Federal Funding for Research

Introduction

Research, along with teaching and public service, is one of the core missions of the University of North Carolina. Federal support of research at our campuses is indispensable as 68% of our research support is provided by the American taxpayer. History has long shown that the long-term competitiveness of our country has been linked to the strength of our academic research foundation. By one estimate, 80% of leading industries have resulted from research conducted at colleges and universities.

Basic Research

Basic research is considered to be important to long-term national interests, through supporting technological advancements and maintaining the growth of new industries, however it has not been significantly supported by the private sector. Colleges and universities conduct the majority of basic research in the United States – 60% in 2008, business and industry only account for 20%. “Game-changing” innovations tend to come from basic research conducted at colleges and universities, innovations that lead to new patents, new technologies, and eventually new companies and industries. Companies spun out of university research have a far greater success rate than other companies, creating good jobs and driving economic activity.

The federal government is the primary source of funding for basic research in the United States, providing 60% (51.9 billion in 2008). The second largest source of basic research funding comes from colleges and universities themselves.

UNC and Federal Funding for Research

In FY 2012, the UNC system was competitively awarded $1.2 billion dollars in external funding for sponsored programs and research, 69% ($910 million) of that funding came from the federal government. North Carolina currently ranks 21st in federal funding for research and our state ranks 5th nationally in academic research and development performed per $1,000 of Gross State Product. It is estimated that for every $1 million investment in sponsored research supports an average of 17.25 jobs, meaning that more than 22,000 jobs were supported through UNC research funding last year.

UNC Strategic Plan, 2013-2018

Earlier this year, the UNC Board of Governors approved a new five-year strategic plan for the UNC system after a 6-month planning process that included input from the state’s business and higher education leaders. UNC is currently in the process of implementing the plan and one key component is strategic investment in “game-changing” research areas:
1. **Advanced Manufacturing** integrates information technology, design methodology, rapid prototyping, automation, computation, software, sensing, networking, and new materials in the production of products, as well as the systems that support and enable them. (e.g., robotics and other automation, additive and traditional machining, exotic and mundane materials, computation and visualization equipment) to produce factory environments, industrial processes, and supply chains that can respond to customer needs, adapt to changes in production technology, and sustain energy and material resources.

2. **Coastal and Marine Science**: With hundreds of miles of ocean beaches, thousands of miles of estuarine coastline, and millions of acres of sounds, creeks, and marshes, the coast is extremely important to North Carolina. For these reasons and many more, it is incumbent on UNC to be at the forefront of understanding our coast. Our coastal and marine resources are varied; thus, we need a variety of academic, research, and outreach programs to fully understand and intelligently utilize them. In addition to several academic departments in marine sciences across the system, UNC has a number of related centers and activities that focus on research, teaching, and outreach.

3. **Data Science**: The volume of data available to us has increased exponentially over the past ten years, creating a corresponding need to make sense of and take advantage of that vast data to inform decision-making in scientific research, security, defense, energy management, and many other fields. Because nearly every sector of the U.S. economy is struggling with growing data volumes, “big data” has become an increasingly important research field.

4. **Defense, military, and security**: North Carolina has a robust and growing military community, with the third-largest military population in the United States distributed among six military installations, including Ft. Bragg and Camp Lejeune. North Carolina also is home to more than half of all U.S. Special Operations Forces, including three of the five subordinate commands of the U.S. Special Operations Command: the U.S. Army Special Operations Command (USASOC), U.S. Marines Corps Forces Special Operations Command (MARSOC), and Joint Special Operations Command (JSOC). UNC has established unique partnerships with these North Carolina-based military entities, which have a range of science, technology, and educational needs.

5. **Energy**: touches the lives of every person every day. Critical activities ranging from transportation to operation of factories and offices to heating and cooling our homes hinge on our ability to produce and consume energy. Recognizing that most sources of easily accessible energy are limited and that many are non-renewable, UNC must be at the forefront in making discoveries that will fuel our state and the world in the future, and we have a robust foundation on which to build.

6. **Pharmacoengineering**: Potential solutions to the world’s biggest challenges increasingly are hidden in the space between disciplines (such as medicine and engineering, or material science and biochemistry), and discovering the answers that will enable us to make breakthroughs must come through cross-disciplinary and cross-institutional work.
Pharmacoengineering is the science behind the development of materials and technologies to improve the delivery of therapeutic and diagnostic agents, and it lives in that interdisciplinary space.

According to preliminary analysis, with these new investments the state can expect to see about 30 patents generated in these areas, about $70 million in new grant funding and approximately 40 new companies with nearly $70 million in external start-up funding, activities generating more than 4,300 jobs, all by 2017-2018.

The real pay-off for the investment comes over time. By 2025, projections show revenues of $1.45B (more than $900M in new grants and contracts, $14M in revenue from approximately 375 patents, and more than $500M invested in about 200 new companies) from a total state investment of $453M, a ratio of 3.5:1, with nearly 23,000 jobs being created. And returns continue to escalate: by 2028, projections show the state’s ROI increasing to 5:1, with more than 33,000 jobs created through a combination of new company start-ups, research funding, and construction.

