

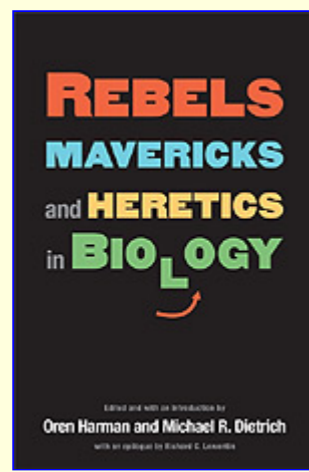
Rebels, Mavericks, and Heretics in Biology

A review by Gert Korthof 14 Mar 2009 (update 29 Nov 2011)



Rebels, Mavericks, and Heretics in Biology.

by Oren Harman and Michael R. Dietrich (2008), Yale University Press, hardback, 400 pages.
[Info](#) from the publisher includes free introductory chapter.



This is a remarkable collection of essays about 19 biological rebels, mavericks, and heretics. Not all scientists in the book are relevant for evolution. But the following 8 scientists certainly are relevant (see table below in red): Motoo Kimura, Stephen Jay Gould, Carl Woese, Alfred Russel Wallace, Richard Goldschmidt, Wynne-Edwards, William Hamilton, and Daniel Simberloff. Although Alfred Russel Wallace is present, Charles Darwin is absent! How on earth is it possible to include Wallace and omit Darwin? I would not have noticed Wallace missing, but Darwin's absence is remarkable. Darwin was no rebel? No maverick? No heretic? Maybe he was just a revolutionary or a genius? Clearly, the inclusion and exclusion of scientists in this book invites discussion.

For example, four Nobel prize winners are included: Barbara McClintock (2), Peter Mitchell, Roger Sperry and Howard Temin. Can Nobel prize winners be rebels, mavericks, or heretics? Apparently, to be included in the book one must *initially* be a rebel, and after a long struggle become accepted by the scientific community and turn into a mainstream scientist (which is the opposite of a rebel). So, a better label would be scientific *innovators* or *revolutionaries*, because they produce knowledge that is accepted by the scientific community after a time of resistance. The editors seem to consider four other scientists as unsuccessful: Croizat, Wynne-Edwards, Goldschmidt and Wallace. The third group is a mixed group of 11 scientists who neither were Nobel prize winners nor were ridiculed or put to shame by fellow scientists.

Another strange fact about the book is that the editors had their own ideas about rebels, mavericks, and heretics, while the invited authors just wrote rather standard scientific biographies. The Woese biography omitted the hostility towards Woese. The Kimura biography omitted his fierce anti-Darwinism, and the Gould review is an open-ended academic review.

A common feature of all scientists in the book seems to be that all encountered 'social' problems in the beginning, later over won those troubles. A lot of rebels, mavericks and heretics such as [Stuart Kauffman](#), [Ted Steele](#), [Wallace Arthur](#), [Michael Denton](#), [Periannan Senapathy](#), [Christian Schwabe](#), [Joan E. Roughgarden](#), [Lynn Margulis](#) (1), Stanley Prusiner (3) are missing. This is easily explained because they are living scientists and the editors choose to include 20e century biologists. They tend to be dead. However, Carl Woese (present) is still alive and [Fred Hoyle](#) (absent) is dead. So a more appropriate title would be: 'Rebels, Mavericks, and Heretics in *the History of Biology*', which makes it a study in the history of biology.

Scientist:	Review:	Nobel prize:
Alfred Russel Wallace		-
Hans Driesch		-
Wilhelm Johannsen		-
Raymond Arthur Dart		-
C. D. Darlington		-
Richard Goldschmidt		-
Barbara McClintock		yes
Oswald T. Avery		-
Roger Sperry		yes
Leon Croizat		-
Vero Copner Wynne-Edwards		-
Peter Mitchell		yes
Howard Temin		yes
Motoo Kimura	review	-
William D. Hamilton	review	-
Carl Woese	review	-
Stephen Jay Gould	review	-
Theima Rowell		-
Daniel S. Simberloff		-

(names in red: related to evolution)

Notes

- "The manuscript in which Dr. Margulis first presented her findings was rejected by 15 journals before being published in 1967 by the Journal of Theoretical Biology." from: BRUCE WEBER (2011) [Lynn Margulis, Evolution Theorist, Dies at 73](#), NYTIMES November 24 2011.
- "It took more than three decades—and a Nobel Prize in 1983—for Barbara McClintock's discovery of transposition and mobile genetic elements to become widely accepted." *Science* 15 November 2013 pp. 812-813
- Stanley B. Prusiner (2014) *Madness and Memory: The Discovery of Prions – A New Biological Principle of Disease*. From a review in *Nature*: "...the extraordinary resistance the idea engendered; and for the sheer unfettered animosity, both personal and professional, directed at him throughout from scientists and the media. ... But it was Prusiner who pursued the idea and Prusiner who proved it, with a determination that earned him both admiration (including the Lasker and Nobel prizes) and blind hostility. ... and his coinage of the term prion – for proteinaceous infectious particle – engendered disbelief, anger, denial and widespread refusal from a hostile scientific community, including many virologists. This antipathy persisted right up to the awarding of his Nobel prize. " So, it seems not only religious people stubbornly and irrationally stick to thousands of years old habits and beliefs, scientists too are vulnerable to similar irrational practices.

