Trees, tees, and Ph.D.s” is the phrase locals use to portray North Carolina’s Research Triangle Park (RTP), an 8-mile by 2-mile area bordered by Chapel Hill, Raleigh, and Durham. The area does, in fact, boast one of the highest per capita concentrations of Ph.D.s. Only the street-level concrete signs reveal the region’s foremost function; the peaceful, tree-lined roads winding through rolling hills are more in keeping with the scenery of a nature reserve than that of a hotbed of scientific research.

One should not underestimate the area, however. The entire state of North Carolina ranks third in the nation, behind Boston and California, for its number of biotechnology companies, according to Ernst and Young’s 2006 Industry Survey, and nearly 400 bioscience companies—albeit hidden behind pine trees—are headquartered or have operations in the state. The RTP itself is the largest planned research park in the world and contains more than 150 companies (132 R&D-related), employing about 40,000 people, and continues to expand, unbounded by geographical limits.

Research Focus
The effort to transform the Raleigh-Durham region—and also the entire state of North Carolina—into a technology and research leader began in the 1950s. RTP, the focal point of that effort, opened in 1959, with its first tenant, Research Triangle International, now the nation’s second largest independent nonprofit research organization. The region is also home to several biomanufacturing and pharmaceutical plants including Merck, GlaxoSmithKline (GSK), Wyeth, and Novartis as well as one of the largest concentrations of contract research organizations in the world.

Pharmaceutical and biopharmaceutical R&D is the leading industry in the area. In addition, three of the world’s largest agribusiness companies—Bayer CropScience, Syngenta Biotechnology, and BASF Corp.—have headquarters in the region. Other clusters of industry include biological agents and infectious diseases, analytical instrumentation, nanoscale technologies, and informatics. The area also accommodates a smattering of high-tech companies, including IBM, SAS, Cisco, and Nortel.

“We conduct our fair share of true academic and industrial research, but an area of science that is focused on here perhaps more than in other research-intensive areas is bioprocess science—the actual production and manufacture of biological therapeutics,” says Maria Rapoza, vice president of science and technology for the North Carolina Biotechnology Center, a government-sponsored organization dedicated to developing the biotechnology industry here. “It’s an exciting and lucrative area of opportunity for Ph.D.-level scientists,” she adds.

Growth in Industry
Opportunities for scientists in industry, at companies both small and large, abound. Biolex Therapeutics, a small company (just over 100 employees), is developing and commercializing therapeutic proteins based on its proprietary LEX System, an expression system that enables the production of hard-to-make proteins and the optimization of monoclonal antibodies. “We are not only researching but also developing drugs,” says Jan Turek, CEO of Biolex, “and the development of these drugs requires people who have experience in both clinical drug development as well as the manufacturing of those drugs.”

On a larger scale, GlaxoSmithKline (GSK), which has about 5,000 employees, is hiring scientists with expertise in a number of different disciplines, including medicinal chemistry, biostatistics and bioinformatics, toxicology, pharmaceutical development, medical genetics, and clinical pharmacology, says GSK spokesperson Robert P. Sutton. Likewise, Talecris Biotherapeutics is hiring in all areas of the organization, “from science and R&D to continued »
Collaborative Efforts

A strong collaboration exists between industry, government, and the local universities in the area. “Having the opportunity to collaborate with a community of scientists is a real advantage,” says postdoctoral trainee Jamie DeWitt, with the EPA’s National Health and Environmental Effects Research Laboratory (NHEERL). “There’s a scientist doing something of everything down here—you can explore any type of science you want.” DeWitt also points out that the scientists at EPA communicate regularly with scientists at NIEHS and work closely with industry.

The immediate area surrounding RTP is home to three major universities: Duke, University of North Carolina (UNC) at Chapel Hill, and North Carolina State University. NC State is the largest school in the region, with an enrollment of nearly 30,000 students, and was ranked by MIT Technology Review as No. 12 in a national survey of technology-transfer strength, a measure, among other things, of the number of patents issued.

