



UNIVERSITY FACULTY
are **UNITING** to
FIGHT the **RESEARCH**
FUNDING CRISIS.



the 1990s, the number of people in the UK who are employed in the public sector has increased from 10.5 million to 12.5 million, and the number of people in the public sector who are employed in health care has increased from 1.5 million to 2.5 million (Department of Health 2000).

There are a number of reasons for this increase. One of the main reasons is the increasing demand for health care services. The population of the UK is ageing, and there is a growing number of people with chronic conditions such as heart disease, diabetes, and asthma. This has led to an increase in the number of people who are hospitalised and the length of their stays. In addition, there has been a growing emphasis on preventive care and health promotion, which has led to an increase in the number of people who are employed in health care.

Another reason for the increase in the number of people employed in health care is the increasing demand for health care services in the private sector. The private sector has been growing rapidly in the UK, and this has led to an increase in the number of people who are employed in health care in the private sector. This is particularly true of the health care services provided by the private sector, which are often more expensive than those provided by the public sector.

There are a number of challenges facing the health care system in the UK. One of the main challenges is the increasing demand for health care services, which is putting pressure on the resources of the health care system. In addition, there is a growing emphasis on preventive care and health promotion, which is also putting pressure on the resources of the health care system. It is therefore essential that the health care system is able to meet the increasing demand for health care services in a cost-effective and sustainable way.

One of the ways in which the health care system can meet the increasing demand for health care services is by increasing the number of people who are employed in health care. This can be done by recruiting more people to the health care profession, and by providing training and development opportunities for existing health care professionals. In addition, it is important to ensure that the health care system is able to attract and retain the best talent.

There are a number of ways in which the health care system can attract and retain the best talent. One of the ways is to offer competitive salaries and benefits. In addition, it is important to provide a supportive and challenging work environment. This can be done by providing training and development opportunities, and by encouraging a culture of continuous learning and improvement.

It is also important to ensure that the health care system is able to attract and retain the best talent from a diverse range of backgrounds. This can be done by providing training and development opportunities for people from disadvantaged backgrounds, and by ensuring that the health care system is able to attract and retain people from a wide range of ethnicities and cultures.

In conclusion, the number of people employed in health care in the UK has increased significantly in the 1990s. This is due to a number of factors, including the increasing demand for health care services, the increasing demand for health care services in the private sector, and the increasing emphasis on preventive care and health promotion. It is therefore essential that the health care system is able to meet the increasing demand for health care services in a cost-effective and sustainable way. This can be done by increasing the number of people who are employed in health care, and by providing training and development opportunities for existing health care professionals.

UNIVERSITY FACULTY are UNITING to FIGHT the RESEARCH FUNDING CRISIS.

Research funding is critical to the economic and social development of the United States, leads to medical and technological breakthroughs, and contributes to the country's national and environmental security. Despite its importance, support for university-based research and development (R&D) has declined as the federal government's role in funding has diminished and restrictions on U.S. universities' use of funds to cover overhead costs have eroded.^{1,2}



These trends reduce the amount of public investment that makes it into the hands of academic researchers who are charged with advancing R&D. Declining federal R&D support means universities must rely more on corporate and philanthropic funding, or their own institutional funds to continue to perform the nation's basic research. Corporate funding in particular can compromise the mission of our public universities by shifting the focus of research from shaping our understanding of the world and instigating progress in vital subjects such as medicine and communication to profit-driven objectives.

Inadequate federal funding can also destabilize research labs as the job security of academic researchers is put at risk and critical research is abandoned. Those who remain in the field often spend too much time chasing grant money at the expense of conducting research. All of this can undermine the role of the United States as a global

scientific and technological powerhouse. Faculty, students and all Americans pay the price for inefficient and inadequate R&D funding.

Now, faculty and staff at major research universities are uniting in a movement to raise workplace standards. Together, they are highlighting the need to act on a local and national level and build the movement necessary to tackle the problems facing our nation's university research labs by advocating for adequate public R&D investment and more transparency in how grants are administered by universities.

Federal R&D funding is nosediving, leading to corporatization of public research labs.