Reviews

- Walter Gratze (2008) [Perils of perversity](#), *Nature* 454, 28-29 (3 July 2008) (free text): "I would have liked to hear a little about some, prominent or scandalous in their day, who have faded into oblivion."
- Audra J. Wolfe [Innovators and Iconoclasts](#), *American Scientist*, On the bookshelf, 2008. "James Watson, whose behavior has sometimes been outrageous, may think of himself as one of the greatest rebels of 20th-century science, but he doesn't make the cut for Rebels, Mavericks, and Heretics in Biology." "But Harman and Dietrich have done well to include at least a few failures in their sample."

Further Reading

- [Scientific Controversies](#) on another page of this site.
- Abigail Lustig, Robert J. Richards, Michael Ruse (eds) (2004) *Darwinian Heresies*, Cambridge University Press. (Introduction). I need to check out this book. (see: Google Books).
- Obituary: M. Judah Folkman (1933-2008): "Folkman published his ideas about angiogenesis in 1971. This landmark paper initially met with scepticism. Undaunted, he and his small research group developed the cell-culture methods, bioassays and drug-delivery systems they needed to validate the theory." *Nature* 14 Feb 2008.
- A review of *The Third Domain* by Tom Schmidt: "We find that Woese's discovery of the Archaea was greeted with skepticism by many and ridicule by others, including some very influential scientists." (no names!), *Science*, 14 Dec 2007.
- Francisco J. Ayala enjoys challenging accepted scientific ideas: [Scientific American](#) October 21, 2008.
- Margaret Wertheim (2011) *Physics on the Fringe: Smoke Rings, Circlons, and Alternative Theories of Everything*. Walker and Company.
 - [review](#): "Among Wertheim's protagonists are those who deny quantum mechanics, postulate new structures for atoms, revive the ether or reject special relativity, and just about all of them despise general relativity. Much of her narrative is devoted to the story of Carter, who has not just a breathtakingly broad theory of life, the universe and everything. Carter "insists on a universe he can comprehend" and has no patience for mathematical virtuosity like that of Helmholtz. ... a host of fringe theories that will consume time and energy to debunk. ... Should AIDS-HIV denialism and Immanuel Velikovsky's cosmic catastrophism also have their day in court? These theories likewise ignore the large edifice built by science (just as Carter ignores the history of vortex atoms)." Michael D. Gordin: 'The Pseudoscience Wars: Immanuel Velikovsky and the Birth of the Modern Fringe' (forthcoming from University of Chicago Press).
- [Dan Shechtman](#) is a heretic in chemistry who was awarded a Nobel Prize in 2011. His controversial manuscript were rejected by journals. The reviewers were theoretical people rejecting the results on theoretical grounds (textbook knowledge). They did not attempt to reproduce the findings. Later another journal published his findings because experimental chemists understood what he had done.
- Michael D. Gordin (2012) *The Pseudoscience Wars: Immanuel Velikovsky and the Birth of the Modern Fringe*, University of Chicago Press: 2012. 304 pp. Reviewed in *Nature* 25 October 2012
- "A youthful decision set me on a maverick's lonely ride," he writes. "Its consequences took a long time to develop." *The Fractalist: Memoir of a Scientific Maverick*, Benoit Mandelbrot, Pantheon: 2012. 352 pp.
- Trisha Gura (2012) Reproductive biology: Fertile mind, *Nature* 14 Nov 2012
 - Heretic Jonathan Tilly defied decades of dogma by suggesting that women can make new eggs throughout their lives: "When I made the decision to pursue this, it was out of pure excitement that we found something that could revolutionize the field. It never even crossed my mind that it would be so negative and so nasty. And it really is negative and nasty." ... the stand-off of mistrust, and sometimes open contempt..." The 'no new eggs' doctrine has a long history. In 1951, the influential anatomist Solly Zuckerman, at the University of Birmingham, UK, performed an in-depth analysis of evidence available at the time. He concluded that none of it effectively countered a proposal from the 1870s stating that female mammals stop producing oocytes after birth.
- Oren Harman and Michael R. Dietrich (2013) [Outsider Scientists. Routes to Innovation in Biology](#).

Scientists Blinded by Scientific Prejudice

In the 1950s, ulcers were placed quite firmly in the class of environmentally caused diseases rather than those caused by a pathogen. Variable delays between infection and onset of ulcers, and the difficulty of growing suspect bacteria in vitro, led to a widespread belief that bacteria could not live in the acidic environment of the stomach. Stress and diet were instead thought to be causes. Although even in the 1940s there had been indications that peptic ulcers could be cured by antibiotics, the overriding assumption that the condition was environmental, blinded scientists and doctors to the implications of those findings. This incorrect classification of a medical condition not only hindered the discovery of the causative factor, but also delayed its acceptance. Even though *H. pylori* was strongly implicated as a possible major cause of ulcers in 1982, it was not until 1994 that antibiotics were generally recommended for their treatment, and as late as 1995 only 5% of patients with ulcers were receiving antibiotic treatment. When considering the reasons why the bacterial hypothesis was missed for such a long time (and then not readily accepted), the main problem was the misattribution of the property 'cannot grow in the acidity of the stomach' to the class of bacteria. Re-evaluating this fundamental property involved a major mind-shift that was difficult to accept.

Ewald, P. W. *Plague Time: How Stealth Infections Cause Cancer, Heart Disease, and Other Deadly Ailments*, Free Press, 2000. Reviewed in [Nature](#).

Korthof blogspot	home: Towards the Third Evolutionary Synthesis	wasdarwinwrong.com/korthof93.htm
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