



# Maryland Technology Transfer Offices Partnership Newsletter

University of Maryland College Park • The Johns Hopkins University • University of Maryland Baltimore County  
University of Maryland Baltimore • Morgan State University • University of Maryland Biotechnology Institute  
The Johns Hopkins University/Applied Physics Lab

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## INTRODUCTION

The eighth issue of MDTTO takes a look at the Bayh-Dole Act, federal legislation passed in 1980. Among other things, the legislation spells out that universities retain rights to inventions made from government-funded research, universities are encouraged to collaborate with commercial entities to promote the use of university research, universities are strongly encouraged to license inventions to small business firms - 500 employees or less - and universities must share licensing income with faculty inventors and use royalty income to further research activities.

Public Law 96-517, commonly known as the “Bayh-Dole Act,” became effective July 1, 1981. Named for the bill’s two lead sponsors, Sen. Birch Bayh and Sen. Bob Dole, the law amended patent and trademark laws to encourage private industry to use government-financed inventions. In December 2005, Rep. James Sensenbrenner and 16 cosponsors introduced legislation in support of Bayh-Dole’s success and to mark its silver anniversary. As of press time, House Concurrent Resolution 319 had been referred to the House Committee on the Judiciary.

## FEATURES

### Small Start-up Software Company Licenses UM Video Indexing Technology

In keeping with the mandates of the Bayh-Dole Act, the University of Maryland’s Office of Technology Commercialization makes every effort to license government-funded technologies to small companies, those with 500 or fewer employees.

The National Security Agency sponsored a technology created by Dr. David S. Doermann and Ming Luo of the University’s Institute for Advanced Computer Studies, and the technology was non-exclusively licensed to a start-up company with five full-time employees. Silver Spring-based Advanced Digital Forensics Solutions, Inc. (ADF Solutions), launched in July 2005, licensed “Shot Boundary Detection & Keyframe Extraction Using Pixel-to-Neighbor Image Difference” in December.

ADF Solutions’ objective is to save time for law enforcement and intelligence agencies by developing software that will help them find suspect data faster and more accurately. In addition to current text-based search technologies, the company is deploying technologies to detect multimedia image, video and sound files. Current software can only search these files based on associated metadata, or data used to describe other data. Using the University technology, ADF Solutions is developing software that will extract images from video streams for analysis. The ultimate goal is to have software actually analyze the image and provide a deeper level of intelligence for the users. ADF Solutions President J.J. Wallia said the software should be able to save up to 80 percent of the time law enforcement officers spend on data analysis investigation.

Unlike other companies that are concentrating on commercial media applications for this type of software, ADF Solutions has primarily focused on law enforcement users and real world application of the software. In fact, the company is working with two law enforcement agencies to test the software.

Doermann and Luo's technology is not the only tie ADF Solutions has to the University of Maryland. The company's new director of research and development, Eugene Borivikov, is an alumnus who earned his degree in computer vision in 2003. Borivikov, who joined the company in January, primarily deals with problems about patterned recognition in images, but he also heads the development of projects with the University.

In addition to the licensed video indexing technology, the company won a Maryland Industrial Partnerships (MIPS) award to develop another University of Maryland technology, advanced image analysis software. Wallia said both Maryland technologies would be integrated into the company's solutions, including two upcoming software releases.

## **Hopkins Applied Physics Laboratory Start-up Company Transforms 3-D Imaging Technology**

A new start-up company has emerged from the Johns Hopkins University Applied Physics Laboratory in Laurel, Md., with a product that processes millions of data points recorded from airborne and ground-based devices – in real time – and turns them into lifelike 3-D graphics that can be used by standard personal computers, saving hours of processing time and millions of dollars for civilian and government users.

The new company, Applied Imagery, located in the Silver Spring Innovation Center, is experiencing commercial success well beyond the norm for a startup. Company President Chris Parker attributes this accomplishment to QT Viewer, a unique software program that was the catalyst for his company and is helping clients study earthquake fault lines, crime scenes and archeological sites.

The Applied Physics Laboratory developed the software for a defense project that involved collecting data using airborne lidar surveys – a process that uses laser light pulses – and producing 3-D images of the ground. The challenge was to find a way to process huge amounts of data without crashing the user's computer. APL physicist Michael Roth said, "They really needed a multimillion-dollar supercomputer to process the data from many millions of light pulses, and that wasn't an option. What we had to do was foment a revolution in imaging."

