

Rational financing

In an otherwise crazy market, a successful strategy can be based on knowing when, how much, and from whom to raise cash.

Howard C. Birndorf

One of the toughest questions facing bioentrepreneurs is where to get the financing to build their businesses. For bioentrepreneurs, cash is their company's lifeblood, and biotechnology companies require constant transfusions. What differentiates successful bioentrepreneurs from unsuccessful ones, however, is not only their appreciation of the value of cash, but also a clear sense of when to raise how much cash from whom. Understanding these issues allows the bioentrepreneur to develop a rational financing plan that reduces risk, minimizes equity dilution, and increases the opportunity for success.

When to hit the fund-raising trail

Most budding bioentrepreneurs are unsure of when they should be asking for what. It has been my experience that the easiest way to answer this question is to recognize which stage your company is presently in (see Table 1). The launch of Hybritech—a diagnostics company based on monoclonal antibody technology that I co-founded in 1978—illustrates this approach.

When we set out to launch the company, we only had an idea about how we could develop a product. I benevolently call this the "early-technical" phase of the company because we had no proprietary technology, and really wanted the money to demonstrate proof of principle through basic feasibility studies. With hat in hand, we went out asking for \$178,000 and came back with \$300,000 in seed-round financing.

Based on our success in proving the principle of the business, six months later we were at the "second-stage-technical" phase. We needed money to resolve technical challenges. We collected \$3.5 million in our first round of financing so that we could lease lab space, hire scientists, and begin making the antibodies that we would use in our diagnostics. The most convincing argument we made with the venture capital teams participating in this round was that we would use this money to build a sustainable company. To accomplish this, we needed to prove that we could make our technology work in an industrial setting—outside of the academic lab. The mile-

stone that demonstrated this to our investors was our creation of antibodies against the hepatitis B surface antigen during this phase.

With the creation of this potential product, the company began to come to life as a business. At that stage, we needed to refine

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our business plan so that it clearly articulated how we could build a sustainable and profitable business based on our experience to date. A key element in this formulation was the fact that our efforts had enabled us to file for our first proprietary patent. This patent provided much of the credibility and confidence our investors required to more than double the previous round's investment during our second round of financing. This enabled us to enter the "execution" phase of Hybritech's development, by allowing us to enter the early phases of our product-development process.

How much to ask for

All business activities involve risk, but not all risk is equal. Earlier stage financing partners absorb the greatest risk because they are impacted not only by the risk associated with the current stage of the company, but also by all subsequent stages of risk. For example, the investor who puts in seed money is likely to have to wait until the company goes public before seeing a return. In exchange for accepting this risk, earlier-stage financing partners deserve a greater opportunity for upside return. What this means to the bioentrepreneur is often equity dilution by exchanging a percentage of the company for cash. There may also be other forms of exchanged value, such as product distribution rights for cash that may be bartered for later-stage risk.

Clearly it is in the interest of the bioentrepreneur to minimize this dilution. The challenge is to assess how much time and investment is required to transition from one risk stage to the next. While there is no textbook formula to calculate either the timing or the investment required, I have developed a rule of thumb that the early-technical phase

should take no more than six months and cost less than \$600,000.

This high-risk seed money can often command as much as 40–60% of the company. During the next year, a biotechnology company will need between \$1–5 million to develop its prototypes based on first-round financing. These investors generally receive 40–60% of the company, while earlier equity positions are diluted. From there, as the company enters the execution stage, it is likely to need an additional \$5–15 million over the course of the next 18 months to do early product development. Investors will expect 20–30% of the company in exchange. As the product is refined and prepared for market an additional 2–3 years are required, and here anywhere from \$20–50 million may be spent. Despite the vast sums involved, these investors are closer to seeing a return on the investment, so they will be likely to ask for 25–35% of the company.

The dilution dilemma

The natural tendency is to ask for as little money as possible at the stages of the company at which investors can demand a relatively large equity position for a modest investment. While the entrepreneur clearly does not want to "over-dilute" by raising too much cash too early in the company life cycle, I recommend erring slightly on the side of overestimating cash needs. Industry and economic developments beyond the company's control can create unforeseen difficulty in raising future rounds, while unexpected technical challenges can drain cash reserves and lengthen the time needed to reach the next stage. Entering a financing round in a position of weakness is a clear opening for dilution. In addition, I have never heard of company going out of business because it had too much cash in reserve.

Examples abound of companies either over-diluting or underestimating requirements. It is important that less-experienced bioentrepreneurs leverage the learning of those who have managed businesses at each stage of the funding life cycle in order to avoid the pitfalls of over-diluting or underestimating requirements.

At Hybritech, we demonstrated our naivete when raising the seed round and were fortunate to have selected experienced investors who understood and corrected our

Howard C. Birndorf is chairman and CEO of Nanogen, 10398 Pacific Center Court, San Diego CA 92121 (hbirndorf@nanogen.com).

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Table 1. Matching risk level with appropriate financing and partners.

