New Human Genetics

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The Human Genome in Health and Disease John Wiley & Sons
"A gifted and thoughtful writer, Metzl brings us to the frontiers of biology and technology, and reveals a world full of promise and peril." — Siddhartha Mukherjee MD, New York Times bestselling author of The Emperor of All Maladies and The Gene Passionate, provocative, and highly illuminating, Hacking Darwin is the must read book about the future of our species for fans of Homo Deus and The Gene. After 3.8 billion years humankind is about to start evolving by new rules... From leading geopolitical expert and technology futurist Jamie Metzl comes a groundbreaking exploration of the many ways genetic-engineering is shaking the core foundations of our lives — sex, war, love, and death. At the dawn of the genetics revolution, our DNA is becoming as readable, writable, and hackable as our information technology. But as humanity starts retooling our own genetic code, the choices we make today will be the difference between realizing breathtaking advances in human well-being and descending into a dangerous and potentially deadly genetic arms race. Enter the laboratories where scientists are turning science fiction into reality. Look towards a future where our deepest beliefs, morals, religions, and politics are challenged like never before and the very essence of what it means to be human is at play. When we can engineer our future children, massively extend our lifespans, build life from scratch, and recreate the plant and animal world, should we?

The New Human Genetics Penguin
Human Molecular Genetics has been carefully crafted over successive editions to provide an authoritative introduction to the molecular aspects of human genetics, genomics and cell biology. Maintaining the features that have made previous editions so popular, this fifth edition has been completely updated in line with the latest developments in the field. Older technologies such as cloning and hybridization have been merged and summarized, coverage of newer DNA sequencing technologies has been expanded, and powerful new gene editing and single-cell genomics technologies have been added. The coverage of GWAS, functional genomics, stem cells, and disease modeling has been expanded. Greater focus is given to inheritance and variation in the context of populations and on the role of epigenetics in gene regulation. Key features: Fully integrated approach to the molecular aspects of human genetics, genomics, and cell biology Accessible text is supported and enhanced throughout by superb artwork illustrating the key concepts and mechanisms Summary boxes at the end of each chapter provide clear learning points Annotated further reading helps readers navigate the wealth of additional information in this complex subject and provides direction for further study Reorganized into five sections for improved access to related topics Also new to this edition – brand new chapter on evolution and anthropology from the authors of the highly acclaimed Human Evolutionary Genetics A proven and popular textbook for upper-level undergraduates and graduate students, the new edition of Human Molecular Genetics remains the ‘go-to’ book for those studying human molecular genetics or genomics courses around the world.

Human Genes and Genomes Oxford University Press, USA
“Ridley leaps from chromosome to chromosome in a handy summation of our ever increasing understanding of the roles that genes play in disease, behavior, sexual differences, and even intelligence. . . . . He addresses not only the ethical quandaries faced by contemporary scientists but the reductionist danger in equating inheritability with inevitability.” — The New Yorker The genome's been mapped. But what does it mean? Matt Ridley’s Genome is the book that explains it all: what it is, how it works, and what it portends for the future Arguably the most significant scientific discovery of the new century, the mapping of the twenty-three pairs of chromosomes that make up the human genome raises almost as many questions as it answers. Questions that will profoundly impact the way we think about disease, about longevity, and about free will. Questions that will affect the rest of your life. Genome offers extraordinary insight into the ramifications of this incredible breakthrough. By picking one newly discovered gene from each pair of chromosomes and telling its story, Matt Ridley recounts the history of our species and its ancestors from the dawn of life to the brink of future medicine. From Huntington's disease to cancer, from the applications of gene therapy to the horrors of eugenics, Ridley probes the scientific, philosophical, and moral issues arising as a result of the mapping of the genome. It will help you understand what this scientific milestone means for you, for your children, and for humankind.

