Power Sex Suicide Mitochondria And The Meaning Of Life Nick Lane

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The Lives of a Cell Oxford University Press on Demand
The noted inventor and futurist's successor to his landmark book The Singularity Is Near explores how technology will refashion the human race in the decades to come Since it was first published in 2005, Ray Kurzweil's The Singularity Is Near and its vision of the future have been influential in spawning a worldwide movement with millions of followers, hundreds of books, major films (Her, Lucy, Ex Machina), and thousands of articles. During the succeeding decade many of Kurzweil's predictions about technological advancements have been borne out, and their viability has become familiar to the public through such now commonplace concepts as AI, intelligent machines, and bioengineering. In this entirely new book Ray Kurzweil brings a fresh perspective to advances in the singularity--assessing the progress of many of his predictions and examining the novel advancements that, in the near future, will bring a revolution in knowledge and an expansion of human potential. Among the topics he discusses are rebuilding the world, atom by atom with devices like nanobots; radical life extension beyond the current age limit of 120; reinventing intelligence by expanding biological capacity with nonbiological intelligence in the cloud; how life is improving with declines in areas such as poverty and violence; and the growth of technologies such as renewable energy and 3-D printing, which can be applied to everything from clothes to building materials to growing human organs. He also considers the potential perils of biotechnology, nanotechnology, and artificial intelligence, including such topics of current controversy as how AI will impact unemployment and the safety of autonomous cars, and After Life technology, which will reanimate people who have passed away through a combination of data and DNA.

Mitochondria and the Future of Medicine FriesenPress
“ 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.

Life Ascending Crown
Mitochondria are tiny structures located inside our cells that carry out the essential task of producing energy for the cell. They are found in all complex living things, and in that sense, they are fundamental for driving complex life on the planet. But there is much more to them than that. Mitochondria have their own DNA, with their own small collection of genes, separate from those in the cell nucleus. It is thought that they were once bacteria living independent lives. Their enslavement within the larger cell was a turning point in the evolution of life, enabling the development of complex organisms and, closely related, the origin of two sexes. Unlike the DNA in the nucleus, mitochondrial DNA is passed down exclusively (or almost exclusively) via the female line. That's why it has been used by some researchers to trace human ancestry daughter-to-mother, to 'Mitochondrial Eve'. Mitochondria give us important information about our evolutionary history. And that's not all. Mitochondrial genes mutate much faster than those in the nucleus because of the free radicals produced in their energy-generating role. This high mutation rate lies behind our ageing and certain congenital diseases. The latest research suggests that mitochondria play a key role in degenerative diseases such as cancer, through their involvement in precipitating cell suicide. Mitochondria, then, are pivotal in power, sex, and suicide. In this fascinating and thought-provoking book, Nick Lane brings together the latest research findings in this exciting field to show how our growing understanding of mitochondria is shedding light on how complex life evolved, why sex arose (why don't we just bud?), and why we age and die. This understanding is of fundamental importance, both in understanding how we and all other complex life came to be, but also in order to be able to control our own illnesses, and delay our degeneration and death. Oxford Landmark Science books are 'must-read' classics of modern science writing which have crystallized big ideas, and shaped the way we think.

The Machinery of Life Harper Collins
While it is barely 50 years since the first reliable reports of the recovery of living cells frozen to cryogenic temperatures, there has been tremendous growth in the use of cryobiology in medicine, agriculture, horticulture, forestry, and the conservation of endangered or economically important species. As the first major text on cryobiolog

