Unlocking Precision Medicine Encounter Intelligence

There exists a profound conflict at the heart of oncology drug development. The efficiency of the drug development process is falling, leading to higher costs per approved drug, at the same time personalised medicine is limiting the target market of each new medicine. Even as the global economic burden of cancer increases, the current paradigm in drug development is unsustainable. In this book, we discuss the development of

techniques in machine learning for improving the efficiency of oncology drug development and delivering cost-effective precision treatment. We consider how to structure data for drug repurposing and target identification, how to improve clinical trials and how patients may view artificial intelligence.

There is a new trend in anti-cancer therapeutics development: a targeted therapy and precision medicine that targets a subgroup of patients with specific biomarkers. An in vitro diagnostic (IVD) assay is required to identify a subgroup of

cancer patients who would benefit from the targeted therapy, or not likely benefit, or have a high risk of side effects from the specific drug treatment. This IVD or medical device is called a companion diagnostic (CDx) assay. It is key to have a robust CDx assay or device for the success of targeted therapy and precision medicine. This book covers the technical, historical, clinical, and regulatory aspects of CDx in precision medicine. Clearly, more and more newly developed oncology drugs will require accompanying CDx assays, and this book, with chapters contributed by renowned oncologists,

provides a comprehensive foundation for the knowledge and application of CDx for precision medicine.

Artificial Intelligence presents a practical guide to AI, including agents, machine learning and problem-solving simple and complex domains.

The world is witnessing the big bang of scientific discovery, and biotech stocks are on fire! The bio-pharma industry employs over 4 million people just in the US. Potentially 100's of new little biotech companies will develop new generations of medicines and medical devices while creating vast numbers

of new millionaires. The new Masters of Bioscience Law & Technology Mini-MBA certificate program, provides leading edge business skills, and leadership training to help propel your career forward. In recent years entrepreneurship has been added to many MBA curriculums, but starting your own business doesn't have to take two years in school and $100,000+ in tuition. To stimulate prospective leaders, this new program will encourage all applicants to be reviewed for scholarship opportunities. What are you waiting for! Now is the time to jump in! The Biotech "Gold Rush" is On! What are you

waiting for?

The hidden costs of artificial intelligence, from natural resources and labor to privacy and freedom What happens when artificial intelligence saturates political life and depletes the planet? How is AI shaping our understanding of ourselves and our societies? In this book Kate Crawford reveals how this planetary network is fueling a shift toward undemocratic governance and increased inequality. Drawing on more than a decade of research, award-winning science, and technology, Crawford reveals how AI is a technology of extraction: from the energy and

minerals needed to build and sustain its infrastructure, to the exploited workers behind "automated" services, to the data AI collects from us. Rather than taking a narrow focus on code and algorithms, Crawford offers us a political and a material perspective on what it takes to make artificial intelligence and where it goes wrong. While technical systems present a veneer of objectivity, they are always systems of power. This is an urgent account of what is at stake as technology companies use artificial intelligence to reshape the world.

Life Force

Artificial Intelligence in Healthcare
Alternative Worlds
The Perfect Fit for Autoimmunity
An Examination of Emerging Bioethical Issues in Biomedical Research
Global Trends 2040

Can you tell the difference between talking to a human and talking to a machine? Or, is it possible to create a machine which is able to converse like a human? In fact, what is it that even makes us human? Turing's Imitation Game,

commonly known as the Turing Test, is fundamental to the science of artificial intelligence. Involving an interrogator conversing with hidden identities, both human and machine, the test strikes at the heart of any questions about the capacity of machines to behave as humans. While this subject area has shifted dramatically in the last few years, this book offers an up-to-date assessment of Turing's Imitation Game, its history, context and implications, all illustrated with practical Turing tests. The contemporary

relevance of this topic and the strong emphasis on example transcripts makes this book an ideal companion for undergraduate courses in artificial intelligence, engineering or computer science.
In a highly competitive market, digital transformation with internet of things, artificial intelligence, and other innovative technological trends are elements of differentiations and are important milestones in business development and consumer interaction, particularly in services. As a result,

there are several new business models anchored in these digital and technological environments and new experiences provided to services consumers and firms that need to be examined. Impact of Digital Transformation on the Development of New Business Models and Consumer Experience provides relevant theoretical and empirical research findings and innovative and multifaceted perspectives on how digital transformation and other innovative technologies can drive new business models and create

valued experiences for consumers and firms. Covering topics such as business models, consumer behavior, and gamification, this publication is ideal for industry professionals, managers, business owners, practitioners, researchers, professors, academicians, and students.

