THE GEORGIA LIFE SCIENCES INDUSTRY ANALYSIS **2008**

Shaping Infinity

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Selig Center for Economic Growth
The University of Georgia

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Major contributer to *Shaping Infinity*
Lorena Akioka, Editor

From the President of Georgia Bio

Georgia Bio (GaBio) welcomes you to the third annual *Shaping Infinity*, the Georgia Life Sciences Industry Analysis 2008. This year's report not only provides data and commentary on the progress of the state's life sciences companies, but also features articles from Governor Sonny Perdue and Georgia Department of Economic Development Commissioner Kenneth Stewart on the state's efforts to support industry growth.

The Georgia Life Sciences Industry Analysis 2008 was produced by the University of Georgia's Selig Center for Economic Growth in the Terry College of Business. The report provides a full range of data from venture capital raised by start-ups to the life sciences-related products manufactured and marketed by established companies.

In addition to Governor Perdue and Commissioner Stewart, the leaders of Altea Therapeutics, Medical College of Georgia, Merial, and Sciele Pharma have written articles for the report describing their breakthrough research and product development. This special section begins on page 15.

In the pages that follow, *Shaping Infinity* reveals that Georgia is home to a robust life sciences industry in which the world's most advanced technologies are applied across business sectors, from pharmaceuticals and biomedicine to agriculture and biofuels. The analysis is the only annual report to capture the full impact of the state's private sector life sciences industry on Georgia's economy.

The 2008 *Shaping Infinity* also heralds the upcoming 2009 Biotechnology Industry Organization International Convention, May 18-21, 2009, in Atlanta. This is the largest biotechnology convention in the world. It is a reflection of the dramatic growth in Georgia's life sciences industry that this international convention is coming to Georgia and the Southeast for the first time.

GaBio is a private, non-profit association representing 300 life sciences companies, universities, research institutes, government groups and other business organizations. The organization sincerely thanks this year's sponsors—Georgia Department of Economic Development and Georgia Allies—and Selig Center Director Jeffrey Humphreys and his staff for making this report possible.

Charles Craig, President
Georgia Bio
www.gabio.org

Georgia Life Sciences Industry Aiming to Feed, Fuel, and Heal the World

The Honorable Sonny Perdue
Governor of Georgia

These are exciting times for Georgia's life sciences industry. Our state is leading the nation in applying life sciences technologies to improve healthcare, agriculture and bioenergy, and many of these new biotechnologies were discovered in our universities. As Georgia applies an intentional focus on developing these exciting and innovative industries, we are building a reputation around the world as a state that is aiming to feed, fuel and heal the world.

When you travel around our state, you are never far from examples of how this 21st century technological revolution is transforming our landscape. The Commission for a New Georgia, which I formed in 2003, initially identified six top strategic industries critical to our economic growth and the health and well-being of all Georgians. Four of these industries—agribusiness, energy and environmental, healthcare and eldercare, and life sciences—are driven by advances in biotechnologies.

Since then, we have established six Centers of Innovation to support the growth of our strategic industries, including centers for Agriculture, Life Sciences and Advanced Manufacturing. The newest one, established this year, is the Energy Center of Innovation, which will spur development of the state's bioenergy industry.

Growth in this sector has accelerated over the past two years. More than $750 million worth of energy-related products have started in Georgia. The Energy Center of Innovation will focus on recruiting bioenergy companies to Georgia. It also will offer its clients access to university research and development resources and to potential funding sources via research grants and other financing opportunities.

Among Georgia's bioenergy assets are two ethanol production facilities and a third scheduled to begin producing corn ethanol in the fall of 2008. Two other ethanol plants are currently under construction, including Range Fuels, in Treutlen County, the first commercial cellulosic ethanol plant in the nation. In addition, eight companies currently produce biodiesel in Georgia.

The Agriculture Center of Innovation supports the application of advanced biotechnologies to help our state's crop and animal farmers, who are the backbone of Georgia's economy. Our farmers are among the most aggressive in the nation in adopting biotechnology to improve their farming and the foods they produce.

We also have leading companies in agricultural biotechnology in Merial and Monsanto. Merial is one of the world's largest animal healthcare products companies, making products that keep domestic and farm animals healthy and preventing the spread of animal diseases to humans. Monsanto operates a state-of-the-art protein manufacturing plant—the largest in the world—that makes bovine growth hormone to increase milk production. This product makes dairy farming more efficient and environmentally friendly.

The Life Sciences Center of Innovation facilitates the translation of basic research at our universities into technologies that companies turn into new medicines and medical devices. The research strengths of Emory University, Georgia Institute of Technology, Georgia State University, Medical College of Georgia, Clark Atlanta University and University of Georgia, supported by the Georgia Research Alliance, are a key reason so many pharmaceutical, biotechnology and medical devices companies have located in our state. Among the 300 life sciences companies in Georgia are major enterprises such as Altea Therapeutics, AtheroGenics, CardioMEMS, Ciba Vision, CryoLife, Immucor, Inhibitex, Noramco, OPTI Medical Systems, Sciele Pharma, Solvay Pharmceuticals, Theragenics, and UCB.

In addition, Georgia is home to the U.S. Centers for Disease Control and Prevention, the Carter Center, American Cancer Society, American Arthritis Foundation and CARE International. Add to this landscape the state's world-class universities and it's easy to see why we have earned the title "Crossroads of Global Health."

Part of the current excitement in our life sciences community is the opportunity to showcase all Georgia life sciences industry strengths to the world when the Biotechnology Industry Organization brings its 2009 BIO International Convention to Atlanta and the Georgia World Congress Center, May 18-21, 2009. The BIO convention is the world's largest biotechnology conference, attracting more than 20,000 professionals from 70 nations. It is an open, international forum on the priority needs of world populations in the areas of medicine, nutrition and fuels.

Georgia's universities and life sciences companies are critical players in meeting these needs. Our state's contributions in solving the globe's biggest challenges, as well as our strategies for supporting the institutions and companies that do the hard work, will make a lasting impression on the world of biosciences and ensure our place at the table for years to come.

Executive Summary

The life sciences industry in Georgia is relatively young, and homegrown, with the largest group of firms established between 1996 and 2007, and headquartered in Georgia. Atlanta, Athens, and Augusta are the hubs of life sciences industry in Georgia.

In 2006, private establishments in the life sciences industries provided 15,283 jobs, over $940 million in annual wages, and an average annual wage of $61,507. The industry is projected to produce $7.8 billion in Georgia-generated sales in 2008 (projections based on rates of growth reported for 1997-2002).

- The 2001-2006 growth in these industries surpassed the overall Georgia industry total by large margins, but the growth slowed down considerably between 2005 and 2006.
- The growth in medical and diagnostic laboratories, surgical appliance and supplies manufacturing, and life sciences R&D fueled the 2001-2006 employment growth. Pharmaceutical manufacturing also grew, but at a slower rate.
- The emergence of a sizable group of bio-fuel and bio-energy firms is a new development in Georgia.
- Georgia ranks 12 in the nation in the amount of venture capital invested in biotechnology between 2006 and 2008.
- Georgia ranks among the top ten in the nation in the number of animal scientists, zoologists, microbiologists, and foresters in the workforce. Georgia's medical scientists earn the highest median annual salaries in the nation. The number and annual salaries of life sciences technicians ranks relatively low, however.

Survey Highlights

Medical devices, pharmaceutical, and diagnostics firms are most common among the surveyed companies, with manufacturing and R&D highlighted as the most prevalent industries.

Life sciences companies in Georgia tend to be small in employment size, with over 36 percent of responding companies hiring fewer than ten employees. Companies that have between 11 and 20 and between 21 and 50 staffers each make up about 20 percent of the surveyed companies. Companies employing over 50 employees make up over 23 percent of the surveyed companies.

Twenty-seven of the 47 responding companies plan to add a total of 228 new jobs in the coming year, the majority of them in sales, marketing, and office support (74 jobs), research and technology (58 jobs), and manufacturing (50 jobs).

Survey respondents cite the availability of skilled managers and technicians as the most pressing labor force issue. The availability of skilled researchers is considered a strong point, however.

Products and Focus

- The surveyed companies currently have 306 products under development or pending approval and report 412 products on the market.
- Cancer and infections are the most commonly cited targets for pharmaceutical, biopharmaceutical, and diagnostic firms.
- General hospital devices, cardiovascular, and neurological devices are the most common specialties among the

medical devices firms. Biologics companies mention therapeutics, blood, vaccines, cell cultures, and research materials as their main products.

Funding

- Most of the respondents reported $10 million or less in 2006 revenues, 20 of the 47 respondents reported income, while 21 reported losses.
- Respondents raised over $342.5 million in capital in 2007, and expect to top that with $405.9 million raised in 2008. Respondents to the 2008 survey raised $1,018,906,942 over the past three years.
- Founders, private equity, partnerships, grants, and venture capital top the list as the most common sources of funding in 2005-2008.
- Access to capital is considered a major challenge by 18 of the 47 respondents.

Georgia's Business Environment

Cost of living, the quality of life, labor force issues, and infrastructure are singled out as the most important factors for Georgia's life sciences companies. While the majority of respondents considered the quality of life a strong point, the availability of specialized managers was singled out as a weakness.

Among the infrastructure and related issues, the proximity to academic institutions, adequate space and facilities, and the availability and cost of land are considered strengths in Georgia, while traffic congestion, the availability of water, land use, and the cost of energy caused concern.

Out of the 80 respondents to the 2007 and 2008 surveys, 39 report university affiliations, primarily with the University of Georgia, Georgia Institute of Technology, and Emory University. This cooperation mainly focuses on technology transfer and matters of licensing.

The 2008 Georgia Life Sciences Industry Survey was sent to 293 companies, and 47 companies answered the survey. Data was tabulated for 207 companies including 2007 and 2008 Survey respondents, and companies for which publicly available data was available.

The principal author thanks computer science professor Dr. Krzysztof Kochut of the University of Georgia for his expertise in administering the online version of the survey.

Life Sciences Industry Overview

The life sciences industry uses modern biological techniques and supporting technologies with a goal to improve human and animal health, address threats to the environment, improve crop production, contain emerging and existing diseases, and improve currently used manufacturing technologies. These industries also utilize a specialized workforce, manufacturing procedures and facilities, and often require targeted funding.

For the purpose of this study, the life sciences industry includes life sciences research and development, pharmaceutical and medicine manufacturing, electro-medical apparatus manufacturing, surgical and medical instrument manufacturing, surgical appliance and supplies manufacturing, medical and diagnostic laboratories, and blood and organ banks. This year's report also includes data on agricultural life sciences and the biofuel and bioenergy industries.

This broad definition encompasses biotechnology, pharmaceuticals, diagnostics and medical devices branches, as well as agricultural, biofuel and bioenergy industries as they all are a part of the state's life sciences base that reaches from the high tech labs at the leading universities to manufacturing facilities scattered around the state.

The 2008 Georgia Life Sciences Industry Survey was sent to 293 companies active in the areas of life sciences R&D, pharmaceutical, and medical devices manufacturing, medical and diagnostic laboratories, blood and organ banks, agriculture and bioenergy. Data for this analysis came from the 47 companies that responded, information from another 16 companies pulled from last year's survey, and statistics for 144 companies gleaned from publicly available sources. Data for these companies was supplemented with 2007 responses, if they were available. Therefore, data for 207 companies were tabulated, with the degree of detail varying depending on the source of data. Like last year, we selected only a sample of companies that represent medical and diagnostic laboratories. Thus, the results of the survey primarily focus on the pharmaceutical, biotechnology, and medical devices groups. (See Table 1.)

The majority of Georgia's life sciences companies are located in the Atlanta, Athens, and Augusta metropolitan areas, with a much smaller number located in Macon, Gainesville, and Savannah. A fairly large group of companies, however, is located in non-metropolitan areas. (See Table 2.)

General Trends

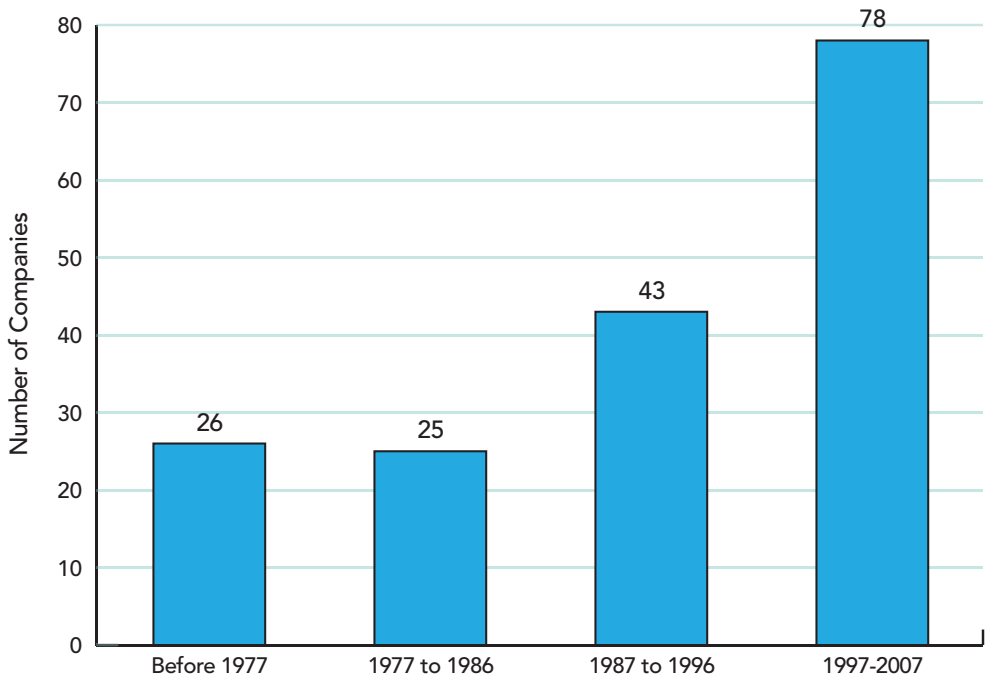
The growth of the life sciences industry in Georgia has been captured by the U.S. Economic Census, which reported that the number of life sciences companies in the state climbed by 30 percent from 1997 to 2002, with the largest jump—77 percent—reported in life sciences research and development. While the industry's annual payroll almost doubled, the number of paid employees increased by 33 percent, with the highest—almost triple-fold—growth occurring in blood and organ banks and life sciences R&D. At the same time, industry-wide sales jumped by over 30 percent. In 2002, Georgia ranked fourteen in the number of life sciences establishments and had

Table 1
Survey Details

MSA	Number of companies	Respondents		Covered*	Total surveyed	
		Number	Rate	Number	Number	Rate
Atlanta	213	34	16.0	119	153	71.8
Albany	1	0	0.0	0	0	0.0
Athens	23	6	26.1	9	15	65.2
Augusta	16	0	0.0	11	11	68.8
Macon	5	1	20.0	1	2	40.0
Gainesville	3	2	66.7	1	3	100.0
Columbus	2	0	0.0	2	2	100.0
Dalton	2	0	0.0	2	2	100.0
Rome	2	0	0.0	0	0	0.0
Valdosta	1	0	0.0	1	1	100.0
Warner Robins	1	0	0.0	0	0	0.0
Savannah	3	0	0.0	1	1	33.3
Non-metro	21	4	19.0	13	17	81.0
Total	293	47	16.0	160	207	70.6

*Data gathered by the Selig Center from publicly available sources, and 2007 Survey responses.

