

A Season of Giving to Science

For many, this is a season of giving. More so than ever, one can find gifts to send or organizations to contribute to online. The offerings now include science.

Bolstered by the establishment of other crowd-sourced funding schemes enabled by technology, there are now several platforms in which scientists can ask for funds to pursue their research. Typically scientists make their ask in both text and video, the former being a letter or informal proposal and the latter often with animation or other visual aids to help explain the intended work. A window of time opens, and the scientists hope that people connect with their idea and decide to donate. Depending on the model of the platform, they may receive any funds donated within the stated time frame, or more like a grant, they may only receive the full amount once enough people have pledged enough money.

If this feels different from how we think we go about funding science, it is and it isn't. Crowdfunded science is typically done on the scale of thousands to tens of thousands of dollars rather than the larger grants typically obtained from the federal government. Where the money is coming from isn't as new as you might think though. In the last fifty years, the share of government-supported research has fallen by half from two thirds to one third with private sources including companies, non-profits and individuals making up the difference. And the appeal is not so different from a grant proposal. Nearly all videos start with a simple explanation of a global problem—global warming, renewable energy, antibiotic resistance, etc. Then the scientists hone in on one aspect they think they can address, with your help. They explain what they intend to do, what they need to do it and how exactly your money will be spent. Then they end on a broad note of community and/or let you know how they will be engaging their community in the work...sounds a bit like a Broader Impacts statement, doesn't it?

Certain fields that allow for some level of audience participation and/or directly provide a public good do very well, e.g., testing water quality in different neighborhoods from Flint, MI. But science across many diverse and surprisingly technical disciplines does get funded. The first major study on crowdfunding in the sciences was published

in December 2014 in *PLoS One*. They found that a broad range of projects were funded including those seemingly unattractive to the public, like statistics.

So who are the funders? Ostensibly, it is “the public” but for many projects, friends and family of the recipient are the first and most frequent givers. This will not be news to any parent of a Girl or Boy Scout based on their lifetime supply of cookies, fancy popcorn or knives. In many cases, getting funded also comes down to finding the right audience. If you are proposing work on a rare genetic disease, parents of patients are certainly going to be more likely to donate.

There are a range of success rates and stories. Using the broadest platform, Kickstarter, most projects receive on the order of \$25 from each person, and projects only receive the funding when a set goal level is reached—which happens about two thirds of the time for science projects in the last four years. There are exceptions. David Eagleman's idea to train people to “hear” via touch exceeded its \$40,000 goal on Kickstarter by 20%. But the idea that your science will “go viral” and that you will be invited to discuss your project on The Ellen Show and suddenly have millions at your disposal might be ascribed to the lottery syndrome. Millions play each week, but the news stories go to a very select few who win.

It is still early days, but there are signs that the science itself, not just the funding, is beginning to come through. The ALS “Ice Bucket Challenge” raised enough money to fund a study that identified a new gene mutation, reported in *Nature Genetics*. If this story encourages you to set up your own crowdfunding campaign in the next year, *PLoS* has provided a guide.

Proponents of the new mechanisms (very often the tech gurus who have set up these sites) say that their platforms encourage public engagement with science and scientists, that they provide a model for funding that is complementary, not competitive, with more traditional approaches. One commonly expressed concern is that there is no quality control or professional validation through peer review—theoretically, anyone could propose anything, and how could a potential donor discriminate brilliance from bunk? However, some science-focused crowdfunding platforms like

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Experiment.com require an independent expert's endorsement to address this issue. Others, including Wallace, say that it is up to the backers to do their due diligence.

Another, perhaps bigger, issue is that of regulation. In certain areas of science there are ethical considerations that would typically be handled by University groups like an Institutional Animal Care and Use Committee or Institutional Review Board. Perhaps all independently secured funds will need to go through some post-funding institutional review. And one might wonder whether a crowdfunded scientist might feel that same pressure to produce results as another funded by the government. Interestingly, scientists who have been funded through private donations [report](#) feeling more, not less, pressure to get their project to work, lest they disappoint their family and friends, rather than a faceless review panel.

Finally, what do the funders get in return? As thousands of people who are waiting years later for products on sites like Kickstarter can attest, there is no guarantee that a given project will work. But goodwill throughout the course of the research journey certainly helps. You can offer up an accessible electronic notebook to your supporters so they can follow your progress. Record weekly video blog entries about how the work is going and how you feel about its promise. If you are creative, you might design different reward levels like the Public Broadcasting Service, regardless of what happens with the science. What people are really looking for is connection. The motivation to give is tied to how good it feels to give. So this holiday season, you might just consider stuffing your stocking with science.

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Notes

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