FY2015 ANNUAL RESEARCH REPORT
Table of Contents

Introduction ............................................................... 2
Proposal Fast Facts ....................................................... 4
Award Fast Facts ........................................................ 8
International Collaborations ........................................... 12
Technology Ventures .................................................... 14
INTRODUCTION

The Johns Hopkins University was the first university in the Western Hemisphere based on the European research institution model. Founded in 1876 with a mission to both teach and advance human knowledge through hands-on discovery, its establishment revolutionized U.S. higher education. For more than 140 years, Johns Hopkins faculty, clinicians, scientific staff, and students have worked side by side in pursuit of discoveries that improve our lives. These researchers at our nine academic divisions and at the university’s Applied Physics Laboratory – across eleven campuses and in more than 155 countries – have continued to ensure that Johns Hopkins remains a world-class force in research, education, and patient care.

Over the last year, Johns Hopkins University researchers have made countless discoveries that expanded the bounds of human knowledge, educated the next generation of scholars, and created life-saving treatments to be employed worldwide. We continued to build upon President Daniels’ vision set forth in the 10x20 Initiative, expanding the Johns Hopkins research infrastructure and our technological capacity, and ensuring a position of strength to remain the leader in U.S. research spending for the foreseeable future. Indeed, for the 35th year in a row, we were named the nation’s leader in federal research and development funding, an accomplishment we do not take lightly in this highly competitive funding environment.

The fiscal year brought with it more than $1.5 billion in research dollars across the nine academic divisions, including a five-year, $500 million award to Jhpiego from the U.S. Agency for International Development to lead the U.S. government’s flagship effort to end preventable maternal and child deaths around the world. Our faculty won many prestigious research awards throughout the year, including the Albert B. Sabin Gold Medal Award, NSF CAREER Awards, a Packard Fellowship, inclusion on Popular Science’s Brilliant Ten list, and election to the National Academies. We also celebrated the opening of Malone Hall —ushering in a new era of networking and interdisciplinary collaboration around computer science—and the successful construction of the world’s most advanced biocontainment
Each year, we continue to seek new ways to better serve our faculty and students by providing new funding opportunities, possibilities for collaboration, and improved services to make research more accessible to all.

units to prepare for safely treating patients with highly infectious diseases. With a grant from Bloomberg Philanthropies, we also established the Center for Government Excellence (GovEx), a keystone of the 21st Century Cities Initiative. GovEx helps local governments across the world build capacity for decision making that is rooted in evidence, transparent accountability, and community engagement.

Highlighted throughout the 10x20 Progress Report, we created new programs and strengthened those that already make Johns Hopkins an international source of innovation. From hiring eleven new Bloomberg Distinguished Professors to introducing networking events between APL and the University’s academic divisions to the construction of the Maryland Advanced Research Computing Center (MARCC), we have promoted collaboration, individual excellence, and a commitment to our community, and strengthened our institution’s infrastructure. Of particular note, we were thrilled to announce the Johns Hopkins Catalyst & Discovery Awards, a $15 million commitment to our faculty’s innovative research. With the inaugural grants, we supported 37 early career faculty and 23 teams pursuing novel interdisciplinary collaborations. We also presented Dr. Sharon Gerecht of the Whiting School of Engineering with the inaugural President’s Frontier Award, a new program established with a $1.25 million donation from two Johns Hopkins alumni.

We are so proud of the creative and groundbreaking research conducted throughout our community of scholars and we are confident that our programs and academics will continue to create new milestones in human knowledge in the coming year.

Denis Wirtz, Vice Provost for Research
TH Smoot Professor of Engineering Science, Oncology, Pathology
Johns Hopkins University and Johns Hopkins School of Medicine
Proposal submissions at the University have increased by 6.8% from FY2014 to FY2015. With greater competition for federal awards than in the past, our faculty have continued to seek alternative avenues for research funding.
Number of Submitted Proposals by Fiscal Year

Over the past four years, proposal submissions increased 18%.

