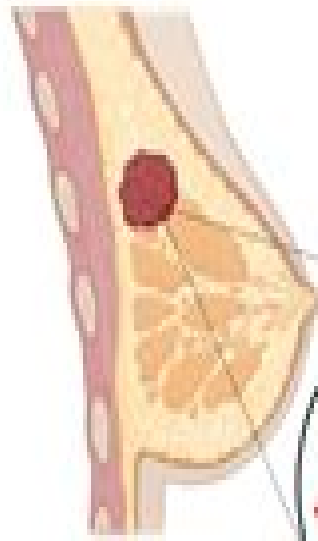


The 7 Main Molecular Subtypes of Breast Cancer



Receptors
 HR: Hormone
 ER: Estrogen receptor
 PR: Progesterone receptor
 HER2: Human Epidermal Growth Factor receptor 2

Luminal A (~40%)
 HR+ (ER+ and/or PR+), HER2-

- Most prevalent subtype and targeted therapy is Tamoxifen.
- MicroRNAs miR-10, miR-200a, and miR181a are potential biomarkers of this breast cancer type that may assist in regulation.
- Examples: ZR-75-1, T-47D, MCF-7, MDA-MB-415

Luminal B (10-20%)
 HR+ (ER+ and/or PR+), HER2+/-

- High levels of Ki-67 with fast cancer cell growth
- MicroRNAs miR-155, miR-125b, miR-4216 are potential biomarkers associated with this breast cancer type that may assist in therapeutic intervention.
- Examples: MDA-MB-320, ZR-75-30

Luminal HER2 (5-10%)
 HR+ (ER+ and/or PR+), HER2+

- High levels of Ki-67 with faster cancer cell growth
- MicroRNAs miR-21, miR-200, miR-27b are potential biomarkers associated with this breast cancer type that may assist in targeting during experimentation.
- Examples: BT-474, MDA-MB-361, UACC-612

HER2-enriched (15-20%)
 HR- (ER-, PR-), HER2+

- Overexpression of receptor HER2 and targeted therapy Herceptin.
- miR-147-3p has been linked with having the actions of a tumor suppressor gene within this breast cancer type that may regulate tumor function and development.
- Examples: AUA65, MDA-MB-453, HCC156A, SUM130PT, SK-BR-3

Triple Negative (10-15%)
 HR- (ER-, PR-), HER2-

- Highest association to BRCA1 mutation and most aggressive type.
- Chemotherapy and experimental therapy are prevalent for this breast cancer type.

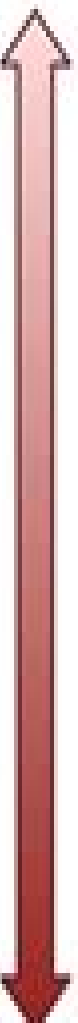
Basal-like (~10%)
 HR- (ER-, PR-), HER2-

- Subset of Triple-Negative
- Enriched with basal markers such as cytokeratins and integrins.
- Examples: SUM229P, HCC70, BT-20, CAL 148

Normal-like (~5%)
 HR- (ER-, PR-), HER2-

- Subset of Triple-Negative, also called claudin-low
- Over-express genes associated with tumor invasive and aggressive features
- Examples: BT-549, MDA-MB-157, MDA-MB-231, Hs 5787

Best prognosis



Worst prognosis

Cancer Cell Lines

Bernhard Ø Palsson, John Masters



Cancer Cell Lines:

Cancer Cell Lines Part 1 John R. W. Masters, Bernhard Palsson, 1999 This series provides the first complete guide to the culture of human cells It is a detailed manual and reference resource for researchers in every aspect of medicine biology technology and immunobiology using human cells Every chapter is written by an internationally recognised authority in the field The first three volumes in the series provide a comprehensive text on the culture of established cell lines from every type of human cancer They provide a basic manual and reference resource for every cancer research scientist using human cancer cells

Cancer Cell Lines Part 2 John Masters, Bernhard Ø Palsson, 2006-04-11 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 naive and misleading

