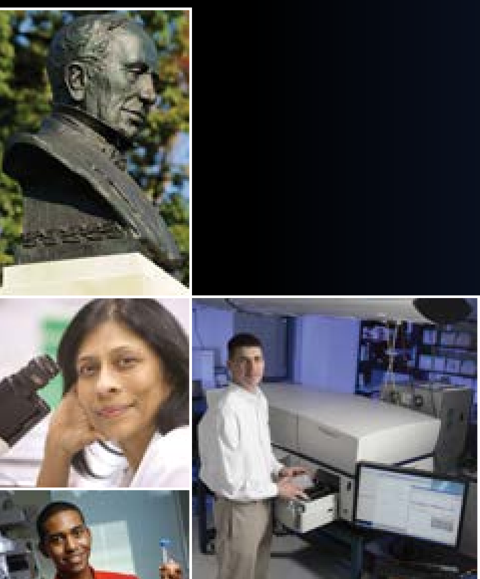
JOHNS HOPKINS
UNIVERSITY

Faces OF INNOVATION



TECHNOLOGY TRANSFER OFFICE
FISCAL YEAR 2013 ANNUAL REPORT

In Memoriam

R. KEITH BAKER

Senior Director, Licensing
Friend, Mentor, and Leader

EMPLOYED BY JOHNS HOPKINS TECHNOLOGY TRANSFER FROM APRIL 2000 - SEPTEMBER 2013

We dedicate this year and this Annual Report to the memory of Keith Baker, and remind ourselves every day that the next invention we license may further help prolong the lives of such talented individuals.

A memorial fund is being organized to benefit Keith's family. Details may be obtained from Johns Hopkins Technology Transfer.

"Be careful up there."

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Message

FROM ARIS MELISSARATOS

"This is about an initiative to change our culture a little bit. We want to maintain our emphasis on research excellence, but we would like more attention to the entrepreneurial side, to get our research output to market for the sole benefit of bench-side to bedside."

~ ARIS MELISSARATOS AT THE MEDICINE TOWN HALL

The total transformation of the Johns Hopkins Technology Transfer Office (JHTT) has continued and has demonstrated results that allowed us to reach new highs in every performance parameter. Our performance has been noticed by many of our peer institutions, all of whom are inquiring about basic processes that have driven our performance transformation. We believe we have world-class processes and information systems in place to allow us tighter and cost-effective legal oversight as well as licensing and deal-making capabilities.

Three years ago, we identified the lack of translational research as a barrier to creating more value in our intellectual property (IP). Since then, JHTT partnered with the Johns Hopkins University (JHU) Department of Biomedical Engineering to win a major Coulter Translational Research Partnership grant. At the same time, JHTT worked with the Office of Government Affairs and helped pass the Maryland Innovation Initiative (MII), a partnership between the State of Maryland and local academic research institutions to promote commercialization. Between these two programs, we now have 20 of our technologies funded for approximately $100K each for translational progress. We expect this to grow with performance and create more value when these ideas are more mature as they reach market.

Having completed the installation of solid fundamentals in the technology transfer process, we are working with the President's Office and new leadership in all of our schools to take us to the next level. We anticipate the new leaders will bring in best practices from their past experiences which will further allow us to achieve new levels of performance. Already we are seeing dramatic activity laying the ground work for corporate partnerships with Bayer, Johnson & Johnson, MedImmune, Sanofi, and many other pharmaceutical firms which are setting the ground-work for substantive corporate partnerships in the future. This level of activity is due to the high level of involvement by the President's Office and the new deans in our schools. We expect these initiatives to substantially improve not only the revenue picture, as a result of our research activity, but accelerate the positioning of Johns Hopkins developed therapeutics, diagnostics, and devices in the effort to improve global health and reduce the cost of health care.

Wesley Blakeslee Receives Penn State's Outstanding Engineering Alumnus Award

Wes Blakeslee, Executive Director of Johns Hopkins Technology Transfer, was named an Outstanding Engineering Alumnus by the Penn State College of Engineering.

Established in 1966, the Outstanding Engineering Alumni Award is the highest honor bestowed by the College of Engineering and recognizes graduates who have reached exceptional levels of professional achievement.

Blakeslee received his award at a ceremony on April 9 at the Nittany Lion Inn on Penn State's University Park campus.

He received his bachelor's degree in engineering science from Penn State in 1969.

Read the press release at http://tinyurl.com/c74m9u3
Read the Baltimore Business Journal's article at
http://tinyurl.com/mr5rngw

Message

FROM WESLEY BLAKESLEE

"Some of the most important inventions of the last 100 years came from Johns Hopkins. Vitamin D and its relationship to rickets, CPR, Heparin, defibrillators, to name a few, all started at or were developed at Johns Hopkins."

~ JOHNS HOPKINS HUB, 4 QUESTIONS

Wesley Blakeslee, March 2013

Once again the hard-working JHTT team turned in another record-breaking year for the institution. We received 441 new invention disclosures and achieved nearly $18 million in revenue, both significant records for JHTT. We also entered into 133 new agreements. These numbers are up from 244 disclosures, 57 agreements and $7.7 million in revenue just seven years ago.

Our licensing staff performed admirably this year. We achieved a new record in the average up-front amount received per license, which was a substantial factor in our income growth for this year. This was done during a time of reduced research dollars expended by the biopharmaceutical industry and a lack of venture capital for biomedical discovery development. These unfortunate financial circumstances also accelerated license terminations and reduced the amount of income JHTT received from its licensed portfolio.

One of our big concerns moving forward is the sustainability of the rapid growth we have achieved over the past seven years. To ensure our disclosure, revenue, and agreement growth rates continue upward, we must continue to improve our knowledge base and skill set. We have begun a number of initiatives to do just that.

PATENT COSTS AND THE AMERICA INVENTS ACT

We reported last year on the creation of the intellectual property management (IPM) team and the separation of patent prosecution and management from our licensing team. This critical change permitted us to focus on controlling patent costs while improving the quality of patents that we file, which is particularly important under the America Invents Act (AIA). We are pleased that our net patent costs are down from fiscal year (FY) 2012 and our gross patent costs were reduced by nearly $1.7 million below what was projected for this year despite a significant increase in activity. Our internal patent group achieved record results this year and became our single largest firm in the value of their billings. Considering the depth and breadth of our patent portfolio and the top-quality of our outside law firms, this is a remarkable achievement by our licensing and patent management group.

TECHNOLOGY DEVELOPMENT FUNDING

As an institution, Johns Hopkins is focused on the need to further engage the commercial sector and institute programs that will provide better opportunities to develop our nascent technologies. Today we have substantially more funding opportunities to develop our technologies than in the past.

One of those funding sources is the Wallace H. Coulter Foundation (Coulter Foundation) award, which provided more than $600,000 in funding in FY 2013 to develop JHU technologies. FY 2014 will be the second year of a 5 year commitment to the Biomedical Engineering Department to promote the creation of biomedical products that will improve patient care. More than a dozen projects have received Coulter funding to date.

The Johns Hopkins Alliance for Science & Technology Development (Alliance), formed in 2004, has continued to provide an opportunity for inventors to present their technology to senior business executives for mentoring and advice. This year the Alliance provided four grants of $50,000 each for the first time to the highest rated technologies coming out of Johns Hopkins University and the University of Maryland; a testament to the program's success. Of these four awards, three were bestowed to Johns Hopkins inventors.

The Maryland Innovation Initiative—a new initiative created by the Maryland General Assembly and administered by the Maryland Technology Development Corporation (TEDCO)—awarded nearly $1 million in funding to 13 projects and 3 startups in FY 2013 to further develop Johns Hopkins technologies.

This translational funding, totaling nearly $2 million, has enabled the continued in-house development of promising technologies that need additional development before licensing or spin-out. By allowing development to continue in-house, we expect that the technologies will either attract licensing interest from established companies, or if placed in startups, provide a better opportunity to receive significant funding.

This year, we continued to focus on high-quality startups, generating eight companies that have a significant opportunity for success. The Whiting School of Engineering created FastForward, an accelerator that will provide an environment to move very early-stage ideas to proof-of-concept, to accelerate the commercialization of Johns Hopkins technologies.

STAFF ANNOUNCEMENTS

As we begin the new fiscal year, our licensing staff will embark on an aggressive business development training program designed to improve negotiation skills and help the team close more new deals. We promoted Rachel Cassidy and Ami Gadhia to Portfolio Directors and added two technology licensing associates, Emily Williams and Jeanine Pennington, who replaced two senior members of our licensing staff lost to other opportunities. The growth in the experience of our sales and marketing team will enable team leaders to focus more on direct sales and corporate outreach.

JHTT welcomed Steven Kousouris as our new Senior Director of Finance and Administration in FY 2013, replacing Glen Steinbach who accepted a position at the Johns Hopkins Carey Business School as the Associate Dean of Finance and Administration. Steve, a Johns Hopkins alumnus, brings a wealth of experience in finance and operations, and is a great addition to our team. In addition we hired Nekeshia Maloney to our contracts team and Halley Pack to the intellectual property management group.

CONCLUSION

This coming year, JHTT will further engage its peers and review our systems and processes to ensure that we remain a leader among the nation's best technology transfer offices. The creation and smooth integration of our intellectual property management group is working well, freeing up our licensing team to concentrate on advancing our technologies. We have more opportunities than ever to fund continued development of early-stage technologies and prepare them for licensing. While we recognize the challenges ahead, we remain optimistic for FY 2014.

Mission

VISION AND GOALS

The mission of the Johns Hopkins University Technology Transfer Office is to: 1) protect the intellectual property of Johns Hopkins faculty, 2) commercialize these inventions for the public good, and 3) bring the benefits of discovery to the world.

VISION

To be the premier intellectual property administration center for Johns Hopkins by:

1. Helping inventors fulfill their intellectual and commercial potential.
2. Protecting inventions through the filing of patent applications and the licensing of technologies for commercialization.
3. Developing partnerships between Johns Hopkins and external parties interested in leveraging Johns Hopkins research materials for academic or corporate endeavors.
4. Coordinating licensing agreements, startups, core facilities, sponsored research, material transfer agreements, research collaborations, and clinical trial opportunities to those best able to bring technologies to market.
5. Promoting the availability of essential medicines for the world.

GOALS

1. To strengthen partnerships with pharmaceutical companies, entrepreneurs, venture capitalists, and academic and corporate entities in an effort to get technologies to the marketplace for the public good.
2. To ensure the integrity of, and a respect for, the science and inventions that are produced at Johns Hopkins.
3. To efficiently and effectively disseminate Johns Hopkins' technologies to the public.

JHTT'S FISCAL YEAR 2013

Fast Facts

$18	MILLION TOTAL REVENUE
441	INVENTION DISCLOSURES
133	NEW LICENSE AND OPTION AGREEMENTS
8	NEW STARTUPS
2,078	ACTIVE ISSUED PATENTS
3,933	MATERIAL TRANSFER AGREEMENTS

The Year in Review

DEALS & ENTERPRISE DEVELOPMENT

"Hopkins administrators, and especially the Office of Technology Transfer, deserve enormous credit for their work on these policies. These are major accomplishments that reflect Hopkins' role as a global health leader and that represent important steps forward for the university."

~ THE BALTIMORE SUN

Brooks Puchner and Tyler Brown, May 2013

LICENSING DEALS

The following is a sample of the licensing deals and collaborations conducted by JHTT in FY 2013.

Master Collaboration Agreement With Ortho-McNeil-Janssen Pharmaceuticals

Johns Hopkins University executed two licenses and initiated two related research projects under a Master Collaboration Agreement with Ortho-McNeil-Janssen Pharmaceuticals, now Janssen Pharmaceuticals, Inc. (JPI), a Johnson & Johnson affiliate. The research projects are being conducted in collaboration with Janssen Research & Development, LLC, an affiliate of JPI. The Master Collaboration Agreement was designed to marry JHU's biological expertise and novel basic science findings with JPI's proprietary compound libraries and drug development know-how. It was also designed to streamline the administrative processing required for drafting and approval of licenses and sponsored research contracts. The focus of the current projects is to create new chemical entities for treating (a) psychiatric disorders impacted by neurogenesis (Dr. Hongjun Song) and (b) bipolar disorder and schizophrenia (Dr. Akira Sawa).

