

NCBIOTECH



North Carolina Biotechnology Center

Creating Impact

Transforming Life Sciences and North Carolina
Annual Report 2016–17

Catalyzing Growth in North Carolina

650

companies employing

63,000

people

North Carolina's **life science sector**

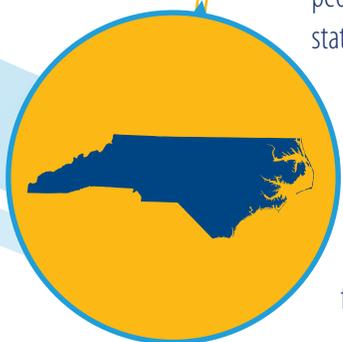
continued to grow robustly in 2016-17, bringing new companies, high-paying jobs and opportunities statewide.

North Carolina now has more than 650 life science companies that directly employ 63,000 people and account for 260,000 jobs overall. Life science companies provide \$2.2 billion in state and local tax revenues. Roll it all up, and North Carolina's life science sector generates \$86 billion in total economic impact.

NCBiotech continued to sow the seeds for more industry growth in 2016-17.

The Center awarded \$4.2 million in loans to 17 young companies, helping them develop and commercialize products and technologies, and positioning them for follow-on investments from other sources.

Thirty-nine companies previously funded by **NCBiotech** parlayed the support into more than \$200 million in follow-on funding from grants, private investments and stock offerings in 2016-17.



Learn more about NC's life sciences | ncbiotech.org

NCBiotech's team of experts fund, mentor, convene, lead, advise, connect, inform, serve, recruit, partner — continually transforming NC's global life science leadership.

PARION

In May 2017 Durham's Parion Sciences sold the rights to its experimental dry eye therapy for a potential \$535 million to Shire, a global pharmaceutical company.

Parion, a 1999 UNC spinout, develops ways to restore patients' mucosal surface defenses in epithelial tissues, such as those in the lungs and eyes. NCBiotech provided \$300,000 in early funding to help Parion's research.

It was a good investment. Two years ago Parion sold rights to two of its experimental cystic fibrosis drugs for as much as \$1.2 billion, plus royalties, to Boston's Vertex Pharmaceuticals, a leader in the fight against CF. The NIH and Cystic Fibrosis Foundation Therapeutics also provided funding.

So Parion's workforce keeps growing — now around 20 employees.

TRANA DISCOVERY

Cary-based Trana Discovery and global agricultural giant Bayer signed a collaboration agreement in January 2017 to use Trana's unique disease-fighting technology to kill fungal disease in crop plants.

NCBiotech helped Trana spin out of NCSU in 2001, then provided \$310,000 in loans. Millions of dollars in venture and other outside funding followed. At the time, the company was focused on human therapies to fight viral and bacterial infections.

Now, big ag companies like Bayer need new weapons like Trana's to bypass "good bugs" in the soil microbiome while targeting the nasty ones.

PIEDMONT ANIMAL HEALTH

Greensboro-based Piedmont Animal Health received a \$150,000 start-up loan from the North Carolina Biotechnology Center in 2003 and has been growing ever since.

Now the privately held company has 24 full-time employees and about 100 contract employees working on its behalf. And the home-grown developer of health products for dogs, cats, and horses recently gained a strategic equity investment from the life science division of Sumitomo Corp., the global Fortune 500 company based in Tokyo.

The Sumitomo group has 107 locations in 65 countries.

WHITE LABS

Asheville's newest life science company, White Labs, produces pure liquid yeast strains for brewers.

It all started in 2012 at Science in the Mountains, an NCBiotech program to highlight western NC's unique life science resources. NCBiotech representatives suggested to CEO Chris White that he add an Asheville site to his California business. Follow-up communications and area economic development support sealed the deal. White will soon add its 65th employee.

SHENGMIN SANG, PH.D.

Shengmin Sang, Ph.D., has been doing well since receiving a \$75,000 NCBiotech grant in 2011 to help him study aspirin and natural food compounds like ginger.