The Book of Humans Profile Books
They started with four: earth, air, fire, and water. From these basics, they sought to understand the essential ingredients of the world. Those who could see further, those who understood that the four were just the beginning, were the last sorcerers â€" and the world's first chemists. What we now call chemistry began in the fiery cauldrons of mystics and sorcerers seeking not to make a better world through science, but rather to make themselves richer through magic formulas and con games. But among these early magicians, frauds, and con artists were a few far-seeing "alchemists" who, through rigorous experimentation, transformed mysticism into science. By the 18th century the building blocks of nature, the elements of which all matter is composed, were on the verge of being discovery. Initially, it was not easy to determine whether a substance really was an element. Was water just water, plain and simple? Or could it be the sum of other (unknown and maybe unknowable) parts? And if water was made up of other substances, how could it be broken down into discreet, fundamental, and measurable components? Scientific historians generally credit the great 18th century French chemist Antoine Lavoisier with addressing these fundamental questions and ultimately modernizing the field of chemistry. Through his meticulous and precise work this chaotic new field of scientific inquiry was given order. Exacting by nature, Lavoisier painstakingly set about performing experiments that would provide lasting and verifiable proofs of various chemical theories. Unfortunately, the outspoken Lavoisier eventually lost his head in the Terror, but others would follow his lead, carefully examining, measuring, and recording their findings. As the field slowly progressed, another pioneer was to emerged almost 100 years later. Dimitri Mendeleev, an eccentric genius who cut his flowing hair and beard but once a year, sought to answer the most pressing questions that remained to chemists: Why did some elements have properties that resembled those of others? Were there certain natural groups of elements? And, if so, how many, and what elements fit into them? It was Mendeleev who finally addressed all these issues when he constructed the first Periodic Table in the late 1800s. But between and after Lavoisier and Mendeleev were a host of other colorful, brilliant scientists who made their mark on the field of chemistry. Depicting the lively careers of these scientists and their contributions while carefully deconstructing the history and the science, author Richard Morris skillfully brings it all to life. Hailed by Kirkus Reviews as a "clear and lively writer with a penchant for down-to-earth examples" Morris's gift for explanation â€" and pure entertainment â€" is abundantly obvious. Taking a cue from the great chemists themselves, Morris has brewed up a potent combination of the alluringly obscure and the historically momentous, spiked with just the right dose of quirky and ribald detail to deliver a magical brew of history, science, and personalities.

What is Life? W. W. Norton & Company
Now the subject of a feature film that the New York Times calls "spellbinding" How does life work? How does nature produce the right numbers of zebras and lions on the African savanna, or fish in the ocean? How do our bodies produce the right numbers of cells in our organs and bloodstream? In The Serengeti Rules, award-winning biologist and author Sean Carroll tells the stories of the pioneering scientists who sought the answers to such simple yet profoundly important questions, and shows how their discoveries matter for our health and the health of the planet we depend upon. One of the most important revelations about the natural world is that everything is regulated—there are rules that regulate the amount of every molecule in our bodies and rules that govern the numbers of every animal and plant in the wild. And the most surprising revelation about the rules that regulate life at such different scales is that they are remarkably similar—there is a common underlying logic of life. Carroll recounts how our deep knowledge of the rules and logic of the human body has spurred the advent of revolutionary life-saving medicines, and makes the compelling case that it is now time to use the Serengeti Rules to heal our ailing planet. A bold and inspiring synthesis by one of our most accomplished biologists and gifted storytellers, The Serengeti Rules is the first book to illuminate how life works at vastly different scales. Read it and you will never look at the world the same way again.

Mitochondrial Dysfunction: A Functional Medicine Approach to Diagnosis and Treatment: Get Rid of Fat, Fatigue, and Brain Fog Princeton University Press
5. 1. 1 Biological Rhythms and Clocks From an evolutionary perspective, the adaptation of an organism’s behavior to its environment has depended on one of life’s fundamental traits: biological rhythm generation. In virtually all light-sensitive organisms from cyanobacteria to humans, biological clocks adapt cyclic physiology to geophysical time with time-keeping properties in the circadian (24 h), ultradian (24 h) domains (Edmunds, 1988; Lloyd, 1998; Lloyd et al. , 2001; Lloyd and Murray, 2006; Lloyd, 2007; Pittendrigh, 1993; Sweeney and Hastings, 1960) By definition, all rhythms exhibit regular periodicities since they constitute a mechanism of timing. Timing exerted by oscillatory mechanisms are found throughout the biological world and their periods span a wide range from milliseconds, as in the action potential of n- rons and the myocytes, to the slow evolutionary changes that require thousands of generations. In this context, to understand the synchronization of a population of coupled oscillators is an important problem for the dynamics of physiology in living systems (Aon et al. , 2007a, b; Kuramoto, 1984; Strogatz, 2003; Winfree, 1967). Circadian rhythms, the most intensively studied, are devoted to measuring daily 24 h cycles. A variety of physiological processes in a wide range of eukaryotic organisms display circadian rhythmicity which is characterized by the following major properties (Anderson et al. , 1985; Edmunds, 1988): (i) stable, autonomous (self-sustaining) oscillations having a free-running period under constant envir- mental conditions of ca.