Life Sciences Companies by Year of Founding



Based on 207 surveyed companies (172 valid, 35 missing).

Table 2
Life Science Companies in Georgia, by Location

MSA	Number of Companies
Atlanta	
Alpharetta	17
Atlanta	58
Duluth	11
Kennesaw	8
Lawrenceville	7
Marietta	22
Norcross	28
Roswell	5
Smyrna	7
Stone Mountain	5
Tucker	6
Other Atlanta	39
Total	213
Albany	1
Athens	
Athens	18
Bogart	3
Watkinsville	2
Total	23
Augusta	
Augusta	15
Martinez	1
Total	16
Columbus	2
Dalton	2
Gainesville	3
Macon	
Lizella	1
Macon	4
Total	5
Rome	2
Savannah	
Savannah	2
Rincon	1
Total	3
Valdosta	1
Warner Robins	1
Not in metropolitan statistical areas	21
Total	293

the eighteenth largest private sector workforce of its kind in the country.

The sector's steep rate of growth is confirmed by the 2008 Life Sciences Industry Survey, which shows that 45.3 percent of the surveyed companies were founded in the last decade. Not only is this growth fast paced and recent, it is also home grown. In fact, over 80 percent of the surveyed companies, for which data were available, were founded in Georgia, and 77.3 percent are headquartered here.

The most recent U.S. Bureau of Labor Statistics data show that the number of life sciences companies kept increasing through 2006. According to this source, Georgia's life sciences sector employed 15,283 people in 2006: 3,386 in surgical, electro-medical and electrotherapeutic instruments manufacturing, 6,575 in medical and diagnostic laboratories and blood and organ banks and 2,051 in life sciences research and development. Since the BLS data report only private employment covered by unemployment insurance, the actual size of the life sciences industry workforce is much larger, and includes, for example, 6,500 employees of the Centers for Disease Control and Prevention.

Although a relatively small part of the state's economy, Georgia's life sciences industry as a whole expanded at a much faster pace than the rest of the state's economy between 2001 and 2006. The number of life science establishments increased by an impressive 38.3 percent (compared to the 13.8 percent average for all industries), employment jumped by 11.3 percent (compared to the 4 percent all-industry average), and total wages jumped by over 38.4 percent, compared to the 19.5 percent increase in the state economy as a whole.

The growth continued between 2005 and 2006, though far more slowly than in previous years. In fact, the 2005-2006 rates of growth in life sciences employment and establishments lagged behind the state average. Over the same period, however, the percentage increase in total wages outpaced the growth in the rest of the economy by almost 2.5 percent.

Medical and diagnostic laboratories, the largest of the Georgia's life science industries, provided 5,144 jobs and over

Table 3
The Life Sciences Industry in Georgia

	Number of Establishments	All Employees	Average Annual Pay ($)	Total Wages ($)
Total, all industries	261,945	4,025,744	40,371	162,521,812
Life sciences industries*				
Pharmaceutical and medicine manufacturing	48	3,271	88,408	289,182
Medicinal and botanical manufacturing	4	309	67,061	20,688
Pharmaceutical preparation manufacturing	34	2,470	87,780	216,810
In-vitro diagnostic substance manufacturing	8	ND	ND	ND
Other biological product manufacturing	2	ND	ND	ND
Electromedical apparatus manufacturing	7	236	59,162	13,967
Surgical and medical instrument manufacturing	10	761	71,570	54,471
Surgical appliance and supplies manufacturing	50	2,389	50,834	121,447
Research and development	146	2,051	69,442	142,438
Medical and diagnostic laboratories	379	5,144	44,946	231,212
Blood and organ banks	29	1,431	60,997	87,307
Life sciences industry total	669	15,283	61,507	940,025

*Estimated by the Selig Center for Economic Growth, Terry College of Business, The University of Georgia.

Source: Bureau of Labor Statistics, Quarterly Census of Employment and Wages.

$230 million in wages in 2006. Although the employment in this sector had increased by a 5.1 percent compound annual rate of growth since 2001, it registered only a 0.5 percent job growth in 2006. Total wages increased at an even slower rate, which amounted to an average annual pay drop of 0.1 percent. The 2001-2006 growth in medical and diagnostic laboratories firms' employment, however, was the strongest in the industry, and fueled job growth in the sector as a whole.

Unfortunately, the electro-medical apparatus manufacturing, surgical and medical instruments manufacturing, and surgical appliance and supplies manufacturing sectors could not match this pace. Altogether, these sectors provided 3,386 jobs in 2006, lost over 4 percent of jobs since 2005, and had fewer employees in 2006 than in 2001. The most dramatic losses occurred in electro-medical, surgical and medical instruments manufacturing. Nonetheless, despite shedding workers in 2006, the largest of the medical device sectors—surgical appliance and supplies manufacturing, (2,389 jobs)—still provided more jobs last year than in 2001.

Pharmaceutical and medicine manufacturing, on the other hand, which provides 3,271 jobs and close to $300 million in wages (21 percent and 31 percent of the life sciences industry total, respectively), increased employment in 2006 by a modest 1.2 percent (half of the all-industry total), but leaped over the state's average increases in wages by over 10 percent. Pharmaceutical manufacturing shed some jobs between 2002 and 2005, but added five new establishments in 2006, so future employment gains probably are forthcoming.

Overall, the R&D sector performed exceptionally well. Life sciences R&D employed 2,051 people and paid over $142 million in annual wages in 2006 (13.4 percent and 15.2 percent of the life sciences industry total, respectively). This sector's employment expanded at a rapid 8.5 percent average annual rate of growth between 2001 and 2006. Even more remarkably, the 2005 to 2006 rate of growth exceeded the five-year average by over 4 percent, and stood out as the fastest employment increase among the life sciences groups in the state. The 4 percent year- over-year increase in average annual pay also exceeded the five-year average.

The average annual salary for those (including professionals, manufacturing workers, and administrative support) in the private sector of the industry reached $61,507 in 2006, up 7 percent from the previous year. The average annual salary of $88,408 in pharmaceutical manufacturing topped the sector's pay scale and exhibited the second steepest percentage increase in the industry. Salaries in the medical devices manufacturing sectors ranged from $50,834 to $71,570, and actually dropped by almost 5 percent in surgical and medical instruments manufacturing. The average annual pay in life sciences R&D totaled $69,442.

The 2008 report includes, for the first time, data for agricultural and biofuel and bioenergy firms in Georgia. Although the available data for this sector is limited, it is possible to estimate the size of the sector, which, in 2006 included 76 establishments. The number of employees totaled 1,827, with an average salary of $49,365. (See Table 5 on page 7.)

Trends in Employment and Occupations

The life sciences industry is a varied field of companies that range from manufacturing plants employing more than a thousand workers, to small start-ups with a very small staff. The 2008 sample of companies includes a mix of small companies—with less than 10 employees—which comprise the core of the industry (36 percent), and larger firms (with between 11 and 50 staffers) making up 40.9 percent of the total. Seven of the firms surveyed in 2008 have more than 250 employees.

As the survey shows, the appetite for workers decreased in 2008: 38.3 percent of respondents are interested in hiring graduates of applied life sciences education programs, compared to 64 percent in 2007; 34 percent are interested in providing unpaid internships, and 19.1 percent expressed interest in providing paid internships. (see Table 6.)

As to any immediate employment changes, 27 out of 47 responding companies anticipate adding workers in 2008-2009, and 16 companies plan to maintain current staffing levels. One company reported plans to cut manufacturing jobs and management positions.

A total of 228 new jobs will be added in the companies that responded to the survey. In contrast to 2007, when the majority of new jobs went to scientists and technologists, the majority of new jobs in 2008 will be in sales, marketing and

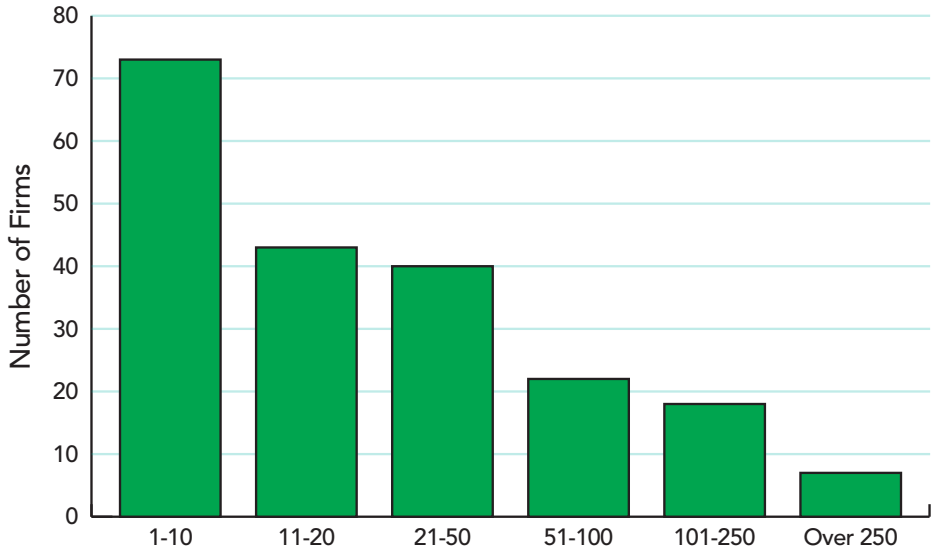
Table 4
Dynamics of Growth in Georgia's Life Sciences Industry

	Percent change from previous year				
	2002	2003	2004	2005	2006
Total, all industries					
Number of Establishments	1.9	2.6	2.6	2.8	3.2
All Employees	-1.6	-0.6	1.5	2.4	2.4
Total Wages	0.0	1.8	5.0	5.7	5.7
Life sciences industries					
Number of Establishments	14.0	10.4	6.8	1.7	1.2
All Employees	4.9	2.1	0.7	2.1	1.2
Total Wages	8.6	6.1	4.7	5.9	8.3

	2001-2006 Percent Change	2005-2006 Percent Change	Compound Annual Rate of Growth
Total, all industries			
Number of Establishments	13.8	3.2	2.6
All Employees	4	2.4	0.8
Total Wages	19.5	5.7	3.6
Life sciences industries			
Number of Establishments	38.3	1.2	6.7
All Employees	11.3	1.2	2.2
Total Wages	38.4	8.3	6.7

Source: Bureau of Labor Statistics, Quarterly Census of Employment and Wages.

Employment in Georgia's Life Sciences Industry



Based on 207 companies (203 valid, 4 missing).

Table 5
Agricultural and Biofuel/Bioenergy Companies

	Number of Establishments	All Employees	Average Annual Pay ($)	Total Wages ($)
Ethyl alcohol manufacturing	3	ND	ND	ND
All other basic organic chemical manufacturing	19	785	62,076	48,735
Cellulosic organic fiber manufacturing	1	ND	ND	ND
Nitrogenous fertilizer manufacturing	8	186	63,761	11,833
Phosphatic fertilizer manufacturing	10	120	36,107	4,345
Fertilizer, mixing only, manufacturing	12	204	35,197	7,165
Pesticide and other ag. chemical manufacturing	14	532	34,070	18,111
Wet corn milling				
Soybean processing	4	ND	ND	ND
Other oilseed processing	5	ND	ND	ND
Total	76	1,827	49,365	90,189

Total does not include industries for which data was not available.
Source: Bureau of Labor Statistics, Quarterly Census of Employment and Wages.

Table 6
Help Wanted

	Number of Companies	Percent of Cases
Interested in hiring graduates of applied programs	18	38.3
Interested in providing unpaid internships	16	34.0
Interested in providing paid internships	9	19.1
Interested in providing financial support to the program	1	2.1
No interest	15	31.9
Total cases	47	
Valid cases	41	
Missing	6	

office support (74 jobs). Employment in the areas of science and technology will increase by 58 jobs. The surveyed companies also anticipate hiring 50 manufacturing workers. Senior and other management positions comprise the fourth largest group of the anticipated new hires (39 jobs), while seven new jobs will be added in the regulatory and legal professions.

