

# Driving *INNOVATION* Forward

VANDERBILT  UNIVERSITY  
CTTC Center for Technology Transfer  
& Commercialization

Vanderbilt's Center for Technology Transfer & Commercialization provides professional commercialization services to the Vanderbilt community, thus optimizing the flow of innovation to the market and generating revenue that supports future research activities, while having a positive impact on the global society.



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## Message from the Director



When Vanderbilt redoubled its efforts to commercialize home-grown innovations for societal and institutional benefit, we did not expect to see the benefits so quickly. In just three years time, our technology commercialization efforts have more than quadrupled, from \$5.5 million total revenue in 2010 to more than \$24.5 million

in FY13. While we certainly pause to celebrate a strong year, we also realize that it will be difficult to approach this level of financial success every year.

Aside from financial gains, we also place great stock in our ongoing process improvement efforts. At the conclusion of FY13, we saw substantial progress in key areas of service, such as inventor engagement and satisfaction, and transactional count and efficiency.

The number of invention disclosures our office received grew 10% (over the corresponding three-year average), indicative of increased inventor engagement despite stagnant research expenditures. Similarly, licensing transactions saw a nearly 60% increase. These transactions set the table for generating long term returns to Vanderbilt over the next decade.

CTTC also launched a number of additional services to Vanderbilt faculty and staff, including an educational series for entrepreneurs, a graduate and undergraduate student internship program, a technology maturation fund for proof of concept and prototyping activities, and a first of its kind comprehensive pharmaceutical pipeline asset summary.

During the 2014 fiscal year, we will continue to focus our efforts on improved service for faculty and staff. One priority high on our list is to substantially automate the process by which Material Transfer Agreements are managed. This automation could save Vanderbilt researchers valuable time in their research programs, and should save the institution several hundred thousand dollars annually in processing costs.

Other programs on tap for CTTC include

- the expansion of a new entrepreneurship support and new venture creation program,
- an assistance program for pursuing SBIR and STTR research grants (pursued by request of the CTTC faculty advisory committee),
- expanded communications and outreach efforts, and
- a program for focused commercialization of healthcare IT products.

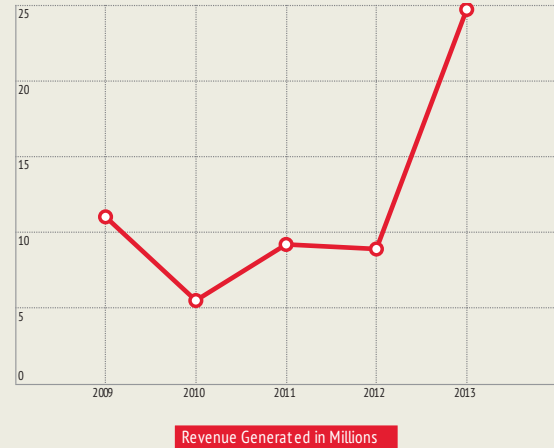
Our hope is these initiatives and new program offerings provide quality technology commercialization and new venture services to the Vanderbilt community for the current year and years to come.

## HIGHLIGHTS



*"Our commercialization efforts have more than quadrupled, from \$5.5 million to more than \$24.5 million in the past three years."*

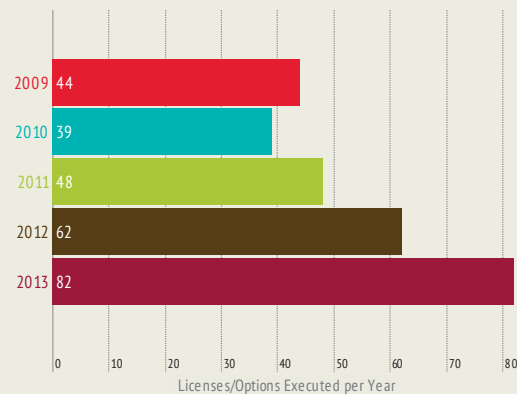
*Alan Bentley, Assistant Vice Chancellor, Technology Commercialization and Intellectual Property Protection*



## Generating Ideas



## Driving Deals



## Featured Inventor

### Benoit M. Dawant, Ph.D.

Cornelius Vanderbilt Chair in Engineering,  
Electrical Engineering & Computer Science

Professor of Electrical Engineering,  
Electrical Engineering & Computer Science

Professor of Radiology and Radiological  
Sciences, Radiology & Radiological Sciences

Professor of Biomedical Engineering,  
Biomedical Engineering



“I just like to develop algorithms, to solve problems,” Benoit M. Dawant, Ph.D., Professor of Engineering, says with a grin. But, he explained, it’s really much more than just solving problems.