This publication covers global megatrends for the next 20 years and how they will affect the United States. This is the fifth installment in the National Intelligence Council's series aimed at

providing a framework for thinking about possible futures and their implications. The report is intended to stimulate strategic thinking about the rapid and vast geopolitical changes characterizing the world today and possible global trajectories during the next 15-20 years by identifying critical trends and potential discontinuities. The authors distinguish between megatrends, those factors that will likely occur under any scenario, and game-changers, critical variables whose trajectories are far less

certain. NIC 2012-001. Several innovations are included in Global Trends 2030, including: a review of the four previous Global Trends reports, input from academic and other experts around the world, coverage of disruptive technologies, and a chapter on the potential trajectories for the US role in the international system and the possible the impact on future international relations. Table of Contents: Introduction 1 Megatrends 6 Individual Empowerment 8 Poverty Reduction 8 An Expanding Global Middle Class 8

Education and the Gender Gap 10 Role of Communications Technologies 11 Improving Health 11 A MORE CONFLICTED IDEOLOGICAL LANDSCAPE 12 Diffusion of Power 15 THE RISE AND FALL OF COUNTRIES: NOT THE SAME OLD STORY 17 THE LIMITS OF HARD POWER IN THE WORLD OF 2030 18 Demographic Patterns 20 Widespread Aging 20 Shrinking Number of Youthful Countries 22 A New Age of Migration 23 The World as Urban 26 Growing Food, Water, and Energy Nexus 30 Food, Water, and Climate 30 A Brighter Energy Outlook 34 Game-Changers 38 The Crisis-

Prone Global Economy 40 The Plight of the West 40 Crunch Time Too for the Emerging Powers 43 A Multipolar Global Economy: Inherently More Fragile? 46 The Governance Gap 48 Governance Starts at Home: Risks and Opportunities 48 INCREASED FOCUS ON EQUALITY AND OPENNESS 53 NEW GOVERNMENTAL FORMS 54 A New Regional Order? 55 Global Multilateral Cooperation 55 The Potential for Increased Conflict 59 INTRASTATE CONFLICT: CONTINUED DECLINE 59 Interstate Conflict: Chances Rising 61 Wider Scope of Regional Instability 70 The Middle East:

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Alternative Worlds 107 Stalled Engines 110 FUSION 116 Gini-out-of-the-Bottle 122 Nonstate World 128 Acknowledgements 134 GT2030 Blog References 137 Audience: Appropriate for anyone, from businesses to banks, government agencies to start-ups, the technology sector to the teaching sector, and more. This publication helps anticipate where the world will be: socially, politically, technologically, and culturally over the next few decades. Keywords: Global Trends 2030 Alternative Worlds, global trends 2030, Global Trends

series, National Intelligence Council, global trajectories, global megatrends, geopolitics, geopolitical changes
This book presents a compilation of the most recent implementation of artificial intelligence methods for solving different problems generated by the COVID-19. The problems addressed came from different fields and not only from medicine. The information contained in the book explores different areas of machine and deep learning, advanced image processing, computational intelligence, IoT, robotics

and automation, optimization, mathematical modeling, neural networks, information technology, big data, data processing, data mining, and likewise. Moreover, the chapters include the theory and methodologies used to provide an overview of applying these tools to the useful contribution to help to face the emerging disaster. The book is primarily intended for researchers, decision makers, practitioners, and readers interested in these subject matters. The book is useful also as rich case studies and project

proposals for postgraduate courses in those specializations.
"This book investiges machine learning (ML), one of the most fruitful fields of current research, both in the proposal of new techniques and theoretic algorithms and in their application to real-life problems"--Provided by publisher.
Artificial Intelligence in Society
Epigenetics in Precision Medicine
Accelerated Path to Cures
Building a Knowledge Network for Biomedical Research and a New Taxonomy of

Disease
The Big Unlock
Artificial Intelligence and Human Cognition in Clinical Medicine and Healthcare
Towards Clinical Applications

