

A Crack In Creation Gene Editing And The Unthinka

Geek Girl Rising Heather Cabot, Samantha Walravens. 2017-05-23 This book isn't about the famous tech trailblazers you already know, like Sheryl Sandberg and Marissa Mayer. Instead, veteran journalists Heather Cabot and Samantha Walravens introduce readers to the ... female entrepreneurs and technologists fighting at the grassroots level for an ownership stake in the revolution that's changing the way we live, work and connect to each other--Amazon.com.

Editing Humanity Kevin Davies. 2020-10-06 One of the world's leading experts on genetics unravels one of the most important breakthroughs in modern science and medicine. If 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.

Summary & Study Guide - A Crack in Creation Lee Tang. 2017-08-01 Power and Peril of Gene Editing CRISPR/Cas9 Technology This book is a summary of "A Crack in Creation: Gene Editing and the Unthinkable Power to Control Evolution" by Jennifer A. Doudna and Samuel H. Sternberg. This book tells the story of CRISPR and "gene-editing." CRISPR is a cutting-edge gene-editing technology that mimics what happens naturally in bacteria. It enables scientists to "play god" with plant or animal DNA, with unlimited power and peril. The technology of gene editing is the most important advance in our era. The possibility of forever altering the genetic composition of humankind is frightening. Yet we can't overlook the opportunities that may lead to inventions for cures of HIV, debilitating genetic diseases, and cancers, and end food shortages. The book will demystify this exciting area of science and inspire you to seek answers to tough moral and ethical questions on the use of this technology. Read this book and get involved in the debate on the moral and ethical issues on the use of this technology. This guide includes: * Book Summary—helps you understand the key concepts. * Online Videos—cover the concepts in more depth. Value-added from this guide: * Save time * Understand key concepts * Expand your knowledge

The Breakthrough Charles Graeber. 2018-11-13 Follow along as this New York Times bestselling author details the astonishing scientific discovery of the code to unleashing the human immune system to fight in this captivating and heartbreaking book (The Wall Street Journal). For decades, scientists have puzzled over one of medicine's most confounding mysteries: Why doesn't our immune system recognize and fight cancer the way it does other diseases, like the common cold? As it turns out, the answer to that question can be traced to a series of tricks that cancer has developed

to turn off normal immune responses -- tricks that scientists have only recently discovered and learned to defeat. The result is what many are calling cancer's penicillin moment, a revolutionary discovery in our understanding of cancer and how to beat it. In *The Breakthrough*, New York Times bestselling author of *The Good Nurse* Charles Graeber guides readers through the revolutionary scientific research bringing immunotherapy out of the realm of the miraculous and into the forefront of twenty-first-century medical science. As advances in the fields of cancer research and the human immune system continue to fuel a therapeutic arms race among biotech and pharmaceutical research centers around the world, the next step -- harnessing the wealth of new information to create modern and more effective patient therapies -- is unfolding at an unprecedented pace, rapidly redefining our relationship with this all-too-human disease. Groundbreaking, riveting, and expertly told, *The Breakthrough* is the story of the game-changing scientific discoveries that unleash our natural ability to recognize and defeat cancer, as told through the experiences of the patients, physicians, and cancer immunotherapy researchers who are on the front lines. This is the incredible true story of the race to find a cure, a dispatch from the life-changing world of modern oncological science, and a brave new chapter in medical history.

Life at the Speed of Light J. Craig Venter. 2014-09-30 "Venter instills awe for biology as it is, and as it might become in our hands." —Publishers Weekly On May 20, 2010, headlines around the world announced one of the most extraordinary accomplishments in modern science: the creation of the world's first synthetic lifeform. In *Life at the Speed of Light*, scientist J. Craig Venter, best known for sequencing the human genome, shares the dramatic account of how he led a team of researchers in this pioneering effort in synthetic genomics—and how that work will have a profound impact on our existence in the years to come. This is a fascinating and authoritative study that provides readers an opportunity to ponder afresh the age-old question "What is life?" at the dawn of a new era of biological engineering.

The Annotated and Illustrated Double Helix James D. Watson, Alexander Gann, Jan Witkowski. 2012-11-06 Published to mark the fiftieth anniversary of the Nobel Prize for Watson and Crick's discovery of the structure of DNA, an annotated and illustrated edition of this classic book gives new insights into the personal relationships between James Watson, Frances Crick, Maurice Wilkins, and Rosalind Franklin, and the making of a scientific revolution.

The Society of Genes Itai Yanai, Lercher Martin. 2016-01-11 Since Dawkins popularized the notion of the selfish gene, the question of how these selfish genes work together to construct an organism remained a mystery. Now, standing atop a wealth of new research, Itai Yanai and Martin Lercher—pioneers in the field of systems biology—provide a vision of how genes cooperate and compete in the struggle for life.

