

# Most published medical research is false; Here's how to improve

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In 2005, in a landmark paper viewed well over a million times, John Ioannidis explained in *PLOS Medicine* why most published research findings are false. To coincide with *PLOS Medicine*'s 10th anniversary he responds to the challenge of this situation by suggesting how the research enterprise could be improved.

**More information:** *PLOS Medicine*,  
[www.plosmedicine.org/article/info%3Adoi%2F10.1371%2Fjournal.pmed.1001747](http://www.plosmedicine.org/article/info%3Adoi%2F10.1371%2Fjournal.pmed.1001747)

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Research, including medical research, is subject to a range of biases which mean that misleading or useless work is sometimes pursued and published while work of value is ignored. The risks and rewards of academic careers, the structures and habits of [peer reviewed journals](#), and the way universities and [research institutions](#) are set up and governed all have profound effects on what research scientists undertake, how they choose to do it and, ultimately, how patients are treated. Perverse incentives can lead scientists to waste time producing and publishing results which are wrong or useless. Understanding these incentives and altering them provides a potential way for drastically re-shaping research to improve in medical knowledge.

In a provocative and personal essay, designed to spur readers into thinking about how research careers could be redesigned in order to encourage better work, Ioannidis suggests practical ways in which our current situation could be improved. He describes how successful practices from some branches of science could be distributed to others which have performed badly, and suggests ways in which academic structures could provide greater benefits from the work of researchers, administrators, publishers and the research funding which supports them all.

"The achievements of science are amazing yet the majority of research effort is currently wasted," asserts Ioannidis. He calls for testing interventions to improve the structure of scientific [research](#), and doing so with the rigor normally reserved for testing drugs or hypotheses.

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