Intelligence-Based Medicine: Data Science, Artificial Intelligence, and Human Cognition in Clinical Medicine and Healthcare provides a multidisciplinary and comprehensive survey of artificial intelligence concepts and methodologies with real life applications in

healthcare and medicine. Authored by a senior physician-data scientist, the book presents an intellectual and academic interface between the medical and the data science domains that is symmetric and balanced. The content consists of basic concepts of artificial intelligence and its real-life applications in a myriad of medical areas as well as medical and surgical subspecialties. It brings section summaries to emphasize key concepts delineated in each section; mini-topics authored by world-renowned experts in

the respective key areas for their personal perspective; and a compendium of practical resources, such as glossary, references, best articles, and top companies. The goal of the book is to inspire clinicians to embrace the artificial intelligence methodologies as well as to educate data scientists about the medical ecosystem, in order to create a transformational paradigm for healthcare and medicine by using this emerging new technology. Covers a wide range of relevant topics from cloud computing, intelligent

agents, to deep reinforcement learning and internet of everything Presents the concepts of artificial intelligence and its applications in an easy-to-understand format accessible to clinicians and data scientists Discusses how artificial intelligence can be utilized in a myriad of subspecialties and imagined of the future Delineates the necessary elements for successful implementation of artificial intelligence in medicine and healthcare Artificial Intelligence (AI) in Healthcare is more than a comprehensive introduction to

artificial intelligence as a tool in the generation and analysis of healthcare data. The book is split into two sections where the first section describes the current healthcare challenges and the rise of AI in this arena. The ten following chapters are written by specialists in each area, covering the whole healthcare ecosystem. First, the AI applications in drug design and drug development are presented followed by its applications in the field of cancer diagnostics, treatment and medical imaging.

Subsequently, the application of AI in medical devices and surgery are covered as well as remote patient monitoring. Finally, the book dives into the topics of security, privacy, information sharing, health insurances and legal aspects of AI in healthcare. Highlights different data techniques in healthcare data analysis, including machine learning and data mining Illustrates different applications and challenges across the design, implementation and management of intelligent systems and healthcare data networks Includes

applications and case studies across all areas of AI in healthcare data

New medicines in the pipeline can extend lives, save money, and even help prevent disease before symptoms appear – if we don't discourage their innovators and investors by trying to lower drug prices artificially. Unlocking Precision Medicine explores the environment necessary for creation of these health care game-changers, and explains how the marketplace can effectively make them more affordable to all without killing the

golden goose.

This book presents state-of-the-art works and systematic reviews in the emerging field of computational intelligence (CI) in electronic health care. The respective chapters present surveys and practical examples of artificial intelligence applications in the areas of Human-Machine Interface (HMI) and affective computing, machine learning, big health data and visualization analytics, computer vision and medical image analysis. The book also addresses new and emerging

topics in CI for health care such as the utilization of Social Media (SM) and the introduction of new intelligent paradigms in the security and privacy domains, which are critical for the health sector. The chapters, while of course not exhaustively addressing all the possible aspects of the aforementioned areas, are indicative of the dynamic nature of interdisciplinary research being pursued. Accordingly, the book is intended not only for researchers in the respective fields, but also for medical and administrative personnel

working in the health sector, as well as managers and stakeholders responsible for making strategic decisions and defining public health policies.

As modern healthcare becomes increasingly personalized and data-driven, traditional healthcare is being transformed into a dynamic, multi-layered and highly connected global ecosystem. New players, such as medical entrepreneurs and tech giants like Apple, Amazon, Google and IBM Watson are continuing to expose and challenge the

current healthcare market by providing innovative digital products and know-how. Digital health offers both—a suite of new capabilities and new approaches that unlock health(care) from constraints of time, place, distance and knowledge. It opens up entirely new ways to address and understand people and their health needs. This is how XPOMET© was born, and has been continuously growing as a platform, that is dedicated to innovative trends in medicine and care and at the same time creates a community that promotes

cultural change in the healthcare industry. In 2019, the XPOMET© Medicinale has become an international event to showcase best practice, highlight trends in global healthcare and forecast future developments in health and tech. The book offers a broad collection of the extensive knowledge of contributors to the XPOMET© Medicinale 2019. International experts share their novel ideas, challenges and achievements in the global healthcare market. The reader is invited to join in the XPOMET© community's vision and to be

inspired by the latest discoveries and technological know-how in healthcare.
17th Conference on Artificial Intelligence in Medicine, AIME 2019, Poznan, Poland, June 26–29, 2019, Proceedings
Impact of Digital Transformation on the Development of New Business Models and Consumer Experience
Toward Precision Medicine
Stories of Personal Triumph from the Frontiers of Brain Science
Algorithms, Methods, and Techniques

