Drug Discovery In Cancer Epigenetics

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Peter Jones on Epigenetics and Improved Therapies for Cancer

Research begins at our new Centre for Cancer Drug Discovery**Drug Discovery In Cancer Epigenetics**

Drug Discovery in Cancer Epigenetics is a practical resource for scientists involved in the discovery, testing, and development of epigenetic cancer drugs.

Epigenetic modifications can have significant implications for translational science as biomarkers for diagnosis, prognosis or therapy prediction.

Drug Discovery in Cancer Epigenetics | ScienceDirect
Drug Discovery in Cancer Epigenetics is a practical resource for scientists involved in the discovery, testing, and development of epigenetic cancer drugs. Epigenetic modifications can have significant implications for translational science as biomarkers for diagnosis, prognosis or therapy prediction.

Drug Discovery in Cancer Epigenetics - 1st Edition
Drug Discovery and Chemical Biology of Cancer

Epigenetics. Comprehensive whole-exome sequencing, DNA copy-number determination, and transcriptomic analyses of diverse cancers have greatly expanded our understanding of the biology of many tumor types. In addition to mutations in the common cell-of-origin specific driver mutations, these studies have also revealed a large number of loss-of-function and gain-of-function mutations in chromatin-modifying proteins (CMPs).

Drug Discovery and Chemical Biology of Cancer Epigenetics ...

Beyond helping to understand the biology of the disease, the use of modern clinical epigenetics is

being incorporated into the management of the cancer patient. Potential epidrug candidates can be found through a process known as drug repositioning or repurposing, a promising strategy for the discovery of novel potential targets in already approved drugs.

Frontiers | Epidrug Repurposing: Discovering New Faces of ...

By Michael Crichton - drug discovery in cancer epigenetics is a practical resource for scientists involved in the discovery testing and development of epigenetic cancer drugs epigenetic modifications can have significant implications for translational science as biomarkers for diagnosis prognosis or

Drug Discovery In Cancer Epigenetics [PDF]
We will also highlight recent successes in cancer epigenetics drug discovery and consider important factors for clinical success in this burgeoning area. Epigenetic dysregulation in cancer Epigenetic information is contained in the cell in multiple forms that include DNA methylation, histone modification (methylation, acetylation, phosphorylation, etc.), nucleosome positioning, and microRNA expression, among others.

JCI - Cancer epigenetics drug discovery and development ...

Below, we discuss how epigenetics has facilitated drug discovery for cancer, neurological diseases, and autoimmune diseases. Epigenetics in cancer The connection between epigenetic changes and cancer has been studied many times across several cancer types.

What Role Does Epigenetics Play in Drug Discovery? These findings have gained the attention of the drug discovery and development community, and offer the potential for a second generation of cancer epigenetic agents for patients following the approved "first generation" of DNA methylation (e.g., Dacogen, Vidaza) and broad-spectrum HDAC inhibitors (e.g.,

Vorinostat, Romidepsin).

Cancer epigenetics drug discovery and development: the ...

Data-driven discovery of cancer driver genes, including tumor suppressor genes (TSGs) and oncogenes (OGs), is imperative for cancer prevention, diagnosis, and treatment. Although epigenetic alterations are important for tumor initiation and progression, most known driver genes were identified based on genetic alterations alone. Here, we developed an algorithm, DORGE (Discovery of Oncogenes and ...

DORGE: Discovery of Oncogenes and tumoR suppressor genes ...

The developments in epigenetic drug discovery [64, 82, 83], together with the growing insights in the importance of epigenetic mutations in diseases [5, 84,85,86] and consequent biomarker discovery , definitely marks epigenetics as an exciting field of research with promising clinical implications. Indeed, the speed of developments in drug design indicates the huge demand for this novel avenue to be fully exploited in order to combat diseases.

The timeline of epigenetic drug discovery: from reality to ...