JHTT Continues Relationship With EMD Millipore

JHTT continued its long-standing licensing relationship with EMD Millipore with two more non-exclusive licenses executed. EMD Millipore has been a valued licensee for 13 years, with more than 20 licenses completed. Many faculty-created research tools such as monoclonal and polyclonal antibodies are made commercially available from EMD Millipore. JHTT looks forward to continuing its productive relationship with EMD Millipore.

Aduro Biotech Licenses GVAX Cancer Vaccine Portfolio

Aduro Biotech Inc, licensed from Johns Hopkins GVAX cancer vaccines that are based on human cancer cell lines genetically modified to secrete granulocyte-macrophage colony-stimulating factor (GM-CSF), for the treatment of conditions such as pancreatic, prostate, and colon cancer. Aduro

Biotech Inc is currently conducting a randomized, controlled Phase 2 clinical trial with modified GVAX combination vaccines in patients with metastatic pancreatic cancer and a Phase 1B trial in patients with malignant pleural mesothelioma. The company's pipeline also includes preclinical programs in glioblastoma, prostate cancer, melanoma, malaria, HBV and tularemia. Aduro Biotech Inc. will continue to work with clinicians at the Johns Hopkins' Sidney Kimmel Comprehensive Cancer Center as they develop the vaccines.

ImmunArray Ltd Licenses Novel Biomarkers for Development of Acute Brain Injury Tests

ImmunArray Ltd licensed from Johns Hopkins novel biomarkers that will be used to develop a suite of tests to detect Acute Brain Injury. These tests will be developed in ImmunArray's new VERACIS laboratory located at the Johns Hopkins University School of Medicine and the Johns Hopkins Bayview Medical Campus. Johns Hopkins inventors Jennifer Van Eyk, Ph.D. and Allen Everett, M.D. will provide the VERACIS laboratory team with proteomics expertise that will allow for the development of further complimentary diagnostic products with proprietary new antigens.

10 Biomarkers Added to Librassay

This fiscal year JHTT added more than 10 disease biomarker technologies to the LIBRASSAY®, a "biomarker supermarket" started by MPEG LA in 2012. The LIBRASSAY includes biomarker technologies from multiple other prestigious institutions, and allows diagnostics companies to easily search the LIBRASSAY for complementary biomarker technologies they may need to develop new diagnostic clinical assays. Non-exclusive licensing through MPEG LA reduces delays that might result from negotiating licenses with multiple institutions. This one-stop access to diagnostic technologies should speed development and validation of diagnostics tests to the public.

OMIM Licenses Double in FY 2013

The late JHU investigator Victor McCusick, M.D. developed a database described as Online Mendelian Inheritance in Man® or OMIM®. OMIM focuses on the relationship between phenotype and genotype of human genes and contains information on all known Mendelian disorders. The laboratory of JHU investigator Ada Hamosh continues to manage and support the database. OMIM has grown in popularity over the years, due to its scientific significance both clinically and for research purposes.

In FY 2013, OMIM licenses nearly doubled compared to years prior. The increased robustness of OMIM coupled with the JHTT licensing team's efforts to restructure terms are the source of this success. Licenses are structured to account for an entity's proposed use as well as its size. Additional flexibility in licensing to startups accounts for the fact that four such companies licensed the database to advance their operations, while no startups had ever licensed OMIM before. Licensing

Pictured: Jonathan S. Lewin, M.D., Martin Donner Professor and Chairman, with a check for the Department of Radiology's share of revenue from a significant licensing deal for imaging technologies.

Big Payday for the Russell H. Morgan Department of Radiology and Radiological Sciences

Licensing in the area of Physical Sciences including medical devices, software, and engineering experienced significant growth in FY 2013. Licenses and revenues rose significantly due to increasing interest and opportunities in this area. As a result of this increase in licensing deals, JHTT presented Dr. Jonathan Lewin with a check for the Department of Radiology's share of revenue from a significant licensing deal for imaging technologies executed in FY 2013.

to foreign companies increased as well, thereby resulting in broader, deeper dissemination of the database for the benefit of the public. Companies have pledged to use OMIM for their own internal research use while some have even committed to developing proprietary products, for which all are paying fair consideration.

This robust licensing program provided the revenue to maintain and update the OMIM database and make it available at no cost to non-profit research entities.

PraPlus Licenses Triple in FY 2013

FY 2013 saw an increase in PraPlus™ licenses, tripling numbers reported for FY 2012. Developed at the Roger C. Lipitz Center for Integrated HealthCare in the Johns Hopkins Bloomberg School of Public Health, PraPlus screens elderly persons to identify those at high risk for heavy use of health-related resources in the future. The results are used to classify a person's risk and help healthcare organizations target special interventions to the individual in an effort to prevent crises that may lead to hospitalization or institutionalization. The Pra™ score has been shown to be a valid predictor of utilization in diverse populations, and has been widely adopted by healthcare organizations as a central feature of their care delivery systems. Health insurance plans have also utilized this tool in order to meet the CMS requirement that insurance plans must make a good faith effort to assess all new enrollees within 90 days of their effective date.

Startup Profile: JPLC Associates, LLC

JPLC Associates, LLC is a Maryland-based startup company that recently licensed from JHU the rights to commercialize a device that provides quality assurance in radiation therapy. The technology was developed by John Wong, Ph.D. from the Department of Radiation Oncology and his collaborators. The result of this work is a simple and elegant solution that determines mechanical and dosimetric quality assurance of the medical accelerator used to deliver radiation dosage to cancer patients. This task is accomplished using a number of different apparati.

Dr. John Wong presented the technology at the Johns Hopkins Alliance Meeting in February 2013, and received the 2013 BioMaryland LIFE Prize recognizing the technology most likely to be commercialized. In June 2013, JPLC was awarded a MII grant to move the technology toward commercialization. The company also raised the necessary funding to move the technology from concept to a working prototype. JPLC has now developed an all-in-one device that provides a more accurate and documented measurement of the mechanical and optical integrity of medical accelerators.

JHTT Executes Second Agreement With Objective Arts

JHTT has executed its second agreement with Chicago-based software development firm Objective Arts to create a platform software version of a JHU Intellectual Asset for broader use. The Antibiotic Stewardship program asset is a clinical decision support tool developed by faculty members in the Johns Hopkins University School of Medicine Department of Pediatrics to streamline current antibiotic prescription approval processes within hospitals. Our partnership with Objective Arts should increase availability of the program to healthcare systems in need of improved and cost-effective stewardship programs.

MOBILE SOLUTIONS

Johns Hopkins Enters the Worldwide iBookstore

JHTT partnered with the Johns Hopkins University Press to implement an institution account in the Apple iBook Store. This new account will allow the institution to repurpose several of the University Press' assets into iBooks and provide an outlet for interested faculty and students to develop educational content for global dissemination. Utilizing the App Store's presence in 155 countries, the iBookstore will allow Johns Hopkins to further its mission by making knowledge readily available and affordable to developing and developed countries worldwide.

In February, JHTT published the first Johns Hopkins book to the iBook Store, "TeamRads Presents: Radiology for First Year Anatomy

Students." Written by Donna Magid M.D., M.Ed.; Krishna Juluru, M.D.; Kopal Kulkarni, M.D.; and Erin Zingarelli, M.D. student, the book provides first year radiology residents with three-dimensional imaging modalities to help medical students better understand what they will experience in the wards on a daily basis. The iBook also links readers to the TeamRads website, an online resource with content derived by radiology and neurology medical students for medical students. To learn more about TeamRads, visit http://teamrads.com.

Cardiac Filling Pressure Device Being Developed for Smart Devices

JHU inventor Harry Silber, M.D. developed a hand-held device that measures the cardiac filling pressure around the heart, thus helping doctors better assess a patient's potential risk of rehospitalization and secondary heart failure. With the assistance of a $100,000 grant from the Maryland Innovation Initiative, Dr. Silber plans to reconfigure the device to work with mobile devices such as smart phones and tablets. This affordable attachment will enable doctors and patients to better monitor patient health and progress by measuring, recording, and reporting cardiac filling pressure levels via an easily accessible outlet.

Mobile Support for Palliative Care Patients

Thomas Smith, M.D., the Director of Palliative Care for Johns Hopkins Medicine and the Johns Hopkins' Sidney Kimmel Comprehensive Cancer Center, and Channing Judith Paller, M.D., Associate Professor of Oncology, have developed a mobile system to record feedback from patients receiving Palliative Care. Data collected through this mobile application will be used to support the utilization of Palliative Care as a standard care practice for terminal pancreatic cancer patients. The mobile application is currently being tested in an IRB-approved clinical trial.

Johns Hopkins Global Mobile Health Initiative Registers 80+ Projects to Date

Johns Hopkins Technology Transfer continued its membership in the Johns Hopkins University Global Mobile Health (mHealth) Initiative (JHU-GmI) in FY 2013. Since its inception in 2011; JHU-GmI has registered more than 80 mHealth projects across the University, spanning disciplines in medicine, public health, nursing, engineering, clinical education and computer science. Several Johns Hopkins mHealth innovations have received global recognition and funding from foundations and donor agencies. JHU-GmI has organized interdisciplinary teams across JHU's centers, departments, and partners to develop and test novel innovations harnessing the power of mobile computing and telephony which is growing globally. From Baltimore to Botswana to Bangladesh, Johns Hopkins innovations in mHealth are leading this emergent field in improving clinical care, enhancing the patient experience, empowering frontline health workers, and educating families.

JHU-GmI faculty have incorporated mHealth training into existing coursework and offer students additional hands-on training, encouraging experience-based learning. JHU-GmI has offered more than 100 student scholarships to attend mHealth conferences and 15 long-term student internships, some of which have resulted in leadership positions at the World Health Organization (WHO), UN Foundation and USAID. Students and faculty have incubated startup companies, several of which are undergoing rapid growth in the mHealth space. Faculty research teams have mobilized substantial funding from the National Institutes of Health, the National Science Foundation, and state, federal, and private foundations to innovate mHealth strategies and to test innovation in real-world settings to improve health outcomes and reduce costs. Bringing rigorous academic thought leadership to the field of mHealth has helped drive growth and expanded the evidence base around mHealth strategies. JHTT has played a vital role in helping JHU mHealth innovators navigate changing FDA and FCC guidelines, identify and protect innovations, and create valuable distribution channels for Android and Apple applications through the respective GooglePlay and iTunes stores.

In FY 2013, the WHO mHealth Technical Advisory Group (mTAG) was constituted, pulling heavily from the JHU-GmI's technical leadership. The mTAG is presently chaired by the GmI Director, Alain Labrique, Ph.D., M.H.S, M.S., and includes several members of the GmI steering committee faculty, together with leading experts in mHealth from across the globe. The group provides a collaborative space for members to develop a shared perspective on mHealth implementation

across a range of technical areas in developing countries while developing the tools necessary to catalog and assess the state of evidence across domains of mHealth, for the purpose of developing guidance for implementing agencies and governments.

SCHOOL COLLABORATIONS

Johns Hopkins-Coulter Translational Partnership Funds 7 Projects

The Johns Hopkins-Coulter Translational Partnership between the JHU Department of Biomedical Engineering, JHTT, and the Coulter Foundation entered into its second year of funding. The award will result in $5 million in funding over 5 years to speed the movement of new medical devices out of the university's lab and into hospitals and doctor's offices. The program provides funding for promising translational research projects and commercialization support to the funded projects to improve the likelihood of obtaining follow-on funding and getting the product to the patient.

