THE GEORGIA LIFE SCIENCES INDUSTRY ANALYSIS 2007

Shaping Infinity

GEORGIA BIO
The Life Sciences Partnership

SELIG CENTER FOR ECONOMIC GROWTH
TERRY COLLEGE OF BUSINESS • THE UNIVERSITY OF GEORGIA

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INDUSTRY ANALYSIS 2007

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From the President of Georgia Bio

Georgia Bio (GaBio) welcomes you to the second annual *Shaping Infinity*, the Georgia Life Sciences Industry Analysis 2007. This year's report not only provides an up-to-date comprehensive analysis of the state's life sciences companies and their impact on the economy and health of Georgians, but it also begins what will be a year-to-year check-up on the progress of this dynamic industry.

The Georgia Life Sciences Industry Analysis 2007 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.

This year also marks the first inclusion of articles from university and industry leaders describing their breakthrough research and product development, introducing readers to some of the people who are driving the development of Georgia's 21st century bioeconomy. 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.

GaBio is a private, non-profit association representing more than 290 life sciences companies, universities, research institutes, government groups and other business organizations. The partnership sincerely thanks this year's sponsors—Georgia Allies, Georgia Research Alliance, and Georgia Department of Economic Development—and Selig Center Director Jeffrey Humphreys and his staff for making this report possible.

Charles Craig, President
Georgia Bio
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Executive Summary

The life sciences industry in Georgia is relatively young, and home grown, with the majority of surveyed firms established between 1996 and 2007, and headquartered in Georgia.

Most of the surveyed companies are located in the Atlanta, Athens, and Augusta metropolitan areas. In the Atlanta area, life sciences firms are clustered in three areas: the quadrangle bordered on the west by the I-75 and I-85 connector, on the east by I-285, and by I-85 from the north, and I-20 from the south (the city of Atlanta, Decatur, and Druid Hills). Life sciences companies extend from this area towards the northeast (Norcross-Alpharetta and Lawrenceville), and northwest toward Marietta. A relatively large number of companies—specifically, medical and diagnostic laboratories—are located in Savannah and Valdosta.

■ 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. (See Table 3 on page 7.) The industry is projected to produce $6.9 billion in Georgia-generated sales in 2007.

■ 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 bioenergy firms is a new development in Georgia. These firms are included in the company list at the end of this book.

Survey Highlights

Pharmaceutical, medical devices 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 38 percent of responding companies hiring fewer than 10 employees. The group of companies employing between 11 and 50 employees is almost as large (34.6 percent of total). Companies employing over 50 employees make up close to 26 percent of the 159 surveyed companies.

Forty-three out of 70 responding companies plan to add a total of 357 new jobs in the coming year, the majority of them professional researchers and technologists (124 jobs) and senior and other management positions, (76 jobs). The remaining jobs will be added in manufacturing, sales and marketing, office support, and regulatory and legal positions.

The availability of skilled managers and technicians is considered the most pressing labor force issue by survey respondents. The availability of skilled researchers is considered a strongpoint, however. Out of 90 2006 and 2007 survey respondents, 47 report university affiliations.

Products and Focus

■ Cancer and infections are the most commonly cited targets for pharmaceutical, biopharmaceutical, and diagnostic firms.

■ General hospital devices, cardiovascular, neurological and reproductive/abdominal devices are the most common specialties among the medical devices firms.

Funding

■ Most of the respondents reported $10 million or less in 2006 revenues, but, in contrast to the 2006 survey, the majority of them reported income. Twenty-three of the 70 respondents reported losses, however.

■ Respondents raised close to $250 million in capital in 2006, and expect to top that with over $319 million raised in 2007. Founders, grants, and venture capital funding tops the list as the most common source of funding in 2004-2007.

■ Access to capital and to government incentives and support are considered major challenges.

Georgia's Business Environment

Access to capital and the quality of life are singled out as the most important factors for the life sciences companies in Georgia. While the majority of respondents considered the quality of life a strongpoint, access to capital was singled out as a weakness.

Among labor force factors, availability of life sciences managers was the most serious weakness, while the availability of skilled researchers was considered a positive.

Infrastructure and related issues: proximity to academic institutions, adequate space and facilities, and the availability and cost of land are considered strengths in Georgia, while the infrastructure, availability of service providers, and regulatory and legislative environment caused concern.

The quality of life and cost of living in Georgia received high marks from life sciences company executives who responded to the survey, while the state's image was considered a weakness.

The 2007 Georgia Life Sciences Industry Survey was sent to 269 companies, and 72 companies returned the survey. Data was tabulated for 159 companies including 2006 and 2007 Survey respondents, and companies for which publicly available data was available. The results of the survey primarily focus on the pharmaceutical, biotechnology, and medical devices groups.