The $1,000 Genome Simon and Schuster
This wide ranging and compelling account surveys the exciting opportunities and difficult problems which arise from the new human genetics. The availability of increasingly sophisticated information on our genetic make-up presents individuals, and society as a whole, with difficult decisions. Although it is hoped that these advances will ultimately lead the way to the effective treatment and screening for all diseases with a genetic component, at present many individuals are 'condemned' to a life sentence, in the knowledge that they have or will develop an incurable genetic disease.

Brave New World? Harper Collins
In 2001, scientists were finally able to determine the full human genome sequence, and with the discovery began a genomic voyage back in time. Since then, we have sequenced the full genomes of a number of mankind's primate relatives at a remarkable rate. The genomes of the common chimpanzee (2005) and bonobo (2012), orangutan (2011), gorilla (2012), and macaque monkey (2007) have already been identified, and the determination of other primate genomes is well underway. Researchers are beginning to unravel our full genomic history, comparing it with closely related species to answer age-old questions about how and when we evolved. For the first time, we are finding our own ancestors in our genome and are thereby gleaning new information about our evolutionary past. In Ancestors in Our Genome, molecular anthropologist Eugene E. Harris presents us with a complete and up-to-date account of the evolution of the human genome and our species. Written from the perspective of population genetics, and in simple terms, the book traces human origins back to their source among our earliest human ancestors, and explains many of the most intriguing questions that genome scientists are currently working to answer. For example, what does the high level of discordance among the gene trees of humans and the African great apes tell us about our respective separations from our common ancestor? Was our separation from the apes fast or slow, and when and why did it occur? Where, when, and how did our modern species evolve? How do we search across genomes to find the genomic underpinnings of our large and complex brains and language abilities? How can we find the genomic bases for life at high altitudes, for lactose tolerance, resistance to disease, and for our different skin pigmentations? How and when did we interbreed with Neandertals and the recently discovered ancient Denisovans of Asia? Harris draws upon extensive experience researching primate evolution in order to deliver a lively and thorough history of human evolution. Ancestors in Our Genome is the most complete discussion of our current understanding of the human genome available.

New Frontiers in Human Genetics Springer Nature
One of the world's leading experts on genetics unravels one of the most important breakthroughs in modern science and medicine. IIf our genes are, to a great extent, our destiny, then what would happen if mankind could engineer and alter the very essence of our DNA coding? Millions might be spared the devastating effects of hereditary disease or the challenges of disability, whether it was the pain of sickle-cell anemia to the ravages of Huntington’s disease. But this power to “play God” also raises major ethical questions and poses threats for potential misuse. For decades, these questions have lived exclusively in the realm of science fiction, but as Kevin Davies powerfully reveals in his new book, this is all about to change. Engrossing and page-turning, Editing Humanity takes readers inside the fascinating world of a new gene editing technology called CRISPR, a high-powered genetic toolkit that enables scientists to not only engineer but to edit the DNA of any organism down to the individual building blocks of the genetic code. Davies introduces readers to arguably the most profound scientific breakthrough of our time. He tracks the scientists on the front lines of its research to the patients whose powerful stories bring the narrative movingly to human scale. Though the birth of the “CRISPR babies” in China made international news, there is much more to the story of CRISPR than headlines seemingly ripped from science fiction. In Editing Humanity, Davies sheds light on the implications that this new technology can have on our everyday lives and in the lives of generations to come.

The Human Genome Garland Science
An authoritative Handbook which offers a discussion of the social, political, ethical and economic consequences and implications of the new bio-sciences. The Handbook takes an interdisciplinary approach providing a synoptic overview of contemporary international social science research on genetics, genomics and the new life sciences. It brings together leading scholars with expertise across a wide-ranging spectrum of research fields related to the production, use, commercialisation and regulation of genetics knowledge. The Handbook is structured into seven cross-cutting themes in contemporary social science research on genetics with introductions written by internationally renowned section editors who take an interdisciplinary approach to offer fresh insights on recent developments and issues in often controversial fields of study. The Handbook explores local and global issues and critically approaches a wide range of public and policy questions, providing an invaluable reference source to a wide variety of researchers, academics and policy makers.

