



# Brilliant Blunders: From Darwin to Einstein - Colossal Mistakes by Great Scientists That Changed Our Understanding of Life and the Universe

By Mario Livio

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**Brilliant Blunders: From Darwin to Einstein - Colossal Mistakes by Great Scientists That Changed Our Understanding of Life and the Universe** By Mario Livio

**Drawing on the lives of five renowned scientists, Mario Livio shows how even these geniuses made major mistakes and how their errors were an essential part of the process of achieving scientific breakthroughs.**

**WE ALL MAKE MISTAKES.** Nobody's perfect. Not even some of the greatest geniuses in history, as Mario Livio tells us in this marvelous story of scientific error and breakthrough.

Charles Darwin, William Thomson (Lord Kelvin), Linus Pauling, Fred Hoyle, and Albert Einstein were all brilliant scientists. Each made groundbreaking contributions to his field—but each also stumbled badly. Darwin's theory of natural selection shouldn't have worked, according to the prevailing beliefs of his time. Not until Gregor Mendel's work was known would there be a mechanism to explain natural selection. How could Darwin be both wrong and right? Lord Kelvin, Britain's leading scientific intellect at the time, gravely miscalculated the age of the earth. Linus Pauling, the world's premier chemist (who would win the Nobel Prize in chemistry) constructed an erroneous model for DNA in his haste to beat the competition to publication. Astrophysicist Fred Hoyle dismissed the idea of a "Big Bang" origin to the universe (ironically, the caustic name he gave to this event endured long after his erroneous objections were disproven). And Albert Einstein, whose name is synonymous with genius, speculated incorrectly about the forces that hold the universe in equilibrium—and that speculation opened the door to brilliant conceptual leaps. These five scientists expanded our knowledge of life on earth, the evolution of the earth itself, and the evolution of the universe, despite and because of their errors. As Mario Livio luminously explains, the scientific process advances through error. Mistakes are essential to progress.

*Brilliant Blunders* is a singular tour through the world of science and scientific

achievement—and a wonderfully insightful examination of the psychology of five fascinating scientists.

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### Editorial Review

From Publishers Weekly

Astrophysicist and award-winning author Livio (*The Golden Ratio*) analyzes ruinous errors of five great scientific minds in the wake of their most prominent discoveries and how those errors have not only propelled scientific breakthroughs, but provide "insights...into the operation of the human mind."

Summoning Charles Darwin, Lord Kelvin, Linus Pauling, Fred Hoyle, and Albert Einstein, Livio argues there is no progress without lessons in humility. These thinkers succumbed to moments of fear, pride, stubbornness, and doubt common to all "mere mortals"—to the benefit of elucidating the evolution of life and the universe. Two-time Nobel prize-winning chemist Pauling's flub of basic chemistry catalyzed the discoveries of Watson and Crick; Hoyle, a cosmologist who displayed "pigheaded, almost infuriating refusal" to give up his thoroughly refuted "steady state theory", energized advanced studies of how we exist in space with his controversial ideas; and Einstein, "the embodiment of genius", refused to give up on his cosmological constant, "the most famous fudge factor in the history of science." With humor and precision, Livio reminds us: "Even the most impressive minds are not flawless; they merely pave the way for the next level of understanding." (May)

Review

"Mario Livio sets the discoveries of five great scientists who were also remarkable personalities in their social context, showing how they emerged from confusion and controversy. His archival research allows him to debunk several myths that have been given currency through less thorough biographies. You don't need to be a scientist to be fascinated by this scholarly, insightful and beautifully written book." (Martin Rees, Astronomer Royal and author of *From Here to Infinity: A Vision for the Future of Science*)

"After reading Livio's account, I look on the history of science in a new way. In every century and every science, I see brilliant blunders." (Freeman Dyson *The New York Review of Books*)

"Scientists make mistakes all the time, but those bumps in the road are often smoothed out in the legends that surround the greatest discoverers. . . . Thoughtful, well-researched and beautifully written, *Brilliant Blunders* offers a distinctive — and far more truthful — perspective on the journey to scientific discovery." (Marcia Bartusiak *The Washington Post*)

"Enlightening. . . . For many people, being a great scientist means being above error. . . . Livio's book is a valuable antidote to this skewed picture. . . . Thanks to his deep curiosity, Livio turns *Brilliant Blunders* into a thoughtful meditation on the course of science itself." (Carl Zimmer *The New York Times Book Review*)

"Elegant, entertaining, and instructive." (Andrew Robinson *The Lancet*)

"It is said that genius is the ability to make all possible mistakes in the least amount of time. Livio's genius is to show us just how much those mistakes have taught us." (Adam Riess, Thomas Barber Professor of Physics and Astronomy, Johns Hopkins University, Nobel Laureate in Physics 2011)

"Taking risks is part of genius, and genius is not immune to bloopers. Mario Livio's *Brilliant Blunders* leads us through the circumstances that surrounded famous gaffes. . . . Mr. Livio helps us see that such spectacular errors are opportunities rather than setbacks." (Dr. Francis Collins, director of the National Institutes of Health)

“Mario Livio wears many hats: scientist, sleuth, storyteller. In *Brilliant Blunders*, a delightful intellectual synthesis, he reminds us that he’s also one of the best science writers in our galaxy.” (Steven Strogatz, professor of applied mathematics, Cornell University, and author of *The Joy of X*)

“In *Brilliant Blunders*, Mario Livio leaves no historical detail untold, as we re-walk the error-filled pathways along which human understanding of the universe slowly emerged.” (Neil deGrasse Tyson, Astrophysicist, American Museum of Natural History, and author of *Space Chronicles: Facing the Ultimate Frontier*)

