

## **Deshpande Center for Technological Innovation**

The Deshpande Center for Technological Innovation serves as a catalyst for innovation and entrepreneurship by supporting research of MIT faculty and students and facilitating collaboration with entrepreneurs, venture capitalists, and innovative businesses. It carries out its mission through several activities, including the Grant Program, the Catalyst Program, the Innovation Teams subject, and sponsored events. The center's goal is to be able to accelerate the movement of technology from the laboratories at MIT into the commercial marketplace, where the technology can have an impact.

The Deshpande Center was founded in 2002 through a generous gift of \$20 million from Jaishree and Gururaj "Desh" Deshpande, cofounder and chairman of Sycamore Networks, Inc. The center depends on the generous support of industry, the entrepreneurial community, and the MIT alumni communities to sustain its programs.

Leon Sandler, executive director, spearheads the Deshpande Center's efforts, along with Charles L. Cooney, faculty director and Robert T. Haslam professor of chemical engineering. Guidance is provided by a steering committee that includes Edward Anderson of North Bridge Venture Partners; Desh Deshpande; Robert Langer, Institute Professor; Thomas Magnanti, Institute Professor and former dean of the School of Engineering; Rafael Reif, provost; and Subra Suresh, dean of the School of Engineering.

### **Highlights**

In academic year 2009, the center continued to see more of its projects move toward commercialization. Since inception, the Deshpande Center has funded more than 80 projects with more than \$9 million in grants. Eighteen projects have spun out of the center into commercial ventures, 17 as startups and one as a license to an existing company. The 17 startups have collectively raised more than \$150 million in outside financing. Thirteen venture capital firms have invested in these start-ups that now employ more than 200 people.

### **Spin-offs in Academic Year 2009**

Several Deshpande Center projects were spun out of MIT to commercialize their technologies.

#### ***Byledge Inc.***

A deep-web searching company founded by Computer Science and Artificial Intelligence Laboratory professor Michael Stonebraker, Byledge is currently in stealth mode.

#### ***Hepregen***

Hepregen Corporation, founded by Harvard-MIT Division of Health, Sciences, and Technology (HST) professor Sangeeta Bhatia, is developing bioengineered solutions for drug development, including a platform for advanced toxicity screening and drug discovery. With its high-fidelity model of the human liver, Hepregen's bioengineered

solution may provide improved predictability of how drugs will affect the liver in humans. See <http://www.hepregen.com/>.

### **TARIS Biomedical**

TARIS Biomedical is a specialty pharmaceutical company focused on local minimally invasive drug-device convergence products. TARIS core technology and development efforts focus on disease areas with high unmet needs in which current therapies or systemic treatments have failed. The company was cofounded by professor Michael J. Cima, Department of Materials Science and Engineering, and Robert S. Langer, Institute Professor. See <http://www.tarisbiomedical.com/>.

### **Awards and Recognition for Grantees and Spin-offs**

Deshpande Center grant recipients and spin-offs received notable media attention for their work.

#### **Grant Recipients**

Sarah Bird, cofounder and director of start-up SaafWater, was featured in an [interview](#) in *World Vision Report*. SaafWater's mission is to provide affordable clean water to low-income communities in urban areas. The goal is to create a profitable distribution network that can supply billions of people with clean water.

Dr. Rajesh Menon, research engineer, Research Laboratory of Electronics, had a [paper](#) published in *Science* on etching very fine lines on a microchip. This work is part of a larger Deshpande Center project in conjunction with professor Henry Smith, Department of Electrical Engineering and Computer Science, to use the technology for high-resolution optical microscopy.

Professor Donald Sadoway's project for a liquid metal battery for grid storage was featured in an [article](#) in *MIT Technology Review*.

Professor Alexander Slocum, Department of Mechanical Engineering and MacVicar Fellow, and professor Jeffrey Karp, affiliate, HST, had a [paper](#) published on their innovative sensing needle project in the *Proceedings of the National Academy of Sciences*.

