

# **The North Carolina Biotechnology Center**

## **Report to the Joint Legislative Commission on Governmental Operations and the Fiscal Research Division**

### **Contents of report:**

- Prior State fiscal year program activities, objectives, and accomplishments.
- Prior State fiscal year itemized expenses and fund sources.
- Detail schedule of awards

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Submitting entity: The North Carolina Biotechnology Center

# North Carolina Biotechnology Center

## Report of Program Activities, Objectives, and Accomplishments

Fiscal Year Ending June 30, 2015

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The Biotechnology Center continues its support of the nation's fastest growing life science cluster. The results show in the jobs: North Carolina's life science industry grew by 7 percent during the Great Recession. This is in contrast to national life science employment and North Carolina's private sector employment, which both contracted from 2007 to 2012.

More than 600 life science companies employ 61,000 North Carolinians, who make an average salary of \$81,000. Each biotech job creates a total of 5.7 jobs for the economy, according to Battelle's 2014 report for the Biotechnology Innovation Organization. This is also reflected in the nearly 3,000 bioscience support companies tracked by the NCBiotech library. Overall, the life science industry and its ripple effects generate \$73.0 billion in revenues and \$1.76 billion in state and local government revenues.

NCBiotech's activities and sponsored events spur high-value commercialization, technology transfer, company creation and growth, and company recruitment. NCBiotech awarded nearly \$7 million during the fiscal year and advanced multiple non-funding programs to move life science ideas to market for the state.

### **Funding, from idea to product**

Taking ideas from lab to market requires both funding and services. NCBiotech's Business and Technology Development Program provides both, to spur the inception and growth of North Carolina life science companies. Three loan programs and one grant program provide funding for company inception, technology development and corporate growth.

This multi-pronged approach helps portfolio companies leverage significant follow-on investment. To date, for every dollar of business loans awarded by the Biotechnology Center, recipients have aggregated \$118 in follow-on funding from external sources.

Loan proposals are reviewed by business and science experts from the NCBiotech staff. Then larger loans are further evaluated by external business and science experts from North Carolina and outside of North Carolina. Award totals for the 2014-15 fiscal year were:

- Technology Enhancement Grant      \$150,000
- Company Inception Loan              \$100,000
- Small Business Research Loan      \$1,975,000
- Strategic Growth Loan                \$1,208,000

The Business and Technology Development Program also provides a number of support services that create an environment for these portfolio companies to succeed. This includes BATON, which is a network of service providers (staffing agencies, accountants, writers, etc.) committed to supporting startup activities, often at a discounted cost. NCBiotech VC Fly-In events take promising companies to meet venture capital firms where they are – in Boston during FY 2015, and earlier, in San Francisco and New York. Partnering events help companies large and small match available technologies with business needs. The team also continued venture philanthropy communications, which led to several high-profile events in the 2015 fiscal year. The Biotech Center also primes the pipeline with research grants targeted to innovation. Grants provide funds to pay for specialized equipment used by groups of researchers, to test new product and commercialization ideas, to encourage that commercialization, and to build statewide life science development capacity.

Grant proposals are reviewed by staff scientists, then peer-reviewed and evaluated by volunteer scientists outside of North Carolina. Grant recipients, on average, go on to attract an additional \$28 per \$1 granted, mostly from federal agencies. These awards by program are:

- Biotechnology Research Grants      \$298,802
- Collaborative Funding Grants      \$400,000
- Institutional Development Grants    \$1,988,062

## **Emerging sectors**

With over 300 miles of coastline, North Carolina has a keen interest in marine science. The Marine Biotech Center of Innovation, created by NCBiotech, continues to form partnerships in the Eastern part of the state. The COI, in partnership with NCBiotech's Southeastern Office, has won the international BioMarine Business Conference, to be held in October 2015 in Wilmington. This annual global meeting is devoted to the commercial development of marine bioresources through business partnerships.

### **Marine Biotechnology**

In addition to creating an inventory of NC marine biotech assets from companies, university faculty and government agencies, the MBCOI also worked with UNC – General Administration to create a functional marine taxonomy that will allow the system to organize and communicate information and discoveries from the research performed in the UNC marine labs. The MBCOI has spent many hours assisting entrepreneurs and companies with filing of intellectual property protections, forming start-up businesses, connecting to a larger network for collaboration/mentoring/funding and identifying and accessing new markets. Their most recent success was an award from the Kenan Institute to perform a portfolio assessment of NC's aquaculture sector.