Some Assembly Required Neil Shubin. 2020-03-17 An exciting and accessible new view of the evolution of human and animal life on Earth. From the author of national bestseller, *Your Inner Fish*, this extraordinary journey of discovery spans centuries, as explorers and scientists seek to understand the origins of life's immense diversity. "Fossils, DNA, scientists with a penchant for suits of armor—what's not to love?"—BBC Wildlife Magazine Over billions of years, ancient fish evolved to walk on land, reptiles transformed into birds that fly, and apelike primates evolved into humans that walk on two legs, talk, and write. For more than a century, paleontologists have traveled the globe to find fossils that show how such changes have happened. We have now arrived at a remarkable moment—prehistoric fossils coupled with new DNA technology have given us the tools to answer some of the basic questions of our existence: How do big changes in evolution happen? Is our presence on Earth the product of mere chance? This new science reveals a multibillion-year evolutionary history filled with twists and turns, trial and error, accident and invention. In *Some Assembly Required*, Neil Shubin takes readers on a journey of discovery spanning centuries, as explorers and scientists seek to understand the origins of life's immense diversity.

[Alice and Bob Meet the Wall of Fire](#) Thomas Lin. 2018-11-20 Accessible, essential coverage of the latest findings in challenging, speculative, and

cutting-edge science, from the Pulitzer Prize-winning leaders in scientific journalism at Quanta Magazine “If you're a science and data nerd like me, you may be interested in Alice and Bob Meet the Wall of Fire . . . from Quanta Magazine and Thomas Lin.” —Bill Gates These stories reveal the latest efforts to untangle the mysteries of the universe. Bringing together the best and most interesting science stories appearing in Quanta Magazine over the past five years, Alice and Bob Meet the Wall of Fire reports on some of the greatest scientific minds as they test the limits of human knowledge. Quanta, under editor-in-chief Thomas Lin, is the only popular publication that offers in-depth coverage of today's challenging, speculative, cutting-edge science. It communicates science by taking it seriously, wrestling with difficult concepts and clearly explaining them in a way that speaks to our innate curiosity about our world and ourselves. In the title story, Alice and Bob—beloved characters of various thought experiments in physics—grapple with gravitational forces, possible spaghettification, and a massive wall of fire as Alice jumps into a black hole. Another story considers whether the universe is impossible, in light of experimental results at the Large Hadron Collider. We learn about quantum reality and the mystery of quantum entanglement; explore the source of time's arrow; and witness a eureka moment when a quantum physicist exclaims: “Finally, we can understand why a cup of coffee equilibrates in a room.” We reflect on humans’ enormous skulls and the Brain Boom; consider the evolutionary benefits of loneliness; peel back the layers of the newest artificial-intelligence algorithms; follow the “battle for the heart and soul of physics”; and mourn the disappearance of the “diphoton bump,” revealed to be a statistical fluctuation rather than a revolutionary new particle. Winner of the 2022 Pulitzer Prize for Explanatory Reporting, Quanta once again gives us a front-row seat to scientific discovery. Contributors Philip Ball, K. C. Cole, Robbert Dijkgraaf, Dan Falk, Courtney Humphries, Ferris Jabr, Katia Moskvitch, George Musser, Michael Nielsen, Jennifer Ouellette, John Pavlus, Emily Singer, Andreas von Bubnoff, Frank Wilczek, Natalie Wolchover, Carl Zimmer

Genome Editing in Animals Izuho Hatada.2024-02-26 This second edition provides new and updated protocols that can be used for generation of knockout animals. Chapters guide the reader through basic protocols for three genome editing technologies, target design tools, and specific protocols for each animal. Written in the 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 protocols, and notes on troubleshooting and avoiding known pitfalls. Authoritative and cutting-edge, *Genome Editing in Animals: Methods and Protocols, Second Edition* aims to be a useful practical guide to researches to help further their study in this field.

Regenesis George M Church,Edward Regis.2014-04-08 A Harvard biologist and master inventor explores how new biotechnologies will enable us to bring species back from the dead, unlock vast supplies of renewable energy, and extend human life. In *Regenesis*, George Church and science writer Ed Regis explore the possibilities of the emerging field of synthetic biology. Synthetic biology, in which living organisms are selectively altered by modifying substantial portions of their genomes, allows for the creation of entirely new species of organisms. These technologies—far from the out-of-control nightmare depicted in science fiction—have the power to improve human and animal health, increase our intelligence, enhance our memory, and even extend our life span. A breathtaking look at the potential of this world-changing technology, *Regenesis* is nothing less than a guide to the future of life.