The program funded 7 projects totaling $645,987 in FY 2013. Three projects received a second year of funding. These projects include:

- A novel method for cardiac defibrillation, which promises to reduce the painful shock of the current defibrillators.
- A new treatment for wet age-related macular degeneration, which not only reduces the frequency of injections into the eye, a major advantage, but also may reverse damage from the disease.
- A simple device which attaches to central venous catheters, reducing their occlusion and thus preventing many unnecessary surgeries.

Other projects that were funded or approved for funding in FY 2013 include improved orthopedic tools, a new method for performing intra-operative histology during breast surgery, and improved diagnostics for tuberculosis.

The Business of Medical Devices

Johns Hopkins Department of Biomedical Engineering together with the Johns Hopkins-Coulter Translational Partnership hosted an event titled "The Business of Medical Devices – A Celebration of Wallace H. Coulter." The program brought together 15 industry experts from various aspects of the medical device commercialization process. Panelists included CEOs, venture capitalists (VCs), angel investors, and regulatory experts. Panels discussed startup creation, regulatory affairs, manufacturing and design elements, marketing techniques, and financing. Elizabeth Good Mazhari, JHTT's Director of Ventures, moderated the panel on financing and exit strategies.

Pictured: The Stieff Building, home of the Johns Hopkins Whiting School of Engineering's FastForward technology accelerator. Learn more at http://engineering.jhu.edu/fastforward/ and watch the YouTube video at http://youtu.be/RwlxTL5uE3k

Accelerating Johns Hopkins Technologies With FastForward

In March 2013, the Johns Hopkins Whiting School of Engineering and the Homewood Office of Intellectual Property and Technology Commercialization launched FastForward, a business accelerator designed to accelerate proof-of-concept of the university's promising intellectual property and build a community of entrepreneurs. FastForward includes an IP assessment system, a technology accelerator, and an education program. FastForward had four tenants in the accelerator at year end, the first being JHU startup Clear Guide Medical. FastForward is currently evaluating 38 potential startups for inclusion in the Initiative.

HUMANITARIAN EFFORTS

Medical and Educational Perspectives on Commercialization

JHTT representatives Abby Bhattacharyya, Rachel Cassidy, and Laura Mitchell presented lectures to a student-run summer class program called "Medical Design Initiative: Low-Cost Solutions to Global Health Challenges." Through the class, students from the JHU School of Medicine, Whiting School of Engineering, Carey Business School, and Bloomberg School of Public Health learned about global health care disparities, design, and distribution of needed medical devices. With an eye towards low-cost medical device conception, the students formed teams to design medical device prototypes. This course is part of Medical and Educational Perspectives (MEP), a non-profit founded at Johns Hopkins. Their mission is to work with communities in developing countries and implement medical education and innovation tailored to those regions.

The JHTT representatives discussed the importance of university technology transfer offices and the licensing and negotiation processes. The students learned about the process for securing intellectual property protection both nationally and internationally as well as issues surrounding intellectual property and commercialization in developing countries. JHTT welcomed the chance to help the Medical Design Initiative students with their goals, as well as the opportunity to meet with potential future JHU inventors.

PARTNERING CONFERENCES AND NETWORKING EVENTS

JHTT Hosts Technology Transfer Summit North America

In October 2012, JHTT—in partnership with TTS Ltd. and the National Institutes of Health—hosted the third annual Technology Transfer Summit North America (TTSNA) at the Johns Hopkins University Montgomery County Campus. The leading international biotech meeting for technology transfer offices, TTSNA featured prominent keynote speakers, top pharmaceutical companies, leading angel investors, venture capitalists, corporate venture stakeholders, and key figures from both government institutions and senior policy think-tanks. The 2-day program featured knowledge, experience, and best practices from the field and fostered licensing, partnering, and technology transfer deals and agreements. To learn more about TTSNA, visit www.techtransfersummit.com

Three Johns Hopkins Inventors Receive Accolades at Annual Alliance Meeting

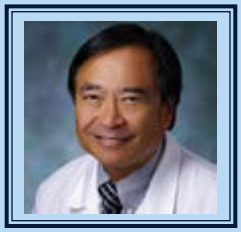
The Johns Hopkins Alliance for Science and

Pictured: Aris Melissaratos, Keith Baker, Wesley Blakeslee, and John Fini.

Technology Transfer Town Halls

In FY 2013, JHTT held three town hall meetings across the Johns Hopkins system, visiting the East Baltimore, Homewood, and Bayview campuses. These events addressed the life cycle of an invention, the technology marketing process, and new procedures resulting from the recently enacted AIA. Executive Director Wesley Blakeslee and Senior Director of Licensing Keith Baker led the meetings with distinguished speakers, including Executive Vice Dean for the School of Medicine Landon King, Vice Dean for Science and Research Infrastructure at the Zanvyl Krieger School of Arts and Sciences Greg Ball, and Senior Advisor to the President for Enterprise Development Aris Melissaratos.

Alliance for Science and Technology Development 2013 Award Recipients



JOHN WONG, PH.D.
BioMaryland LIFE Award

Dr. Wong holds two patents on methods of delivering precisely targeted radiation treatment. Three of Dr. Wong's inventions have been successfully commercialized and have become standards of care in radiation therapy.

RONALD BERGER, M.D., PH.D.
Abell Foundation Award

Dr. Berger holds more than 20 patents in the fields of arrhythmia detection, catheter ablation, defibrillation and cardiopulmonary resuscitation. He has co-founded three medical device companies and served on advisory boards for eight others.

HIEN NGUYEN, M.D.
Abell Foundation Award

Dr. Nguyen specializes in minimally invasive surgery and his surgical practice involves the repair of complex hernias, abdominal wall reconstruction, and bariatric surgery. His FastStitch device has received many accolades.

Pictures taken by Keith Weller Commercial Photography for Johns Hopkins Medicine.

Technology Development and the University of Maryland Baltimore Commercial Advisory Board met for their annual meeting in February 2013. The committee reviewed inventor presentations and bestowed monetary awards to the highest-ranking commercial technologies. Four awards were granted for the first time; two from the Maryland Biotechnology Center and two from the Abell Foundation. Johns Hopkins' John Wong, Ph.D. and University of Maryland School of Dentistry's Mark Shirtliff each received a BioMaryland Life award. Johns Hopkins' Ronald Berger, M.D., Ph.D., and Hien Nguyen, M.D., were awarded funds from the Abell Foundation.

Drug Development Bootcamp for Entrepreneurs

In March, JHTT hosted a Drug Development Bootcamp presented by BioMed Valley Discoveries. This data-rich overview of the process of drug discovery and development provided insights from biotechnology and pharmaceutical companies as well as information on raising capital to launch startups. From the event, JHU physicians, scientists, administrators, and students developed a better understanding of the expectations from the various entities that are needed to move discoveries forward in a challenging funding environment.

Clear Guide Medical and NexImmune Present at University and Research Entrepreneurship Symposium

For the third year in a row, JHU inventions were showcased at the annual University and Research Entrepreneurship Symposium (URES) in Boston, Massachusetts. URES is an invitation-only, one-day conference established to bring world-class technologies from universities to Boston to showcase them before a group of New England's top entrepreneurs and venture capitalists. The 2013 event featured breakthrough technologies in three focus areas: information technology, deep technology, and life sciences. Clear Guide Medical (commercializing technology developed by JHU researchers, Dr. Emad Boctor and Dr. Philipp Stolka) participated in the Life Sciences Medtech track and NexImmune (commercializing technology developed by JHU researchers, Jonathan Schneck and Mathias Oelke) presented in the Life Sciences Biotech track. URES provides a supportive forum for researchers and startups to receive immediate feedback

on their pitch from top-tier investors, while also providing great networking opportunities with like-minded colleagues from universities across the country. Over the past 5 years, 110 projects from nearly 40 universities have presented to entrepreneurs and venture capitalists at the event resulting in 13 companies receiving nearly $100 million in funding to date.

INTERNATIONAL RELATIONS

JHTT Invited to Qatar

This past fall, Executive Director Wesley Blakeslee traveled to Qatar as a guest of the Qatar Foundation to discuss technology transfer and the entrepreneurial ecosystem in Qatar. The Qatar Foundation is working to create a research and knowledge-based economy in Qatar. The research effort has begun to generate invention disclosures and commercialization opportunities. The program, collaboration opportunities, and future needs were discussed over several days of meetings with the Executive Vice President of Research and Development and other leaders of the Qatar effort.

OFFICE UPDATES

JHTT Intern Accepted to 2013 Biotechnology Scholar for the Scientist Mentoring and Diversity Program

Sean Evans, an intern with the JHTT Technology Transfer Analyst Program (TTAP) and Johns Hopkins Bloomberg School of Public Health Ph.D. Candidate, was selected to be a 2013 Biotechnology Scholar for the Scientist Mentoring and Diversity Program (SMDP). The program is sponsored by the International Center for Professional Development with support from multiple Biotechnology and Pharmaceutical companies (e.g. Johnson & Johnson, Baxter, and Amgen). As a scholar/mentee, Sean participated in a 6-day professional development training experience as well as attended the annual BIO International Convention. In addition, Sean was paired with a biotechnology industry mentor who he will meet with multiple times over a one-year period to receive professional career advice and training.

Sean joined TTAP in October 2012. In this capacity, he reviewed new technology disclosures from JHU researchers and prepared technical reports and marketing summaries for the inventions.

SCIENCE + TECHNOLOGY PARK

The Science + Technology Park at Johns Hopkins (the Park) and surrounding neighborhood, comprising 88 acres, have progressed substantially during 2012 and 2013 including:

- Completion and successful leasing of the

Sebastian Seiguer was awarded the 2013 Graduate Student of the Year Award. Pictured: Leigh Penfield, Ying-Li Chen, Sebastian Seiguer, Wes Blakeslee, Anne Vilsoet, and Keith Baker.

JHTT Intern Receives Graduate Student of the Year Award

Sebastian Seiguer, J.D., M.B.A., an Agreement Monitoring Analyst Program (AMAP) Intern was awarded the 2013 Graduate Student of the Year Award. The award recognized students who exceeded job expectations and contributed to the overall success of the office. Sebastian was nominated for his overall financial analysis contribution to the technology transfer office; both for the time he spent in the compliance group and for a specific technology valuation project expected to pay long-range dividends to Johns Hopkins. JHTT Marketing Analyst Program (MAP) Intern Anne Vilsoet was also nominated for the award. Anne is now working for Accenture.

Maryland Public Health Laboratory at the Science + Technology Park at Johns Hopkins

Pictured: Plans for the new Maryland Public Health Laboratory. The laboratory will serve the citizens of the State of Maryland. This new building will include a broad range of programmatic functions, enhancing the laboratory's diverse testing programs and sharpening the focus on technology and workforce development.

22-story graduate student housing building at 929 N. Wolfe Street (325 apartments and 550 beds).

- Work on the new 235,000 square foot Maryland Department of Health and Mental Hygiene Public Health laboratory facility with plans for completion and delivery in 2014.
- Completion of a 10-story parking garage which will soon feature a Walgreen's pharmacy and clinic on the ground floor.
- Inauguration of first retail businesses: 7-Eleven and Cuban Revolution (the Park's first Restaurant).
- Initiation of construction on the new Hopkins-Henderson K-8th grade school.
- Plans to break ground on a new hotel and life science buildings.

The Rangos Building— the first of five life science buildings—is now 92 percent leased; with leasing expected to be completed in 2013. The Lieber Institute for Brain Development and the contract research organization Sobran will also expand their space within the Rangos Building. The Lieber Institute expects to increase their scientist base from 70 to more than 100 by next year and have announced research collaborations with several pharmaceutical companies and international institutions. Lieber, together with the Johns Hopkins Brain Science Institute, is creating a powerful neuroscience cluster in Baltimore.

