Biotech bites back

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Area Development Site and Facility Planning
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The industry has rebounded, garnering more investment, enjoying higher sales, creating new jobs in various locations - and scoring attractive incentives.

WHILE DOLLY the cloned sheep is still biotechnology's most-famous poster girl, she is just one of countless embodiments destined to significantly improve humankind's health and environment.

For example, researchers have high hopes that more than 350 biotech drug products in clinical trials - plus hundreds more in development in the United States - will be responsible for saving or improving millions of lives. People are beginning to imagine the heretofore impossible scenario of witnessing the eradication of cancer, heart disease, or even AIDS.

Bioengineering is already being applied to improve the quality and abundance of many foods while decreasing our dependency on pesticides. And biotech environmental products are efficiently cleaning up hazardous wastes without the use of dangerous chemicals. Biotech firms continue to be courted by practically every state in the union: They bring in outstanding brainpower and well-paying jobs; add excellent R&D value to other industries, companies, and research centers; attract large amounts of investment dollars; and provide states with that much-sought-after hightech image.

What follows is a brief overview of the industry and the state incentives most attractive to biotech firms as well as a peek at where many biotechs are flourishing. The State of the industry Last year Ernst & Young LLP (E&Y) released

"Biotech 99: Bridging the Gap," its annual report on biotechnology, an industry that is concerned with advances in our

understanding of plant, animal, and human genetics; cellular and molecular biology;

and how the human immune system fights disease. The overview of the E&Y report asserts that the accelerating pace of discovery - "particularly in the genomics arena" - together with a rapidly aging population and its associated healthcare demands will ensure biotechnology's position as a "leading industry in this century."

Alliances between pharmaceutical and biotech companies "are certainly plentiful as ever," continues the E&Y report, "and likely will be a feature of the industry for a while yet...With over 80 biotechnology drugs on, or on the verge of entering, the market, improvements in the quality of life for many are being realized.

"Meanwhile, all the players and possibilities will be affected by public policy. Quelling public anxiety and shedding positive light on the industry has made the Biotechnology Industry Organization (BIO) a body of some influence in U.S. political circles, while legislation itself is now accelerating drug development and approval times."

However, the report noted that "a significant gap" has emerged. "Investors are loath to recognize and reward the value being created during the developmental phase of a biotech product. As a result, public financing markets have all but dried up for the industry... By September 1998 over 200 of the 327 public companies we tracked had market valuations of less than $100 million."

A comprehensive view of the industry is provided by BIO, a Washington, D.C.-based association that represents more than 860 biotech companies, academic institutions, and state biotech centers in 47 states and 26 nations. Its 1998 statistics show that 1,283 U.S. biotech firms (1 percent more than in the previous year) enjoyed $97 billion in investments ($4 billion more than in 1997). Moreover, the U.S. industry is one of the most research-intensive in the world, as evidenced by $9.9 billion of R&D spending in 1998. Currently more than 153,000 people work in the U.S. sector in high-wage, high-value jobs.

A primary indicator of commercial viability for the industry is sales. BIO reports $13 billion in sales in 1997 - a "dramatic" 20 percent increase over 1996 figures. By major market segment, agricultural biotech enjoyed a 30 percent boost in sales in 1997, followed by chemical, environmental, and services (23 percent); therapeutic (20 percent); supplier (15 percent); and diagnostic (9 percent).

What's the greatest industry challenge? Finding more investment dollars. "It's not that the capital markets have dried up," explains BIO's Patrick Kelly, director of state government relations and grassroots programs. He notes that "billions of venture capital has shifted from our industry, the `darling' of the late '80s and early '90s, to

start up Internet firms." The investment pendulum could easily and quickly swing back, however, as new biotech products begin proving their worth to the world.

New Developments: State Incentives and Tobacco Money

The hottest economic development tool out there, says Kelly, is the "incredibly sexy" loss-transferability state incentive that New Jersey offers.

In 1998 the state passed a law allowing certain high-tech (including biotech) firms to transfer unused tax credits to other companies in the state in exchange for money to fund R&D activities or expand in-state research or manufacturing facilities.

