

Biosciences — A Brilliant Future

The diversity of Charlotte's economy is enhanced by the increasing presence of biotechnology and related industries. This is not surprising since North Carolina has the nation's third largest biotechnology industry for the third consecutive year, according to Ernst & Young's 2007 *Beyond Borders Report*.

The North Carolina Biotechnology Center, established as the first state-supported biotechnology initiative in 1981, has expanded its presence in many regions around the state including Charlotte. The Charlotte office of NCBC is located on the Charlotte Research Institute Campus of UNC Charlotte, one of the focal points in the growth of biomedical research in the Charlotte Region. A 2004 report entitled "New Jobs Across North Carolina: A Strategic Plan for Growing the Economy Statewide through Biotechnology," focuses on cooperation among government, business and academia to expand the state's biotechnology jobs to 125,000 by 2023. In an effort to retrain North Carolina's manufacturing workers, as jobs in the textile and furniture industries decrease, the state is actively supporting biotechnology development. As stated in "New Jobs Across North Carolina," the biotechnology sector offers promise for long-term, sustained community development and job creation (www.ncbiotech.org).

Charlotte is certainly implementing this plan as new industries in biotechnology, life sciences

and ancillary industries come into the community. There are already several large, well-established firms in Charlotte such as Barnhardt Manufacturing Company which has been in business since 1895 and manufactures surgical dressings. Microban, established in 1984, manufactures products with built-in microbial protection. Newer companies to



Photo courtesy of the Charlotte Research Institute at UNC Charlotte



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the area include Polypore, established in 2004 to manufacture blood cleansing fibers and medical filter products, and Alveolus, which was established in 2001 and manufactures non-vascular stents.

In addition to the well-defined Drugs and Pharmaceuticals industries, the Biotechnology Industry Organization (www.bio.org) lists bioscience subsector industries as Agricultural Feedstock and Chemicals, Medical Devices and Equipment, and Research Testing and Medical Laboratories. There are also many companies that provide services to the biotechnology industry such as attorneys and venture capital firms.

There are more than 200 firms in Charlotte-Mecklenburg that are classified as biotechnology, life sciences or related industries. An inventory of these firms is continually being refined and updated as the strength of biotechnology in the Charlotte region becomes more defined. Because industry base and is very business oriented, the

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Average Employment in Select Biotech Industry Sectors, 2006

Region	Medical Equipment and Supplies Manufacturing Emp.	Medical, Dental and Hospital Equipment and Supplies Merchant Wholesalers Emp.
North Carolina	7,652	7,535
Charlotte Region	2,197	1,610
Research Triangle Region	1,976	1,201
Piedmont Triad Region	1,556	752

Source: NC Employment Security Commission (<http://www.ncesc.com>)

growth of the bio-sciences industry — while having a strong research component — will have a decided business slant. That is why subsectors of the biosciences industry such as medical device manufacturing and distribution are so successful in this region.

Medical Devices

Bioscience is a technology that supports many different markets. One of the most important markets is healthcare products and services. Charlotte has a strong presence in the Medical Devices

sector. The accompanying table shows employment in Medical Equipment Supplies and Manufacturing and Wholesalers compared to employment in these sectors in the Research Triangle and Piedmont Triad regions of the state. Charlotte outpaces both of these regions in medical device manufacturing and wholesaling with nearly 2,200 jobs in Medical Equipment Supplies and Manufacturing and more than 1,610 jobs in the wholesale distribution of these supplies.

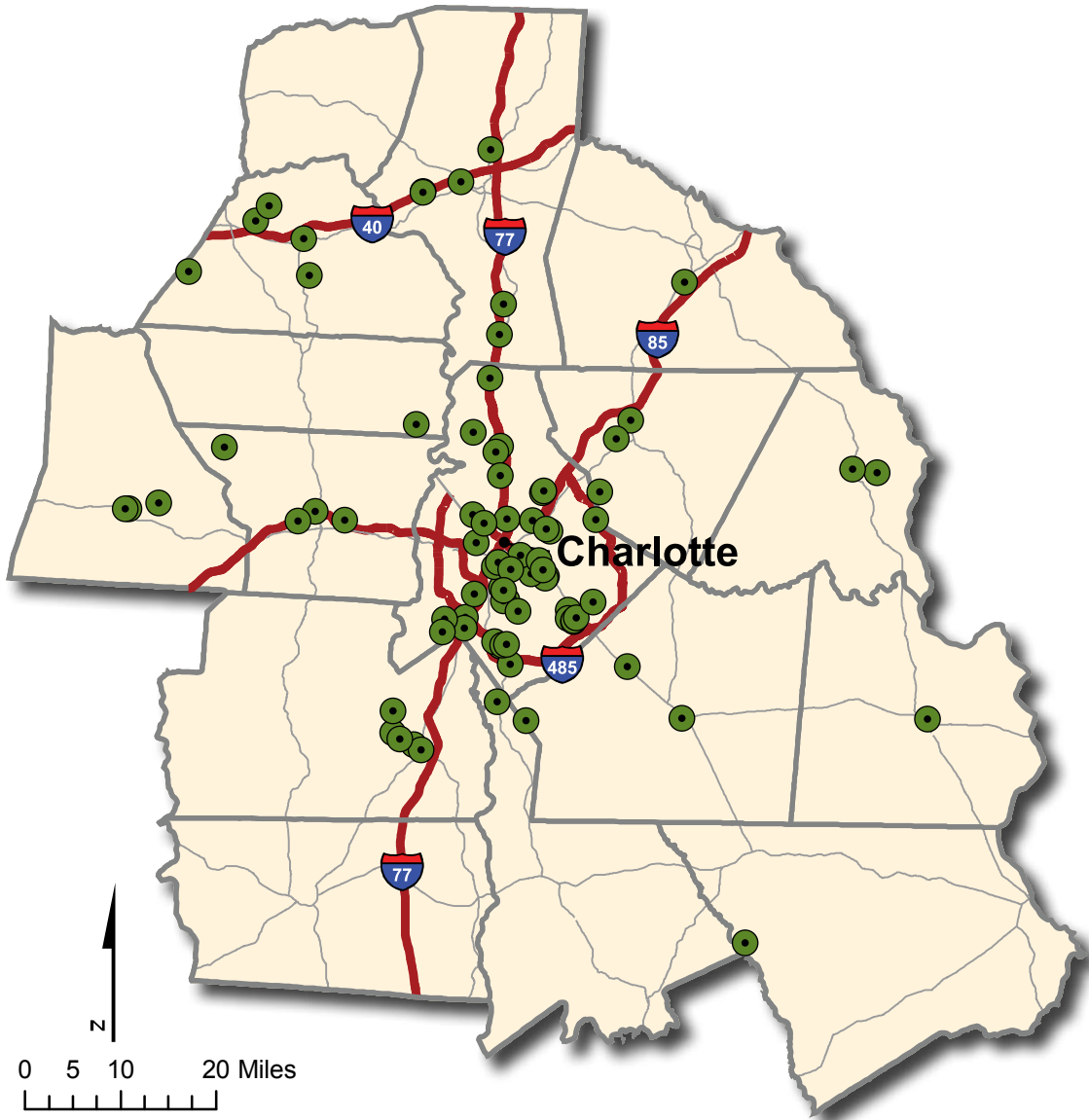
Large medical device firms in Charlotte-Mecklenburg include BSN Medical which, with 300 employees, manufactures orthopedic splinting and casting material. McKesson General Medical has 100