Procedures and Strategies
Turing's Imitation Game

This electronic version has been made available under a Creative Commons (BY-NC-ND) open access license. What does it mean to personalise cancer medicine? Drawing on an ethnographic study with cancer patients, carers and practitioners in the UK, this book traces their efforts to access and interpret novel genomic tests, information and treatments as they craft personal and collective futures. Exploring multiple experiences of new diagnostic tests, research programmes and trials, advocacy and experimental therapies, the authors chart

the different kinds of care and work involved in efforts to personalise cancer medicine, as well as the ways in which benefits and opportunities are unevenly realised and distributed. Comparing these experiences with policy and professional accounts of the 'big' future of personalised healthcare, the authors show how hope and care are multi-faceted, contingent and, at times, frustrated in the everyday complexities of living and working with cancer.

On February 26, 2020, the Board on Health Sciences Policy of the National Academies of Sciences, Engineering, and Medicine hosted a 1-day public workshop in Washington, DC, to examine current and

emerging bioethical issues that might arise in the context of biomedical research and to consider research topics in bioethics that could benefit from further attention. The scope of bioethical issues in research is broad, but this workshop focused on issues related to the development and use of digital technologies, artificial intelligence, and machine learning in research and clinical practice; issues emerging as nontraditional approaches to health research become more widespread; the role of bioethics in addressing racial and structural inequalities in health; and enhancing the capacity and diversity of the bioethics workforce. This publication summarizes the presentations and discussions from the workshop.

Between the 18th and 19th centuries, Britain experienced massive leaps in technological, scientific, and economical advancement

Market access is the process by which a pharmaceutical company gets its product available on the market after having obtained a marketing authorization from a regulatory agency and by which the product becomes available for all patients for whom it is indicated as per its marketing authorization. It covers a group of activities intended to provide access to the appropriate medicine for the appropriate group of patients at the appropriate price (in most countries). Market Access may also be seen as activities that support the management of

potential barriers, such as non-optimal price and reimbursement levels, the restriction of the scope of prescribing for the drug or complicated prescription writing or funding procedures. Since there are cultural differences among countries, any Market Access strategy needs to be culturally sensitive. Pharmaceutical Market Access in emerging markets has been extensively discussed in our previous book, published in 2016. The present book focuses on developed markets with the goal of helping students, academics, industry personnel, government workers, and decision makers understand the environment in developed markets.

Foundational Handbook of Artificial Intelligence in

Healthcare and Bioscience: A User Friendly Guide for IT Professionals, Healthcare Providers, Researchers, and Clinicians uses color-coded illustrations to explain AI from its basics to modern technologies. Other sections cover extensive, current literature research and citations regarding AI's role in the business and clinical aspects of health care. The book provides readers with a unique opportunity to appreciate AI technology in practical terms, understand its applications, and realize its profound influence on the clinical and business aspects of health care. Artificial Intelligence is a disruptive technology that is having a profound and growing influence on the business of health care as well as

medical diagnosis, treatment, research and clinical delivery. The AI relationships in health care are complex, but understandable, especially when discussed and developed from their foundational elements through to their practical applications in health care. Provides an illustrated, foundational guide and comprehensive descriptions of what Artificial Intelligence is and how it functions Integrates a comprehensive discussion of AI applications in the business of health care Presents in-depth clinical and AI-related discussions on diagnostic medicine, therapeutic medicine, and prevalent disease categories with an emphasis on immunology and genetics, the two categories most influenced by AI

Includes comprehensive coverage of a variety of AI treatment applications, including medical/pharmaceutical care, nursing care, stem cell therapies, robotics, and 10 common disease categories with AI applications
Pharmaceutical Market Access in Developed Markets
Artificial Intelligence
Augmenting Neurological Disorder Prediction and Rehabilitation Using Artificial Intelligence
Harnessing Data and Growing Digital Health Businesses in a Value-Based Care Era
Conversations with the Unknown
Towards Precision Medicine for Immune-Mediated Disorders: Advances in Using Big Data and Artificial

Intelligence to Understand Heterogeneity in Inflammatory Responses

Handbook of Research on Machine Learning Applications and Trends: Algorithms, Methods, and Techniques