Rangos is also home to several Baltimore and Johns Hopkins life science community events—planned in collaboration with JHTT—and visits from major pharmaceutical and medical device companies. Additionally, Forest City, the developer of the Park, is partnering with Johns Hopkins at major medical and life science events to promote the Park and Johns Hopkins technologies (including AdvaMed, Bio-Europe, BIO International Conference, and America Association of Cancer Research).

To learn more about the Park, visit www.scienceparkjohnshopkins.net.

NEWS AND PRESS

The following contains a sample of articles that featured JHTT or JHU enterprise development efforts, startups, inventors, or technologies in FY 2013.

TECHNOLOGY TRANSFER

Four Questions for Wesley Blakeslee
Johns Hopkins University HUB
March 2013
http://tinyurl.com/loze6ra

Big Changes Loom for Organizations That File Patents
Baltimore Business Journal
March 2013
http://tinyurl.com/a5dbvr6

ENTERPRISE DEVELOPMENT

The Changing Face of East Baltimore
Featuring: Science + Technology Park at Johns Hopkins and the Forest City New East Baltimore Partnership
Johns Hopkins Gazette
January 2013
http://tinyurl.com/a6zrf3k

THE CHANGING FACE OF EAST BALTIMORE
Watch the Science + Technology Park at Johns Hopkins and the Forest City New East Baltimore Partnership YouTube video at:
http://tinyurl.com/omvqzbw

STARTUPS

Cardioxyl Collects $28 Million New Venture Capital
Featuring: Cardioxyl
VentureDeal
November 2012
http://tinyurl.com/ocwhqre

Circulomics Awarded Nearly $1M to Develop Multiplex MicroRNA Assay
Featuring: Circulomics
Yahoo Finance
December 2012
http://tinyurl.com/ny8dho2

Maryland Innovation Initiative Awards $300,000 in Grants
Featuring: BOSS Medical
Baltimore Business Journal
December 2012
http://tinyurl.com/nf8fsla

Daiichi Sankyo, Amplimmune to Jointly Develop Autoimmune Disease Therapeutic
Featuring: Amplimmune
Pharmaceutical Business Review
January 2013
http://tinyurl.com/kqw9q6y

Kala Pharmaceuticals: New $11.5M Funding Will Help Develop Treatments for Eye Diseases
Featuring: Kala Pharmaceuticals
The Boston Globe
February 2013
http://tinyurl.com/pts4nte

Top 10 A Rounds in 2012 for Innovative Startups
Featuring: Cerecor
Bioentrepreneur

C12191: PAPGENE TEST
Watch the YouTube video on JHU Technology C12191: PapGene Test at:
http://tinyurl.com/ovwpjr6

March 2013
http://tinyurl.com/m2os7x5

Two Baltimore Startups Among InvestMaryland Challenge Winners
Featuring: GrayBug, LLC
Baltimore Business Journal
April 2013
http://tinyurl.com/ns3eqfb

INVENTIONS

Could FastStitch Device Be the Future of Suture?
Featuring: C11888: FastStitch The Future of Suture
Invented By: Hien Nguyen, M.D., Adam Clark, Leslie Myint, Daniel Peng, Ang Tu, Stephen Van Kooten, Sohail Zahid
Science Daily
August 2012
http://tinyurl.com/oseumke

Pap Test Could Help Find Cancers of Uterus and Ovaries
Featuring: C12191: PapGene Test
Invented By: Drs. Bert Vogelstein, Chetan Bettegowda, Luis Diaz, Isaac Kinde, Kenneth Kinzler, Nickolas Papadopoulos, Yuxuan Wang
New York Times
January 2013
http://tinyurl.com/c67y5wk

Genes May Boost Woman's Risk of Postpartum Depression
Featuring: C12094: Biomarkers for Predicting Postpartum Depression Risk
Invented By: Zachary Kaminsky, Ph.D.
U.S. News
May 2013
http://tinyurl.com/ojetzae

Osteoarthritis Study Could Make Joint Replacement Obsolete
Featuring: C11908: Therapeutic Target to Stop Osteoarthritis Progression
Invented By: Xu Cao
Yahoo! News
May 2013
http://tinyurl.com/qa3rkhp

INVENTORS

30 Under 30: Science and Healthcare
Featuring: Isaac Kinde
Forbes
December 2012
http://tinyurl.com/owndc4c

Hopkins Researcher Receives New Award to Spotlight Scientists
Featuring: Bert Vogelstein, M.D.
The Baltimore Sun
February 2013
http://tinyurl.com/qj3hupx

How to Cure Cancer
Featuring: Stephen Baylin, M.D.
Time Magazine
March 2013
http://tinyurl.com/c8fvl5b

JHU INVENTOR ISAAC KINDE KEYNOTES BIO
Watch JHU inventor Isaac Kinde participate in the 2013 BIO International Convention's Keynote Address: Forbes 30 Under 30.
http://tinyurl.com/lohxhsp

INTELLECTUAL PROPERTY

Intellectual property can bring enormous value to an institution. As we reported last year, we created the IPM Group to manage our intellectual property assets and to increase their economic value to the University. During 2013, we devoted substantial energy to revising our processes, educating JHU faculty and staff about our new structure and abilities and integrating the new IPM group into our daily operations. The IPM group has improved our ability to manage patent expenses while also improving the quality of our intellectual property assets.

One of the largest challenges we faced this year was the enactment of the AIA which made the United States a "first inventor to file" country on March 16, 2013. The legislation led to many changes. One of the most important for JHU was the change in how the U.S. Patent and Trademark Office reviewed priority claims. This change resulted in a higher standard of review for priority claims to provisional applications. Entering 2013, we expected this change to drive up the cost of filing provisional applications substantially. To counter this increase in patent expenses, our IPM group adapted its system to file more substantial provisional applications on fewer inventions while ensuring that our most valuable intellectual property was protected. The IPM group's focus on intellectual property management has allowed JHU to evaluate its new disclosures more quickly, which has added to our ability to limit our investments to our technologies with the greatest chance of commercial success.

This year the IPM group received 441 new invention disclosure reports to review and evaluate. This is yet again an increase over last year's disclosures. As the number of disclosures continues to increase, the IPM group is continuing to adapt its procedures to control patent expenses. We have switched to a fixed-fee billing system in which our outside counsel receives a fixed fee rather than an hourly rate for most tasks. This has also contributed to our ability to decrease our patent expenses.

The creation of our IPM group has also facilitated our ability to take a much more active role in the prosecution of pending patent applications which has resulted in decreasing cost of patent expenses per application. Although we have greater numbers of pending applications each year, the activities of our IPM group have contributed substantially to our ability to maintain or decrease our patent expense expenditure.

For FY 2013, our net patent expenses were $2.9 million—less than last year's $3.1 million. This decrease was achieved in spite of having more pending applications and dealing with the changes brought by the enactment of AIA.

Bloomberg BNA

FAST TIMES AT JOHNS HOPKINS TECHNOLOGY TRANSFER

Responding to the America Invents Act in a University Setting

JILL UHL
JHTT Director, Intellectual Property

LOUISA RYAN
JHTT Patent Counsel

"Patent practitioners across the country are scrambling to figure out how best to respond to and work with the changes to the patent laws resulting from the America Invents Act. This could not be more true for the already fast-paced world of university technology transfer. The directors, intellectual property managers, and patent counsel at Johns Hopkins Technology Transfer have been working to educate faculty inventors and to modify our practices to comply with the rule changes."

http://tinyurl.com/mw4ujtg

MATERIAL TRANSFER AGREEMENTS

Sharing tangible materials with other academic institutions, nonprofit organizations, and commercial entities through Material Transfer Agreements (MTAs) provides the scientific community with essential research tools at little or no expense. In FY 2013 we received more than 4,000 MTA requests—a 7 percent increase over the previous year. Continuing several years of steady improvements in the management of MTAs, we reduced the average turnaround time from 8.2 to 6.8 days, all without any increase in staffing levels. Once again we surpassed our goal of completing at least 90 percent of all MTAs within either 30 days (for MTAs with non-profits) or 90 days (for MTAs with for-profit entities).

In prior years, the JHTT Contracts Group focused primarily on the review and management of MTAs. In FY 2013 we embraced an expanded role, adding a wider variety of legal contracts to our review and negotiation repertoire, including licenses, options, collaborative research agreements, inter-institutional agreements, and confidential disclosure agreements. In particular, we reviewed and negotiated 53 confidential disclosure agreements and made substantial contributions to 66 different licenses. By bearing more of the contract review and drafting burden, we freed our licensing staff to focus on negotiation and deal making.

The JHTT Contracts Group also embraced several new initiatives in the past year, including:

- Implementation of quality control through checklists and peer review.
- Introduction of new metrics including value tracking for MTAs and cost tracking for all agreements.
- New agreement templates for MTAs and NDAs.
- Development of a JHTT export control plan.

As shown in the table below, we've taken on the additional contract work even as overall MTA transaction volume has increased 47 percent from FY 2009 to FY 2013—all without any additional employees.

MTA STATISTICS

	MTA Requests	MTAs Processed	Number of FTES	Agreements/FTEs
FY 2009	2,725	2,821	7	389.3
FY 2010	2,873	2,896	7	410.2
FY 2011	3,299	3,283	6	549.8
FY 2012	3,745	3,710	6.5	576.15
FY 2013	4,014	3,933	6.5	617.5

STARTUP COMPANIES

This year JHTT formed 8 new companies. The mix of companies includes three therapeutic, three medical device, one diagnostic and one ag/bio startup. Seed and early-stage venture capital financing remained difficult to find for startups nationwide, particularly in the life science sector. Uncertainty surrounding reimbursement and regulatory issues in the medical device and diagnostic sectors dampened the enthusiasm for new company creation. However, two therapeutic startups from JHU were able to raise more than $20 million in their Series A rounds, earning them a spot on Bioentrepreneur's (Nature Biotechnology) list of Top 10 A rounds in 2012 for Innovative Startups.

Innovators have had to find new ways to advance their technology as traditional funding sources dried up. In Maryland, the Governor and the State legislature helped fill the void with a new translational funding program, MII, that focused on advancing opportunities coming out of the major academic research institutions in the State with the hope of creating more Maryland-based startups. This program provides a continuum of funding, including advanced proof-of-concept work at the institution as well as product development funding once the technology has been licensed to a new startup. It also provides funding for "Site Miners" or Executives–in–Residence, who work with innovators to develop a commercialization plan. In FY 2013, JHU had 16 projects funded (including 3 startups, BOSS Medical, CardioSolv Ablation Technologies, and JPLC Associates). The MII funding complements other translational funding programs available to JHU researchers and spin-off companies, such as the Johns Hopkins-Coulter Translational Partnership and Maryland Biotechnology Center Awards. We expect these programs to further enhance the quality, and possibly quantity, of our startups in the years to come. The full list of MII Award Recipients is available on page 4 of this report.

JHU spin-offs also received national and local news coverage. Stories featured Amplimmune (strategic alliance with Daiichi Sankyo), Cardioxyl ($28 million Series B), Circulomics (more than $800k in SBIR awards), and Kala Pharmaceuticals ($11.5 Series A). Locally, 6 of the 10 life science semi-finalists for the InvestMaryland Challenge had JHU origins including BOSS Medical, Cerecor, CoolTech, GrayBug, Immunomic Therapeutics, and Vasoptic Medical. GrayBug took top honors, including the $100k prize.

