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Chasing Bioscience
Arizona's emphasis on gene-based therapy could be the state's best bet

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Three years ago, advocates for the bioscience industry touted the creation of the Arizona 21st Century Competitive Initiative Fund as proof that Arizona had emerged as a market primed for bioscience innovation.

The $100 million grant program was designed to make Arizona a more attractive location for bioscience companies as they scan the globe, looking for cities in which to expand their operations. The goal was to make Arizona competitive with other states that were on the hunt to bag the higher-paying jobs in the life sciences sector and the additional tax revenue that is generated by successful drug or biotech firms.

Now, though, lawmakers have gutted the program as they confront a massive budget shortfall, leaving zero dollars in the fund for this year and considering another fund sweep in fiscal 2010, which is the final year of state funding under the 2006 legislation. And industry experts say it's just the latest example of a general hesitance by state officials to commit fully to sustaining the incentive programs that would put Arizona on the short list of bioscience companies looking to branch out.

National rankings place Arizona around 30th among the states when comparing the number of firms located here, the level of venture capital investments made annually and the number of new technologies patented. But the real fight for attracting big names in bioscience and the tax revenue and high-paying jobs that come along with them occurs mostly among states ranked in the top 10.

Economic development specialists who act as intermediaries between local and state governments and large biotech firms say brokering a deal in most cases requires a comprehensive package of incentives that can include subsidized infrastructure, low corporate taxes, government land sold at below market value, special tax breaks, etc.

If Arizona isn't using all of the tools at its disposal, then it simply won't be as attractive to firms that can just as easily locate in states that traditionally have extended themselves further to attract high-tech firms.

Even the 21st Century Competitive Initiative Fund, which was supposed to receive $25 million per year from fiscal 2007 until fiscal 2010, didn't shatter any molds. California, for instance, had been offering grant funding to biotech companies through special divisions in its public university system every year since 1985. North Carolina has used the promise of state-subsidized grants to attract biotech firms to the state for nearly a decade. And Michigan lawmakers in 2007 voted to merge two grant funding streams totally more than $200 million annually, which had existed independently in the state for years.

It wasn't a good sign when the 21st Century fund was cut slightly two years ago. But the full retraction of money this year could send the wrong signal to business considering a move to Arizona.

Bioscience companies can spend decades researching a product before introducing it to the market, and they make long-term commitments when they launch a new research lab or manufacturing plant. So companies want to make sure the state they decide to locate in is willing to make a similar commitment.

But lawmakers sent a different message when they voted to sweep the state's primary research program two years after it began, according to bioscience advocates. And the state's lukewarm support likely will not be enough to convince the country's biggest biotech firms to relocate.

"Without the political will to sustain the biotech efforts for more than one political generation, it is going to be impossible to sustain the industry," said Mathew Gardner, president of BayBio, a nonprofit advocacy group for biotechnology in the San Francisco Bay Area.

When the stop-and-go policies of states discourage biotech businesses looking to relocate, other states step in to claim the prize.

South Carolina was able to lure Pilot Therapeutics away from its founding location in North Carolina seven years ago by prioritizing the firm's growth more than its neighboring state. South Carolina officials approved a $17 million incentive package for Pilot Therapeutics during a time when its research funding was dwindling, a move that prompted the company to move 300 miles south.

And it is not just other states that Arizona has to compete with. Biotech firms scan the globe for the most economical location, forcing states to compete with countries such as France and Germany as well.

In 2004, when bioscience giant Genentech was looking for a city to locate a new manufacturing facility, it starting a worldwide bidding war. But the incentives battle was waged on a local level as well as cities across the U.S.; even some cities within the same state tried to one-up each other's incentive packages. Vacaville, Calif., wound up with the facility after out-bidding Los Angeles and San Diego.

Research grants are only one of the tools used in the locational tug-of-war. But Arizona is also playing a game of corporate follow-the-leader in other areas, introducing incentive measures decades after states such as California, Massachusetts and Michigan, and failing to provide biotech firms with much-needed capital investments.

For example, Arizona state legislators instituted a research and development tax credit in 1993, a full five years after California officials approved a more generous R&D tax credit.

Arizona businesses can tap into the research resources at the University of Arizona, Arizona State University and Northern Arizona University. Yet Boston is the home of two world-renowned universities — Northeastern University and Boston University –four medical schools, 20 teaching hospitals and over 500 life-sciences companies.

