

In my 23 years in the food and beverage industry (and in an additional 10-plus years working as a consultant for a variety of companies), the idea of strong-arming university researchers to produce positive results has never been raised in my presence. If it had been, the notion would have immediately been rejected. Not only would such actions be unethical and at direct odds with helping to increase shareholder value, whatever short-term gain might have been realized from fabricated or overly massaged research results would quickly have been lost—along with the reputation of the company and its employees—because of the self-correcting nature of scientific research. Replicating studies to determine if similar results can be produced is a cornerstone of good science. In that way, poor studies—including those with fabricated results—are eventually exposed. For successful companies with established reputations, fudging the data makes absolutely no sense.

That's not to say that such actions have not happened in the past and will not happen in the future. They have and they will, but these kinds of scientific shenanigans are far more the exception than the rule. We should also keep in mind that scientific mischief is not isolated to industry; researchers reliant on federal grant money have been guilty of fabricating results to bolster their reputations and renew their grants.

Universities typically provide funds to help scientists create a lab space and buy the equipment needed to support their research efforts, with the expectation that the scientists will attract external research dollars, part of which are returned to the university as overhead costs. This arrangement obligates university scientists to apply for research funding by submitting grant proposals to the public or private sector.

The U.S. National Institutes of Health (NIH) is the primary public (federal) sponsor of research in the biomedical and health sciences. NIH grants are prestigious because only a small percentage of grant proposals are accepted for funding. Grants are awarded in specific areas of research deemed important by the NIH's 27 different Institutes or Centers (e.g., National Cancer Institute, National Institute on Aging, National Center for Complementary and Integrative Health, etc.), placing a premium on having a research focus in a subject area that receives funding. For university scientists whose research expertise falls outside the interests of the NIH and for the large number of university scientists whose proposals are rejected by NIH, the only other option is to seek funding from the private sector, that is, from corporations, foundations, and professional organizations.

The NIH budget for 2019 is projected to be \$39.3 billion; in 1994, the NIH budget was roughly \$10 billion. In 2015, Newt Gingrich, the former speaker of the US House of Representatives benevolently suggested doubling the NIH budget (<https://www.nytimes.com/2015/04/22/opinion/double-the-nih-budget.html>). Even if that doubling were to occur today, the NIH budget would

still be substantially less than private sector research funding, and most university researchers would still not qualify for NIH grants.



The food and beverage industry spends many millions of dollars each year on R&D, with a substantial amount supporting university research studies. In a 2017 article in *The Atlantic*, writer Molly McCluskey described the relationship between universities and corporations, summarizing the benefits of additional funding along with the concerns that the funders may receive a *quid pro quo* in return:

“Proponents of such arrangements—including all of the university officials I spoke with—say that corporate engagement in research is critical if universities are to continue their cutting-edge work. For many opponents, however, the mere mention that a corporation has sponsored research is enough to dismiss it as compromised. That’s because corporate backers can be given a great deal of power and latitude, selecting the specific kinds of studies, materials, and techniques to be used in exchange for their funding.”

(<https://www.theatlantic.com/education/archive/2017/04/public-universities-get-an-education-in-private-industry/521379/>)

Similar concerns have been voiced by Marion Nestle, PhD, MPH, an emerita professor of nutrition at New York University who has been critical of food industry funding of research, as in this quote from an online Q&A in 2018:

“This is a huge problem right now, with government funding declining and foundation [corporate] funding going to the foundation’s [corporation’s] research agenda. But food industry funding distorts the research agenda. Investigators would be more likely to be working on other problems if they weren’t working on studies paid for by companies. There is a big difference between calling for studies to demonstrate the benefits of a food or product and those aimed at finding out how diet affects health. But most companies don’t want to risk paying for studies that might not show their products to be beneficial.”

(<https://blogs.plos.org/globalhealth/2018/12/unsavory-truth-a-short-and-sweet-qa-with-marion-nestle/>)

Yet good companies must and do risk paying for studies that might not show that their products are beneficial. Good companies employ good scientists who are just as intent on contributing to the greater good as they are in contributing to the corporate good. And good science—regardless of the results—invariably leads to better, healthier products. Of course there will always be unethical companies who employ unethical scientists who will happily attempt to corrupt the scientific process for a favorable outcome. And there will be unethical university researchers willing to go along with such schemes. While these instances deserve all of the negative attention they attract, they simply do not happen with the frequency some critics suggest.

For those unfamiliar with the typical interactions between the food and beverage industry and university scientists interested in securing research funding, here is a quick summary:

- a. Companies interested in funding extramural research either proactively solicit research proposals from interested scientists or reactively respond to unsolicited proposals submitted to the company.
- b. A company agrees to provide financial support for a university research project, perhaps even offering suggestions on the design of the study to ensure that the company's interests are well represented. (The university typically makes certain that its interests are well represented by way of a detailed legal contract between the university and the company sponsoring the research.)
- c. University scientists then carry out the work and, for the sake of this example, let's assume that the study produces positive results about the benefits of the company's product, one of the treatments in a well-designed, randomized, placebo-controlled, double-blinded study.
- d. The results of the study are typically summarized in a report to the company, allowing the company to make whatever decisions might be needed based upon the results.
- e. The scientists then usually author a manuscript describing the study and its results, and submit the paper to a reputable, peer-reviewed scientific journal.
- f. After a few revisions by the authors, the journal reviewers are satisfied and the paper is accepted for publication.
- g. The paper is eventually published and read by other scientists with similar interests. Those scientists are then free to design similar studies, perhaps even using the product in question as one of the treatments. Those studies either support or refute the initial findings about the product's benefits, and in the process, generate other studies that add bits and pieces to the overall understanding in that particular area of science. The replication or refutation of the initial results regarding the product's benefits occurs over many years, with many studies making a contribution.

In the mid-1980s, when we first set out to research the effectiveness of Gatorade at maintaining important physiological and performance functions during exercise (e.g., keeping blood volume from dropping too low, preventing

body temperature from climbing too high, supplying carbohydrate energy to active muscles, etc.), we were able to see what other researchers had written on the topic. Those scientists included the original inventors of Gatorade from the University of Florida, along with scientists who had studied Gatorade either independently because of their interest in the topic or at the behest of the Stokely Van Camp Company, the original owners of the Gatorade business. The combined results of those studies were suggestive of benefits associated with consuming Gatorade during exercise, but were far from being clearly conclusive.

The initial studies from the GSSI lab also reported benefits, but because we worked for Gatorade, we knew that corroboration from other researchers was needed to counter the understandable (but ill-founded) skepticism that our findings were tainted by our corporate affiliation. Over the subsequent years, that corroboration—the replication of our results—was achieved through dozens of studies, some conducted with the help of funding from GSSI and other studies conducted independently. Had we fudged our positive results or conspired with willing university scientists to do the same, that malfeasance would have soon been exposed and the long-term damage to the Gatorade business would have been immeasurable, not to mention the career-ending implications for the involved scientists.

To sum up, there is nothing wrong with being skeptical of conclusions from studies that have been supported by corporate funds. In fact, healthy skepticism is a cornerstone of the scientific process. But as in all scientific endeavors—including those conducted with the support of government grants—it is best to look for replication of the results before drawing conclusions about the scientific merit of the results or assuming that a conflict of interest has skewed the results in favor of the funder. Private-sector funding of research helps ensure that important research gets accomplished and is a major reason why America continues to lead the world in R&D.