"This means a firm can sell its state tax credits to another New Jerseybased company and pocket the money," Kelly explains. "For example, if your biotech company had $100,000 of tax credits, another firm could purchase them for $75,000, then apply $100,000 against their state tax bill."

Up until now, tax credits were useless to biotech firms that were without products. "Biotech companies need a steady source of capital until they complete the lengthy product approval process and can generate revenue from product sales," Kelly continues, adding that it can typically take 10 to 15 years and up to $500 million dollars to get a new drug to the market. BIO doesn't know yet how to quantify the new program's success. "But it excites the biotech industry so much already that every industry cluster in the nation is considering looking into a similar program."

The biotech industry is also energized by the potential windfall situation created from the $50 billion in tobacco-settlement monies now going out to the states. That's because many people think tobacco funds should be invested in health-related projects.

Michigan has allocated $1 billion of its tobacco settlement over the next 20 years to projects improving its biomedical infrastructure. Half of the annual outlay will go into basic university research, 40 percent to applied research, and 10 percent to business development incentives that help commercialize technology. Numerous states are considering comparable programs.

The Industry's Incentives Wish List

If states want to successfully attract biotechs and related businesses, Kelly maintains, they need to develop competitive incentive programs - especially those involving capital formation - that focus on companies in the early stages of product development.

After studying state legislative initiatives, BIO developed a wish list of the "more useful" capital-formation initiatives it believes states should implement to help the industry and to create jobs and revenue within their borders. Besides New Jersey's tax credit idea, the initiatives include:

Capital access funds: These would encourage states to invest in or support the creation of venture funds that invest in biotechnology with little or no expense to the state taxpayer.

Pension fund investment: Investing "a very small portion" of state pension funds in the biotech industry can provide a pool of much-needed capital, says BIO, "yet only a handful" of state pension funds actively do this.

Capital gains tax cuts: BIO recommends 75 percent of the gain be excluded from taxable income for investors (corporations, institutions, individuals) who hold the stock for at least five years. A roll-over provision would allow investors to defer the tax if they sell the stock and invest in another qualifying company for at least one year.

Net operating loss (NOL): BIO suggests allowing biotechs to carry forward 100 percent of their NOL for 15 years as an offset against future taxable income.

Biotech sales and use tax exemptions and/or deferrals: These would create more R&D capital sources by exempting/limiting the applicable sales and use taxes paid on purchases of R&D and manufacturing materials. As an alternative, the exemption could be restricted to purchases made from instate vendors and/or defer sales taxes only until the company's biotech product is FDA-approved and marketable.

Research and development (R&D) tax credits: This approach encourages R&D expenditures by giving firms tax credits. BIO prefers R&D tax credits modeled on the federal credit, with a rate of 50 percent of the incremental increase in expenditures as compared to the firm's gross receipts.

Investment tax credits: Used to purchase equipment for research as well as manufacturing, these "are more helpful than depreciation deductions or the ability to expense the cost of the equipment," according to BIO.

Incubators/shared research manufacturing facilities: Under this initiative, states are encouraged to help biotech firms gain access to readymade, early-stage incubators and/or shared manufacturing facilities.

Clinical trial loan programs: Programs helping "mid-stage" companies during their

expensive FDA approval process are needed. Low-interest loans to fund "in state" trials at third-party organizations "would provide welcome support to a state's emerging biotechnology industry as well as provide support and high-paying jobs in state medical institutions."

North Carolina: Secret Growth Recipe Revealed

North Carolina ranked number 12 in E&Y's 1999 report identifying the dozen places with the most public biotech companies. (The areas include 1. the San Francisco Bay area, 2, New England, 3. San Diego, 4. New Jersey, 5. the Mid-Atlantic, 6. New York State, 7. Seattle, 8. Los Angeles/ Orange County, 9. Texas, 10. Philadelphia/Delaware Valley, 11. Minnesota, and 12. North Carolina.)

Of the more than 100 biotechnology companies in North Carolina, about two-thirds are located in the worldfamous Research Triangle area (Raleigh, Durham, and Chapel Hill). Perhaps the area's best advocate is the North Carolina Biotechnology Center (NCBC), the nation's first state-sponsored initiative to develop the biotechnology industry.