Roth and APL software engineer Kevin Murphy brainstormed ideas, starting with the 3-D video cards used by the video game industry to produce lifelike animation. "We took what video cards were good at and then built what we needed around that," Murphy said. They created a series of algorithms to manage huge amounts of information based on the "quad trees" data-storage and retrieval method (thus the software's name: QT Viewer) that proved effective for processing digital topographic and feature data.

They discovered that they could process lidar data in real time with QT Viewer, giving them the pictures they needed immediately and in a virtual reality interactive format that provided options: a panoramic view; and the ability to zoom in on and around natural landforms and structures, or study the terrain through a line-of-sight vantage point.

Depending on what a user needs, the software can provide a high-resolution, real-time display of an area, such as the entire city of Washington, D.C., with data samples every 18 inches, or concentrate on a smaller area using a laser snapshot with samples every four inches. The user can even drop a "person" into the middle of a scene and ask the system to reveal what the person can see from any vantage point.

"This is the best lidar visualization tool on the market," Parker said. "That's what users are saying. It's given them a way to process enormous amounts of data very quickly without crashing their computers. They can 'walk' through landscapes and cityscapes, see around buildings and see the terrain from any perspective. It's an amazing technology, and it's fun to use, too."

The software's capability has been expanded recently to support more file formats for exporting and importing data, and to deliver more powerful analytical tools. Applied Imagery has also created two new software packages: QT Reader, for what Parker calls the "casual" user; and QT Modeler, designed for those who want to create new data file models.

"Lidar is an emerging technology, and Applied Imagery has a significant role to play in its use," Parker said. "We have a niche product but I expect we will do well as the lidar market grows and people realize how useful three-dimensional geospatial data is."

The Defense Advanced Research Projects Agency and the Army supported this project.

## **UMB Licenses Interstitial Cystitis Technology to Ortho Clinical Diagnostics**

Ortho Clinical Diagnostics, a division of Johnson & Johnson, recently licensed rights to “A Novel Antiproliferative Factor from Patients with Interstitial Cystitis” from the University of Maryland, Baltimore (UMB). The license agreement also includes rights to a related patent application jointly owned with the National Cancer Institute (NCI). Ortho Clinical is currently funding developmental research in the laboratory of Dr. Susan Keay, a member of the UMB faculty in the School of Medicine and the Department of Infectious Diseases. The Company plans to commercialize a diagnostic test for interstitial cystitis (IC).

IC is a chronic inflammatory condition of the bladder for which a specific cause is currently unknown. Research and clinical data indicate that the condition is not caused by bacteria and, therefore, does not respond to conventional antibiotic therapy. Further, IC is not a psychosomatic disorder nor is it caused by stress. Although IC can affect people of any age, race or sex, it is most commonly found in women. Recent epidemiological data suggest that there may be greater than 700,000 cases of IC in the US. The most common symptoms include frequency and urgency of urination as well as lower abdominal, urethral or vaginal pain. There is no known cure for IC. Dr. Keay and her collaborators have also developed therapies for IC and continue to seek improvements for both diagnostic and therapeutic procedures.

The license is the end result of a complex set of research collaborations involving both state and federal institutions. Dr. Keay’s initial research was funded by grants from the National Institutes of Health (NIH) awarded to UMB. Dr. Keay is also an employee of the Baltimore Veterans Affairs Medical Center. Further, her more recent work has been in collaboration with co-investigators at the NCI. As a result of these interactions and relationships, the intellectual property is co-owned by the institutions. Inter-institutional agreements between UMB and the VA and between UMB and the NCI (through the Public Health Service) were necessary to facilitate the license with Ortho Clinical Diagnostics.

## **Two UMBI Start-up Companies with R&D Funded in part by the National Institutes of Health**

Profectus Biosciences, Inc. is a Baltimore-based biotechnology company founded by Dr. Robert Gallo, Dr. William Blattner and Dr. Robert Redfield that is developing and commercializing technologies to reduce the morbidity and mortality caused by human viral diseases and cancers, including the causative agent of AIDS, the human immunodeficiency virus (HIV). In FY05, Profectus exclusively licensed from UMBI additional intellectual property for HIV vaccines and therapeutics developed by scientists at the Institute of Human Virology.