Finding and hiring skilled technicians and specialized managers was singled out by survey respondents again as the most important labor force factor impacting the operations of life sciences companies in Georgia. While opinion was evenly split on whether the availability of skilled technicians is a strength or weakness in Georgia (12 each), most respondents agreed that there are not enough specialized managers in the state.

The need for managers and technical personnel combined with a perceived dearth of these workers in the state means that prospective new hires could command higher salaries. It also exposes a potential weakness, however, which, in this highly competitive environment, may put Georgia at a disadvantage with firms seeking to relocate. More programs to train managers specifically for the needs of this rapidly expanding industry would be a practical solution.

The availability of skilled researchers, on the other hand, is considered very important or critical to the operations of 22 of the 47 responding companies, and 17 deemed the availability of researchers a strongpoint. Eight of the respondents to the 2008 survey believed that there was a shortage of researchers here, however. Most respondents agreed that the proximity to academic institutions was a definite strength in Georgia's business environment, and only one respondent considered it a weakness.

In 2007, Georgia ranked among the top ten in the nation in the number of animal scientists (4), zoologists (7), microbiologists (8), and foresters (8) in the workforce. Out of these categories, microbiologists in Georgia also ranked second and third in the country in terms of average and median annual salaries. Medical scientists, on the other hand, are fewer in number (30), but earn the highest median annual salaries in the nation. The number of life sciences technicians in Georgia ranks relatively low, compared to other states, however. The

Table 7
Anticipated Changes in Employment

	Number of Companies	Percent of Valid Cases	Percent of All Cases
No changes in employment	16	36.4	34.0
Expand employment	27	61.4	57.4
Ph.D./M.S. scientists	15	34.1	31.9
Bench technologists	14	31.8	29.8
Manufacturing workers	10	22.7	21.3
Senior management	13	29.5	27.7
Management	14	31.8	29.8
Regulatory/legal	7	15.9	14.9
Sales/marketing	16	36.4	34.0
Office support	12	27.3	25.5
Total cases	47		
Valid cases	44		
Missing	3		

Table 8
Anticipated Employment Expansion, 2008-2009

Position	Number of jobs
Ph.D./M.S. scientists	28
Bench technologists	30
Manufacturing workers	50
Senior management	15
Management	24
Regulatory/legal	7
Sales/marketing	55
Office support	19
Total jobs	228

Table 9
Labor Force Availability in Georgia, 2008

	Importance to Operations		
Availability	Critical	Moderate	Not Important
Technicians	29	10	4
Managers	30	11	2
Researchers	22	18	3
Manufacturing labor	18	9	16

	Weakness or Strength in Georgia	
	Weakness	Strength
Technicians	12	12
Managers	17	8
Researchers	8	17
Manufacturing labor	10	10
Total cases	47	
Valid responses	43	
Missing	4	

annual salaries in these professions also rank relatively low, except for forest and conservation technicians who earn the tenth highest average paychecks in the country.

Government institutions are the largest employer of life scientists, followed by life sciences research and development firms, and colleges and universities. Life sciences professionals also find employment in pharmaceutical manufacturing, hospitals, consulting, engineering and testing services.

Company Focus

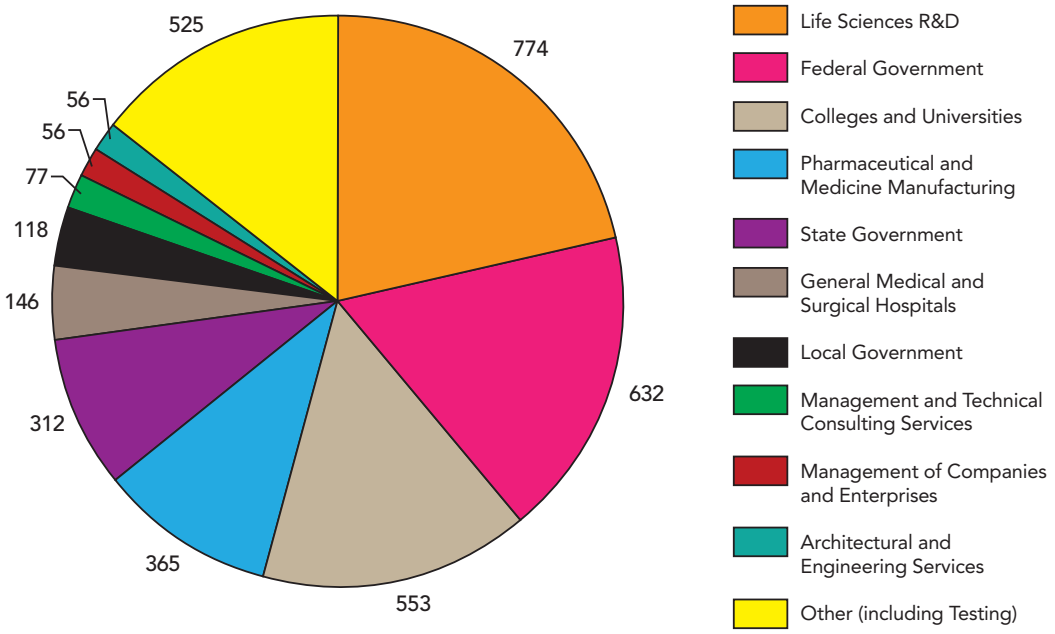
The main branches of the life sciences industry covered by this survey are pharmaceuticals, diagnostics, medical devices, and life sciences R&D (biotechnology). These branches develop and manufacture drugs, diagnostics, medical devices, and biological substances, and provide related services to other companies or consumers. The areas of focus and product ap-

Table 10
Georgia's 2007 Life Sciences Workforce: Employment and Salaries

	Rank*					
	Total Employment	Mean Annual Salary	Median Annual Salary	Total Employment	Mean Annual Salary	Median Annual Salary
Animal scientists	4	14	15	100	54,090	58,110
Agricultural and food science technicians	14	18	15	450	36,110	35,090
Biochemists and biophysicists	NA	NA	NA	NA	NA	NA
Biological scientists, all other	13	13	11	660	66,430	65,120
Microbiologists	8	2	3	520	85,720	81,220
Biological technicians	25	23	23	690	35,820	34,240
Chemists	20	14	10	1210	69,490	67,820
Chemical technicians	15	31	32	1360	38,950	37,100
Environmental scientists and specialists, including health	27	26	26	790	58,060	54,190
Environmental science and protection technicians, including health	19	42	42	620	34,480	32,540
Conservation scientists	29	28	18	210	58,220	60,100
Foresters	8	17	19	320	55,160	51,970
Forest and conservation technicians	22	10	17	290	38,180	36,110
Epidemiologists	NA	25	22	NA	55,640	55,190
Food scientists and technologists	15	21	19	220	56,380	55,530
Medical scientists, except epidemiologists	30	1	1	320	132,930	130,650
Soil and plant scientists	13	13	7	240	64,560	67,580
Zoologists and wildlife biologists	7	40	40	550	44,820	42,060
Life scientists, all other	17	2	1	130	108,630	107,680
Forensic science technicians	13	22	28	230	44,620	37,480

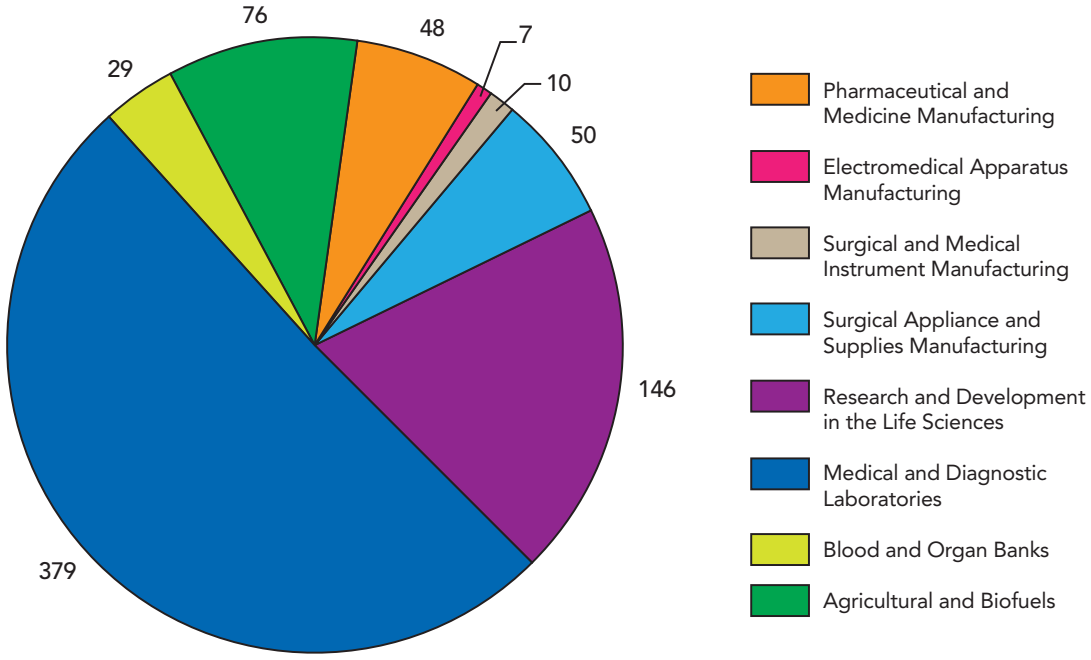
*Ranked by the Selig Center for Economic Growth.
Source: U.S. Department of Labor, Bureau of Labor Statistics, 2007 State Occupational Employment and Wage Estimates.

Life Scientists Employment by Industry, Georgia, 2006



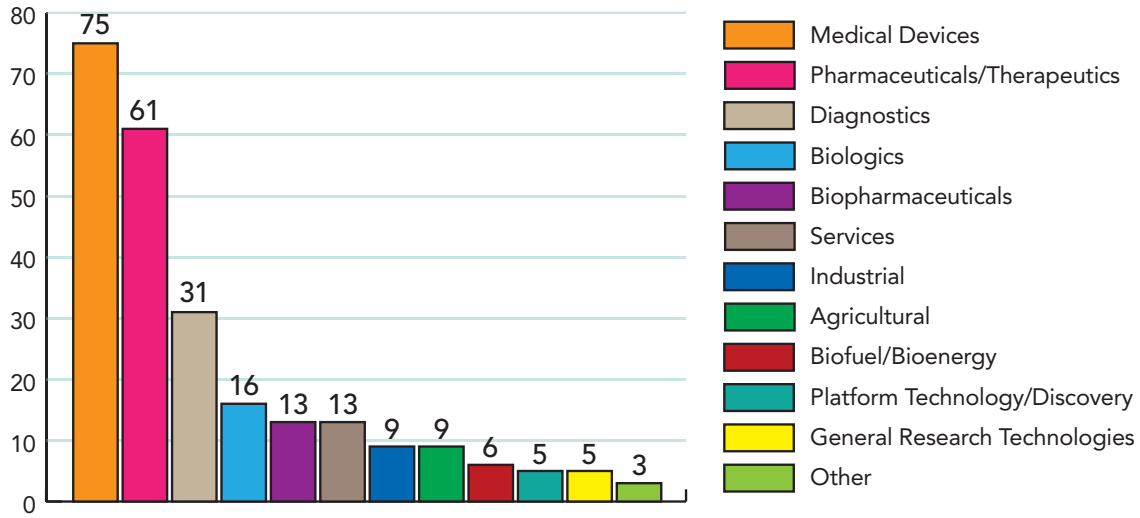
Source: Selig Center for Economic Growth, based on: A Concise Look at Occupations in the Life and Physical Sciences, John I. Jones, BLS; BLS occupational data.

Life Sciences Industry, Number of Companies, 2006



Source: U.S. Department of Labor, Bureau of Labor Statistics

Surveyed Companies by Type of Product



Based on 207 surveyed companies.

Table 11
Life Sciences Companies by Industry
(Percent)

	Manufacturing	R&D	Biotechnology	Medical And Diagnostic Labs	Blood and Organ Banks	Sales/ Marketing Business Services	Other
Medical devices	68.9	20.3	0.0	2.7	0.0	21.6	2.7
Pharmaceuticals/ therapeutics	56.7	41.7	10.0	0.0	0.0	20.0	1.7
Diagnostics	20.0	13.3	6.7	60.0	6.7	3.3	0.0
Biologics	43.8	62.5	31.3	12.5	0.0	6.3	6.3
Biopharmaceuticals	7.7	53.8	61.5	0.0	7.7	23.1	0.0
Services	0.0	53.8	23.1	30.8	0.0	23.1	0.0
Industrial	33.3	44.4	11.1	11.1	0.0	11.1	0.0
Agricultural	55.6	44.4	0.0	22.2	0.0	0.0	0.0
Biofuel/Bioenergy	83.3	16.7	0.0	0.0	0.0	0.0	0.0
Platform technology/ discovery	20.0	40.0	80.0	0.0	0.0	0.0	0.0
General research technologies	40.0	40.0	60.0	0.0	0.0	0.0	0.0
Other	0.0	33.3	33.3	0.0	0.0	0.0	66.7
Total							
Number	105	60	18	25	2	32	3
Percent	51.7	29.6	8.9	12.3	1.0	15.8	1.5

Based on 207 surveyed companies. Multiple-choice question. Percentages do not add to 100.

plications include, among others, human and animal health, environment, agriculture, and bioenergy.

