

# BIODESIGN THE YEAR IN REVIEW



Nish Chasmawala (l) and Jayant Karve (r) present their concepts and prototypes

## STANFORD-INDIA BIODESIGN CENTER OFFICIALLY OPENS

Our first year of the SIB program ends with the opening of the new Stanford-India Biodesign Center at the All India Institute of Medical Sciences in New Delhi, India. Fellows and Faculty presented to a group of supporters.

A year in the making, the new Stanford-India Biodesign (SIB) Center is the first of what we hope will be a trend toward medtech innovation at academic institutions throughout India. Housed at the All India Institute of Medical Sciences (AIIMS), just a short drive from the Indian Institute of Technology, Delhi (IIT Delhi), the center will be the hub of activity for Stanford-India Biodesign in the years to come.

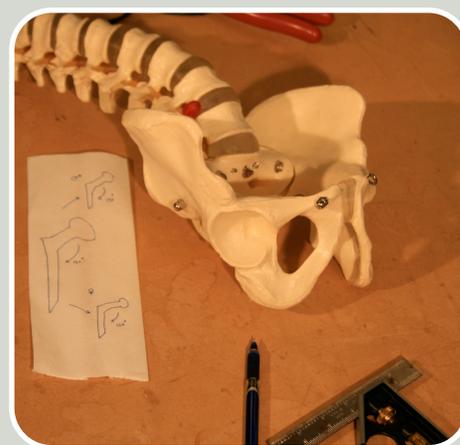
We selected the first SIB fellows in 2007 for the 2008 fellowship. At the official opening of the center on December 14, 2008, these First Fellows presented concepts and prototypes based on six months of learning the Biodesign process (at Stanford) and six months of practicing the process (at AIIMS and IIT Delhi).

The focus area for the first year was Emergency Medicine. We partnered with the Stanford Emergency Medicine division as well

as the Emergency department at AIIMS to get full exposure for the fellows. They spent several months in both settings observing intake, procedure, process and follow-up care in the emergency setting in order to best understand where the critical needs lie. In addition, they were asked, while in India, to focus on problems that particularly affect the under-served and poor populations.

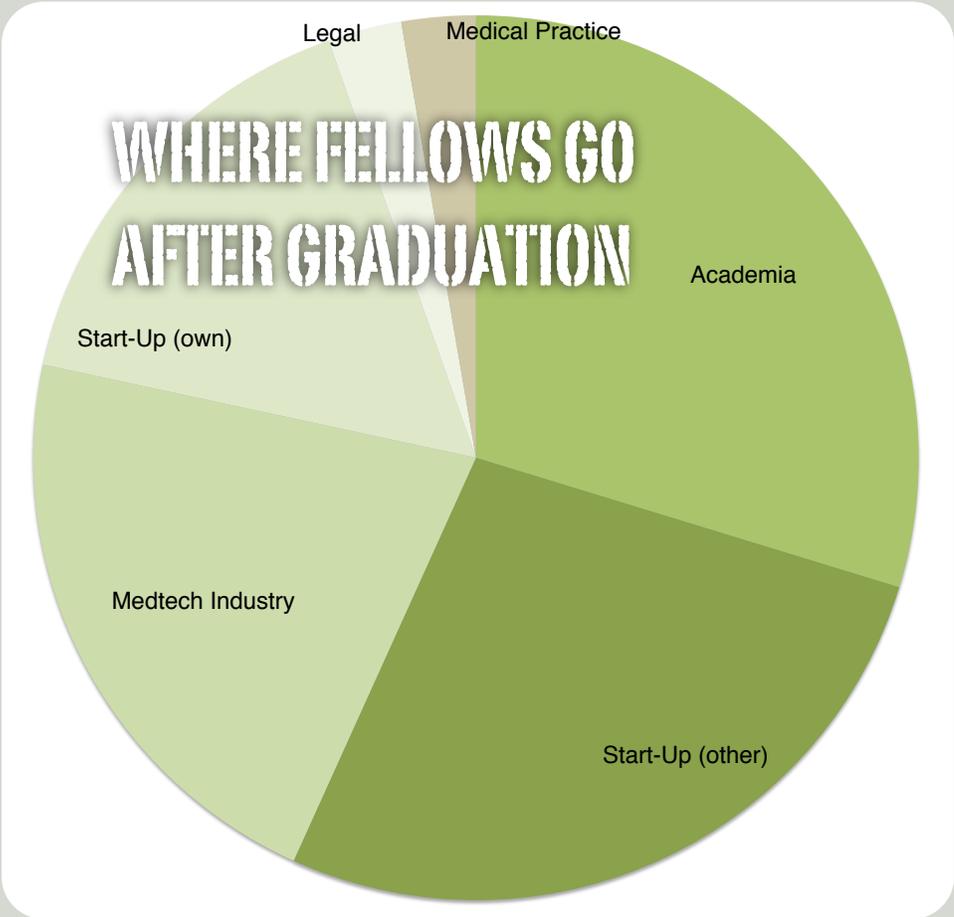
The resulting work included prototype devices in the areas of fluid delivery, fecal incontinence, CPR automation and improved intubation.

