INDUSTRY TRENDS

Spin-offs versus start-ups as business models in biotechnology

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Which is better: to spin a company out of a parent or to start one from scratch? This is a hotly debated question among entrepreneurs, investors, and company managers alike, as the two approaches require different types of efforts, investments, and kinds of people to carry them out, although the criteria for success or failure are the same. It is also a particularly timely one, since biotechnology and pharmaceutical companies are enjoying significant growth at the present time, recent stock vagaries notwithstanding.

With growth come additional resources and the issue of how best to deploy them. At this point, a manager debates the value of internal versus external investments, and—if there is enough critical mass—the question of whether to spin out or start up. Here, we explore the components involved in both strategies.

Internal rates of return

One of the most widely accepted drivers of the decision to start up or spin out is the so-called internal rate of return, or IRR. The IRR is determined to a significant extent by two major variables. The first is the so-called return multiple of cost, i.e., how much the original investment grows. This return is realized when the investment actually exits through an initial public offering (IPO) or sale of the company. The second variable is the time it has taken to realize that multiple. The shorter the time, the better, because this means that the original investment grew several-fold faster.

Given these variables, one might assume that value creation in biotechnology can be a linear process over time. However, this is not what happens in reality, and value in biotechnology goes through time in a nonlinear manner with distinct specific inflection points along the way, each of which is linked to identifiable fundamental events (E) of the company's life. Each of these events has a certain probability of success and failure and will impact the company's value (V) to varying degrees. It is important to realize that unless there are significant E's in a company's life, V remains constant or decreases over time. Therefore, every biotechnology manager tries to ensure that his or her company emits a steady stream of positive E's to the outside world, which signal increases in V, making the company attractive for more investments and collaborations.

The start-up scenario

In a typical scenario, a start-up biotechnology company originates from a group of scientists who decide to capitalize on a scientific breakthrough that is potentially relevant to industry. If the discovery itself can be patented or patents for new discoveries can be generated, a company will be started. Patent granting is the first major moment of value creation: patents represent a way to build a "monopolistic" environment, where market share and profit margins from future sales will be protected. A company at this stage, with granted patents for an industry-relevant application, can be worth around $5–10 million.

The company will then become fully operational, hire staff, lease facilities, and establish the necessary in vitro or other proofs of principle. Assuming there is a therapeutic focus, the next major E will be the selection of a candidate molecule for preclinical testing. This step is usually achieved after one to two years of in vitro testing. A company that has compounds in preclinical testing is usually valued at approximately $15–20 million. Preclinical testing will take between one and three years and, if successful, clinical development will begin. V remains flat between preclinical and early clinical testing, such as phase I trials. Probably the most important milestone on the value creation pathway is the preliminary evidence of efficacy in human testing (interim phase II results). Phase II clinical testing usually takes one to two years and allows initial product positioning: hypotheses on the therapeutic dose, efficacy, and an estimate of the cost of goods for the future marketed drug.

After this stage, a new factor is compounded in the estimate of V: "time to market" of the future drug. This is the first moment where discounted free cash flows-based valuation methods start to be used. Here, V starts to be based upon the promise of the product earning potential, still a few years off and hence discounted by a biotech-specific rate (25–40%). At this stage, V is mostly a function of two major determinants: dollar product potential and probability of getting to the market. In these cases, V can be the $50–80 million range, and the former start-up is now about four years old and well on its way to potential clinical and product success. We are not computing here the

Table 1. Qualitative advantages and disadvantages of a start-up versus a spin-off

Start-up		Spin-off	
Plus	**Minus**	**Plus**	**Minus**
Retention of full upside	No company track record	Preassembled team	Heavy royalties due
Brand new project	Money limitations	Experience	Precontracted options, limiting upside
Full patent life	Troubleshooting, planning, and operations limitations	Faster to operational status	Second choice project
Versatility	Lack of visibility	Time and money preinvestments	Residual patent life
	Time lag to milestone delivery	Good visibility and positioning	Limited potential of third-party partnering
	Abolute reliance on one or very few initial projects	Established networks	
		Established and /or additional projects to tap into	
		Attraction of parents to potential partners	

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additional contributions that more patents issued, enhanced pipelines, and a number of strategic alliances would make to the value (V) of a company. In addition, these numbers will all be slightly different for non-therapeutic oriented companies, such as platform tool companies and the like.