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 broad definition encompasses biotechnology, pharmaceuticals, diagnostics and medical devices branches, 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. In addition, in this edition of the study, we also include companies active in the bio-fuel and bio-energy industries.

The 2007 Georgia Life Sciences Industry Survey was sent to 270 companies active in the areas of life sciences R&D, pharmaceutical, and medical devices manufacturing, medical and diagnostic laboratories, and blood and organ banks. Data for this analysis came from the 70 companies that responded, information from another 20 companies pulled from last year's survey, and statistics for 69 companies gleaned from publicly available sources. Therefore, data for 159 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 representing medical and diagnostic laboratories. Thus, the results of the survey primarily focus on the pharmaceutical, biotechnology, and medical devices groups.

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, Savannah, Columbus, Dalton, Rome, Valdosta, and Warner Robins. A fairly large group of companies, however, is located in non-metropolitan areas, mainly in northeastern Georgia. (See Table 1.)

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

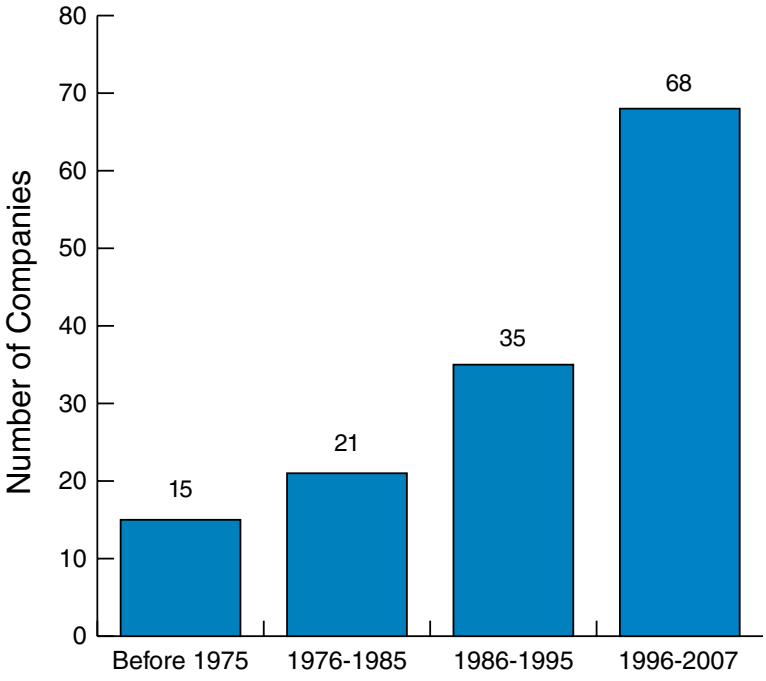
The sector's steep rate of growth is confirmed by the 2007 Life Sciences Industry Survey, which shows that 42 percent of the 159 companies surveyed were founded in the last decade. Not only is this growth fast paced and recent, it is also home grown. In fact, nearly 84 percent of the surveyed companies, for which data were available, were founded in Georgia, and nearly 87 percent are headquartered in Georgia.

Table 1
Survey Details

MSA	Number of companies	Respondents Number	Respondents Rate	Covered* Number	Total surveyed Number	Total surveyed Rate
Atlanta	195	49	25.1	72	121	62.1
Athens	26	11	42.3	5	16	61.5
Non-metro	15	3	20.0	2	5	33.3
Augusta	15	4	26.7	4	8	53.3
Macon	5	1	20.0	2	3	60.0
Gainesville	3	1	33.3	2	3	100.0
Columbus	2	0	0.0	1	1	50.0
Dalton	2	0	0.0	0	0	0.0
Rome	2	0	0.0	0	0	0.0
Valdosta	1	1	100.0	0	1	100.0
Warner Robins	1	0	0.0	0	0	0.0
Savannah	2	0	0.0	1	1	50.0
Total	269	70	26.0	89	159	59.1