“I like to have a purpose in what I’m doing,” said Dawant. “Having this combination of algorithm development but also application in the medical domain is very fulfilling. In the long term, those are going to have an impact on patients.”

Throughout his 25-year career at Vanderbilt, Dawant has developed numerous algorithms and systems, many of which have gained patent protection from the USPTO, that are used to assist with image-guided surgery. In 2007, Dawant, along with Pierre-Francois D’Haese, Ph.D., and Peter Konrad, M.D., Ph.D., founded Neurotargeting, LLC, a medical device company that specializes in medical imaging analysis and computer assisted solutions that can be applied to fields such as Neurosurgery. The company was largely a product of the team’s desire to commercialize the CranialVault system that was developed at Vanderbilt and assists Deep Brain Stimulation (DBS) procedures that help with the treatment of movement disorders such as Parkinson’s Disease.

When asked what pushed him into this line of research, Dawant said his interest first began as a graduate student at the University of Houston, while working on a Ph.D. in signal processing.

“That was 30 years ago!” Dawant said. “I was still young and after I graduated I wanted to work more on images than signals because there was so much potential in that field. When I joined here, I began collaborating with Mike Fitzpatrick in Computer Science, Bob Galloway in Biomedical Engineering and several surgeons in the Medical Center. One thing led to another, and I never looked back.”

*“I like to have a purpose in what I’m doing... application in the medical domain is very fulfilling.” - Benoit Dawant, Ph.D.*

Interestingly, all of Dawant’s projects during his tenure at Vanderbilt have involved individuals in the medical center, largely in the field of image-guided procedures. One such project is a now patent-pending nonsurgical process to fine-tune cochlear implants. Dawant, along with René H. Gifford, audiologist and assistant professor of hearing and speech sciences; Jack H. Noble, research assistant professor of electrical engineering and computer science; and Robert F. Labadie, associate professor of otolaryngology and associate professor of biomedical engineering, developed the automated and image-guided process. Early results, said Dawant, are very positive.

“We recently completed a study of patients with existing cochlear implants in which we used this procedure to reprogram their devices,” Dawant said. “Of those patients, 86% reported significantly improved sound quality and clarity.”

His role as an inventor and entrepreneur is just one side of Professor Dawant. His primary appointment at Vanderbilt is training the next class of standout engineers in VUSE’s Electrical Engineering Department. Dawant also has secondary appointments in Biomedical Engineering, Radiology and Radiological Sciences, and Computer Science.

“I try to bring innovative ideas and products into the classroom,” Benoit said, “to make learning interesting and show the students that if you understand these basic techniques, you can apply them to various projects and have a real impact on society.”

## How to publish and patent

CTTC is often asked about the timing of publishing research and disclosing an invention.

*Question: I've developed a novel device that helped with a project I am working on. I think it could be commercialized, but I need to publish my results that were enabled by it. Do I need to wait to publish?*

CTTC supports Vanderbilt researchers' efforts to publish work and to explore commercialization. The two endeavors are not mutually exclusive. Our goals are congruent with the research mission, and it is rare that the commercialization process will impact publication. The best approach is to contact CTTC (615-343-2430 or [cttc@vanderbilt.edu](mailto:cttc@vanderbilt.edu)) as early as possible prior to submission of a publication or other public disclosure of the invention outside of Vanderbilt University (such as a conference). The more time we have before publication, the better we will be able to determine whether the invention is patentable and how it might be commercialized. It will also give us adequate time to take whatever measures may be necessary to protect the invention.

"Public disclosure" can take many forms in the eyes of the patent office, including presentations at professional conferences, formal or informal technical discussions with colleagues from other institutions or companies, press releases, and internet postings. The reason for disclosing inventions in advance of public disclosure is that publishing before patenting eliminates the possibility of obtaining patent protection in most countries (there is a one-year grace period in the U.S.). Once a patent application has been filed, however, publications can be beneficial in generating commercial interest in the technology.






In the case of software that may have commercial potential, copyright begins when "the code is affixed to tangible material". Therefore, publication does not limit your right to protect the intellectual property, but could impact patentable algorithms embedded in the software.



## Stay Connected to CTTC

Tostay informed of the latest innovation news, events and technology commercialization activities, visit our blog, CTTC Muse. There you will find everything from agreement signings to tips for inventors - such as how to publish and patent, entrepreneurship challenges to videos about Vanderbilt technologies and core research capabilities.

You can also:

-  Follow us on Twitter,
-  Find us on Facebook,
-  Connect with us on LinkedIn,
-  Subscribe to our YouTube channel, or
-  Sign up for Tech Connect, our biweekly report of activities.

