"Virtual" biotech companies may win out

The biotechnology industry requires large amounts of capital to bring products successfully to market. Anything that can limit this requirement without sacrificing opportunities will increase the likelihood both that the capital will be raised and that reasonable returns will be achieved. Good strategy, as well as historical trends, suggest that the "virtual" biotechnology company presents an attractive vehicle to achieve these ends.

In its first decade, the biotechnology industry, goaded by investors, tried to ape the established drug companies by creating fully integrated firms. With the single exception of Amgen (Thousand Oaks, CA), none succeeded. Even Genentech (S. San Francisco, CA), the granddaddy of the industry, with arguably the most varied and potent pipeline, could not sustain its research without cutting so deeply into earnings that its shareholders would have revolted. Consequently, it changed strategies and sold itself to Hoffmann-La Roche (Nutley, NJ) in exchange for the cash to build its business.

Despite this evidence, the Amgen story, which should have been regarded as unique, emerged as the industry's paradigm. Venture-backed biotech companies quickly acquired the accoutrements of the established pharmaceutical industry. Vast sums of capital were raised and large corporate infrastructures were established to build the "next Amgen." A fact often neglected in this analysis is that Amgen had not one, but two, blockbuster drugs. For one, erythropoietin, Amgen enjoys an exclusive patent position to the only gene for a replacement hormone whose use is fully reimbursed under Medicare. The other, granulocyte-colony stimulating factor, is used to combat the most common toxicity of chemotherapy of any cancer. Few drugs enjoy such exclusivity or market niches.

There are now approximately 1,200 biotechnology companies, many pursuing important treatments for the same group of critical illnesses. The winners will have products that provide either unambiguous clinical superiority or substantial cost savings or both. The enormous investments required to determine these endpoints, from research through approval through market competition, are staggering.

Will sufficient capital be available to support 1,200 research groups, 1,200 manufacturing groups, 1,200 clinical groups, and 1,200 quality-assurance groups? Moreover, even if it were, is the aggregate return on this capital sufficient to justify the investment risk? The case of Alza (Palo Alto, CA), perhaps the first biotech company and one that has created many high value-added products, suggests that even a successful product portfolio may not provide the appropriate return on capital. Alza's valuation of $1.7 billion represents a return on $900 million invested over 20 years. The challenge for the industry, therefore, is to manage capital in a manner that provides reasonable returns on investment.

By its very nature, biotechnology has the potential of reducing some of these capital requirements. At the research end, the tools of biotechnology—monoclonal antibodies, gene cloning, and rational drug design—offer the likelihood of more consistent research "hits" than the massive screening paradigms of the traditional pharmaceutical industry. Simultaneously, the consolidation of drug purchasers will decrease the advantages provided by large sales forces, allowing small firms to compete successfully.

Large pharmaceutical companies are not alone in facing the increased disadvantages of size. Falling trade barriers, falling prices of computerization, and greater dissemination of expertise have eliminated the advantages of large companies that previously balanced their bureaucracies, waste, and inflexibility. In biological terms, the excess energy required to run most large entities is no longer matched by any commensurate gain, and their size inhibits "amoeba-like" responses to changes in the market environment.

These trends should be positive for biotechnology. The coalescence of these pressures should drive biotechnology companies to avoid recreating traditional pharmaceutical structures. Biotechnology companies should, instead, become more like expert organizations.

These virtual biotechnology companies will mostly manage and direct, rather than hire and build. New opportunities will be discovered internally or in-licensed, using collaborations, contracts, and strategic alliances to help develop the product. The company should be able to perform a significant number of pharmaceutical functions, but not necessarily on a large scale, and without compartmentalizing and duplicating skills, as occurs in traditional organizations.

Employing individuals skilled in a number of areas would enable the company to shift tasks in response to shifting priorities without requiring separate, permanent, and expensive infrastructure. This has been our strategy at NeoRx (Seattle, WA). The result has been improved output accomplished while expenses were slashed by 40 percent.

Strategic alliances need to be more broadly pursued. So long as antitrust laws are not violated, cooperation in areas of shared need, such as manufacturing, can spread the risk and provide opportunities for several small organizations to work together harmoniously.

Because of compatible cultures, collaborations between biotech companies are more likely to be successful than those with more traditional companies. At the same time, the traditional companies will have to change their expectations to deal successfully with their own changing environment and the growing presence of biotech companies. Roche's hands off approach to running Genentech is an example of a progressive attitude that needs further development.

Virtual biotechnology companies will require less total capital than traditional structures. They will benefit from their greater expertise and flexibility to meet the accelerated pace of change, providing greater returns on investment, while decreasing the risks associated with the fully integrated strategy. ///

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