The Government of India, initial and strong supporters of the program, were represented at the opening by M.K.Bhan, Secretary of the Department of Biotechnology, who indicated a very positive response to the results of the first year of the fellowship.



### Ideas become Inventions

The Biodesign program is dedicated to the continual improvement of human lives through medtech innovation.



**Companies Flourish**

More than fourteen companies have come from the Stanford Biodesign Program out of efforts of our fellows and students. Some have been acquired, some are in Series A, B and C funding, some early stage are working from SBIR grants. All hope to make a difference in patient lives.



**Our Product: the Students and Fellows of the Biodesign Program**

Our mission is simple, but by no means easy: train the next generation of leaders in medical device technology innovation. We take our mission very seriously, by providing a one- and two-year fellowship as well as a graduate-level class we reach over 100 young innovators every year with the Biodesign Innovation Process. In addition we have recently added an Indian version of the fellowship.

But beyond our doors, we also strive to bring this process to others in academia and industry. We have completed a book that describes the Biodesign Process, which will be published in 2009 by Cambridge Press. The book will be useful to entrepreneurs, innovators, educators and industry

professionals who need to better understand the process of innovation in the medical device technology arena.

Finally, we're working hard to promote the idea of Biodesign beyond our own doors. We have initiated programs in Mexico and India, our alumni fellows are starting programs in Singapore and Minnesota and we are continually asked to provide information and resources to programs that are starting at other universities. Programs in Missouri, Michigan, Indiana and Sweden have all started within the last few years with assistance from Stanford's Biodesign Program.

In each of these venues, we see further results of our efforts: individuals who understand the process and can duplicate it in their careers.

**We have now graduated 54 fellows**

A FEW OF THE COMPANIES STARTED	ACUMEN	NEOGUIDE	IRHYTHM	CURANT
	<p><b>Nick Mourlas, Chris Eversull</b></p> <p>Visualizing and cannulating the Coronary Sinus to facilitate LV Lead delivery</p>	<p><b>Amir Belson</b></p> <p>Colonoscopy device with real-time pathway tracking. Doctors can more precisely locate and treat polyps and cancerous lesions.</p>	<p><b>Uday Kumar</b></p> <p>Help physicians detect and diagnose arrhythmias and streamline procedural pathway.</p>	<p><b>Rich Vecchiotti, Venita Chandra</b></p> <p>Minimally invasive urinary implant that automatically activates and prevents leakage.</p>

# STUDENT DESIGN



## New Knee Prosthetic In Use

Armand Neukermans, renowned philanthropist in the bay area, has been an avid support of the BMVSS organization in Jaipur, India. At Jaipur, BMVSS ensures that all people in need of prosthetic legs can get them at no cost. One Stanford student team, sponsored by Armand through Biodesign and Tom Andriacchi designed a new knee now in use at BMVSS.

## Biodesign continues to depend on industry, venture capital firm, individual and foundation support

We are honored to have so many supporters among the medical technology community. Our supporters include

### Corporate Sponsors

Abbott Laboratories  
Boston Scientific  
Edwards Life Sciences  
Johnson & Johnson Cordis  
Medtronic  
St. Jude Medical  
Stryker

### Foundation Support

Cottrell Foundation  
Coulter Foundation  
InHealth  
Kauffman Foundation  
Lemelson Foundation  
Littlefield Foundation  
Lucile Packard Foundation  
Medtronic Foundation  
NCIIA  
Whitaker Foundation