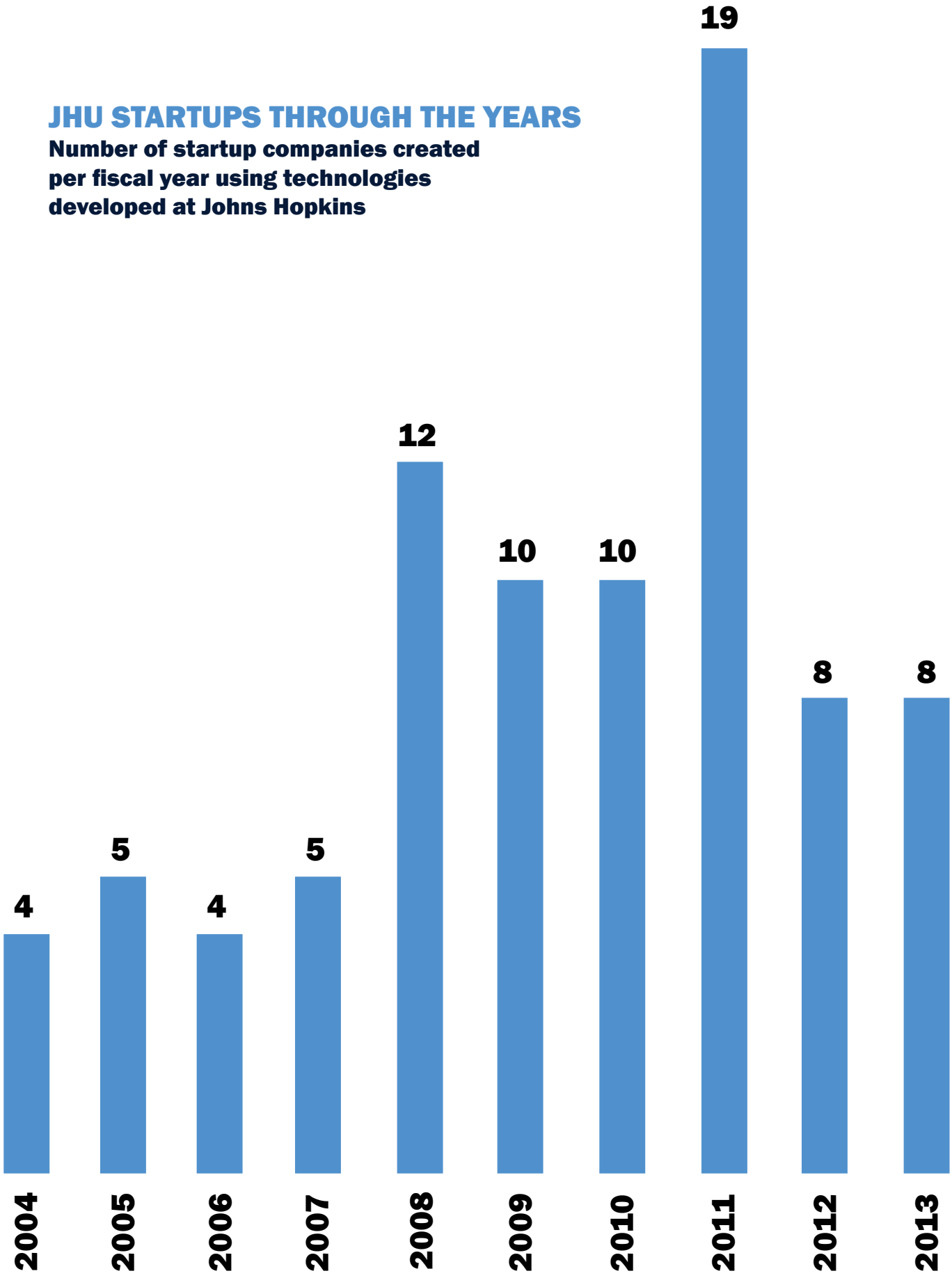
Pictured: Co-founder and COO Christy Wyskiel and CEO and Founder Justin Hanes, Ph.D. with Maryland Governor Martin O'Malley and Secretary of the Maryland Department of Business and Economic Development Dominick Murray. Photograph taken by Rick Lippenholz.

InvestMaryland Challenge Life Science Recipient GrayBug, LLC

The InvestMaryland Challenge awarded three $100,000 grants to companies in the life sciences and high tech industries. GrayBug, LLC, a Johns Hopkins startup company developing drugs for various ophthalmic diseases won the top prize for the life sciences category. The award will be used to advance the development of drug delivery therapies toward human clinical trials based on GrayBug's controlled release technologies. Read the press release at http://tinyurl.com/kzphtbw

JHU STARTUPS THROUGH THE YEARS

Number of startup companies created per fiscal year using technologies developed at Johns Hopkins



PRODUCT DEVELOPMENT

FY 2013 saw steady growth in the total number of JHTT products that were introduced to the market by our licensees. At year end, 1,307 JHTT products were either marketed or in various stages of development—an increase of approximately 300 products from FY 2012. These products consisted primarily of therapeutics, diagnostics, devices, and research tools. Oncology continues to be our greatest source of therapeutic and diagnostic products, while ophthalmology leads device product marketing.

Of these 1,307 products, 1,075 are currently on the market—an increase from last year's 789 products. In addition, 39 products developed under JHU licenses remained on the market after patent expiration.

Licensees also made substantial progress in moving JHTT technologies through the regulatory process. During FY 2013, JHTT had several therapeutics reach clinical benchmarks, with 30 reported in Phase II clinical trials, 32 in Phase 1 clinical trials, and 4 reaching IND status. Seven devices were also reported in pivotal clinical trial stages, and two devices received FDA clearance.

All of these products remain a tangible translation of JHU's intellectual property and represent a measurable, direct benefit of the research conducted at JHU. We will continue to monitor licensee progress in FY 2014 and track our market success.

FIGURE 1

FY 2013 Products by Classification (n=1,307)

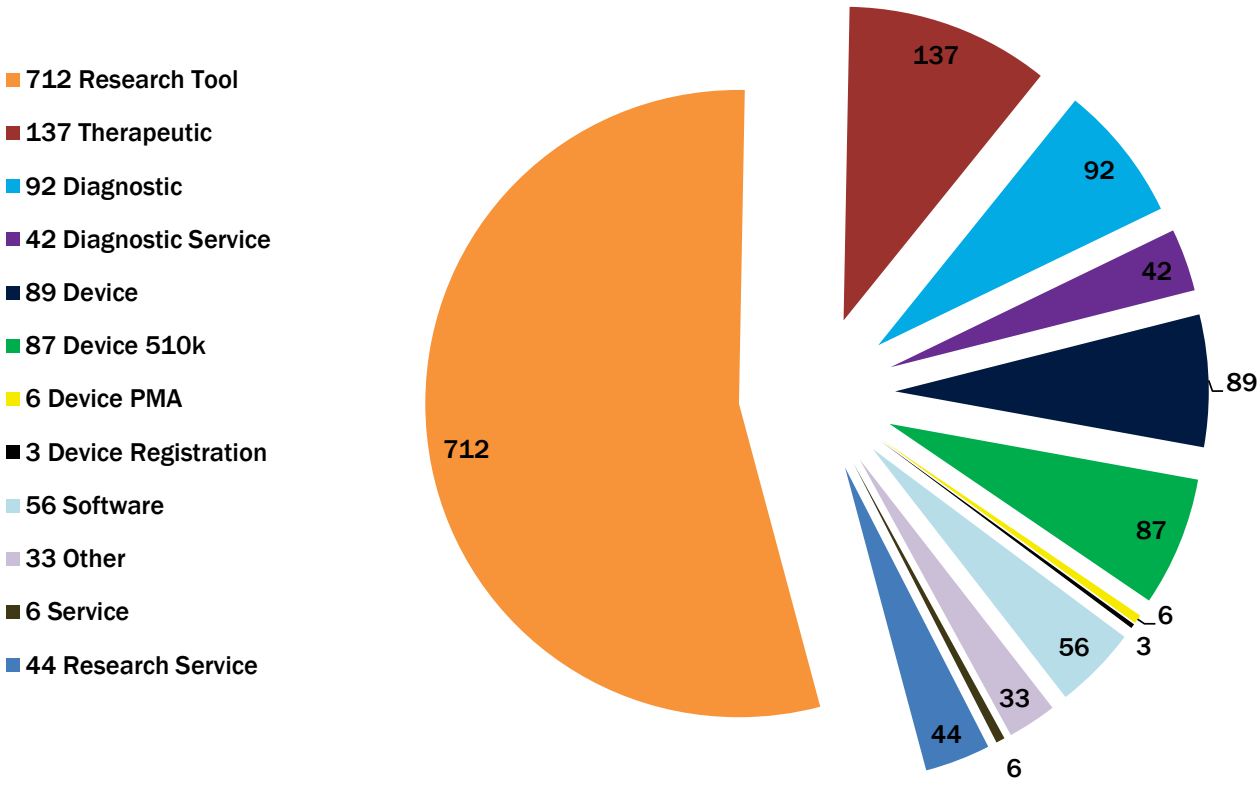


FIGURE 2

FY 2013 Marketed Products (n=1,075)

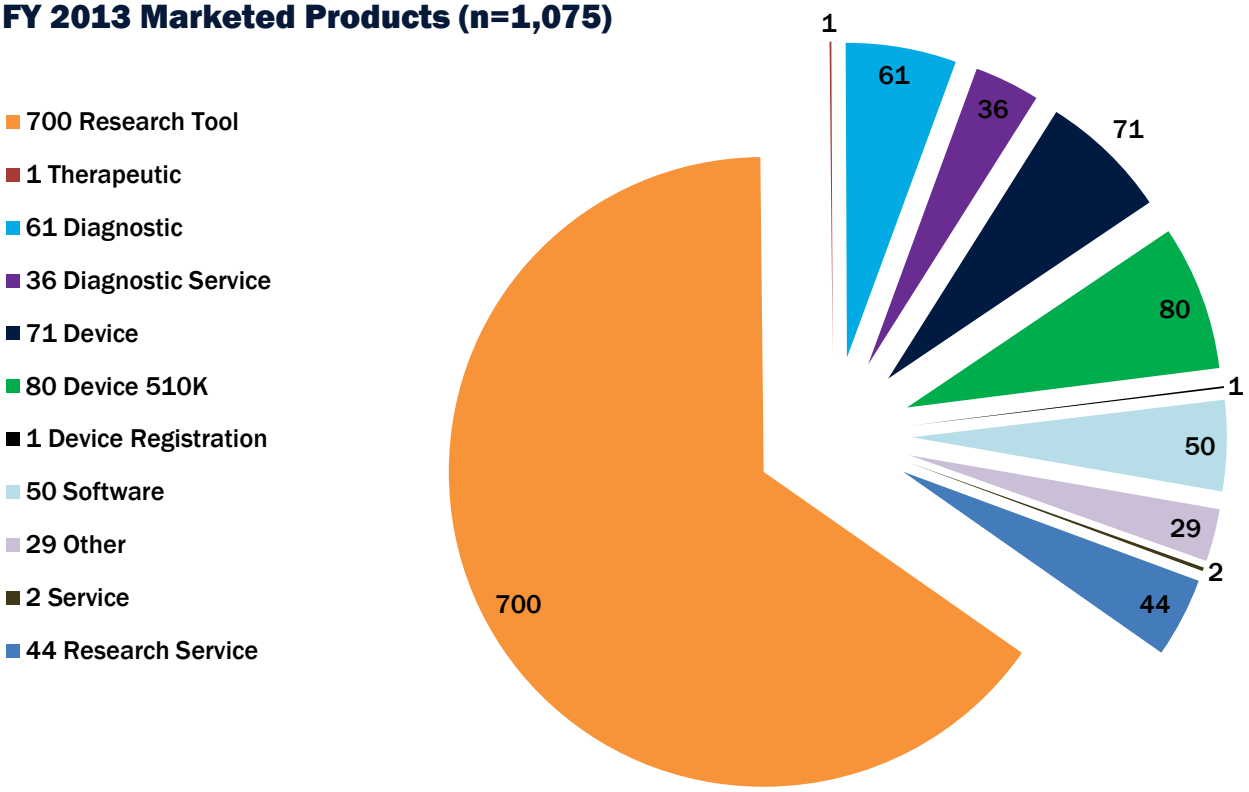
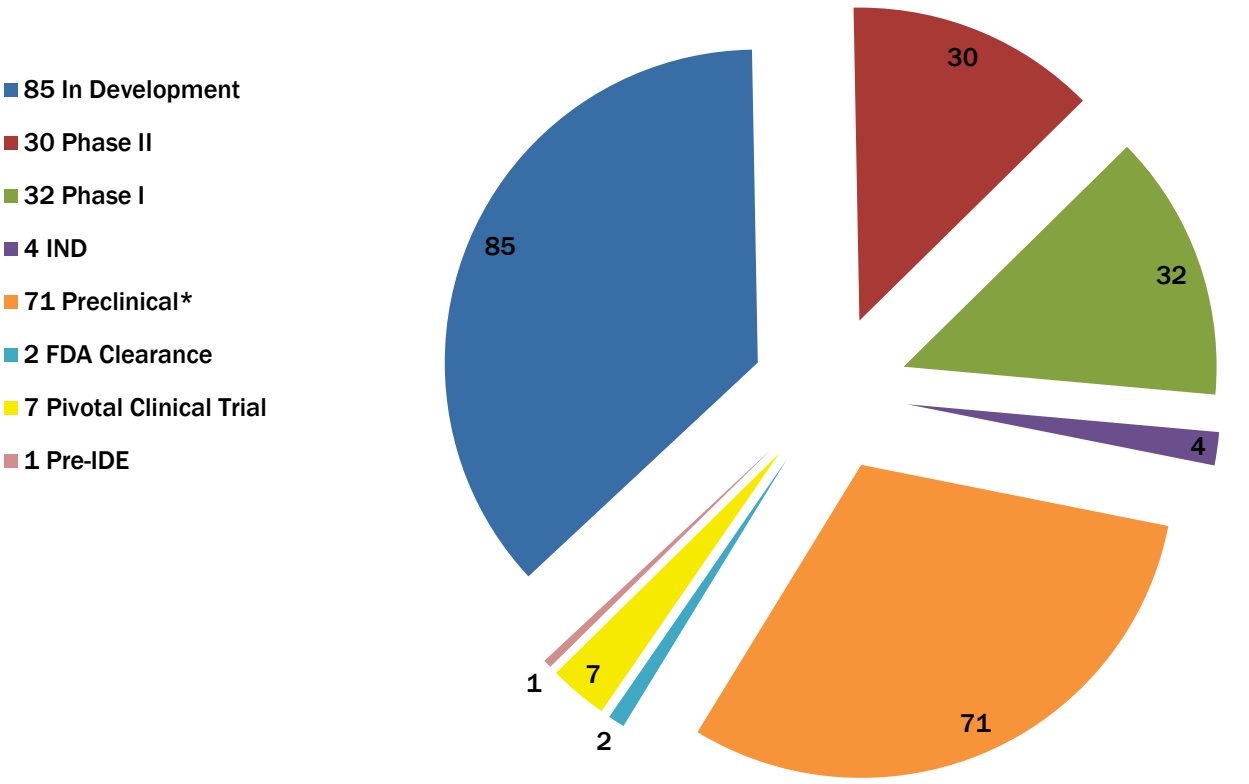


