Kickstart your research

Scientists are beginning to use crowdfunding to support their work, but don’t stop filling out those grant applications just yet.

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Lauren Kuehne wanted to branch into a new area of research characterizing the soundscape near freshwater lakes. Ethan Perlstein’s postdoctoral fellowship was about to expire, but he was keen to continue his work on the pharmacology of methamphetamine. And Kay Holekamp knew her project to use hyenas as indicators of ecosystem health was important but too applied to get funding from the National Science Foundation (NSF).

Faced with research goals that fell between the funding cracks, all of these researchers turned to an emerging fundraising channel—crowdfunding—to get the dollars they needed.

Crowdfunding involves asking members of the public to chip in money for projects that interest them, and a number of crowdfunding Web sites now offer researchers a page to pitch their idea, typically including a short video. Much like donating to public radio, backers receive specified perks in return for different levels of support. The best known crowdfunding hub is Kickstarter, which raised over $300 million for over 18,000 projects last year. Kickstarter does not support scientific research projects, but other sites such as Indiegogo and RocketHub have filled the gap. Specialized, research-specific sites such as Microryza, founded by graduates of the University of Washington, Seattle, are also popping up.

Crowdfunding is giving researchers the opportunity to take their research in new directions, funding graduate students or undergraduates who can do a lot with a little bit of money, or even paying for a season of field research. Two similar projects on Indiegogo, the American Gut project and uBiome, recently became the most lucrative crowdfunded science projects to date, their creators believe, by each raising around $350,000.

But unlike these two projects, which provide backers with a profile of the microbes living in their bodies, most crowdfunded projects don’t have personal data to offer their supporters, and the vast majority raise nothing close to the levels of grant funding from the NSF or the National Institutes of Health (NIH). “Is this going to supplant NIH funding? Absolutely not,” says Jeff Leach, an anthropologist based in New Orleans, and a member of the American Gut team.

Still, with grant success rates for federal funding agencies typically lower than 25%, researchers, especially those early in their careers, are increasingly turning to crowdfunding to source small amounts of cash. Kuehne, a research scientist in freshwater ecology at the University of Washington, met her crowdfunding goal of $2,000, which covered some field trip costs and publication fees. Perlstein, an evolutionary pharmacologist then at Princeton University, Princeton, NJ, but now continuing his research unaffiliated, attracted a lot of attention for raising $25,000—about 10 times the typical successful research crowdfunding target. Holekamp, a zoologist at Michigan State University, East Lansing, MI, did not make her $15,000 goal—backers pledged just over $4,000. Some sites let you collect what you raise whether you meet your goal or not, but not the site Holekamp used, Petridish. “Mine failed utterly,” she says.

While some think crowdfunding is best suited to small or risky projects that would be hard to support through traditional channels, others disagree. Ecologists Jai Ranganathan, University of California, Santa Barbara, CA, and Jarrett Byrnes, University of Massachusetts, Boston, are convinced that the route could deliver more substantial sums, and have founded #SciFund Challenge, a series of research-crowdfunding pushes using RocketHub’s platform.

#SciFund works with cohorts of interested researchers to refine their pitches, and then launches the month-long campaigns at the same time. Ranganathan and Byrnes, who are now compiling the results of the first round of 49 projects, point out that it took Kickstarter several years before large campaigns were successful, and that the charity Cancer Research UK regularly raises £50,000 this way for individual projects. They expect that, over time, the potential for crowdfunding research will grow. Ranganathan believes that the recent success of the American Gut project and uBiome show this is happening.
Unexpected Benefits

But crowdfunding is not easy money. “Everybody thinks that if you build it, they will come. That just doesn’t work,” says Leach. Crafting a message that will appeal to the public, making a video, and putting up a Web page takes a lot of work. While a campaign is live, success hinges on staying engaged, responding to questions and glitches, and continuing to spread the word on social media and among potentially interested networks, including relevant businesses and the press. After the campaign, teams need to update backers on the project and distribute the perks, which can include t-shirts, tokens related to the research, or lab tours for larger donors. “It was a lot of work for $2,000, I’m not going to lie,” says Kuehne. “I would recommend that people not do this if their sole purpose is fundraising.” Many agree that if you are only in it for the money, you will likely be disappointed.

So why do it? “Crowdfunding is a crash course in media communication, networking, and fundraising,” says Kuehne, who participated in the second #SciFund Challenge. “I immediately had this network of people who were aware of the research. People would send me papers and ideas for extending the research, and ideas for data management.”

