



# Mutation: The History of an Idea from Darwin to Genomics

By *Elof Axel Carlson*

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## **Mutation: The History of an Idea from Darwin to Genomics** By Elof Axel Carlson

Today, most scientists regard the term "mutation" as a description of a change in an individual gene, and more precisely as some minute alteration of the DNA of that gene, especially a nucleotide substitution. But the idea of mutation has changed considerably from the pre-Mendelian concepts of Darwin's generation, who viewed "fluctuating variations" as the raw material on which evolution acted, to today's up-to-the-minute genomic context of mutation. *Mutation: The History of an Idea from Darwin to Genomics* explores six generations of mutation research, providing the background the people and the ideas for this biological journey.

After exploring Darwin's and Francis Galton's concepts of mutation, Carlson shows how the 1900 rediscovery of Gregor Mendel's experiments led to a discontinuous model of evolution by mutation and how cytological investigations led to the chromosome theory of heredity of classical genetics in which there was random mutation in genes. Carlson details how Mendelian and biometric approaches to heredity and evolution were closely tied and how induction of mutations by radiation and chemical mutagens led to biochemical investigations of gene action, shifting attention to the chemistry of the gene. The interpretation of the gene as DNA and the deciphering of the genetic code then gave rise to molecular interpretations of mutation, views that also impacted evolutionary biology, population genetics, commercial development of plants and animals, and human genetics.

This book shows how generational definitions or assessments of mutation have responded to the technologies added to science and the experiments that abounded with the inquiries of each successive generation. These observations are combined with an exploration of how the nonscientific public has shifted its understanding and concern about mutations over the past 150 or more years. Carlson's historical approach in this book examining the evolution of a concept reveals the way science works, incrementally by small steps of additions and replacements rather than by dramatic, and rare, paradigm shifts.

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### Editorial Review

#### Review

"Biologists' conceptions of hereditary variation and mutation have undergone considerable shifts since the days of Darwin. In *Mutation: The History of an Idea from Darwin to Genomics*, Carlson traces those changes in the meaning of the term from genetics at the turn of the 20th century to the emergence of genomics, identifying the researchers involved and how ideas evolved...Carlson includes commentary on human genetics, concern for genetic effects [of] radiation with the development of atomic weapons, and the use of radiation in medicine and industry. He argues that the deployment of new techniques has resulted in the changed meaning of mutation, and in this regard, all readers will agree."

The Quarterly Review of Biology

"Carlson trained as a *Drosophila* geneticist with Hermann Muller surely the person who has done more than any other in advancing our understanding of mutation. But he is also a historian, as witnessed by his previous books...Altogether Carlson's account of the story of mutation is well told...Genetics has been fortunate in having such a wide-range and thoughtful person as Carlson to examine the topic of mutation from a broad perspective, and I greatly hope that this book will not only be enjoyed by geneticists of all kinds, but that it will lead them to Carlson's other equally enjoyable historical books on genetics."

Human Genetics

The book is a quick read. It doesn't seek so much to re-educate readers on what mutation is, as it does construct a timeline of how scientists have perceived it through the past couple of centuries....Carlson's book presents a history of the concept of mutation, but also a history of how science itself has changed because of that word's evolution....In seeking to lend a sense of history to a word that is used often in today's science, Carlson succeeds."

Genome Web Daily News

"Because Carlson has been directly involved in some of the research, there are details and insights one is unlikely to find in any other public reference sourceEL.*Mutation: The History of an Idea from Darwin to Genomics* tells this story in an engaging narrativeEL." --- PsycCRITIQUES

"This book provides an excellent view of mutation theories from a historical perspective, and it gives the reader an appreciation for those involved in the process and the difficulty some theories faced in gaining acceptance by the scientific community....It is an easy read for scientists and nonscientists alike, and a valuable resource for genetics or history of science courses."

Choice

## **Users Review**

### **From reader reviews:**

#### **Hazel Polk:**

Have you spare time for the day? What do you do when you have much more or little spare time? Yep, you can choose the suitable activity for spend your time. Any person spent their spare time to take a wander, shopping, or went to the Mall. How about open or maybe read a book eligible Mutation: The History of an Idea from Darwin to Genomics? Maybe it is being best activity for you. You realize beside you can spend your time with the favorite's book, you can wiser than before. Do you agree with its opinion or you have additional opinion?

#### **Madeline Pastrana:**

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#### **Tracey Cook:**

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#### **Rosa Milliken:**

In this particular era which is the greater individual or who has ability to do something more are more treasured than other. Do you want to become one among it? It is just simple solution to have that. What you should do is just spending your time not much but quite enough to enjoy a look at some books. One of several books in the top collection in your reading list is usually Mutation: The History of an Idea from Darwin to Genomics. This book that is qualified as The Hungry Inclines can get you closer in turning out to be precious person. By looking upwards and review this book you can get many advantages.

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