### **Bio Defense**

NCBiotech has also dedicated significant resources to developing Bio Defense opportunities. NCBiotech has taken a broad view of this sector to bring more Department of Defense (DoD)



funding to North Carolina companies and universities. Life science applications range from vaccines and novel technologies that will protect our soldiers and heal those who sustain wounds in battle, to protecting the food supply.

In the 2014-15 fiscal year the Bio Defense initiative leveraged the existing NCBiotech infrastructure to provide new loans and grants targeting Bio Defense applicants. Loans went to Dignify Therapeutics, which is developing novel therapies for treating urinary and bowel retention disorders; KeraNetics, developing products for burn management, bone and muscle regeneration, treatment for shock after hemorrhage, and drug delivery; and KindHeart, which is developing heart surgery simulators as training tools. Dignify subsequently raised over \$4 million in venture and federal funding. KeraNetics has raised nearly \$23 million in venture and federal funding. And KindHeart has so far raised over \$506,000 in venture capital.

Grants went to NC State University/Dow Chemical and LINC for controlled-release “Smart Bandages” for anti-microbial, anti-bacteria and anti-inflammatory wound healing applications; to UNC Greensboro for research into surveillance and control of sand flies; to Duke University for new pain therapy technology; to UNC to support faculty attendance at the U.S. Army Medical Research and Materiel Command Conference in Maryland; and to Appalachian State University to explore non-invasive bioanalysis of bone and skeletal muscle tissue.

The funding also enabled NCBiotech to produce these events:

- **Grantsmanship Training Event**, “Demystifying the Department of Defense (DoD) Funding Process,” held April 15, 2015 at NCBiotech.
- **“Ebola NC: Local Response-Global Impact,”** held on Dec. 8, 2014 at NCBiotech to generate awareness of North Carolina’s role in the global health sector, as well as to demonstrate and discuss the state’s preparedness. Presented in partnership with the Triangle Global Health Consortium.
- **“NC Bio Defense Summit,”** held Aug. 26, 2014 at NCBiotech. Federal agency participants included NIAID, BARDA, ARO, DTRA, DARPA and high-level DoD chem bio units. Several featured companies are now in discussions with defense funding programs.
- **“Business NC Roundtable”** (April 2015). NCBiotech’s Bio Defense Initiative collaborated with Business North Carolina magazine and Bio Defense partner companies and institutions to discuss the statewide opportunities available from this merging of biotechnology and defense. An edited transcript of the Roundtable was published as a special section in the magazine’s April 2015 issue.

Center staff also made significant efforts to better connect NC life sciences to the defense sector by engaging with many military support groups including the NC Military Business Center, the NC Military Foundation and the NC Defense Business Association. Additionally, Center staff worked to establish direct relationships with the defense and military personnel by attending several events hosted by federal entities including BARDA’s Industry Day, the US Army’s Medical Research and Materiel Command’s Industry Conference and the Federal Advanced Technology Review.

## Statewide development

The preceding programs are designed to grow biotechnology companies in North Carolina from North Carolina research. The Biotech Center also works with statewide partners to bring biotechnology companies to the state, to expand existing capabilities and to capitalize on regional assets. With low business costs and specialized strengths in vaccine and pharmaceutical production, cancer research and medical research, North Carolina has a strong value proposition for companies looking to locate new facilities.

## Bioscience Industrial Development

The Center's recruitment team continues to work closely with the new Economic Development Partnership of North Carolina (EDPNC) and the NC Commerce Department on projects with new potential for job creation and investment. At the time of this report, 13 projects with more than 2,200 jobs and \$2.1 billion of potential investment are being recruited.

Significant news of the 2014-15 fiscal year included:

- **Patheon's** announcement of 488 jobs to its Greenville facility, as part of a planned \$159 million expansion of the site.
- **Argos Therapeutics'** investment of \$56.6 million to expand in Durham County. The company plans to build a 97,500-square-foot commercial FDA compliant biomanufacturing facility and create 236 jobs.
- **Biogen's** addition at its RTP campus of more than 100 employees in response to growing demand for its MS and hemophilia treatments.
- **Grifols'** FDA approval of its new \$370 million Clayton manufacturing facility, where the company expects to employ more than 200 new workers.
- The groundbreaking by **Bayer CropScience** on a new \$34 million research facility at its RTP headquarters.

## Regional offices

NCBiotech's statewide offices were instrumental in several recruitment projects, including Tyton Biofuels and Genome ID. With the help of their regional advisory committees, the offices continue to make strides matching regional strengths with the life sciences. Specific accomplishments include:

### Piedmont Triad Office

The Piedmont Triad Office worked closely with KeraNetics executives as they prepared for the expanding company's consolidation, putting all employees into one location. The company



started in the Piedmont Triad Research Park WetLab Launchpad with early loan support from NCBiotech. That Launchpad space was the creation of NCBiotech's Advisory Committee for Biotechnology in the Piedmont Triad. This subsequent move into the former Targacept headquarters culminated in a December ribbon-cutting ceremony.