“I felt like I was this little hub for people who were interested in freshwater, in noise, in data management, in new technologies,” Kuehne adds. “And there were a few people who were just interested in learning something new.” About one-third of her backers were her friends and family, a similar fraction were people she knew but would not have thought to ask for support, but one-third were strangers. Kuehne is still motivated by sharing her progress with the network of backers. Ranganathan notes, “The goal here is to have scientists start to build an audience.”

Crowdfunding can also help find larger donors. Jeff Huang, a doctoral student in information science at the University of Washington, woke up one morning during his Microryza crowdfunding campaign to discover that someone had pledged $5,000 for his project to better understand where spammers get e-mail addresses. Huang initially thought it must be a mistake, but then found that the cofounder of MailChimp, an e-mail marketing company, had donated the funds in part because he thought the results might be relevant to his business. Raising more than five times his fundraising goal, Huang was able to hire a research assistant. Another research institute, Worm-free World Institute, which is testing drugs that could eliminate intestinal worms in children in the developing world, received $10,000 in matching funds from an anonymous donor through its campaign.

With some projects, connecting with the public is an essential part of the research. The American Gut project and uBiome both invited backers to donate money and samples from their own microbial populations in exchange for a printout detailing the bacteria in their bodies. The teams counted on growing public awareness about the importance of the microbiome and people’s innate desire to know more about themselves to drive involvement.

Together, the projects raised almost $700,000. One curious aspect of this crowdfunding approach is that certain groups—like people who ascribe to caloric restriction, or those interested in following paleolithic diets—have shown strong interest, says Rob Knight of the University of Colorado, Boulder, CO, who is the lead scientist on the American Gut project. This skews the sample population, but it should allow the researchers to make some interesting comparisons, and they plan to contact participants for follow-up studies.

uBiome is interested in taking one more step: allowing backers to submit research questions as the database grows. “We wanted to bring the public in in a bigger way, let them ask questions of the data, and really harness the scientific understanding,” says uBiome cofounder Jessica Richman.

Crowdfunding may be more likely to succeed for a project with broad public appeal. Perlstein’s project capitalized on the popularity of the television program “Breaking Bad”, about a chemistry teacher who starts making methamphetamine. Projects with a local interest or with an educational focus have also done well, says Cindy Wu, co-founder of Microryza, pointing to a project that sought to excavate fossilized Triceratops bones that would then be displayed in Seattle.

But Ranganathan points out that crowdfunding is not only for “panda bear science”. According to his analysis of the projects in #SciFund, success is “based on two things—literally, that’s all that matters—the size of your audience and the enthusiasm of that audience”. Researchers have fundraised projects studying Escherichia coli evolution in mouse guts and crayfish genetics. Wu says, “The projects that do the best are those that have a really passionate researcher behind them.”

One worry is that crowdfunding will attract fraudsters, or quacks with research...
ideas that flout the laws of physics. #Sci-Fund challenge and Microryza have guarded against this by screening each team that approaches them. “We vet them on very basic criteria,” says Microryza cofounder Denny Luan. “One: Is it research? Two: Is the researcher who he says he is? And three: Is the researcher capable of carrying out the research goals?”

Another issue is that most crowdfunding sites take a cut of 4–9% of funds raised. Some hope that researchers might eventually cut out the middle man, raising money directly on their own Web sites; at least one #SciFund project claims to have met its goal after accepting direct donations to avoid paying RocketHub’s fees.

Crowdfunding in Academia

Universities are also exploring how to incorporate crowdfunding into their operations, and view the campaigns as potentially valuable outreach. The University of California, San Francisco (UCSF), has forged a partnership with Indiegogo that, among other things, allows backers to donate under tax-exempt status. But it is too early to tell how much impact the campaign will have, says Tuhin Sinha, a UCSF administrator who is coordinating the efforts. “We’re totally in a pilot mode. We’re having mixed reviews with this.”

Taking a different approach is Michael Greenberg, Director of Innovation and Strategic Initiatives for the Office of Research at the University of California, Los Angeles, and the cofounder of ScaleFunder, a company that has developed a crowdfunding platform tailored to universities. Although the site is not yet live, it has partnerships with several universities in the pipeline and anticipates that at least one will be running later this spring.

Greenberg says that when universities coordinate crowdfunding campaigns, researchers can access a much larger network of potential backers. The universities can also provide support as the researchers prepare their text and videos, and ensure that no university regulations are breached. “Institutions have the ability not only to bring in major donors but also major corporations,” Greenberg says.

But these are early days for crowdfunding, and its outreach component may eventually become more important than the money it raises. #SciFund and Microryza envision their sites as hubs for open science where people come to learn about new or ongoing research projects and to share information as well as cash. “The real power of this is to build a science-literate society,” says Ranganathan. Julian Olden, Kuehne’s supervisor, says: “Crowdfunding is where the public can get involved in science for a small cover charge.”