Human Genome Editing National Academies of Sciences, Engineering, and Medicine,National Academy of Medicine,National Academy of Sciences,Committee on Human Gene Editing: Scientific, Medical, and Ethical Considerations.2017-08-13 Genome editing is a powerful new tool for making precise alterations to an organism's genetic material. Recent scientific advances have made genome editing more efficient, precise, and flexible than ever before. These advances have spurred an explosion of interest from around the globe in the possible ways in which genome editing can improve human health. The speed at which these technologies are being developed and applied has led many policymakers and stakeholders to

express concern about whether appropriate systems are in place to govern these technologies and how and when the public should be engaged in these decisions. Human Genome Editing considers important questions about the human application of genome editing including: balancing potential benefits with unintended risks, governing the use of genome editing, incorporating societal values into clinical applications and policy decisions, and respecting the inevitable differences across nations and cultures that will shape how and whether to use these new technologies. This report proposes criteria for heritable germline editing, provides conclusions on the crucial need for public education and engagement, and presents 7 general principles for the governance of human genome editing.

A Crack In Creation Jennifer A. Doudna, Samuel H. Sternberg. 2017-06-13 BY THE WINNER OF THE 2020 NOBEL PRIZE IN CHEMISTRY | Finalist for the Los Angeles Times Book Prize “A powerful mix of science and ethics . . . This book is required reading for every concerned citizen—the material it covers should be discussed in schools, colleges, and universities throughout the country.”— New York Review of Books Not since the atomic bomb has a technology so alarmed its inventors that they warned the world about its use. That is, until 2015, when biologist Jennifer Doudna called for a worldwide moratorium on the use of the gene-editing tool CRISPR—a revolutionary new technology that she helped create—to make heritable changes in human embryos. The cheapest, simplest, most effective way of manipulating DNA ever known, CRISPR may well give us the cure to HIV, genetic diseases, and some cancers. Yet even the tiniest changes to DNA could have myriad, unforeseeable consequences, to say nothing of the ethical and societal repercussions of intentionally mutating embryos to create “better” humans. Writing with fellow researcher Sam Sternberg, Doudna—who has since won the Nobel Prize for her CRISPR research—shares the thrilling story of her discovery and describes the enormous responsibility that comes with the power to rewrite the code of life. “The future is in our hands as never before, and this book explains the stakes like no other.” — George Lucas “An invaluable account . . . We owe Doudna several times over.” — Guardian

The Code Breaker Walter Isaacson. 2021-03-09 A Best Book of 2021 by Bloomberg BusinessWeek, Time, and The Washington Post The bestselling author of Leonardo da Vinci and Steve Jobs returns with a “compelling” (The Washington Post) account of how Nobel Prize winner Jennifer Doudna and her colleagues launched a revolution that will allow us to cure diseases, fend off viruses, and have healthier babies. When Jennifer Doudna was in sixth grade, she came home one day to find that her dad had left a paperback titled *The Double Helix* on her bed. She put it aside, thinking it was one of those detective tales she loved. When she read it on a rainy Saturday, she discovered she was right, in a way. As she sped through the pages, she became enthralled by the intense drama behind the competition to discover the code of life. Even though her high school counselor told her girls didn’t become scientists, she decided she would. Driven by a passion to understand how nature works and to turn discoveries into inventions, she would help to make what the book’s author, James Watson, told her was the most important biological advance since his codiscovery of the structure of DNA. She and her collaborators turned a curiosity of nature into an invention that will transform the human race: an easy-to-use tool that can edit DNA. Known as CRISPR, it opened a brave new world of medical miracles and moral questions. The development of CRISPR and the race to create vaccines for coronavirus will hasten our transition to the next great innovation revolution. The past half-century has been a digital age, based on the microchip, computer, and internet. Now we are entering a life-science revolution. Children who study digital coding will be joined by those who study genetic code. Should we use our new evolution-hacking powers to make us less susceptible to viruses? What a wonderful boon that would be! And what about preventing depression? Hmm...Should we allow parents, if they can afford it, to enhance the height or muscles or IQ of their kids? After helping to discover CRISPR, Doudna became a leader in wrestling with these moral issues and, with her collaborator Emmanuelle Charpentier, won the Nobel Prize in 2020. Her story is an “enthraling detective story” (Oprah Daily) that involves the most profound wonders of nature, from the origins of life to the future of our species.

A Crack in Creation Jennifer Doudna, Samuel Sternberg. 2018-06-14 A handful of discoveries have changed the course of human history. This book is about the most recent and potentially the most powerful and dangerous of them all. It is an invention that allows us to rewrite the genetic code that shapes and controls all living beings with astonishing accuracy and ease. Thanks to it, the dreams of genetic manipulation have become a stark reality: the power to cure disease and alleviate suffering, to create new sources of food and energy, as well as to re-design any species, including humans, for our own ends. Jennifer Doudna is the co-inventor of this technology - known as CRISPR - and a scientist of worldwide renown. Writing with fellow researcher Samuel Sternberg, here she provides the definitive account of her discovery, explaining how this wondrous invention works and what it is capable of. She also asks us to consider what our new-found power means: how do we enjoy its unprecedented benefits while avoiding its equally unprecedented dangers? The future of humankind - and of all life on Earth - is at stake. This book is an essential guide to the path that now lies ahead.