Medical devices and technology firms are the largest group of companies in the 2008 survey. Pharmaceuticals are the second largest group, with diagnostics being third. Biologics are also relatively well represented. Since many companies are involved in more than one type of production, the number of responses to this question exceeds the number of companies surveyed.

For example, many firms that specialize in medical devices also cover pharmaceutical and diagnostic products. Pharmaceutical firms are also involved in biopharmaceuticals and biologics. Diagnostics are sometimes paired with medical devices, pharmaceuticals and biologics. Firms providing services most typically handle platform technology and general research technology as well.

The operations of pharmaceutical, biologics, industrial, agricultural and biofuel firms most commonly include manufacturing and research and development (R&D), the two largest industries among the surveyed companies. The majority of medical devices and technology firms also are involved in manufacturing, with sales and R&D being important components of their operations. Diagnostic firms, on the other hand, most often operate medical and diagnostic laboratories, although their operations involve manufacturing and R&D, too. Life sciences services firms offer R&D, laboratory, biotechnology, and sales and marketing expertise. Sixty of the 207 surveyed companies are involved in research and development, which all types of companies utilize in their operations.

For the third consecutive year, cancer and infections were the most commonly cited targets for pharmaceutical, biopharmaceutical, and medical diagnostic firms. Among pharmaceutical firms, heart, inflammation, pain and neurological conditions were also among the top targets. Medical diagnostics firms continue to concentrate on infections and pathogens, but also target reproductive and urologic conditions. Metabolic and endocrine conditions are also a primary focus for many pharmaceutical and diagnostic firms in Georgia.

Amplifying the medical application of the life sciences, medical devices firms that responded to the survey most commonly specialize in hospital, cardiovascular, neurological, and radiological and other diagnostic devices. Reproductive/abdominal devices are well represented, too, which magnifies the importance of these areas of focus in Georgia, since both neurological and reproductive/abdominal conditions are also targeted by a large number of pharmaceutical and diagnostic firms.

Georgia companies that focus on biologics most commonly develop and manufacture biological therapeutics, vaccines, and blood products. Cell cultures, proteins, and research materials are also important. Microchip technology, cell analysis and separation, nanotechnology, and bioinformatics are the most common focus of discovery and platform technology firms.

Life sciences companies that provide services to other companies in the industry are crucial to the life sciences environment, too. Most of these companies specialize in contract research and laboratory work, while others offer sales, marketing, and other business services. Still others provide drug screening and development, clinical trials, product design and commercialization, quality assurance, and data management services. (See Table 12 on page 26.)

The importance of the availability of service providers cannot be overstated. Among the respondents to the 2008 survey, only three deemed it unimportant to their company operations, and over 40 percent of the valid responses stated that it was very important or even critical to their companies. While 16 respondents reported that the availability of service providers is a strongpoint, only 5 considered it weakness. Among the respondents to the 2007 survey, 18 were satisfied with the availability of service providers, while 15 considered it a weakness in Georgia.

Product Development

The 2007 and 2008 survey respondents currently have 306 products under development or pending approval, 234 of which require FDA approval. Luckily, the product pipeline headed to the FDA is fairly well stocked. The relatively low number of products in the earliest stages of development,

continued on page 26

Industry Insight

Special Articles Contributed by University and Industry Leaders

Industry Insight

Georgia: Crossroads of Global Health

Kenneth C. Stewart
Commissioner
Georgia Department of Economic Development

Georgia has come to be known as the "Crossroads of Global Health." We have accomplished this through the development of the infrastructure of pre-eminent institutions already in place as well as the application of modern knowledge capital concepts. The state's unique strength is the ability to integrate talent and ideas of the institutions collectively and to connect them through public-private partnerships.

When the global life sciences community gathers in Atlanta next year for the 2009 Biotechnology Industry Organization International Convention, the more than 20,000 delegates from 70 nations attending the world's largest biotechnology convention will see a robust life sciences industry made up of more than 270 multinational and emerging pharmaceutical, biopharmaceutical, and medical device companies.

Georgia is home to the U.S. Centers for Disease Control and Prevention, the world's premier public health research institute, and the Carter Center, with its efforts to eradicate diseases in developing nations. The American Cancer Society, American Arthritis Foundation, and CARE International are headquartered in Atlanta. Add to this landscape the state's world-class universities and it's easy to see why Georgia has earned the title "Crossroads of Global Health."

Georgia's public and private universities have been supported with $470 million in state funding through the Georgia Research Alliance, which fosters unique collaborations across diverse institutions that include Clark Atlanta University, Emory University, Georgia Institute of Technology, Georgia Sate University, Medical College of Georgia, and University of Georgia. This is a strong foundation on which to build a 21st century life sciences industry and we have plotted a strategy

to accelerate the growth of Georgia's global health leadership through increased capital investment, collaboration and branding.

Our goal is to move Georgia's bioeconomy into the top five over the next 10 years by implementing public policies that support translation of technologies from our universities to the commercial sector and recruitment of new technologies and companies to our state in the areas of advanced medical devices, biomanufacturing, vaccine and drug development, nanomedicine, and contract research services.

This year, new legislation provides investment tax incentives to create a significant venture capital fund. It will focus on critical early stage financing for emerging companies that commercialize bioscience technologies from our major research universities.

We also are developing a Georgia Business Center for Global Health that will facilitate the public-private partnerships we need to support the bioscience industry. The center will represent a comprehensive, unified approach to bioscience economic development and investment in the entrepreneurs who drive industry growth.

These efforts are only the start of a strategy to create a positive environment for venture capital investment; support formation of innovative companies and recruit others in our targeted sectors to form a critical mass of businesses, as well as increase awareness of our existing strengths and assets.

Georgia has moved beyond the low-cost land and labor economic development model of the 20th century. We recognize that in a knowledge-based economy, bioscience is a top strategic industry for growth in the 21st century.

Industry Insight

Merial Animal Health: Innovation Through Technology Platforms

José Barella
Executive Chairman
Merial Ltd.

Merial is a Georgia life sciences success story that some may view as a well-kept secret. While much attention rightly goes to the human health focus for a robust biotechnology industry in our state and metro area, Merial applies most of the same science, technology, and business energy to enhancing the health and performance of animals—for the ultimate benefit of humans worldwide.

Merial is one of the world's largest companies dedicated to developing, manufacturing, and marketing veterinary pharmaceuticals and vaccines for a wide range of species of companion and production animals. The company's global headquarters are located in Duluth, Georgia with other R&D and manufacturing sites in Athens and Gainesville.

Formed in 1997 when the animal health divisions of two of the world's largest pharmaceutical companies, Merck and Rhône-Merieux (now Sanofi-Aventis), merged into a stand-alone joint venture, Merial immediately became the leader in its industry. It does business in 150 countries globally, with 2007 sales of nearly $2.5 billion. We employ more than 5,400 people globally, with nearly 1,500 in Georgia.

As in many industries, success in animal health relies on a steady flow of new products, novel formulations, and the continuous improvement of existing products via line extensions. An important factor in Merial's innovation engine is our development of a number of proprietary technology platforms that form the basis for new, but related, entities that can be adapted and applied to multiple animal species. This means that instead of only pursuing development projects with a single focus, Merial can leverage these technology platforms to yield products that can treat or prevent different diseases in variety of species.

Examples of these technology platforms include vectored vaccines. Merial has been able to employ a common vaccine delivery method to the successful management of diseases of dogs, cats, poultry, cattle, and horses. One recent use of this vectored vaccine technology has given rise to the first therapeutic vaccine ever to treat cancer in any species of animal or in humans—a vaccine to treat canine melanoma. Another was responsible for stemming and eventually eradicating an outbreak of equine influenza in Australia.

Another chemical entity, a specific parasiticide, has been successfully adapted to control deadly internal parasites in animal species as diverse as pets, cattle, horses, and even camels and fish.

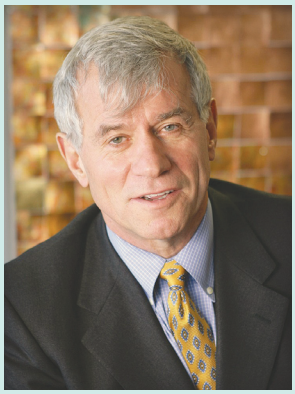
Merial's innovation process continues to develop novel formulations for current drugs and vaccines, such as needle-free delivery systems, long-acting injectable formations, and oral preparations that can be useful in treating a diverse population of animal species. Innovative and proprietary technology also comes into play in the complex processes required to manufacture the billions of doses of vaccines Merial produces in Georgia each year, all with consistent quality and biosecurity.

The relationship between humans and animals is inextricably interrelated. Whether by enhancing the bond between people and their pets, or by helping to provide the world with a reliable, plentiful, economical and safe food supply, Merial is proud of the role we play in the vast landscape of life sciences innovation in Georgia.

Industry Insight

Sciele Pharma Growing with Diversified Product Focus

Patrick P. Fourteau
Chief Executive Officer
Sciele Pharma



This is an exciting time for Sciele Pharma. The company continues to deliver strong revenues and earnings, and we have diversified our product portfolio and built a substantial product pipeline.

We recently expanded our business model beyond developing new products from our internal product pipeline, and licensing or acquiring late-stage development and marketed products. In July 2008, we acquired from Addrenex Pharmaceuticals the rights to our first, early-stage new chemical entity, ADX415, for the treatment of hypertension. Our focus remains on cardiovascular, diabetes, women's health and pediatrics products.

An important growth driver for the company is our pediatrics business. With the completion of the acquisition of Alliant Pharmaceuticals in June 2007, we significantly expanded our presence in pediatrics. This acquisition further diversified our product portfolio and provided a new platform to launch our pipeline of pediatric products. In the second quarter of 2008, we expanded the number of pediatric sales representatives to 143 from 100. We believe the solid base of products and new product launches, which include the first non-toxic pesticide treatment for head lice, will create additional future growth opportunities.

At the end of 2007, we strengthened our position in the diabetes market through our exclusive agreement in the U.S. with Novo Nordisk to market Prandin (repaglinide) and PrandiMet (combination of repaglinide and metformin) for the treatment of Type II diabetes. PrandiMet received FDA ap-

proval in June 2008. Both of these products fit well in our diabetes product portfolio and are an excellent complement to Fortamet.

We are also very pleased with the excellent results by our sales team launching our new Sular formulation in March 2008 and introducing Prenate DHA in June 2007, which has been the most successful product launch in the prenatal DHA market, the fastest growing area in prenatal vitamins. Our Prenate family of vitamins continues to be one of the leading prenatal brands in the U.S.

Enthusiasm is high about the significant product pipeline we have developed during the past 18 months. We launched five products in the first half of 2008. These products included the new Sular formulation (utilizing SkyePharma's technology), Prandin, Allegra ODT, Fenoglide and Twinject. We expect to launch an additional three products in the second half of this year, which include PrandiMet, a novel head lice treatment, and a new Prenate Elite formulation.

We have seven products in the pipeline. Two are under review at the FDA: a novel head lice treatment and CloniBid for hypertension. Four are currently in pivotal Phase III trials: Glycopyrrolate for chronic, moderate-to-severe drooling in pediatric patients; Clonicel for ADH; PSD502 for premature ejaculation; and Pravastatin/Fenofibrate combination for mixed dyslipedemia. ADX415 for hypertension is expected to begin Phase II clinical trials in the second half of this year.

Sciele is in a strong financial position, and the company's future growth will be driven by our new product launches. Our success is driven by the execution excellence of our employees. Our corporate culture, which is unique and entrepreneurial, has enabled us to attract a number of talented people, particularly in marketing and sales, business development, clinical, regulatory and legal areas. We are optimistic about our continued success, and we look forward to bringing new products to market that will improve the health and quality of life for patients.

Industry Insight

MCG Research Focused on Improving Health

Daniel W. Rahn, MD
President, Medical College of Georgia
and Senior Vice Chancellor for Health
and Medical Programs,
University System of Georgia

In 1900, the average life expectancy in the United States was 47 years. Today, it is more than 77. Over the past century, American lives have been extended three decades as a result of advances in the health sciences. A consequence of our progress is that today more than 100 million people, one of every three Americans, suffer from chronic illnesses and degenerative conditions such as cancer, cardiovascular disease, and arthritis.

Although we have much to be thankful for as we think about the improvement in quality of life and longevity, our successes have created new challenges. First, there is cost. At present, the United States spends approximately 16 percent of its gross domestic product on health care—considerably more than other industrialized nations throughout the world. In actual dollars, Americans spent $1.73 trillion in 2007 on health care. *That's $3.3 million every minute.* Further compounding the issue—the nation's pool of under- and uninsured has significantly increased due to shifts in health insurance coverage. In addition, dramatic demographic transitions, a huge aging population, and a highly diverse youth population have created a perfect economic storm: high demand but low supply of an educated health workforce. Much has been accomplished to address these issues, but much work remains.

The United States is home to more than 120 medical schools and approximately 100 academic health centers—the Medical College of Georgia, our nation's thirteenth oldest medical school, among them. The three components of the mission of academic health centers and MCG in specific—education, research, and clinical care—are collectively focused on improving the nation's health.

We are keenly focused on developing first-rate health professionals to meet current and future health care needs, bringing new advances to the care of patients, and conducting research in areas relevant to human health and disease. To maximize our impact on health, MCG has focused its research

on diseases that affect every family in Georgia and the nation: cancer, cardiovascular disease, diabetes and obesity, infection/inflammation, and neurological disease.

You're probably aware that Georgia is located in what is commonly referred to as "the stroke belt." MCG researchers recently enrolled the first patient in the nation in a study to determine if an intravenous antibiotic no longer in use in this country can find new life as a treatment for stroke, the nation's third leading cause of death. Our researchers discovered that this antibiotic can reduce stroke damage by up to 40 percent. One of our incubated companies, ReachMD Consult, is helping to meet clinical stroke diagnosing needs—quickly.