Buy Drug Discovery in Cancer Epigenetics (Translational Epigenetics Series) by Egger, Gerda, Arimondo, Paola (ISBN: 9780128022085) from Amazon's Book Store. Everyday low prices and free delivery on eligible orders.

Drug Discovery in Cancer Epigenetics (Translational ... Sep 12, 2020 drug discovery in cancer epigenetics Posted By Sidney SheldonPublishing TEXT ID e36fc12c Online PDF Ebook Epub Library Epigenetics Revitalizes Drug Discovery epigenetics now sits squarely at the forefront of novel drug discovery with promises of treatments for cancer and other diseases the most widely studied epigenetic mechanisms dna

methylation

drug discovery in cancer epigenetics
Here, we review the key protein families that mediate epigenetic signalling through the acetylation and methylation of histones, including histone deacetylases, protein methyltransferases, lysine demethylases, bromodomain-containing proteins and proteins that bind to methylated histones. These protein families are emerging as druggable classes of enzymes and druggable classes of protein-protein interaction domains.

Epigenetic protein families: a new frontier for drug

discovery
P300 is a kind of epigenetic drug; that is, it controls how genes are expressed. P300, the MSU team suggests, could be far more effective than current treatments, including surgery, hormone...

Endometriosis Relief May Come from Epigenetic Therapy
Episteme Prognostics aims to 1) optimize PancEpistemeDx for routine clinical use and expand it to all stages of pancreatic cancer, and 2) develop companion diagnostics (CDx) for epigenetic drugs.

Guiding pancreatic cancer therapy by individualized ...

All Bioprocessing Cancer Drug Discovery OMICs Translational Medicine Genome Editing. ... Single Cell Multiomics: Simultaneous Epigenetic and Transcriptional Profiling. LEAVE A REPLY Cancel reply.

Drug Discovery in Cancer Epigenetics is a practical resource for scientists involved in the discovery, testing, and development of epigenetic cancer drugs. Epigenetic modifications can have significant implications for translational science as biomarkers for diagnosis, prognosis or therapy prediction. Most importantly, epigenetic modifications are reversible

and epigenetic players are found mutated in different cancers; therefore, they provide attractive therapeutic targets. There has been great interest in developing and testing epigenetic drugs, which inhibit DNA methyltransferases, histone modifying enzymes or chromatin reader proteins. The first few drugs are already FDA approved and have made their way into clinical settings. This book provides a comprehensive summary of the epigenetic drugs currently available and aims to increase awareness in this area to foster more rapid translation of epigenetic drugs into the clinic. Highlights the potential of epigenetic alterations in cancer for drug development Covers the tools and methods for epigenetic drug discovery, preclinical and

clinical testing, and clinical implications of epigenetic therapy Provides important information regarding putative epigenetic targets, epigenetic technologies, networks and consortia for epigenetic drug discovery and routes for translation

This book will provide an invaluable guide to epigenetics, one of the fastest moving fields in drug discovery, for medicinal chemists working in academia and in the pharmaceutical industry.

This broad view of epigenetic approaches in drug discovery combines methods and strategies with individual targets, including new and largely

unexplored ones such as sirtuins and methyl-lysine reader proteins. Presented in three parts - Introduction to Epigenetics, General Aspects and Methodologies, and Epigenetic Target Classes - it covers everything any drug researcher would need in order to know about targeting epigenetic mechanisms of disease. Epigenetic Drug Discovery is an important resource for medicinal chemists, pharmaceutical researchers, biochemists, molecular biologists, and molecular geneticists.