Arizona bioscience venture capital investments totaled $278 million in the five-year period from 2002 to 2007. Venture capitalists in Massachusetts contributed $760 million to start-up bioscience companies in just 2006.

Arizona's biotech industry grew by more than 100 firms in 2006. Approximately 770 firms had laid down roots in Arizona by 2007. But, for comparison purposes, the first biotech companies broke ground in San Francisco more than 30 years ago, and the Bay Area is now home to more than 1,300 firms associated with the life sciences sector.

"Arizona has made great advancement in recent years," Gardner said. "But you can't say you want to become like California in only 12-months. It takes 20 years."

And bioscience advocates hoping to catch up with states decades ahead of Arizona find themselves reaching for a moving target. While Arizona inches closer to meeting the level of incentives provided as far back as the 1980s by states such as California and Massachusetts, those same states continue to dedicate even more resources, leaving Arizona behind in the effort to attract bioscience companies.

Last year, for example, when lawmakers in Arizona voted to reduce the funding for the 21st Century Fund, Massachusetts Gov. Deval Patrick signed legislation dedicating $1 billion during a 10-year period to his state's bioscience industry. The Life Science Initiative included $500 million in capital funding, $250 million in granting authority and $250 million in tax credits.

Arizona's late entry to the bioscience boom, said John Murphy, president and CEO of the Flinn Foundation, a philanthropic organization that provides grants for bioscience innovation, makes it nearly impossible to compete head-to-head with the most competitive states.

"We are too late to the game," Murphy said. "These other sites have at least a 10- or 15-year head-start."

Still, Murphy and other biotech advocates in Arizona believe the state could become a national and even international presence if it devoted its efforts to carving out an industry-niche.

"We have a strength that we think can be the basis of pull vaulting ahead," Murphy said. "These areas are in molecular diagnostics for early identification of diseases."

The majority of Arizona's biotech companies focus on the early detection and treatment of gene-based diseases, such as cancer, Alzheimer's and Parkinson's. The Translational Genomics Research Institute (TGen) is at the heart of the targeted field.

TGen is a nonprofit organization that opened shop in Arizona seven years ago after the state committed $500 million for five years to the company and the City of Phoenix took on the cost of constructing TGen's downtown facility.

Industry advocates said the presence of TGen provides the state with a much-needed bioscience core that the larger, for-profit firms look for when selecting new sites.

"That is how you create the critical mass. You recruit top names and people will follow them," Murphy said. "But we have to sustain this because if you lose a researcher, that is 40 people that go with him."

The top researchers at TGen, including Jeffery Trent, the company's president, were recruited by Arizona in an effort to "leap frog" into competitiveness in 2002.

Before coming to Arizona, TGen researchers had worked on the Human Genome Project with the National Institutes of Health in Maryland. The project successfully isolated thousands of genes and mapped the sequence of proteins that make up the human DNA.

"TGen is the key to Arizona's bioscience future," Murphy said.

TGen has patented approximately 10 new products since coming to Arizona. The company was recognized earlier this year for its efforts in cancer research. Daniel Von Huff, a leading expert in pancreatic cancer, leads the firm's nearly 40-member cancer

research staff. Researchers work on 35 different studies in an effort to identify anti-cancer agents.

MaryAnn Guerra, the CEO of Catapult Bio, a TGen-splinter firm, said TGen officials agreed to relocate to Arizona because the state provides companies an ideal environment to develop alternative research methods.

“Boston and California are wonderful, but there are a lot of silos there and it can be hard to break down the old ways of doing things,” she said. “Arizona realized they all had to work together and couldn’t afford to be silos. That is to the advantage of everyone who moved here.”

Most Arizona companies are still in the research stages of production. But at least one business has caught the attention of the international community.

Ventana Medical Systems, Inc., a Tucson-based medical device manufacturer that employs more than 600 people, was acquired by Roche, a Switzerland-based health care research firm, early in 2008.

“Roche realized these guys (Ventana) had a breakthrough and knew that was where the market was going,” Murphy said.

Roche is one of the largest and oldest pharmaceutical companies in the world, and last year it made another significant investment by acquiring Genentech, one of the most established biopharmaceutical firms in the United States.

After the two purchases in 2008, Roche made Ventana the headquarters for its global business unit focusing on diagnostics. Roche/Ventana then bought 17.1 acres of land to expand its research campus.