Strange Natures Kent H. Redford, William M. Adams. 2021-06-22 A groundbreaking examination of the implications of synthetic biology for biodiversity conservation. Nature almost everywhere survives on human terms. The distinction between what is natural and what is human-made, which has informed conservation for centuries, has become blurred. When scientists can reshape genes more or less at will, what does it mean to conserve nature? The tools of synthetic biology are changing the way we answer that question. Gene editing technology is already transforming the agriculture and biotechnology industries. What happens if synthetic biology is also used in conservation to control invasive species, fight wildlife disease, or even bring extinct species back from the dead? Conservation scientist Kent Redford and geographer Bill Adams turn to synthetic biology, ecological restoration, political ecology, and de-extinction studies and propose a thoroughly innovative vision for protecting nature.

CRISPR Gene Editing Yonglun Luo. 2019 This detailed volume guides readers through strategic planning and user-friendly guidelines in order to select the most suitable CRISPR-Cas system and target sites with high activity and specificity. Methods covering CRISPR gRNA design, CRISPR delivery, CRISPR activity quantification (indel quantification), and examples of applying CRISPR gene editing in human pluripotent stem cells, primary cells, gene therapy, and genetic screening are included. Written for the highly successful *Methods in Molecular Biology* series, 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. Authoritative and invaluable, *CRISPR Gene Editing: Methods and Protocols* will assist undergraduates, graduates, and researchers with detailed guidelines and methods for the vitally important CRISPR gene editing field. Chapter 3 is available open access under a CC BY 4.0 license via link.springer.com.

DNA James D. Watson, Andrew Berry, Kevin Davies. 2017-08-22 The definitive insider's history of the genetic revolution--significantly updated to reflect the discoveries of the last decade. James D. Watson, the Nobel laureate whose pioneering work helped unlock the mystery of DNA's structure, charts the greatest scientific journey of our time, from the discovery of the double helix to today's controversies to what the future may hold. Updated to include new findings in gene editing, epigenetics, agricultural chemistry, as well as two entirely new chapters on personal genomics and cancer research. This is the most comprehensive and authoritative exploration of DNA's impact--practical, social, and ethical--on our society and our world.

DNA Is Not Destiny Steven J Heine. 2018-08-21 "[An] important book.... Heine's vibrant writing makes it come alive with personal significance for every reader."—Carol Dweck, author of *Mindset* Scientists expect one billion people to have their genomes sequenced by 2025. Yet cultural psychologist Steven J. Heine argues that, in trying to know who we are and where we come from, we're likely to completely misinterpret what's "in our DNA." Heine's fresh, surprising conclusions about the promise, and limits, of genetic engineering and DNA testing upend conventional thinking and reveal a simple, profound truth: your genes create life—but they do not control it.

CRISPR Yolanda Ridge.2020-09-08 We can change the world with gene editing—but should we? CRISPR stands for clustered regularly interspaced short palindromic repeats. If it sounds complicated, it is—but it’s also one of the most powerful ways we can shape the future. And it’s poised to completely upend the way we think about science. Author Yolanda Ridge tackles this topic in a friendly and accessible tone, with two introductory chapters covering the basics of DNA and gene editing before taking readers through the ways that this ground-breaking science could affect them by potentially: • eliminating diseases like malaria and cancer, • improving the stability of our food supply, and • helping to manage conservation efforts for threatened animals and environments. But all of these possible advancements come with risks, the biggest being that the consequences are unknown. Chapters end with “Stop, Go, Yield” sections encouraging readers to consider the pros and cons of using CRISPR. “Cutting Questions” give readers the opportunity to further reflect on the ethics of the science. CRISPR is a game changer. This important book, with detailed scientific illustrations, brings much needed clarity to a topic that will affect readers for generations to come. *A Junior Library Guild Gold Standard Selection

Junk DNA Nessa Carey.2015-03-05 From the author of the acclaimed *The Epigenetics Revolution* (‘A book that would have had Darwin swooning’ – Guardian) comes another thrilling exploration of the cutting edge of human science. For decades after the structure of DNA was identified, scientists focused purely on genes, the regions of the genome that contain codes for the production of proteins. Other regions – 98% of the human genome – were dismissed as ‘junk’. But in recent years researchers have discovered that variations in this ‘junk’ DNA underlie many previously intractable diseases, and they can now generate new approaches to tackling them. Nessa Carey explores, for the first time for a general audience, the incredible story behind a controversy that has generated unusually vituperative public exchanges between scientists. She shows how junk DNA plays an important role in areas as diverse as genetic diseases, viral infections, sex determination in mammals, human biological complexity, disease treatments, even evolution itself – and reveals how we are only now truly unlocking its secrets, more than half a century after Crick and Watson won their Nobel prize for the discovery of the structure of DNA in 1962.