**Return on Investment**

Below, please find some excellent examples of the return on investment from federally funded research at our campuses:

- **CREE Inc.** is a multinational manufacturer of semiconductor materials and devices, headquartered in Durham, NC. CREE is known for their improvements in LED (light-emitting diode) technologies. CREE was founded by a group of researchers at NC State Universities after years of work on research funded by the Department of Defense Office of Naval Research. For more information: [http://www.sciencecoalition.org/successstories/company.cfm?companyId=169](http://www.sciencecoalition.org/successstories/company.cfm?companyId=169)

- **Dr. Myron Cohen** HIV research at UNC Chapel Hill has proved definitively that early and effective treatment with antiretroviral drugs could essentially prevent those with HIV from spreading the disease. Dr. Cohen’s decades long research was funded primarily by the National Institutes of Health. His discovery was named “Breakthrough of the Year” by the Science magazine. For more information: [http://globalhealth.unc.edu/2011/12/unc-hiv-prevention-research-named-scientific-breakthrough-of-the-year/](http://globalhealth.unc.edu/2011/12/unc-hiv-prevention-research-named-scientific-breakthrough-of-the-year/)

- **SAS Institute** is one of the world’s largest private software companies specializing in developing analytics software headquartered in Cary, NC. SAS was founded by a group of NC State graduates working on research funded by the Department of Agriculture and the National Institutes of Health. For more information: [http://www.sciencecoalition.org/successstories/company.cfm?companyId=213](http://www.sciencecoalition.org/successstories/company.cfm?companyId=213)

- **Dr. Joseph DeSimone**, the Chancellor’s Eminent Professor of Chemistry at UNC Chapel Hill and his team have been conducting groundbreaking research on PRINT (Particle
Replication in Non-wetting Templates) technology. They believe that their discoveries could lead to the creation of artificial or synthetic blood. His research has been supported by funding from the National Science Foundation and the National Institute of Health. For more information:  
http://www.chem.unc.edu/people/faculty/desimone/index.html?display=research_display&show=all

F&A (Facilities and Administrative) Cost-Reimbursement Rules

Recognizing that research carries necessary administrative, facilities, and other expenses above and beyond the direct costs of the project, federal agencies have included in research grants and contracts a portion of funds to help offset these related costs – commonly called "indirect costs," "overhead receipts," or "facilities and administrative (F&A) receipts." Under federal guidelines, F&A receipts reimburse for costs associated with supporting grants and contracts based on a formula negotiated between a campus and the federal government.

Examples of F&A expenditures include but are not limited to the following: personnel services, supplies, utilities, fixed charges, renovation and capital improvement projects, educational and computing equipment, and library materials.

F&A receipts are expended to support costs associated with maintaining an environment conducive to research and scholarly advancement and ensuring competitiveness for attracting additional research funds. Specifically, these funds support the staff and operating costs for research functions, audit and compliance related to grants and contracts, facilities and equipment repairs and maintenance, debt service for facilities that provide research space, maintenance and operation of the physical plant and offices that provide support to the universities’ research endeavors, and investment in the libraries to maintain current research related collections and services. F&A funds are increasingly important as University research is a critical and growing economic driver for the State of North Carolina.

Conclusion

We believe that federal investment in research programs and infrastructure are fundamental to our national security, economic recovery, and prosperity. Further, we believe that the University is a producer and not a consumer; we produce students, medical treatments and cures, ideas, technology and leaders for government, industry, education, and more. UNC will continue to partner with the federal government to promote and enhance American competitiveness and capturing and accelerating innovation. Finally, we believe that the federal government must continue to make strategic investments for future economic growth even as it seeks to control spending.
UNC specifically supports the following priorities:

- **Preserve current funding levels for National Institutes of Health (NIH), National Science Foundation (NSF), Department of Defense (DOD), Department of Agriculture (AG), Department of Education (ED), and Department of Energy (DOE) research grants and contracts with Universities.**

- **Enforce existing Facilities and Administrative (F&A) cost-reimbursement rules for federally funded grant awards and ensure consistent application by all federal agencies across all universities. Oppose effort to arbitrarily cap cost reimbursement associated with federally funded university based research.**

- **Cost Sharing:** Work to minimize the number of federal research grants at NSF and other agencies that require cost-sharing. Cost sharing requirements in research grant solicitations disadvantage universities and faculty members with small endowments or other research resources and discourage the best research proposals from being funded.

- **Open Access to Research:** Support legislation or regulatory action to mandate public access to taxpayer-funded research at the NIH and other federal agencies without diminishing copyright protection currently accorded scholarly work.

- **DOD & DHS Research Contracts:** Support efforts to reinforce DOD & DHS policy that basic research, unless classified, should not be burdened by clauses that restrict the dissemination and sharing of scientific information.

- **Comprehensive Energy Policy:** Support legislation that authorizes energy research opportunities.

- **Export Controls Reform:** Support efforts to revise and simplify the federal government ITAR and Export Controls rules to update and limit the technologies that are subject to ITAR restrictions and clearly protect technologies that are a threat to our national security.

- **Reform and Improve Grants.gov:** Urge federal agencies and Congress to improve the grant and contract submission process known as “Grants.gov” to facilitate the grants and contracts process with the federal government.

- **Extend the Research and Development (R&D) Tax Credit:** Permanently extend the R&D credit to encourage commercial R&D investment that enables American companies to bring new and improved products and services to the market.

- **Patent Legislation:** Monitor the implementation of Public Law 112-29, the Leahy-Smith
America Invents Act of 2011 as it applies to University patents and technology transfer.

-Bayh-Dole Refinements: Support the role of universities in the innovation process and continuation of Bayh-Dole provisions that allow universities to own and license the results of federal research.