Cancer Cell Lines Bernhard Ø Palsson, John Masters, 2006-04-11 This book describes all human leukemia lymphoma cell lines that have been established and that grow continuously under standardised in vitro conditions These lines are derived from cells belonging to all the major hematopoietic cell lineages i e B and T lymphocytes natural killer cells granulocytic cells and megakaryocytic cells The clinical data the culture conditions and the major phenotypic features of the cell lines are described with citations This book is the first book describing human leukemia lymphoma cell lines and will be of interest to scientists involved in the areas of hematology oncology immunology molecular biology and cytogenetics

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Atlas of Human Tumor Cell Lines Robert K.M. Hay,Jae-Gahb Park,Adi Gazdar,2013-10-22 Human tumor cells in culture are valuable for studying cancer causes and properties This convenient reference provides useful information for cancer researchers on commonly used established tumor cell lines of the major human organ systems Atlas of Human Tumor Cell Lines includes data about morphological metabolic genetic and growth characteristics of human tumor cells with morphological characteristics presented in more than 250 photomicrographs It also contains information for establishing and maintaining human tumor cell lines in culture and each chapter covers future perspectives Covers well characterized tumor cell lines from the major human organ systems Presents over 250 photomicrographs both phase contrast and electron micrographs Includes a list of key references for each chapter Written by world renowned experts *Cancer Cell Culture* Simon P. Langdon,2008-02-01 The culture of cancer cells is routinely practiced in many academic research centers biotechnology companies and hospital laboratories Cancer Cell Culture Methods and Protocols describes easy to follow methods to guide both novice and more experienced researchers seeking to use new techniques in their laboratories Our present understanding of the cell and molecular biology of cancer has been derived mainly from the use of cultured cancer cells and we cover a number of the most widely used assays to study function in current use Part I introduces the basic concept of cancer cell culture and this is followed by a description of the general techniques used in many cell culture facilities The importance of cell line characterization is now widely recognized and methods to characterize and authenticate cell lines are described in Part II Part III covers the isolation and development of specific cancer cell types and provides valuable tips for those wishing to derive new cell line models A wide range of procedures encompassing many of the key functional features of cancer cells are described in Part IV including assays to evaluate clonogenicity cell proliferation apoptosis adhesion migration invasion senescence angiogenesis and cell cycle parameters Methods to modify cancer cells are described in Part V including protocols for transfection development of drug resistance immortalization and transfer in vivo In Part VI methods of coculture of different cell types and contamination of cell lines are covered *Cancer Cell Lines Part 1* John Masters,Bernhard Ø Palsson,1998-10-31 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 naive and misleading

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Cell and Molecular Biology of Endometrial Carcinoma Hiroyuki Kuramoto,2003-07-02 The 15th International Symposium of the Japan Human Cell Society on Cell and Molecular Biology of Endometrial Carcinoma brought together leading researchers from Japan and around the world The papers collected here are the work of twenty two leaders in their field and are organized in ten major categories The first section in vitro experimental systems takes up the pioneering work by Kuramoto in 1968 and Nishida in 1980 in establishing respectively the HEC 1 and hormone responsive endometrial carcinoma cell lines Other topics include apoptosis proliferation and growth factors cell cycle regulators signaling pathways angiogenesis carcinogenesis hormones and hormone receptors genes and gene expression endometrial receptivity and chemo resistance and sensitivity Presenting the latest work in the cell and molecular biology of endometrial carcinoma this volume is a valuable resource for gynecologists pathologists and molecular biologists

Cancer Cell Culture Dania Movia,Adriele Prina-Mello,2023-05-18 This volume explores the latest collection of cell models that are used in preclinical cancer research and covers both two dimensional and three dimensional culturing techniques The chapters in this book are divided into two parts Part One discusses two dimensional cancer cell culture cell models at the Air Liquid Interface and the latest advancements in three dimensional complex spheroid models and dedicated disease animal models Part Two contains technical chapters that illustrate step by step methodologies for specific cancer cell culture methods The methods discussed range from the generation of isogenic cancer cell lines the use of serum free growth conditions and three dimensional cell cultures and their specific assays for the efficacy assessment of new anticancer therapies Written in the highly successful Methods in Molecular Biology series format chapters include introductions to their respective topics lists of the necessary materials and reagents step by step readily reproducible laboratory protocols and tips on troubleshooting and avoiding known pitfalls Cutting edge and comprehensive *Cancer Cell Culture Methods and Protocols* is a valuable tool to help researchers involved in this important field to further improve or advance their models for cancer research