"The ongoing COVID-19 pandemic marks the most significant, singular global disruption since World War II, with health, economic, political, and security implications that will ripple for years to come." -Global Trends 2040 (2021) Global Trends 2040-A More Contested World (2021), released by the US National Intelligence Council, is the latest report in its series of reports starting in 1997

about megatrends and the world's future. This report, strongly influenced by the COVID-19 pandemic, paints a bleak picture of the future and describes a contested, fragmented and turbulent world. It specifically discusses the four main trends that will shape tomorrow's world: - Demographics-by 2040, 1.4 billion people will be added mostly in Africa and South Asia. - Economics-increased government debt and concentrated economic power will escalate problems for the poor and middleclass. - Climate-a hotter world will increase water, food, and health insecurity. - Technology-the emergence of

new technologies could both solve and cause problems for human life. Students of trends, policymakers, entrepreneurs, academics, journalists and anyone eager for a glimpse into the next decades, will find this report, with colored graphs, essential reading.

This book is a comprehensive survey of our scientific knowledge about human intelligence, written by a researcher who has spent more than 30 years studying the field, receiving a Lifetime Contribution award from the International Society for Intelligence. Human Intelligence takes a non-ideological view of a topic in which, too often,

writings are dominated by a single theory or social viewpoint. The book discusses the conceptual status of intelligence as a collection of cognitive skills that include, but also go beyond, those skills evaluated by conventional tests; intelligence tests and their analysis; contemporary theories of intelligence; biological and social causes of intelligence; the importance of intelligence in social, industrial, and educational spheres; the role of intelligence in determining success in life, both inside and outside educational settings; and the nature and causes of variations in intelligence across age,

gender, and racial and ethnic groups. Augmenting Neurological Disorder Prediction and Rehabilitation Using Artificial Intelligence focuses on how the neurosciences can benefit from advances in AI, especially in areas such as medical image analysis for the improved diagnosis of Alzheimer's disease, early detection of acute neurologic events, prediction of stroke, medical image segmentation for quantitative evaluation of neuroanatomy and vasculature, diagnosis of Alzheimer's Disease, autism spectrum disorder, and other key neurological disorders. Chapters also focus on how AI can help

in predicting stroke recovery, and the use of Machine Learning and AI in personalizing stroke rehabilitation therapy. Other sections delve into Epilepsy and the use of Machine Learning techniques to detect epileptogenic lesions on MRIs and how to understand neural networks. Provides readers with an understanding on the key applications of artificial intelligence and machine learning in the diagnosis and treatment of the most important neurological disorders Integrates recent advancements of artificial intelligence and machine learning to the evaluation of large amounts of clinical data for

the early detection of disorders such as Alzheimer's Disease, autism spectrum disorder, Multiple Sclerosis, headache disorder, Epilepsy, and stroke Provides readers with illustrative examples of how artificial intelligence can be applied to outcome prediction, neurorehabilitation and clinical exams, including a wide range of case studies in predicting and classifying neurological disorders

Along with a shift towards value-based care, a digital transformation is under way in health care. However, health care enterprises are having a hard time keeping up with advances in

information technology. Organizations that could once spend months or years developing a strategy to deliver solutions now must implement changes on a near real-time basis. Complicating matters is the emergence of new data sources, new technology architectures and models, and new methods to analyze an avalanche of data. This book provides a framework for understanding the competitive landscape for digital health and advanced analytics solutions that are harnessing data to unlock insights. It reveals a set of key principles, or universal themes, for success in the digital health

marketplace. Whether youre a health care information technology specialist, a digital health startup or technology firm with a strategic focus on health care, a venture capitalist, or just interested in the industry structure and the emerging technology landscape in health care, youll learn how to grow revenue and profits while creating a sustainable competitive advantage. Take a key step in navigating the exciting transformation of health care, and harness the power of data and analytics with The Big Unlock. One of America's top doctors reveals how AI will empower physicians and revolutionize patient

care Medicine has become inhuman, to disastrous effect. The doctor-patient relationship--the heart of medicine--is broken: doctors are too distracted and overwhelmed to truly connect with their patients, and medical errors and misdiagnoses abound. In Deep Medicine, leading physician Eric Topol reveals how artificial intelligence can help. AI has the potential to transform everything doctors do, from notetaking and medical scans to diagnosis and treatment, greatly cutting down the cost of medicine and reducing human mortality. By freeing physicians from the tasks that interfere with human connection, AI will create space for

the real healing that takes place between a doctor who can listen and a patient who needs to be heard. Innovative, provocative, and hopeful, Deep Medicine shows us how the awesome power of AI can make medicine better, for all the humans involved.

