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# From Imagination to Market: Technology Transfer Office Shepherds Another Spin-Off to Success

When the company Topera was recently acquired for $250 million by global health-care giant Abbott, it was the culmination of a UC San Diego scientist's entrepreneurial hard work – and another successful university spin-off shepherded to market by our Technology Transfer Office.

Even sweeter, Topera and another UC San Diego spin-off, Electrozyme, earned Most Innovative Product awards at this year's Connect Showcase. Earlier in the year, Topera was the featured enterprise for Connect's "Frontiers in Science and Technology" program, where students, faculty and Connect members met on campus to learn about how a UC San Diego faculty member, entrepreneur co-founder, and the TTO worked together to commercialize the technology for public benefit.

TTO Assistant Director David Gibbons, with MBA and PE credentials, worked on bringing the Topera research work "from imagination to market." (His colleague Dr. Victoria Cajipe did the same for Electrozyme.)

Topera is the brainchild of Dr. Sanjiv Narayan, a then-dual-appointee at our School of Medicine and the Veterans Administration. (He is now at Stanford.)

As background, Gibbons points to a New Enterprise Associates analysis of Narayan and his ultimately profitable idea:

"Dr. Narayan is a practicing cardiovascular electrophysiologist who also has a doctorate in neuroscience and a master's degree in software engineering. He is that uniquely situated individual who, out of intellectual curiosity and compassion for his patients, committed to apply his years of postdoctoral study and insight into resolving the complex electrical signaling associated with EEGs of the brain to the complex and chaotic electrical patterns associated with atrial fibrillation in the heart.

*"Over the course of several years of collecting electrograms from his patients, he wrote and tested and rewrote and retested his own software code that analyzes complex rhythms of the heart and resolves them into 3-D representation of the dynamic, localized electrical activity of cardiac tissue. In addition, he undertook the process of demonstrating through rigorous clinical study that by performing conventional PVI, plus targeting and ablating the rotors and focal impulses in the heart, single-procedure AF ablation success rates could be dramatically north of 80% as much as two years after the procedure compared to PVI alone, or double the success rate of the current standard of care today."*

Gibbons had known Narayan since 2006, when the scientist had come to TTO to license technology for his first start-up attempt.

"Dr. Narayan is pretty entrepreneurial by nature and saw the commercial potential for his work early on," says Gibbons. "When he approached our Tech Transfer Office with his first disclosure of this work in 2010, he already had the idea for a start-up in mind. During the next several years, he continued to develop his methods at UC San Diego and the VA through several NIH-funded patient trials. Meanwhile, Topera's management team was busy developing the actual work-station and catheter-product that would implement the UC San Diego IP in the clinic."

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Though Narayan's first idea "failed to gain traction," the team at TTO had established a strong working relationship with the scientist.

"We worked with Dr. Narayan to establish a broad patent portfolio both in the USA and abroad, established agreements with the VA to address their interest in Dr. Narayan's rights, and ultimately negotiated a license with Topera's founding management team," says Gibbons. "Since 2010, our patent team has had a very active relationship with Topera, leading to the creation of a patent portfolio that now includes about two dozen applications."

Gibbons says the Topera example re-affirmed the TTO's commitment to help turn ideas into life-improving products.

"I would say that Topera is notable in that it provides a perfect case study in how public research universities can leverage federal dollars to study key issues, cooperatively protect those results in a win-win licensing arrangement, and ultimately see a great exit for the investors and a great therapy made available for millions of people," Gibbons says.

"It's also notable in that the PI and company founders were always up-front with the university and we addressed issues head-on, as they arose, and the process worked. When both sides come to the table to get things done, around the right technology, it happens. Investors will tell you that the team is key in any deal they do. That could not be more true than with Topera, as they were great to work with and I think they'd say the same about UC San Diego."

The Topera success-story stands out from other spin-offs because of Abbott's significant payment to buy it, but Gibbons doesn't consider it otherwise out-of-the-ordinary.

"I think that Topera is not aberrational," he says, "rather, it is another data-point supporting the robust and lasting contributions of UC San Diego to the local and regional economy.

"Topera's exit pushed our tally of start-up fund raising to just over $4 billion – that's in venture-capital investments in companies, money from acquisitions, and stock-market values.

"We could not have amassed that long-term economic impact without many previous Toperas," Gibbons says, "and, I think if anything, Topera is a good opportunity to remind the public of the great things that have occurred and will continue to occur at UC San Diego."

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