Although federal research funding is part of a broader mix of funding sources that include state and local, university, and corporate and philanthropic funds, it continues to be the largest source of university-based R&D.³ Prominent agencies that finance federally funded R&D include the National Science Foundation (NSF), National Institutes of Health (NIH), which is an agency of the U.S. Department of Health and Human Services, the U.S. Department of Agriculture, NASA and the U.S. Department of Defense.⁴ These federal agencies, among others, help facilitate university-based research



advancements in prominent fields such as physics, life sciences and engineering.

A recent survey by the *Chronicle of Higher Education* found that not all money is equal when it comes to research funding.⁵ Nearly 38 percent of respondents who had been leading a lab for six or more years indicated that funding from the federal government was much more important than other sources.^{6,7,8}

Despite its importance, however, R&D has become less of a priority as the rate of federal funding dedicated to R&D has steadily declined over time. Since 1965, the proportion of the federal budget dedicated to total R&D has declined by two-thirds from approximately 12 percent of the total federal budget to just under 4 percent of the federal budget.^{9,10,11}

For example, the U.S. Department of Health and Human Services provided almost 57 percent of the federal support for basic university research in FY 2014, which is mostly funded through the NIH, and has seen a \$4.4 billion, or 13 percent, decline in its budget from fiscal years 2005 to 2015, in constant 2015 dollars. Overall R&D spending across agencies mirrored the NIH and fell \$21 billion, or 13 percent, in constant 2015 dollars over this same time period.^{12,13}

From 1965 to 2013, the proportion of university-based R&D that is federally funded has declined by almost one-fifth from 73 percent of total university-based R&D in 1965 to 59 percent in 2013.¹⁴ This can have negative consequences as the role of corporate funding is elevated in the face of declining public investment.

As federal funding declines, corporate research funding is becoming more critical to universities. Corporations and private foundations are more willing to fund applied research, intended to make profits, than basic research, which promotes an expanded understanding of the natural world. Yet it is basic

research in science and mathematics that has provided the crucial foundation upon which our understanding of the world, and in which progress in vital areas such as medicine, communications and environmental science is rooted.

The influence of corporate funding can lead to the prioritization of research that is marketable over that which has greater social value. One example of this is a lab at the University of Minnesota that spent more than \$2 million from the Wrigley Co. between 2010 and 2014 to study “environmentally compatible” chewing gum that won’t lose its flavor or stick to pavement.¹⁵ This type of research may make sense for Wrigley’s bottom line, but it is not necessarily the direction a university lab would take were it less reliant on corporate funding.

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Some examples go beyond just a shift in priorities and raise questions about the potential for unethical practices and conflicts of interest. For example, at the University of Minnesota, one lab found that 3M chemical workers were not at a higher risk of developing cancer. That \$450,000 study was paid for entirely by 3M.¹⁶

The ethical concerns that arise with the elevated role of corporate funding are not confined just to the University of Minnesota. The State University of New York–Buffalo closed a research institute developed to study fracking in 2012 after watchdog groups condemned a study claiming that regulations in Pennsylvania and New York made drilling safer. The watchdog groups criticized the lack of full disclosure regarding the study’s lead authors, who had ties to, and had conducted research directly for, the oil and gas industry.¹⁷ In another example, at Duke University—the largest recipient of corporate dollars in 2013— a pulmonologist “was investigated in 2011 after he recommended the FDA delay approval of a generic counterpart to a blood thinner developed

by drug giant Sanofi-Aventis,” because he did not disclose his financial ties to the company.¹⁸

University administrative costs are diverting funds from front-line researchers.

Another area of concern for faculty and other academic researchers has been skyrocketing overhead rates, which many faculty members see as a competition for funds that would otherwise directly fund research.¹⁹ Overhead rates are the mechanisms used to reimburse universities for the facilities and administrative costs, most commonly known as indirect costs, they incur both leading up to and while conducting federally funded research.²⁰ These rates are negotiated and audited by the federal government every three or four years.²¹



The federal government first started reimbursing universities for indirect costs—such as libraries, electricity, facilities maintenance, new buildings and administrative staff—in the 1950s.²² At that time, a cap of 8 percent was placed on overhead rates.²³ The cap was removed in 1966 when universities were first allowed to negotiate their own individual rates.²⁴ By 2013, the overhead rate had increased almost sevenfold to an average negotiated rate of 53 percent.²⁵

Many prestigious private universities negotiate rates well above the average. Harvard’s overhead rate in 2013 was 69 percent, which is also among the highest in the nation.²⁶ Boston University (64 percent), Massachusetts Institute of Technology (56 percent) and Tufts University (54 percent) were all part of a group of elite universities with overhead rates in excess of the average rate of 53 percent that year.²⁷ Grant recipients often fear that a high overhead rate at their institution will cost them out of the market and hurt their chances of getting a grant funded.