Potomac Affinity Proteins, LLC is a new UMBI spin-out company formed by Dr. Philip Bryan, a member of the CARB faculty. Dr. Bryan and colleagues developed a rapid, inexpensive and robust affinity purification technology by capitalizing on the highly specific interaction between the protease subtilisin and its cognate prodomain to enable the efficient purification of a target protein. This technology will save time and money, especially for young start-up biotechnology companies needing to substantiate the properties of specific proteins. Founded in May 2005, Potomac Affinity Proteins is located in North Potomac and plans to become a leading provider of novel molecular recognition technologies.

## **More End-of-Year Statistics**

The last MDTTO issue focused on year-end statistics. These numbers provide an overall picture of technology transfer in Maryland from partner universities to industry during fiscal year 2005. The fiscal year for Johns Hopkins University and the Johns Hopkins University Applied Physics Laboratory had not ended in time for the last MDTTO publication, so their year-end statistics are included here.

### **JHU APL**

The JHU APL received 118 invention disclosures for fiscal year 2005. The office executed 23 license agreements and generated \$5.1 million in licensing and related R&D income. One new company was created. Seven licenses were signed with Maryland companies.

### **Johns Hopkins University**

The Johns Hopkins University received 270 invention disclosures for fiscal year 2005. The office executed 58 licenses involving 92 technologies and generated \$11,639,605 in income, not including patent reimbursement. Six start-up companies were formed, and 13 licenses were signed by Maryland companies.

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## NEWS & NOTES

### OTC participates in beta testing of USPTO's new electronic filing system

The Office of Technology Commercialization at the University of Maryland, College Park, is part of a group of about 200 beta testers for the U.S. Patent & Trademark Office's new electronic filing system, EFS-Web. OTC is the only university tester, according to the USPTO.

EFS-Web will allow filers to directly submit patent applications and related documents electronically as PDF's, saving time and money with better image quality, according to the USPTO Web site. The USPTO receives more than 350,000 patent applications each year, and the goal of the EFS-Web tool is to make filing those patent applications easier.

The beta testing for EFS-Web began on Dec. 1, and the system will be publicly available on March 17. More information will be available on the USPTO's Web site. Non-beta testers can pre-register to use EFS-Web by visiting <http://www.uspto.gov/ebc/portal/infocustomernumber.htm>.

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## CALENDAR

- January 31**      ***Tech Council of Maryland Leadership Dinner***  
The Maryland Inn, Annapolis; 6-9 p.m.  
<http://www.mdhitech.org/Calendar/html/520.html>
- February 2**      ***UMBI Legislative Breakfast & Faculty Awards Ceremony***  
Governor Calvert House, Annapolis; 8-9 a.m.  
<http://www.umbi.umd.edu/nande/events.html>
- February 6**      ***Tech Council of Maryland's "Maryland Business Matters" Luncheon***  
Hyatt Regency Bethesda; 11:30 a.m.-1:30 p.m.  
<http://www.mdhitech.org/Calendar/html/519.html>
- February 6**      ***Maryland Chamber of Commerce Congressional Delegation Dinner***  
Martin's Crosswinds, Greenbelt; 5-8:30 p.m.  
<http://marylandmdcoc.weblinkconnect.com/CWT/External/WCPages/WCEvents/EventDetail.aspx?EventID=62>
- February 7**      ***Accelerating Time to Insight: New Innovations in Technology for Biotech & Pharma***  
Tech Council of Maryland: Bethesda Marriott; 8:30 a.m.-1:30 p.m.  
<http://www.mdhitech.org/Calendar/html/518.html>
- February 8**      ***Dingman Center Tech Visionary Panel***  
2517 Van Munching Hall, College Park: Executive Dining Room; 8:30-11:30 a.m.  
Topic: Web 2.0; [http://www.rhsmith.umd.edu/dingman/events.html#Tech\\_Visionary\\_Panel](http://www.rhsmith.umd.edu/dingman/events.html#Tech_Visionary_Panel)
- February 8**      ***Frederick County Annual Tech Awards Celebration***  
Frederick Holiday Inn & Conference Center; 5:30-9 p.m.  
<http://www.mdhitech.org/Calendar/html/492.html>
- February 10**      ***TEDCO Funding Briefing***  
Garrett College in McHenry, Md.; 12-1:30 p.m.  
<http://www.marylandtedco.org/calendarofevents/detail.cfm?eventID=37>
- February 10**      ***TEDCO Funding Briefing***  
TEDCO Columbia office; 2-3:30 p.m.  
<http://www.marylandtedco.org/calendarofevents/detail.cfm?eventID=35>
- February 15**      ***Is Entrepreneurship Really for You?***  
Prince George's County Economic Development Corporation event  
Largo; 9:30 a.m.-12:30 p.m.; <http://www.pgcedc.com/>
- February 15**      ***BioAlliance Network BIO Breakfast***  
University of Maryland Baltimore; 7:30-9:30 a.m.  
<http://www.mdhitech.org/Calendar/html/494.html>
- February 16**      ***How to Own and Sustain Your Piece of the Technology Marketplace***  
Tech Council of Maryland; Johns Hopkins University; 7:30-9:30 a.m.  
<http://www.mdhitech.org/Calendar/html/514.html>