### Community Partners

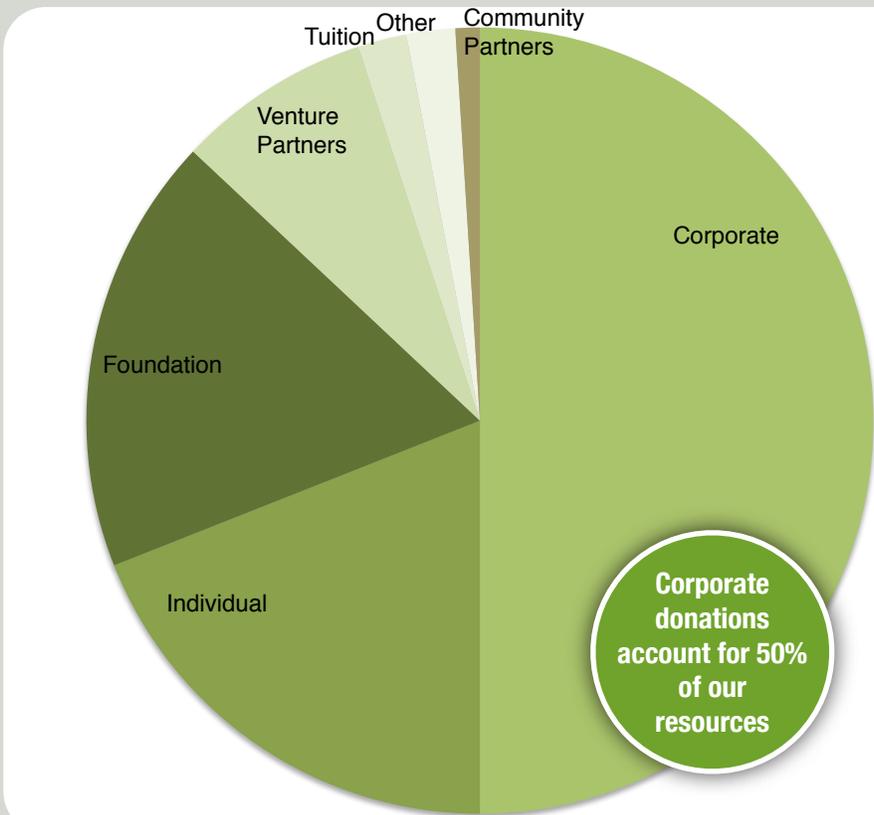
Cooley Godward Kronish LLP  
Dorsey & Whitney LLP  
The Foundry  
PriceWaterhouseCoopers  
Wilson Sonsini Goodrich & Rosati

### Individual Support

Josh Barlow  
Ronald Dollens  
Thomas Fogarty  
Eberhard Grube  
Jos Henkens  
Julio Palmaz  
John Simpson  
Simon Stertzer

### Venture Partners

Advanced Technology Ventures  
Alloy Ventures  
Artiman Ventures  
Bay City Capital  
Delphi Ventures  
De Novo Ventures  
Frazier Healthcare  
InterWest Partners  
Kearny Venture Partners  
Kleiner Perkins Caufield & Byers  
Mohr Davidow Ventures  
Montreux Equity Partners  
Morgenthaler Ventures  
New Enterprise Associate  
ONSET Ventures  
Prospect Venture Partners  
Sanderling Ventures  
Split Rock Partners  
Synergy Life Science Partners  
Three Arch Partners  
U S Venture Partners  
Versant Ventures  
The Vertical Group



## Our Educational Initiatives are at the Core of What We Do

This year we have revamped our core graduate offerings: BioE 374 Biodesign Innovation is a graduate level course offered to students in Business, Medicine and Engineering. The course has recently been split into two courses, a core sequence which provides the didactic portion with guest speakers and practical topics from faculty. A second course is now offered with the project component. Thus, students who want the core sequence can register for that, while most will continue to take the complete two-course sequence for the full project experience. We continue to offer the core course through the Stanford Center for Professional Development (SCPD) to online students as well.

## Students Gain Real-World Experience

Students taking our Biodesign Innovation course gain real-world knowledge from our experts and real-world experience through their projects. The reaction from our students indicate the value of our program::

*The Biodesign course is the most useful course I have taken at Stanford. Please keep bringing in leaders in med devices, as I learned from them in 1 hour what would have otherwise taken months or years to learn on my own.*

2nd year Masters, Mechanical Engineering

*It's the best class ever! I love this class. The knowledge from this class is very useful and I think it will help me a great deal in my future career! It's absolutely the best class I've ever taken.*

2nd year Masters, Mechanical Engineering

*It was an excellent class. I really enjoyed it and got a much better view and idea of how the med-tech start-ups are organizing and being managed.*

PhD, Mechanical Engineering

*I was a student.. in the 2004- 2005 Biodesign Innovation course. Since that time, I've spent some time at Merck in the vaccines area and as an analyst at a Philadelphia based VC firm. I am now an MD/PhD student at Baylor College of Medicine. I credit much of my success to the things I learned from your course.*

Former Student



**BioE 374  
Course popular  
option for  
Innovators**

## NETWORKING



## Events Create Opportunity

Biodesign regularly holds events for the Medtech community at Stanford and beyond in order to provide networking opportunities and to stay informed about the latest company news. Our 'From the Innovator's Workbench' events are always well attended. Coming in 2011 will be our third Emerging Entrepreneurs Workshop.

