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How Is Science Funded In The United States?

By Julianna LeMieux — February 7, 2017

Scientific research is not cheap. Conducting experiments requires people, reagents, technology and a lot of very expensive equipment.

The funding for science can come from two sources, private funds (from companies and foundations) or public funds, which can come from a number of different government agencies.

In general, companies focus on specific goals, such as drug design or vaccine development, for specific diseases. Therefore, deciding which projects get funded is typically not determined by the people running the experiments in the private sector (there are exceptions to this, of course.)

In the arena of public funding - the source of financial resources for the majority of academic science - the system works very differently. Because there are more ideas than there is available money, scientists vie for it in an incredibly competitive - even cutthroat - process. For example, for the past few years, the "funding line" - the percentage of grants funded - has been around 10%, with variations depending on the area of research and whether the grant was a first time submission or renewal. That may sound reasonable to outsiders, but, when your research, career and paycheck depend on a one in ten chance, the life of an academic scientist becomes a stressful one.

Grants given by the government are the lifeline of academic researchers. Without money to fund your research, an institution is unlikely to keep you on their faculty. This is largely because a portion of the funds from the government go directly to the school. These 'indirect costs', which range from 50% - 75% of the total grant get split between the university, the dean and the departments. They pay only for the 'support of research' which generally means keeping the building maintained. That is lights, natural gas lines, and management of the facilities - not people, equipment, or supplies.

The process begins with the submission of a grant to a governmental agency, usually either the National Institute of Health (NIH) or the National Science Foundation (NSF.) The NIH budget for 2016 was $31.3 billion - by far the largest source of funding for academic research in the United States.

The traditional NIH grant that funds a laboratory and its research is called The Research Project Grant [1], or RO1. The scientist requesting the grant is the Principal Investigator (PI) and serves as the head of the lab. RO1 grants, which can be submitted three times annually, are the bread and butter of academic science funding and almost a requirement to keep a lab up and running.

Included in the RO1 grant submission are descriptions of what the scientist would like to do and how they are going to do it, including specific plans and any preliminary data that supports the project. A budget is included with any expenses over $250K requiring a justification. The PI's try to convey, among other attributes, how innovative their work is and are likely to include a link to a human disease, even in the areas of the most basic research.

The grant is submitted to the NIH where it will be reviewed by a group of scientists with only the top ten percent receiving funding.

This article is part one in a two part series on how science in funded in the United States. Please tune in to part two entitled "How One In Ten Grants Gets Funded - The Review Process" to be published later this week.

Links
[1] https://grants.nih.gov/grants/funding/r01.htm