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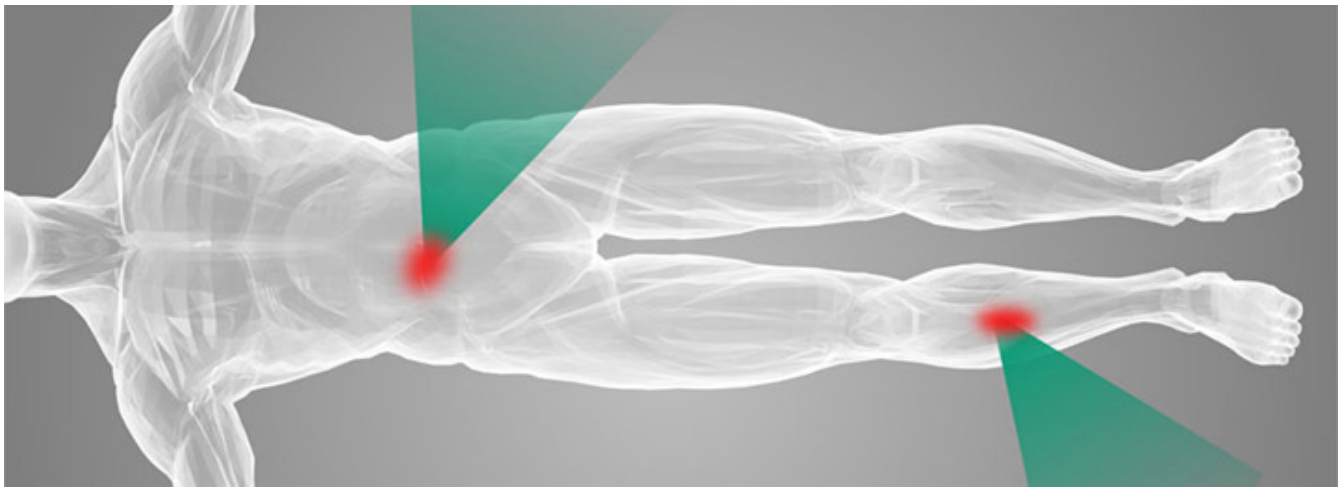
How an Entrepreneurial Engineering Education Nurtured a Biotech Startup



SonRx uses nanocarriers smaller than human cells to carry chemotherapy drugs through the body where they can be released at the tumor site by a doctor deploying focused ultrasound. Image by Sonrgy

Identify a real-world problem. Engineer a solution. And, if the solution works, figure out how it can be commercially viable. That's what Michael Benchimol said he learned over 7 years of working in the laboratory of Sadik Esener, a professor in the departments of NanoEngineering and Electrical and Computer Engineering at the University of California, San Diego. In Benchimol's (Ph.D., Electrical Engineering, '12) case, it specifically means building a company to advance a targeted drug delivery platform that could make chemotherapy more effective and less toxic to the healthy tissue in the body.

"I like to build things. That's the engineering side of me," said Benchimol, who also earned a master's in electrical engineering at UC San Diego in 2008. "Creating a company was just a different form of creating something from nothing. I always had that interest and I saw that there was an opportunity here."

The opportunity is a method of delivering chemotherapy drugs directly to cancerous tumors in the body, a longtime goal of next generation cancer therapy research due to the toxic effects the drugs can have on the rest of the body. The field is enjoying a research heyday in part thanks to advances specifically in the area of nanotechnology. Benchimol says nanotechnology

is enabling cancer researchers to leverage the best properties of cancer drugs and biocompatible materials, in a single therapy that can circulate undetected by the body's immune system.

His company, Sonrgy, recently entered an exclusive licensing agreement with UC San Diego to further develop the company's technology, which resulted from his Ph.D. and postdoctoral research at the Jacobs School of Engineering and UCSD Moores Cancer Center, where Esener, also directs the NanoTumor Center. Benchimol's solution is unique in that it doesn't rely on "tumor receptors" that the nanoparticle can seek out and "stick to" before releasing the drug. Rather, the Sonrgy platform, called SonRx, uses nanocarriers smaller than human cells that carry chemotherapy drugs through the body where they can be released at the tumor site by a doctor deploying ultrasound. The technology is in the preclinical stage.

"The SonRx technology addresses longstanding challenges related to stability and controlled release in nano-scale drug delivery," said Michael Benchimol, who is Sonrgy's Chief Technology Officer, in a company statement about the licensing agreement.

lichael Benchimol's startup, Sonrgy, recently entered e licensing agreement with UC San Diego to develop d chemotherapy treatment. Benchimol earned a ectrical engineering in 2012 and a master's in ngineering in 2008. Image by Sonrgy

The company is fleshing out its management team and bringing on talent with pharmaceutical experience and expertise in the drug development process.

Benchimol said working in the laboratory of a successful inventor and entrepreneur provided essential support as he explored whether his idea had both scientific merit and commercial potential."Professor Esener enforced these concepts early on in my Ph.D. program," said Benchimol.

Along the way, Benchimol used the resources and programs available to entrepreneurially minded students to guide his path. At Research Expo, the annual technology showcase of the Jacobs School of Engineering, Benchimol presented earlier versions of his targeted chemotherapy program to a panel of judges drawn from faculty, alumni and industry.

"What a great networking opportunity. I know some students who met their future employers at Research Expo. It helped me learn to frame my research to a more

diverse audience, which is essential if you want to advance your research or even launch a company based on your idea," said Benchimol. For many graduate students, Research Expo is an early opportunity to explain the real-world significance of their research, he said. During his Ph.D. program, Benchimol also took part in the mentoring offered by the von Liebig Entrepreneurism Center at the Jacobs School, and the student-led UC San Diego Entrepreneur Challenge. His team won 2nd prize, taking home $28,000 in cash and services, from the 2012 Entrepreneur Challenge, which helped him pay for patent and licensing expenses needed to launch Sonrgy.

He said students who think they may be onto the next great idea should ask themselves tough questions and use resources offered by the Entrepreneur Challenge and the von Liebig Center to really examine the commercial merit of their idea. His own entrepreneurial path was driven by a desire to contribute something practical to the field, and the drive to seize on the potential of this new technology.

"It's really that there's a very important problem and I see a huge opportunity in our technology to address that problem," Benchimol said. "There are many promising ideas developed at the university, and if no one helps to bring them out, they're likely to still be sitting in a lab notebook 20 years from now."