360° Next Generation Healthcare

Artificial Intelligence in Drug Discovery

Artificial Intelligence for Computational Modeling of the Heart

How Artificial Intelligence Can Make Healthcare Human Again

Human Intelligence

Artificial Intelligence for COVID-19
The Atlas of AI

New medicines in the pipeline can extend lives, save money, and even help prevent disease before symptoms appear - if we don't discourage their innovators and investors by trying to lower drug prices artificially. Unlocking Precision Medicine explores the environment necessary for creation of these health care game-changers, and explains how the marketplace can effectively make them more affordable to all without killing the golden goose.

This book constitutes the refereed proceedings of the 17th Conference on Artificial Intelligence in Medicine, AIME 2019, held in Poznan, Poland, in June 2019. The 22 revised full and 31 short papers presented were carefully reviewed and selected from 134 submissions. The papers are organized in the following topical sections: deep learning; simulation; knowledge representation; probabilistic models; behavior monitoring; clustering, natural language processing, and decision support; feature selection; image processing; general machine learning; and

unsupervised learning.

Accelerated Path to Cures provides a transformative perspective on the power of combining advanced computational technologies, modeling, bioinformatics and machine learning approaches with nonclinical and clinical experimentation to accelerate drug development. This book discusses the application of advanced modeling technologies, from target identification and validation to nonclinical studies in animals to Phase 1-3 human clinical trials and post-approval

monitoring, as alternative models of drug development. As a case of successful integration of computational modeling and drug development, we discuss the development of oral small molecule therapeutics for inflammatory bowel disease, from the application of docking studies to screening new chemical entities to the development of next-generation in silico human clinical trials from large-scale clinical data. Additionally, this book illustrates how modeling techniques, machine learning, and informatics can be utilized effectively at each

stage of drug development to advance the progress towards predictive, preventive, personalized, precision medicine, and thus provide a successful framework for Path to Cures.

Artificial Intelligence for Computational Modeling of the Heart presents recent research developments towards streamlined and automatic estimation of the digital twin of a patient's heart by combining computational modeling of heart physiology and artificial intelligence. The book first introduces the major

aspects of multi-scale modeling of the heart, along with the compromises needed to achieve subject-specific simulations. Reader will then learn how AI technologies can unlock robust estimations of cardiac anatomy, obtain meta-models for real-time biophysical computations, and estimate model parameters from routine clinical data. Concepts are all illustrated through concrete clinical applications. Presents recent advances in computational modeling of heart function and artificial intelligence technologies for subject-specific applications Discusses AI-

based technologies for robust anatomical modeling from medical images, data-driven reduction of multi-scale cardiac models, and estimations of physiological parameters from clinical data Illustrates the technology through concrete clinical applications and discusses potential impacts and next steps needed for clinical translation

Phase transitions typically occur in combinatorial computational problems and have important consequences, especially with the current spread of statistical relational learning as

well as sequence learning methodologies. In Phase Transitions in Machine Learning the authors begin by describing in detail this phenomenon, and the extensive experimental investigation that supports its presence. They then turn their attention to the possible implications and explore appropriate methods for tackling them. Weaving together fundamental aspects of computer science, statistical physics and machine learning, the book provides sufficient mathematics and physics background to make the subject intelligible to researchers in

AI and other computer science communities. Open research issues are also discussed, suggesting promising directions for future research.

Artificial Intelligence in Oncology Drug Discovery and Development

Personalised cancer medicine

The Brain That Changes Itself

Phase Transitions in Machine Learning

XPOMET©

Biomedical Informatics

Precision Medicine and Artificial Intelligence

Following significant advances in deep learning and related areas interest in artificial intelligence (AI) has rapidly grown. In particular, the application of AI in drug discovery provides an opportunity to tackle challenges that previously have been difficult to solve, such as predicting properties, designing molecules and optimising synthetic routes. Artificial Intelligence in Drug Discovery aims to introduce the reader to AI and machine learning tools and techniques, and to outline specific challenges including designing new molecular structures, synthesis planning and simulation.

Providing a wealth of information from leading experts in the field this book is ideal for students, postgraduates and established researchers in both industry and academia.

Topic Editor Dr. MacLeod is employed by Janssen. All other Topic Editors declare no competing interests with regards to the Research Topic subject.

