Dartmouth College Technology Transfer Office

Fiscal Year 2005 Annual Report
Mission Statement

The Technology Transfer Office serves as a focal point of interaction between industry and academic research on Dartmouth campus by transferring technology, originated in the College and its professional schools, to the private sector for the benefit of the general public and by contributing to the educational, research and public service missions of Dartmouth College.
Year 2005 has been an important milestone for academic technology transfer – it marks the 25th anniversary of the Bayh-Dole Act, a seminal legislation allowing universities to retain title to inventions conceived under federal sponsorship. During its quarter of a century existence the Act caused a spur in inventive activity within academia and fostered economic development in the United States. The U.S. Patent and Trademark Office issued almost 4,000 U.S. patents in 2003 to universities, less than 250 were issued to universities in 1980, prior to Bayh-Dole Act becoming law. Almost 500 products based on academic research were made available to the public in 2003 alone. According to the Association of University Technology Managers (AUTM) survey data, 4,543 companies have been established since 1980 to commercialize university originated technologies. In spite of such spectacular performance, universities have become victims of their own success and recently have been accused in the press of excessive greed, loss of public service purpose, and compromising research integrity for the sake of financial gain. It is very important therefore to emphasize universities’ public service role and contributions to the wellbeing of society.

To meet the public benefit aspect of our mission, Dartmouth’s Technology Transfer Office (TTO) continues investing into inventions in their nascent stages in the hopes that they will develop into life saving or life quality improving products. In FY05 the TTO staff dedicated a lot of effort to bringing Dartmouth originated technologies to the marketplace. In just one year we concluded 12 new license agreements, which brought the total number of active licenses to 111. In our effort to contribute to the betterment of human condition, we issued a royalty-free license to the Gates Foundation to our patents claiming genes allowing the design of transgenic plants capable of iron extraction from iron-deficient soils. These genes will be used in the Gates Grand Challenges for Global Health Initiative exploring issues related to improving nutrition for people in sub-Saharan Africa.

The TTO also contributes to local economic development by being a satellite of the State of New Hampshire business assistance program, the Industrial Research Center (IRC), which provides grants to New Hampshire companies for collaboration with Dartmouth or University of New Hampshire academic experts. The program helped create more than 3,000 new jobs in New Hampshire since its inception in 1991.

Just as U.S. universities as a whole look back on the last 25 years of their technology transfer activity, Dartmouth TTO also looks back to assess its accomplishments. Our FY05 Annual Report illustrates continued growth of all aspects of TTO activities: licensing, patenting, and research enterprise support. We are proud to present this report and to continue serving the Dartmouth community.

Alla Kan, Director
The tables below provide a numerical summary of Dartmouth’s technology transfer activity in FY05.

### Invention Disclosures, Licenses, and Sponsored Research & Other Non-License Agreements

<table>
<thead>
<tr>
<th></th>
<th>Invention Disclosures</th>
<th>Licenses</th>
<th>Sponsored Research &amp; Other Non-License Agreements</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Total Active</td>
<td>Concluded in FY05</td>
<td>Start-up Companies</td>
</tr>
<tr>
<td></td>
<td>41</td>
<td>111</td>
<td>12</td>
</tr>
</tbody>
</table>

### Revenue Generated

<table>
<thead>
<tr>
<th></th>
<th>License Revenue</th>
<th>Sponsored Research and Other Non-License Agreements</th>
<th>Legal Expenses Reimbursed by Licensees</th>
<th>Sponsored Research Revenue Generated from License Agreements</th>
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<tbody>
<tr>
<td></td>
<td>$889,247</td>
<td>$5,208,960</td>
<td>$221,298</td>
<td>$350,000</td>
</tr>
</tbody>
</table>

### Licensing

In FY05 the TTO handled 111 active license and option agreements, an increase of 11% compared to FY04. Twelve of these agreements were concluded in FY05. Two of these newly concluded licenses were to start-ups, which depended upon licensing of Dartmouth originated technology for their initiation.

One of these companies, Sound Innovations, Inc. is located in the Upper Valley. Its core technology, developed at the Thayer School of Engineering, is a noise filtering device, with numerous applications requiring noise reduction. Some of the users of the technology would be military and commercial pilots, flight deck personnel, and operators of machinery in high noise environments.

Another start-up is Reata Discovery, Inc., located in Dallas, Texas. This company licensed a promising new class of small molecule anticancer compounds synthesized and developed at Dartmouth Medical School and Chemistry Department at the College of Arts & Sciences (see press release on page 8). These
compounds, called triterpenoids, are based on compounds found in medicinal plants, but have much greater potency than the natural products and have shown to have a unique profile of anti-tumor, anti-inflammatory, and anti-carcinogenic properties.

License agreements generated $889,247 in license revenue, $221,298 in legal expense reimbursement and $350,000 in sponsored research revenue as part of license agreements.