In its 16-year history the center has given 73 financial awards totaling $6.6 million to 52 biotech firms, says NCBC's Barry Teater, director of public affairs. "In turn, those firms raised $408 million from other sources. During the same time period, the center bestowed $55 million to universities." In 1999 alone, North Carolina universities received 53 grants totaling $2.5 million for research and related biotech activity.

One of its newest programs, the $30 million North Carolina BioScience Investment Fund, primarily invests in early-stage life science companies. Since its debut last summer, the venture capital fund has given to nine biotechs. Another of the center's new initiatives, now in the planning stages, will create the nation's first forest biotechnology institute, which will be located in North Carolina.

Teater says visitors from around the world continually ask for the secret recipe to growing a thriving biotechnology industry.

"I tell them you need a trained work force, business infrastructure, lab space, financing, entrepreneurial support groups, and universities as the engine to drive the industry. Then you need a catalyst to pull together the resources; that's what the center does. Fortunately, we have all that in North Carolina."

Massachusetts: The Concentrated Cambridge Corridor

According to the Cambridge-based Massachusetts Biotechnology Council (MBC), the state has 250 biotech companies employing 25,000 people. Of these firms, "over 50 are publicly-traded companies with a combined $13 billion market capitalization," states an MBC article. "Massachusetts also leads all states in the amount of federal research dollars received per capita, totaling a remarkable $1 billion in R&D funding sent annually by the U.S. government." The two largest biotech firms in the state are Genzyme Corporation and Biogen, Inc., both human healthcare firms.

Boston, a leading worldwide center for scientific and medical innovations, is the site of BIO's annual international industry conference, which is expected to draw 2,000 companies on March 26-30, 2000. "Currently and in the foreseeable future, [Boston] is one of the world's hotbeds of biotechnology," affirms BIO's president, Carl Feldbaum.

Greater Boston's "Cambridge Corridor" has the largest concentration of biotech firms in the world, according to Janice Bourque, executive director of MBC. "They're drawn here not only by the academic centers and medical institutions, but because those places have been able to transfer their knowledge and research into the marketplace. There's also a concentration of venture capital here and in nearby stew York." The highly educated work force graduating from area institutions serves the industry's needs very well, she adds.

"Biotechs like to have high visibility and to be networked; they also like to be close to where other biotech companies are," explains Bourque. "If you think of what's required to set up a facility, it's a long-term commitment - very different from other high-tech firms (Internet, software) which can easily pick up and move."

California: 'Wild West' Opportunities

The biotech industry is flourishing in the Golden State. According to the California Healthcare Institute (CHI), the state has 2,500-plus biomedical companies, and more than 75 universities and research organizations are engaged in biomedical R&D there. CHI represents 185-plus biotechnology, medical-device, diagnostic, and pharmaceutical companies and research organizations.

Three-fourths of the firms concentrate on R&D for medical devices and diagnostics, while the rest focus on biotechnology and pharmaceutical R&D, says CHI. "Large pharmaceutical companies played a key role in the growth and development of California's biotechnology industry through joint ventures, strategic alliances, contract research, and licensing and royalty agreements, investing $3. 7 billion (through mid-1999) in the state's biotech firms... [The state] exports over $4.2 billion

of healthcare-technology products annually."

Moreover, CHI reports that in 1998 the San Diego area received almost 10 times more NIH grant dollars per capita than the national average, "with San Francisco not far behind."

BIOCOM represents the San Diego life sciences industry; specifically, 200 industries and 150 allied firms. The region has 350 to 400 biotechnology, medical device, and bioagriculture companies, says Joe Panetta, president and CEO of BIOCOM. And further north in Orange County, "the area is incredibly rich in medical device companies; they [number] in the thousands. Some are very small, with one or two employees," Panetta notes.

The area's attractions include world-class academic and research institutions plus a highly supportive state government, economic development corporations, and local community. "From the city government down to the not-for-profits, we work to generate a work force that feeds into the industry, even in grades K to 12," says Panetta. "For instance, we're in the process of opening a new charter school - High Tech High - focusing on science and math and featuring biotech labs. We're also working with San Diego State to develop programs for the industry."