The Piedmont Triad Office also worked with executives of Alrgn Bio as the company moved its global headquarters from Canada to Gateway University Research Park in Greensboro, announced in an October media event. The company has developed a patented, food-grade enzymatic process that inactivates major allergens found in peanuts and peanut products. Executives have asked NCBiotech to help make connections with key industry contacts as it expands its board and its employee base.

### **Eastern Office**

Patheon, the world's largest pharmaceutical contract manufacturer, headquartered in Durham, announced a \$159 million expansion of its Pharmaceutical Development Services, adding 488 jobs to its Greenville facility. NCBiotech has worked closely with the company in its expansion activities.

The NCBiotech Eastern Office also participated on a committee representing East Carolina University, Pitt Community College and the Pitt County Economic Development Commission in developing the application to secure a \$1.75 million Golden LEAF Foundation grant, to support expansion of the Patheon Pharmaceutical Development Sciences Training Center of Excellence.

In another promising development, Hospira, located in Rocky Mount, is embarking on a new \$159 million sterile manufacturing facility.

### **Southeastern Office**

NCBiotech's Southeastern Office represented North Carolina at the 2014 BioMarine Business Convention, as the co-host for the 2015 Convention to be held in Wilmington in October. This will be the first time this event will be held in the United States. The convention attracts an international audience of 300 company leaders, government officials, and investors to focus on deal-making opportunities in the diverse marine biotech sector, including aquaculture, by-product utilization, bio-energy, waste remediation for useful products, algae production, and pharmaceuticals from the sea. Started in France, the convention has also been hosted in London, in Halifax, Nova Scotia, and in Cascais, Portugal. It goes to Oslo in 2016.

The office also worked on many economic development projects related to company relocation/recruitment and expansion, as well as entrepreneurial ventures, including the following: GW Pharma to RTP, bioskin to Wilmington, Modoc Research expansion, Project Hand to Bladen County, Project Green in Brunswick County, and company relocations to the UNCW MARBIONC Biotech Building (A-1 Biochem, CMS Food Technologies, Ocis Biotechnologies, O.TM).

The office also worked with UNCW's College of Health and Human Services to secure \$390,000 grant funding from Duke Energy to support a workforce development program as a component of the NC Coast Clinical Research Initiative, a regional exchange group sponsored by the NCBiotech Southeastern office.

### **Greater Charlotte Office**

The Greater Charlotte Office was involved in numerous activities focused on the region's growing international profile during the past fiscal year, laying the groundwork for corporate recruitment possibilities associated with the Charlotte area's life science strengths. Among the partnering organizations included Emmeplus, World Affairs Council of Charlotte w/ Belgian Ambassador & trade commissioner, the Trans-Atlantic Business Council, Bridgehouse Partners, the Canadian Counsel, and the International House South American Delegation.

The office also managed the close-out and compliance requirements for the multi-year Golden LEAF-funded BioMoto STEM Initiative, and also exploring options for its possible sustainability. The BioMoto program impacted more than 750 8th grade students in four area school systems, providing hands-on STEM education projects and access to scientists at the NC Research Campus in Kannapolis.

### **Western Office**

NCBiotech has been working closely with the region's fermentation science specialists to create more high-paying jobs in the sector. One of the key developments during the year came from White Labs. The San Diego company announced an \$8 million East Coast expansion with the establishment of a yeast production and distribution center in downtown Asheville. At least 65 employees are planned for the 26,000-square-foot manufacturing, distribution and tasting room facility which will ship product to both national and international craft brewers.

This is another example of the growing craft beverage industry in western North Carolina, which now includes three national breweries and more than 40 other regional distributors.

## **Agricultural biotechnology**

Agriculture and agribusiness – food, fiber and forestry – generate \$78 billion in annual revenues for North Carolina's economy. We've positioned our state as a global ag biotech leader by combining our well-established biotechnology base with our wide-ranging agricultural assets to create new jobs, new crops, new uses for existing crops and improved ways to heal, feed, clothe and fuel the world. We now have over 80 ag biotech companies. Our big global ag biotech firms have invested some \$270 million in RTP alone, with more expansions planned.