Although high blood pressure is one the most common chronic health problems in our state and nation, about two thirds of patients with high blood pressure don't have their pressure under good control. Pioneering studies at MCG's Georgia Prevention Institute are helping us understand the factors that contribute to hypertension and how more effective therapies can be identified for individuals.

A decade ago, MCG scientists were the first to identify an enzyme, called IDO, which helps the fetus avoid rejection by the mother's immune system. They speculated that tumors also might use the same mechanism to survive. Today, MCG researchers measure IDO levels in newly diagnosed leukemia patients to see if they are correct. If so, the IDO inhibitor the scientists have studied in the lab could prove a powerful new cancer treatment. These studies are a sample of the many discovery initiatives underway at Georgia's health sciences university—all innovative efforts that hold real promise for improving the lives of many.

In addition to conducting important research on significant health issues, MCG has developed a robust biotechnology transfer function—the process of moving research from the laboratory to the marketplace. MCG operates a business incubator devoted to the life sciences, a facility that houses up to five businesses ranging from bioinformatics and genomics to medical devices and diagnostics. An early success associated with MCG's technology transfer initiative is Zygogen, an Atlanta-based drug discovery company, whose work is based in part on an MCG scientist's invention related to the fluorescent tag in specific organs of zebrafish.

This year, the Georgia Department of Economic Development, the OneGeorgia Authority, and MCG began a strategic partnership to establish our innovation center as ***Georgia's*** Life Sciences Innovation Center. Statewide outreach plans are emerging, highly focused on opportunities created by our state's selection as host of the 2009 BIO International Convention—a global biotechnology event.

As Georgia's health sciences university, MCG makes significant contributions to the health and wellbeing of Georgians through highly integrated programs in education, research, and clinical care. While we focus on better health for the population we serve, many of our endeavors also result in better *economic* health for the state. We've done much, but much remains to be done—and partnership is central to our success. Academia, the business community, and government must work together to create an infrastructure that supports bringing the best minds of all communities together—and MCG is proud to lead the way.

Industry Insight

Altea Therapeutics — Emerging in Georgia's Life Sciences Industry

Eric Tomlinson, DSc, Ph.D.
President and CEO

Yogi Patel, PharmD
Manager, Business Development

Atlanta-based Altea Therapeutics received the Frost and Sullivan Technology Innovation Award in 2007 for its development of a breakthrough transdermal patch technology that enables painless drug delivery through the skin of drugs that until now were administered only by needle injection. The company's world-leading technology is at the core of several products in clinical development, including a diabetes patch that delivers insulin continuously through the skin for needle-free management of this ravaging disease.

Altea Therapeutics has dramatically extended the range of use of transdermal patches to treat human diseases by providing a method of drug administration that has been proven to lead to high patient compliance that can ultimately lead to improved treatment outcomes.

Although transdermal patches were introduced two decades ago in response to increasing demand for a more acceptable delivery system than needle injections, their use has been restricted to a limited number of molecules that can be delivered through the skin. The skin typically only allows the penetration of lipid-soluble drugs that have a molecular weight of less than approximately 500 daltons, thus preventing a wide range of modern drugs, including many bioengineered compounds, from being considered for transdermal delivery. Various modes of transdermal drug delivery such as iontophoresis, ultrasound, microneedles, and dermabrasion have endeavored to meet the need for a more convenient form of administering larger molecules. However, these approaches have limitations relating to efficiency and reproducibility. Altea Therapeutics has been able to overcome these challenges with its patented transdermal technology, The PassPort™ System.

Altea Therapeutics is conducting clinical trials in the United States for its lead products, including for the world's first insulin transdermal patch that provides continuous basal levels of insulin for people with both type 1 or type 2 diabetes and a fentanyl citrate transdermal patch that enables rapid and safe management of moderate to severe pain. The insulin transdermal patch delivers recombinant human insulin to patients with type 1 diabetes in a cost-effective manner. Clinical results with the fentanyl citrate transdermal patch demonstrate a pharmacokinetic profile similar to intravenous infusion of fentanyl citrate over 24 hours—namely, quick rise to steady-state and rapid elimination after patch removal or cessation of infusion.

Furthermore, the company is in pre-clinical development with a number of product candidates, including a low-molecular-weight heparin patch for thrombosis, a parathyroid hormone analog transdermal patch for osteoporosis, and an atypical antipsychotic transdermal patch for the management of psychosis. Altea Therapeutics also had pre-clinical experience with successful delivery of human and avian influenza antigens, Hepatitis B antigen and interferons.

Altea Therapeutics is first applying the PassPort technology to existing drugs. This not only allows the company to avoid both the costs and time spent on drug discovery and the risks of bringing a new compound to the market, but also provides it with a significant pipeline of potential products based on already-approved drugs. The company plans to develop its initial products with the pharmaceutical industry and has entered into agreements with several major pharmaceutical companies for the transdermal delivery of certain therapeutic proteins and carbohydrates.

Altea Therapeutics is prosecuting 16 patent families covering the use, composition, and manufacture of its proprietary transdermal delivery technology, the PassPort System. Fifteen U.S. patents and 22 international patents have been issued, with key patent protection through 2020 and beyond.

The state's support for the life sciences industry coupled with the finest educational institutions have offered Altea Therapeutics access to immense developmental resources, capabilities and talent. With ongoing support, Altea Therapeutics continues to grow and successfully develop a solution that finally delivers on the promise of drug delivery through the skin—making more patient-friendly treatments possible for a number of different conditions, providing millions of patients with improved disease management and freedom from needles and pumps and costly, complicated devices.

Continued from page 13

Table 12
Surveyed Companies by Product Application

Product/Application	Number of Companies
Agricultural	
Animal food and supplements	2
Agricultural testing lab	1
Pesticides	1
Plant nutrition	1
Poultry research	1
Agrochemical	1
Biologics	
Biological therapeutics	6
Blood	5
Vaccines	5
Cell cultures, compounds, research materials	5
Tissue	4
Allergenics	1
Devices	
Hospital devices	26
Cardiovascular	12
Neurological	11
Radiological	11
Clinical/laboratory	10
General, restorative	9
Reproductive/abdominal	8
Ophthalmic	8
ENT devices	5
Respiratory	4
Infection control	4
Implants and biomaterials	3
Dental	2
Wound closure/care	2
Other	5

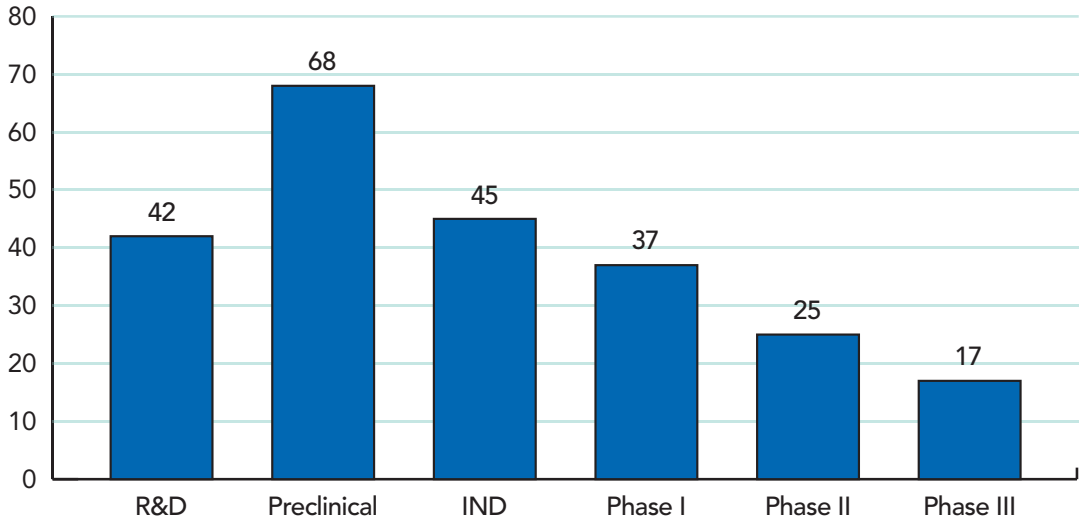
Product/Application	Number of Companies
Industrial/Biofuels/Bioenergy	
Biodiesel/ethanol	3
Cellulosic ethanol, methanol & higher alcohols	1
Paper	1
Pharmaceutical	
Cancer	15
Anti-infective	13
Neuropharmacological	10
Cardio-renal	10
Inflammatory/analgesic	10
Metabolic	8
Anti-viral	8
Endocrine	7
Gastrointestinal	7
Pulmonary	6
Reproductive/urologic	5
Pathogen/immunologic	5
Dermatologic	5
Coagulation	3
Dental	3
Ophthalmologic	2
Addiction	2
Medical imaging	1
Radiopharmaceutical	1
Anesthetic	1

Table 12 (Continued)
Surveyed Companies by Product Application

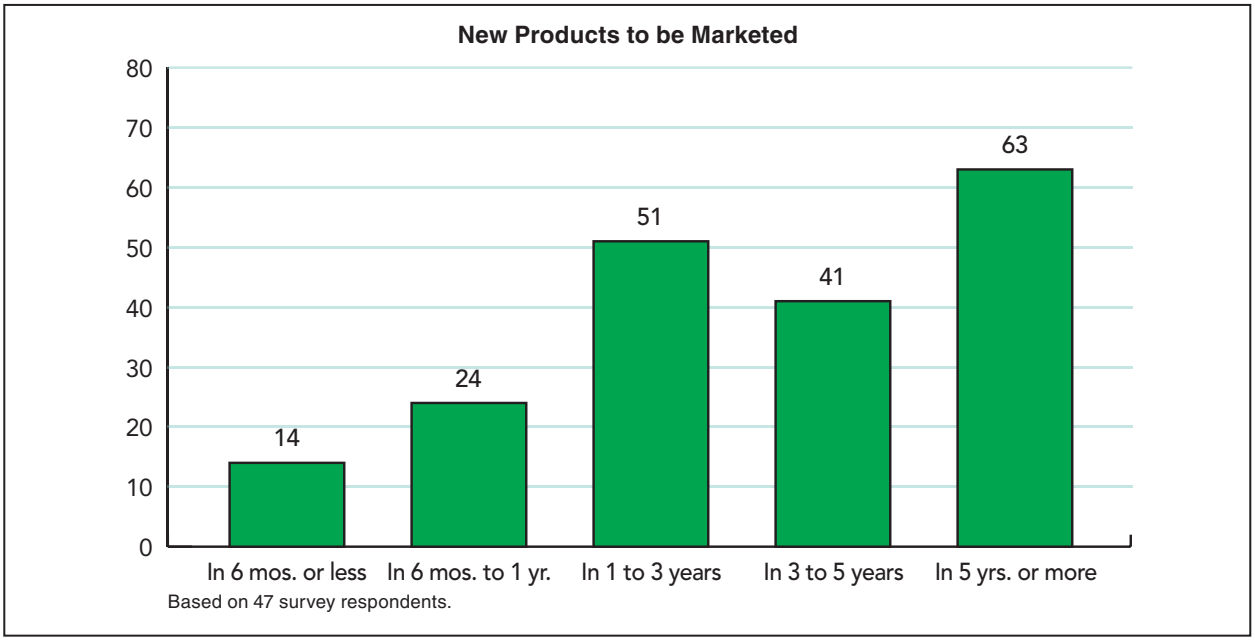
Product/Application	Number of Companies
Diagnostic	
Pathogen/immunologic	8
Cancer	7
Reproductive/urologic	6
Metabolic	5
Cardio-renal	4
Anti-viral	4
Gastrointestinal	3
Coagulation	3
Anti-infective	3
Dermatologic	3
Endocrine	2
Inflammatory/analgesic	2
Pulmonary	2
Dental	2
Medical imaging	1
Radiopharmaceutical	1
Ophthalmologic	1
Anesthetic	1
Addiction	1

Based on 207 surveyed companies. Multiple-choice question.
Numbers do not add up to previously listed totals.

Number of Products by Stage of Development



Based on 2007 and 2008 Survey responses (80 companies).



however, may be a concern, since only a fraction of products in R&D eventually make it into pre-clinical and clinical trials.

These respondents also reported 412 products on the market. If things go as expected, the 47 responding companies in the 2008 survey indicate that an additional 193 products will be available in the next five years.

Funding

Thirty-six of the 207 surveyed companies are publicly traded, with 16 of them headquartered in Georgia. Of the 2007 and 2008 survey respondents, 11 companies are public, and 68 are private.

According to the 2008 survey, 36 of the 47 respondent companies earned less than $10 million in Georgia-generated revenue last year, and seven reported $11 million or more. Also, 21 of the 2008 survey respondents reported losses in 2007, while 20 reported income.

The operations of life sciences firms whose new products require FDA approval differ from other companies in terms of high development costs and a lengthy approval process. Since this entire process takes an average of 15 years before the product hits the market, access to capital is a major obstacle. This is true especially for young companies with no marketed products. Since so many companies are both young, and are involved in pharmaceutical research and development, the financing challenge is even more pronounced.

Venture capital provides close to a quarter of the funding of biotechnology firms. Between 1995 and 2000, Georgia ranked 17 in both the amount of capital raised and the number of financing deals. The state moved up to 12 in rank in the amount of capital raised between 2006 and 2008. Between 1995 and 2008 Georgia moved ahead of New York, Michigan, Wisconsin, Ohio, and Virginia in the amount of capital invested in biotechnology companies. Biotechnology firms in the state had close to $90 million in capital in 2007 and the first quarter of 2008.