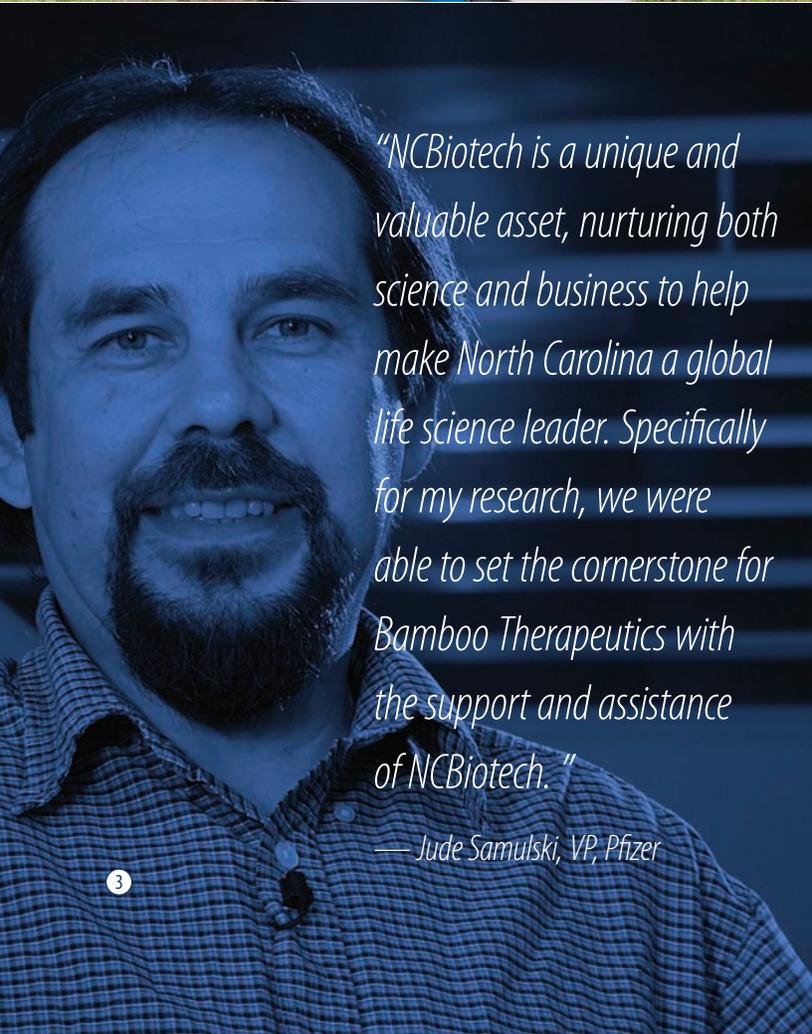
His work at NCA&T labs in Kannapolis led to a patent license to a Michigan pharma company. In March 2017 Sang won the top prize at Triad BioNight, a competition co-sponsored by SoBran Bioscience and NCBiotech's Piedmont Triad Office.



260,000
jobs overall



Sang



"NCBiotech is a unique and valuable asset, nurturing both science and business to help make North Carolina a global life science leader. Specifically for my research, we were able to set the cornerstone for Bamboo Therapeutics with the support and assistance of NCBiotech."

— Jude Samulski, VP, Pfizer

PFIZER

North Carolina's textile companies are known for making great jeans. Now, genes share that spotlight.

Gene therapies are today's huge economic and health-care story. Fortunately, **NCBiotech** has spent almost 25 of its 33 years of existence planning for this moment.

In 1993, UNC recruited Jude Samulski, a pioneer in cloning a virus essential to gene therapy, from the University of Pittsburgh with the help of a \$430,000 grant from **NCBiotech**. In what grew into the Gene Therapy Center at UNC, Samulski developed technologies that formed the basis of several companies, including Bamboo Therapeutics.

NCBiotech bootstrapped Bamboo's parent company, AskBio, with more than \$700,000 to keep it alive and growing. Pfizer then bought Bamboo in an August 2016 deal worth up to \$645 million, to expand its gene therapy pipeline.

Now, Samulski works to cure rare diseases as part of Pfizer. He and Pfizer want to make sure they have a steady stream of trained scientists to continue their important research. So in 2017 Pfizer asked **NCBiotech** to launch an unprecedented \$4 million gene therapy post-doc fellowship program open to any North Carolina university.

Partnerships make it happen. Bamboo grew via an agreement with UNC. Longfellow provides lab space for some of this research. NCBioImpact and its training partners – NCSU, NCCU and the NC Community Colleges – provide training for Pfizer's facility in Lee County, where state and local government agencies have supported life science growth for a long time.

Now, Pfizer is investing \$100 million to add gene therapy capabilities – and 40 high-paying jobs – to its Sanford campus.