### **Deshpande Grant Program Awards**

The Grant Program provides research funds that permit MIT faculty and students to create and investigate new technologies and support the transfer of new knowledge and technologies from the Institute to young companies. The Grant Program consists of two types of awards: Ignition Grants of up to \$50K and Innovation Grants of up to \$250K. Multiple experts in academia and industry review each application in two stages: preproposal and full proposal. The center announces awards twice annually. For the first time, the center awarded a no-dollar grant in the form of a Support Services Grant. The recipients of this newly created grant type enjoy the full array of support—mentoring, exposure, Internet protocol guidance, and networking opportunities—identical to Ignition and Innovation grantees.

The Deshpande Center awarded 13 grants in fiscal year 2009, totaling just under \$850,000. The awards support a wide range of emerging technologies.

### **Ignition Grants**

With up to \$50K, Ignition Grants target projects focusing on novel, enabling, and potentially useful ideas in all areas of technology. Though it might enable only exploratory experiments to establish proof of concept, an Ignition Grant can position projects to receive further funding, such as an Innovation Grant, to take a concept to full development.

### **Innovation Grants**

With as much as \$250K, an Innovation Grant benefits projects that have established proof of concept and identified a research and development path and intellectual property strategy. Each grant helps a project advance its technology and reduce technical and market risk. The goal is to reach a point where investors would invest in a start-up to commercialize the technology, or an existing company might license the technology and develop it.

### ***Academic Year 2009 Grant Recipients***

Joel Dawson: A New Architecture for Highly Efficient Broadband RF Transceivers. Very energy efficient, high data rate transmitters for broadband wireless communications, which will increase battery life in handsets and reduce heat generation in base stations.

Utkan Demirci: CD-4 T Lymphocyte-Counting Microchip. A disposable CD-4 T lymphocyte-counting microchip providing fast, cost-effective on-site HIV virus monitoring to improve patient care in the developing world.

Patrick Doyle: Rapid Multiplexed Analysis for Molecular Diagnostics. A new method to perform multitarget bioassays using microparticles that may enable clinical bedside diagnostics and easier, less costly diagnosis of disease.

Gerald Fink: Compound to Enhance Immune Stimulation. A compound to stimulate a more powerful immune response to specific monoclonal antibodies, potentially enabling the development of effective disease therapies.

Karen Gleason: Stable Inorganic-Organic Hybrid Light-Emitting Diodes. Long-lived light-emitting diodes on flexible substrates providing energy-efficient portable displays.

Douglas Hart: Digital Ear Canal Scanner. An in-ear, three-dimensional digital scanner for custom-fitting hearing aids, resulting in better hearing for hearing aid users.

Rohit Karnik and Jeffrey Karp: A Novel Device for Label-Free Cell Rolling Separation. A device for separating cells that can be used for monitoring and diagnosing a wide variety of diseases.

Susan Lindquist: Developing Novel Strategies to Arrest Biofilms. The development of novel therapeutic strategies to combat difficult-to-treat bacterial biofilm infections.

J. Christopher Love: Quantitative Diagnostic for Allergies Using Single-Cell Technology. An in vitro test that will improve the accuracy of assessing responses to allergens and enable long-term monitoring of allergies and desensitizing therapies.

Joel Schindall and Riccardo Signorelli: High-Energy-Density Ultracapactors. A solution being developed that may constitute a paradigm shift in the energy storage space and can be the enabler of a number of industries.

Henry Smith and Rajesh Menon: High-Throughput Nanoscale Imaging. An absorbance modulation technique enabling economical high-resolution, high-throughput nanoscale imaging for faster more flexible analysis of nanostructures.

Donald Sadoway: Supervalent Battery. A proof of concept for a novel battery utilizing a supervalent technology to move energy density beyond the limitations of Li ion batteries.

Graham Walker: New Antibiotic Target. A project to attempt to isolate lead compounds to develop a new antibiotic.

### **Catalyst Program**

Volunteers from the business community are integral to the Deshpande Center's mission of helping MIT innovators achieve market impact.

