

# Idea to IPO

## A technology venture capitalist teaches scientists to be savvy entrepreneurs

By Leslie Taylor

“IF YOU’RE A PHD CANDIDATE, A POSTDOC, OR FACULTY working in the sciences, I can guarantee with 100 percent certainty that in your career you will deal with a venture capitalist,” says entrepreneur David Anthony to students of “Idea to IPO,” a 12-week course he taught at the New York Academy of Sciences for the fourth time this fall.

Anthony is a partner in 21 Ventures, LLC, a venture capital fund specializing in development of early stage technology companies. Companies in his portfolio include Agent Video Intelligence, Orion Solar, BioPetroClean, Cell2Bet, Juice Wireless, Visioneered Image Systems, and VOIP Logic. Presently entrepreneur-in-residence at the University of Alabama at Birmingham School of Business, Anthony is passionate about teaching scientists the perils and perks of what he calls the “technology venture ecosystem”—a “highly evolved environment” with its own language, set of players, and conventions that, he says, you won’t learn about in any economics or marketing class.

### DESCEND FROM THE IVORY TOWER

Anthony says he came up with “Idea to IPO” during his search for new deals among laboratories at New York-area universities. He discovered that scientists here aren’t nearly as savvy about commercializing their discoveries as are their peers in Israel or Silicon Valley.

“My job as an investor is to look for gaps in marketplaces,” Anthony says. He found one in New York’s science institutions,

where there are few opportunities for scientists to interact with or learn the language of investors. With most of America’s top technology venture capitalists based in Silicon Valley and Boston, he says, New York doesn’t have a stable of experts available to teach technology entrepreneurship to scientists.

“In New York there seems to be a real lack of conversation between academia and industry,” says John Wilson, a student of Anthony’s course and a graduate fellow in the Laboratory of Chemical Biology and Microbial Pathogenesis at Rockefeller University. “When I first moved here from Silicon Valley, I was curious about why New York City has \$2 billion in NIH funding but no biotech cluster,” he says. Wilson, who once worked at a small startup in the field of biomarker discovery and hopes ultimately to have his own lab and run several companies, regrets that business was rarely emphasized in his science education. “Even scientists in academia need to be aware of the implications and opportunities that capitalism provides,” he says.

### IT’S THE MARKET, STUPID

“Scientists are somewhat naive,” says Anthony. “One of the biggest problems is that they think that ‘the idea’ is so valuable. There are 500 tech transfer offices across the country and each one will have 200 patents that are interesting ideas.”

“The first thing I ask a scientist about their innovation is: ‘What’s the problem you’re solving?’ They usually want to begin with the science, but I have to tell them I don’t really care about



the science,” he says. “If a scientist doesn’t think of their science in terms of solving a specific problem, then they haven’t done their homework.”

Before starting a technology venture, Anthony suggests a scientist determine the answer to three fundamental questions:

- Is it real? The product must do what it is designed to do.
- Is it worth it? There must be someone who will buy the product because it is better or cheaper than existing technology.
- How do you win? There must be a reason your technology will outdo the competition.

Before that last question, Anthony asks any scientist pitching him an idea if there are any competitors. “If they answer ‘No,’ then right there they’re dead,” he says. “If nobody is pursuing an idea, either something is wrong with the science or there must be no market for it. Today there is a competitor for everything.”

His philosophy is that there is no idea so ground-breaking that no one has ever thought of it. “Maybe the science is something no one has ever thought of, but that doesn’t mean there’s not a substitute product that is competitive.”

“Understanding how markets develop, how markets evolve and grow, is often more critical than the actual idea,” says Anthony. “I’m more interested in what is out there in the market, what is the problem they can solve, and how can they do it better than anyone else.”

A former “Idea to IPO” student, Moshe Pritsker, internalized Anthony’s message about market analysis. Though he holds a PhD

in molecular biology from Princeton University, he was inspired to start his business not by a discovery made at the bench, but by a problem that needed solving. On a flight to a training session in Scotland, Pritsker realized how much time and money researchers spend traveling to visit people who have developed new lab methods that need to be shared with the research community. To reduce wasted travel time and to help researchers disseminate their methods, he started JoVE, the *Journal of Visualized Experiments*, an online video publication for biological research.

