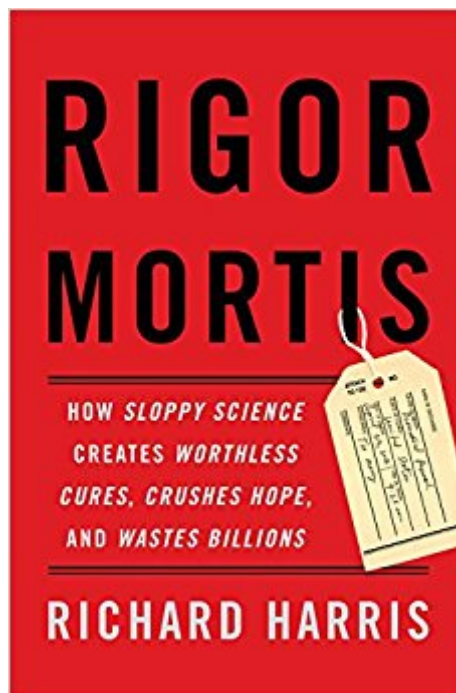




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Rigor Mortis: How Sloppy Science Creates Worthless Cures, Crushes Hope, And Wastes Billions



Synopsis

Named by [as one of the "Best Nonfiction Books of the Month"](#) "A rewarding read for anyone who wants to know the unvarnished truth about how science really gets done." --Financial Times
American taxpayers spend \$30 billion annually funding biomedical research, but over half of these studies can't be replicated due to poor experimental design, improper methods, and sloppy statistics. Bad science doesn't just hold back medical progress, it can sign the equivalent of a death sentence for terminal patients. In *Rigor Mortis*, Richard Harris explores these urgent issues with vivid anecdotes, personal stories, and interviews with the top biomedical researchers. We need to fix our dysfunctional biomedical system--before it's too late. "Rigor Mortis effectively illustrates what can happen when a convergence of social, cultural, and scientific forces . . . conspires to create a real crisis of confidence in the research process."--Science
"Harris makes a strong case that the biomedical research culture is seriously in need of repair." --Nature

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Customer Reviews

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"Rigor Mortis effectively illustrates what can happen when a convergence of social, cultural, and scientific forces, as well as basic human motivation, conspires to create a real crisis of confidence in the research process."--SCIENCE
"Harris makes a strong case that the biomedical research culture is seriously in need of repair."--Nature
"A blueprint for ways to improve academic research on the

whole."--PBSNewshour Online"Rigor Mortis is rife with examples of things that go awry in medical studies, how they happen, and how they can be avoided and fixed. For the most part, academic biomedical scientists are not evil, malicious, or liars at heart."--Ars Technica"An alarming and highly readable summation of what has been called the 'reproducibility crisis' in science -- the growing realization that large swathes of the biomedical literature may be wrong."--Spectrum Magazine"This behind-the-scenes look at biomedical research will appeal to students and academics. A larger audience of impacted patients and taxpayers will also find this critical review fascinating and alarming. Highly recommended for public and academic libraries."--Library Journal"[An] easy-reading but hard-hitting exposé..."--Kirkus"Just as 'post-truth' was selected as the word of the year in 2016 for its political connotations, Richard Harris masterfully shows how this pertains to science, too. Rigor Mortis is a compelling, sobering, and important account of bad biomedical research, and the pressing need to fix a broken culture."--Eric Topol, Director of the Scripps Translational Science Institute and author of The Patient Will See You Now"Science remains the best way to build knowledge and improve health, but as Richard Harris reminds us in Rigor Mortis, it is also carried out by humans subject to 'publish or perish' and other perverse incentives. Tapping into these tensions, Harris deftly weaves gripping tales of sleuthing with possible paths out of what some call a crisis. Read this book if you want to see how biomedical research is reviving itself." --Ivan Oransky, Co-Founder of Retraction Watch and Distinguished Writer In Residence at New York University"Richard Harris's elegant and compelling dissection of scientific research is must-reading for anyone seeking to understand today's troubled research enterprise-and how to save it." --Deborah Blum, Pulitzer Prize-winning journalist and Director of the Knight Science Journalism Program at MIT"Richard Harris has written an essential guide to how scientific research may arrive at the wrong conclusions. From the 235 ways that scientists can fool themselves to the misuse of statistics and the persistence of unsound research methods, Harris outlines the problems underlying the so-called 'reproducibility crisis' in biomedical research and introduces readers to the people working on solutions." --Christie Aschwanden, lead science writer for FiveThirtyEight and health columnist for the Washington Post

Richard Harris is one of the nation's most celebrated science journalists, covering science, medicine, and the environment for twenty-nine years for NPR, and the three-time winner of the AAAS Science Journalism Award. He lives in Washington, DC.