Establishment of a normal phenotype involves dynamic epigenetic regulation of gene expression that when affected contributes to human diseases. On a

molecular level, epigenetic regulation is marked by specific covalent modifications (acetylation, methylation, phosphorylation, sumoylation, PARylation and ubiquitylation) of DNA and its associated histones. Studies also suggest the influence of such epigenetic modifications on non-coding RNA expression implicated in normal and diseased phenotypes. Epigenetic control of genetic expression is a reversible process essential for normal development and function of an organism. Alteration of epigenetic regulation leads to various disease forms such as cancer, diabetes, inflammation and neuropsychiatric disorders. Assessing these alterations provides a deeper insight into the changes

induced in the genome, which is often informative for identifying disease subtypes or developing suitable treatments. Therefore, epigenetics proves to be a key area of clinical investigation in diagnosis, prognosis, and treatment of complex diseases. Genetic mutations, environmental stress, pathogens and drugs of abuse are some of the predominant factors that induce and impact changes on chromatin, which directly dictate a diseased phenotype. It is essential to consider the interaction between genetic and epigenetic factors to understand the molecular mechanisms of complex human diseases for safer and efficient drug development. Furthermore, genetic variation in absorption, distribution, metabolism, and

excretion (ADME) genes is insufficient to account for interindividual variability of drug response. Therefore, current efforts aim to identify epigenetic components of ADME gene regulation, which include phase-I and phase-II enzymes, uptake transporters, efflux transporters and nuclear receptors involved in regulation of ADME genes. Monitoring circulatory epigenetic biomarkers in liquid biopsies (blood, saliva, urine, cerebrospinal fluid) of disease-associated and drug-associated epigenetic alterations may prove useful for decision support for routine clinical treatment and drug discovery. Hence, recent drug discovery efforts on targeting the epigenome, has emerged an area of interest with several new drugs

being developed, tested and some already approved by the US Food and Drug Administration (FDA). These new insights into the complexities of epigenetic regulation are key contributors to our basic understanding of this process in human health and disease, which will provide scope for innovative drug therapies. It is of urgency to aid the present understanding of epigenomics driven diseased outcomes, with the expectation that further studies will identify early markers of disease and targets for therapeutics.

Pharmacoepigenetics, Volume Eleven provides a comprehensive volume on the role of epigenetics and

epigenomics in drug discovery and development, providing a detailed, but accessible, view of the field, from basic principles, to applications in disease therapeutics. Leading international researchers from across academia, clinical settings and the pharmaceutical industry discuss the influence of epigenetics and epigenomics in human pathology, epigenetic biomarkers for disease prediction, diagnosis, and treatment, current epigenetic drugs, and the application of epigenetic procedures in drug development. Throughout the book, chapter authors offer a balanced and objective discussion of the future of pharmacoepigenetics and its crucial contribution to the growth of precision and personalized medicine.

Fully examines the influence of epigenetics and epigenomics in human pathology, epigenetic biomarkers for disease prediction, diagnosis, treatment, current epigenetic drugs and the application of epigenetic procedures in drug development Features chapter contributions from leading international researchers in academia, clinical settings and the pharmaceutical industry Instructs researchers, students and clinicians on how to better interpret and employ pharmacoepigenetics in drug development, efficiency and safety Provides a balanced and objective discussion of the future of pharmacoepigenetics and its crucial role in precision medicine

Epigenetic Cancer Therapy unites issues central to a translational audience actively seeking to understand the topic. It is ideal for cancer specialists, including oncologists and clinicians, but also provides valuable information for researchers, academics, students, governments, and decision-makers in the healthcare sector. The text covers the basic background of the epigenome, aberrant epigenetics, and its potential as a target for cancer therapy, and includes individual chapters on the state of epigenome knowledge in specific cancers (including lung, breast, prostate, liver). The book encompasses both large-scale intergovernmental initiatives as well as recent

findings across cancer stem cells, rational drug design, clinical trials, and chemopreventative strategies. As a whole, the work articulates and raises the profile of epigenetics as a therapeutic option in the future management of cancer. Concisely summarizes the therapeutic implications of recent, large-scale epigenome studies, including the cancer epigenome atlas Discusses targeted isoform specific versus pan-specific inhibitors, a rational drug design approach to epigenetics relevant to pharmacoepigenetic clinical applications Covers new findings in the interplay between cancer stem cells (CSCs) and drug resistance, demonstrating that epigenetic machinery is a candidate target for the

