Dear Colleagues,

The Office of the Vice Chancellor for Research is pleased to provide the Washington University FY13 Annual Research Report. To provide broad access to information and support WU sustainability efforts, this year’s report is entirely electronic: [http://research.wustl.edu/about/AnnualReport/Pages/default.aspx](http://research.wustl.edu/about/AnnualReport/Pages/default.aspx). This Annual Report presents research data in charts and tables that are rich in detail and information; and research vignettes that highlight some exciting research studies and discoveries. The report also provides examples of technology innovations yielding revolutionary medical diagnostics and treatments, new computer applications, exciting discoveries in energy, among innumerable accomplishments. Commercialization of such research provides meaningful and important benefits to people worldwide.

Washington University’s research enterprise continues as one of the country’s largest, most creative, and most productive life sciences endeavors, driven by faculty who are among the world’s best and most envied.

With regard to research funding, it is notable that industry-sponsored clinical studies, associated with the School of Medicine, grew strongly in FY13, increasing 29% over FY12. Other major accomplishments include 6% increases in research funding in the School of Arts & Sciences and in the School of Engineering and Applied Sciences.

The University, however, continues to be highly dependent on federal funding, and this past year’s federal research budget was under duress in three ways: 1) the March 2013 sequestration was immediately felt and significantly reduced federal research support, 2) a 16-day federal government shutdown delayed review and funding of federal research, and 3) the funding bump from the American Recovery and Reinvestment Act (ARRA) ended in FY12.

WU sponsored research awards ($549M) decreased 11.5% in FY13, with the federal component ($402M) diminished by 11%. WU research continues to be particularly supported by and dependent on funding from the National Institutes of Health (NIH), whose budget is also constrained. Of the total $585M WU research portfolio (including industry-sponsored clinical studies), 69% is from federal sponsors and 59% is from NIH.

Washington University is not alone in these challenges, which affect research universities nationally. Federal Research & Development (R&D) investments have declined continuously since 2002 in both constant and actual dollars. From 2010 to
2013, federal support of research decreased 16%, and cuts to biomedical research were even greater. The NIH budget has fallen $1.5B; in essence reverting back to 2001 inflation-adjusted levels. These realities can be placed in the context of global competitiveness. For example, the 2007-2012 annual growth of biomedical R&D expenditures (government and private sector, compounded and adjusted for inflation) fell 1.9% in the US, while increasing 5.7% in Japan, 6.7% in India, 11.4% in South Korea, and 32.9% in China (Chakma: N Engl J Med 2014;370:3-6).

As a consequence of these challenges, faculty are spending more time writing and submitting grant proposals, and making other sacrifices. Any resulting loss of scientific momentum is lamentable. Similarly disturbing is the lack of clarity and uncertainty the funding future presents to our faculty, and to our trainees as they begin their careers.

Faculty are seeking more diverse funding sources, often from private foundations. Washington University’s most significant foundation relationships are those with our partner hospitals, and their Barnes-Jewish and St. Louis Children’s Hospital foundations. They have consistently been our top foundation sponsors, and we are most appreciative for their enduring support and the research which they enable. Another trend is increasing relationships between research sponsors themselves, including federal-foundation, federal-industry, and foundation-industry partnerships. We expect these partnerships to become more common.

Our innovative faculty, nevertheless, have the talent to leverage the challenges presented by a constrained funding environment. Excepting industry-sponsored clinical studies, our portfolio of industry-sponsored nonclinical research is relatively small (2.6% in FY13). This represents significant opportunity for new academic-industry partnerships, collaborations, engagement, and research growth. Institutionally, we also have the opportunity to assist them in several ways:

1. Strategic planning for targeted growth and expansion of our research portfolio
2. Creation and strategic investment of internal pilot funds to seed new research
3. Messaging, incentives and rewards
4. Evaluation of risk tolerance and strategic research development activities
5. Streamlined policies and administration, and enhanced operational efficiencies
6. Create and value new long-term relationships and models

Indeed, the Office of the Vice Chancellor for Research (OVCR) has already moved forward on many of these efforts, which have already yielded benefit.