# PEOPLE ARE OUR FOCUS

## The bulk of our expenses cover the costs of faculty, staff, fellows and students.

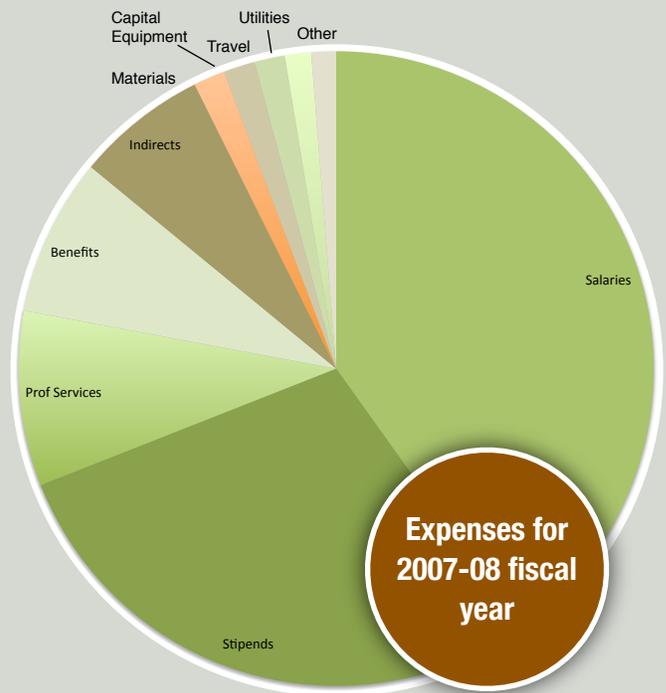
As one can see from the chart at right, our expenses are primarily to fund people: faculty and staff represent 40% while stipends for Fellows take up an additional 28%. These stipends fund 14 fellowships. Benefits for faculty, staff and fellows represent another 19%.

We continue to keep expenses to the program to a minimum in an attempt to make the best use of our funders' investments in our program.

As has been reported in the local press, Stanford University is experiencing a downturn in revenues from its endowment. Although the Biodesign Program does not receive funds from this source, this does not preclude the program from experiencing financial challenges in the months and years ahead. We have experienced the generosity of the industry for over eight years and we hope that this will continue. However, we are managing our current finances in a way that will mitigate future changes to income. We are putting together cost-savings measures wherever possible and are taking advantage of technological innovations to help save the program money. Moving to a paperless office is one initiative that has started with the initiation of an all-online application and review process for the fellowships. In addition, we are reducing our dependence on expensive fee-for-service vendors, outsourcing to our India partners in the case of the Stanford-India Biodesign Fellowships.

We welcome input from our partners in this arena as we move toward a more efficient and cost-effective program.

We are also exploring new revenue producing programs, hoping to provide additional training opportunities to the industry on a fee-for-service model. As we gear up for a future of restraint, we plan to continue to provide valuable programs and opportunities for our students, fellows and partners. We appreciate your continued support of Biodesign during these difficult times.



## Biodesign Textbook to be Published in Oct 2009

The Biodesign process will get a complete telling when the textbook, *Biodesign: The Process of Innovating Medical Technologies* comes to press in October of this year. To be published by Cambridge Press, the book will feature chapters devoted to each step of the process of innovating new medical devices. Each chapter will include a "Getting Started" section that will provide a checklist for the new entrepreneur. We are also developing a companion website which will provide accompanying video and links for each of the chapters. To get on our first purchase list, send an email to [christine.kurihara@stanford.edu](mailto:christine.kurihara@stanford.edu).

## Your Help Welcome

We depend on the kindness of friends and strangers alike. Our program is made possible by the assistance of individuals and organizations interested in the furtherance of medical device innovation. Many in the industry give of their time to mentor our fellows, speak in classes or review projects.

## Participate

- Register for a Workbench Event
- Fund a fellow
- Join the network (register on our website)
- Donate to the program
- Speak at an event

## Thank you

We are grateful to all who support the program through their efforts.

## BIODESIGN PROGRAM

James H Clark Center

318 Campus Drive, Rm E100

Stanford University

Stanford, CA 94305-5428

<http://biodesign.stanford.edu>