Venture capital investment also plays a pivotal role for medical device and technology firms. In previous years, these firms were able to raise more capital than biotechnology firms. From 2006 to 2008, however, biotechnology firms attracted more investment than companies specializing in medical devices.

Medical devices firms raised $103.9 million in venture capital between 2006 and 2008. Together, biotechnology and medical devices firms attracted $222.6 million during that time.

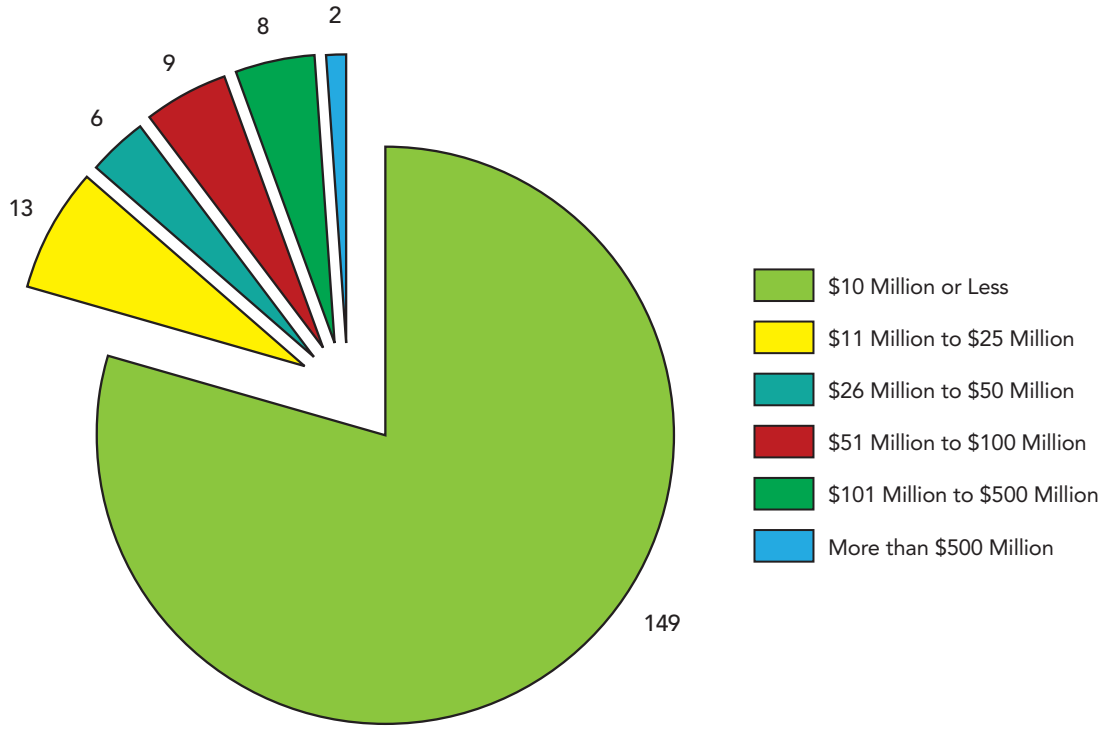
Access to capital and to government financial incentives was cited by 21 respondents (44.7 percent) as the most impor-

Table 13
Life Sciences Companies' Revenues and Income, 2007

Revenues ($ millions)	Number of firms	Income ($ millions)	Number of firms
Missing	4	Missing	6
under $10	36	Loss	21
$11 - $25	3	$0 - $5	18
$26- $50	0	$6 - $10	0
$51 - $100	2	$11 - $25	1
$101- $500	0	$26- $50	0
over $500	2	over $50	1

Based on 2008 Survey (47 respondents).

Revenues of Companies Covered by the 2008 Survey



Based on 191 companies covered by the survey (47 respondents, 144 covered)

Table 14
Venture Capital Investment in Biotechnology, Top 12 States, 2006-2008

State	Investment ($)	Deals
California	4,650,783,200	362
Massachusetts	1,991,820,700	183
Pennsylvania	678,365,300	67
New Jersey	579,833,800	49
Washington	438,129,300	52
North Carolina	401,578,400	49
Colorado	385,371,400	31
Maryland	355,068,400	59
Connecticut	285,850,900	19
Illinois	272,900,000	17
Texas	182,337,800	18
Georgia	118,709,400	17

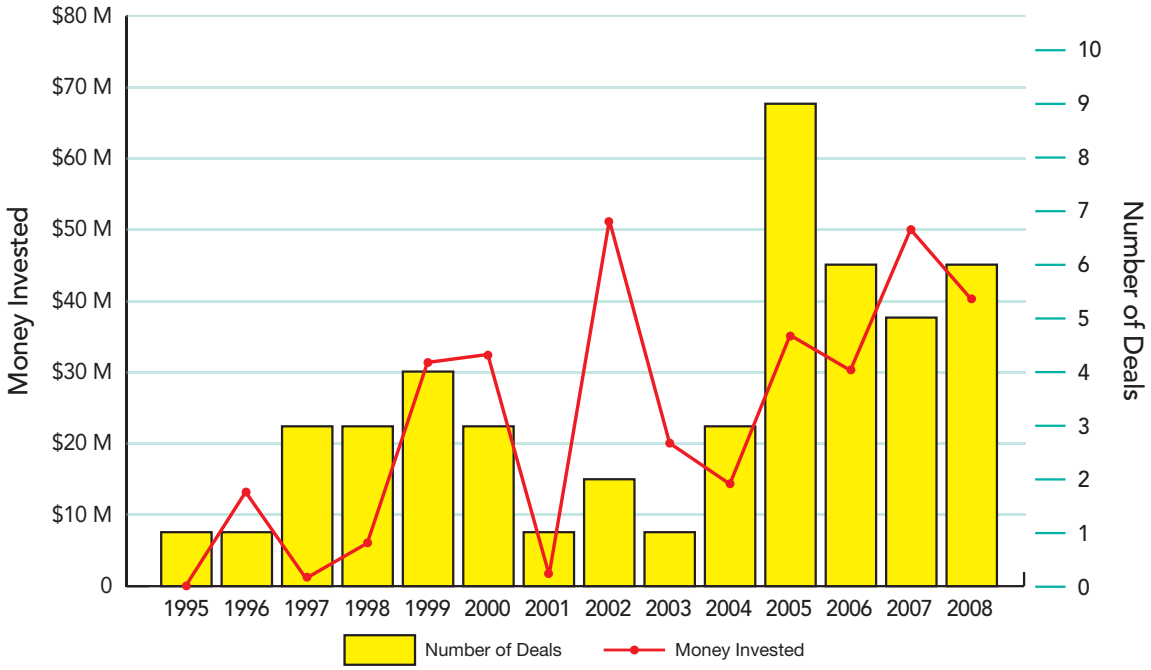
Source: Selig Center for Economic Growth, based on PricewaterhouseCoopers, Money Tree Report.

Table 15
Venture Capital Invested in Georgia's Biotechnology Companies, 1995-2008

			State Rank	
	Investment Amount ($)	Number of Deals	Investment Amount	Number of Deals
1995-2000	88,022,100	15	17	17
2001-2005	124,209,000	16	13	16
2006-2008	118,709,400	17	12	13

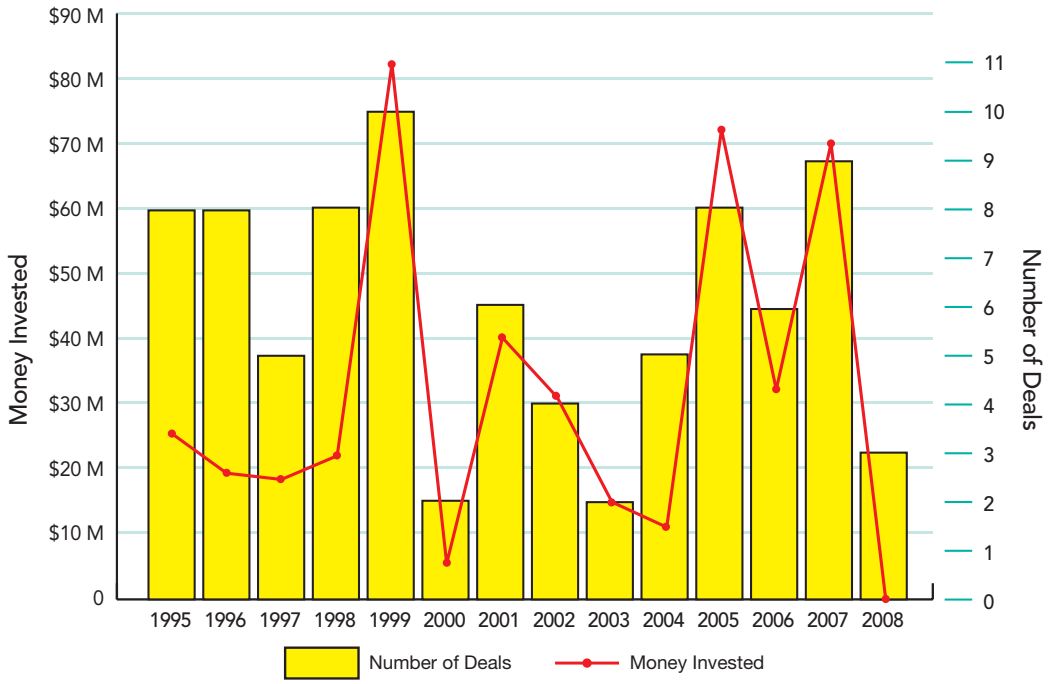
Source: Selig Center for Economic Growth, based on PricewaterhouseCoopers, Money Tree Report.

Capital Invested in Biotechnology Firms, Georgia, 1995-2008



Source: Selig Center for Economic Growth, based on PricewaterhouseCoopers, Money Tree Report.

Capital Invested in Medical Devices and Technology, Georgia, 1995-2008



Source: Selig Center for Economic Growth, based on PricewaterhouseCoopers, Money Tree Report.

tant or critical factor impacting their operations in Georgia. While 18 respondents considered access to capital a weakness in Georgia, 7 thought it was a strongpoint, and 17 were neutral. The same group of respondents regarded access to government institutions much more positively: 30 respondents said it was a strongpoint or an issue of no concern, and 12 said it as a weakness.

Between 2005 and 2008, survey respondents raised $1,018,906,942 in capital, and an additional $194,374,973 is anticipated in the remaining three quarters of 2008, for a total of $1,213,281,915. The amount of capital reported by the 47 respondents in 2008 exceeds the capital reported in 2007 by over $307 million.

Although founders and family and friends were the primary source of funding for the life sciences companies since 2003, the majority of young firms cite private equity investment and partnerships as the most sought-after source of funding in the second half of 2008, with founders, family and friends, grants, angel capital investment and venture capital also of prime importance. Respondents to the 2008 survey report two public offerings between 2005 and 2007, and one more is anticipated later this year.

Private equity and partnerships, which consistently placed among the most important sources of funding for the survey respondents, was singled out as the most important funding source for the remainder of 2008. In fact, 27 of the 47 respondents were interested in partnerships—and especially in R&D and funding partners. Sales, marketing, and contract manufacturing were also cited as reasons for seeking partnerships.

Out of 80 respondents to the 2007 and 2008 surveys, R&D and sales/marketing were most commonly performed in-house, while manufacturing and clinical trials were the most often cited as outsourced activities.

Although not a direct source of funding, university affiliations are a prime ingredient of the life sciences industry. University facilities, research cooperation, and technology transfer play an important role in moving cutting-edge research out of university laboratories and into the marketplace. In fact, nearly half of the 2007 and 2008 survey respondents report some type of university affiliation. The University of Georgia, Georgia Institute of Technology, and Emory University are most active in this area, with Georgia State University and the Medical College of Georgia also important players. In addition, Georgia companies collaborate with top research universities in Alabama, Florida, Colorado, Utah, Arizona, and Washington. Cornell University, Columbia University, Duke University, and Johns Hopkins University were also mentioned. Moreover, companies said they had international contacts with research institutions in Canada, South Africa, Great Britain, and Belgium.

Table 16
Interest in Partnerships

	Number of Companies
Seeking partnerships	27
Not seeking partnerships	15
Funding	11
R&D	11
Other	6
Valid responses	42
NA or missing	5
Total	47

Based on 47 2008 Survey respondents.

Georgia's Business Climate

For the second consecutive year, survey participants singled out the access to capital and the quality of life as the most important factors for their companies' operations in Georgia, followed by the availability of skilled technicians, researchers and managers. The cost of living, infrastructure, and the availability of service providers were most often cited as very important, while the availability of skilled manufacturing labor, and the availability and cost of land were deemed least important. Looking at factors that are either critically or very important, however, the cost of living, quality of life, labor force issues, and infrastructure top the list. Respondents were almost equally split on the issue of access to government

Table 17
Capital Raised and the Sources of Funding, 2005-2008

Capital raised 2005-2008	
2005-2006	$464,927,776
2007	$342,479,166
2008 to date	$211,500,000
Total	$1,018,906,942
Anticipated (remainder of 2008)	$194,374,973
Total 2006-2008	$1,213,281,915
2005-2007	
Founders, family, friends	20
Private equity/Partnership	9
Grants	9
VC funding	8
Early stage (Series A-B)	4
Mid stage (Series C-D)	2
Late stage (Series E)	1
Angels	7
Public offering	2
2008 to date	
Founders, family, friends	13
Angels	6
VC funding	5
Early stage (Series A-B)	3
Private equity/Partnership	4
Grants	3
Anticipated (remainder of 2008)	
Private equity/Partnership	9
Founders, family, friends	8
Grants	6
Angels	6
VC funding	5
Public offering	1
Valid responses	20
Not applicable or missing	27

Based on 2008 Survey (47 respondents).

