

Thomas Jefferson University

Research Development Report

Reporting Period:

July 1, 2013 – June 30, 2014

Commercial Development of Research

Since the Office of Technology Transfer and Business Development (“OTT”) was implemented in 1984, Thomas Jefferson University (“Jefferson”) has established procedures for the commercial development of new technology from Jefferson research and actively promoted the commercialization of its technologies.

Through its OTT, Jefferson facilitates patent protection to strengthen the intellectual property position of Jefferson-developed technologies. OTT has actively engaged in networking with the Southeastern Pennsylvania region’s pharmaceutical and biotechnology companies and economic development agencies to promote partnerships and to help further Jefferson’s research and technologies. Also, Jefferson’s OTT systematically markets these technologies to targeted companies for collaboration, sponsored research, and licensing opportunities. For licensing Jefferson technologies, the flexible license arrangements provide incentives to external commercial partners that desire to commercialize the technologies.

Based on the AUTM FY2013 information, the results for Thomas Jefferson University are:

- \$76,959,000 in total federal and industrial research funding
- \$1,171,294 in gross license income
- 10 licenses or options were executed
- 30 active licenses or options yielding license income
- 13 start-up companies were still active
- With 45 new disclosures received, 19 new patent applications were filed, and 19 US applications were filed.
- 7 US patents were issued.

Research Licensing Agreements

Thomas Jefferson University uses Exclusive and Non-Exclusive licensing agreements that were developed prior to June 30, 2004. The agreements are for use in the licensing of research results related to medical devices, drugs or other research discoveries. Copies of these agreements were previously submitted to the Commonwealth.

Training Students and Health Professionals

Thomas Jefferson University Medical College and Hospitals (Jefferson) is affiliated with a wide range of academic medical centers in north-eastern, south-eastern, central and western Pennsylvania at which we educate our medical students. These institutions provide core undergraduate rotations for third year medical students and elective and subspecialty clerkships for fourth year medical students. These institutions include:

- Abington Hospital, Abington, PA
- Albert Einstein Medical Center, Philadelphia, PA
- Bryn Mawr Hospital, Bryn Mawr, PA
- Crozier-Keystone Health System, Chester, PA
- Excelsa Health Latrobe Hospital, Latrobe, PA
- Lankenau Hospital, Wynnewood, PA
- Magee Rehabilitation Hospital, Philadelphia, PA
- Paoli Hospital, Paoli, PA
- Reading Hospital, Reading, PA
- Wills Eye Institute, Philadelphia, PA
- York Hospital, York, PA

During this academic year, the Division of Graduate Medical Education (GME) continued its mission to provide oversight, guidance, and support to all GME programs at Jefferson and the affiliates for which the Hospital is the sponsoring institution. Residents rotate to a number of affiliated hospitals for their specialty-specific core and subspecialty graduate programs. The affiliated hospitals for GME include:

- Albert Einstein Medical Center, Philadelphia, PA
- Bryn Mawr Hospital, Bryn Mawr, PA
- Children's Hospital, Philadelphia, PA
- Lankenau Hospital, Wynnewood, PA
- Magee Rehabilitation Hospital, Philadelphia, PA
- Moss Rehabilitation Hospital, Philadelphia, PA
- Reading Hospital, Reading, PA
- Wills Eye Hospital, Philadelphia, PA

The ACGME Outcome Project and the implementation of competency-based education in all GME programs are fully implemented into all GME programs within the institution. Over the past year, continued institution-wide educational forums, assistance in outcomes-based curriculum development, pilot programs for the development of new resident evaluation instruments, and individualized consultations have occurred.

Jefferson sponsored over 121 CME certified activities in this last year. In FY 13 (latest completed data), Jefferson OCME designated these activities for 2335 *AMA PRA Category 1 credits*. These activities involved 26, 000+ participants.

JMC has in place a patient encounter log system (PELS) for tracking core educational requirements during clinical clerkships. Counselling for smoking prevention and cessation are core requirements in three clerkships. This data was reported for the 2012-13 academic year. Compliance with this requirement is high.

Clerkship 2012-13	Number of Students Reporting	% Students Reporting Counselling for Smoking Prevention/Cessation for 3 or more patients
Internal Medicine	235	90
Family Medicine	218	99
Pediatrics	248	96

Clerkship 2013-14 (YTD)	Number of Students Reporting	% Students Reporting Counselling for Smoking Prevention/Cessation for 3 or more patients
Internal Medicine	180	84
Family Medicine	237	97
Pediatrics	230	97

Abigail Kay, MD (Department of Psychiatry and Human Behavior) continues to teach a large group session for all first year medical students, during the Introduction to Clinical Medicine course, on the physiology, impact and treatment of tobacco addiction that includes evaluation for readiness for smoking cessation. There are also a total six lectures in the required second year class, Foundations in Clinical Medicine, that address tobacco-related pulmonary injury (three) and smoking and tobacco cessation (three).