For example, to encourage increased collaboration and support the strategic investment of internal funds, this office in 2011 initiated the University Research Strategic Alliance (URSA) internal seed funding program. The focus is on new teams of investigators, doing new research, and in new ways. The goal is to encourage collaborative efforts in novel, innovative, and sustainable research, with
the ultimate goal of competing for extramural support. Only teams are eligible – and they must be new collaborations. Each project receives up to $25,000 in seed funding. Three annual rounds of funding have supported eighteen collaborative teams of thirty-seven investigators, representing nearly every WU school. URSA investment of $150K in 2011 has returned approximately $2.4M in external awards. This is a truly successful program.

Another example is research operations. A recent external review showed that our OVCR research administration infrastructure is comparatively small, and highly cost-efficient. Nevertheless, we have sought and achieved additional improvements. A major recent accomplishment is the streamlining of grants and contracts in the OVCR Office of Sponsored Research Services (OSRS). Through consolidation of several grants and contracts teams, including a partnership with the School of Medicine’s Center for Clinical Studies, OSRS has brought together contract negotiation units from several separate areas to form a single team of skilled staff to negotiate the University’s research agreements. This single infrastructure is better able to support the University’s pre-award and award processes, creating more efficient processes and improved overall services to faculty and to department staff across the University.

Despite the decline in federal research support, there was no sequester on the administrative workload and compliance burden of the faculty, departments or central areas. This burden is ongoing and increasing, and not reflected simply by the amount of University research funding. The OVCR is also committed to finding ways to reduce that burden. For example, the faculty Policy on Conflict of Interest in Research, implemented in 2012, has brought increased clarity, consistency and transparency, as well as operational efficiency, to the process of declaring and successfully managing potential faculty conflicts of interests.

Returning to the matter of research strategy, it is important to emphasize the ongoing university initiative on Research Innovation and Entrepreneurship, led by the VCR and the Office of Technology Management (OTM). We have been assisted by a Research Innovation & Entrepreneurship Steering Committee, convened by the VCR, and comprised of accomplished faculty innovators, senior University leaders, and executives from regional bioscience and technology organizations and providers of investment capital who help make start-up companies a reality. The overall objective of this initiative is the creation, protection, commercialization, and licensing of university research discoveries, in order to provide the greatest benefit of our research to the public. Another focus is to engage, support, and nurture the entrepreneurial spirit and activities of students and trainees, as well as faculty. And these efforts are succeeding. Since our efforts began in FY10, invention disclosures have increased 45% and the number of US patents filed annually increased 41%. We are increasingly engaged with and supporting groups of entrepreneurial students and postdoctoral associates, such as the Biotechnology and Life Science Advising (BALSA) group and BioEntrepreneurship Core (BEC). The OTM Bear Cub program continues to provide critical proof-of-concept funding of WU technologies and to date has
funded 31 projects and invested over $1.3M. Innovation and the advancement of technologies is important in the creation of start-up companies, and in FY13 there were four new start-ups based on WU technologies. The trajectories of all these activities are strongly positive. We anticipate increased translation of new ideas to the marketplace, new relationships with industry and the investment community, and University-enhanced economic development.

While this message is perhaps long, it is because of wanting to tell the story of our incredible investigators and the ecosystem of trainees, staff, and administrators who execute and support the research mission. And yet, this only scratches the surface of Washington University’s research enterprise, and presents just a few efforts to improve and enhance our research accomplishments.

WU remains a globally competitive and prestigious research institution, with an even more exciting potential. I invite you to view the Annual Report, tour our website, and share my reasons for such a positive outlook.

Sincerely,

Evan D. Kharasch, MD, PhD
Vice Chancellor for Research
Russell D. and Mary B. Shelden Professor of Anesthesiology
Professor of Biochemistry and Molecular Biophysics

1 We have changed our reporting practices, effective with this year’s report. Previously, clinical research which was supported by industry (typically pharmaceuticals and devices) was not reported as funded research. This historical practice has been updated to properly reflect that such clinical research is important to the University and our hospital partners, to properly reflect the overall size of the university research enterprise, and to credit those investigators competing for industry support and engaging in this research which is also of vital interests to patients. To avoid confusion, information is presented using both the old and new accounting methods.