

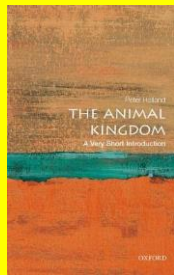
Biology Extended Reading List

Almost like a Whale by Steve Jones (576.82)



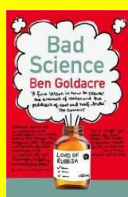
This work updates the theories of Darwin's "The Origin of the Species". It highlights the relationships of the living world using 20th century science to breathe life into Darwin's 19th century theory.

The Animal Kingdom by Peter Holland (590)



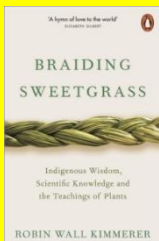
The animal world is immensely diverse, and our understanding of it has been greatly enhanced by molecular biology and the study of evolution and development ("evo-devo"). Moreover, ground-breaking research on genes, and especially key families of genes such as the Homeobox genes which control the development of body plans, has led to radical changes in the classification of animals. In this Very Short Introduction, Peter Holland presents a cutting-edge tour of the animal kingdom, providing an authoritative summary of the modern view of animal life, its origins, and the new classification resulting from DNA studies. Beginning with the definition of animals (not obvious in biological terms), Holland takes the reader through the revolutionary new high-level groupings of animals (phyla) based on evolutionary relationships and ancestry. Ranging from corals and sponges to nematodes, sea squirts, and vertebrates, and illuminating many key topics in zoology, this fascinating, brief overview will be of great value to all students of the life sciences as well as providing a concise summary for the interested lay reader.

Bad Science by Ben Goldacre (500)



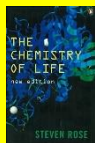
Full of spleen, this is a hilarious, invigorating and informative journey through the world of *Bad Science*. When Dr Ben Goldacre saw someone on daytime TV dipping her feet in an 'Aqua Detox' footbath, releasing her toxins into the water, turning it brown, he thought he'd try the same at home. 'Like some kind of Johnny Ball cum Witchfinder General', using his girlfriend's Barbie doll, he gently passed an electrical current through the warm salt water. It turned brown. In his words: 'before my very eyes, the world's first Detox Barbie was sat, with her feet in a pool of brown sludge, purged of a weekend's immorality.' Dr Ben Goldacre is the author of the Bad Science column in the Guardian. His book is about all the 'bad science' we are constantly bombarded with in the media and in advertising. At a time when science is used to prove everything and nothing, everyone has their own 'bad science' moments from the useless pie-chart on the back of cereal packets to the use of the word 'visibly' in cosmetics ads.

Braiding Sweetgrass: Indigenous Wisdom, Scientific Knowledge and the teaching of Plants by Robin Wall Kimmerer



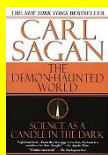
Drawing on her life as an indigenous scientist, a mother, and a woman, Kimmerer shows how other living beings - asters and goldenrod, strawberries and squash, salamanders, algae, and sweetgrass - offer us gifts and lessons, even if we've forgotten how to hear their voices. In a rich braid of reflections that range from the creation of Turtle Island to the forces that threaten its flourishing today, she circles toward a central argument: that the awakening of a wider ecological consciousness requires the acknowledgment and celebration of our reciprocal relationship with the rest of the living world.

The Chemistry of Life by Steven Rose and Radmila Miseusnic (572)



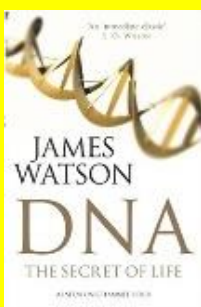
First published in 1966, it has held its own as a clear and authoritative introduction to the world of biochemistry. This fourth edition has been fully updated and revised to include the latest developments in DNA and protein synthesis, cell regulation, and their social and medical implications.

Demon Hunter World: Science as a Candle in the Dark by Sagan (501)



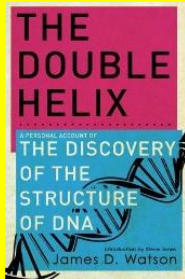
How can we make intelligent decisions about our increasingly technology-driven lives if we don't understand the difference between the myths of pseudoscience and the testable hypotheses of science? Pulitzer Prize-winning author and distinguished astronomer Carl Sagan argues that scientific thinking is critical not only to the pursuit of truth but to the very well-being of our democratic institutions.