### EndoInSight Team participates in NSF Innovation Corps

Pietro Valdastri, Ph.D., and Byron Smith, Ph.D., from Vanderbilt University School of Engineering and Rigved Joshi, MBA, of the CTTC New Ventures Team were selected to participate in the National Science Foundation Innovation Corps, a six-month business accelerator program. The EndoInSight team, formed to explore commercialization of an innovative insufflation device developed by Valdastri and Smith, has now participated in two three-day workshops with other entrepreneurs, inventors and mentors from around the country. The first session, held in early October, offered numerous “pivot” points for the EndoInSight team.

“When we started this program, we thought we had a great product concept that patients would be more than happy to pay for if it meant reducing the unpleasantness associated with colorectal cancer screening,” said Smith, the team’s entrepreneurial lead. “Throughout the program, we realized that while our initial product concept wasn’t far off the mark, our business model was far from viable. We’ve since revised our strategy and feel like we have a much stronger and more viable business.”



The EndoInSight team joined 21 other three-member teams from across the nation to comprise the current cohort. Aside from the workshops, they also receive advice from program mentors and the opportunity to network with other entrepreneurs, venture capitalists, and more. The team also received a \$50,000 grant to help build the business model. Click on the clip to the right to watch a short video about EndoInSight and the NSF Innovation Corps Program.



### Educational trainings/seminars

In the spring of 2013, CTTC’s New Ventures Team launched an Entrepreneur Boot Camp Series for faculty, staff, students and others interested in learning more about intellectual property and its incorporation into entrepreneurial opportunities. To date, the team has hosted a half-day boot camp, an SBIR/STTR workshop, and most recently, an intellectual property and new venture valuation seminar. The team will continue to offer such education opportunities throughout the spring. Watch [www.vanderbilt.edu/cttc](http://www.vanderbilt.edu/cttc) for announcements.

Above: Vanderbilt University faculty and staff, along with researchers from TSU, MTSU, Lipscomb University, and Tennessee Tech University, attended Launch Tennessee’s SBIR/STTR workshop, led by nationally renowned expert Mark Henry, founder Grow Emerging Companies, LLC. The workshop was held at Vanderbilt University School of Engineering and drew more than 60 participants.

### Academic Drug Discovery Conference draws researchers, industry professionals from across the globe

Hundreds from academia and industry, including more than 200 professionals from the biopharma industry, convened in Music City to discuss the growing trend, and need, in academic drug discovery. The Academic Drug Discovery Consortium (ADDC) held its annual conference at the newly opened Music City Center. Vanderbilt Center for Neuroscience Drug Discovery hosted and organized the three-day event. Simultaneously, Life Science Tennessee, a statewide non-profit aimed at growing the life sciences industry across the state, gathered its members for an annual conference and Venture Forum.

Discussions at the conferences centered around funding for academic centers, the importance of ongoing drug discovery, challenges facing the industry, and how to overcome challenges. Participants were able to talk with exhibitors, schedule one-on-one partnering sessions with other conference-goers, and view more than 100 poster abstracts detailing current research efforts across the country.



Left: P. Jeffrey Conn, Ph.D., Lee Limbird Professor of Pharmacology, Director of the Vanderbilt Center for Neuroscience Drug Discovery and founder/ Vice President of the ADDC greets John Crowley, Chairman & CEO of Amicus Therapeutics, Inc.; Abby Trotter Executive Director of Life Sciences Tennessee ; and Mary Kosinski, Vice President of Vertex Clinical Innovations at the 2013 ADDC Conference Opening Ceremony.

Right: Conference attendees had the opportunity to visit with representatives from more than 50 exhibitors at the 2013 ADDC Conference. The exhibition hall included pharmaceutical companies, national laboratories, and academic research institutions.