Catalysts are a highly vetted group of individuals with experience relevant to innovation, technology commercialization, and entrepreneurship. Catalysts provide individual contributions to the center and do not represent any company interests in their role as Catalysts.

Catalysts are chosen based on the following qualifications:

- Experience in commercializing early-stage technologies or mentoring researchers and entrepreneurs as well as industry expertise
- Willingness to proactively provide assistance to MIT research teams
- Willingness to abide by the time commitment, confidentiality, and conflict-of-interest guidelines
- Commitment to the interests of MIT researchers and the Deshpande Center

All Catalysts must sign a Catalyst guidelines document and agree to abide by the Deshpande Center's volunteer guidelines for managing privileged information and conflicts of interest.

## **Innovation Teams**

The Innovation Teams (i-Teams) subject is a full-credit subject taught jointly by the School of Engineering and the Sloan School of Management. The subject is designed for entrepreneurial and highly qualified graduate students throughout the Institute who want to help bring innovations from Deshpande Center–funded research projects to the marketplace. Guidance is offered by the project’s principal investigators, faculty from MIT’s Entrepreneurship Center, and Deshpande Center Catalysts; each team is expected to create a go-to-market strategy for a technology developed by Deshpande Center–funded research.

The course is led by a faculty team of Charles Cooney, Edward Roberts, and—from the Sloan School of Management—professor Fiona Murray and Dr. Luis Perez-Breva, senior lecturer. The subject has been offered 10 times, has focused on go-to-market strategies for more than 54 projects, and has engaged more than 265 students.

## **Deshpande Center Events**

Through its sponsored events, the Deshpande Center seeks to bring together the components needed for MIT technologies to reach commercialization. These events connect faculty and students with members of the emerging technology industry.

### **IdeaStream Symposium**

On June 9, 2009, the Deshpande Center held its annual IdeaStream Symposium aimed at connecting MIT researchers with the entrepreneurial community. The symposium included presentations highlighting grantees at different stages, from new grantee to spin-off; an Innovation Showcase, where MIT researchers pitched their innovative technology ideas and received market feedback from venture capitalists and successful entrepreneurs attending the symposium, and addresses by Subra Suresh, dean of the School of Engineering, and keynote speakers William Bonvillian, director of the MIT Washington Office, and Shai Agassi, chief executive officer and founder of Better Place. More than 225 entrepreneurs, industry executives, venture capitalists, and MIT researchers attended this year’s conference, which had the generous support of 11 corporate sponsors.

### **Catalyst Events**

Near the start of each semester, the Deshpande Center arranges a small reception to celebrate the latest grant recipients. This event is held in advance of announcing the grant round to the general public. It is an opportunity for the grant recipient teams and Catalysts to meet and mingle with each other and with staff and other volunteers. All new grant recipients are asked to give a brief “elevator pitch” of their project.

### **Open House**

The Deshpande Center hosted its premier fall event, the Open House, in December 2008. The event served as a poster session for active grant projects and gathered nearly 200 members of the Deshpande Center community, including members of the MIT Corporation, for an evening of camaraderie and networking.

## **Other Collaborations**

The Deshpande Center met with delegates from more than 20 national and international universities and organizations to discuss the center's and MIT's approach to innovation and technology commercialization. Deshpande Center staff also spoke at numerous forums, conferences, and events across the United States and around the globe, particularly in Washington, DC; Lisbon, Portugal; and Toronto, Ontario, Canada. The center is seen as an internationally renowned model for stimulating technological innovation.

Within the MIT community, the Deshpande Center actively collaborates with other members of MIT's innovation ecosystem, including the Technology Licensing Office, the Entrepreneurship Center, the Venture Mentoring Service, the Industrial Liaison Program, and numerous student organizations.

## **Administrative Changes**

Erica Deary joined the center as administrative assistant.

**Leon Sandler**  
**Executive Director**  
**Deshpande Center for Technological Innovation**

*More information on the Deshpande Center for Technological Innovation can be found at <http://web.mit.edu/deshpandecenter/>.*