The art of entrepreneurship

Robert S. Langer, the David H. Koch Institute Professor at the Massachusetts Institute of Technology (MIT) in Cambridge, is the most cited engineer in history, with more than 163,000 citations. He holds more than 1000 patents, licensed or sublicensed to more than 300 companies, and he has helped found at least two dozen biotechnology companies. This interview has been edited for brevity and clarity.

Q: Why did you become a scientist?
A: In my day, there was this company called A. C. Gilbert that made these great erector, chemistry, and microscope sets. I got them for various birthdays. Later on, in high school, I was good in math and science and terrible in everything else. People would say to me, “You should become an engineer.” I thought engineers ran railroad cars. I went to Cornell and majored in engineering. My first term, the only class I liked and did OK in was chemistry, so I decided I would be a chemical engineer.

When I graduated with my doctorate in 1974, the standard chemical engineering job was to work at an oil company. I wasn’t excited about that. So I kept looking for things I felt would make an impact, that would help people. I ended up working as a postdoc with Judah Folkman, a surgeon at Boston Children’s Hospital. He had this idea that if you could stop blood vessels, maybe that would be a way to stop cancer. I thought, “Boy, this is a lot better than oil companies.” If it worked, it would be incredible.

Q: How did you go from scientist to entrepreneur?
A: My project was to isolate the first angiogenesis inhibitors. We invented microparticles that release an inhibitor of blood vessel growth to starve the growing tumors. I thought, “We’ll publish our work on microparticles, and everybody will use them clinically.” And then nobody did. Nobody used them to help people. So we patented them and licensed them. After about 10 years, somebody called me. They were going to work with the microspheres we developed, but they did only an experiment or two a year. I was frustrated. About a year later, Alex Klibanov, a professor at MIT, said, “Bob, we should start a company.”

Q: What is the connection between graduate science education and entrepreneurship?
A: When you’re a student, you’re judged by how well you answer questions. But in life, you’re judged by how good your questions are. You want students and postdocs to transition from giving good answers to asking good questions. Then they’ll become great professors, great entrepreneurs, great something.

When somebody is a student or postdoc, what is going to help them through is to be stretched. Feeling some of that discomfort, knowing how to get through it—the fact that you can prove to yourself that you can get through, and you can do well—that is wonderful, as long as it is not too painful.

Q: How do you advise scientists to approach their careers?
A: I always tell people, “Just follow your heart. Pick something you think you are going to love.” To me, that is the most important thing.

Q: What is your take-home message to budding scientist-entrepreneurs?
A: Do great science. Don’t sacrifice publishing good science to be secretive. Then go to the next step and patent it—and do licensing and start companies. That can be incredibly fulfilling because it gives you the opportunity to take your ideas—and give your students the opportunities to take their ideas along with you—and create things that could change the world and make it a better place.

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Trisha Gura (November 27, 2014)
Science 346 (6213), 1146. [doi: 10.1126/science.346.6213.1146]

Editor's Summary

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