High overhead rates, which are only intended for reimbursement of facilities and administrative costs, actually enter universities’ general fund where there is no requirement they be used for expenses exclusively associated with research.^{28, 29} The lack of stringent regulation from the federal government opens the door to abuse by universities.

Inadequate R&D funding is threatening the research workforce.

According to an editorial in the journal *Nature*, “The success rate of grant applications to the [two major] U.S. funding agencies, the National Institutes of Health (NIH) and the National Science Foundation (NSF) are at an all-time low.”³⁰ As a result, faculty researchers are spending more time chasing money that is becoming more and more elusive. The lack of funding has created a stressful working environment for university researchers. A recent survey by the *Chronicle of Higher Education* found the majority of experienced researchers feel more pressure now than they have in the past and almost half of the scientists it surveyed have “abandoned an area of planned investigation they considered central to their lab’s mission.”^{31, 32}



The lack of adequate funding is also forcing academic researchers out of their field. In 2013, an American Society for Biochemistry and Molecular Biology (ASBMB) survey found that almost 80 percent of surveyed researchers spend more time writing grant applications than they did in 2010.³³ Despite dedicating more time to applying, more than 64 percent had experienced a decrease in their grant funding level over the same period of time.³⁴ More than 1 in 10 researchers surveyed by ASBMB reported they had either already lost their job or expected to do so soon and 45 percent have seen colleagues lose their job, as a result of the competitive funding environment.³⁵

Students and recent graduates have also been hit by the instability in lab funding. Many university researchers have reduced their recruitment of graduate students and research fellows. Approximately 88 percent of researchers surveyed by The Chronicle of Higher Education reported they feel the financial pressure on university research will discourage graduate students and post-docs from pursuing careers in university research.³⁶ This could have a chilling effect on recruiting the next generation of scientists and other academic researchers necessary to fuel the future of American innovation.

An innovation deficit looms as the United States loses its competitive edge in R&D.

There are already a number of indicators the United States has started to lose its global R&D edge. Two-thirds of research scientists responded to the ASBMB that they do not have the funds to expand their lab's research operations; and almost 1 in 5 stated they may have to close their lab if more funding is not secured in the next 12 months.³⁷ The growth rate of researchers in the United States since 1995 has not kept up with many other countries with significant R&D operations.³⁸ In fact, of six strategic regions evaluated in the National Science Board's 2014, "Science & Engineering Indicators" report, only two had growth rates below the United States. In comparison, China has increased its number of researchers by 200 percent and the European Union has experienced a 65 percent growth over the same period.³⁹



Faculty are uniting to take on the funding crisis in higher ed R&D.

Faculty are uniting to take on the underfunding of higher education research - calling attention to the negative consequences of reduced federal support, increasing "overhead" charges by university administrations.. Faculty and their allies among students and the broader community have started to come together to build a movement to tackle these issues - and the related growth of unwarranted corporate influence on university-based research. Faculty are seeking improved public investment in R&D and the reintroduction of reasonable limits to overhead rates. Faculty at colleges and universities across the country are collecting and reporting on their experiences as university researchers through a Faculty Forward survey. The surveys will provide important insights from front-line researchers which will be used by faculty to formulate concrete proposals to improve university-based research funding.



ENDNOTES

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- 5 Basken, Paul and Voosen, Paul, "Strapped Scientists Abandon Research and Students," p. 19, The Chronicle of Higher Education, February 24, 2014. <https://chronicle.com/article/Strapped-Scientists-Abandon/144921/#article-scroll-section-7>
- 6 Ibid.
- 7 By comparison just 28 percent said the same about private philanthropy; just 19 percent said that private industry was much more important than other sources of funding; and just 10 percent said state government was much more important
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