

Crowdsourcing a medical research donation database

Government-funded research grants have become nearly twice as competitive over the last fifteen years, leaving many talented scientists underfunded or even unemployed, thereby slowing the progress of medical research (1). This paper analyzes the present state of medical research funding to advocate for a redesigned form of crowdfunding as a solution to this funding shortage.

Over the last decade, the backing of medical research in the United States has shifted towards private philanthropy. While public funding has decreased, science philanthropy has grown up to 5% annually, making up almost 30% of university research funding (2). To stay competitive researchers face increased pressure from university administrators and journal editors to obtain funding from private philanthropists (3,4).

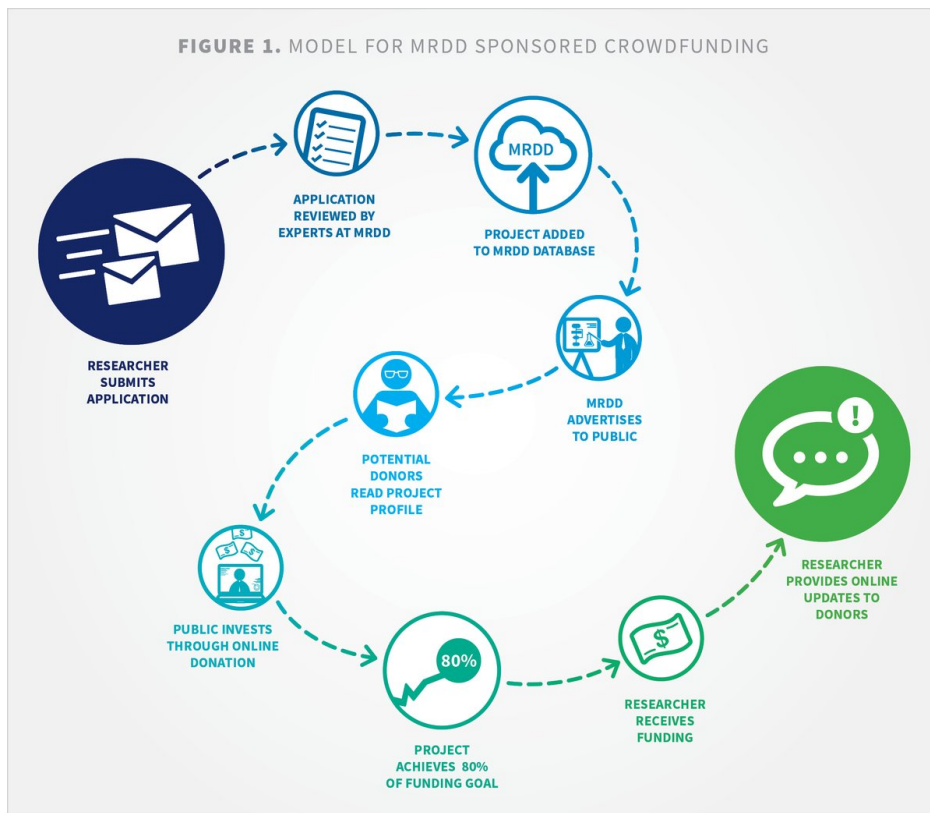


Figure 1. Model for MRDD Sponsored Crowdfunding

These private donations are coming almost exclusively from the pockets of a few large investors to a few institutions (2). An example is the 100 million dollar donation from American businessman and chemical engineer David H. Koch to the Massachusetts Center for Cancer Research.² However, the strategy whereby researchers personally solicit private donations, only allows researchers to connect with a small fraction of the richest Americans. The general public, and even most of the nation's richest Americans, remain untapped for potential donations.

Crowdfunding has recently emerged as a mechanism for researchers to solicit philanthropic donations from the general public via the Internet. On crowdfunding websites, such as petridish.org, anyone may create an online profile describing their credentials, project, and budget needed to complete the project (5). If during a certain time period (typically 30 to 90 days) donors pledge to meet the target financial goal, the site charges the pledgers and passes the money to the researcher (minus an 8% to 10% commission). While crowdfunding is recognized as an important source of scientific funding by some, such as the editors of the journal *Science*, crowdfunding exists on the fringes of research funding (6).

The crowdfunding of medical research has largely escaped the public's attention because the process has yet to gain the public's trust. The lack of validation of the quality of research projects on crowdfunding websites has left potential donors wondering about the possibility, and sometimes actuality, of fraud (7). Additionally, even legitimate scientific projects pose the possibility of poor experimental design that the general public is largely unable to evaluate.

However, the obstacles that currently stop crowdfunding from gaining the public's trust and reaching its full potential can be remedied. The remedy is a central, non-profit organization that can evaluate the credibility of scientific projects and bring them to a larger audience. For our purposes we may call this organization the Medical Research Donation Database (MRDD).

The MRDD could be supervised by a private, non-profit organization interested in the advancement of medical research, such as the Howard Hughes Medical Institute or the Bill and Melinda Gates Foundation. As modeled in **Figure 1**, the MRDD would employ a small group of expert researchers to provide scientific review and evaluate the merits of scientific projects.

Researchers seeking funding would submit proposals similar in style to those presented to grant-giving organizations such as the National Institute of Health. Proposals will be scored for merit and the most suitable proposals would be added to the online database. The process would be competitive and approve only high merit proposals to ensure that donated money is well spent.

The projects in the database will be presented and explained to the general public in an understandable, interesting, and exciting way. Projects will be explained in layman's terms, communicating both a brief overview of the research process and the goal of the project (e.g., the development of a new drug for a particular type of breast cancer). But most importantly, these projects will be presented to potential donors in a manner that elicits an emotional investment. Each project page will include a subsection explaining how the research will have an impact on patients' lives, possibly within the context of a particular patient affected by the disease. Attention could be directed to these pages via traditional television or Internet fundraising campaigns, possibly in conjunction with other non-profit groups, such as the American Cancer Society. Once donations are made, researchers receiving funding through the MRDD will be required to provide online updates to donors regarding the progress of their project at regular intervals.

The ability for donors to give to a project that is validated by scientific review and accountable through online updates, will allow crowdfunded medical research to gain the public's trust and attain significant levels of support. Similarly, crowdfunded business enterprises, such as videogame development or smart watch production, are already successful at sustainable crowdfunding. These business enterprises repeatedly raise more than 10 million dollars per project, becoming a 5.1 billion dollar industry in 2013 (8). The public trusts and invests in these business enterprises because manufacturers are held accountable and obligated to produce a finished project (e.g., new videogame). By holding researchers accountable with online updates, the MRDD will foster this sense of credibility and accountability, thereby creating a worthwhile investment.

Further, the new ability for donors to understand and give to a specific project of value to them will provide medical research projects with a greater sense of importance. Explaining projects in

layman's terms via the MRDD will empower donors to understand the nature of the research and its implications for them. For example, if a donor or their family member is diagnosed with triple negative breast cancer they will see greater value in donating directly to research aimed at this particular type of breast cancer, rather than breast cancer as a whole. The value added to a research project through this strengthened personal connection will make research less susceptible to the reductions in funding seen during economic recessions.

This raised importance and connection to medical research that a credible and accountable form of crowdfunding could create will bring significant, continuous support to medical research. Scientists have already learned how to recruit donations from a few billionaires, now it is time to give them the tools to do so from everybody else.

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