CRISPR People Henry T. Greely.2022-03-01 What does the birth of babies whose embryos had gone through genome editing mean—for science and for all of us? In November 2018, the world was shocked to learn that two babies had been born in China with DNA edited while they were embryos—as dramatic a development in genetics as the 1996 cloning of Dolly the sheep. In this book, Hank Greely, a leading authority on law and genetics, tells the fascinating story of this human experiment and its consequences. Greely explains what Chinese scientist He Jiankui did, how he did it, and how the public and other scientists learned about and reacted to this unprecedented genetic intervention. The two babies, nonidentical twin girls, were the first “CRISPR’d” people ever born (CRISPR, Clustered Regularly Interspaced Short Palindromic Repeats, is a powerful gene-editing method). Greely not only describes He's experiment and its public rollout (aided by a public relations adviser) but also considers, in a balanced and thoughtful way, the lessons to be drawn both from these CRISPR'd babies and, more broadly, from this kind of human DNA editing—“germline editing” that can be passed on from one generation to the next. Greely doesn't mince words, describing He's experiment as grossly reckless, irresponsible, immoral, and illegal. Although he sees no inherent or unmanageable barriers to human germline editing, he also sees very few good uses for it—other, less risky, technologies can achieve the same benefits. We should consider the implications carefully before we proceed.

Hacking Darwin Jamie Metzl.2019-04-23 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* A groundbreaking exploration of genetic engineering and its impact on the future of our species from leading geopolitical expert and technology futurist, Jamie Metzl. 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. In this captivating and thought-provoking nonfiction science book, Jamie Metzl delves into the ethical, scientific, political, and technological dimensions of genetic engineering, and shares how it will shape the course of human evolution. Cutting-edge insights into the field of genetic engineering and its implications for humanity's future Explores the transformative power of genetic technologies and their potential to reshape human life Examines the ethical considerations surrounding genetic engineering and the choices we face as a species Engaging narrative that delves into the scientific breakthroughs and real-world applications of genetic technologies Provides a balanced perspective on the promises and risks associated with genetic engineering Raises thought-provoking questions about the future of reproduction, human health, and our relationship with nature Drawing on his extensive background in genetics, national security, and foreign policy, Metzl paints a vivid picture of a world where advancements in technology empower us to take control of our own evolution, but also cautions against the pitfalls and ethical dilemmas that could arise if not properly managed. Hacking Darwin is a must-read for anyone interested in the intersection of science, technology, and humanity's future.

Mapping Human History Steve Olson.2002 Until just a few years ago, we knew surprisingly little about the 150,000 or so years of human existence before the advent of writing. Some of the most momentous events in our past - including our origins, our migrations across the globe, and our acquisition of language - were veiled in the uncertainty of 'prehistory'. That veil is being lifted at last by geneticists and other scientists. Mapping Human History is nothing less than an astonishing 'history of prehistory'. Steve Olson travelled through four continents to gather insights into the development of humans and our expansion throughout the world. He describes, for example, new thinking about how centres of agriculture sprang up among disparate foraging societies at roughly the same time. He tells why most of us can claim Julius Caesar and Confucius among our forebears. He pinpoints why the ways in which the story of the Jewish people jibes with, and diverges from, biblical accounts. And using very recent genetic findings, he explodes the myth that human races are a biological reality.

Hacking the Code of Life Nessa Carey.2019-03-07 'An excellent, brisk guide to what is likely to happen as opposed to the fantastically remote.' - Los Angeles Review of Books In 2018 the world woke up to gene editing with a storm of controversy over twin girls born in China with genetic changes deliberately introduced by scientists - changes they will pass on to their own offspring. Genetic modification (GM) has been with us for 45 years now, but the new system known as CRISPR or gene editing can manipulate the genes of almost any organism with a degree of precision, ease and speed that we could only dream of ten years ago. But is it ethical to change the genetic material of organisms in a way that might be passed on to future generations? If a person is suffering from a lethal genetic disease, is it unethical to deny them this option? Who controls the application of this technology, when it makes 'biohacking' - perhaps of one's own genome - a real possibility? Nessa Carey's book is a thrilling and timely snapshot of a cutting-edge technology that will radically alter our futures and the way we prevent disease. 'A focused snapshot of a brave new world.' - Nature 'A brisk, accessible primer on the fast-moving field, a clear-eyed look at a technology that is already driving major scientific advances - and raising complex ethical questions.' - Emily Anthes, Undark

Change Agent Daniel Suarez.2017 2045. Kenneth Durand leads Interpol's most effective team against genetic crime, hunting down black market labs that perform illegal procedures, augmenting embryos and rapidly accelerating human evolution-- and preying on human-trafficking victims to experiment and advance their technology. One figure looms behind it all: Marcus Demang Wyckes, leader of a cartel known as the Huli jing. When Durand is forcibly dosed with a radical new change agent, he wakes from a coma weeks later to find he's been genetically transformed into Wyckes. Determined to restore his original DNA, Durand hasn't anticipated just how difficult locating his enemy will be.