(Quick review: Many biomedical scientists are already aware of the content of this book, but for

academics in other fields, industry professionals, doctors, or people who plan to donate money to biomedical research, I highly recommend it.) Biomedical science is falling sway to the law of diminishing returns. These are no longer the days when new cures pop up out of nowhere during quick tests. Complex new technologies have opened up millions of new possibilities for discovering agents of disease or possible treatments, while creating countless new opportunities for failure in the process. In the 21st century, it is exponentially harder to find new drugs than it was in the 20th, and increasingly, young researchers around the world are feeling the grind. Luckily, science has all the tools of the Enlightenment at its disposal to expose mistaken research and weed out bad methods. There are regular conferences, internal reviews, retractions, and impeccable science journalism at the journals Nature and Science especially. The more exuberant apologists for science will tell us that unlike religious prophecy, science gains from failed predictions. So, is there really a problem? Richard Harris, NPR science reporter, argues in this book that yes, diminishing returns is creating real problems for science. This book reads like a long NPR story, so it would probably make a great audiobook, except that I wouldn't recommend listening to it in the car: some of Harris's findings would probably make you slam on the brakes. Despite the best intentions of hundreds of whistleblowers, and an institutional recognition that things need to change, much of the medical research funded by tax money and grieving parents is *well* a word that Harris refuses to put down on print. On a structural level, the stakes are very high. A researcher might spend a decade working based on false assumptions, or become widely known in his field for a lauded finding that might not be exactly true. And there is no prize for discovering that a result is false. Researchers may take months or years failing to reproduce a result, with the only reward being the ability to grumble about it at next year's conference. Scientists are human and there are always little problems at the interpersonal level, but when those problems are well-known to everyone and seem unavoidable, they become part of the structure of science itself. The result is that there are a number of sacred cows that regularly spawn bad science, but which both academics and publishers have refused to abandon, resulting in the 70-90% rate of inaccuracy among published studies. The inexcusable becomes normal: there's the overconfidence in mouse studies. There's the sloppy use of cell lines, which is no longer tolerated in industry studies. There's the infamous $p = 0.05$ standard, which is well known by biostatisticians to be too loose, but which would slow biomedical publication to a near halt if it were abandoned. Researchers are evaluated on quantity of publications, rather than quality, during job interviews. Data sharing in biomedical science lags far behind other fields, due to intense competition for funding. Worst of all, research

universities do not offer classes in methodology where problems like these might be discussed. Researchers trying to evaluate recent literature and get new results are forced to learn “on their feet,” either in the laboratory or at conferences. This is now recognized as a crisis throughout the field. In 2015 a discussion was opened as to how things might be improved. Unfortunately, besides closer attention to detail at the top journals, there is no consensus about what can be done. The hypercompetitive environment that promotes false results and sloppy standards relies on the same psychological drive that causes good researchers to seek out hidden methodological problems. The most frightening question is, in the long run, can these problems actually be fixed? At a structural level, the law of diminishing returns (called *Eroom's Law* in the book) means that research is going to get more and more expensive • the possibilities may still be exciting, but institutions are going to pour more and more cash to complete any given study, and the desire for positive results is going to be more, not less. The import of this is that all of us, doctors and laypeople alike, will need to be more and more skeptical of research findings as time goes on. Although biomedical researchers may want to insist that this book is a compilation of challenges rather than fatal flaws, and that their research continues to save lives, any academic or journalist with a serious interest in the truth needs to read it, in order to understand how biological research in general operates today. When I, a humanities grad student, explained to my biomedical researcher friend the type of procedure that has been proposed by my colleagues for applying “cognitive science” to artistic behavior, he laughed out loud. When you know how modern science really works, and the vast number of pitfalls that might be hiding between the lines of any individual paper, the uses to which non-experts put your work can sound naive or even absurd. Harris is doing his duty as a journalist to put that variety of scientific intuition down in print. Related books: • *Unhinged: The Trouble with Psychiatry - A Doctor's Revelations about a Profession in Crisis* • *The Trouble With Physics: The Rise of String Theory, The Fall of a Science, and What Comes Next*

A very well written analysis of the struggles facing academic laboratories today. While this book focuses on biologic research, similar problems afflict the physical sciences as well and have since at least the mid-1970s. Unfortunately, science has become less about "The Search for the Truth" and much more about job retention and vainglory. Mr. Harris has done the scientific establishment a great service in elucidating this disturbing trend. Read the book!! It is a great read for those who care about honesty and truth in science.

Richard Harris tackles a complex and vast topic coherently and directly, starting a conversation that is badly needed in the research community. Flaws exist in all systems, and often we are unaware of their impact. Scientific research is no different, but the results can be far reaching. Because this enterprise is both important and costly, there are many incentives to make the process better, but it is a human undertaking, and as usual, humans remain the most implacable obstacles to its resolution, and our only hope.

This book has quickly become one of my favorites of all times. Points out the perverse incentives of academic research, fueled by many other sectors. Best of all, they offer simple solutions (albeit challenging to enact). As with most things in life, the more you police yourself, the less others will need to do it for you. Let's hope this sector takes it to heart.

Good information but too much unnecessary details and sometimes boring. It could be condensed in my opinion to less than third that the reader can avoid repeated or similar information. I have gone through it quickly, since I found it the same purpose in different pages. I may come back to it when I have more time.

I can't really judge on this, being no scientist. But it's getting more and more obvious that these days, research, articles/reports and peer reviews often are no more than a scam. This, alas, is not only so in the biomedical science, the main subject of this book.

The author shows through numerous examples that scientific research is not as scientific and rigorous as many people may think. The author believes improvements can be made but research remains a human endeavor and, as the author points out, ego, bias and politics contribute to the failings covered in his book.

EXCELLENT! Worth the read, purchase and time! Book came quickly and it was in great shape.

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