When Pritsker started Anthony’s course, he had been planning a career in academia. But the course inspired him to become an entrepreneur. “Now I don’t think there is a fundamental difference between academia and industry,” Pritsker says. “Academia is also sort of a business—especially these days when funding is so tight and the average professor must spend so much time applying for and managing grants.”

“What is different is the approach,” he adds. “In academia, the moment you initiate a project you state your goal. But if you reach a different goal, and you don’t achieve what you set out to do, it’s still considered OK. This is how science advances. In industry, unless you achieve your stated goal, unless you achieve profitability, financing, and other milestones, your project is not a success.”

#### TIPS AND TRICKS

Unlike their counterparts starting more conventional businesses,

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David Anthony, 21 Ventures LLC

technology entrepreneurs are often forced to negotiate problems quickly, Anthony says. That’s because the life cycle of a technology company—from idea to patent protection to funding to new product introduction to marketing to sale of company—is typically no more than three to seven years.

In “Idea to IPO,” Anthony offers lessons learned by entrepreneurs who faced each type of problem a scientist might encounter in that short life cycle of a company.

First, he says, communicating your technology or your problem-solving ability to scientists as well as to non-scientists is critical. “The best science entrepreneurs are the ones who can communicate effectively.”

It’s also extremely important for scientists to be able to sell their ideas, he adds, sharing the story of Bob Metcalf, the inventor of Ethernet who credits his success not to the brilliance of his invention, but to the effort he put into selling the science, traveling across the country to promote and pitch it.

Perseverance is also crucial. “I will not take a call from a scientist unless he calls me three or four times,” Anthony says. “It’s not because I have anything against the scientist. It’s because when you call on a customer, they’re not going to take the call right away. You have to demonstrate to me that you have that persistence. You’ve got to show me your resourcefulness. If you can’t get me on the phone, get me via e-mail. If e-mail doesn’t work, get me another way. Get my attention somehow, because eventually you’re going to have to sell this to a customer.”

Anthony also warns scientists about relying too heavily on software tools to make a pitch. “Excel is a crutch,” he says. “It has trained both scientists and MBAs to depend on spreadsheets and not to think through math in their heads. I ask people to walk me through the economics on a blank sheet of paper. If you need a spreadsheet to walk me through the business model it’s either too complicated or it hasn’t really been tattooed onto your brain. So that’s a big red flag.”

“You need to show me the logical process you’re using to determine the revenue the business is going to generate and how profitable this idea is going to be in three to five years. If you can’t do that over a beer, on a piece of paper, you’re not an entrepreneur,” he says.

#### IT’S NOT ROCKET SCIENCE

“Venture capitalism is not that hard,” says Anthony. “You find big problems, you solve big problems. If you solve big problems, you make a lot of money. If you solve little problems, you make a little bit of money.”

But many scientists find the prospect of commercializing their research quite daunting. At the time he took Anthony’s course, Hugo Sondermeijer was in the process of patenting a tissue engineering approach to replacing damaged myocardia. A postdoctoral research fellow in the Division of Cardiothoracic Surgery at Columbia University, he had no idea what to expect from taking his science outside of academia. “I was biased about commercialization. In Europe we haven’t learned that it can be important to commercialize. There’s worry that it might influence objectivity and take away from the purity of science,” he says.

Now Sondermeijer says he feels better prepared to take the next step toward selling his discovery. “You work hard, you do inventions, and there’s additional incentive when there’s the prospect that they might benefit the larger public and you might receive some financial reward for it,” he says. ■

*Leslie Taylor is associate editor of the magazine.*

#### on the web

For more about building a business from academic research, see the eBriefing “Start Me Up,” covering an event held at UC Berkeley in 2006. Go to [www.nyas.org/start](http://www.nyas.org/start).