Deshpande Center for Technological Innovation

The Deshpande Center for Technological Innovation serves as a catalyst for innovation and entrepreneurship by supporting the research of MIT faculty and students and facilitating collaboration with entrepreneurs, venture capitalists, and innovative businesses. It carries out its mission though several activities, including the Grant Program, the Catalyst Program, the Innovation Teams ("i-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.

Executive director Leon Sandler 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 Hemang Dave; Desh Deshpande; Mark Gorenberg of Hummer Winblad Ventures; Robert Langer, Institute Professor; Rafael Reif, provost; and Ian Waitz, dean of the School of Engineering.

Highlights

In academic year 2011, the center continued to see more of its projects move toward commercialization. Since its inception, the Deshpande Center has funded more than 80 projects with more than $11 million in grants. Twenty-five projects have spun out of the center into commercial ventures, 24 as start-ups and one as a license to an existing company. The 24 start-ups have collectively raised more than $300 million in outside financing and now employ more than 400 people.

Several Deshpande Center projects spun out from MIT in academic year 2010–2011 and commercialized their technologies.

Enumeral: a molecular diagnostics company founded by professor Christopher Love of Chemical Engineering

Lantos Technologies: a company founded by professor Douglas Hart of Mechanical Engineering that is commercializing an ear canal scanner for precise hearing aid fitting

Liquid Metal Battery Corporation (LMBC): a company that is commercializing a large-scale battery for grid electricity storage, founded by professor Donald Sadoway of Materials Science and Engineering and David Bradwell (PhD '11)

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 $50,000 and Innovation Grants of up to $250,000. Multiple experts in academia and industry review each application in two stages: preproposal and full proposal. The center announces awards twice annually.

The Deshpande Center awarded 10 grants in fiscal year 2011 totaling $820,000. The awards support a wide range of emerging technologies.

Ignition Grants

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

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 where an existing company might license the technology and develop it.

AY2011 Grant Recipients

Geoffrey Beach: On-Chip Diagnostic Device. There are many tests that clinicians send to a lab and wait hours or days for results. This project will develop a chip-based, point of care diagnostic technology for use in clinical settings to provide rapid test results.

Vladimir Bulović: MEMS for Large Area and Flexible Applications. A flexible paper thin microelectromechanical system (MEMS) array that can be used for sensing and actuation over large surfaces (renewal from fall 2009).

Tonio Buonassisi: Enhancing Solar Cell Performance. This project aims to demonstrate a scalable method to eliminate bulk defects in commercial solar cell materials (including silicon blocks or wafers), targeting a relative improvement in performance of 20% or more at marginal cost.

Michael Cima: Device for Treatment of Cerebral Edema. A drug delivery device to treat brain edema with reduced systemic side effects typical of conventional treatments (renewal from fall 2009).

Elazer Edelman: Tissue-Specific Adhesive Materials. Leakage after surgery, especially in the gastrointestinal tract, is a problem that affects a significant number of patients. This project is developing a class of biocompatible adhesive materials that can be designed to match tissue type and used in surgery. These adhesive sealants would diminish leakage after surgeries, reducing complications and improving patient health.

Dina Katabi: WikiDo: Large-Scale Automation of Computer Tasks. A software platform that will reduce the cost and time associated with computer support and maintenance by automatically capturing best information technology practices and solutions, generalizing these solutions to work for different machine configurations, and automatically implementing them on computers needing maintenance or support.

Ramesh Raskar: A Low-Cost Mobile Diagnostic Tool for Self-Evaluation of Eye Refractive Disorders. Uncorrected refractive errors affect the daily lives of hundreds of millions of people, especially those residing in developing countries. This project is developing a low-cost, rapid, easy-to-use tool to measure refractive errors and provide data for corrective eyeglass prescriptions.

Alex H. Slocum: A Robotically Steered Electrode for Tumor Ablation. Conventional thermal ablation for treating cancer is limited in precision and configurability as straight needle-like electrodes are manually inserted through the skin and into a tumor in the body. This project will develop a robotically steered electrode that can perform many small ablations in precise three-dimensional locations by moving the electrode tip within the tumor. This will extend the use of thermal ablation as a minimally invasive technique for treating cancer, thus eliminating the need for open or laparoscopic surgery for some patients.

Michael Strano: A Wearable Sensor for Continuous Glucose Monitoring for Diabetics. A carbon nanotube–based, minimally invasive, tissue implantable glucose sensor. The sensor will allow continuous glucose monitoring for diabetes patients, resulting in improved glucose regulation and better health (renewal from fall 2009).

Kripa Varanasi: Nano-Engineered Surfaces for Ultra High Power Density Thermal Management. Heat needs to be removed rapidly from high power electronics or the semiconductors will fail. This project will develop a system to very rapidly dissipate large amounts of heat from such devices (renewal from fall 2009).

Graham Walker: New Antibiotic Target. A project attempting to isolate lead compounds to develop a new antibiotic (renewal from fall 2009).

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. They 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 and/or mentoring researchers and entrepreneurs as well as industry expertise

- Willingness to proactively provide assistance to MIT research teams
- Willingness to abide by 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 conflict of interest.

Innovation Teams

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

The course is led by a faculty team of Charles Cooney and Dr. Luis Perez-Breva from the Department of Chemical Engineering, and professors Edward Roberts and Fiona Murray from the Sloan School of Management. The subject has been offered 13 times, has focused on go-to-market strategies for over 80 projects, and has engaged more than 400 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 April 15, 2011, the Deshpande Center held its annual IdeaStream Symposium aimed at connecting MIT researchers with the entrepreneurial community. The symposium included presentations and posters highlighting grantees at different stages, from new grantee to spin-off. This year presenters included researchers from Portugal and Singapore. More than 200 entrepreneurs, industry executives, venture capitalists, and MIT researchers attended the conference, which had the generous support of nine 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 get to meet and mingle with each other and with staff and other volunteers. All new grant recipients are also 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 2010. 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 many 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; 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.

Leon Sandler
Executive Director