DNA: The Secret of Life by James Watson and Andrew Berry (576,5)



Fifty years ago, James D. Watson, then just twenty four, helped launch the greatest ongoing scientific quest of our time. Now, with unique authority and sweeping vision, he gives us the first full account of the genetic revolution—from Mendel's garden to the double helix to the sequencing of the human genome and beyond. Watson's lively, panoramic narrative begins with the fanciful speculations of the ancients as to why "like begets like" before skipping ahead to 1866, when an Austrian monk named Gregor Mendel first deduced the basic laws of inheritance. But genetics as we recognize it today—with its capacity, both thrilling and sobering, to manipulate the very essence of living things—came into being only with the rise of molecular investigations culminating in the breakthrough discovery of the structure of DNA, for which Watson shared a Nobel prize in 1962. In the DNA molecule's graceful curves was the key to a whole new science.

The Double Helix by James D Watson (576.5)



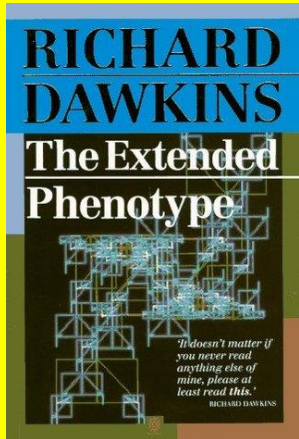
By identifying the structure of DNA, the molecule of life, Francis Crick and James Watson revolutionized biochemistry & won themselves a Nobel Prize. At the time, Watson was only 24, a young scientist hungry to make his mark. His uncompromisingly honest account of the heady days of their thrilling sprint against other world-class researchers to solve one of science's greatest mysteries gives a dazzlingly clear picture of a world of brilliant scientists with great gifts, very human ambitions & bitter rivalries. With humility unspoiled by false modesty, Watson relates his & Crick's desperate efforts to beat Linus Pauling to the Holy Grail of life sciences, the identification of the basic building block of life. Never has a scientist been so truthful in capturing in words the flavour of his work.

Entangled Life by Merlin Sheldrake (579.5)



Entangled Life is a mind-altering journey into a spectacular and neglected world, and shows that fungi provide a key to understanding both the planet on which we live, and life itself.

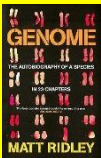
Extended Phenotype by Richard Dawkins (575.1DAW)



In *The Selfish Gene*, Richard Dawkins crystallized the gene's eye view of evolution developed by W.D. Hamilton and others. The book provoked widespread and heated debate. Written in part as a response, *The Extended Phenotype* gave a deeper clarification of the central concept of the gene as the unit of selection; but it did much more besides. In it, Dawkins extended the gene's eye view to argue that the genes that sit within an organism have an influence that reaches out beyond the visible traits in that body - the phenotype - to the wider environment, which can include other individuals. So, for instance, the genes of the beaver drive it to gather twigs to produce the substantial physical structure of a dam; and the genes of the cuckoo chick produce effects that manipulate the behaviour of the host bird, making it nurture the intruder as one of its own. This notion of the extended phenotype has proved to be highly influential in the way we understand evolution and the natural world. It represents a key scientific contribution to evolutionary biology, and it continues to play an important role in research in the life sciences. *The Extended Phenotype* is a conceptually deep book that forms important reading for biologists and students. But Dawkins'

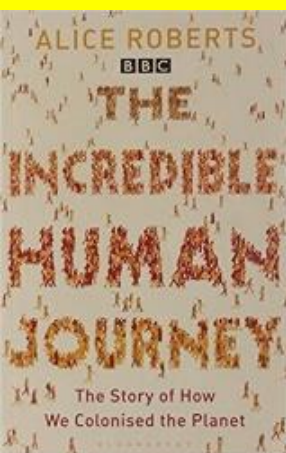
clear exposition is accessible to all who are prepared to put in a little effort.