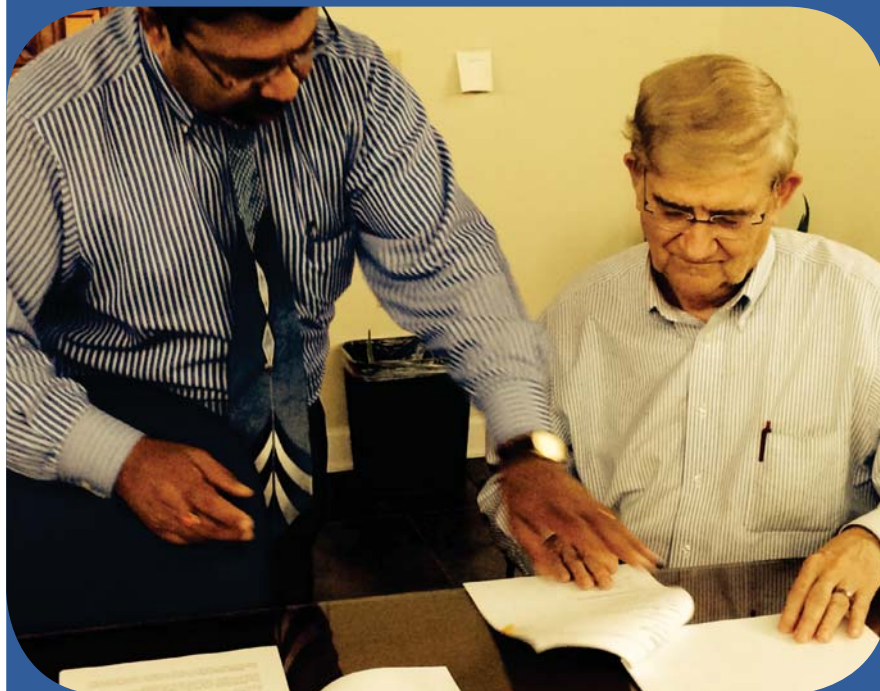
## CTTC: How We Support

CTTC supports Vanderbilt researchers in commercializing intellectual property by providing a variety of services. Some of the services are more widely known, while others may be less obvious.

To give you an idea of how we may be able to assist you, here is a snapshot of the services we regularly provide:

- **Evaluating** commercial opportunities and market potential for novel technologies
- **Filing and prosecuting** patent applications
- **Maintaining** issued patents
- **Marketing** technologies to industry
- **Negotiating** license agreements and options
- **Executing** various agreements, including: license, material transfers, confidentiality, interinstitutional and research collaboration
- **Facilitating** sponsored research and clinical trial agreements
- **Monitoring** licensee compliance
- **Tracking** milestones and collecting royalties
- **Distributing** payments to inventors, labs, departments, centers, and schools
- **Assisting** in new venture assessment and development
- **Hosting** departmental talks or presentations about intellectual property protection and commercialization

Glenn Perdue, Kraft Analytics, presents a session on assessing the value of a new venture in the life sciences industry at a November 2013 Valuation Seminar hosted by CTTC's New Ventures Team. The two-hour session also featured CTTC Licensing Office Mike Villalobos who walked the 60+-member audience through the valuation process for intellectual property. The session was held at the Cools Springs Life Sciences Center in Franklin.



Above: International FemtoScience, Inc., a Vanderbilt startup, signed a license agreement with Vanderbilt and TVA. The technology involved is that of nanodiamond additives to transformer oil for improved cooling performance.

The company was founded by David Kerns, Ph.D., previous Chair of Vanderbilt's Department of Electrical Engineering and Computer Science and former Acting Dean of Vanderbilt University School of Engineering, and Jimmy Davidson, Ph.D., (pictured), Professor of Electrical Engineering, Emeritus; Professor of Materials Science, Emeritus; Professor of Engineering Management, Emeritus. and Computer Science.

## Faculty Advisory Committee

A team of more than two dozen Vanderbilt faculty have graciously agreed to serve on the 2013-14 CTTC Faculty Advisory Committee (FAC). Led by Ken Holroyd, Medical Director of CTTC, this group of researchers and inventors will convene quarterly to provide direction and input to CTTC as we explore new ways to serve the Vanderbilt community, improve existing practices, and develop new processes and procedures. While guidance is a large part of the FAC's role, we also look to them to give feedback from our inventors about things we are doing well and ways we might improve. The FAC also enables CTTC to channel information back to other researchers and faculty members.

By engaging our faculty in this regular committee-style, collaborative meeting, we gain real-time feedback from the people we serve. We've gained valuable insight that has positively directed and impacted decisions on our Center's operations. And we've been able to engage with our research community more directly.

To learn more about our Faculty Advisory Committee, and to see who is serving during 2013-14, [click here.](#)



The seventh meeting, and first of FY13, of the Faculty Advisory Committee was held Oct. 16, 2013. This group meets quarterly to identify ways to maximize the effectiveness of Vanderbilt commercialization services and discuss new initiatives regarding commercialization.

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Have a question for CTTC?

Feel free to call our main office line at 615.343.2430  
or email [cttc@vanderbilt.edu](mailto:cttc@vanderbilt.edu).

Visit us online at [www.vanderbilt.edu/cttc](http://www.vanderbilt.edu/cttc)