Motivated by the explosion of molecular data on humans-particularly data associated with individual patients-and the sense that there are large, as-yet-untapped opportunities to use this data to improve

health outcomes, Toward Precision Medicine explores the feasibility and need for "a new taxonomy of human disease based on molecular biology" and develops a potential framework for creating one. The book says that a new data network that integrates emerging research on the molecular makeup of diseases with clinical data on individual patients could drive the development of a more accurate classification of diseases and ultimately enhance diagnosis and treatment. The "new taxonomy" that emerges would define diseases by their underlying molecular causes and

other factors in addition to their traditional physical signs and symptoms. The book adds that the new data network could also improve biomedical research by enabling scientists to access patients' information during treatment while still protecting their rights. This would allow the marriage of molecular research and clinical data at the point of care, as opposed to research information continuing to reside primarily in academia. Toward Precision Medicine notes that moving toward individualized medicine requires that researchers and health care providers have access to very large

sets of health- and disease-related data linked to individual patients. These data are also critical for developing the information commons, the knowledge network of disease, and ultimately the new taxonomy.

Precision Medicine and Artificial Intelligence: The Perfect Fit for Autoimmunity covers background on AI, its link to PM, and examples of AI in healthcare, especially autoimmunity. The book highlights future perspectives and potential directions as artificial intelligence (AI) has gained significant attention in the past decade. Autoimmune diseases

are complex and heterogeneous conditions, but exciting new developments and implementation tactics surrounding automated systems has enabled the generation of large amounts of data, making autoimmunity an ideal target for AI in the field of Precision Medicine (PM). More and more diagnostic products utilize AI, which is also starting to be supported by regulatory agencies such as the Food and Drug Administration (FDA). Knowledge generation by leveraging large data sets including demographic, environmental, clinical and biomarker data has the potential to not only impact

the diagnosis of patients, but also disease prediction, prognosis and treatment options. Allows the readers to get a good overview of the field of Precision Medicine for autoimmune diseases and Artificial Intelligence Provides background, milestone and examples of precision medicine for autoimmune disease and artificial intelligence Proves the paradigm shift towards precision medicine driven by value-based systems Discusses future applications of precision medicine research using artificial intelligence

INSTANT #1 NEW YORK TIMES BESTSELLER

Transform your life or the life of someone you love with Life Force—the newest breakthroughs in health technology to help maximize your energy and strength, prevent disease, and extend your health span—from Tony Robbins, author of the #1 New York Times bestseller Money: Master the Game. What if there were scientific solutions that could wipe out your deepest fears of falling ill, receiving a life-threatening diagnosis, or feeling the effects of aging? What if you had access to the same cutting-edge tools and technology used by peak performers and the world's greatest athletes?

In a world full of fear and uncertainty about our health, it can be difficult to know where to turn for actionable advice you can trust. Today, leading scientists and doctors in the field of regenerative medicine are developing diagnostic tools and safe and effective therapies that can free you from fear. In this book, Tony Robbins, the world's #1 life and business strategist who has coached more than fifty million people, brings you more than 100 of the world's top medical minds and the latest research, inspiring comeback stories, and amazing advancements in precision medicine that you can

apply today to help extend the length and quality of your life. This book is the result of Robbins going on his own life-changing journey. After being told that his health challenges were irreversible, he experienced firsthand how new regenerative technology not only helped him heal but made him stronger than ever before. Life Force will show you how you can wake up every day with increased energy, a more bulletproof immune system, and the know-how to help turn back your biological clock. This is a book for everyone, from peak performance athletes, to the average person who

wants to increase their energy and strength, to those looking for healing. Life Force provides answers that can transform and even save your life, or that of someone you love.

Future crafting in the genomic era

Companion Diagnostics (CDx) in Precision Medicine

Power, Politics, and the Planetary Costs of Artificial Intelligence

Bioscience Regulatory Law

Artificial Intelligence in Medicine

Proceedings of a Workshop

Proteomics in Nephrology

Does your family make you smarter? James R. Flynn presents an exciting new method for estimating the effects of family on a range of cognitive abilities. Rather than using twin and adoption studies, he analyses IQ tables that have been hidden in manuals over the last 65 years, and shows that family environment can confer a significant advantage or disadvantage to your level of intelligence. Wading into the nature vs. nurture debate, Flynn banishes the pessimistic notion that by the age of seventeen, people's cognitive

abilities are solely determined by their genes. He argues that intelligence is also influenced by human autonomy - genetics and family notwithstanding, we all have the capacity to choose to enhance our cognitive performance. He concludes by reconciling this new understanding of individual differences with his earlier research on intergenerational trends (the 'Flynn effect') culminating in a general theory of intelligence.