Molecular Biology Michael M. Cox,Michael O'Donnell.2015-03-16 Written and illustrated with unsurpassed clarity, Molecular Biology: Principles

and Practice introduces fundamental concepts while exposing students to how science is done. The authors convey the sense of joy and excitement that comes from scientific discovery, highlighting the work of researchers who have shaped—and who continue to shape—the field today. The second edition addresses recent discoveries and advances, corresponding to our ever-changing understanding of molecular biology. There are numerous new figures and photos, along with significantly updated figures in every chapter. There are also new end-of-chapter questions for every chapter and many new Unanswered Questions. This textbook is available with LaunchPad. LaunchPad combines an interactive ebook with high-quality multimedia content and ready-made assessment options, including Learning Curve adaptive quizzing. See ‘Instructor Resources’ and ‘Student Resources’ for further information.

Biostatistics For Dummies John Pezzullo.2013-07-10 Score your highest in biostatistics Biostatistics is a required course for students of medicine, epidemiology, forestry, agriculture, bioinformatics, and public health. In years past this course has been mainly a graduate-level requirement; however its application is growing and course offerings at the undergraduate level are exploding. Biostatistics For Dummies is an excellent resource for those taking a course, as well as for those in need of a handy reference to this complex material. Biostatisticians—analysts of biological data—are charged with finding answers to some of the world's most pressing health questions: how safe or effective are drugs hitting the market today? What causes autism? What are the risk factors for cardiovascular disease? Are those risk factors different for men and women or different ethnic groups? Biostatistics For Dummies examines these and other questions associated with the study of biostatistics. Provides plain-English explanations of techniques and clinical examples to help Serves as an excellent course supplement for those struggling with the complexities of the biostatistics Tracks to a typical, introductory biostatistics course Biostatistics For Dummies is an excellent resource for anyone looking to succeed in this difficult course.

Seven Daughters of Eve Bryan Sykes.2002-05-17 This national bestseller, now in paperback, reveals how all humans are descended from seven prehistoric women--the Seven Daughters of Eve.

Right/Wrong Juan Enriquez.2021-09-14 A lively and entertaining guide to ethics in a technological age. Most people have a strong sense of right and wrong, and they aren't shy about expressing their opinions. But when we take a polarizing stand on something we regard as an eternal truth, we often forget that ethics evolve over time. Many shifts in the right versus wrong pendulum are driven by advances in technology. Our great-grandparents might be shocked by in vitro fertilization; our great-grandchildren might be shocked by the messiness of pregnancy, childbirth, and unedited genes. In Right/Wrong, Juan Enriquez reflects on what happens to our ethics as technology makes the once unimaginable a commonplace occurrence.

Summary & Study Guide - A Crack in Creation Lee Tang.2017-08-01 Power and Peril of Gene Editing CRISPR/Cas9 Technology This book is a summary of “A Crack in Creation: Gene Editing and the Unthinkable Power to Control Evolution” by Jennifer A. Doudna and Samuel H. Sternberg. This book tells the story of CRISPR and “gene-editing.” CRISPR is a cutting-edge gene-editing technology that mimics what happens naturally in bacteria. It enables scientists to “play god” with plant or animal DNA, with unlimited power and peril. The technology of gene editing is the most important advance in our era. The possibility of forever altering the genetic composition of humankind is frightening. Yet we can’t overlook the opportunities that may lead to inventions for cures of HIV, debilitating genetic diseases, and cancers, and end food shortages. The book will demystify this exciting area of science and inspire you to seek answers to tough moral and ethical questions on the use of this technology. Read this book and get involved in the debate on the moral and ethical issues on the use of this technology. This guide includes: * Book Summary—helps you understand the key concepts. * Online Videos—cover the concepts in more depth. Value-added from this guide: * Save time * Understand key

