

North Carolina Biotechnology Center...

We make connections in these four areas to commercialize life-science ideas and create jobs for North Carolina:

Research & Innovation...

...are where it all starts, so the Biotech Center helps to move great life-science ideas into the marketplace. For example:

Grant Helps Turn Tall Grass to Long Green

The pathway to life-science success in North Carolina can take many twists and turns, like the work of Thomas Ranney, Ph.D., a professor of horticultural science at North Carolina State University's Mountain Horticultural Crops Research and Extension Center, near Asheville.

Ranney received a Collaborative Funding Grant from the Biotech Center in 2006 to commercialize a sterile or seedless line of the popular ornamental landscape grass *Miscanthus* – an Asian plant that some fear could otherwise become an invasive pest, like kudzu.

The \$90,000 grant, supported through a Biotech Center partnership with NCSU's Kenan Institute, required a commercial partner — in this case, the Research Triangle area's Hoffman Nursery.

It's producing results. Hoffman has a target to grow and sell its unique, non-invasive *Miscanthus* in 2012. Ranney is also developing a version for biofuels.

That grant is translating into new jobs for North Carolinians — and new products for people everywhere.

ncbiotech.org/research



Rebecca Howell (L), Joanna Cooper, Ben Bahr, Ph.D.

Workforce & Education...

... are fundamental to growing North Carolina's knowledge economy. Here's one of the many ways the Biotech Center boosts N.C. students — from middle schoolers to university postdocs:

Fellowships Propel Research Futures

It's the old Catch-22 — you need experience to get a job, but you can't get experience without a job.

Young scientists can build that experience through the Biotech Center's Undergraduate Research Fellowships — \$5,000 awards to support research experiences for science and engineering majors. These awards each summer give university students an opportunity to try bench science, and their academic or company mentors gain new ideas.

Joanna Cooper, a University of North Carolina at Pembroke student, earned one of the fellowships in 2010. She studied with internationally respected molecular biologist Ben Bahr, Ph.D. Her project explored the underlying cause of a group of inherited metabolic diseases.

The next year, Rebecca Howell, who left the real estate industry to become a UNCP student, won the award, and is also studying in Bahr's lab.

Prof. Bahr is himself a Biotech Center success story; he's one of the 50-plus world-class experts we helped recruit to North Carolina universities. Bahr's commitment to mentoring young scientists is another manifestation of our programs' impact on the statewide biotech community.

ncbiotech.org/training

Biotech Growth Companies...

...require funding to survive their lean early years. One source of support for these major job engines is a Biotech Center loan:



Piedmont Pharma Spins Loan into Partnerships

A decade ago Piedmont Pharmaceuticals started on a path to commercialize a product that kills head lice.

Now, while the Greensboro firm is working toward U.S. Food and Drug Administration approval, it is licensing its unique, patented parasite-killing system to companies that are selling it around the world. Its R&D has also made it a hit with big-name animal-health collaborators, including Pfizer and Bayer.

Piedmont's path to success included a well-timed \$150,000 Small Business Research Loan from the Biotech Center.

Eric Barnett, M.D., executive vice president of business development, says Piedmont is excited to be entering a critical growth phase. But he says it might not have survived its start-up years without that early loan.

"It's sometimes not so much the dollar amount of these Biotech Center loans that makes them so important. It's their timing. They buy a young company time to get to the next level. And the vetting involved helps recipients demonstrate their investment worthiness to others."

— Eric Barnett, M.D., Executive Vice President of Business Development,
Piedmont Pharmaceuticals

ncbiotech.org/growth

Economic Development...

... reaps an immediate reward in jobs for North Carolina. The Biotech Center's life-science expertise is a critical contribution to recruitment projects, including:

N.C.'s Tobacco Legacy Turns Over a New Leaf

Time was, a new tobacco company in North Carolina wouldn't be international news.

We've turned over a new leaf with Medicago's new \$42 million facility in Research Triangle Park. It's designed to produce new vaccines quickly using tobacco plants grown in greenhouses.

Recruitment specialists from the Biotech Center worked with partner organizations to show the Canadian company why North Carolina would be the right home for its new facility.

Medicago execs liked what they saw.

Already a world leader in vaccine research and manufacturing, North Carolina is a business-friendly state with a highly trained workforce and an unparalleled quality of life. We're home to the nation's third-largest life-science sector — some 530-plus companies employing about 60,000 people. That includes the biggest names in pharmaceuticals and agriculture.

North Carolina. International news in the life sciences.

ncbiotech.org/WhyNC



...Creating Biotech Jobs

Did You Know?