The Evolution of Desire Oxford University Press
From the creator of Bulletproof Coffee and author of the bestselling The Bulletproof Diet comes a revolutionary plan to upgrade your brainpower—in two weeks or less. For the last decade, Silicon Valley entrepreneur Dave Asprey has worked with world-renowned doctors and scientists to uncover the latest, most innovative methods for making humans perform better—a process known as "biohacking." In his first book, The Bulletproof Diet, he shared his biohacking tips for taking control of your own biology. Now, in Head Strong, Asprey shows readers how to biohack their way to a sharper, smarter, faster, more resilient brain. Imagine feeling like your mind is operating at its clearest and sharpest, and being able—possibly for the first time in your life—to do more in less time? What it suddenly became easier to do the very hardest things you do? Or if you could feel 100% confident about your intellect, and never again fear being the person in the room who just isn’t smart enough, or can’t remember something important? How would you treat people if the mood swings, short temper, and food cravings that disrupt your day could simply disappear? In Head Strong,

Asprey shows us that all of this is possible—and more. Using his simple lifestyle modifications (or "hacks") to take advantage of how the structure of your brain works, readers will learn how to take their mental performance to the next level. Combining the latest findings in neuroscience and neurobiology with a hacker-inspired "get it done now" perspective, Asprey offers a program structured around key areas of brain performance that will help you: Power the brain with exactly what it needs to perform at its best all day long Eliminate the sources of "kryptonite," both nutritional and environmental, that make the brain slower. Supercharge the cellular powerhouses of our brains, the mitochondria, to eliminate cravings and turn up mental focus. Reverse inflammation to perform better right now, then stay sharp and energized well into your golden years. Promote neuron growth to enhance processing speed and reinforce new learning—hotwiring your brain for success. Asprey's easy to follow, two-week program offers a detailed plan to supercharge brain performance, including: which foods to eat and which ones to avoid, how to incorporate the right kinds of physical activity into your day, a detox protocol for your home and body; meditation and breathing for performance, recommended brain-boosting supplements; and how to adjust the lighting in your home and work space to give your brain the quality light it thrives on. A better brain—and a happier, easier, more productive life—is within reach. You just need to get Head Strong.

Genome Oxford University Press

Why is life the way it is? Bacteria evolved into complex life just once in four billion years of life on earth-and all complex life shares many strange properties, from sex to ageing and death. If life evolved on other planets, would it be the same or completely different?In The Vital Question, Nick Lane radically reframes evolutionary history, putting forward a cogent solution to conundrums that have troubled scientists for decades. The answer, he argues, lies in energy: how all life on Earth lives off a voltage with the strength of a bolt of lightning. In unravelling these scientific enigmas, making sense of life's quirks, Lane's explanation provides a solution to life's vital questions: why are we as we are, and why are we here at all?This is ground-breaking science in an accessible form, in the tradition of Charles Darwin's The Origin of Species, Richard Dawkins' The Selfish Gene, and Jared Diamond's Guns, Germs and Steel.

Cuckoo Oxford University Press

"Every pebble has many stories to tell. Its particular atoms, its crystals, its minerals, its grains, its textures, its strata, its tiny fossils bear evidence to a history that stretches back billions of years."--Book flap.

The Origins of Life Oxford University Press

With information for patients and practitioners on optimizing mitochondrial function for greater health and longevity Why do we age? Why does cancer develop? What's the connection between heart failure and Alzheimer's disease, or infertility and hearing loss? Can we extend lifespan, and if so, how? What is the Exercise Paradox? Why do antioxidant supplements sometimes do more harm than good? Many will be amazed to learn that all these questions, and many more, can be answered by a single point of discussion: mitochondria and bioenergetics. In Mitochondria and the Future of Medicine, Naturopathic Doctor Lee Know tells the epic story of mitochondria, the widely misunderstood and often-overlooked powerhouses of our cells. The legendary saga began over two billion years ago, when one bacterium entered another without being digested, which would evolve to create the first mitochondrion. Since then, for life to exist beyond single-celled bacteria, it's the mitochondria that have been responsible for this life-giving energy. By understanding how our mitochondria work, in fact, it is possible to add years to our lives, and life to our years. Current research, however, has revealed a dark side: many seemingly disconnected degenerative diseases have tangled roots in dysfunctional mitochondria. However, modern research has also endowed us with the knowledge on how to optimize its function, which is of critical importance to our health and longevity. Lee Know offers cutting-edge information on supplementation and lifestyle changes for mitochondrial optimization, such as CoQ10, D-Ribose, cannabinoids, and ketogenic dietary therapy, and how to implement their use successfully. Mitochondria and the Future of Medicine is an invaluable resource for practitioners interested in mitochondrial medicine and the true roots of chronic illness and disease, as well as anyone interested in optimizing their health.