Commercial Research Development Training

Jefferson’s Office of Technology Transfer (OTT) conducts numerous outreach training programs throughout the year to educate the faculty, new employees, and research staff about OTT’s services and procedures for licensing the university’s technologies. During the reporting period, OTT hosted 49 events for the Jefferson campus on innovation, intellectual property, technology commercialization, and industry partnering opportunities. These events included:

- (1) The Savvy Innovator Seminar Series, which featured guest speakers from biotechnology and pharmaceutical companies, venture capitalists, and patent attorneys who presented on various topics such as venture capital basics, the America Invents Act and its impact for academia, and specific company’s areas of interest.
- (2) Innovation Corner, a weekly initiative that began in January 2014 as an open-forum opportunity for the Jefferson campus—students, fellows, residents, researchers, and faculty—to network with colleagues, find potential collaborators for cross-disciplinary research, and innovate.
- (3) More personalized group presentations by OTT to the faculty and researchers of individual Jefferson departments and schools, such as the Department of Pharmaceutical

Sciences, the School of Nursing, and the School of Population Health, to inform them of the commercialization process and OTT's services to the Jefferson campus.

- (4) OTT's presentation to Jefferson's biotechnology and business student group, called BizBio, to explain the basics of intellectual property and the commercialization process.

Jefferson's OTT has also formed strong partnerships with the other universities in Philadelphia and with the many Commonwealth agencies and biotech and pharmaceutical companies that support its technology commercialization programs. Through the support of four Keystone Innovation Grants (KIGs) from the Commonwealth of Pennsylvania and one Keystone Innovation Network grant received via the University City Keystone Innovation Zone office, Jefferson's OTT has provided technology commercialization services and mentoring to the Office of Technology Management (OTM) and director at University of the Sciences in Philadelphia and also to Cheyney University and Widener University. The mentoring and partnership programs provided research collaboration opportunities drawing on the unique expertise at each university.

Through its internal and external outreach programs for research development, Jefferson's OTT continues to strengthen the working relationships and research within Jefferson and to increase awareness and foster interest in technology commercialization in the region.

Outreach to Businesses Regarding Recent Research Developments

In April 2014, a regional economic development agency announced an application round for a funding program that facilitates a close working relationship with a regional pharmaceutical company. One Jefferson faculty member, Dr. Jianke Zhang, has been selected as a semi-finalist to give a presentation to the pharmaceutical company's scientists. Dr. Zhang first applied to the funding program's pilot round in 2011 and was selected as a finalist. This provided funding assistance to further develop his research and also fostered a relationship with the regional pharmaceutical company with whom he and OTT have been in close contact.

Additionally, OTT has leveraged its business development contacts to cultivate relationships with venture capital firms and have had their representatives present at Jefferson and meet with Jefferson faculty members who have promising research projects and technologies.

Furthermore, since the 2013 launch of the "Research Toolbox Initiative," a program that aims to market a combination of Jefferson faculty's expertise and research tools to targeted companies in order to seek collaboration and sponsored research opportunities, Jefferson's OTT has continued to work with faculty and researchers and to market their expertise and research tools.

Research Development Collaboration

Jefferson has a long history of collaborating with researchers at other institutes and universities in the region, which will continue. Jefferson's faculty members are routinely engaged in collaborative research projects with investigators at other research centers or institutes both

within the Commonwealth and around the country.

In the 2012 Formula grant, Project 2 has collaborations with a private for-profit diagnostics laboratory (MDR Global Inc. in Windber, PA) for help with tumor analyses. A not-for-profit research institute (Windber Research Institute) has helped with data management. Project 2 also has collaborations with researchers at the University of Pennsylvania and Drexel University. Project 8 has collaboration with a diagnostic entity (DeNovo) to compare their CTCs detection method with CellSearch. They are currently discussing with other companies similar collaborations (Parsonix, ScreenCell) and a possible major grant with Novartis.

When new intellectual property develops from these collaborations, Jefferson and the collaborating organization(s) enter into an inter-institutional agreement that covers the management of patents and licensing of technology.

Jefferson is also a leader in establishing and maintaining the Pennsylvania Cancer Alliance and seeks opportunities for the cancer institutes in Pennsylvania to collaborate on joint grants, research programs, and other development projects.