Comparison with spin-offs

How does the valuation dynamics of spin-offs compare to the usual start-up scenario? Some general considerations are shown in Table 1. The value of a company may be affected by every single item shown. The key difference between a start-up and a spin-off is usually speed: a spin-off will be generally faster at achieving its milestones.

In addition, the spin-off starts with the considerable advantage of having a preassembled team of founders and managers, even though in most cases it will still need to be completed with new relevant hires. This team's members are familiar with a large corporate environment and have already faced the organizational and operative challenges of bringing a project forward. More importantly, their experience is directly relevant for the technology and products of the spin-off. In the best-case scenario, the team has been directly responsible for the discovery and development of those products, and hence can better predict the bottlenecks that might be encountered. The team members know each others' strengths and competencies. Task delegation proceeds faster and with more trust. Decision making and, more generally, the establishment of a corporate philosophy, is a rather straightforward process. A spin-off also benefits from technical files already organized, business development contacts already made, and clinical sites already aware of the specific project, previously sponsored by the parent(s). Very often the parent(s) ensure a "pulling effect," thanks to already established networks in the industry. Also, the visibility of the parent(s) can help the rapid positioning and differentiation of the spin-off's assets.

On the downside, a product that has been sitting on the shelves of some pharmaceutical company before being licensed into the spin-off has a shorthened patent life that can heavily limit the product earning potential. Also, a typical spin-off may have prenegotiated and granted rights of first refusal to the parent(s). This limits the upside potential for the spin-off, but, on the other hand, it may also have the effect of signaling to the outside world that the project is an attractive one. This is probably the toughest challenge for the spin-off: to convince investors and other pharmaceutical companies that the in-licensed product has strong potential and is not a second choice.

The potential benefits and downsides of start-ups are also relatively clear. A start-up is unencumbered by existing parent habits and can forge its own identity. The projects are novel and have maximum patent leverageability. The founders typically share a heightened dedication to the common cause, as there is no parental "safety net." Essentially, a start-up is a blank sheet of paper, on which the capabilities and limitations of the individuals involved are the defining factors.

All of these points should be considered in context and are not absolutes by any means. Start-ups can easily fail if egos get in the way or if there is no backup science, and spin-offs can get bogged down in parental politics.

Some spin-off examples

Both large and small companies follow the spin-off path when appropriate and can enjoy benefits. For example, in July 1999, Baxter International (Deerfield, IL) announced that it would be spinning off its cardiovascular business into a new company, later named Edwards Lifesciences (Irvine, CA). On news of the move, the company's stock moved up by 5.4% immediately after the announcements. By placing its $1 billion cardiovascular business, based mostly on heart valve sales, into a spin-off, Baxter hopes to offer an additional vehicle for generating new value, freeing up this particular business to grow on its own merits.

On a smaller scale, Ribozyme Pharmaceuticals' (Boulder, CO) 1999 spin-off, Atugen Biotechnology GmH (Berlin, Germany), announced a significant collaboration on target validation with Roche Bioscience (Palo Alto, CA) a few months after its formation, taking over an existing deal between Roche and its parent. Financial details were not announced; however, the spin-off approach offers a different vehicle for collaboration with prospective partners who may not be as willing to do a deal with the parent company, or who may find the particular circumstances of the spin-off to be more attractive.

Conclusions

Spin-offs and start-ups are different corporate beasts with significantly different risk/reward profiles. The differences are blurred if one considers a spin-off to actually be a start-up in disguise, but here we have taken the simple case of a new company beginning from scratch, comparing some of its characteristics with another company that is spun out of one or more parents. Although on average, a spin-off will achieve its milestones faster, a start-up may offer a larger return multiple to investors, albeit with an equally higher risk exposure when compared to a spin-off. Either way, understanding these differences and the issues surrounding them is important for investors and entrepreneurs alike, and the two types of companies should be judged on their own merits. ///