Venturing Off: The World of the Entrepreneur

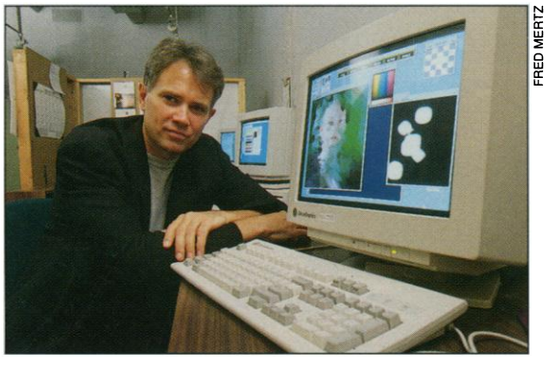
Scientists who think they can turn an idea into a business had better have plenty of self-confidence—and money.

For Danny Hillis, the founder of Thinking Machines in Cambridge, Massachusetts, starting his own company in 1984 was not a matter of choice if he wanted to stay in science. "It was the only way I could do the research I wanted," he explains. Hillis was then a graduate student in artificial intelligence at MIT, but the subject he wanted to explore for his doctoral thesis—common-sense reasoning by machines—needed a far bigger and faster computer than any available at the university. In fact, the kind of massively parallel computer Hillis needed didn't exist.

"It takes a few hundred million dollars to design and build a new computer of that size," Hillis notes. So, with $8 million in venture capitalists' money, he started his own state-of-the-art computer company. Ten years later, Hillis's Thinking Machines had 500 employees and did $100 million worth of business a year. But last month, hurt by defense-department cutbacks, Hillis's company filed for bankruptcy.

Welcome to the world of the scientist as entrepreneur: a heady world of innovation, risk, and big bucks. It's also a world, say scientists who are caught up in its struggles, of almost guaranteed failure. "There are about 1500 biotech companies around today; that's more companies than there are diseases to cure," notes Larry Gold, founder of NeXagen, a thriving 3-year-old bioengineering company in Boulder, Colorado. "So your idea better be a good one." The stormy entrepreneurial seas are reflected in the U.S. Department of Labor's figures: In 1993, 915,783 new businesses were started, while 802,702 closed their doors. "It's not a game for the faint-of-heart or risk-averse," adds Mark Pearson, the founder of Darwin Molecular Corporation in Bothell, Washington. Michael Tolson recalls the start-up of his San Francisco computer graphics firm, Chaos Inc., which he launched in his living room, as "absolute hell." But, he adds, "we did it."

These days, scientists are largely involved in two major kinds of start-ups: software companies and biotechnology companies. While electronics empires are often born in founders' living rooms or basements, biotech companies typically emerge from university labs. But while these may be two different species, there are common principles, say those involved in start-ups, that apply to success for both.



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Shaky start. Starting his computer graphics firm was "absolute hell," says Michael Tolson.

What the customer wants. "Not understanding the marketplace is the single biggest reason companies fail," says John Wall, founder of Wall Data, a software firm in Redmond, Washington. "I thought it was something I could read about in a book and grasp," he adds. "But you can't. You have to be out in the marketplace listening to what the customers are saying." That can be a difficult transition for innovative research scientists. Companies typically have to turn out the same thing over and over again to make a profit. Thus, says Hillis, "the most innovative company is not necessarily the most profitable."

Safety in numbers. You need more than one idea to sell, says NeXagen's Gold. "We are building a platform on a very good technology out of which many drug compounds will flow. So we've not targeted just one compound or disease but are going after a wide range"—some of which are already being tested against heart disease and cancer in animal models. Of course, there are exceptions to the rule: Amgen, one of the most successful biotech companies to date, was largely built on two blockbuster drugs that induce white and red blood-cell growth. But, says David V. Goedel, the former director of Genentech's molecular biology department who founded his own venture, Tularik, 2 years ago, "It's a very risky way to go."

Ask the experts. A little humility can save you a lot of money. Wall started his data communications company 12 years ago in his living room. There, he designed and built a data communications device for connecting terminals to large computers and the software to go with it, and hired a small sales force to peddle the unit. But they lost money. Not until he found a knowledgeable chief executive officer 6 years ago did his company begin to show a profit. The new CEO laid down some strict rules: Wall was not to spend any money the company did not have, and he was to "go to market," or study the marketplace, Wall recalls.

Sound planning. "Venture capitalists," notes Milton Chang, an engineer-entrepreneur who recently founded a laser company, New Focus, in Sunnyvale, California, "are not venturesome." They expect to be shown a sound business plan with realistic goals, and they want as fast a turnaround on their investment as possible. Pearson of Darwin Molecular relates how his company, which aims to develop new drugs for cancers and autoimmune diseases, tried to get Microsoft's Bill Gates interested in investing. "I'm not sure DNA sequencing can be used to make any money," Gates told the group bluntly. "You tell me how." The Darwin group apparently gave the right answers to Gates and a fellow investor, who together anted up a $10-million investment. "You've got to be prepared to answer those tough questions," says Pearson. "You've got to be able to say when you plan to have a drug in clinical trials, and how big the market is."

Finding the money. But where do scientists find deep-pocket investors? According to Fred Dorey, president of the Bay Area Bioscience Center in Oakland, California, the investors usually find them: "The venture-capitalist community often goes to the scientists. They know which scientists have the hot reputations; they go to conferences and keep abreast of the field." Scientists not on the "A" list may have a tougher time. Dorey suggests reading the annual reports of successful start-ups, which list the investors, and initiating contact themselves. Initiative, after all, is the first requirement for scientists striking out on their own.

–Virginia Morell