Nearly 2,200 workers are employed within medical equipment manufacturing in the Charlotte region.



Photo courtesy of the Charlotte Research Institute at UNC Charlotte

Medical and Dental Equipment Manufacturing Charlotte Region



The Charlotte region is home to more than 92 medical device manufacturing companies.

employees and is a wholesaler of medical supplies and equipment.

The map shows the location of 92 medical device manufacturing firms in the Charlotte Region. The majority of the firms are in Charlotte-Mecklenburg, and there are clusters developing in other areas of the region. These clusters will continue to grow as more firms move in to business locations around the region. The North Carolina Research Campus will provide a strong impetus for firms to locate in the Kannapolis area and along the I-85 corridor towards UNC Charlotte, another regional focal point for biosciences development. As biosciences companies locate in the region, they will be looking for economies of scale and a skilled workforce for the jobs they bring to the area.

Education

UNC Charlotte is committed to the growth of life science research, investing more than \$100 million in the last five years in faculty, lab equipment and new buildings. Research areas entail the Department of Biology (College of Arts and Sciences), the Center for Biomedical Engineering (College of Engineering), the Department of Bioinformatics and Bioinformatics Research Center (College of Computing and Informatics), and Health Services (College of Health and Human Services).

The Charlotte Research Institute Campus has a mission to facilitate university-industry partnerships and is also home to a Center for Bioinformatics which specializes in the analysis of gigantic vol-

The Charlotte Research Institute campus is home to a Center for Bioinformatics.

The North Carolina Research campus will provide strong support to the growing biotech community.



Photo courtesy of the Charlotte Research Institute at UNC Charlotte

umes of data to support the healthcare industry and understand genetic factors in health and disease; a Center for Biomedical Engineering Systems; and, Nanotechnology. Annually, 2,500 undergraduates and graduates complete their degrees in biosciences in the region. The community colleges contribute approximately the same number at the associate level. Recently, Central Piedmont Community College, a national leader in workforce development, received a grant to provide state of the art laboratory equipment to support biotechnology instruction.

The North Carolina Research Campus, 15 miles north of center city Charlotte, will provide a strong impetus to the growth of biosciences in the Charlotte region. This campus has and will continue to attract

the leading universities to the area such as Duke, NC State and UNC Chapel Hill.

Healthcare Industry

The healthcare industry plays a significant role in biosciences in the Charlotte Region. The two major healthcare organizations in Charlotte are Carolinas HealthCare System and Novant Health. Carolinas HealthCare System has more than 26,000 employees and 20 affiliate hospitals in the Carolinas. It also has numerous physician offices in Charlotte-Mecklenburg and in regional counties in North and South Carolina. Presbyterian Healthcare, an affiliate of Novant Health, has 7,800 employees in the Charlotte Region. Presbyterian has hospitals in Charlotte, Matthews and Huntersville, several facilities in other counties around the region and many physician offices around the area.

One of the major contributions to biotechnology and life sciences from the healthcare industry is in research and clinical trials. ClinicalTrials.gov reports more than 1,000 active clinical trails in Charlotte. The James G. Cannon Research Center, located on the campus of Carolinas Medical Center, provides a central research facility where scientists, academicians and clinical experts work in concert. There are also several organizations in Charlotte that run clinical trials and conduct research on diseases such as cancer.

Biotechnology and life sciences are complex industries with many facets. As reported by the North Carolina Biotechnology Center, "with so many emerging technologies now coming together in support of medical solutions, biotechnology is being viewed as only one component of a much broader base of advanced medical technologies that will change medical care and life expectancies." Many people, when thinking of biotechnology, focus on pharmaceutical companies. Though Charlotte has some of those, the area's contribution to the biosciences industry is much broader than pharmaceuticals and will become increasingly larger and more focused in the coming years.



330 South Tryon Street; P.O. Box 32785
Charlotte, North Carolina 28232 U.S.A.
704.378.1300 phone; 704.374.1903 fax
www.charlottechamber.com

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