License agreements distribution by academic units is represented on the chart below:

**Invention Disclosures**

During FY05, the TTO staff handled 41 invention disclosures. The distribution of these disclosures by units is presented on the following chart.

**Distribution of Invention Disclosures for FY05 by Unit. Total = 41**

**Patenting**

Twenty one patents issued to the Trustees of Dartmouth College in FY05 and 75 patent applications were filed. The territories in which patents were issued and categories of filed applications are summarized in the table below.

<table>
<thead>
<tr>
<th>Total Filed</th>
<th>Total Issued</th>
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</thead>
<tbody>
<tr>
<td>75</td>
<td>21</td>
</tr>
<tr>
<td>27 U.S. Provisional</td>
<td>6 U.S.</td>
</tr>
<tr>
<td>14 PCT</td>
<td>1 Australia</td>
</tr>
<tr>
<td>16 U.S. Regular</td>
<td>1 Belgium</td>
</tr>
<tr>
<td>3 U.S. Divisional</td>
<td>1 China</td>
</tr>
<tr>
<td>5 U.S. Continuation</td>
<td>1 Denmark</td>
</tr>
<tr>
<td>4 U.S. Continuation in Part</td>
<td>1 EPC</td>
</tr>
<tr>
<td>3 EPO</td>
<td>1 Italy</td>
</tr>
<tr>
<td>1 Japan</td>
<td>1 Korea</td>
</tr>
<tr>
<td>2 Canada</td>
<td>1 Mexico</td>
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<td>1 Russia</td>
</tr>
<tr>
<td></td>
<td>2 South Korea</td>
</tr>
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<td></td>
<td>2 Taiwan</td>
</tr>
</tbody>
</table>
Historically relations between academia and industry have not been close. Academic scientists tended to shy away from influences that might taint the purity of their research aims, while corporate leaders were generally content to leave the theorists in their ivory towers. Although academia and industry are governed by different cultures, in the recent decades they have been increasingly drawn together by each other’s ability to complement the resources needed by the other side.

Companies report increased productivity and an improved competitive position as a result of collaborations with university scientists. In many cases it is less expensive for a company to support university investigation and gain access to government funded basic research, than to set up R&D resources in-house. Universities get much needed research support as well as valuable practical experience for students, as a result of industrial collaborations. Licenses, and the revenue they generate, are but a small fraction of the entire spectrum of academic collaborations with industry.

The TTO oversees numerous types of collaborations with industry on Dartmouth’s campus, including industrially sponsored research, testing, confidentiality and material transfer agreements.

The office also assists in establishing industrial collaborations via Federal and State government business assistance mechanisms, such as Small Business Innovation Research (SBIR), Small Business Technology Transfer (STTR), and New Hampshire Industrial Research Center (NHIRC) programs.

Sometimes Dartmouth researchers are involved in joint research work, leading to shared invention rights with other institutions. Therefore, the Technology Transfer Office also negotiates and prepares Interinstitutional Agreements with other universities or for-profit

Research Enterprise Support

License, and the revenue they generate, are but a small fraction of the entire spectrum of academic collaborations with industry.
organizations. These agreements address the issues of intellectual property ownership, legal expenses management and distribution of license revenue.

All this multitude of agreements resulted in 262 non-license agreements handled by the TTO in FY05, which represents an increase of 19% as compared with FY04. These non-license agreements brought $5,208,960 of sponsored research to campus. The chart below presents the distribution of these agreements by category with the dollar amounts generated, when applicable.
**Total Transactional Activity**

The scope and volume of the TTO's services supporting research and technology transfer on campus are steadily increasing. The charts below reflect the overall increase in TTO activity throughout the years.

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**License Agreements FY94-FY05**

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**Non-License Agreements FY94-FY05**
Material Transfer Agreements FY94-FY05

<table>
<thead>
<tr>
<th>Year</th>
<th>Filed</th>
<th>Issued</th>
</tr>
</thead>
<tbody>
<tr>
<td>FY94</td>
<td>30</td>
<td></td>
</tr>
<tr>
<td>FY95</td>
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<td>FY04</td>
<td>153</td>
<td></td>
</tr>
<tr>
<td>FY05</td>
<td>182</td>
<td></td>
</tr>
</tbody>
</table>

Patents Filed vs. Issued FY94-FY05

- Issued
- Filed
Reata Announces Licensing of Novel Anticancer Compounds with Broad Clinical Potential

Discovery Inc. (“Reata”) announced the completion of preclinical development with worldwide rights to a novel class of anticancer compounds. The company has selected a clinical candidate, designated RIA 401, for advanced development and intends to initiate clinical testing of RIA 401 in 2005. First synthesized by investigators at Dartmouth College and developed in cooperation with M. D. Anderson and the National Cancer Institute, RIA 401 also known as GI200 and its analogues are based on compounds found in traditional Chinese medicinal herb extracts, which have greater potency and efficacy than traditional Chinese medicinal herbs.