Roche is expected to invest $100 million in Ventana in 2009, more than doubling what the company spent in 2007.

The biggest threat to Arizona’s fledgling bioscience industry is a shortage of available seed money and venture capital, Murphy said.

Start-up bioscience companies rely heavily on private and public investments in the early stages of development before they are ready to sell their developed products on the market. Companies can spend as many as 12 years developing a biotech product before it can be brought to market. The development of some products, especially new pharmaceuticals or medical devices, can put a company billions of dollars in the red.

The acquisition of venture capital is difficult in any state or market. Gardner said the phenomenon known in the industry as “the valley of death” has widened across the

nation during the last five years. The phrase “valley of death” refers to a funding gap after federal and university funding for preliminary research ends and before investors are willing to invest in a promising product.

Investors who are uncomfortable putting money into companies in the beginning stages of product development make it difficult for new business in California as well. But the number of investment firms located in the area helps counteract the restricted money flow, Gardner said.

“This is still the area that if you have a new idea, it can be funded here,” he said.

Arizona, though, has no more than a half-dozen private venture capital firms for new bioscience businesses to turn to. Without a surety that there will be available capital down the road, biotech firms will put on hold researching new products and building new facilities.

“We are really far behind in venture capital,” Murphy said.

The shining star in Arizona’s otherwise run-of-the-mill biotech incentives package is the newly increased tax credit for research and development expenditures.

Arizona lawmakers voted to approve an increase in the state’s R&D credit last session. Beginning next January, companies can receive as much as a 24-percent tax credit for the first $2.5 million in qualified expenses.

Companies that spend more than $2.5 million on research projects also will be able to apply for an additional 15-percent tax credit on all expenses exceeding the initial $2.5 million cap.

In 2018, the tax credit rate will revert back to the current levels of 20 percent for the first $2.5 million and 11 percent for any additional expenses in January 2018.

Arizona’s new R&D credit is more generous than many states, including Massachusetts and California, which offers a 15 percent credit for in-house research. Massachusetts’s credit, though, is permanent.

Biotech firms interested in locating in Arizona may also benefit from the state’s Angel Tax Credit, which allows investors in start-up companies to claim an income tax credit of up to 35 percent of the investment amount over three years.

Biotech firms also could be eligible for additional tax credits depending on the specific nature of their business. For example, money spent on training Arizona employees and building manufacturing facilities might also qualify the company for a tax incentive program.

More than 30 additional states offer R&D and Angel Tax credits. But many of the states at the forefront of bioscience development offer direct funding for start-up companies in the form of state-subsidized grants.

California has myriad research options available to start-up and existing biotech firms. One of the most attractive grant programs provides as much as $300 million for product development to firms that partner with university researchers. The University of California Discovery Grant program began in 1996 and disperses $60 million in grants annually.

The state also provided the California Institute of Regenerative Medicine with $150 million in 2007 to help fund grant programs for research in human embryonic stem cell science.

The majority of grants historically are offered to university researchers, where the bulk of R&D is conducted in Arizona. Project research funded by grants since the 21 Century Fund's 2006 debut include efforts to make photovoltaic technology more affordable, identifying and treating the causes of childhood asthma and producing a commercially viable test to distinguish between a common Staph infection and a more virulent strain requiring advanced treatment.

The fiscal 2009 budget revisions supported by House Speaker Kirk Adams originally left the 21st Century Fund untouched. But Rep. Sam Crump, a Republican from Anthem, and a handful of other Republicans pushed for the fund to be swept.

Crump and his supporters delayed the passage of the budget revisions in January and eventually succeeded in pulling the funding.

Most of the grant money provided by the state to support biotech firms already had been awarded when the Legislature called for the money to be returned, sparking the question of whether lawmakers had the ability to revert the money to the general fund.

Senate President Bob Burns told the Arizona Capitol Times that the Governor's Office has taken the lead in determining whether the 21st Century Fund can be swept.

"If there are services that have been rendered and people haven't been paid, I don't see how you pull that money out of there," Burns said just days after the fiscal 2009 budget was revised.

The loss of the grants could be a large roadblock for the advancement of the industry, said Bob Eaton, president of the Arizona Bioindustry Association.

“A lot of the programs Science Arizona funded had an impact on companies by helping to fund research,” Eaton said. “The 21st Century Fund was an important element in diversifying Arizona’s economy and building up the bioscience industry.”