A Troublesome Inheritance Simon and Schuster
In 2000, President Bill Clinton signaled the completion of the Human Genome Project at a cost in excess of $2 billion. A decade later, the price for any of us to order our own personal genome sequence--a comprehensive map of the 3 billion letters in our DNA--is rapidly and inevitably dropping to just $1,000. Dozens of men and women--scientists, entrepreneurs, celebrities, and patients--have already been sequenced, pioneers in a bold new era of personalized genomic medicine. The $1,000 genome has long been considered the tipping point that would open the floodgates to this revolution. Do you have gene variants associated with Alzheimer's or diabetes, heart disease or cancer? Which drugs should you consider taking for various diseases, and at what dosage? In the years to come, doctors will likely be able to tackle all of these questions--and many more--by using a computer in their offices to call up your unique genome sequence, which will become as much a part of your medical record as your blood pressure.

Evolution of the Human Genome II National Academies Press
The human genome is a linear sequence of roughly 3 billion bases and information regarding this genome is accumulating at an astonishing rate. Inspired by these advances, The Human Genome in Health and Disease: A Story of Four Letters explores the intimate link between sequence information and biological function. A range of sequence-based functional units of the genome are discussed and illustrated with inherited disorders and cancer. In addition, the book considers valuable medical applications related to human genome sequencing, such as gene therapy methods and the identification of causative mutations in rare genetic disorders. The primary audiences of the book are students of genetics, biology, medicine, molecular biology and bioinformatics. Richly illustrated with review questions provided for each chapter, the book helps students without previous studies of genetics and molecular biology. It may also be of benefit for advanced non-academics, which in the era of personal genomics, want to learn more about their genome. Key selling features: Molecular sequence perspective, explaining the relationship between DNA sequence motifs and biological function Aids in understanding the functional impact of mutations and genetic variants Material presented at basic level, making it accessible to students without previous studies of genetics and molecular biology Richly illustrated with questions provided to each chapter

The New Human Genetics Vintage

Heritable human genome editing - making changes to the genetic material of eggs, sperm, or any cells that lead to their development, including the cells of early embryos, and establishing a pregnancy - raises not only scientific and medical considerations but also a host of ethical, moral, and societal issues. Human embryos whose genomes have been edited should not be used to create a pregnancy until it is established that precise genomic changes can be made reliably and without introducing undesired changes - criteria that have not yet been met, says Heritable Human Genome Editing. From an international commission of the U.S. National Academy of Medicine, U.S. National Academy of Sciences, and the U.K.'s Royal Society, the report considers potential benefits, harms, and uncertainties associated with genome editing technologies and defines a translational pathway from rigorous preclinical research to initial clinical uses, should a country decide to permit such uses. The report specifies stringent preclinical and clinical requirements for establishing safety and efficacy, and for undertaking long-term monitoring of outcomes. Extensive national and international dialogue is needed before any country decides whether to permit clinical use of this technology, according to the report, which identifies essential elements of national and international scientific governance and oversight.

Cracking the Genome Academic Press

Developments in the field of genetics (including, but not limited to, human genetics) have brought into being (or at least into the realm of plausibility) a genetic engineering which is widely perceived to pose a diverse assortment of intricately tangled and in many respects novel ethical problem