Key activities of our AgBiotech Initiative included:

- **NC Agriculture & Biotechnology Summit 2014**

Produced the second Ag Biotech Summit in collaboration with NC State University's College of Agriculture and Life Science on November 18-19. The combination of both groups' signature events engaged the ag and biotech communities by addressing key topics such as research innovation, technology commercialization, regulation, policy, public acceptance, agricultural production and ag biotech products. This event attracted over 520 attendees and reached more than 325,000 through social media and marketing efforts.



- **NC Ag Biotech Professional Forum**

This event series has established a consistent base of attendees from local industry and support groups, being recognized as a valuable engagement and learning opportunity for ag biotech colleagues. With topics covering big data in agriculture, soil microbiome impacts on big ag, and the traits and techniques that are enhancing global crop innovation.

- **NC AgBiotech Advisory Council**

Currently 17 leaders from industry, academia and government meet three times annually to help create effective biotechnology development growth in number, maturity, and commitment.

- **Ag Biotech Entrepreneurial Showcase 2015**

We expanded this annual event to include entrepreneurs from across the Eastern United States competing for investor interest and one of two cash prizes by showcasing their companies and breakthrough technologies. Keynote speakers and a panel session inspired future innovation development and partnerships in the ag biotech industry. More than 135 registered to attend this third Showcase, 23 percent of whom came from outside the state, including Portugal, Israel and the United Kingdom. Investors made up 12 percent of the audience, with more than half of them coming from out of state.

- **Biotechnology Crop Commercialization Center**

The BCCC functions within the AgBiotech Initiative to accelerate crop development into the marketplace to meet critical industry needs. The core function is to improve and commercialize existing or new crops by convening partnerships to conduct research that includes trait identification, agronomic development, grower engagement, and market introduction. Existing projects include:

- **Mid-Atlantic Animal Feed Grains:**

- Problem: NC swine and poultry production required import of majority of animal feed from Midwest or overseas at a high transportation premium
- Objective: increase Mid-Atlantic animal feed grain production to sustain profitability of NC swine and poultry meat animal industry
- Obtained funding of \$748,314 to date from Golden LEAF Foundation, Murphy Brown LLC, North Carolina Pork Council, and United Sorghum Checkoff Program to support crop improvement
- Deployed majority of funding as awarded research contracts to collaborative multi-university and industry projects



- **AgBio[sphere]**

This branding initiative was launched in 2014 to position NC as the leading global hub for ag biosciences. Recruitment efforts are led in partnership with key state agencies: NC Department of Commerce, NC Department of Agriculture & Consumer Services, NC State University, NC A&T State University, and the NC BioNetwork. A dedicated promotional website was established to position strategic advantages for ag biotech in NC ([www.agbiosphere.com](http://www.agbiosphere.com)) and invite interested parties to engage with NCBiotech and our partners.

- **Jobs Network**

Offered two programs through the NCBiotech Jobs Network focusing on ag biotech careers, specifically the multiple opportunities available and how to translate your existing career/experience into the ag biotech field.

- **Agricultural Bioscience Company and Entrepreneurial Profile System (AgBIOCEPS)**

Annual portfolio showcasing 26 companies and technologies in 2015 helps to grow the NC's existing entrepreneurial companies while establishing awareness for technology partnership opportunities with small and large companies.

As noted, State funding was supplemented by additional grants to achieve these outcomes.

## **Workforce Development**

Extending its workforce mission directly to the job seeker, NCBiotech hosted more than 600 Jobs Network participants at monthly programs for NC life science professionals in career transition. Programs, which link participants in Wilmington and Kannapolis electronically, included discussions with hiring managers and recruiters as well as expert guidance on job search techniques and resources, career opportunities, support systems and more. The Jobs Network coordinator at NCBiotech now oversees a LinkedIn group of over 1,100 members.

The Center also coordinated a special event at GlaxoSmithKline's RTP research auditorium after GSK announced plans in December 2014 to lay off 900 of its 2,500 R&D people in RTP. The event, "Life Beyond GSK: Entrepreneurial Career Options," featured presentations from GSK "alums" who have gone on to successful careers as entrepreneurs, executives, investors and community leaders. Over 300 GSK employees registered. Many of these have or will use their scientific expertise and NCBiotech support to start new life science businesses and careers in North Carolina.

NCBiotech also:

- Staffed a GSK Jobs Fair in March, providing over 100 people losing jobs at GSK with job-search information and resources at NCBiotech.
- Attended a subsequent GSK-related networking event at the Frontier in RTP, providing support and resource information to more of those affected by job cuts.

- Held a workshop on Entrepreneurship Essentials, aimed at professionals who might want to establish consulting businesses. This was not exclusively for the GSK workforce, but it was heavily directed toward those people being impacted by the GSK cutbacks.