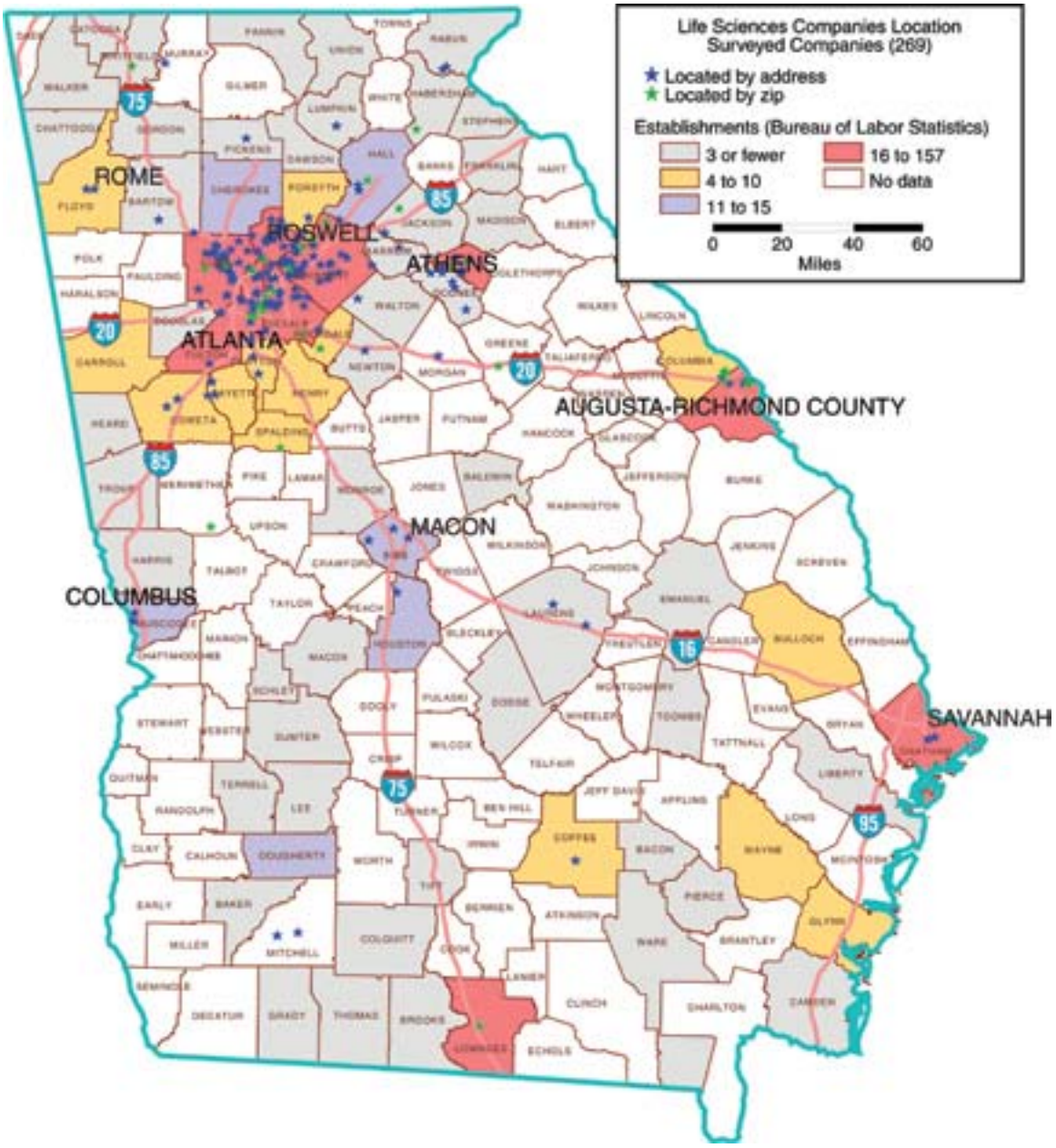
*Data gathered by the Selig Center from publicly available sources, and 2006 Survey responses.

Life Sciences Companies by Year of Founding



Based on 159 surveyed companies.

Life Sciences Companies by Location



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: 3,271 in pharmaceutical manufacturing, 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.

General Trends

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 sciences 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 sciences industries, provided 5,144 jobs and over $230 million dollars 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 the average annual pay drop of 0.1 percent. The 2001-2006 growth in medical and diagnostic laboratories firms and employment, however, was the second strongest in the industry, and fueled the 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 devices 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 science industries in the state. The 4 percent year- over-year increase in average annual pay also exceeded the five-year average.

