

# Study: Growth in research comes at a steep price

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A study released this month confirms and quantifies what many medical school deans and financial administrators have long understood: Basic science research can be an expensive luxury. The study, which was conducted by the University of Rochester School of Medicine and Dentistry, found that the school had to add 40 cents to every dollar of external grant support received by newly recruited scientists in order to achieve financial equilibrium. This is in contrast to support required for established scientists, which is considerably less.

"The benefit of research, both to an institution and society, is greater than the sum of the parts," said David Guzick, M.D., Ph.D., dean of the University of Rochester School of Medicine and Dentistry and a co-author of the study. "However, grant revenue never comes close to paying for the total cost of research. This is especially true in the start-up phase of newly hired investigators."

The authors are quick to point out that, regardless of the financial implications, research should remain a core mission of academic medicine in that this activity is critical for the advancement of medical knowledge. Research is also an important source of prestige, and an institution's national reputation is often closely linked to the success (and size) of its research enterprise - an important factor in the competition for faculty, patients, partnerships, and philanthropy. Furthermore, in places like Rochester, academic medical centers play an important role in their local economies, both as employers and as a source of technological innovation for biotechnology and medical device

companies. But these benefits come at a cost.

The study, which appears in the January edition of *Academic Medicine*, followed 25 basic biomedical science faculty members who were recruited to the University of Rochester between 1999 and 2004. Of that number, 23 were hired from outside the University. At the time, the University of Rochester Medical Center (URMC) was in the midst of a major expansion of its biomedical research enterprise which included two new buildings, several new research centers, and a push to increase the number of scientists and research funding.

Total expenses for the 25 faculty members, as well as the revenues they obtained through grant support, were calculated through 2006. Over this period, the researchers were highly successful at generating research revenue; cumulatively they were awarded \$99.7 million extramural research grants, measured in 2006 dollars. Of that amount, \$70.7 million directly supported their research (salaries, lab supplies, equipment expenses, etc.) and \$29.1 million was indirect support - revenue provided by funding agencies such as the National Institutes of Health to help defray overhead costs of the scientists' home institution. Other potential sources of revenue generated directly by the scientists - such as philanthropy, royalty revenue from intellectual property, and clinical and education revenue - were found to be minimal.

The report's authors then tallied the start-up costs associated with the 25 faculty. This included recruitment packages that consisted of salaries and benefits for the scientists and their research assistants not recovered by grants, laboratory renovations, equipment, and other costs. The total amount provided by the school in the form of start-up packages for these 25 scientists was \$33.1 million.

The study also calculated the indirect costs born by the school to support each of the researcher's activities. This included a prorated share of the

school's overall facility and administrative expenses, such as utilities, housekeeping, research administration and oversight, and shared research resources and technologies. The indirect (overhead) expenses associated with the 25 scientists over the eight year period were \$35.9 million.

The medical school's cumulative expenses for the group were \$69 million (\$33.1 million in start-up and \$35.9 million in indirect costs), of which the school was able to recover only \$29.1 million in the form of indirect revenue from granting agencies, for a shortfall of \$39.9 million. Thus, every dollar of research funding brought in by the scientists required an additional 40 cents of support from the school. To plug this hole, the medical school was compelled to tap other forms of revenue such as its endowment, philanthropy, royalty revenue from its licensed technologies, and transfers from other divisions of the Medical Center.

"Basic science is not necessarily a self funding activity," said neurologist Ray Dorsey, M.D., the lead author of the study. "It often requires substantial support from an institution above and beyond the research grants and indirect revenue it receives from NIH and other funding sources."

While conventional wisdom is that, once scientists begin to build a portfolio of research grants, this revenue will cover the cost of research and institutional overhead expenses, this is not the case. Other studies have shown that universities must contribute anywhere between 15 to 20 cents for every research dollar received by established faculty to support their research missions.

However, the University of Rochester study showed that this disparity is even more pronounced when start up costs for new faculty are added to the mix, a factor that has significant implications for institutions that are looking to expand their research enterprise and climb the rankings ladder

in terms of research funding. The Rochester study shows that additional costs associated with recruiting a new scientist essentially doubles the subsidy that medical schools must pay to support their work.

"The investments that academic health centers must make in order for basic science to occur are growing, much of which will never be fully recovered," said Dorsey. "This report illustrates that while funding agencies such as the NIH continue to play a leading role in biomedical research, other sources of revenue such as philanthropy, medical school endowments, and private and government support are of equal and increasing importance to the advancement of science."

Source: University of Rochester

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