## **Biotech Community**

The Biotech Center continues to provide and promote two dozen networking groups, events and programs that create the right environment for small company growth.

Several event highlights include:

- More than two dozen scientific and business networking groups welcomed several thousand participants to events throughout the year.
- NCBiotech organized business partnering sessions at the annual CED Life Science Conference in Raleigh. The event resulted in nearly 200 meetings connecting startups, larger companies and investors.

This is in addition to a variety of local and regional events that showcase the Center's and North Carolina's strengths to the world. The largest was the North Carolina Pavilion at the Biotechnology Industry Organization's annual convention, this year in Philadelphia. Coordinated by the Biotech Center, the Pavilion included 20 sponsors from across the state. Company sponsors held dozens of partnering meetings at the conference.

NCBiotech's Hamner Conference Center hosted more than 1,200 meetings involving some 30,000 people. These events involved intellectual exchanges, biotechnology industry education, corporate and nonprofit meetings and training events, and industry trade shows.

Each year hundreds of visitors to our RTP headquarters also use the NCBiotech library's resources, which are specific to the kinds of life science businesses we serve. During the past year the library staff spent 550 hours answering 113 research questions from external clients. The professional librarians also logged over 288 hours handling 119 research requests from NCBiotech staff. Separately, the library entered into a professional services contract with BD Technologies. It has also continued serving as a subcontractor to PharmIntell, performing clinical evaluation reports for a global medical device firm.

## **Looking to the Future**

NCBiotech has just finished a year of transition with a new leader in FY 2015, and with plans to continue maximizing state resources to create high-paying jobs for North Carolina.

For the most up-to-date information on the Biotech Center, please visit our Web site, [www.ncbiotech.org](http://www.ncbiotech.org).



# North Carolina Biotechnology Center

## Report of Fund Sources and Expenses

### Fiscal Year Ending June 30, 2015

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#### Fund Sources:

Unrestricted Revenues	
State Appropriation	\$13,600,338
Hamner Conference Center	344,333
Other, net	958,176
Restricted Revenues	
Contributions	<u>662,117</u>
Total Revenues	<u>\$15,564,964</u>

#### Expenditures:

Science & Technology Development	\$ 3,470,760
Business & Technology Development	2,640,783
AgBio initiatives	1,322,078
Statewide development	995,571
Bioscience industrial development	709,170
NC Bio pavilion	417,485
Biodefense	550,239
Centers of Innovation	518,887
Library services	1,205,993
Other Programs	126,045
Hamner conference center	452,196
General & Administrative	<u>2,795,804</u>
Total Expenditures	<u>\$15,205,011</u>

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**Note:** Figures above are on an accrual basis. The final quarterly report filed with the Department of Commerce is on a cash basis. This schedule will reconcile to our audited financial statements as of June 30, 2015.

# North Carolina Biotechnology Center

## Report of Awards by Program

### Fiscal Year Ending June 30, 2015

Program Area Program Category	Record Count	Amount	Percent of Total
<b><u>Business Financing</u></b>			
Company Inception Loan	2	\$ 100,000	1%
Small Business Research Loan	10	\$1,975,000	29%
Strategic Growth Loan	3	\$1,208,000	18%
Industrial Fellowship Program	1	\$ 52,000	< 1%
Industrial Internship Program	9	\$ 25,500	< 1%
<i>Total Business Financing</i>	25	\$3,360,500	50%
<b><u>Event Support</u></b>			
Grantsmanship Training Grant	1	\$ 5,000	< 1%
Biotechnology Event Sponsorships	22	\$ 53,488	< 1%
Biotechnology Meeting Grants	7	\$ 51,000	< 1%
<i>Total Event Support</i>	30	\$ 109,488	1%
<b><u>Research and Equipment Support</u></b>			
Biotechnology Research Grant	3	\$ 298,802	4%
Collaborative Funding Grant	4	\$ 400,000	6%
Institutional Development Grant	14	\$ 1,988,062	29%
Technology Enhancement Grant	3	\$ 150,000	2%
<i>Total Research and Equipment Support</i>	24	\$ 2,836,864	42%
<b><u>Sector and Region Support</u></b>			
Center of Innovation	1	\$ 350,000	5%
Economic Development Award	1	\$ 100,000	1%
Presidential Initiative Award	1	\$ 30,000	< 1%
<i>Total Sector and Region Support</i>	3	\$ 480,000	7%
<b>Grant Totals</b>	<b>82</b>	<b>\$6,786,852</b>	<b>100%</b>