FIGURE 3

FY 2013 Products by Development Stage, Not on the Market (n= 232)



** Change in methodology from FY 2012 and FY 2013*

FIGURE 4

FY 2013 Number of Diagnostic Products by Medical Area (n=134)

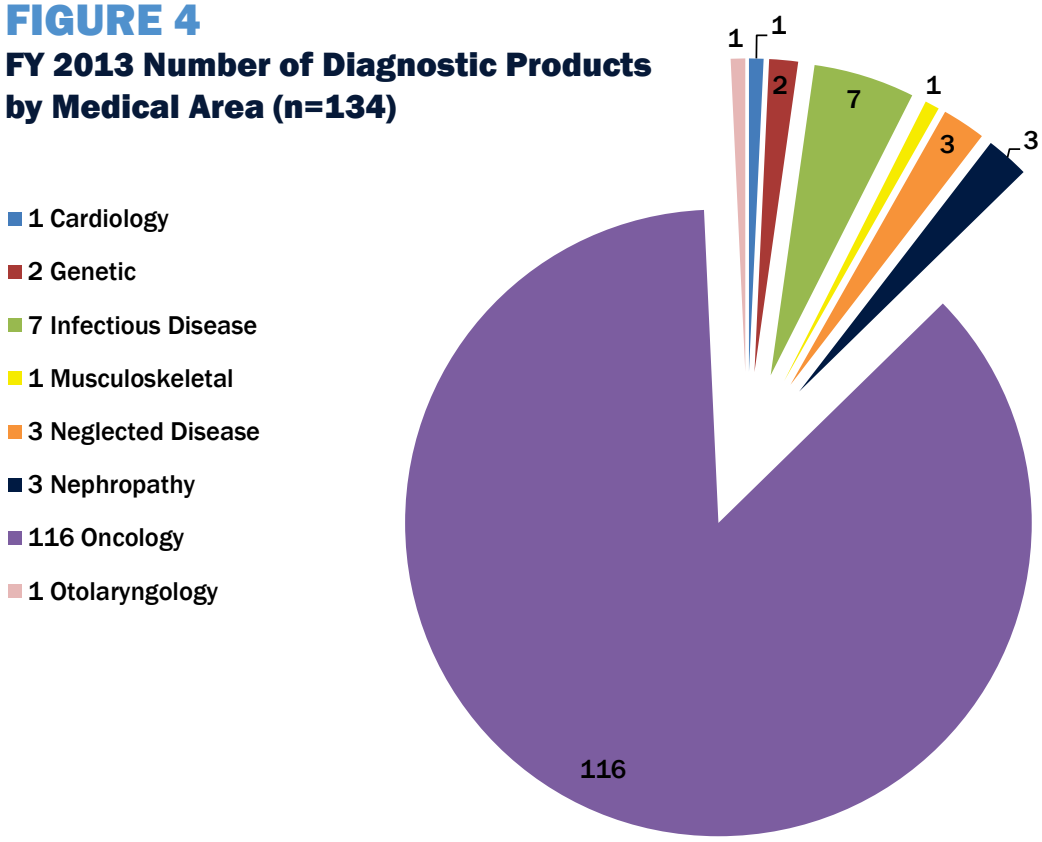


FIGURE 5

FY 2013 Number of Device Products by Medical Area (n=184)

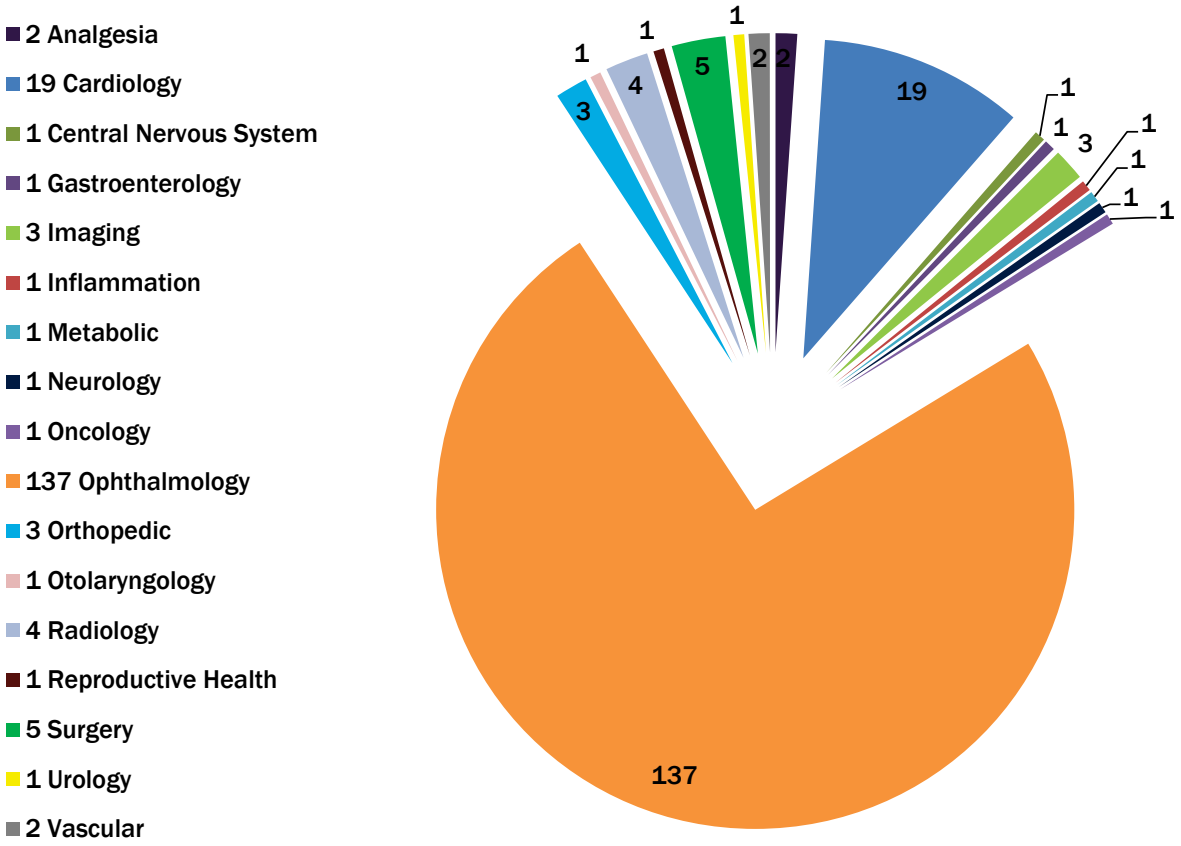
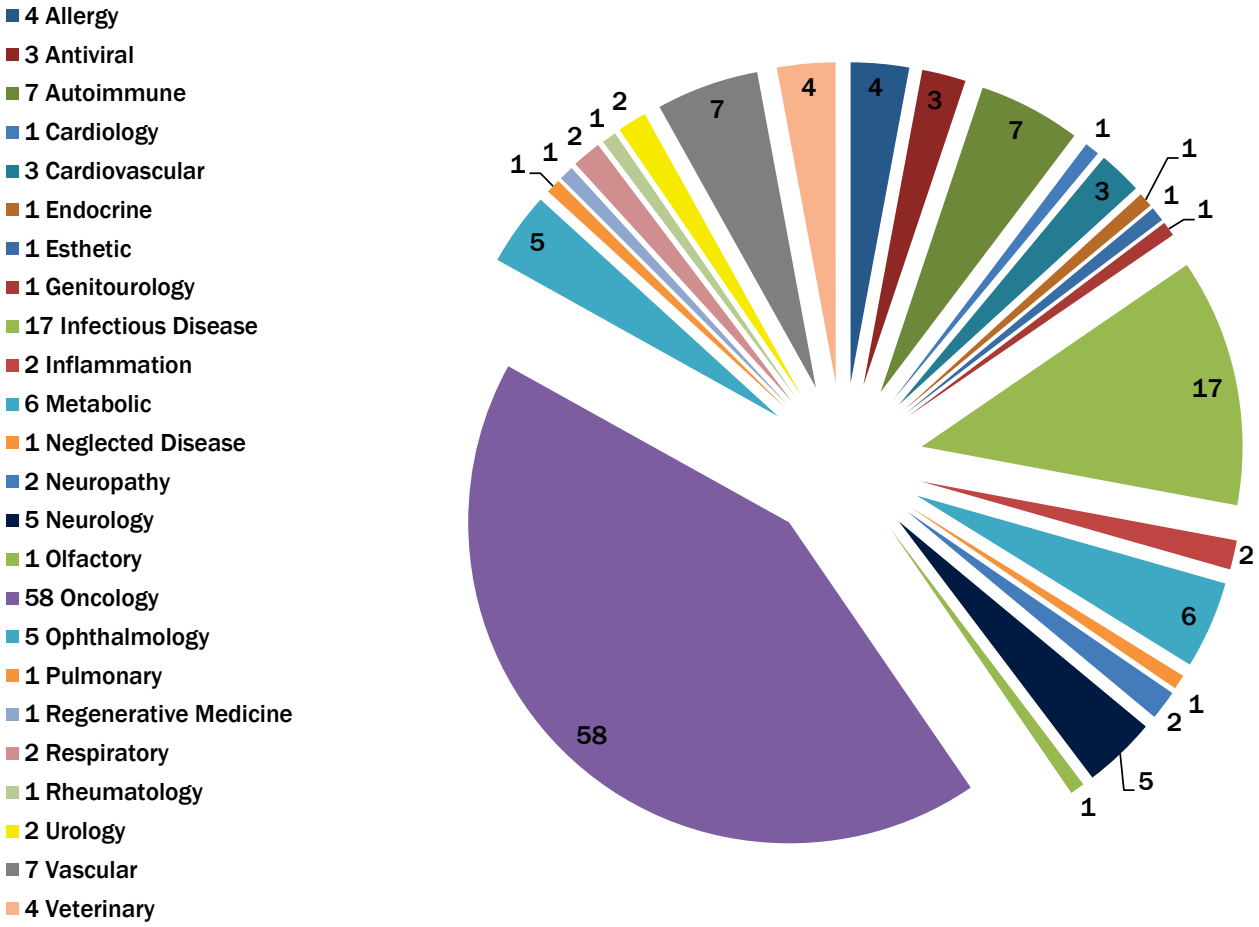