concepts * Expand your knowledge

Life on the Edge Johnjoe McFadden, Jim Al-Khalili. 2015-07-28 New York Times bestseller • Life on the Edge alters our understanding of our world's fundamental dynamics through the use of quantum mechanics. Life is the most extraordinary phenomenon in the known universe; but how did it come to be? Even in an age of cloning and artificial biology, the remarkable truth remains: nobody has ever made anything living entirely out of dead material. Life remains the only way to make life. Are we still missing a vital ingredient in its creation? Using first-hand experience at the cutting edge of science, Jim Al-Khalili and Johnjoe Macfadden reveal that missing ingredient to be quantum mechanics. Drawing on recent ground-breaking experiments around the world, each chapter in Life on the Edge illustrates one of life's puzzles: How do migrating birds know where to go? How do we really smell the scent of a rose? How do our genes copy themselves with such precision? Life on the Edge accessibly reveals how quantum mechanics can answer these probing questions of the universe. Guiding the reader through the rapidly unfolding discoveries of the last few years, Al-Khalili and McFadden describe the explosive new field of quantum biology and its potentially revolutionary applications, while offering insights into the biggest puzzle of all: what is life? As they brilliantly demonstrate in these groundbreaking pages, life exists on the quantum edge. Winner, Stephen Hawking Medal for Science Communication

Altered Inheritance Françoise Baylis. 2019-09-17 With the advent of CRISPR gene-editing technology, designer babies have become a reality. Françoise Baylis insists that scientists alone cannot decide the terms of this new era in human evolution. Members of the public, with diverse interests and perspectives, must have a role in determining our future as a species.

The Forever Fix Ricki Lewis. 2012-03-13 Fascinating narrative science that explores the next frontier in medicine and genetics through the very personal prism of the children and families gene therapy has touched. Eight-year-old Corey Haas was nearly blind from a hereditary disorder when his sight was restored through a delicate procedure that made medical history. Like something from a science fiction novel, doctors carefully injected viruses bearing healing genes into the DNA of Corey's eyes—a few days later, Corey could see, his sight restored by gene therapy. THE FOREVER FIX is the first book to tell the fascinating story of gene therapy: how it works, the science behind it, how patients (mostly children) have been helped and harmed, and how scientists learned from each trial to get one step closer to its immense promise, the promise of a forever fix, - a cure that, by fixing problems at their genetic root, does not need further surgery or medication. Told through the voices of the children and families who have been the inspiration, experimental subjects, and successes of genetic science, THE FOREVER FIX is compelling and engaging narrative science that tells explores the future of medicine as well as the families and scientists who are breaking new ground every day.

CRISPR'd Judy Foreman. 2022-02-15 For fans of Julia Buckley and Tess Gerritsen, a debut featuring a killer in plain sight using a microscopic murder weapon, the cutting edge gene-editing technology: CRISPR. Boston geneticist Dr. Saul Kramer is on the cutting edge of genetic disease research. Revered among clients at his IVF clinic, he harbors a dark secret. In addition to helping infertile couples conceive healthy babies, Dr. Kramer is obsessed, for his own dark reasons, with an alternate mission as well. In certain patients, he uses the gene editing technology CRISPR to tamper with embryos, not to improve the health of the embryos, but to replace a healthy gene with a deadly mutation. A young female journalist, Sammie Fuller, begins to suspect what he has done when three infants conceived at his clinic die mysteriously, all at about one year old. She and a molecular biologist work secretly in his MIT lab to identify any genetic defects in the deceased children and together make a chilling discovery. Thanks to Sammie's blockbuster stories, which go viral, Dr. Kramer is charged with murder and winds up in court. In the subsequent dramatic court scenes, his feisty defense lawyer stuns the world with her defense. Set in this uneasy time of genetic engineering with CRISPR technology, Foreman, spins a compelling tale of love, revenge, and murder.

CRISPR-Cas Jennifer A. Doudna, Prashant Mali. 2016 CRISPR/Cas-based techniques are revolutionizing the way geneticists and molecular biologists modify DNA sequences and modulate gene expression in cells and organisms. This laboratory manual presents step-by-step protocols for applying this cutting-edge technology to any system of interest. Contributors describe approaches for de.

The CRISPR Generation Kiran Musunuru. 2019-11-29 A leading physician, scientist, and expert in gene editing explains how a series of scientific breakthroughs led to the medical scandal of the decade. - - - - In November 2018, Dr. He Jiankui of Shenzhen, China, announced via YouTube that he had created the world's first gene-edited babies. It soon became clear that this was not a historic scientific achievement, but rather a historic ethical fiasco, a deeply flawed experiment on unborn human beings. What made it possible for a rogue scientist with no medical training to covertly and recklessly alter the genes of babies? What does the future hold now that the first members of the CRISPR generation have been born? - - - - In *The CRISPR Generation*, Dr. Kiran Musunuru takes the reader through an insider's view of the history of the gene-editing field, key discoveries about how gene editing can be used to prevent and treat diseases like AIDS and heart attacks, a full account of the events surrounding Dr. He's revelation to the world, a dissection of Dr. He's scientific and ethical lapses, and a look ahead to the consequences of gene editing for humankind, both good and bad. Gene-editing technology has the potential to cause untold damage if taken up by the wrong hands and used irresponsibly. But it also promises to be a boon for the health of patients otherwise destined for disease and suffering.

