



# The Century of the Gene

By Evelyn Fox Keller

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In a book that promises to change the way we think and talk about genes and genetic determinism, **Evelyn Fox Keller**, one of our most gifted historians and philosophers of science, provides a powerful, profound analysis of the achievements of genetics and molecular biology in the twentieth century, the century of the gene. Not just a chronicle of biology's progress from gene to genome in one hundred years, *The Century of the Gene* also calls our attention to the surprising ways these advances challenge the familiar picture of the gene most of us still entertain. Keller shows us that the very successes that have stirred our imagination have also radically undermined the primacy of the gene?word and object?as the core explanatory concept of heredity and development. She argues that we need a new vocabulary that includes concepts such as robustness, fidelity, and evolvability. But more than a new vocabulary, a new awareness is absolutely crucial: that understanding the components of a system (be they individual genes, proteins, or even molecules) may tell us little about the interactions among these components. With the Human Genome Project nearing its first and most publicized goal, biologists are coming to realize that they have reached not the end of biology but the beginning of a new era. Indeed, Keller predicts that in the new century we will witness another Cambrian era, this time in new forms of biological thought rather than in new forms of biological life.

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### Editorial Review

#### Amazon.com Review

We've been under the spell of DNA for too long. Science historian and MacArthur Fellow Evelyn Fox Keller makes the case for radically new thinking about the nature of heredity in *The Century of the Gene*. This short, magisterial treatise examines 100 years of genetic thinking and finds outdated elements of Victorian beliefs still permeating our scientific writing. Despite compelling evidence that cytoplasmic and other nonchromosomal factors play important roles in development and even in the inheritance of traits, most discussion still relies on the master-slave (or manager-worker) relationship between the nucleus and the cell. Keller wants to move on; her proximate goal is to proceed from talking about genes to talking about genetic talk, the better to understand our biases. Her excitement at developments such as the Human Genome Project, despite her initial doubts, is only heightened by the prospect of vast stretches of uncharted intellectual territory. Ultimately, of course, her program matches that of the scientific enterprise--to more fully understand ourselves and our world. What comes after *The Century of the Gene*? It's an excellent question, and one that can only be answered once we leave behind the baggage of the past. --Rob Lightner

#### From Publishers Weekly

A former MacArthur fellow and a professor of history and philosophy of science at MIT, Keller (*Keywords in Evolutionary Biology*) tackles the contemporary revolution in genetic science. Although originally a critic of the Human Genome Project (the effort to sequence the entire human genome), Keller doesn't dismiss it out of hand anymore. "What is most impressive to me," she writes, "is not so much the ways in which the genome project has fulfilled our expectations but the ways in which it has transformed them." In this tight, clearly written survey, Keller does a wonderful job of explaining and demonstrating how our knowledge of genetics has accumulated to the extent that we can fathom what we don't understand. In her articulate and insightful, if abbreviated, history of genetics and molecular biology, she suggests that most of our common assumptions about genes are either too simplistic or simply incorrect. It turns out, for example, that a single functioning gene may be split and found in several locations on a chromosome, and it's rare that a gene can be determined to have caused any particular trait, characteristic or behavior. Keller argues that scientists have gained a great deal by refocusing their attention from individual genes to the concept of an integrated genetic program. Keller's ideas are provocative, and she is interested in contributing to a popular discussion about the politics of genetic research, but because she skips a lot of the scientific basics, the general reader won't be able to grasp all of her points. Even so, her reputation as a scholar of genetics means this will appeal primarily to hard-core biology/genetics devotees. (Oct.)

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#### From Library Journal

In scientific literature as well as the popular press, "gene talk" is rampant and, even when technical, can seem confidently glib. Keller (*Refiguring Life: Metaphors of 20th Century Biology*), a noted feminist historian and philosopher of science, wonders whether these writers really know what they are talking about. Over the last century, scientific conceptions of what a gene is and does have changed from its being viewed as a discrete element of heredity to an ingredient in a determinant program to a component of a dynamic, distributed, self-correcting network. Yet the word gene, with all of its ambiguities, has been retained. Keller puts this philosophical problem in a broad context, and while the historical stories of discoveries in genetics have been told many times, her interpretations of how they changed the meanings of gene carry the argument for a new vocabulary for the field. Especially compelling are her analogies between biological development and adaptive computer systems. This discussion is for scientists and historians/philosophers of science mostly. For general readers, a good overview of genetics and DNA is Dorothy Nelkin and M. Susan Lindee's *The*

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Book is to be different for each grade. Book for children until eventually adult are different content. We all know that that book is very important for all of us. The book The Century of the Gene seemed to be making you to know about other knowledge and of course you can take more information. It is extremely advantages for you. The reserve The Century of the Gene is not only giving you far more new information but also being your friend when you experience bored. You can spend your spend time to read your guide. Try to make relationship with the book The Century of the Gene. You never sense lose out for everything when you read some books.

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#### **Carolyn Scott:**

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