Genome by Matt Ridley (576.5)



The genome is our 100,000 or so genes. The genome is the collective recipe for the building and running of the human body. These 100,000 genes are sited across 23 pairs of chromosomes. *Genome*, a book of about 100,000 words, is divided into 23 chapters, a chapter for each chromosome. The first chromosome, for example, contains our oldest genes, genes which we have in common with plants.

The Incredible Human Journey by Alice Roberts (910.4)



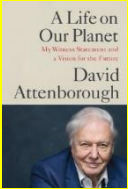
Alice Roberts has been travelling the world - from Ethiopian desert to Malay peninsula and from Russian steppes to Amazon basin - in order to understand the challenges that early humans faced as they tried to settle continents. On her travels she has witnessed some of the daunting and brutal challenges our ancestors had to face: mountains, deserts, oceans, changing climates, terrifying giant beasts and volcanoes. But she discovers that perhaps the most serious threat of all came from other humans. When our ancestors set out from Africa there were already two other species of human on the planet: Neanderthal in Europe and *Homo erectus* in Asia. Both (contrary to popular perception) were intelligent, adept at making tools and weapons and were long adapted to their environments. So, Alice asks, why did only *Homo sapiens* survive? Part detective story, part travelogue, and drawing on the latest genetic and archaeological discoveries, Alice examines how our ancestors evolved physically in response to these challenges, finding out how our colour, shape, size, diet, disease resistance and even athletic ability have been shaped by the range of environments that our ancestors had to survive. She also relates how astonishingly closely related we all are.

Life Ascending: the Ten Great Inventions of Evolution by Nick Lane (576.8)



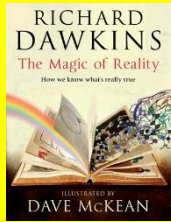
How did life invent itself? Where did DNA come from? How did consciousness develop? Powerful new research methods are providing vivid insights into the makeup of life. Comparing gene sequences, examining atomic structures of proteins, and looking into the geochemistry of rocks have helped explain evolution in more detail than ever before. Nick Lane expertly reconstructs the history of life by describing the ten greatest inventions of evolution (including DNA, photosynthesis, sex, and sight), based on their historical impact, role in organisms today, and relevance to current controversies. Who would have guessed that eyes started off as light-sensitive spots used to calibrate photosynthesis in algae? Or that DNA's building blocks form spontaneously in hydrothermal vents? Lane gives a gripping, lucid account of nature's ingenuity, and the result is a work of essential reading for anyone who has ever pondered or questioned the science underlying evolution's greatest gifts to man.

A Life on Our Planet by Sir David Attenborough (333.72)



As a young man, I felt I was out there in the wild, experiencing the untouched natural world - but it was an illusion. The tragedy of our time has been happening all around us, barely noticeable from day to day -- the loss of our planet's wild places, its biodiversity. I have been witness to this decline. A Life on Our Planet is my witness statement, and my vision for the future. It is the story of how we came to make this, our greatest mistake -- and how, if we act now, we can yet put it right. We have one final chance to create the perfect home for ourselves and restore the wonderful world we inherited. All we need is the will to do so.

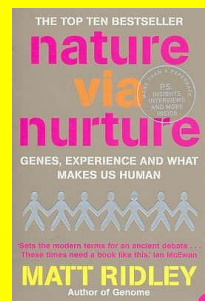
The Magic of Reality: how we know what's really true by Richard Dawkins and Dave McKean (110)



Magic takes many forms. Supernatural magic is what our ancestors used in order to explain the world before they developed the scientific method. The ancient Egyptians explained the night by suggesting the goddess Nut swallowed the sun. The Vikings believed a rainbow was the gods' bridge to earth. The Japanese used to explain earthquakes by conjuring a gigantic catfish that carried the world on its back—earthquakes occurred each time it flipped its tail. These are magical, extraordinary tales. But there is another kind of magic, and it lies in the exhilaration of discovering the real answers to these questions. It is the magic of reality—science. Packed with clever thought experiments, dazzling illustrations and jaw-dropping facts, The Magic of Reality explains a stunningly wide range of natural phenomena. What is stuff made of? How old is the universe? Why do the continents

look like disconnected pieces of a puzzle? What causes tsunamis? Why are there so many kinds of plants and animals? Who was the first man, or woman? This is a page-turning, graphic detective story that not only mines all the sciences for its clues but primes the reader to think like a scientist as well.