RTP becomes the logical home to much of the technology spawned at local universities. The technology produced by Biolex, for example, was initiated at NC State. “Obviously since our technology came from one of the major universities here, it made sense for the company to establish its business nearby,” notes Turek. “This region is well known for its universities, so the ability to attract strong, research-oriented people has not been a challenge,” he adds.

According to Marcia Harris, director of University Career Services with UNC-Chapel Hill, a number of advantages exist for UNC students due to the presence of multiple employers as well as professional associations and other universities. “The students here have a lot of resources available to them.” Harris estimates that about a third of graduating Master’s and Ph.D. students from UNC remain in the immediate area after graduating.

Talecris and GSK both say the universities provide an important resource in terms of conducting research and as a source of qualified people. The proximity of research universities ranked as the Triangle’s greatest strength while the availability and retention of top technical, nontechnical, and management talent registered as the most significant concern, according to one 2007 survey of RTP biotechnology entrepreneurs.

Larry Reiter, director of the National Exposure Research Laboratory (NERL) at the EPA, also points out that in addition to federal postdoctoral research programs at his institution, the EPA has developed cooperative training agreements with UNC, Duke, and others, allowing predoctoral students to do their thesis research under scientists at EPA. “We also bring in faculty members from universities that are interested in doing a sabbatical and working in our labs for up to two years. So, we have a number of different mechanisms available to continue to keep this as an exciting and dynamic environment for research,” he says.

Likewise, the NIEHS offers its Summers of Discovery Program, a full-time, 8- to 12-week program during May to September, open to teachers and college faculty, graduate, undergraduate, and high-school students, which according to Blackshear, is a “good way to test out working at the institution.”

Seeding Science

While the RTP remains the focal point of scientific research in the area, smaller annexes are beginning to colonize.

“We have a number of different mechanisms available to continue to keep this as an exciting and dynamic environment for research.”
—Larry Reiter

finance and manufacturing,” notes spokesperson Lacy McMahon. The growth at Talecris shows no signs of slowing down, says McMahon. “We added over 900 employees last year through an acquisition and hired several more on top of that, and we will be hiring more people next year as well.”

By all accounts, the growth of the region is extensive. Within the last three years, 90,000 new jobs have been added to the 13-county region surrounding RTP, according to the Research Triangle Regional Partnership. Recent biopharmaceutical additions to the area include a $100 million expansion of the operations of Quintiles Transnational. In addition, both Novartis and Merck are building vaccine manufacturing plants costing upwards of $200 million. Major planned expansions have also been announced by Wyeth, Novo Nordisk, GSK, and other companies. Fueling some of the growth are tax credits available for the purposes of job creation and property purchases as well as state-funded industrial training for workers at local community colleges, which make the area an attractive destination for companies.

Local Government Agencies

RTP is also home to two major US government health and environmental agencies: the National Institute of Environmental Health Sciences (NIEHS) and the Environmental Protection Agency (EPA), making the area the largest concentration of environmental sciences research in the world.

The EPA, perched on the side of a lake, directly opposite the NIEHS, has an army of over 2,000 scientists strongly focused on scientific research. “Many people and businesses attribute policy-making and regulation of pollution to the EPA,” notes EPA spokesperson Cynthia Yu. “But our focus here is more on improving the environment through scientific research so that informed, evidence-based decisions can be made.”

Across the lake, the NIEHS is planning its first outpatient clinical research unit to help bridge the gap between bench science and patient care and which will provide training opportunities, especially for physician scientists. According to Perry Blackshear, director of clinical research at NIEHS, the unit will include a modular building of around 11,000 square feet where patients can have blood, urine, and other samples taken and can be assessed for a variety of environmental exposures. He says the agency is actively seeking tenure-track M.D./Ph.D. scientists to work in the clinical research unit.

Notably, the EPA and the NIEHS ranked third and seventh, respectively, in a 2007 survey of best places to work for postdocs, conducted by The Scientist. The rankings took into account several factors, including training and access to state-of-the-art technology, availability of benefits such as health care, and starting salary. Starting salaries at the NIEHS and EPA are $42,000 to $65,000 and $45,106 to $85,037, respectively, while the average annual salary of RTP employees overall is about $56,000.