Heritable Human Genome Editing Simon and Schuster

Mapping and Sequencing the Human GenomeNational Academies Press

Cracking the Genome Harvard University Press

This fourth edition of the best-selling textbook, Human Genetics and Genomics, clearly explains the key principles needed by medical and health sciences students, from the basis of molecular genetics, to clinical applications used in the treatment of both rare and common conditions. A newly expanded Part 1, Basic Principles of Human Genetics, focuses on introducing the reader to key concepts such as Mendelian principles, DNA replication and gene expression. Part 2, Genetics and Genomics in Medical Practice, uses case scenarios to help you engage with current genetic practice. Now featuring full-color diagrams, Human Genetics and Genomics has been rigorously updated to reflect today's genetics teaching, and includes updated discussion of genetic risk assessment, "single gene" disorders and therapeutics. Key learning features include: Clinical snapshots to help relate science to practice 'Hot topics' boxes that focus on the latest developments in testing, assessment and treatment 'Ethical issues' boxes to prompt further thought and discussion on the implications of genetic developments 'Sources of information' boxes to assist with the practicalities of clinical research and information provision Self-assessment review questions in each chapter Accompanied by the Wiley E-Text digital edition (included in the price of the book), Human Genetics and Genomics is also fully supported by a suite of online resources at www.korfgenetics.com, including: Factsheets on 100 genetic disorders, ideal for study and exam preparation Interactive Multiple Choice Questions (MCQs) with feedback on all answers Links to online resources for further study Figures from the book available as PowerPoint slides, ideal for teaching purposes The perfect companion to the genetics component of both problem-based learning and integrated medical courses, Human Genetics and Genomics presents the ideal balance between the bio-molecular basis of genetics and clinical cases, and provides an invaluable overview for anyone wishing to engage with this fast-moving discipline.

Mapping and Sequencing the Human Genome National Academies Press

Analogies play a fundamental role in science. To understand how and why, at a given moment, a certain analogy was used, one has to know the specific, historical circumstances under which the new idea was developed. This historical background is never presented in scientific articles and quite rarely in books. For the general reader, the undergraduate or graduate student who learns the subject for the first time, but also for the practitioner who looks for inspiration or who wants to understand what his colleague working in another field does, these historical circumstances can be fascinating and useful. This book discusses a series of analogy effects in subatomic physics, the prediction and theory of which the author has contributed to in the last 50 years. These phenomena are presented at a level accessible to the non-specialist, without formulae but with emphasis on the personal and historical background: memoirs of meetings, discussions and correspondence with collaborators and colleagues. As such, besides its scientific aspects, the book constitutes an absorbing witness account of a holocaust survivor who subsequently illegally crossed the Iron Curtain to escape communist persecution.

Curiosity Guides: The Human Genome States Academic Press

This two-volume set provides a general overview of the evolution of the human genome; The first volume overviews the human genome with descriptions of important gene groups. This second volume provides up-to-date, concise yet ample knowledge on the genome evolution of modern humans. It comprises twelve chapters divided into two parts discussing "Non-neutral Evolution on Human Genes" (Part I) and "Evolution of Modern Human Populations" (Part II.) The most significant feature of this book is the continent-wise discussion of modern human dispersal using human genomic data in Part II. Recent results such as introgression of paleogenomes to modern humans, new methods such as computer simulation of global human dispersals, and new information on genes for humanness will be of particular interest to the readers. Since the euchromatin regions of the human genome was sequenced in 2003, a huge number of research papers were published on modern human evolution for a variety of populations. It is now time to summarize these achievements. This book stands out as the most comprehensive book on the modern human evolution, focusing on genomic points of view with a broad scope. Primary target audiences are researchers and graduate students in evolutionary biology.

Human Molecular Genetics Academic Press

There is growing enthusiasm in the scientific community about the prospect of mapping and sequencing the human genome, a monumental project that will have far-reaching consequences for medicine, biology, technology, and other fields. But how will such an effort be organized and funded? How will we develop the new technologies that are needed? What new legal, social, and ethical questions will be raised? Mapping and Sequencing the Human Genome is a blueprint for this proposed project. The authors offer a highly readable explanation of the technical aspects of genetic mapping and sequencing, and they recommend specific interim and long-range research goals, organizational strategies, and funding levels. They also outline some of the legal and social questions that might arise and urge their early consideration by policymakers.