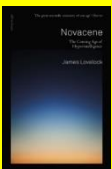
Nature via Nurture by Matt Ridley (304.5)



Acclaimed author Matt Ridley's thrilling follow-up to his bestseller *Genome*. Armed with the extraordinary new discoveries about our genes, Ridley turns his attention to the nature versus nurture debate to bring the first popular account of the roots of human behaviour. What makes us who we are? In February 2001 it was announced that the genome contains not 100,000 genes as originally expected but only 30,000. This startling revision led some scientists to conclude that there are simply not enough human genes to account for all the different ways people behave: we must be made by nurture, not nature. Matt Ridley argues that the emerging truth is far more interesting than this myth. Nurture depends on genes, too, and genes need nurture. Genes not only predetermine the broad structure of the brain; they also absorb formative experiences, react to social cues and even run memory. After the discovery of the double helix of DNA, *Nature via Nurture* chronicles a new revolution in our understanding of genes. Ridley recounts the hundred years' war between the partisans of nature and nurture to explain how this paradoxical creature, the human being, can be simultaneously free-willed and motivated by

instinct and culture. *Nature via Nurture* is an enthralling, up-to-the-minute account of how genes build brains to absorb experience.

Novacene: The Coming of Age of Hyperintelligence by James Lovelock (570.1)



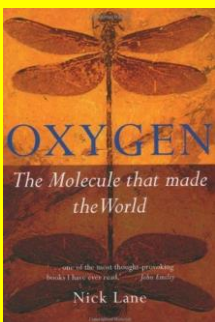
James Lovelock, creator of the Gaia hypothesis and the greatest environmental thinker of our time, has produced an astounding new theory about future of life on Earth. He argues that the anthropocene - the age in which humans acquired planetary-scale technologies - is, after 300 years, coming to an end. A new age - the novacene - has already begun. New beings will emerge from existing artificial intelligence systems.

Origin of Species by Charles Darwin (576.82)



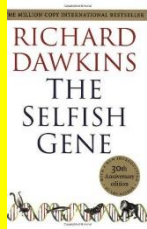
Darwin's theory of natural selection issued a profound challenge to orthodox thought and belief: no being or species has been specifically created; all are locked into a pitiless struggle for existence, with extinction looming for those not fitted for the task. Yet *The Origin of Species* (1859) is also a humane and inspirational vision of ecological interrelatedness, revealing the complex mutual interdependencies between animal and plant life, climate and physical environment, and - by implication - within the human world. Written for the general reader, in a style which combines the rigour of science with the subtlety of literature, *The Origin of Species* remains one of the founding documents of the modern age.

Oxygen: the Molecule that made the World by Nick Lane (546.72)



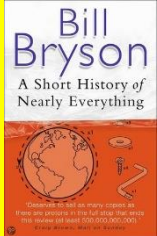
In *Oxygen*, Nick Lane takes the reader on an enthralling journey as he unravels the unexpected ways in which oxygen spurred the evolution of life and death. He shows how oxygen underpins the origin of biological complexity, the birth of photosynthesis, the sudden evolution of animals, the need for two sexes, the accelerated aging of cloned animals like Dolly the sheep, and the surprisingly long lives of bats and birds. Drawing on this grand evolutionary canvas, *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. The result is a captivating vision of contemporary science and a humane synthesis of our place in nature. This remarkable book will redefine the way we think about the world.