- Willow bark, yarrow, wild ginger — North Carolina's mountain west is home to these and 2,500 species of plants, many with potential medical uses. **Bent Creek Institute** in Asheville, established with help from the Biotech Center, includes the first North American germplasm repository to help protect and study precious regional flora.
- In 2003, the Pillowtex textile mill near Charlotte went bankrupt, displacing all 7,650 workers — the largest mass layoff in industry history. Today, that 6-million-square-foot, old-economy site is being reused in the \$1.5 billion **North Carolina Research Campus**, where scientists study foods, nutrition and health.
- It once was science fiction. Now, scientists in North Carolina can take a few cells from a human body and coax them to become new organs and tissues. Regenerative medicine is making North Carolina a "body-building" capital, thanks to scientists like **Anthony Atala, M.D.**, at Wake Forest University. Children are already thriving with new bladders made this way, and more breakthroughs are near.
- Spider silk is five times stronger than steel, 10 times more elastic than Kevlar. But spiders can't be trained to produce it in useable ways. Scientists at Charlotte biotech company **EntoGenetics** put spider genes in silkworms to spin spider silk — a bulletproof combination with huge potential.
- Pizza-topping **button mushrooms**. Farm-pond **duckweed**. **Tobacco leaves**. They're all being used in North Carolina as living factories, producing vaccines and other medicines faster and more efficiently than ever before.



More Ways to Connect...

Keeping it Local

The Biotech Center extends from its Research Triangle Park headquarters into five regional offices — in Asheville, Charlotte, Greenville, Wilmington and Winston-Salem. Professionals in these offices link unique and diverse life-science stakeholders with programs from the mountains to the Outer Banks.

ncbiotech.org/statewide

Sharing Intelligence

The Biotech Center's Library is the Southeast's only dedicated source for life-science business information. Our specialists direct entrepreneurs to valuable business intelligence via free self-service tools or through fee-based research services. They also track the industry through our bioscience company directory, available for free on our website.

ncbiotech.org/library

Introducing People and Ideas

The Biotech Center supports more than 20 Regional and Intellectual Exchange Groups across the state — valuable forums for scientists and business people to swap ideas on topics of mutual interest.

ncbiotech.org/ideas

Facilitating Meetings

The Biotech Center headquarters includes the Hamner Conference Center, tastefully designed meeting spaces that accommodate a wide range of gatherings. Our staff provides a full range of meeting support, including A/V, food and beverage services.

ncbiotech.org/hammercenter

Bringing Sectors to Life

The Biotech Center keeps an eye on evolving sectors to maximize job-creation opportunities. Our AgBiotech Initiative is building on North Carolina's agriculture and biotech strengths to develop ideas that can heal and fuel as well as feed the world. Through our Centers of Innovation in advanced medical devices, nanobiotechnology, marine biotech and computer-driven drug discovery, academic and industry partners work together to commercialize products.

ncbiotech.org/sectors



Return on Investment: Jobs and Growth

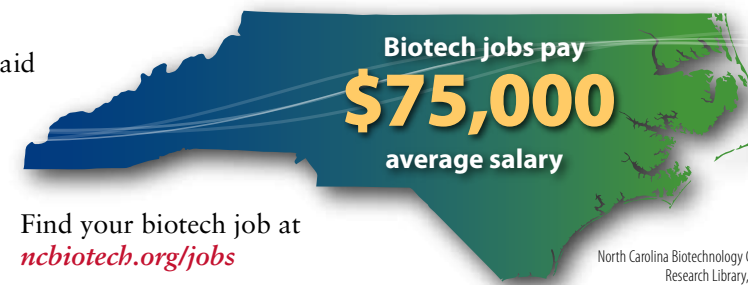
The Biotech Center is instrumental in writing many success stories, some beginning with the Center's founding in 1984. Each story reflects a reality: North Carolina life-science employment growth leads top biotech states.

We asked a well-respected outside agency — the Battelle Institute — to write its own review. Here are some of the metrics on the significance of the life sciences to the state's economy:

- **\$64.6 billion** in annual economic activity
- **226,823** total jobs
- **\$1.92 billion** in state and local taxes paid each year

Our programs, outlined in this brochure, are designed to leverage additional dollars, activities and jobs. Some of our highlighted results include:

- **\$1** in Biotech Center grants leverages **\$41** to commercialize biotechnology research
- **1,700+** teachers use ideas from our summer workshops to inspire **600,000+** students
- **\$1** in Biotech Center company funding leads to **\$103** in additional funding



**North Carolina
Biotechnology Center**

ncbiotech.org

The Biotechnology Center is a private, non-profit corporation funded by the General Assembly to provide long-term economic and societal benefits to North Carolina through support of biotechnology research, business, education and strategic policy statewide.

With offices in Asheville · Charlotte · Greenville · Research Triangle Park · Wilmington · Winston-Salem



*We Make the Connections
that Create Biotech Jobs*

How Can We Help You Connect?

Images: BTEC/NCSSU, Hoffman Nursery, Medicago, Inc., NCSSU General Administration, North Carolina Research Campus, Talents Biotherapeutics, Wake Forest University, UNC at Chapel Hill/Dan Sears, UNC Pembroke/Paul Rubiera, UNC Wilmington/Maribian/Jamie Monard, iStockphoto.com 11-036 CA 05/2011