FIGURE 6

FY 2013 Number of Therapeutic Products by Medical Area (n=136)

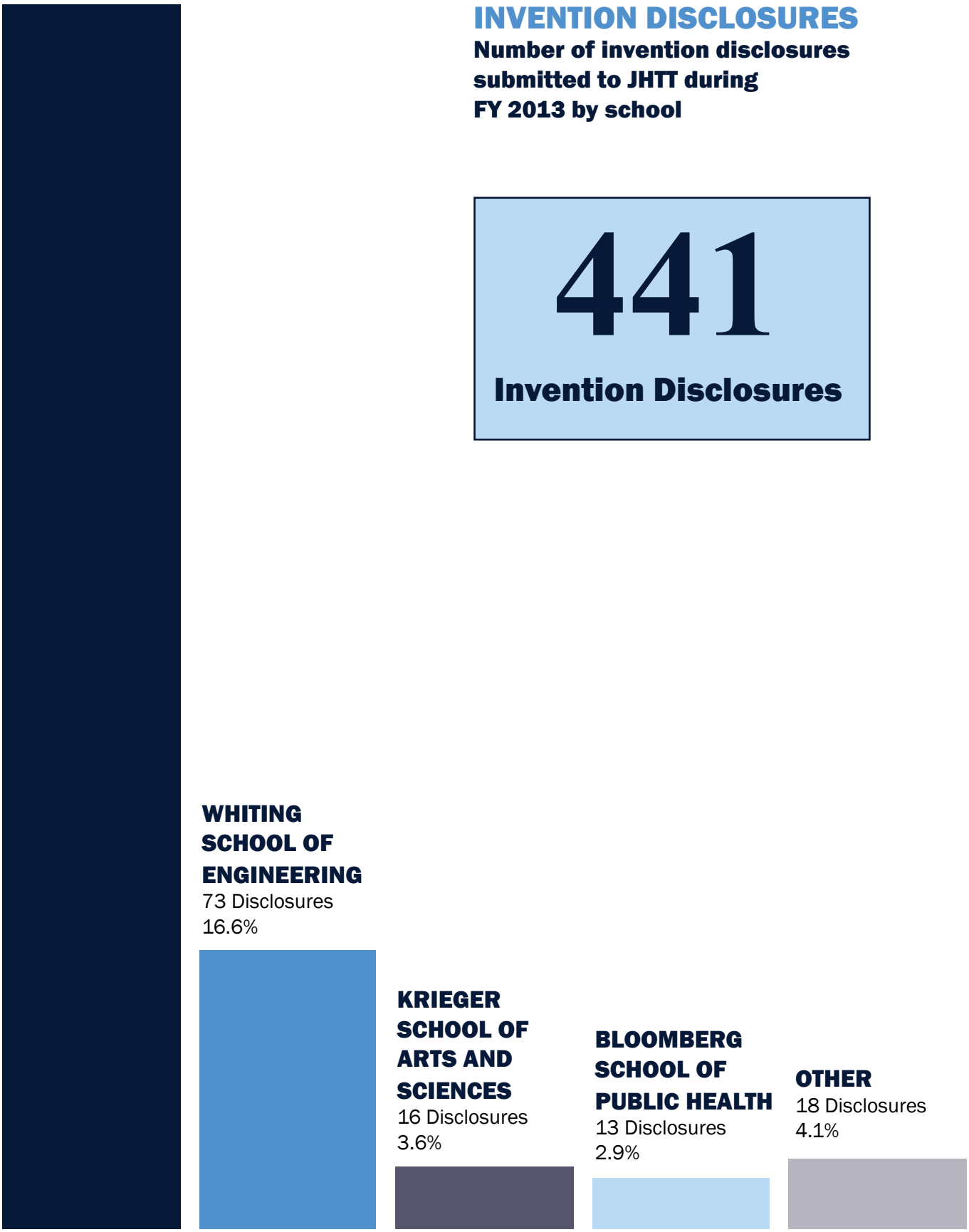


INVENTION DISCLOSURES

Number of invention disclosures submitted to JHTT during FY 2013 by school

441

Invention Disclosures



Appendix

FINANCIALS

"The Johns Hopkins tech transfer office has been making changes for more than a year to adapt to the new law...the office has revamped by moving some people to deal with intellectual property. It also doubled the number of in-house patent counsel."

~ BALTIMORE BUSINESS JOURNAL
Christine Hall, March 2013

SUMMARY

JHTT achieved record results in FY 2013. Performance highlights for the year include:

LICENSING REVENUE OF $17.9 MILLION
- An increase of $2 million over FY 2012.
- Exceeded budget target by $4 million.

441 PROCESSED INVENTION DISCLOSURES
- 4 percent increase over FY 2012.

133 NEW AGREEMENTS, INCLUDING OPTIONS

77 NEW U.S. PATENTS ISSUED
- 13 percent increase over FY 2012.

8 STARTUPS FORMED, 5 BASED IN MARYLAND

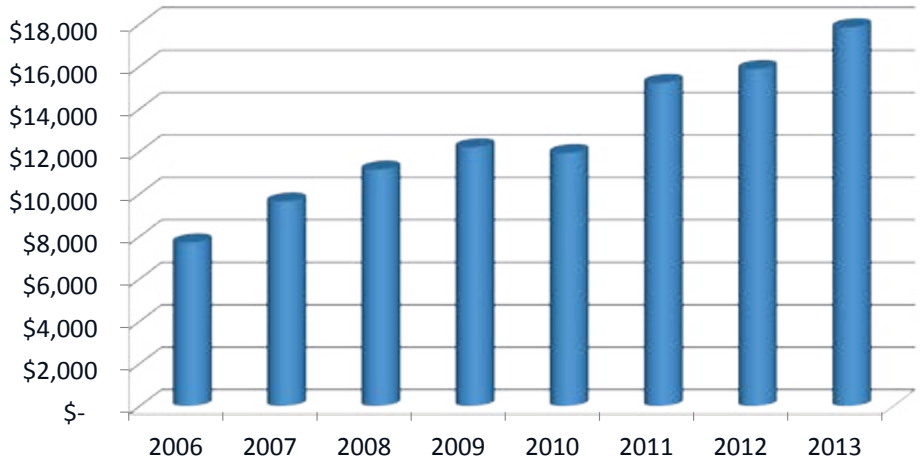
We accomplished these results while holding our net patent expense level with FY 2012, managing operating expenses to 98 percent of budget. JHTT generated $8.3 million in net income in FY 2013, exceeding the $3.9 million plan by 110 percent.

These outcomes are the result of our efforts to improve our marketing and operational performance. The IPM group was a significant contributor to operating efficiency and patent expense control. Relieved of patent management responsibilities, our licensing staff was able to improve licensing and marketing performance.

License revenue is distributed based on the University's Intellectual Property Policy. The timing of the distributions is somewhat different from that of JHTT's revenue recognition. For FY 2013, we distributed a total of $18.6 million, an increase of $7 million over FY 2012. JHU inventors and their research accounts received $6.7 million and JHU schools and departments received $6.6 million.

JHTT also manages Material Transfer Agreements for the University. Our MTA department received 4,014 MTA requests in FY 2013 and completed 3,933 agreements, a 6 percent increase over FY 2012. Ninety-six percent of the agreements were completed in 30 days or less.

Our financial results and operating metrics have



License Income
FY 2013 revenue of $17.9 million is more than twice the $7.7 million figure for FY 2006.

improved steadily in recent years, as shown in the graphs on this page and the next.

OPERATIONAL PERFORMANCE

We received 441 invention disclosures in FY 2013, our highest number ever. This increase reflects a focus on commercialization in every school coupled with frequent interactions between researchers and our staff. We received our first disclosure from the Peabody Institute and the Carey Business School this year. Schools contributed to the total as follows:

School of Medicine	321	72.8%
Whiting School of Engineering	73	16.6%
Krieger School of Arts & Sciences	16	3.6%
Bloomberg School of Public Health	13	2.9%
Other	18	4.1%

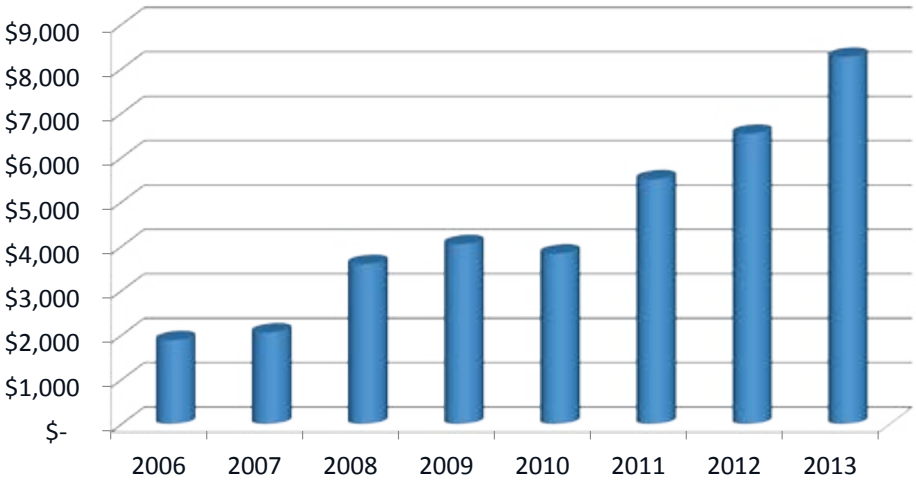
We completed 476 patent filings during the year. Seventy-seven new patents were issued, a 13 percent increase over last year. At June 30, we had 2,078 issued and 2,499 pending patents. Our current operation allows us to better evaluate new disclosures quickly. In addition, with the advent of AIA and the associated increase in costs, we have been much more selective in our patent filings than in the past. We have also initiated regular review of unlicensed issued cases, and have pro-actively inactivated cases with little chance of licensing. Thus our active and pending patents are slightly lower than last year.

We executed 133 new license agreements and 50 amendments in FY 2013, with 683 active agreements at year-end. We were able to secure more than $1 million in sponsored research for faculty as a byproduct of our licensing activities.