Hacking Darwin Simon and Schuster

Significant advances in our knowledge of genetics were made during the twentieth century but in the most recent decades, genetic research has dramatically increased its impact throughout society. Genetic issues are now playing a large role in health and public policy, and new knowledge in this field will continue to have significant implications for individuals and society. Written for the non-majors human genetics course, Human Genetics, 3E will increase the genetics knowledge of students who are learning about human genetics for the first time. This thorough revision of the best-selling Human Genome,2E includes entirely new chapters on forensics, stem cell biology, bioinformatics, and societal/ethical issues associated with the field. New special features boxes make connections between human genetics and human health and disease. Carefully crafted pedagogy includes chapter-opening case studies that set the stage for each chapter; concept statements interspersed throughout the chapter that keep first-time students focused on key concepts; and end-of-chapter questions and critical thinking activities. This new edition will contribute to creating a genetically literate student population that understands basic biological research, understands elements of the personal and health implications of genetics, and participates effectively in public policy issues involving genetic information . Includes topical material on forensics, disease studies, and the human genome project to engage non-specialist students Full, 4-color illustration program enhances and reinforces key concepts and themes Uniform organization of chapters includes interest boxes that focus on human health and disease, chapter-opening case studies, and concept statements to engage non-specialist readers

The Troubled Helix Mapping and Sequencing the Human Genome

Human genetics has blossomed from an obscure biological science and explanation for rare disorders to a field that is profoundly altering health care for everyone. This thoroughly updated new edition of Human Genetics: The Basics provides a concise background of gene structure and function through the lens of real examples, from families living with inherited diseases to population-wide efforts in which millions of average people are learning about their genetic selves. The book raises compelling issues concerning: • The role of genes in maintaining health and explaining sickness • Genetic testing, gene therapy, and genome editing • The common ancestry of all humanity and how we are affecting our future. Written in an engaging, narrative manner, this concise introduction is an ideal starting point for anyone who wants to know more about genes, DNA, genomes, and the genetic ties that bind us all.

Genome Routledge

Geneticist Eugene Harris presents us with the complete and up-to-date account of the evolution of the human genome.

Crumbling Genome Cambridge University Press

Drawing on startling new evidence from the mapping of the genome, an explosive new account of the genetic basis of race and its role in the human story Fewer ideas have been more toxic or harmful than the idea of the biological reality of race, and with it the idea that humans of different races are biologically different from one another. For this understandable reason, the idea has been banished from polite academic conversation. Arguing that race is more than just a social construct can get a scholar run out of town, or at least off campus, on a rail. Human evolution, the consensus view insists, ended in prehistory. Inconveniently, as Nicholas Wade argues in A Troublesome Inheritance, the consensus view cannot be right. And in fact, we know that populations have changed in the past few thousand years—to be lactose tolerant, for example, and to survive at high altitudes. Race is not a bright-line distinction; by definition it means that the more human populations are kept apart, the more they evolve their own distinct traits under the selective pressure known as Darwinian evolution. For many thousands of years, most human populations stayed where they were and grew distinct, not just in outward appearance but in deeper senses as well. Wade, the longtime journalist covering genetic advances for The New York Times, draws widely on the work of scientists who have made crucial breakthroughs in establishing the reality of recent human evolution. The most provocative claims in this book involve the genetic basis of human social habits. What we might call middle-class social traits—thrift, docility, nonviolence—have been slowly but surely inculcated genetically within agrarian societies, Wade argues. These "values" obviously had a strong cultural component, but Wade points to evidence that agrarian societies evolved away from hunter-gatherer societies in some crucial respects. Also controversial are his findings regarding the genetic basis of traits we associate with intelligence, such as literacy and numeracy, in certain ethnic populations, including the Chinese and Ashkenazi Jews. Wade believes deeply in the fundamental equality of all human peoples. He also believes that science is best served by pursuing the truth without fear, and if his mission to arrive at a coherent summa of what the new genetic science does and does not tell us about race and human history leads straight into a minefield, then so be it. This will not be the last word on the subject, but it will begin a powerful and overdue conversation.