By 2007, RTP was home to over 100,000 people, up from 65,000 in 2004. All told, the RTP region added 13,000 new jobs over the past two years. So, we have a number of different mechanisms available to continue to keep this as an exciting and dynamic environment for research.”
—Larry Reiter

The Scientist.
Regional Focus: North Carolina

among the state. Another emerging area, about 100 miles to the west of RTP, is the Piedmont Triad (Greensboro, Winston-Salem, and High Point). “The activity in the RTP region is the fruit of over 20 years of investments,” says Kathleen Kennedy, vice president of education and training with the North Carolina Biotechnology Center. “We hope to start that again and clone this type of development in other regions around North Carolina,” she says.

An intriguing story is the North Carolina Research Campus (NCRC) in Kannapolis, a small town just north of Charlotte, on Interstate 85 and a few miles south of the Piedmont Triad. In July 2003, the town of Kannapolis became the epicenter of the largest mass layoff in North Carolina’s history, when a Pillowtex Corporation plant was affected by a general slowdown of the state’s textile industry; 4,800 workers lost their livelihood. But in December 2005, Rupert Murdock, owner of Dole Food Company, donated $1 billion to establish the research campus there. The NCRC, now under construction, will be devoted to the study of nutrition, crop development, produce development, and the genomics of nutrition, and will include 350-acres of state-of-the-art laboratory space. Duke, UNC, NC State, and others all will have laboratories on the planned multibuilding campus.

“Extensive opportunities for the training of residents, including laid off workers, will continue to be available so that they can prepare for employment at the NCRC; the NC Community College System will have a training center on the Kannapolis NCRC campus for precisely this purpose,” notes NC Biotech’s Kennedy. “My guess is that the NCRC will change the shape of economic development in that region north of Charlotte and will help stimulate the development of research areas along the I-85 corridor,” she adds.

Another research focus of the area is marine biology, scattered along the state’s 300-mile-long coastline. “Many people are unaware of the wealth of marine research that is here in North Carolina,” says NC Biotech’s Raporza. “We really have the equivalent of Woods Hole here—it’s just spread over a number of different marine labs and institutes.” Duke University’s marine lab, for example, is located in coastal Beaufort and offers a year-round curriculum for undergraduates as well as research facilities for postdocs and faculty.

An Agreeable Life

A number of lifestyle factors make the area attractive to many people seeking to relocate, and the region has ranked high on a number of “best-of” lists. Raleigh-Cary was ranked as the No. 1 Best US City for Jobs by Forbes in February 2007, and Raleigh was ranked No. 4 among the Best Places to Live by Money in 2006. The cost of living relative to other biotechnology hubs is particularly attractive, with an index score of 97.1 for the area, compared with 100 for the nation as a whole, 138 for Boston, and 173 for San Francisco.

“The housing prices are much more moderate as compared to the Northeast or the West Coast, and it’s a great place to raise families; the beaches are beautiful and only two hours away,” Turek says. “Everyone that we’ve brought to Biolex—from San Diego, from the Northeast—really loves it.”

“Employees here tend to like the fact that we’re not a big cosmopolitan area,” says GSK’s Sutton. “On the way to work you see trees and vegetation, not skyscrapers, and this tends to be a drawing card for the colleagues I work with.” Blackshear with the NIEHS agrees that the area is a “fantastic” place for raising families, and provides numerous job opportunities for spouses. “Those of us who have lived here for a while love living here,” he says.

However, the same qualities that make the area a great place to live, also give rise to an important potential negative that could make or break the living experience for some. That quality is an undeniable smaller-town feel. While the community is, by all accounts, a cosmopolitan area replete with most of the offerings of a big city, the cities are, in fact, small. The most populous city in the state is Charlotte, with about 700,000 people, and the numbers decline from there. Blackshear relayed the story of a potential recruit to the NIEHS who came from a major East Coast city and spent the entire day looking at real estate with his wife. At dinner, the recruit’s wife asked, “This place is fine, but is there a city anywhere around here?” To which the most accurate response might be “maybe—have you tried looking behind the trees?”

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