Climate is another draw. "You can't play that down," laughs Panetta. "Also, we have a very entrepreneurial climate out here. It's still the Wild West in some sense. People come to look for opportunities - and find them."

Land is limited and prices are high, however, so managing growth will continue to be a challenge for the industry, he says. He believes a local/regional infrastructure - one that includes an accessible international airport and uncongested highways - will address these growth issues and help attract and retain biotechs. One solution might be the creation of a new regional technology manufacturing park. Now in the feasibility-study stage, a facility has been proposed for a three-milewide zone near the Mexican border.

Iowa: "Bread Basket" Takes Biotech to Next Level

The new global economy has encouraged Iowa to take its agricultural industry to the next level. Today, it boasts the fifteenth-largest concentration of life sciences companies in the United States, according to Ernst & Young.

Nearly 180 biotech firms, mainly in agbiotechnology, have put down roots in Iowa, says Bob Henningsen, director of business development for the Iowa Department of Economic Development. Moreover, the state has 750 value-added agricultural firms

that have invested more than $1.3 billion in technology expansion in the last five years. World-class giants are plentiful in Iowa, too. For example, Pioneer Hy-Bred International (recently acquired by DuPont), the world's largest seed company, is undergoing a $32 million expansion. And Monsanto, which explores the connection between food, medicine, and health, is building a $19.5 million lab to complement its existing 65,000-sq.-ft lab/ research center.

Henningsen says some of the most amazing research is being done by small companies with 20 employees or less. Part of their success, he says, is found in shared efforts that "leapfrog technologies. Development time is shrinking tremendously through these collaborations and joint ventures."

Literally thousands of new products are being developed using Iowa-produced commodities. Supporting biotechs with R&D and "get-it-to-market" expertise are the more than 40 research centers scattered throughout Iowa, most notably those at Iowa State University (ISU), the University of Iowa (UI), and the University of Northern Iowa. The young, 40-member Iowa Biotechnology Association also supports statewide activity. Welltrained industry employees are plentiful as more than 20,000 students are enrolled in biotech-related disciplines at ISU and UI.

Current economic development technology initiatives include helping ISU's Research Park build a wet-lab incubator space to help small biotech spinoffs; this will eventually be duplicated at UI. The park and its business incubator, the Iowa State Innovation System, are the center of a comprehensive technology-transfer network carrying technology from the lab to the marketplace.

Bret Weber, marketing manager for Iowa's Department of Economic Development, assists biotechs on site selection. Locally and nationally they have to "look more intently for working industrial space," he notes, "as there's not as much wet-lab space available as there are generic industrial buildings. That's why we've built a group of developers who understand the industry's facility needs."

Since developers can't absorb highpriced biotech facility costs on a speculative basis by themselves, explains Weber, the state is working with them and with university communities to find and/or create 10,000 to 50,000 square feet of lab space for future projects.

Biotech Industries Worldwide

Canada: The Canadian biotech industry boasts more than 282 firms employing just under 10,000 nationwide. Almost half are concentrated in the healthcare sector; agriculture represents 22 percent. Quebec has the largest number of companies

(Montreal is Quebec's biopharmaceutical sector epicenter), followed by Ontario and British Columbia. More than $1 billion has been invested by foreign national firms in Quebec's biopharmaceutical sector since 1992. Major companies include Pfizer Canada, Merck Frosst, Phoenix International, Quintiles, Wyeth-Ayerst, AstraZeneca, and RTP Pharma.

Europe: EuropaBio is the voice of European bioindustries, representing 47 corporate members operating globally and 12 national associations (700 firms). Germany ranks as a major industry leader with an estimated 1,250 biotech or biotech-related firms (up 300 percent since 1995), right behind the United Kingdom.

For more global information about the biotech industry, contact the International Bioindustry Forum. Its member organizations are: EuropaBio (Europe), Japan Bioindustry Association, BIO (USA), and the Industrial Biotechnology Association of Canada.