We're North Carolina. It's in our genes.

Transforming Life Science by Building, Partnering, Investing and Communicating

HUMACYTE

This Duke University regenerative medicine spinout may someday save your life — and the lives of thousands of wounded soldiers.

The company is creating “off-the-shelf,” or ready-to-use, bioengineered blood vessels that can be easily stored until doctors and patients need them. The vessels, branded as Humacyl, are in Phase 3 clinical trials for people undergoing kidney dialysis who require vascular access, and for patients with peripheral arterial disease.

Meanwhile, the U.S. military is scrambling to speed access to Humacyte’s technology, convinced it can save life and limb when used immediately after soldiers incur major battlefield wounds.

Humacyl is derived from human vascular cells that are seeded onto a biodegradable tube-shaped scaffold. The company then turns the material into a blood vessel by removing the cells to avoid triggering an immune response in the recipient. The result is a replacement vessel with great potential.

Laura Niklason, M.D., Ph.D., a world leader in tissue engineering, founded the Morrisville company in 2004. Humacyte got its first loan support in 2006 from **NCBiotech**, translating that \$150,000 commitment into more than \$200 million in follow-on funding.

In June, Carrie Cox, chairman and CEO of Humacyte, was in China where the World Economic Forum honored Humacyte as one of the world’s top 30 “Technology Pioneers” for 2017.

Another reason North Carolina is a global life science leader.

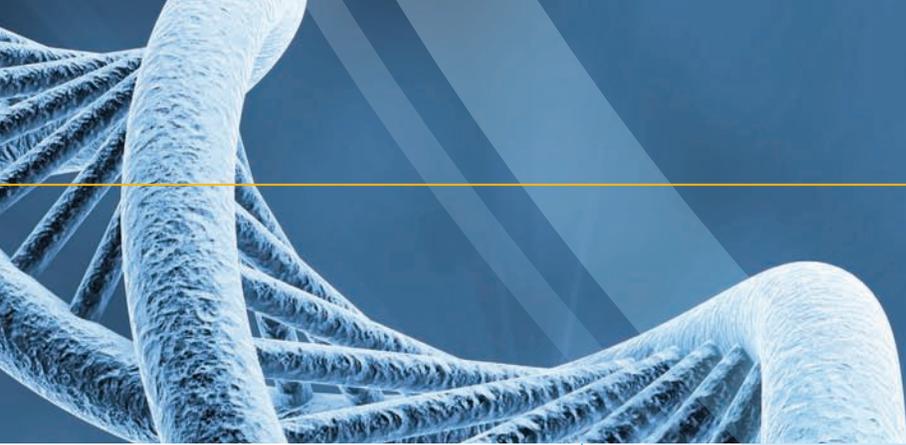


Humacyte CEO Carrie Cox (left) oversees development of Humacyl vessel (top), sought by military to treat battlefield injuries.

\$95K+
average salary

2,000
support
companies

\$2.2B
state and local
tax revenues



G1 THERAPEUTICS

G1 Therapeutics took its cancer-fighting capabilities on the road in May 2017, raising \$105 million in an initial public offering of seven million shares of stock priced at \$15 a share.

G1, a Research Triangle Park spinout from the University of North Carolina at Chapel Hill, is developing novel therapies that address significant unmet needs in people with various cancers. **NCBiotech** bootstrapped the company with \$500,000 in loans in 2011 and 2012. G1 subsequently raised \$95.5 million in venture capital before its IPO.

In late 2016 the company announced a partnership with biotech pioneer Genentech on a clinical trial involving patients with small-cell lung cancer who are receiving chemotherapy. It's a Phase 2 trial to evaluate the combination of Genentech's FDA-approved cancer-immunotherapy drug Tecentriq (atezolizumab) with G1's Trilaciclib to treat lung cancer.