The Selfish Gene by Richard Dawkins (591.1)



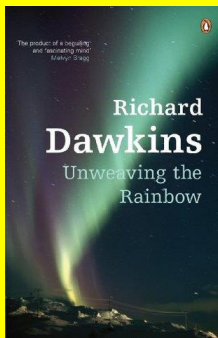
Inheriting the mantle of revolutionary biologist from Darwin, Watson, and Crick, Richard Dawkins forced an enormous change in the way we see ourselves and the world with the publication of *The Selfish Gene*. Suppose, instead of thinking about organisms using genes to reproduce themselves, as we had since Mendel's work was rediscovered, we turn it around and imagine that "our" genes build and maintain us in order to make more genes. That simple reversal seems to answer many puzzles which had stumped scientists for years, and we haven't thought of evolution in the same way since. Why are there miles and miles of "unused" DNA within each of our bodies? Why should a bee give up its own chance to reproduce to help raise her sisters and brothers? With a prophet's clarity, Dawkins told us the answers from the perspective of molecules competing for limited space and resources to produce more of their own kind. Drawing fascinating examples from every field of biology, he paved the way for a serious re-evaluation of evolution. He also introduced the concept of self-reproducing ideas, or memes, which (seemingly) use humans exclusively for their propagation. If we are puppets, he says, at least we can try to understand our strings. *By Rob Lightner*

Short History of Nearly Everything by Bill Bryson (500)



In Bryson's biggest book, he confronts his greatest challenge: to understand—and, if possible, answer—the oldest, biggest questions we have posed about the universe and ourselves. Taking as territory everything from the Big Bang to the rise of civilization, Bryson seeks to understand how we got from there being nothing at all to there being us. To that end, he has attached himself to a host of the world's most advanced (and often obsessed) archaeologists, anthropologists, and mathematicians, travelling to their offices, laboratories, and field camps. He has read (or tried to read) their books, pestered them with questions, apprenticed himself to their powerful minds. *A Short History of Nearly Everything* is the record of this quest, and it is a sometimes profound, sometimes funny, and always supremely clear and entertaining adventure in the realms of human knowledge, as only Bill Bryson can render it. Science has never been more involving or entertaining.

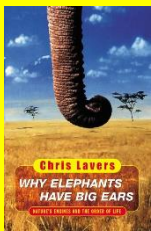
Unweaving the Rainbow: Science, Delusion and the Appetite for Wonder by Richard Dawkins (501)



Did Newton "unweave the rainbow" by reducing it to its prismatic colours, as Keats contended? Did he, in other words, diminish beauty? Far from it, says acclaimed scientist Richard Dawkins; Newton's unweaving is the key to much of modern astronomy and to the breathtaking poetry of modern cosmology. Mysteries don't lose their poetry because they are solved: the solution often is more beautiful than the puzzle, uncovering deeper mysteries. With the wit, insight, and spellbinding prose that have made him a best-selling author, Dawkins takes up the most important and compelling topics in modern science, from astronomy and genetics to language and virtual reality, combining them in a landmark statement of the human appetite for wonder.

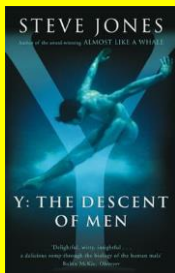
This is the book Richard Dawkins was meant to write: a brilliant assessment of what science is (and isn't), a tribute to science not because it is useful but because it is uplifting.

Why Elephants have Big Ears: Understanding Patterns of Life on Earth by Chris Laver (591.38)



Why do elephants have big ears? Why do shrews have large hearts? Why don't gnats get wet when it rains? And why are there no snake-shaped mammals? This highly readable popular science book engages the reader with a variety of such puzzles and conundrums to explain how creatures have interacted with their environment to evolve into the extraordinary forms they possess today. Lavers makes use of biology, physiology, zoology, ecology, and palaeontology in order to arrive at his explanations. In the process, he explains such things as how warm-bloodedness evolved and why mammals dominate continents and amphibians cool, damp places; and he concludes by presenting a new view of life on earth, rejecting all notions of superiority and inferiority in nature.

Y: the Descent of Men by Steve Jones (576.5)



In his highly entertaining and enlightening book, the acclaimed geneticist and author Steve Jones offers a landmark exploration of maleness. With effervescent wit, Jones argues that men, biologically speaking, are the true second sex. Here he lays out the cases for and against masculinity -- exploring every biological aspect from the genesis of the Y chromosome onward -- based on the recent explosion of biological research. Along the way, he offers pithy commentary on topics such as male hormones, hair loss, and the hydraulics of man's most intimate organ. Fascinating and often surprising, Jones's evidence offers fresh fuel for the battle of the sexes.

