STANFORD biodesign

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Stanford, India to Collaborate in Training Medical Technology Innovators

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STANFORD, Calif.--The Stanford University Program in Biodesign is partnering with the government of India to establish a new training program, called Stanford-India Biodesign, to help create the next generation of biomedical technology innovators in India.

"India is on the move," said Harry Greenberg, MD, senior associate dean for research at the Stanford University School of Medicine, who describes the partnership as a plan to meet the future needs of India's medical technology industry, which is poised to grow dramatically. "India represents a huge part of the population of the globe that is likely to benefit from medical innovation and technology over the next 20 years."

The Indian government announced May 31 it will allocate $4.8 million over the next five years to help fund the joint venture between Stanford University and India's department of biotechnology to train future medical device inventors and catalyze the expansion of the medical technology industry in India.

"By sharing our teaching methods with our Indian partners, we expect similar biodesign training programs to spring up around India fueling the development of exciting new technologies within the next decade," said Paul Yock, MD, director of Stanford's Program in Biodesign. "We hope this will parallel the extraordinary growth of the medical technology industry in the Silicon Valley over the past 25 years."

The plan is to bring the Stanford program's method of "teaching innovation" to Indian engineering, business and medical students through a two-year fellowship pilot project. The fellowship will start with hands-on innovation training at Stanford and progress to immersion in health clinics and hospitals in India where students will identify unmet medical needs specifically targeted for the Indian heath-care environment and create cost-effective solutions to meet those needs. At the end of the program, the fellows will remain in India and lead the further development and testing of these solutions in either a university program, a start-up company or a new unit of an existing company.

The $4.8 million in funding from the government should cover about half the cost of the program, which means Stanford must raise the additional funding.

While Stanford's biodesign program has successfully trained medical innovators with its unique methods of immersion in clinical settings and hands-on innovation for years now, the new

partnership will emphasize the cost-effectiveness of the technology more than it has in the past. This is a new emphasis that the Stanford leaders hope to promote for their own Stanford students as well.

"The purpose is to eventually help meet the medical needs of the people at the bottom of the economic pyramid in India," said Balram Bhargava, MD, the India-based executive director of Stanford-India Biodesign and a professor of cardiology at the All India Institute of Medical Sciences in New Delhi, one of two educational institutions involved in the first stage of the Stanford-India Biodesign initiative. The Indian Institute of Technology is the other.

"With a population over 1 billion strong, along with emerging medical and engineering fields and an exploding need for a stronger medical device industry, India is poised for explosive growth of its nascent medical technology industry," said Raj Doshi, MD, PhD, a Stanford graduate in both engineering and medicine who has been named the U.S.-based executive director of Stanford-India Biodesign. "There's a huge opportunity to do a lot of good. The potential in India is limitless. What's needed is a catalyst. We are hoping the combined efforts of the three educational institutions will be this catalyst."

While this initial partnership is based on Stanford bringing its training skills to India, Yock emphasized that Stanford is hoping to cultivate long-term benefits from the program. The hope is that the five-year pilot project will develop into an ongoing collaboration between Stanford and key institutions in India.

"The global health marketplace for biomedical technology innovation is going to be important in a way that it never was before," Yock said. "Inventors and developers of new medical technologies will need to understand the global applications. The best way for our students to train for this new era is to jump in and experience first-hand the process of innovation in a developing-world setting."

Other hoped-for benefits to Stanford will be the new emphasis on creating cost-effective technology, Yock said. "Ninety percent of Indian citizens lack medical insurance and many live in rural areas without access to decent health care," he said. "We think cost-effective technology has a really important role in bridging the gap to these underserved patients."

India has already developed several examples of cost-effective medical devices that reach underserved patients such as the Jaipur limb, a lower leg prosthesis that can be manufactured and fitted in a matter of a few hours and is provided free to those who can't afford it. And at the Aravind Eye Institutes, a custom-designed and manufactured intra-ocular lens is implanted in tens of thousands of patients a year, free for those who can't afford it.

In the United States, medical technology is often blamed for much of the runaway costs of health-care expenditures, Yock said. "We think there is a kind of technology innovation that we don't understand at all in the U.S. that is cost-efficient, cost-effective and still high quality. We want to expose our students to its implications in the context of the developing world," he said.

The SIB program will be developed in conjunction with Stanford's newly announced International Initiative and the Hasso Plattner Institute of Design at Stanford.

Stanford University Medical Center integrates research, medical education and patient care at its three institutions — Stanford University School of Medicine, Stanford Hospital & Clinics and Lucile Packard Children's Hospital at Stanford. For more information, please visit the Web site of the medical center's Office of Communication & Public Affairs at http://mednews.stanford.edu.