IRL-180 secretory phospholipase A2 inhibited the risk factor for heart disease. The compound’s targeted tyrosine kinase inhibitors were designed to have a unique profile of antitumor, antifibrotic, and antiangiogenic properties. These exciting compounds are now under development in the Reata pipeline,” said William A. Shafik, Chief Executive Officer of Reata.

The compound has been widely studied at leading centers of cancer research and shown to have a unique profile of antitumor, antifibrotic, and antiangiogenic properties. The compound has been widely studied at leading centers of cancer research and shown to have a unique profile of antitumor, antifibrotic, and antiangiogenic properties.

Digimarc Licensed DRM Patent Essential for Open Mobile Alliance 1.0

Digimarc and Philips establish cooperative licensing relationship for digital rights management patents

Amsterdam, The Netherlands, and Beaverton, OR, USA – Jan. 18, 2005

Royal Philips Electronics (Amsterdam, The Netherlands) and Digimarc Corporation (NASDAQ: DMRC) today announced a cooperative licensing agreement that grants Philips access to Digimarc’s Digital Rights Management (DRM) patents.

The partnership between Philips and Digimarc is intended to enable Philips to access Digimarc’s DRM technology in its products, including digital media devices such as digital video recorders, satellite television receivers, and cellular telephones, as well as multimedia software applications. The agreement will also facilitate the development of Digimarc’s technology for use in Philips products, such as hard drives, network-attached storage devices, and other digital media storage solutions.

“Digital content is an important part of our broader strategy to deliver high-quality entertainment and communication services to our customers,” said Rob Peters, CEO of Philips Intellectual Property & Standards. “By partnering with Digimarc, we are able to further enhance the value of our products and services.”

Digimarc acquired rights to the Philips patents in 1997 through an agreement with Dartmouth College and the U.S. Patent and Trademark Office. The agreement was later expanded to include licensing of the patents to Philips.

“Digimarc is pleased to work with Philips on this licensing framework that builds on the technological and intellectual property advantages of both companies,” said John Jackson, the original inventor of the Digimarc content protection technology. “This agreement is a significant milestone in our efforts to advance the state of the art in digital content management.”

The Digimarc-Dramar agreement also provides for the development of a jointly owned open standard for digital rights management, which will be available to all interested parties. The standard will be based on Digimarc’s technology and is designed to be interoperable with other DRM systems, including those from other companies.

“By working together, we can provide our customers with the most effective and efficient DRM solutions available,” said Peters. “This agreement is a testament to our commitment to innovation in the digital media industry.”

Marketing, Digimarc: “We are delighted to see these patents become available to Philips and our customers, and to help promote the deployment of Digital Rights Management solutions for the digital delivery of content.”

Issued patents from this family of innovation include U.S. Patent Nos. 6,867,534 and 5,765,152 and No. 6,897,534. Seven more pending patent applications are included in the portfolio of claims.”
TTO Kudos

“You were awesome today! Tough but effective negotiator. I enjoyed watching you in action.”
DMS faculty member

“I must say that I enjoyed working with you… your input has been consistently crisp and useful.”
Thayer School faculty member

“That’s a wonderfully concise way to resolve our concern.”
Arts & Sciences faculty member

“Thank you for your prompt and knowledgeable response to this pressing question. You were utterly delightful on the phone today…”
DMS researcher

“Thanks again for your response… your assistance in this matter has been invaluable”
Licensee company president

“People like you are what makes this biz go around!”
Colleague from another major university

“Thanks to you and everyone else at TTO for making the process so easy…”
DMS faculty member

“Again, many thanks for all you have done over the years to support and promote this entire project…”
DMS researcher

“You made us tech transfer people proud!”
Major university TTO Director

“Thank you for your great support!”
Thayer School faculty member

“Thanks for your essential positive role in all of this…”
DMS faculty member

“Excellent. Alla comes through yet again. Thanks so much for your help and your keen eye for things.”
DMS faculty member
Services to Dartmouth Community

The TTO first and foremost views itself as a service office to the Dartmouth community. The TTO staff often consults individual faculty and students on general issues concerning intellectual property. We review consulting agreements for our researchers to ensure that their academic freedom is not encumbered upon in any way by the wording of their personal agreements with companies. We conduct technology transfer primers for faculty, students and administrators, and generate educational materials.

The TTO is called upon by Dartmouth administration on a regular basis to provide advice and expertise on various compliance and policy issues involving technology transfer matters. In order to provide these services, staff members are staying abreast of new developments in the U.S. Patent Law, government regulations and programs, network with their peers, peruse relevant publications and attend workshops and courses. This continuous professional development is viewed by the TTO as a key to maintaining the high quality of the Office’s services.

The TTO staff is looking forward to continue supporting research and administrative efforts of various Dartmouth constituencies and meeting the challenges of the rapidly changing technology transfer field.
OUR STAFF

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Lisa M. Jones, Administrative Assistant

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