Dollars Requested by Submitted Proposals by Fiscal Year ($ millions)

*Note: FY2013 includes $500M USAID “Global: RMNCH” proposal.
FY2015 Proposals Submitted By Division (7,066 Total)*

- School of Medicine: 62.7%
- Bloomberg School of Public Health: 17.5%
- Whiting School of Engineering: 6.9%
- Krieger School of Arts & Sciences: 9.0%
- JHPIEGO: 5.8%
- School of Education: 5.4%
- Other: 3.1%

*excluding APL

FY2015 Amount Requested By Division ($ 5.6 Billion Total)*

- School of Medicine: 56.1%
- Bloomberg School of Public Health: 20.5%
- Whiting School of Engineering: 9.0%
- Krieger School of Arts & Sciences: 5.8%
- JHPIEGO: 5.4%
- School of Education: 9.0%
- Other: 3.1%

*excluding APL
AWARD FAST FACTS

Of the proposals in which the University was successful, we were approved for 77.8% of the amount requested in FY 2015.
Total Dollars Proposed vs. Approved ($ billion)

JHU was awarded 77.8% of the total requested in FY2015 awards, 91.4% in FY2014, 87.6% in FY2013 and 90.1% in FY2012.

<table>
<thead>
<tr>
<th>Year</th>
<th>Proposed</th>
<th>Awarded</th>
</tr>
</thead>
<tbody>
<tr>
<td>FY2012</td>
<td>2.2B</td>
<td>1.3B</td>
</tr>
<tr>
<td>FY2013</td>
<td>2.0B</td>
<td>1.5B</td>
</tr>
<tr>
<td>FY2014</td>
<td>1.8B</td>
<td>1.2B</td>
</tr>
<tr>
<td>FY2015*</td>
<td>2.1B</td>
<td>1.4B</td>
</tr>
</tbody>
</table>

**FY2015 NUMBER OF AWARDS PER PI**

Number of awards, and per-award average, by PI.

<table>
<thead>
<tr>
<th># of Awards per PI</th>
<th># of Pls</th>
<th>Avg. $ FY2015 Approved Award</th>
<th>% of Pls</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>820</td>
<td>478,017</td>
<td>60%</td>
</tr>
<tr>
<td>2</td>
<td>274</td>
<td>532,353</td>
<td>20%</td>
</tr>
<tr>
<td>3</td>
<td>128</td>
<td>425,070</td>
<td>9%</td>
</tr>
<tr>
<td>4</td>
<td>57</td>
<td>702,417</td>
<td>4%</td>
</tr>
<tr>
<td>5</td>
<td>41</td>
<td>464,699</td>
<td>3%</td>
</tr>
<tr>
<td>6+</td>
<td>47</td>
<td>1,021,286</td>
<td>4%</td>
</tr>
<tr>
<td>Total:</td>
<td>1367</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Award notifications have not yet been received for all FY2015 proposals.
FY2015 Award Amount Received By Division ($1.4 Billion Total)*

- School of Medicine: 47%
- Bloomberg School of Public Health: 16%
- Jhpiego: 13%
- Krieger School of Arts & Sciences: 24%

FY2015 Number of Awards By Sponsor Type ($1.4 Billion Total)*

- Federal: 42%
- Foreign: 19%
- Foundation: 12%
- Private Non-Profit: 16%
- Private Profit: 8%
- Other: 3%

*excluding APL
FY2015 Award Amount Received By Sponsor Type ($1.4 Billion Total)

- **Federal**: 75%
- **Foundation**: 9%
- **Private Profit**: 4%
- **Private Non-Profit**: 4%
- **Foreign**: 7%
- **Other**: 1%

**TOP FIVE SPONSORS IN FY2015**

1. **Department of Health and Human Services (DHHS)**
   - $742,044,752
2. **United States Agency for International Development (USAID)**
   - $279,024,331
3. **National Science Foundation (NSF)**
   - $40,193,239
4. **Bill and Melinda Gates Foundation**
   - $35,220,818
5. **National Aeronautics and Space Administration (NASA)**
   - $31,793,344
INTERNATIONAL COLLABORATIONS

With over 170 field offices in 96 countries in FY2015, our faculty, staff, and students are able to apply and share their knowledge globally.
International Collaborations

Johns Hopkins University researchers have collaborations world-wide in areas of focus such as:

- HIV/AIDS
- Cardiology
- Malaria
- Immunology
- Hepatitis
- Cancer
- Meningitis
- Family Planning
- Geology
- Autism
- Vaccines
- Astronomy
- Sociology
- Influenza
- Maternal and Child Health
- Nutrition

**TOP FIVE COUNTRIES RECEIVING SUBWARDS FROM JHU IN FY2015**

- Kenya
- Tanzania
- Mozambique
- Malawi
- Uganda
In FY2015, Johns Hopkins Technology Ventures (JHTV) boasted an impressive portfolio including 2,478 Active Patents, 112 new U.S. Patents, 3,900 Material Transfer Agreements and 171 signed licenses and options. The projected 10 year value of the license fees and minimum annual royalties is $11 million. JHTV license revenue, including equity sales, was $17.9 million against a budget of $15.6 million.
FY2015 Technology Transfer Activities

Number of Disclosures

START-UP COMPANIES CREATED IN FY2015

- Anacrusis
- Ashvatta Therapeutics
- Baton
- Blade Therapeutics
- Brightfield Imaging
- DiPole Materials
- Intellix Checklists
- MycoMed Technologies
- Malaria Newco
- PapGene
- Public Health Technologies
- Sonavex
- Tavec
- TheraCord

FY2015 Reports on Inventions (ROIs)

ROIs have increased by 15% from FY2012 to FY2015
NEW ACCELERATOR SPACE:
FastForward East

In FY15, JHTV expanded the footprint of FastForward to East Baltimore opening a new innovation hub in the Rangos building that offers nearly 7000 square feet of shared lab space, co-working space and dedicated office space to support entrepreneurs and startup companies.
COLLABORATION: JHU and Bayer HealthCare

In FY15, the University and Bayer HealthCare entered into a five-year collaboration agreement to jointly develop new ophthalmic therapies targeting retinal diseases. The goal of the strategic research alliance is to accelerate the translation of innovative approaches from the laboratory to the clinic, ultimately offering patients new treatment options for several retinal diseases.
A Sample of Research Awards Received in FY2015

School of Medicine

Dr. Gul Dolen, assistant professor of neuroscience in the School of Medicine, and Dr. Eili Klein, assistant professor of emergency medicine, received 2014 Individual Biomedical Research Awards from the Hartwell Foundation. Dolen is identifying the brain cells responsible for imagining the world from another person’s point of view - an ability crucial to healthy social interaction. She plans to then develop a highly targeted therapy to stimulate those brain cells to alleviate the symptoms of autism. Klein aims to predict how influenza viruses will evolve from one season to the next, which would enable more effective flu vaccines to be developed.

Bloomberg School of Public Health

Dr. Sara Bleich, an associate professor in the Bloomberg School of Public Health specializing in obesity, and Dr. Shereef Elnahal, A&S '07, a radiation oncology resident at Johns Hopkins Hospital, were appointed White House Fellows, a prestigious award that brings them for one year to Washington to be involved in the process of government. Bleich is placed at the U.S. Department of Agriculture, Elnahal at the U.S. Department of Veterans Affairs.

Krieger School of Arts and Sciences & Whiting School of Engineering

Dr. Kit H. Bowen, professor in the Krieger School’s Department of Chemistry, is principal investigator on a project that won a five-year Department of Defense award. Dr. Tim Mueller, an assistant professor of materials science and engineering in the Whiting School of Engineering, will lead one of the other research groups. In total, seven teams from five institutions are working on the project, with the goal of finding ways to turn atom clusters into materials that would be useful in practical ways.

School of Education

Dr. Steven Ross, professor of education, received a grant from the U.S. Department of Education to develop a framework for high-impact support systems for novice principals. This framework for principal evaluation that can guide the improvement of professional practice that leads to increased student learning.
ACKNOWLEDGMENTS

THE JOHNS HOPKINS UNIVERSITY
ANNUAL RESEARCH REPORT
web.jhu.edu/administration/provost/bios/wirtz

Denis Wirtz
Vice Provost for Research
wirtz@jhu.edu

Alexandra Albinak McKeown
Associate Vice Provost for Research Administration
amckeown@jhu.edu

Susannah Porterfield
Assistant Vice Provost for Research
sporterfield@jhu.edu

PHOTO CREDITS

JHTV
JHU HUB
Homewood Photography
Mary Spiro