Table 18
University Affiliations of Life Sciences Companies in Georgia, 2007-2008

	Number of Companies
No university affiliations	41
University affiliations	39
The University of Georgia (Athens)	11
Georgia Institute of Technology (Atlanta)	11
Emory University (Atlanta)	10
Georgia State University (Atlanta)	3
Medical College of Georgia (Augusta)	3
Research institutions in other states	13
Research institutions in other countries	4
Licensing, patent/technology transfer	17
Contract research/Research collaboration	12
Use of facilities	10
Consulting	4

Based on 2007 and 2008 Survey (80 respondents).

financial incentives, with 21 respondents saying it was either critical, or very important to their operations, while 19 found it a matter of little or no importance.

For R&D firms, the availability of skilled researchers, suitable space, facilities, and service providers were extremely important. Manufacturers pinpointed the availability of skilled labor and managers as critical.

The state's image topped the list of issues moderately important to life sciences companies (18 respondents), with 11 respondents ranking it as either extremely or very important, and 9 respondents considering it a matter of slight or no importance.

In previous years, traffic congestion and the airport were the leading infrastructure issues singled out by the survey respondents. In 2008, traffic was still the top infrastructure issue (20 respondents), but the availability of water moved into second place (17 respondents), ahead of the airport (15 respondents), land use (11 respondents), and the cost of energy (10 respondents).

Tax policy and incentives, capital formation, R&D regulations, and the quality of public education were mentioned as the top state policy and regulatory issues by (13, 12, and 10 respondents, respectively).

It speaks well for Georgia's business climate that most of the issues deemed vital for company operations were singled out as strengths by the majority of respondents, namely, the cost of living (30 respondents), quality of life (29 respondents), and the availability of suitable space and facilities (18 respondents). The proximity to academic institutions got the third highest number of positive votes (26).

Infrastructure, access to capital, and the availability of specialized managers tell a different story, however: while 29 respondents consider infrastructure as either extremely or very important to their operations, only 10 see it as one of Georgia's strengths and 19 respondents consider it a weakness. Twenty-one companies said access to capital is vital to their operations, but only seven considered this a strong point in Georgia, while 18 saw it as a weakness. Skilled managers are important to the operations of 30 firms, but only eight see it as one of Georgia's strengths, while 17 consider it a weakness. The vote is split on the availability of skilled technicians, important to the operations of 29 responding firms, with 12 responses on each side of the issue.

Table 19
Factors Impacting Life Sciences Companies' Operations in Georgia

	Not Important	Slightly Important	Moderately Important	Very Important	Extremely Important/ Critical
Funding					
Access to capital	12	2	7	6	15
Access to government financial incentives/support	16	3	2	14	7
Labor force					
Availability /cost of skilled manufacturing labor	16	4	5	8	10
Availability of skilled managers	2	1	10	18	12
Availability of skilled researchers	3	6	12	10	12
Availability of skilled technicians	4	2	8	16	13
Infrastructure and related issues					
Availability of suitable space and facilities	5	2	10	14	12
Availability/cost of land	15	7	7	11	3
Availability/Quality of service providers	3	4	16	16	3
Regulatory/legislative environment	5	1	14	17	5
Proximity to academic institutions/facilities	2	8	12	11	10
Infrastructure (e.g. traffic, energy, etc.)	0	2	10	19	10
Quality of life					
Quality of life	0	1	10	17	15
Cost of living (e.g. housing)	0	1	8	24	9
State's image	3	6	18	7	6
Valid responses	43				
Missing	4				
Total	47				

Table 20
Respondents' Viewpoint: Issues Relevant to Life Science Companies' Operations in Georgia

	Number of Responses	Percent of Valid Responses
Crucial/ Very Important		
Cost of living (e.g. housing)	33	76.7
Quality of life	32	74.4
Availability of skilled managers	30	69.8
Availability of skilled technicians	29	67.4
Infrastructure (e.g. traffic, energy, etc.)	29	67.4
Availability of suitable space and facilities	26	60.5
Availability of skilled researchers	22	51.2
Regulatory/legislative environment	22	51.2
Proximity to academic institutions/facilities	21	48.8
Access to capital	21	48.8
Access to government financial incentives/support	21	48.8
Availability/Quality of service providers	19	44.2
Availability /cost of skilled manufacturing labor	18	41.9
Availability/cost of land	14	32.6
State's image	13	30.2
Valid responses	43	
Missing	4	
Total	47	
Not Important		
Availability/cost of land	22	51.2
Availability /cost of skilled manufacturing labor	20	46.5
Access to government financial incentives/support	19	44.2
Access to capital	14	32.6
Proximity to academic institutions/facilities	10	23.3
Availability of skilled researchers	9	20.9
State's image	9	20.9
Availability of suitable space and facilities	7	16.3
Availability/Quality of service providers	7	16.3
Availability of skilled technicians	6	14.0
Regulatory/legislative environment	6	14.0
Availability of skilled managers	3	7.0
Infrastructure (e.g. traffic, energy, etc.)	2	4.7
Quality of life	1	2.3
Cost of living (e.g. housing)	1	2.3
Valid responses	43	
Missing	4	
Total	47	

Based on 47 responses to the 2008 Survey.

Table 21
Georgia's Business Environment, Strengths and Weaknesses

	Strength	Neutral	Weakness
Funding			
Access to capital	7	18	18
Access to government financial incentives and support	12	19	12
Labor force			
Availability of skilled researchers	17	18	8
Availability of skilled technicians	12	19	12
Availability of skilled managers	8	18	17
Availability and cost of skilled manufacturing labor	10	23	10
Infrastructure and related issues			
Proximity to academic institutions	26	16	1
Availability and cost of land	17	24	2
Availability of suitable space and facilities	18	15	10
Availability/quality of service providers	16	22	5
Regulatory/legislative environment	13	21	9
Infrastructure (e.g., transportation, water, energy)	10	14	19
Quality of life			
Quality of life	29	14	0
Cost of living	30	13	0
State's image	13	19	11
Valid responses	43		
Missing	4		
Total responses	47		

Appendix

LIST OF COMPANIES

Company	Location	MSA/Location	Product/Focus
Abbott Laboratories	Lizella	MAC	PHARM
Abeome, Inc.	Athens	ATH	PHARM
ABC Safety, Inc.	Rincon	SAV	DEV
Adagen Medical International, Inc.	Atlanta	ATL	DEV, SERV
Aderans Research Institute	Marietta	ATL	BIOTECH
Advanced Applications Institute	Atlanta	ATL	PHARM
Advanced Biotechnologies, Inc.	Madison	Madison	BIOFUELS
Advanced Technology Pharmaceuticals Corporations	Dacula	ATL	PHARM
AerovectRx Corporation	Norcross	ATL	DEV
AgTeck Industries, LLC	Stone Mountain	ATL	BIOFUELS
Agri Biofuels, Inc.	Camilla	Camilla	BIOFUELS
Agrinostics, Inc.	Watkinsville	ATH	DIAG
Ajay North America, LLC	Powder Springs	ATL	CHEM
Alcott Chromatography, Inc.	Norcross	ATL	DEV
Alimera Sciences, Inc.	Alpharetta	ATL	PHARM
Alion Science & Technology	Athens	ATH	PHARM, IND
Allied Diagnostic Imaging Resources	Norcross	ATL	DIAG
Alpha Omega Engineering	Alpharetta	ATL	DEV
Altea Therapeutics	Tucker	ATL	DEV, PHARM
Alterra Bioenergy of Middle Georgia	Macon	MAC	BIOFUELS
American Clinical Laboratory	Stone Mountain	ATL	DIAG
American Medical Devices, Inc.	Atlanta	ATL	DEV
AMMI, Inc.	Martinez	AUG	DEV
Ana-Gen Technologies, Inc.	Atlanta	ATL	BIOL
Analytical Development, Inc.	Lawrenceville	ATL	DEV
Analytics, Inc.	Atlanta	ATL	DEV, SERV
Angionics	Athens	ATH	PHARM, BIOTECH
Any Test, Inc.	Kennesaw	ATL	DIAG
Apeliotus Technologies, Inc.	Atlanta	ATL	DEV, R&D
Applied PhytoGenetics, Inc. (APGEN)	Athens	ATH	IND
AptoTec	ATHENS	ATH	R&D
Aqua Solutions, Inc.	Jasper	ATL	SERV
Archaea Solutions	Tyrone	ATL	DIAG, IND
Aruna Biomedical	Athens	ATH	BIOTECH
Athens Research and Technology, Inc.	Athens	ATH	BIOL
AtheroGenics, Inc.	Alpharetta	ATL	PHARM

Company	Location	MSA/Location	Product/Focus
Atlanta Biologicals, Inc.	Lawrenceville	ATL	BIOL
Atlanta Center for Medical Research	Atlanta	ATL	R&D, PHARM, SERV
Atlanta Pathology Professional	Atlanta	ATL	DIAG
Atlanta Research Lab Supplies, Inc.	Atlanta	ATL	SERV
Atrium Imaging Group of America	Dalton	DALTON	DIAG
Augusta Laboratory, Inc.	Augusta	AUG	DIAG
AuraZyme Pharmaceuticals, Inc.	Kennesaw	ATL	PHARM
Auriga Laboratories	Norcross	ATL	PHARM
AviGenics, Inc.	Athens	ATH	BIOTECH, PHARM
Axona	Atlanta	ATL	R&D
Bacterial Barcodes	Athens	ATH	R&D
Bard Medical Division (C.R. Bard)	Covington	ATL	DEV
Bard Urological Division (C.R. Bard)	Covington	ATL	DEV
Beocarta Romega, Inc.	Rome	ROME	R&D
BIMECO, Inc.(Lxu Healthcare Co.)	Tyrone	ATL	DEV
Biofisica, Inc.	Duluth	ATL	DEV
Biomedical Design, Inc.	Dunwoody	ATL	DEV
Biomedical Disposal, Inc.	Norcross	ATL	DEV
Bioniche Animal Health USA, Inc.	Bogart	ATH	PHARM
Bio-Plus, Inc.	Madison	Madison	AGR
BioSante Pharmaceutical, Inc.	Smyrna	ATL	PHARM
BioSentry, Inc.	Stone Mountain	ATL	AGR
BioStrategies	Marietta	ATL	PHARM
Biosystems, Inc.	Stone Mountain	ATL	DEV
Bonaseptic Company	Atlanta	ATL	PHARM
Brace International, Inc.	Atlanta	ATL	DEV, PHARM
BresaGen, Inc./Novocell, Inc.	Athens	ATH	BIOTECH
Brettech Alternative Fuel, Inc.	Tifton	Tifton	BIOFUELS
Bristol-Myers Squibb	Atlanta	ATL	PHARM
Burdox, Inc.	Griffin	ATL	DEV
C A P S Pharmacy	Norcross	ATL	PHARM
C2 Biofuels	Atlanta	ATL	BIOFUELS
Caire, Inc.	Marietta	ATL	PHARM, DEV
CardioMEMS, Inc.	Atlanta	ATL	DEV
Carticept Medical, Inc.	Alpharetta	ATL	DEV
Cell Design, LLC	Smyrna	ATL	BIOL
Cell Dynamics, LLC	Smyrna	ATL	BIOL
Celliance	Norcross	ATL	BIOL
Cellutions, Inc.	Duluth	ATL	DEV
CeloNova BioSciences	Newnan	ATL	DEV
Cerebral Vascular Applications, Inc.	Duluth	ATL	DEV
CIBA Vision Corp.	Duluth	ATL	DEV

Company	Location	MSA/Location	Product/Focus
CIS Biotech, Inc.	Atlanta	ATL	BIOTECH
ClariPath Laboratories, Inc.	Augusta	AUG	DIAG
Clinical Laboratory Services	Winder	ATH	DIAG
Clinimetrics Research Associates, Inc.	Atlanta	ATL	SERV, R&D
Cptmed ,Inc.	Jackson	ATL	DEV
CryoLife, Inc.	Kennesaw	ATL	BOB
D Technology	Smyrna	ATL	BIOFUELS
D S M Nutritional Products, Inc.	Pendergrass	Pendergrass	PHARM
Doctors Laboratory, Inc.	Valdosta	VALDOSTA	DIAG, SERV
Dornier MedTech America	Kennesaw	ATL	DEV
ECO Solutions, LLC	Chatsworth	DALTON	BIOFUELS
EKA Chemicals, Inc.	Augusta	AUG	IND
Equinox Chemicals ,LLC	Albany	ALB	CHEM
Effcon Laboratories, Inc.	Mariettta	ATL	PHARM
Elan Holdings, Inc. (Elan drug del.)	Gainesville	GAINESVILLE	PHARM
Elekta Holdings U. S., Inc.	Norcross	ATL	DEV
EmTech Biotechnology Development, Inc.	Atlanta	ATL	BIOTECH, SERV
EMThrax, LLC	Augusta	AUG	BIOL
Encompass Pharmaceutical Services, Inc.	Norcross	ATL	PHARM
Enviropac, LLC	Peachtree City	ATL	DEV
Enzymatic Deinking Technologies, LLC (EDT)	Norcross	ATL	IND
EPD Pharma Solutions	Alpharetta	ATL	PHARM, SERV
ERBE USA, Inc.	Marietta	ATL	DEV
ERMI, Inc.	Decatur	ATL	DEV
Essential Consultants, Inc.	Chamblee	ATL	SERV
Essentics, LLC	Marietta	ATL	PHARM
Ethicon	Cornelia	Cornelia	DEV
ExtRx Corporation	Roswell	ATL	SERV
Facet Technologies, LLC (Division of Matria Healthcare)	Kennesaw	ATL	DEV
Femasys	Suwanee	ATL	DEV
First United Ethanol	Camilla	Camilla	BIOFUELS
Fortec Medical	Norcross	ATL	DEV
Fisher Scientific Research	Suwanee	ATL	DIAG, R&D
FOB Synthesis, Inc.	Kennesaw	ATL	PHARM
GE Healthcare	Atlanta	ATL	PHARM
Gene Probe, Inc.	Atlanta	ATL	BIOINFO, BIOTECH
GeneCure Biotechnologies	Norcross	ATL	BIOTECH
Genentech	Atlanta	ATL	PHARM