Why It's Not All Rocket Science CRC Press

A journey into the sub-microscopic world of molecular machines. Readers are first introduced to the types of molecules built by cells: proteins, nucleic acids, lipids, and polysaccharides. Then, in a series of distinctive illustrations, the reader is guided through the interior world of cells, exploring the ways in which molecules work in concert to perform the processes of living. Finally, the author shows us how vitamins, viruses, poisons, and drugs each have their effects on the molecules in our bodies. David Goodsell, author and illustrator, has prepared a fascinating introduction to biochemistry for the non-specialist. His book combines a lucid text with an abundance of drawings and computer graphics that present the world of cells and their components in a truly unique way.

Power, Sex, Suicide Random House Large Print

Did you know that two of every three people reading this book will die for reasons connected with the genes they carry? That our DNA gradually changes with age, which is why older parents are more likely to give birth to children with genetic defects than younger parents? That each individual is a kind of living fossil, carrying within a genetic record that goes back to the beginnings of humanity? In The Language of Genes, renowned geneticist Steve Jones explores the meanings and explodes the myths of human genetics, offering up an extraordinary picture of what we are, what we were, and what we may become. “An essential book for anyone interested in the development and possible future of our species.”—Kirkus Reviews “This is one of the most insightful books on genetics to date and certainly the most entertaining.”—The Wall Street Journal

Life on the Edge Oxford University Press, USA

Are of sick and tired of being tired, overweight, brain fogged and depressed? You have tried everything and nothing makes a difference. The answer may lie deep inside your cells called the mitochondria, the energy factories that power the cell. By rebooting them in a proven treatment method, you can not only get rid of your symptoms but also prevent chronic degenerative diseases like cancer and Alzheimer's and even slow the aging process. Functional medicine can help you diagnose and treat mitochondrial dysfunction.Dr. Michael Chang, MD, CFMP, Board certified in Pathology and Laboratory Medicine, draws from his experience at Healed and Whole Clinic using a validated treatment approach to this condition. He has also personally experienced mitochondrial fatigue stemming from biomechanical leg pain from which he has now recovered by applying the same treatments as outlined in this book.

Eating the Sun HarperCollins

A “drop-dead shocker” (Washington Post Book World) that uses evolutionary psychology to explain human mating and the mysteries of love If we all want love, why is there so much conflict in our most cherished relationships? To answer this question, we must look into our evolutionary past, argues prominent psychologist David M. Buss. Based one of the largest studies of human mating ever undertaken, encompassing more than 10,000 people of all ages from thirty-seven cultures worldwide, The Evolution of Desire is the first work to present a unified theory of human mating behavior. Drawing on a wide range of examples of mating behavior — from lovebugs to elephant seals, from the Yanomamö tribe of Venezuela to online dating apps — Buss reveals what women want, what men want, and why their desires radically differ. Love has a central place in human sexual psychology, but conflict, competition, and manipulation also pervade human mating — something we must confront in order to control our own mating destiny. Updated to reflect the very latest scientific research on human mating, this definitive edition of this classic work of evolutionary psychology explains the powerful forces that shape our most intimate desires.

Life - The Epic Story of Our Mitochondria Simon and Schuster

Oxygen offers fresh perspectives on our own lives and deaths, explaining modern killer diseases, why we age, and what we can do about it. Advancing revelatory new ideas, following chains of evidence, the book ranges through many disciplines, from environmental sciences to molecular medicine. Damage to DNA caused by oxidative stress appears to explain aging and many of its diseases, hence the popularity in alternative health circles of antioxidants. But antioxidants alone fail to prevent aging. Lane suggests two different avenues of study: modulation of the immune system, which generates free radicals as part of its defense against infectious diseases; and ways of improving the health of our cellular mitochondria, on which many age-related ailments seem to depend. Provocative and complexly argued. Copyright ©Kirkus Reviews, used with permission.