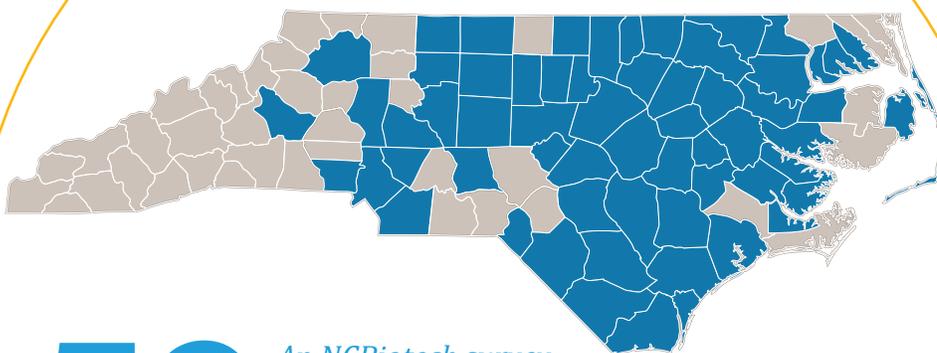
G1 found a niche developing a biopharmaceutical shield that protects bone marrow from chemotherapy and radiation damage.

G1 is also testing some promising breast cancer drug candidates – one intravenous and another oral.

G1 stock trades on The NASDAQ Global Select Market under the ticker symbol "GTHX."

**Grants |
\$1 : \$28
ROI for every \$1**

Rural Impact: Jobs



59 *An NCBiotech survey of 14 Eastern NC life science manufacturing companies, including one location in High Point, found workers commute from these 59 counties.*

Learn more at our redesigned website | ncbiotech.org

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Driving Momentum Statewide



NCBiotech, Research Triangle Park

Competitive Funding Awarded

New ideas and their transformation into products and services are at the core of technology-based economic development. NCBiotech investments bridge gaps in this pipeline, propelling technologies and companies forward. This year, grants and loans totaling \$7,478,637 were awarded.

Company Funding

Company Inception Loans (3)	\$ 225,000
Small Business Research Loans (10)	\$2,450,000
Strategic Growth Loans (3)	\$1,300,000
TOTAL	\$3,674,975

Grants

Institutional Development Grants (11)	\$1,553,989
Collaborative Funding Grants (1)	\$100,000
Biotechnology Innovation Grants (8)	\$784,830
Technology Enhancement Grants (6)	\$449,800

TOTAL

\$3,803,662



Industrial Internships	\$30,100
Economic Development Awards (4)	\$350,000
NC Pharmaceutical Services Award (1)	\$36,100
Event and Meeting Grants	\$126,981

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Lawrence Carin, Ph.D. | Duke University
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Alan Rebar, Ph.D. | North Carolina State University
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Financial Data

July 1, 2016–June 30, 2017.

Revenues

State of North Carolina	\$13,600,338
*Other revenues	\$7,225,477
Asset redeployment	\$627,572

TOTAL \$21,453,387

Expenses

Technology development	\$3,769,654
Company development	\$3,897,115
Regional development	\$1,112,756
Sector development	\$2,647,342
Program services	\$2,138,210
Operations	\$2,810,405

SUBTOTAL \$16,375,482

*Change in net assets **\$5,077,905**

TOTAL \$21,453,387

*Other revenues include restricted grants, added to net assets, to support programs in FY18 and beyond.

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Margaret Spellings | University of North Carolina General Administration
Michael Tanner | NOAA Center for Weather and Climate
Steve Troxler | North Carolina Department of Agriculture and Consumer Services
Bhaskar R. Venepalli, Ph.D., MBA, FRSC | CiVentiChem
Robert G. Wilhelm, Ph.D. | The University of North Carolina Charlotte
Benjamin R. Yerxa, Ph.D. | Foundation for Fighting Blindness

Board Staff

William Pappas | Parker, Poe, Adams and Bernstein L.L.P.
Judy Orchard | North Carolina Biotechnology Center

\$86B

total economic impact

For 33 years, NCBiotech has worked to build North Carolina's global life science leadership.

Our first Company Directory in 1985 contained 50 companies with 4,000 employees, including service providers such as law firms. Our 2017 print directory contains more than 650 life science companies employing 63,000 North Carolinians. And our online directory adds 2,000 service providers that employ tens of thousands more.

Today our life science base generates \$86 billion in economic activity and \$2.2 billion in state and local taxes. The sector's average salary is \$95,000 — twice that of the overall private sector wage.

NCBiotech's ongoing focus on technology development, life science company growth and recruitment is paying big dividends to our state.

Our successful partnerships continue to drive growth in this highly competitive arena. Thank you for supporting our important work, transforming North Carolina into a global life science leader.



Doug Edgeton | President and CEO,
North Carolina Biotechnology Center

funding

*sector
development*

*statewide
development*

North Carolina Biotechnology Center

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