Mr. Livio is a gifted storyteller. . . .[He] shows how science works partly by feeding on past mistakes: Once recognized, the errors sparked creativity in other scientists. An incorrect view of the world is not simply a mistake; it's a catalyst that leads to better understanding." (Samuel Arbesman *The Wall Street Journal*)

"At last we have a book specifically devoted to scientific mistakes. . . . For someone who wants the whole story, Livio's book is a page turner." (Donald Simanek *Physics Today*)

“One of the most important things that distinguishes science from religion is that in science we (eventually) are happy to change our minds. This is called learning. As Mario Livio eloquently describes in this far-reaching and thoroughly enlightening book, many famous scientific advances involved either false starts or dead ends. In my own field, Einstein is purported to have said that inserting the cosmological constant into his equations of General Relativity was his ‘biggest blunder.’ In hindsight, as we find ourselves living in a Universe whose future may be determined by this quantity, most of us would now pay our eye teeth to have made such blunder!” (Lawrence M. Krauss, Director of the Origins Project at Arizona State University and Foundation Professor in the School of Earth and Space Exploration)

“Entertaining accounts of how five celebrated scientists went wrong. . . . An absorbing, persuasive reminder that science is not a direct march to the truth.” (*Kirkus Reviews*)

"Astrophysicist Livio unmaskes the flaws in the work of some of our greatest scientific minds in this meditation on the winding, unpredictable path of discovery." (Anna Kuchment *Scientific American*)

"Livio's usual knack at making sophisticated concepts accessible has been brought to bear on his book. . . . What comes through clearly, as is one of the author's stated intentions, is that errors are part and parcel of the process and that science progresses, not always despite them, but also through them. . . . With its illustrious characters, interesting ideas and those blunders to marvel at, the book makes a fascinating read." (Marianne Freiberger *Plus magazine*)

"Wide ranging and entertaining, *Brilliant Blunders* might be picked up by readers who have been fooled into doing so by the notion of blunders, but they will certainly enjoy it for its brilliance." (Robert Schaefer *New York Journal of Books*)

"[Mario Livio is ] one of my favorite authors." (Dan Brown)

The blunders committed by the five geniuses profiled in this book should make us lesser beings feel better about ourselves. Mario Livio, an astrophysicist who writes popular science with Asimovian accessibility, doesn't want to bring these men down. . . . Knowledge, Livio reminds us, transcends any one individual. It is relentless; in time it overcomes all obstacles, including the shortcomings of the very people dedicated to its advancement." (Ariel Gonzalez *The Miami Herald*)

"You don't have to be a science scholar to appreciate this book. . . . *Brilliant Blunders* shows that while

scientists make mistakes, they ultimately get things right. And we'd better start paying attention." (Curt Schleier *Minneapolis Star-Tribune*)

"Countless scientists have made major mistakes over the centuries, but Livio wisely focuses on gaffes from just five great minds: Pauling, Darwin, Einstein, astrophysicist Fred Hoyle and William Thomson, also known as Lord Kelvin. . . . Though Livio can only speculate on the reasons behind these errors, his clear and compelling writing reinforces the important contributions each of these men made to their fields. . . . Livio's ultimate message is that blunders — even big ones — can play a role in scientific discovery." (Allison Bohac *ScienceNews*)

"The stories of how these blunders came about, and what happened next, are extremely well researched, and they shed a welcome, informative, entertaining and sometimes new light on science as a deeply human activity." (Len Fisher *Physics World*)

#### About the Author

Mario Livio is an internationally known astrophysicist, a bestselling author, and a popular speaker who has appeared on *The Daily Show*, *60 Minutes*, and *NOVA*. He is a Fellow of the American Association for the Advancement of Science. Besides *Why? What Makes Us Curious*, he is the author of *The Golden Ratio*, a highly acclaimed book for which he received the International Pythagoras Prize and the Peano Prize; *The Equation That Couldn't Be Solved; Is God a Mathematician?* (which was the basis for the 2016 Emmy-nominated *NOVA* program "The Great Math Mystery"); the national bestseller *Brilliant Blunders*; and *The Accelerating Universe*. He lives in Baltimore, Maryland.

#### Users Review

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##### **Bethany Hall:**

Book is to be different for each grade. Book for children until eventually adult are different content. As you may know that book is very important for all of us. The book *Brilliant Blunders: From Darwin to Einstein - Colossal Mistakes by Great Scientists That Changed Our Understanding of Life and the Universe* 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 e-book *Brilliant Blunders: From Darwin to Einstein - Colossal Mistakes by Great Scientists That Changed Our Understanding of Life and the Universe* is not only giving you a lot more new information but also for being your friend when you experience bored. You can spend your own personal spend time to read your reserve. Try to make relationship with all the book *Brilliant Blunders: From Darwin to Einstein - Colossal Mistakes by Great Scientists That Changed Our Understanding of Life and the Universe*. You never sense lose out for everything in case you read some books.

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**Mary Lamm:**

This book untitled Brilliant Blunders: From Darwin to Einstein - Colossal Mistakes by Great Scientists That Changed Our Understanding of Life and the Universe to be one of several books in which best seller in this year, honestly, that is because when you read this e-book you can get a lot of benefit on it. You will easily to buy this specific book in the book retail store or you can order it by using online. The publisher with this book sells the e-book too. It makes you more readily to read this book, because you can read this book in your Cell phone. So there is no reason to you personally to past this publication from your list.

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