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Biotechnology in West Virginia

What will it take to realize the economic development benefits?

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Although we often think of biotechnology as a recent development, it has been around in some form for thousands of years. Think about it. Throughout history, people have used biological processes to make things to improve their lives. They have planted crops, bred livestock, and made bread, wine and cheese. More recent examples of biotechnology advances include pasteurization and vaccinations.

But during the past 30 or 40 years, the term has come to mean much more. And what biotechnology could mean for West Virginia's future is significant indeed.

According to the Biotechnology Industry Organization (BIO), "new" biotechnology can be defined as the use of cellular and bio-molecular processes to solve problems or make useful products—it is a collection of technologies that capitalizes on the attributes of cells, such as their manufacturing capabilities, and puts biological molecules, such as DNA and proteins, to work for us.

And biotechnology is big business. According to BIO, U.S. healthcare biotech revenues alone have increased from $8 billion in 1992 to nearly $51 billion in 2005. And there is no end to this growth in sight.

Can West Virginia benefit from this boom?

Absolutely. Our big opportunity in biotechnology is building on our existing strengths.

West Virginia University (WVU) and Marshall University (MU) have world-class scientists already working at the forefront of research to use biotechnology to improve the lives of people not only here at home but across the country and around the world. They are not only making names for themselves internationally in the fields of biometrics, forensics, biomedicine, environmental sciences, crop sciences and alternative energy sources, they are also training students—the research and manufacturing workforce of tomorrow.

But the key to a successful biotechnology enterprise is not just the discovery.

In fact, the discovery is just the beginning. Creating knowledge is the vital first step, but the real economic development payoff comes when the products that result from the discoveries are patented, startup companies emerge and the related manufacturing facilities are built. And the Vision Shared Technology-Based Economic Development (TBED) committee, directed by Dr. Kevin DiGregorio, is working on strategies and incentives to ensure these facilities are built here in West Virginia.

Manufacturing facilities mean high-paying jobs, and it is important to note the jobs created by research are not just for scientists. Technical support positions are required at all skill and education levels. It is estimated, for example, that each bioscience job generates an additional 5.8 jobs in the national economy.

Studies also show that 75 percent of all technology-based startup companies stay in the state where they originated. At least three biotechnology companies recently formed in West Virginia—Protea Biosciences Inc., Progenesis Technologies LLC and Vandalia Research Inc.—have their roots in research conducted at WVU and MU. These companies are growing, adding employees and building production facilities. But we need many more of these high-tech companies to make a significant impact on our state's economy.

Some recent good news for West Virginia came in the form of a study released in June by BIO and Battelle. According to the study, 'Technology, Talent and Capital: State Bioscience Initiatives 2008," employment in the state's drug and pharmaceuticals subsector increased by more than 68 percent between 2001 and 2006. In the same period, employment in the medical devices/equipment and the research, testing and medical laboratories subsectors in West Virginia increased by more than 20 percent and more than 14 percent, respectively.

But what must we do as a state if we are to truly capitalize on the economic development opportunities presented by biotechnology?

Quite simply, we must stay focused on knowledge creation and building intellectual capital as the stepping stones to a brighter future for all West Virginians.

We are off to a good start. Seeded in large part by the successes of biotechnology research funded through the National Science Foundation's Experimental Program to Stimulate Competitive Research, policy makers have wisely begun to progressively increase the state's investment in research—in 2004 through the creation of the Research Challenge Fund; in 2007 with the $10 million Eminent Scholars Recruitment and Enhancement program; and earlier this year with the $50 million "Bucks for Brains" research trust fund to help WVU and MU attract top scientists and their labs.

Our universities are also building facilities dedicated to biotech research. MU dedicated its state-of-the-art $48 million Robert C. Byrd Biotechnology Science Center in 2006. WVU plans to open its new Biomedical Science Research Lab later this year, and is also scheduled to substantially complete a $30 million building to house the Blanchette Rockefeller Neurosciences Institute, with space to support the research activities of up to 125 scientists and staff.

This increased funding and the new university facilities are certainly important steps forward for West Virginia, but they are just the start, given that we still rank relatively low in biotech job creation.

The research trust fund is perhaps the most forward-thinking investment the state has made in recent memory and we are nurturing the idea of knowledge creation more than ever before. Now we must chart a course to capitalize on this momentum and continue investment in research infrastructure. Research infrastructure—namely, researchers and laboratory facilities—is the base upon which we can build our state's new, prosperous economy.

Vision 2015—the state's strategic plan for science and research—calls for the state to grow its research enterprise by investing $250 million over 10 years to recruit scientists and engineers, construct state-of-the-art science and engineering facilities, increase the number of West Virginia scientists and engineers with advanced degrees and develop new technology-based businesses. If the plan is fully funded, it is projected the investment would result in a cumulative economic impact of $3.3 billion and 33,000 new jobs.

The report by BIO and Battelle concludes that the nation's bioscience industry continues to grow as states and regions vie to attract high-wage jobs.

West Virginia can be an important player in this national growth, but achieving the goals in Vision 2015 will require us to stay focused on the horizon. The economic development payoff will not come overnight and will require ongoing investments and attention.

The good news is that we have a strong foothold. The opportunities are here.

We have carved out unique niches in biotechnology research and are beginning to make significant investments in infrastructure. Our world-class scientists are not only making discoveries that could change the lives of people all over the world, they are also training students to be tomorrow's leaders in our high-tech economy. It is up to us to seize the opportunities before us, continue to invest in our research enterprise and, ultimately, reap the benefits of a brighter economic future.

The report: "Technology, Talent and Capital: State Bioscience Initiatives 2008" and individual profiles of the 50 states and Puerto Rico are available at http://www.bio.org/local/battelle2008.

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