“Fascinating. Doidge’s book is a remarkable and hopeful portrait of the

endless adaptability of the human brain."—Oliver Sacks, MD, author of The Man Who Mistook His Wife for a Hat What is neuroplasticity? Is it possible to change your brain? Norman Doidge's inspiring guide to the new brain science explains all of this and more An astonishing new science called neuroplasticity is overthrowing the centuries-old notion that the human brain is immutable, and proving that it is, in fact, possible to change your brain. Psychoanalyst, Norman Doidge, M.D., traveled the country to meet both

the brilliant scientists championing neuroplasticity, its healing powers, and the people whose lives they've transformed—people whose mental limitations, brain damage or brain trauma were seen as unalterable. We see a woman born with half a brain that rewired itself to work as a whole, blind people who learn to see, learning disorders cured, IQs raised, aging brains rejuvenated, stroke patients learning to speak, children with cerebral palsy learning to move with more grace, depression and anxiety disorders

successfully treated, and lifelong character traits changed. Using these marvelous stories to probe mysteries of the body, emotion, love, sex, culture, and education, Dr. Doidge has written an immensely moving, inspiring book that will permanently alter the way we look at our brains, human nature, and human potential. In recent years, knowledge of epigenetic mechanisms underlying disease onset and progression has proven crucial for the development of novel early diagnosis and prognosis biomarkers for patient

stratification and precision medicine. Epigenetics in Precision Medicine, a new volume in the Translational Epigenetics series, provides a thorough discussion and overview of current developments in clinical epigenetics with special emphasis on epigenetic biomarkers that can be used for clinical diagnosis, prognosis, patient stratification, and treatment monitoring. Disease types discussed include cancer, metabolic disorders, neurodegenerative diseases, bone disease, and immune-related disorders. The book examines the

challenges of advancing epigenetics research and translating findings to the clinic and drug discovery in each of these areas, as well as current solutions; chapter authors discuss how to leverage epigenomic technologies, applications, and tools, such as next-generation sequencing, to discover new epigenetic biomarkers in disease and drug studies. Epigenetics in Precision Medicine focuses on complex epigenetic mechanisms in several pathologies, and explores how epigenetics can power the advance of precision

medicine, not only by improving in vitro diagnostic and prognostic tools, but by providing new therapeutic approaches to treat human disease. Provides a thorough grounding in epigenetics-driven precision medicine, with emphasis on developing and implementing early diagnosis and prognosis biomarkers, and supporting patient stratification Empowers researchers and clinicians to incorporate epigenetics in new disease research, drug discovery, and clinical practice Features chapter contributions from international leaders

in the field
Unlocking Precision MedicineEncounter Intelligence
Since the publication of the first volume on proteomics in nephrology, methodologies and protocols for renal and urinary proteome analyses have been continuously improved, resulting in considerable progress towards clinical application. Proteomics not only contributes to a better understanding of the renal physiology and pathogenic mechanisms of kidney diseases, but also assists in the

search for novel biomarkers for diagnostics and prognostics and supports the definition and development of new therapeutic targets and drugs for better therapeutic outcome. While the first volume focused mainly on an overview, technologies and methodologies, this volume highlights successful applications of proteomics to several kidney diseases, including acute kidney injury, nephrotic syndrome, diabetic nephropathy, renal allograft rejection, renal cell carcinoma, obstructive nephropathy, kidney stone

disease, uremia, and others. Written by acclaimed experts in proteomics and nephrology, this book is an excellent resource of references for nephrologists, clinicians, pharmacists, other healthcare professionals, proteomists, physiologists, scientists, and trainees.

The Fourth Industrial Revolution

Intelligence-Based Medicine

Does your Family Make You Smarter?

Unlocking Precision Medicine

Deep Medicine

How New Breakthroughs in Precision

Medicine Can Transform the Quality of Your Life & Those You Love

A More Contested World

The artificial intelligence (AI) landscape has evolved significantly from 1950 when Alan Turing first posed the question of whether machines can think. Today, AI is transforming societies and economies. It promises to generate productivity gains, improve well-being and help address global challenges, such as climate change, resource scarcity and health crises.

Advanced Computational Intelligence in Healthcare-7
Nature, Nurture, and Human Autonomy
Foundations of Artificial Intelligence in Healthcare and Bioscience
Global Trends 2030
A User Friendly Guide for IT Professionals, Healthcare Providers, Researchers, and Clinicians