Company	Location	MSA/Location	Product/Focus
geneRx+	Atlanta	ATL	BIOTECH
Genesis Technologies International, Inc.	Lawrenceville	ATL	IND, AGR
Genzyme Corporation	Roswell	ATL	BIOTECH
Georgia Alternate Fuels, LLC	Dublin	Dublin	BIOFUELS
Georgia Biofuels Corp	Loganville	ATL	BIOFUEL
Geoplasma Inc.	Atlanta	ATL	BIOFUELS
GeoVax, Inc.	Atlanta	ATL	BIOTECH, PHARM, R&D
Given Imaging, Inc.	Norcross	ATL	DEV, DIAG
Glades Pharmaceuticals, Inc. (Division of Stiefel Laboratories, Inc.)	Duluth	ATL	PHARM
Glass Horse Project, LLC	Watkinsville	ATH	AGR
Global Cardiac Solutions	Snellville	ATL	PHARM
Grace Labs, LLC	Decatur	ATL	PHARM, DIAG, R&D
Health Discovery Corp.	Savannah	SAV	BIOTECH
Histology Services Co.	Stone Mountain	ATL	SERV
Howmedica Osteonics	Atlanta	ATL	DEV
IIIrd Millennium, Inc.	Alpharetta	ATL	SERV
Imiren Pharmaceuticals, Inc.	Forest Park	ATL	PHARM, BIOL
Immucor, Inc.	Norcross	ATL	DIAG, BIOL
Inhibitex, Inc.	Alpharetta	ATL	PHARM, R&D
Innogenetics, Inc.	Alpharetta	ATL	DIAG
Innovation Factory	Atlanta	ATL	DEV
Insectigen	Athens	ATH	BIOTECH
Integrated Science Systems	Augusta	AUG	DEV
International Plant Nutrition	Norcross	ATL	AGR
Inviro Medical Devices	Duluth	ATL	DEV
KB Visions	Atlanta	ATL	PHARM
Kendall Healthcare Products/ TYCO Healthcare Products	Augusta	AUG	DEV
Kiel Pharmaceuticals, Inc.	Gainesville	GAINESVILLE	PHARM
KPS Technologies	Atlanta	ATL	R&D
Laboratory Corporation of America	Columbus	COL	DIAG
Lee Laboratories	Grayson	ATL	DIAG
Leven, Inc.	Bogart	ATH	R&D
Lexicor Medical Technolgies	Augusta	AUG	DEV
Life Therapeutics	Clarkston	ATL	PHARM, BIOL
Lifescape Biosciences	Atlanta	ATL	PHARM
Lightyear Technology, Inc.	Roswell	ATL	DEV
Marietta X-Ray, Inc.	Marietta	ATL	DEV
McKesson Information Solutions, LLC	Alpharetta	ATL	SERV, HI
Mddatacor, Inc.	Alpharetta	ATL	HI
Mean Green Biofuels	Lakemont	Lakemont	BIOFUELS

Company	Location	MSA/Location	Product/Focus
Medical Device Marketing	Lawrenceville	ATL	DEV
Medical Edge Technologies, Inc.	Atlanta	ATL	DEV
Medical Molecular Therapeutics, LLC	Lakemont	Lakemont	DEV
Medical Specialty Innovations	Alpharetta	ATL	DEV
Medtronic, Inc.	Atlanta	ATL	DEV
Merial Limited	Duluth	ATL	PHARM, BIOL, DIAG
Merial Select	Gainesville	GAINSVILLE	BIOL
Metametrix, Inc.	Norcross	ATL	DIAG
Metastatix	Tucker	ATL	PHARM
Metro Vascular, PC	Decatur	ATL	DIAG
Micro-Macro International, Inc.	Athens	ATH	AGR
Microtek Medical Holdings, Inc.	Alpharetta	ATL	DEV
Middle Georgia Biofuels, Inc.	Dublin	Dublin	BIOFUELS
Mikart, Inc.	Atlanta	ATL	PHARM
Molecular Therapeutics, LLC	ATHENS	ATH	BIOTECH
Mölnlycke Health Care U.S.	Norcross	ATL	DEV
Monsanto Company	Augusta	AUG	AGR
Montgomery Chemicals	Greensboro	Greensboro	CHEM
Mq Associates, Inc.	Athens	ATH	DEV
Mullins Pathology & Cytology	Augusta	AUG	SERV, DIAG
Myelotec	Roswell	ATL	DEV
Nanli Laser Supply, LLC	Atlanta	ATL	DEV
Nanomist Systems, LLC	Warner Robins	WARNER ROBINS	R&D
National Diagnostics, Inc.	Atlanta	ATL	DIAG
NDC Health Corporation	Atlanta	ATL	SERV, HI
Neotonus, Inc.	Marietta	ATL	DEV
NeoVista, Inc.	Duluth	ATL	DEV
Neural Signals, Inc.	Atlanta	ATL	DEV
NeurOP	Atlanta	ATL	PHARM
NeuroTrials Research, Inc.	Atlanta	ATL	PHARM, DIAG
Newton Laboratories Inc	Conyers	ATL	PHARM
NitrOsystems	Augusta	AUG	PHARM
Noramco, Inc.	Athens	ATH	PHARM
North American Bioproducts	Duluth	ATL	BIOFUELS
North American Science Associates	Atlanta	ATL	DIAG
Nova Biogenetics, Inc.	Atlanta	ATL	PHARM, IND
Novoste Corporation	Norcross	ATL	DEV
Nutrasweet Company	Augusta	AUG	AGR
Octogen Pharmacal Co., Inc.	Cumming	ATL	PHARM
Omega Bio-Tek, Inc.	Norcross	ATL	R&D, DEV
Omni International, Inc.	Marietta	ATL	R&D, DEV
Oncose, Inc.	Athens	ATH	DIAG

Company	Location	MSA/Location	Product/Focus
Opti Medical Systems	Roswell	ATL	DEV
Orthonics, Inc.	Atlanta	ATL	DEV
OsteoLign	Duluth	ATL	DEV
P3 Laboratories	Winder	ATH	TESTING, R&D, PHARM
Parexel	Lawrenceville	ATL	SERV, PHARM
Pathogen Control Associates	Norcross	ATL	DIAG, IND
Pathology Consultants of Georgia	Dahlonega	Dahlonega	DIAG, BIOL
Patient Care Technologies	Atlanta	ATL	HI
Peat Fuel Company	Claxton	Claxton	BIOFUELS
Pfeiffer Pharmaceuticals	Atlanta	ATL	PHARM
Pharm Data Inc/Premier Research	Marietta	ATL	PHARM, SERV
Porex Porous Products Group	Fairburn	ATL	DEV
Porex Surgical, Inc.	Newnan	ATL	DEV
Poultry Specialties, Inc.	Marietta	ATL	AGR
Precision Medical, Inc.	Hoschton	Hoschton	DEV
Premier Research Atlanta, Inc.	Marietta	ATL	PHARM
Preventive Therapeutics, Inc.	Snellville	ATL	PHARM
Primagen, Inc.	Alpharetta	ATL	DIAG
Prizm Medical, Inc.	Oakwood	ATL	DIAG
Proactive Labs, Inc.	Lithia Springs	ATL	PHARM
Proscien, Inc.	Atlanta	ATL	BIOL
Professional Formulators, Inc.	Douglas	Douglas	AGR, PHARM
Q Care International, LLC	Marietta	ATL	DEV
Quality Assurance Service Corp.	Augusta	AUG	SERV
Quest Diagnostics	Tucker	ATL	DIAG
Quintiles Laboratories Limited	Smyrna	ATL	DIAG
Range Fuels Soperton Plant, LLC	Soperton	Soperton	BIOFUEL
RayBiotech, Inc.	Norcross	ATL	PHARM
ReachMDconsult, Inc.	Augusta	AUG	HI
Recombinant Peptide Technologies, LLC (rPeptide)	Bogart	ATH	BIOTECH
Reddy US Therapeutics, Inc.	Norcross	ATL	PHARM, R&D
Research Think Tank, Inc.	Alpharetta	ATL	DIAG, R&D
Respironics, Inc.	Kennesaw	ATL	DEV
RFS Pharma	Tucker	ATL	PHARM
Rhodia, Inc.	Winder	ATL	IND
RITA Medical Systems, Inc.	Manchester	ATL	DEV
Rx PHI Beta Group S A, Inc.	Marietta	ATL	PHARM
S S S Company	Atlanta	ATL	PHARM
SaluMedica, LLC	Smyrna	ATL	DEV
ScheBo Biotech USA, Inc.	Marietta	ATL	BIOTECH
Schering-Plough	Suwanee	ATL	PHARM

Company	Location	MSA/Location	Product/Focus
SCI Tech Manufacturing, Inc.	Norcross	ATL	PHARM
Sero-Immuno Diagnostics	Tucker	ATL	DIAG
Sciele Pharma Inc. (formerly First Horizon Pharmaceutical Corp.)	Atlanta	ATL	PHARM
Scientific Adsorbents (Division of Apyron Technologies, Inc.)	Atlanta	ATL	DEV
Sebia, Inc.	Norcross	ATL	DEV
Sector Electronics, LLC	Acworth	ATL	DEV
Severn Trent Laboratories, Inc.	Savannah	SAV	IND
Siemens Medical Solutions USA, Inc., Ultrasound Division	Atlanta	ATL	DIAG, HI, DIAG
Sigvaris, Inc.	Peachtree City	ATL	DEV
Skalar	Norcross	ATL	DEV
Slainte Bioceuticals	Marietta	ATL	PHARM, BIOTECH
Sleepmed, Inc.	Kennesaw	ATL	DIAG, PHARM
Smisson Cartledge Biomedical	Macon	MAC	DEV
Smithkline Beecham Corp	Columbus	COL	DIAG
SMO-USA, Inc.	Canton	ATL	R&D, BIOL, SERV
Snowden Pencer, Inc.	Tucker	ATL	DEV
Solvay Pharmaceuticals, Inc./ Unimed Pharmaceuticals, Inc.	Marietta	ATL	PHARM
Southeast Laboratories, Inc.	Athens	ATH	DEV
Southern Neurophysiology, LLC	Alpharetta	ATL	DIAG, SERV
SpectRx, Inc.	Norcross	ATL	DEV, DIAG
Splash Medical Devices, LLC	Atlanta	ATL	DEV
Starkey Laboratories, Inc	Norcross	ATL	DEV
Sterimed, Inc.	Cartersville	Cartersville	DEV
Stheno Corporation	Atlanta	ATL	DEV, R&D
Stiefel Laboratories, Inc.	Duluth	ATL	PHARM, DIAG
Stradis Medical, LLC	Lawrenceville	ATL	DEV
Summit Industries, Inc.	Marietta	ATL	PHARM
Syntermed, Inc.	Atlanta	ATL	DIAG, SOFTWARE
TAP Pharmaceuticals	Atlanta	ATL	PHARM
Technical Products, Inc. of GA, USA	Lawrenceville	ATL	DEV
Technology Resource International Corporation (TRI)	Alpharetta	ATL	DEV, R&D
Theragenics Corporation	Buford	ATL	PHARM, DEV
Thione International, Inc.	Atlanta	ATL	PHARM
Tikvah Therapeutics, Inc.	Atlanta	ATL	PHARM
Trimex Medical Management, Inc.	Macon	MAC	DEV
Trs Labs, Inc.	Athens	ATH	PHARM, DIAG, R&D
UCB	Smyrna	ATL	PHARM

Company	Location	MSA/Location	Product/Focus
Unimed Pharmaceuticals	Marietta	ATL	PHARM
U.S. Biofuels, Inc.	Rome	ROME	BIOFUELS
Unisplint Corp.	Norcross	ATL	DEV
UPPI-PET	Macon	MAC	PHARM, DIAG
VersaPharm, Inc.	Marietta	ATL	PHARM
Viro-Med Laboratories, Inc.	Marietta	ATL	DIAG, BIOL
Vitalabs, Inc.	Jonesboro	ATL	PHARM
Vivonetics, Inc.	Atlanta	ATL	R&D
Warner-Lambert Co., LLC	Atlanta	ATL	PHARM
Waters Agricultural Labs	Camilla	Camilla	AGR
Wingo, Inc.	Cleveland	ATH	BIOL
Wynden Pharmaceuticals, LLC	Marietta	ATL	PHARM
Xytex Corp.	Augusta	AUG	DIAG
Xytex Research	Augusta	AUG	BOB
Z Technologies, LLC	Atlanta	ATL	DEV
Zygogen, LLC	Atlanta	ATL	R&D, BIOTECH

AGR	Agricultural, food, nutrition (human and animal)
BIOFUELS	Biofuels, bioenergy
BIOL	Biologics
BIOTECH	Biotechnology
BOB	Blood and Organ Banks
CHEM	Chemical
DEV	Medical devices and technology
DIAG	Diagnostics
HI	Health Informatics
IND	Industrial, environmental
PHARM	Pharmaceutical, biopharmaceutical, therapeutics, etc. (Including veterinary)
R&D	Research and Development, Platform Technology, Product Discovery
SERV	Services

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