- February 17 **Pitch Dingman Competition**  
3570 Van Munching Hall, College Park; 11 a.m.-12 p.m.  
[http://www.rhsmith.umd.edu/dingman/events.html#Pitch\\_Dingman\\_Competition](http://www.rhsmith.umd.edu/dingman/events.html#Pitch_Dingman_Competition)
- February 17 **Dingman Day Lunch**  
2517 Van Munching Hall, College Park: Executive Dining Room; 12:30-2:30 p.m.  
Speaker: TBD; [http://www.rhsmith.umd.edu/dingman/events.html#Dingman\\_Day\\_Lunch](http://www.rhsmith.umd.edu/dingman/events.html#Dingman_Day_Lunch)
- February 22 **TEDCO Funding Briefing**  
Lexington Park Training Center; 11 a.m.-12:30 p.m.  
<http://www.marylandtedco.org/calendarofevents/detail.cfm?eventID=39>
- February 23 **Bioscience for Life: Technology to Enhance Health, the Environment & Agriculture**  
Holiday Inn College Park; 8 a.m.-3 p.m.  
<http://www.techcouncilmd.com/Calendar/html/495.html>
- February 24 **Venture Capitalist Investment Competition**  
Van Munching Hall, College Park; 8 a.m.-7 p.m.; [http://www.rhsmith.umd.edu/dingman/events.html#Venture\\_Capitalist\\_Investment\\_Competition\\_\(VCIC\)](http://www.rhsmith.umd.edu/dingman/events.html#Venture_Capitalist_Investment_Competition_(VCIC))
- February 24 **TEDCO Briefing**  
Largo, Prince George's County Economic Development Corporation offices  
3-4:30 p.m. <http://www.pgcedc.com/>
- February 27 **BioAlliance Network Bio Boardroom**  
Medimmune, Inc. offices, Gaithersburg, 5:30-9 p.m.  
<http://www.mdhitech.org/Calendar/html/521.html>
- March 2 – 4 **2006 AUTM Annual Meeting**  
Disney's Yacht & Beach Club Resorts; Orlando, Fla.  
<http://www.autm.net/events/dsp.eventDetail.cfm?eid=12&mode=current>
- March 8 **Tech Council of Maryland Spring Mixer**  
Location TBD; 5:30-9:30 p.m.  
<http://www.mdhitech.org/Calendar/html/497.html>
- March 9 **Federal Marketplace Government Contracting Symposium**  
Location: TBD; 7:30 a.m.-1:30 p.m.  
<http://www.mdhitech.org/Calendar/html/498.html>
- March 15 **Dingman Center Speaker Event**  
Joe Bailey; 5 p.m.-8 p.m.; Location TBD  
[http://www.rhsmith.umd.edu/dingman/events.html#Speaker\\_Event](http://www.rhsmith.umd.edu/dingman/events.html#Speaker_Event)
- March 15 **Tech Council of Maryland Informatics & Cybersecurity Conference**  
Location: TBD; 7:30 a.m.-1:30 p.m.  
<http://www.mdhitech.org/Calendar/html/499.html>
- March 23 **BioAlliance Network BIO Breakfast**  
Location: TBD; 7:30-9:30 a.m.  
<http://www.mdhitech.org/Calendar/html/502.html>
- March 26 **Presentation of the Maryland Performance Excellence Awards**  
Samuel Riggs Alumni Center, College Park; <http://www.umcqp.umd.edu/>
- March 29 **Tech Council of Maryland Business Plan Competition**  
Location: TBD; 5:30-9:30 p.m.  
<http://www.mdhitech.org/Calendar/html/503.html>
- March 31 **Pitch Dingman Competition**  
3570 Van Munching Hall, College Park; 11 a.m.-12 p.m.  
[http://www.rhsmith.umd.edu/dingman/events.html#Pitch\\_Dingman\\_Competition](http://www.rhsmith.umd.edu/dingman/events.html#Pitch_Dingman_Competition)
- March 31 **UMBI Education Stakeholders Day: Developing a Competitive Workforce**  
UMBI Columbus Center, Baltimore; 8:30 a.m.-2 p.m.  
<http://www.umbi.umd.edu/nande/events.html>
- April 2 **Dingman Day Lunch**  
2517 Van Munching Hall, College Park: Executive Dining Room; 12:30-2:30 p.m.  
Speaker: TBD; [http://www.rhsmith.umd.edu/dingman/events.html#Dingman\\_Day\\_Lunch](http://www.rhsmith.umd.edu/dingman/events.html#Dingman_Day_Lunch)
- April 5 **20th Anniversary Gala for Dingman Center**  
Atrium of Van Munching Hall, College Park; 5:30 p.m. cocktails; 6:30-9 p.m. banquet  
[http://www.rhsmith.umd.edu/dingman/events.html#20th\\_Anniversary\\_Gala](http://www.rhsmith.umd.edu/dingman/events.html#20th_Anniversary_Gala)

