

## Anna Iwaniec: Bioengineering Graduate Student Working Close to the Heart

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HE GRADUATE STUDENTS WORKING ON THEIR PhDs IN BIO-

ENGINEERING come to Caltech from a variety of disciplines and institutions. Anna Iwaniec, however, is homegrown. After completing her BS in Engineering and Applied Science (with honors), with a concentration in Mechanical Engineering, she tinkered around for a year in various engineering-type things. In contact with Professor Mory Gharib, she returned to Caltech as an engineer in his cardiovascular fluids dynamics laboratory. Her interest and ability in mechanical design lent itself perfectly to the design and testing of a few of Gharib's heart pump ideas.

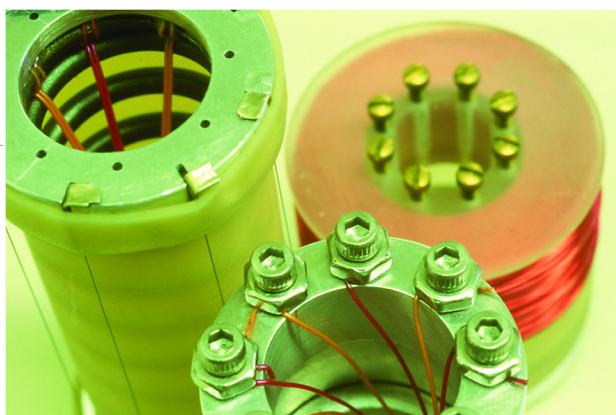
Working closely with the pumps simultaneously expanded and concentrated her thinking about her future directions. What the world needs now, she thought, were new paradigms in medical device and product design. *"Oftentimes, medical devices are designed by doctors. I think that I can offer new ideas to the industry by apply-*

*ing my engineering skills. It is the combination of backgrounds that will allow for the development of innovative designs."* Gharib suggested that she apply to the new Option in Bioengineering. World-class biological sciences research was happening a couple of buildings away on campus and, if she could integrate the two broad areas, maybe she could approach these same engineering problems in radical ways and truly advance the work she was doing.

That was the upside. The flipside was that a mechanical engineer now had to take biology classes (a couple of buildings away) from Caltech's superstars of anatomy, physiology, molecular biophysics, neurobiology, and the like. Ouch. This was going to be hard and, not surprisingly, it is. *"I was really nervous jumping into classes without all the background that most of the students had, though I knew that the courses would give me knowledge important for gaining a broader perspective of my research."* But Caltech seems to attract people who rise to the challenge and make things their own.

How's she doing? Nearly nine months into the program, Anna's excited. The course work thus far is as interesting and fulfilling as it is challenging, and there are great people all around. *"No matter how abstract the work at Caltech gets, you know that you can always rely on fellow students and faculty to lead you in the right direction to help you accomplish your goals."* We'll get back to you in a few years to let you know where it's all leading... **E N G**

Visit Anna's personal page to learn more.  
<http://www.iwaniec.org>



Prototype designs demonstrating how helical bands can be used to create a squeezing action were originally conceived to create valveless pumps. Such design principles may lead to important biomedical fluid displacement devices.

