

# Regeneration: How Synthetic Biology Will Reinvent Nature and Ourselves

By George M. Church, Ed Regis

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**“Bold and provocative... *Regeneration* tells of recent advances that may soon yield endless supplies of renewable energy, increased longevity and the return of long-extinct species.”—*New Scientist***

In *Regeneration*, Harvard biologist George Church and science writer Ed Regis explore the possibilities—and perils—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, *Regeneration* is nothing less than a guide to the future of life.

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
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### Editorial Review

#### Review

Nathan Myhrvold, Founder and CEO, Intellectual Ventures

"A delightfully opinionated, visionary and controversial romp through synthetic biology, which is one of the most important technologies of our time." Eric Topol, Professor of Genomics, The Scripps Research Institute, and author of "The Creative Destruction of Medicine" "Literally reinventing nature could provide solutions to intractable problems with the energy supply, global warming, and human health. In "Regenesi

s," George Church, a pioneer and pre-eminent force in promoting our ability to "read" DNA sequence, now guides us to the future: "writing" DNA sequence. Teaming up with Ed Regis, Church provides a mind-bending, tour de force account of how this seventh industrial revolution will take hold, and how ultimately the survival of our planet and the human species may rely upon rewriting the code of life. An enthralling journey into the future--with truly profound implications--that should not be missed." Stewart Brand, author of "Whole Earth Discipline" "Here you will find the bleeding, screaming, thrilling edges of what is becoming possible with genomic engineering, handsomely framed in the fine-grained fundamentals of molecular biology. It is a combination primer and forecast of what is coming in this 'century of biology' from the perspective of a leading pioneer in the science."

"Kirkus Reviews" "[An] authoritative, sometimes awe-inspiring book.... A valuable glimpse of science at the edge." "Publishers Weekly" "Exhilarating and scary facts suffuse this book about bioengineering by leading Harvard genetics professor and entrepreneur Church.... [W]hen Church describes current work building microbes with minimal genes, the book takes off - and eventually soars.... [A] stimulating book." Steven Pinker, Harvard College Professor of Psychology, Harvard University, and author of "How the Mind Works" and "The Better Angels of Our Nature" "A thoughtful introduction to one of the great frontiers of science, o

"New Scientist"

"Bold and provocative... Church and Regis offer a behind-the-scenes look at synthetic biology, a rapidly emerging field that is reprogramming the genetic code to create organisms and functions not found in nature. "Regenesi

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"Nature"

"The life sciences emerge as the new high-tech in this paean to synthetic biology.... Each step in the genome's evolution serves as a springboard for expositions of how synthetic biology will revolutionize renewable energy, multivirus resistance, and more."

Mike Loukides, "O'Reilly Radar"

"If there's one book that can turn this movement into a full-blown revolution, this is it."

Derek Jacoby, "O'Reilly Radar"

"George Church and Ed Regis pull off an exciting and speculative romp through the field of synthetic biology and where it could take us in the not too distant future.... "Regenesis" provides an accessible and engaging introduction to the revolutionary potentials of synthetic biology and should be of interest to both experts and a general science audience."

"The Scientist"

"[A]n important and surprisingly accessible book, magisterially structured to intertwine the accelerated history of synthetic biology with its precedents in humanity's earlier technological revolutions and in the epochal evolution of life itself. The book packs in a superb short course on life's molecular workings, enabling the reader to grasp how we can actually contemplate resurrecting mammoths and Neanderthals, brewing biofuel from seawater and sunlight, engineering total immunity to vir

"Science News"

"Reading the first book penned by Church, a Harvard biologist and polymath, is like falling down a rabbit hole straight into his fermenting brain. Church's wide-ranging career includes developing novel methods for reading the genetic instruction manual, or genome, of creatures from bacteria to humans. Now he focuses on synthesizing those instructions from scratch.... [A] dizzying survey of how scientists have unearthed the secrets of living organisms and are now using that information to revamp life itself."

Robert T. Gonzalez, io9

"[A] phenomenal read."

"Wall Street Journal"

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About the Author

**George M. Church** is Professor of Genetics at the Harvard Medical School and member of the Wyss Institute of Biologically Inspired Engineering.

**Ed Regis** is author of seven science books, most recently *What Is Life? Investigating the Nature of Life in the Age of Synthetic Biology*.

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