Targeted Genome Editing Using Site-Specific Nucleases Takashi Yamamoto. 2015-01-05 This book serves as an introduction to targeted genome editing, beginning with the background of this rapidly developing field and methods for generation of engineered nucleases. Applications of genome editing tools are then described in detail, in iPS cells and diverse organisms such as mice, rats, marine invertebrates, fish, frogs, and plants. Tools that are mentioned include zinc finger nucleases (ZFNs), transcription activator-like effector nucleases (TALENs), and CRISPR/Cas9, all of which have received much attention in recent years as breakthrough technologies. Genome editing with engineered nucleases allows us to precisely change the target genome of living cells and is a powerful way to control functional genes. It is feasible in almost all organisms ranging from bacteria to plants and animals, as well as in cultured cells such as ES and iPS cells. Various genome modifications have proven successful, including gene knockout and knock-in experiments with targeting vectors and chromosomal editing. Genome editing technologies hold great promise for the future, for example in biomedical research, clinical medicine, and generation of crops and livestock with desirable traits. A wide range of readers will find this book interesting, and with its focus on applications in a variety of organisms and cells, the book will be valuable for life scientists in all fields.

The Epigenetics Revolution Nessa Carey. 2012-03-06 Epigenetics can potentially revolutionize our understanding of the structure and behavior of biological life on Earth. It explains why mapping an organism's genetic code is not enough to determine how it develops or acts and shows how nurture combines with nature to engineer biological diversity. Surveying the twenty-year history of the field while also highlighting its latest findings and innovations, this volume provides a readily understandable introduction to the foundations of epigenetics. Nessa Carey, a leading epigenetics researcher, connects the field's arguments to such diverse phenomena as how ants and queen bees control their colonies; why tortoiseshell cats are always female; why some plants need cold weather before they can flower; and how our bodies age and develop disease. Reaching beyond biology, epigenetics now informs work on drug addiction, the long-term effects of famine, and the physical and psychological consequences of childhood trauma. Carey concludes with a discussion of the future directions for this research and its ability to improve human health and well-being.

The Gene Siddhartha Mukherjee. 2016-05-17 The #1 NEW YORK TIMES Bestseller The basis for the PBS Ken Burns Documentary *The Gene: An Intimate History* Now includes an excerpt from Siddhartha Mukherjee's new book *Song of the Cell!* From the Pulitzer Prize-winning author of *The Emperor of All Maladies*—a fascinating history of the gene and “a magisterial account of how human minds have laboriously, ingeniously picked apart

what makes us tick” (Elle). “Sid Mukherjee has the uncanny ability to bring together science, history, and the future in a way that is understandable and riveting, guiding us through both time and the mystery of life itself.” —Ken Burns “Dr. Siddhartha Mukherjee dazzled readers with his Pulitzer Prize-winning *The Emperor of All Maladies* in 2010. That achievement was evidently just a warm-up for his virtuoso performance in *The Gene: An Intimate History*, in which he braids science, history, and memoir into an epic with all the range and biblical thunder of *Paradise Lost*” (The New York Times). In this biography Mukherjee brings to life the quest to understand human heredity and its surprising influence on our lives, personalities, identities, fates, and choices. “Mukherjee expresses abstract intellectual ideas through emotional stories...[and] swaddles his medical rigor with rhapsodic tenderness, surprising vulnerability, and occasional flashes of pure poetry” (The Washington Post). Throughout, the story of Mukherjee’s own family—with its tragic and bewildering history of mental illness—reminds us of the questions that hang over our ability to translate the science of genetics from the laboratory to the real world. In riveting and dramatic prose, he describes the centuries of research and experimentation—from Aristotle and Pythagoras to Mendel and Darwin, from Boveri and Morgan to Crick, Watson and Franklin, all the way through the revolutionary twenty-first century innovators who mapped the human genome. “A fascinating and often sobering history of how humans came to understand the roles of genes in making us who we are—and what our manipulation of those genes might mean for our future” (Milwaukee Journal-Sentinel), *The Gene* is the revelatory and magisterial history of a scientific idea coming to life, the most crucial science of our time, intimately explained by a master. “*The Gene* is a book we all should read” (USA TODAY).

Unveiling the Magic of Words: A Report on "**A Crack In Creation Gene Editing And The Unthinka**"

In some sort of defined by information and interconnectivity, the enchanting power of words has acquired unparalleled significance. Their capability to kindle emotions, provoke contemplation, and ignite transformative change is truly awe-inspiring. Enter the realm of "**A Crack In Creation Gene Editing And The Unthinka**," a mesmerizing literary masterpiece penned with a distinguished author, guiding readers on a profound journey to unravel the secrets and potential hidden within every word. In this critique, we shall delve to the book is central themes, examine its distinctive writing style, and assess its profound affect the souls of its readers.

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