Transformer: The Deep Chemistry of Life and Death Black Swan

THE NUMBER ONE SUNDAY TIMES BESTSELLER _____ 'A directory of wonders.' - The Guardian 'Jaw-dropping.' - The Times 'Classic, wry, gleeful Bryson...an entertaining and absolutely fact-rammed book.' - The Sunday Times 'It is a feat of narrative skill to bake so many facts into an entertaining and nutritious book.' - The Daily Telegraph _____ 'We spend our whole lives in one body and yet most of us have practically no idea how it works and what goes on inside it. The idea of the book is simply to try to understand the extraordinary contraption that is us.' Bill Bryson sets off to explore the human body, how it functions and its remarkable ability to heal itself. Full of extraordinary facts and astonishing stories The Body: A Guide for Occupants is a brilliant, often very funny attempt to understand the miracle of our physical and neurological make up. A wonderful successor to A Short History of Nearly Everything, this new book is an instant classic. It will have you marvelling at the form you occupy, and celebrating the genius of your existence, time and time again. 'What I learned is that we are infinitely more complex and wondrous, and often more mysterious, than I had ever suspected. There really is no story more amazing than the story of us.' Bill Bryson

Ultradian Rhythms from Molecules to Mind W. W. Norton & Company

To those interested in a life in science, Sir Peter Medawar, Nobel laureate, deflates the myths of invincibility, superiority, and genius; instead, he demonstrates it is common sense and an inquiring mind that are essential to the scientist's calling. He deflates the myths surrounding scientists -- invincibility, superiority, and genius; instead, he argues that it is common sense and an inquiring mind that are essential to the makeup of a scientist. He delivers many wry observations on how to choose a research topic, how to get along wih collaborators and older scientists and administrators, how (and how not) to present a scientific paper, and how to cope with culturally "superior" specialists in the arts and humanities.

Life Evolving Weidenfeld & Nicolson

Mitochondria are tiny structures located inside our cells that carry out the essential task of producing energy for the cell. They are found in all complex living things, and in that sense, they are fundamental for driving complex life on the planet. But there is much more to them than that. Mitochondria have their own DNA, with their own small collection of genes, separate from those in the cell nucleus. It is thought that they were once bacteria living independent lives. Their enslavement within the larger cell was a turning point in the evolution of life, enabling the development of complex organisms and, closely related, the origin of two sexes. Unlike the DNA in the nucleus, mitochondrial DNA is passed down exclusively (or almost exclusively) via the female line. That's why it has been used by some researchers to trace human ancestry daughter-to-mother, to 'Mitochondrial Eve'. Mitochondria give us important information about our evolutionary history. And that's not all. Mitochondrial genes mutate much faster than those in the nucleus because of the free radicals produced in their energy-generating role. This high mutation rate lies behind our ageing and certain congenital diseases. The latest research suggests that mitochondria play a key role in degenerative diseases such as cancer, through their involvement in precipitating cell suicide. Mitochondria, then, are pivotal in power, sex, and suicide. In this fascinating and thought-provoking book, Nick Lane brings together the latest research findings in this exciting field to show how our growing understanding of mitochondria is shedding light on how complex life evolved, why sex arose (why don't we just bud?), and why we age and die. This understanding is of fundamental importance, both in understanding how we and all other complex life came to be, but also in order to be able to control our own illnesses, and delay our degeneration and death. Oxford Landmark Science books are 'must-read' classics of modern science writing which have crystallized big ideas, and shaped the way we think.

Life in the Frozen State Basic Books

Winner of the 2010 Royal Society Prize for science books Powerful new research methods are providing fresh and vivid insights into the makeup of life. Comparing gene sequences, examining the atomic structure of proteins and looking into the geochemistry of rocks have all helped to explain creation and evolution in more detail than ever before. Nick Lane uses the full extent of this new knowledge to describe the ten greatest inventions of life, based on their historical impact, role in living organisms today and relevance to current controversies. DNA, sex, sight and consciousnesses are just four examples. Lane also explains how these findings have come about, and the extent to which they can be relied upon. The result is a gripping and lucid account of the ingenuity of nature, and a book which is essential reading for anyone who has ever questioned the science behind the glories of everyday life.