Targeting Thyroid Cancer Microenvironment and Epigenetic Signalling: New Frontiers in Cancer Endocrinology Basic and Clinical Research, 2nd Edition Carmelo Nucera, *Cancer Cell Metabolism and Immunomodulation in the Context of Tumor Metastasis* Qiongzhu Dong,Baoli Hu,Peter Jon Nelson,Hongquan Zhang,Yue Zhao,2022-03-18 *Exploration of Natural*

Product Leads for Multitarget-Based Treatment of Cancer - Computational to Experimental Journey Rajeev K. Singla, Marcus Scotti, Supratik Kar, 2022-03-14 **Equity in Cancer Care** Jorge J. Nieva, Hussain Gadelkarim Ahmed, 2024-01-17

Preclinical cancer models for translational research and drug development Suresh P.K., Arindam Banerjee, 2025-03-13

This book provides updated information on certain in vitro and preclinical in vivo cancer models. The topics covered include an update on advancements in the diagnosis, treatment, and heterogeneity in certain cancers; the development of preclinical in vitro and xenograft based in vivo cancer models as well as their validation based on widely accepted biomarkers; modelling of aberrations in bioenergetics in cancers. Also, the importance and latest advances of in silico modeling for the design of new and potent anti-cancer drugs has been reviewed. Cutting edge and resourceful, this book is valuable for researchers, academicians, and professionals involved in cancer research.

The Search for New Anticancer Drugs Michael Waring, B.A. Ponder, 1992-11-30. Most of the anti-cancer drugs in use today were discovered by happy accident rather than design, yet the rational design of better anti-cancer drugs remains a cherished goal and one of the most important challenges facing medical science. This book represents a compilation of views and progress reports which illustrate the diversity of approaches to the problem. Recent research has confirmed the belief that critical genetic changes are at work in cancer cells. The genome, then DNA in biochemical terms, surely represents a critical target for specific chemotherapy of cancer, and several chapters address the issue of attacking DNA, gene targeting, and the like. Others deal with principles of rational design, exploitation of novel modalities and targets, or the nuts and bolts of antitumour drug testing. While no attempt has been made to provide a comprehensive coverage of this wide-ranging and vitally important subject, the present volume in the series will provide much food for thought.

Metastasis Lalage Wakefield, Kent W. Hunter, 2007. Metastasis is the most dreaded aspect of the carcinogenic process. More than ninety percent of all cancer deaths are attributable to the consequences of the primary tumor successfully colonizing distant organs. Unlike the situation with colon cancer, a patient with breast cancer can never be considered cured since as many as a third of breast cancer patients who have apparently curative surgery for their primary tumors ultimately relapse with metastatic disease, sometimes decades later. Much effort is now devoted to understanding this process of metastasis and finding ways to predict and prevent its occurrence. This publication covers recent advances in the field, specifically as they relate to breast cancer. The availability of new tools and technological approaches has prompted a reconsideration of the very definition of a metastasis. Furthermore, a number of commonly held myths are being explored, and a new definition of a metastasis with important implications for clinical staging is being proposed. Also, a novel conceptual framework for cancer progression based on the system-level dynamics of regulatory networks is presented, and the role of chemokines in mediating some of

Advances in Molecular Pathology 2018, 2018-10-09. This inaugural issue of *Advances in Molecular Pathology* will provide a comprehensive review of the most current practices, trends, and developments in the field of Molecular Pathology. Publishing on an annual basis, the volume will

be divided into 7 sections Genetics Hematopathology Infectious Disease Pharmacogenomics Informatics Solid tumors and Identity HLA Led by Dr Gregory Tsongalis of Dartmouth University a team of experienced pathologists from institutions across the country oversee annual topic and expert author selection Topics discussed in this volume include but are not limited to whole genome sequencing in critically ill children bioinformatics in clinical genomic sequencing comprehensive monitoring of patients with chronic myeloid leukemia genetic biomarkers in the biology and clinical workup of chronic lymphocytic leukemia metagenomics in infectious disease point of care molecular testing pharmacogenomics in oncology clinical uses of panel testing vs single gene testing large scale data sharing initiatives in genomic oncology clinical NGS assays for solid tumors emerging concepts in liquid biopsy the cell line and tissue misidentification problem and cell line detective work

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