Risk type	Characteristics	Financing	Timing / Investment	Additional Partners	% Ownership
Early technical	Proof of principle	Seed financing	\$300–600K 3 to 6 months burn	Venture capital & entrepreneurs	40–60
Second-stage technical	Prototypes, resolving technical challenges	First-round financing	\$1–5 million 1-year burn	Institutional investors	40–60
Execution	Early product development	Early mezzanine	\$5–15 million 1–1.5 years burn	Strategic partners	20–30
Market	Final product development and commercial launch	Later-stage mezzanine and public offering	\$20–50 million 2 to 3 years burn	Public markets	25–35

miscalculations before any damage was done. My co-founder and I believed that we needed only \$178,000 to meet our initial commitments and survive until the first round. The experienced financing sources immediately recognized the shortfall and provided \$300,000 in seed capital as opposed to the \$178,000 requested. As a result, we were able to meet all of our commitments and successfully raise our first round six months later.

Whom to ask

Cash may be king, but whom you get your money from can be equally important to the dollar amount. Bioentrepreneurs must think of financing rounds as an opportunity to align their companies with value-added investors. The earlier the stage of the company, the more critical the selection. I team with well-known, well-entrenched venture capitalists in the early rounds, add institutional investors and strategic industry partners in the second-stage-technical-risk rounds, and go to the public markets in the final rounds. This strategy encourages different types of investors to participate in later rounds. For example, venture capitalists will often participate in both seed and mezzanine financing.

Selection of value-added investors is often situation-dependent, but I have experienced certain constants by using this strategy. By working with a large, well-established venture firm during early financing stages, I have found that you not only get a well-funded source of investment capital but an invaluable source of experience and contacts. The larger firms can provide insights into the successful and not so successful business strategies taken by other technology-based companies in their investment portfolio. It is not only this network of information about what is working in the current market, but also the network of contacts that they can bring to the table.

When we move on to later rounds of funding, I frequently use strategic partnerships with industry participants as a method to gain additional value from a financing event. Since every company has limited resources with which to accomplish their

long-term goals, a partner's non-financial assets—whether technical, commercial or operational—can be used to create opportunities that might otherwise be unobtainable.

For example, at Nanogen we recognized that an enormous opportunity for our platform technology was the infectious disease diagnostic market. In order to successfully serve this market, any company would need an in-depth knowledge of the customers' needs and buying patterns, as well as cost-effective access to the purchasing and delivery channel. The cost of internally developing these competencies would be prohibitive.

Nanogen's response? Develop a joint venture with the world's leading infectious disease diagnostics firm, Becton-Dickinson (Franklin Lakes, NJ) to co-develop and distribute next-generation products to serve this market. By creating this business relationship with Becton-Dickinson, we turned a potentially difficult business situation into an opportunity to access market and product expertise while securing cash funding in the form of both equity and cost-sharing. In addition, Nanogen was provided access to a novel technology that can be used both within and outside the scope of the joint venture to extend our technology's reach. This combination has generated even greater value from this "financing event."

Strategic considerations

Raising funds is hard work that distracts senior management from the primary mission of running the company and consequently moving from one risk stage to the next. This is where creative financing strategies can most often save precious time—and sometimes even save the company.

For example, at Gensia we used the "Byers Two-Step" financing strategy named for Brook Byers (Kleiner, Perkins, Caufield & Byers, Menlo Park, CA) to fund both the first and second rounds. This financing "tango" depends on setting obtainable milestones for the company during the first round of financing. When the company successfully meets a milestone, it automatically triggers additional funding for the second round funding at prenegotiated prices. By using the

Two-Step, we were able to focus all of our efforts on meeting our development milestones without the distraction of raising the next round or the risk of over-diluting the stock.

Perhaps the greatest challenge for a bioentrepreneur is to access capital during difficult financial times. It is in these situations that one really appreciates the value of your investment partners. For example, when I was on the board of directors of Ligand Pharmaceutical (San Diego, CA), we were approaching the phase of the business where we would consider an initial public offering to move the company into final product development. At the time, however, the IPO market was closed—almost no deals were getting done. Not accessing significant funds would have been disastrous for the firm. It was here that Fred Frank (Lehman Brothers, New York) stepped up to the plate with a strategy that yanked the investment window open for us. We guaranteed investors in this IPO a two-year, 20% annual internal rate of return, the discount rate at which the present value of the future cash flows of an investment equals cost of the investment. It was a bold move on our part, but it allowed the company to raise \$45 million of badly needed capital in an otherwise closed market.

Conclusions

Recognizing when to initiate funding will help an entrepreneur match risk categories with appropriate financing rounds. Determining how much funding to raise during any given round will help minimize equity dilution while allowing the business to fulfill its business plan. And finally, selecting who to accept financing from can provide significant benefit well beyond the simple value of cash.

But perhaps the most important take-home message for bioentrepreneurs is to not limit the company's finances by what other companies have experienced. If you stay focused on growing your business and associate with true value-added partners, it is likely that an answer will emerge to get you to the next stage. ///