eradication of these CSCs

This volume provides comprehensive information on how mapping an individual's epigenome can be medically relevant and holds the potential to improve preventive medicine and precision therapeutics at an early-stage (prior to disease onset). In order to advance clinical adoption of the recently developed epigenetic approaches, it is necessary for translational scientists, clinicians, and students to gain a better understanding about epigenetic mechanisms that are associated with a particular disorder; and to be able to effectively identify biomarkers that can be applied in drug development

and for better diagnosis and prognosis of diseases. Prognostic Epigenetics is the most-inclusive volume to-date specifically dedicated to epigenetic markers that have been developed for prognosis of diseases, recent advances in this field, the clinical implementation of this research, and the future outlook. Compiles all known information on prognostic epigenetics and its role in preventive medicine and drug discovery Covers the basic functionality of epigenetic mechanisms involved in early disease prognosis and diagnosis, and provides tools for the identification and development of these biomarkers for a wide range of diseases Enables clinicians, researchers, and pharmacologists to improve

preventive medicine and precision therapeutics throughout a person's lifetime Features chapter contributions from leading international researchers

Epigenetics has emerged recently as an important area of molecular biological studies. Epigenetic modifications lead to potentially heritable but reversible alterations in the expression of genes that determine cell fate. Epigenetic misregulation is thus often linked to degenerative diseases, cancer and neuronal disorders. Recent biomedical interest in this regulatory system stems from the fact that epigenetic, in contrast to genetic, alterations are in principle amenable to pharmacological intervention. A

few epigenetically active drugs, for example histone deacetylase inhibitors (HDACi) and DNA methyltransferase (DNMT) inhibitors, have been approved by FDA for treatment of cancers such as CTCL, MDS, and AML. This volume explores the scientific background for clinical applications of epigenetically active drugs. Included are descriptions of epigenetic controls over gene expression, the post-transcriptional silencing of genes by RNA interference (RNAi) and microRNAs, as well as new findings from stem cell research which are relevant to pharmacological applications.

From its origins as a niche technique more than 15

years ago, fragment-based approaches have become a major tool for drug and ligand discovery, often yielding results where other methods have failed. Written by the pioneers in the field, this book provides a comprehensive overview of current methods and applications of fragment-based discovery, as well as an outlook on where the field is headed. The first part discusses basic considerations of when to use fragment-based methods, how to select targets, and how to build libraries in the chemical fragment space. The second part describes established, novel and emerging methods for fragment screening, including empirical as well as computational approaches. Special cases of fragment-based screening, e. g. for

complex target systems and for covalent inhibitors are also discussed. The third part presents several case studies from recent and on-going drug discovery projects for a variety of target classes, from kinases and phosphatases to targeting protein-protein interaction and epigenetic targets.

Resistance to therapies, both targeted and systemic, and metastases to distant organs are the underlying causes of breast cancer-associated mortality. The second edition of Breast Cancer Metastasis and Drug Resistance brings together some of the leading experts to comprehensively understand breast cancer: the factors that make it lethal, and current

research and clinical progress. This volume covers the following core topics: basic understanding of breast cancer (statistics, epidemiology, racial disparity and heterogeneity), metastasis and drug resistance (bone metastasis, trastuzumab resistance, tamoxifen resistance and novel therapeutic targets, including non-coding RNAs, inflammatory cytokines, cancer stem cells, ubiquitin ligases, tumor microenvironment and signaling pathways such as TRAIL, JAK-STAT and mTOR) and recent developments in the field (epigenetic regulation, microRNAs-mediated regulation, novel therapies and the clinically relevant 3D models). Experts also discuss the advances in laboratory research along with their translational and

clinical implications with an overarching goal to improve the diagnosis and prognosis, particularly that of breast cancer patients with advanced disease.