



Why Some Start-ups Choose Cooperation over Competition

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When faced with the challenge of commercializing its AIDS drug, Trimeris Inc., a small biotech company based in Durham, N.C., didn't hire a sales force or sink money into marketing. Instead, it called in Hoffman-La Roche Inc., the Swiss pharmaceutical giant. In 1999, tiny Trimeris and burly Roche hammered out an agreement under which Roche agreed to put its production and marketing might behind Trimeris' drug, called Fuzeon, in exchange for a piece of the profits. In January, the two companies announced that they were extending their partnership.



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[David Hsu](#), a Wharton management professor who specializes in studying entrepreneurship, says this sort of arrangement has become common in the drug industry. Small biotechs such as Trimeris innovate, creating promising drugs and vaccines, while big drug companies such as Roche look to partner with them, lending their heft to the biotechs' promise.

In a co-authored paper entitled, *When Does Start-up Innovation Spur the Gale of Creative Destruction*, Hsu argues that this sort of cooperation belies the popular idea of technological innovation. In the usual formulation, start-ups sneak in with new products and swipe sales from incumbent leaders. As a result, the innovators grow, while the older companies stagnate, even shrink. That's certainly been the case in the hard-drive industry, for example, and in online retailing.

But sometimes the market operates more benignly, with new entrants such as Trimeris cooperating with established players such as Roche. Suddenly, the gale of creation doesn't look so destructive.

Understanding what leads some start-ups to choose cooperation over competition was the impetus for Hsu's article, written with co-authors Joshua Gans at the University of Melbourne in Australia and Scott Stern at Northwestern University, and published in the *RAND Journal of Economics*. The researchers found that the likelihood of start-ups cooperating with established companies depends upon three factors: 1) the strength of the startups' intellectual property rights; 2) whether they have relationships with intermediaries such as venture capitalists; and 3) whether their industry requires big investments in things such as manufacturing and distribution. To draw their conclusions, they surveyed 118 technology start-ups.

"In economic environments like the biotechnology industry – where patents are relatively effective in protecting [intellectual property rights], firms face high relative investment costs, and brokers are available to facilitate trade – start-up innovators tend to earn their returns from innovation through the market for ideas, acting as an upstream supplier of 'technology' rather than as a horizontal innovation-oriented competitor," the authors write. "In contrast, when investment costs for the entrant are

relatively low and the technological innovation is not protected by patents, as in the disk-drive industry, the disclosure threat tends to foreclose the ideas market. Start-up innovators in this environment are more likely to commercialize their innovations through product market competition.”

Intellectual property rights take many forms, the most obvious being patents. A patent gives its owner the exclusive right to commercialize an invention for a specified period. “Firms with at least one project-related patent are more than twice as likely to cooperate relative to those with no patents,” the authors write.

Patents protect start-ups from having their inventions stolen by incumbents. That, in turn, gives them greater leverage in negotiations. “Under cooperation, negotiating over the sale of an idea inevitably involves a disclosure risk, eroding the bargaining position of the start-up and reducing the incumbent’s willingness to pay,” the researchers explain. “Increasing the strength of [intellectual property rights] reduces the expropriation threat for either strategy, and thus it increases the absolute expected returns to start-up innovators.” Negotiations often lead to cooperative relationships such as joint ventures and even acquisitions.

It’s not only the small biotechs that have embraced the cooperative model of innovation, Hsu pointed out in an interview. Merck & Co., the giant drug maker based in Whitehouse Station, N.J., has made partnering a cornerstone of its strategy for bringing new drugs to the market. Two of its leading products – Fosamax, an osteoporosis drug, and Cozaar/Hyzaar, a hypertension medication – came to the company via license agreements.

Of course, negotiating, like marriage, requires a partner, and finding the right one can make the difference between happiness and divorce. But as a rule, start-ups aren’t well-suited to finding good partners. They tend to be small and thus stretched thin. What they need are matchmakers, that is, intermediaries such as venture capitalists, lawyers and accountants.

Intermediaries often specialize in particular industries, working mostly with, say, biotech or information-technology companies. As a result, they have a deep knowledge of the industry’s players; they know whether those players are looking for partners and whether they can be trusted in negotiations. Likewise, they can vouch for the value of a startup’s innovation and the ability of its founders. Hsu and his co-authors find that start-ups that work with intermediaries are more likely to choose cooperation over competition.

Finally, they find that start-ups will be less likely to cooperate if they have to devote a lot of money to gearing up to compete. “As the sunk costs of product-market entry increase, the gains from trade between start-up innovators and incumbents also increase, so start-ups will be more likely to forgo competition,” they point out.

For example, within the car manufacturing industry, an auto plant is massive and costly. The owner has to invest hundreds of millions of dollars before producing the first car. If a start-up develops a new motor, it therefore might be better off licensing its technology to an established carmaker rather than trying to build its own plant from scratch. The drug industry operates in much the same way. Bringing a new drug to market takes about a decade, and requires hundreds of scientists and safety and efficacy tests that last years. Once federal regulators deem a drug safe and effective, the manufacturer needs an army of sales people and a hefty marketing budget to reach out to doctors and their patients.

All this suggests that big, established players have a hefty advantage in making and selling drugs, except that they haven't proved very good at developing new ones, at least not in the last decade. Biotech start-ups such as Trimeris have shown themselves to be more innovative, devising new drugs and techniques. And they have tended to license their inventions to big established players such as Roche. "The probability of cooperation is highest in biotechnology," the researchers state.

What does all this mean if you are an entrepreneur with a company or a manager within a big, established firm? Ideally, it will help you pick the right path, cooperation or competition. But as Hsu points out, no formula fits all companies within an industry. Two of the best-known and biggest biotech companies – Amgen and Genentech, both based in California – partnered early on with established companies. But they invested the earnings from those partnerships in becoming fully integrated pharmaceutical companies.

"Not all biotechs earn their returns by partnering," Hsu explains. "We're not saying one thing is best for everyone. There's variation in commercialization strategies. What we're saying is, 'This is the average behavior and here are the drivers.'"

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