REVENUE ANALYSIS

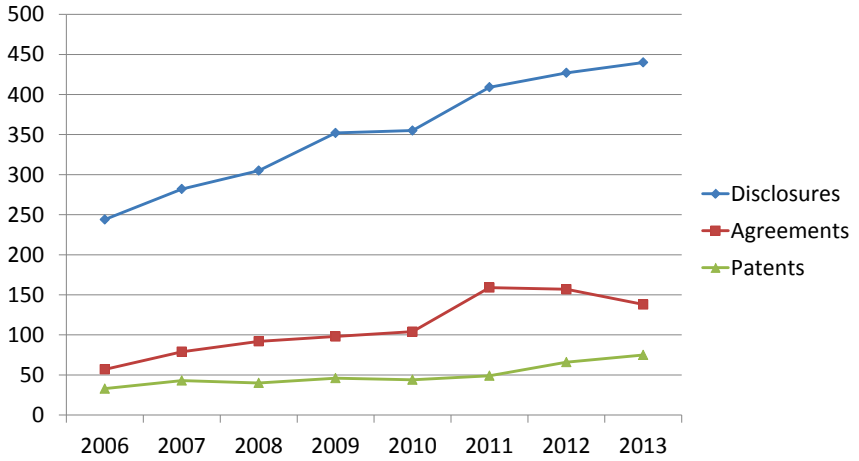
Revenue by Fee Type
We collected $17.9 million in licensing revenue

Net Income
FY 2013 net income of $8.3 million is over 4 times FY 2006 net earnings.



Operational Performance Trends

This graph shows how FY 2013 performance compares to recent years.



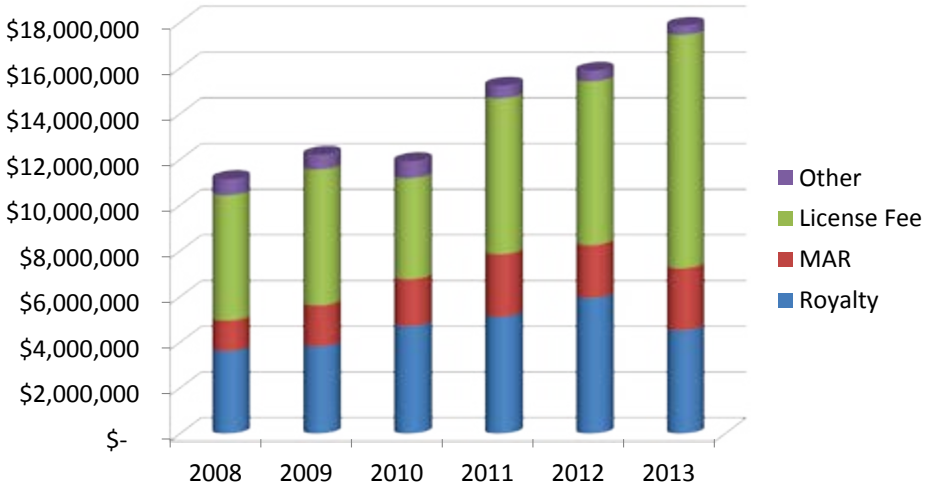
during FY 2013, nearly 30 percent higher than our $13.8 million budget. Of this, $7.5 million, or 42 percent, was received from new agreements signed during the year. These upfront fees are nonrecurring and must be replaced by new upfront agreements each fiscal year, which creates a challenge for the JHTT staff.

The graph below shows that our royalty and minimum annual royalty payments have been level in recent years. Our growth is attributable to upfront and milestone-related license fees.

New Agreement Total Contract Value

In addition to measuring upfront fees generated by new license agreements, we also measure the total contract value (TCV) of these agreements. TCV is defined as all scheduled and milestone payments, excluding the value of equity and anticipated product sale royalties, that have been or will be received from an agreement over its first 10 years. We may never see these payments should the licensee cease to pursue product development and terminate the license agreement. However, we believe that measuring TCV is useful as it indicates the potential future revenue that we expect to realize from our new agreements. The TCV of new agreements expected in FY 2013 is $35.4 million.

We know that other universities that receive very high income from their technology transfer efforts generally have a few older agreements that produce most of their license revenue. The technologies licensed in these older agreements have been successfully commercialized by the licensees and are now producing substantial income and thus royalties for the universities. We do not have any such "big hits" at the present time, although we have been tracking products in development by our licensees and believe that there are some strong possibilities for the future. For more on our this topic, please visit our "Product Development" section of this report on page 26.



Revenue by Fee Type

FY 2013 licensing revenue of $17.9 million was nearly 30 percent higher than budget.

INCOME BY AGE OF AGREEMENT

EXECUTED	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013
PRE-FY 2007	$8,425	$7,259	$8,920	$6,970	$6,263	$6,720	$4,491
IN FY 2007	$1,045	$1,647	$287	$367	$807	$1,288	$1,259
IN FY 2008		$2,257	$501	$579	$4,081	$486	$587
IN FY 2009			$2,513	$930	$831	$655	$507
IN FY 2010				$3,100	$1,071	$1,120	$459
IN FY 2011					$2,191	$2,041	$2,116
IN FY 2012						$3,592	$886
IN FY 2013							$7,544
	$9,470	$11,163	$12,221	$11,946	$15,249	$15,902	$17,849

Income by Age of Agreement

The table above shows income by the age of the agreement that produced the income. It shows that a substantial percentage of revenue comes from agreements that are 5+ years old, summarized as follows:

FY 2010	58.3%
FY 2011	46.4%
FY 2012	53.4%
FY 2013	38.3%

PATENT EXPENSES AND REIMBURSEMENTS

Gross patent expenses totaled $8.1 million, $1.7K under budget and $635K less than last year. This decrease is the result of the cost control efforts of our new Patent Counsel group and timely analysis by our licensing team. Gross patent expenses includes $1.4 million in billings from our in-house patent counsel attorneys, resulting in external patent costs of $6.6 million. We collected $3.7 million in patent expense reimbursements from licensees, resulting in a net external patent expense of $2.9 million.

Patent Expenses by Country

Forty-seven percent of our patent expenditures are in the United States and 17 percent are with the European Patent Office. The chart below shows the breakdown of our expenses by country.

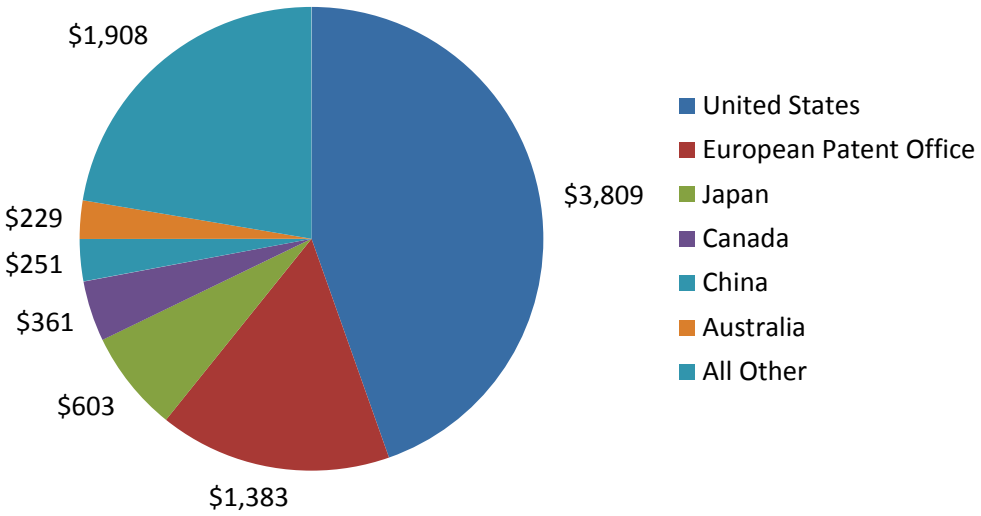
Patent Expense Reimbursement

Our patent expense reimbursement rate was 46 percent compared to 47 percent in FY 2011 and 51 percent in FY 2012. We are currently researching this decrease in percentage of reimbursement, but believe it is the result of the increased cost of filing enabled provisional patent applications, which loads patent costs much earlier in the process.

Unlicensed Cases

Patent Expenses by Country

In FY 2013, 47 percent of patent expenditures were from the United Sates.



ANALYSIS OF PATENT EXPENSES FOR UNLICENSED CASES*

	Total	< 1 year	1-3 years	4-6 years	7-10 years	>10 years
2013	$3,985	$553	$1,872	$684	$532	$343
2012	$4,483	$251	$2,383	$684	$716	$449
2011	$4,360	$213	$1,846	$1,183	$732	$386
2010	$3,173	$151	$1,236	$769	$749	$268
2009	$3,592	$130	$1,840	$664	$607	$351
5-Year Total	$19,593	$1,298	$9,177	$3,984	$3,336	$1,797
Percent	100%	6.6%	46.8%	20.3%	17.0%	9.2%

**Measured by the age of the case when the patent expense was paid.*

As the table on the next page shows, over the past 5 years we have incurred only 6.6 percent of our patenting costs in the first year of a technology case's life. However, this increased to 14 percent in FY 2013, due to the front loading effects of the AIA as discussed earlier.

OFFICE EXPENSES

JHTT expenses totaled $6.6 million, 98 percent of budget. The table on the next page shows the 5-year trends in expenses by category.

DISCLOSURES

We received 441 invention disclosures in FY 2013. The chart on page 30 shows the trends over the past four years. We are pleased to see the widening interest in technology commercialization and entrepreneurial activities by our faculty.

DISTRIBUTIONS

JHTT distributes license income in accordance with the University's Intellectual Property Policy. As the timing of distributions differs from the timing of license revenue recognition, the amounts distributed in any fiscal year will differ from the revenue reported on our financial statements. We distributed $18.6 million in FY 2013. Of this, $2.7 million—referred to as the licensing expense share—was used to defray JHTT operating expenses, which are covered by the schools. The remaining $15.9 million was distributed as shown on the next page.

AGE OF LICENSED CASES

The chart on the next page shows the time from initial disclosure of the invention to the execution date of the license agreement.

Approximately 15 percent of the cases licensed in recent years were less than one year old. Often these licenses resulted from industry sponsored research where the sponsor took a license or where the IP is follow-on technology to cases previously licensed. Other technology can take much longer to license, with 30 percent at 7 or more years old at the time they were licensed.

FY 2013 OPERATING EXPENSES COMPARED TO PAST YEARS

	2009	2010	2011	2012	2013
Salaries	$3,488	$3,825	$4,068	$3,941	4,109
Benefits	$1,055	$1,125	$1,217	$1,240	1,308
Other Office Expenses	$830	$876	$1,186	$1,361	1,503
UA Credits	($294)	($279)	($279)	($279)	(279)
Total Office Expenses	$5,079	$5,547	$6,192	$6,264	6,641

FY 2011-2013 INCOME DISTRIBUTIONS

Distributed to:	2011	2012	2013
Inter-Institutional (incl. HHMI)*	$948	$1,239	$839
Inventor	$3,651	$4,146	$5,324
Inventor Research Accounts	$1,451	$1,176	$2,104
Departments	$1,485	$1,372	$2,125
Schools	$3,205	$2,993	$4,516
University	$597	$523	$997
TOTAL	$11,337	$11,451	$15,905

Income is generally distributed the quarter after it is received. Licensing costs, expense reimbursements, administrative fees, and other charges are not included in the amount distributed.

ANALYSIS OF NEWLY LICENSED CASES BY AGE OF CASE

Fiscal Year	Agr.	Cases	Average	<1	1-3	4-6	7-10	>10
2013	133	205	1.54	19	87	22	26	51
2012	157	252	1.61	19	118	27	42	46
2011	159	316	1.99	78	106	48	51	33
2010	104	144	1.38	34	36	27	30	17
2009	99	172	1.74	21	62	40	28	21
TOTAL	611	1,037	1.70	193	470	198	193	188
PERCENT				15.5%	37.8%	15.9%	15.5%	15.1%

Measured by the age of the case when it was licensed.

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Images of Bream, Berger, Garza, Goldberg and Milner, Kinde, Nguyen, Vogelstein, and Wong were taken by Keith Weller Commercial Photography for Johns Hopkins Medicine.

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