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## Research Grant Funding

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Research grant funding is a must to keep a scientific project advancing. It costs money for materials and equipment in addition to personnel to undertake a research project.

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## Where does Funding Come From?

The common belief is that research grant funding comes from governments, for example the National Institute for Health Sciences.

In the US, it generally only accounts for about 36% of the funding, and the majority of that budget is spent on basic research and military research and development. There is some funding that comes from non profit organizations like The American Cancer Society and other like non profits.

The largest research funding comes from private companies. It is also a common myth that funding is granted based on a competitive criteria; this may be true in certain arenas but not in all.

Of the corporate entities offering research grant funding the pharmaceutical companies are the largest.

# The Influence of Funding On Research

Let's start by saying money does matter. It matters in every sector including science. Even if the researcher has a pure love of the scientific method [1], given the right circumstances, such as pride or the right amount of money, there may be some consideration given to skewing the data or holding back on publishing results for a little longer than they should.

There are quite a few ethical concerns with privately funded research where a profit is at risk. We will use a pharmaceutical company as an example. There are rigorous requirements in the United States regarding pharmaceutical trials; the process can take up to ten years.

There is a lot of money invested in research and development of drug companies it is the backbone of their structure. This need to produce positive results can make or break a drug company. The pressure is tremendous to produce the results that are hypothesized will be produced.

Again money matters, the public at large and the medical community depend heavily upon the pharmaceutical industries to provide direction for drug use. They gain much of this information from published reports concerning research.

It is difficult for the researcher to remain impartial when there is pressure that is directly tied to income to produce a positive correlation between a drug and a disease. The researcher is bound to feel a certain amount of intimidation especially if there has been a long ongoing professional relationship between him and the pharmaceutical company.

If there is a long ongoing relationship between the scientist and the pharmaceutical company this may invoke feelings of loyalty from the scientist toward the pharmaceutical company. The scientist may be an employee of the pharmaceutical company and the grants maybe awarded within the company for merit and dedication to the company.

Unfavorable findings may be perceived to be a certain death sentence to receive any further financial support for research. This scenario not only would compromise the scientific method but could also potentially result in drugs hitting the market that either lack effectiveness or are potentially dangerous to the public.

## What Types of Bias is Present in Private Sector Research?

According to the AMA:

"When control lies with the commercial rather than academic or public sector, bias can also envelop the process through the trial design,"

The report stated:

"Outcome bias can result from the use of unreliable methods or instruments, as well as inadequate sample size or comparison groups."

- Sample size

- Delay in publishing unfavorable results [2]
- Unreliable methods
- Control group [3] issues
- Skewed data

No one of the aforementioned are really scientific misconduct but will affect the outcome of the research and can be interpreted to mean that there was some misconduct present.

There are other biases in privately funded research like delaying the publication of unfavorable data until after favorable data is published, this too cannot be called out and out misconduct because it is hard to prove but certainly does have the undertones of being misconduct.

## What Can Be Done to Avoid Funding Bias in Research?

The private sector companies that would like to provide research dollars should be governed by law to do the following:

- Instead of research being contracted it should be granted, the company should not be allowed to prevent publication of the results.
- Language in research is a factor and this too needs to be considered.
- Bonuses for work completely early should not be a motivator in research
- There should be as little contact between the researcher and the company as possible
- The amount of trials should be limited.

The reporting period should be clearly outlined in the funding agreement, and both parties should be held to the time frame within reason. Remove the bonus factor will cut the risk of bias by nullifying the reward for speedy work.

Of course funding bias can be completely eliminated by only allowing research grant funding to come from the public sector, but again money matters, and the public sector does not have enough money to support all the research that needs to take place.

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### Links

[1] <https://explorable.com/what-is-the-scientific-method> [2] <https://explorable.com/statistically-significant-results> [3] <https://explorable.com/scientific-control-group>