nature neuroscience

Citizen science

Getting people invested in science is critical for increasing public support. Some new initiatives may help open both pocketbooks and minds.

Funding for the US National Institutes of Health, the primary source of funding for many neuroscience researchers, comes out of the pockets of every American taxpayer. Although the abstracts of funded grants are accessible by anyone with sufficient interest, in practice, most people have little idea what their money supports. According to a poll taken by the Pew Research center, although 60% of Americans view government investment in scientific research as essential, they see it as having a substantially lower priority than other areas, including education and health care. Funding basic science may never have quite the same imperative as investment in social programs, where financial support yields more tangible benefits, but finding a way to make scientific research more personally compelling could increase the value that people place on it. Several new funding initiatives that encourage the public to fund science directly with their pocket change could be a step in this direction. Such microfinance efforts will not make an immediate dent in systemic problems of insufficient funding, but increased personal investment in scientific research could help improve scientific literacy and enthusiasm for science and, ultimately, win stronger backing for federal support of scientific research.

Organizations such as FundScience, EurekaFund, SciFlies and the Open Source Science project currently attempt to connect individuals with scientific projects they might like to help fund. Although the practical details of the funding process differ across organizations, all four hope to match scientists looking for money with individuals interested in funding research. On their websites, the organizations host research proposals outlining the nature of the project and how much money would be needed to execute it. People browse these proposals and then choose to fund the experiments they find to be most compelling. Proposals can be for a few thousand dollars or up to $50,000, depending on the organization, but people can donate as much or as little as they like, making this endeavor accessible to a broad population. The organization collects the individual donations and transfers them to the researchers once they reach a critical mass. If donations do not reach the threshold by an organization-determined deadline, then the proposal is not funded and investors are offered the opportunity to re-allocate their donations to another project. Once a project receives funds, researchers are expected to keep their investors informed through publically posted progress reports. Although the process of microfinance is still in the early stages, EurekaFund is already soliciting funds for research in energy and the environment and FundScience recently invited donations for three proposals, two of which are neuroscience projects.

Microfinance makes it possible to pool many small donations, but even a large group of investors is unlikely to contribute the amount of money that would be awarded for a standard R01. Instead, the idea is for scientists to raise enough money to run a small research project that requires a limited amount of money and time. The hope is that these small pilot projects could provide preliminary data that would lay the groundwork for more substantial projects. This approach is appealing at a time when the consensus is that government grants are rarely awarded to risky projects, particularly those without pilot data or from young investigators with limited track records.

Another real benefit of microfinance for scientific research is the opportunity to interact directly with the public. First, researchers must persuade potential investors about the importance of their work. For example, although FundScience project proposals include the usual sections about specific aims and background, they also include a sales pitch aimed at the public. Scientists have to learn to convey their ideas and enthusiasm for the work to people who may have little formal science education. Once funded, all of these organizations require researchers to submit progress reports, providing investors (and interested observers) with information about the results of their investments. This will hopefully increase the transparency of the research process; scientists must be able to explain both their failures and successes. Increasing communication with the public has great potential to remind the public why scientific research is worth funding in general and can help taxpayers to better understand why scientific research doesn't necessarily provide quick, tangible results.

Microfinance, however, does present its own problems. Regardless of the size of the award, instead of convincing one's peers that a project is worth pursuing, scientists must convince potential investors who may have entirely different perspectives on what makes a scientific question compelling or pressing. Although this may be a refreshing change, crowd sourcing could result in a skew of its own. For example, the public may be more inclined to fund research that is relevant to disease, rather than more basic research. Another issue that may require some time to work out is quality control in the proposals on offer. The peer review process varies widely across organizations, from very rigorous to none at all. One could argue that peer review is at odds with the process of microfinance, as the idea is to let donors choose what they consider valuable. However, it would be wasteful for laypeople to invest in projects that are ill conceived, lack sufficient institutional resources or duplicate previous work.

Microfinance for scientific research is still in its early days. Although it won't fix the immediate problem of flat increases for government research budgets, it offers some promise for the future. Today's investors could become tomorrow's advocates for scientific research. ■