- April 5** ***Tech Council of Maryland Annual Dinner & Tech Awards Celebration***  
Bethesda North Marriott Conference Center; 5:30-9:30 p.m.  
<http://www.mdhitech.org/Calendar/html/504.html>
- April 11** ***Office of Technology Commercialization Inventions of the Year Reception***  
University of Maryland Golf Course
- April 20** ***Federal Marketplace & TEDCO: APG***  
Aberdeen Proving Ground; 8 a.m.-3:30 p.m.  
<http://www.mdhitech.org/Calendar/html/505.html>
- April 21** ***Pitch Dingman Competition***  
3570 Van Munching Hall, College Park; 11 a.m.-12 p.m.  
[http://www.rhsmith.umd.edu/dingman/events.html#Pitch\\_Dingman\\_Competition](http://www.rhsmith.umd.edu/dingman/events.html#Pitch_Dingman_Competition)
- April 26** ***Dingman Center Tech Visionary Panel***  
2517 Van Munching Hall, College Park: Executive Dining Room; 8:30-11:30 a.m.  
Topic: Alternative Energy  
[http://www.rhsmith.umd.edu/dingman/events.html#Tech\\_Visionary\\_Panel](http://www.rhsmith.umd.edu/dingman/events.html#Tech_Visionary_Panel)
- April 26** ***BioAlliance Network BIO Breakfast***  
Location: TBD; 7:30-9:30 a.m.  
<http://www.mdhitech.org/Calendar/html/506.html>
- April 27** ***Maryland Chamber of Commerce 2006 Annual Membership Meeting & Business Hall of Fame Awards***  
Baltimore Marriott Waterfront Hotel; <http://marylandmdcoc.weblinkconnect.com/CWT/External/WCPages/WCEvents/EventDetail.aspx?EventID=34>
- May 10 – 12** ***LES and AUTM Joint Spring Meeting***  
Loews Philadelphia  
<http://www.autm.net/events/dsp.eventDetail.cfm?eid=56&mode=current>
- May 24** ***JHUAPL Invention of the Year 2005***  
<http://www.jhuapl.edu/ott/technologies/IOY/IOY.asp>
- June 3** ***UMBI 20th Anniversary Evening Gala***  
7-11 p.m.; <http://www.umbi.umd.edu/nande/events.html>
- June 8** ***JHUAPL Patents & Pizza***  
11 a.m.-1 p.m.; <http://www.jhuapl.edu/ott/newsevents/PatentsAndPizza/patpizza.asp>

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