Thomas Jefferson University

Research Development Report

Reporting Period:

July 1, 2011 - June 30, 2012

Commercial Development of Research

The Office of Technology Transfer and Business Development (OTT) was implemented in 1984. Within this Office, Thomas Jefferson University (TJU) has established procedures in place for the commercial development of new technology from Jefferson research.

- TJU facilitates patent protection and proceeds with systematic marketing efforts to identify potential licensees where the research results have commercial value.
- TJU has actively promoted commercialization of its technologies since OTT was implemented.
- The OTT has actively engaged in networking with regional pharmaceutical industries and local state funded economic development agencies, to promote partnerships to help further TJU’s research results. In the current funding period, OTT invited representatives from the local state-funded economic development agencies to faculty outreach events. Several technologies were evaluated by the Science Center, a Southeast Pennsylvania economic development agency, for its early stage quod erat demonstrandum (QED) proof-of-concept gap funding program. One group, developing an early detection blood test for pancreatic cancer, revised and resubmitted a previous, unfunded proposal to the program after obtaining additional data with funding from a state technology development grant to OTT. After their proposal was selected as one of 10 semi-finalists out of 48 submissions, they were selected as one of three finalists and were awarded $200,000 to further develop their project.
- The OTT aggressively markets TJU’s research results in a systematic fashion coupled with flexible license arrangements.
- The flexible license arrangements provide incentives to TJU’s external commercial partners that desire to commercialize TJU’s research results.
- In the current funding period, OTT has conducted 122 outreach events, including networking opportunities, business meetings on TJU technologies, and formal training presentations for TJU employees. The training presentations, to research departments as well as to individual faculty members, educated TJU researcher participants about technology transfer and marketing processes, technology development funding opportunities, and licensing deal structures. The general audience presentations also involved speakers from industry sectors and patent attorneys.
- Small group sessions were held to address specific technology transfer related issues.

Based on the available AUTM FY2010 information, the results for Thomas Jefferson University are:
- $100,452,376 in total federal and industrial research funding
• $837,912 in gross license income
• 15 licenses or options were executed
• 21 active licenses or options yielding license income
• 12 start-up companies were still active.
• With 60 new disclosures received, 17 provisional patent applications were filed and 26 US applications were filed.
• 9 US patents 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**

In addition to Thomas Jefferson University Hospital and Methodist Hospital, Jefferson’s Medical College is affiliated with a wide range of academic medical centers in northeastern, southeastern, 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
- Aria Health, Philadelphia, PA
- Bryn Mawr Hospital, Bryn Mawr, PA
- Crozier-Keystone Health System, Chester, PA
- Excela 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 in 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
- Aria Health, Philadelphia, PA
- Lankenau Hospital, Wynnewood, 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 119 CME certified activities in this last year. In FY 11 (latest completed data), Jefferson OCME designated these activities for 2249 AMA PRA Category 1 credits. These activities involved 24,861 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 2011-12 academic year. Compliance with this requirement is high.

<table>
<thead>
<tr>
<th>Clerkship</th>
<th>Number of Students Reporting</th>
<th>% Students Reporting Counselling for Smoking Prevention/Cessation for 3 or more patients</th>
</tr>
</thead>
<tbody>
<tr>
<td>Internal Medicine</td>
<td>217</td>
<td>86</td>
</tr>
<tr>
<td>Family Medicine</td>
<td>222</td>
<td>99</td>
</tr>
<tr>
<td>Pediatrics</td>
<td>243</td>
<td>95</td>
</tr>
</tbody>
</table>

- 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 research results. In the past year, OTT hosted 44 events for the TJU research community on intellectual property and patenting topics, technology transfer activities and services, and industry partnering opportunities. OTT also visited individual departments for small group presentations on the invention disclosure and commercialization process, confidential disclosure agreements and material transfer agreements.

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 our technology commercialization programs. In particular, under four Keystone Innovation Grants (KIGs) from the Commonwealth of Pennsylvania, Jefferson’s OTT has provided technology commercialization services and mentoring to the newly formed Office of Technology Management (OTM) and director at University of the Sciences in Philadelphia (USP) and to Cheyney University and Widener University. The mentoring and partnership programs provided research collaboration opportunities drawing on the unique expertise at each university.

OTT has also received a fourth Pennsylvania Commonwealth Innovation Grant, from which a Technology Development Grant was allocated, enabling TJU researchers to obtain additional supporting data for commercially promising research. The Technology Development Grant was split among four research projects. The Grant funding enabled the investigators to obtain additional preliminary data, and using that data, to submit a proposal to the regional economic development agency, Science Center, QED proof-of-concept funding program. Two of the four proposals submitted from TJU to the QED program were selected as top ten finalists from 48 regional university submissions. One proposal for an early detection assay for pancreatic cancer was selected by the QED industry expert panel to receive one of three $200,000 QED awards. This was the first QED award for TJU. In the current fiscal year, TJU filed a patent application converting a prior provisional patent application on the serum diagnostic test to a PCT patent application for international and US patent rights.

OTT continues its practice to understand and meet the needs and concerns of faculty members in order to enhance technology transfer services. The internal outreach efforts, including a Savvy Innovators seminar series on intellectual property and commercialization topics, continue to strengthen the working relationship between OTT and faculty members. A strong relationship between faculty members and OTT increases awareness and fosters interest in technology transfer amongst Jefferson researchers.

Outreach to Businesses Regarding Recent Research Developments

Dr. Marja Nevalainen continues to receive requests for a new prostate cancer cell line, following her publication describing the generation and characterization of the cell line. Several companies have also expressed interest in sponsored research projects in Dr. Nevalainen’s laboratory.

The pancreatic cancer assay that received the QED award has received licensing and sponsored research interest from four pharmaceutical companies, and OTT and the co-inventors are in advanced discussions with the parties.

In June 2011, OTT assisted a Jefferson faculty member’s application for a regional economic development agency’s pilot funding program that, if awarded, will facilitate a close working relationship between the faculty member and a regional pharmaceutical company that may lead to sponsored research. The award results will be announced the following month.

Research Development Collaboration

TJU has a long history of collaborating with researchers at other institutes and universities in the region, and we expect this practice to 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.

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

TJU 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.