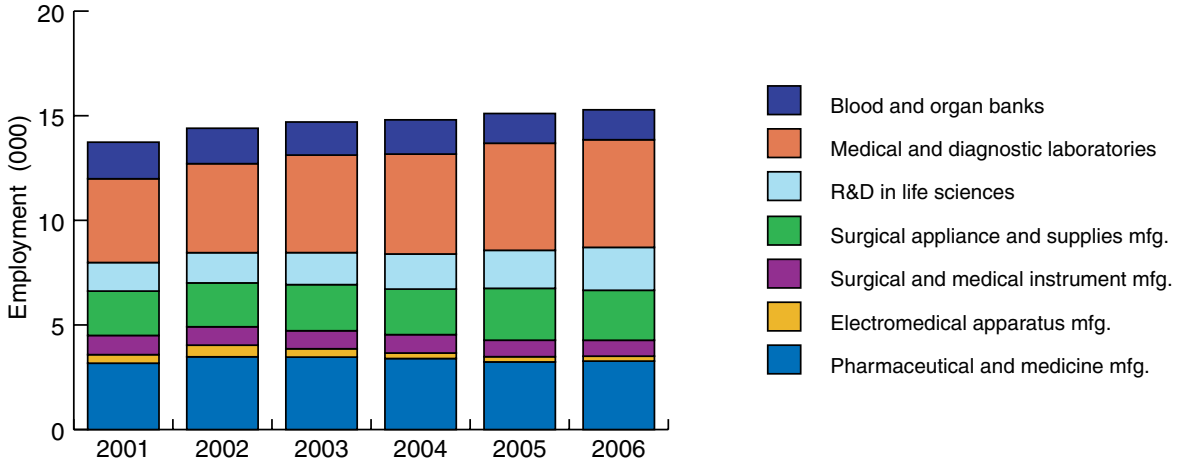
The average annual pay for those (including professionals, manufacturing workers, and administrative support) in the private sector of the industry reached $61,507 in 2006, up 7 percent from a year ago. The average annual salary of $88,408 in pharmaceutical manufacturing topped the sector's pay scale 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.

Table 2
The Life Sciences Industry in Georgia, 2006

	Number of Establishments	All Employees	Average Annual Salary (dollars)	Total Wages ($000)
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
Electro-medical 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	231,213
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: U.S. Bureau of Labor Statistics, Quarterly Census of Employment and Wages.

Life Sciences Employment by Industry, 2001-2006



Source: Based on U. S. Bureau of Labor Statistics, Quarterly Census of Employment and Wages.

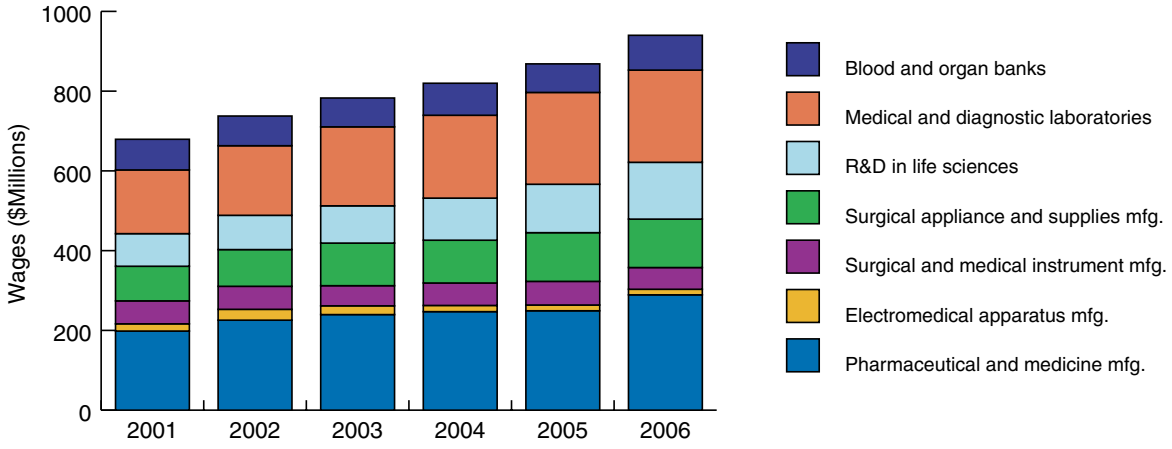
Table 3
Dynamics of Growth in Georgia's Life Sciences Industry

	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 industry					
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	4.0	2.4	0.8
Total wages	19.5	5.7	3.6
Life sciences industry			
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: Selig Center for Economic Growth, based on data from the U.S. Bureau of Labor Statistics.

Life Sciences Wages by Industry, 2001-2006



Source: Based on U. S. Bureau of Labor Statistics, Quarterly Census of Employment and Wages.

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. Compared to the 2006 survey, the 2007 sample of companies includes a more balanced mix. Small companies—with less than 10 employees—are the core of the industry (38.3 percent), but larger firms (with between 11 and 50 staffers) comprise 35.7 percent of the total.

As the survey shows, the appetite for workers continues, too: 75 percent of the respondents are interested in hiring graduates of applied life sciences education programs, 51.7 percent are interested in providing unpaid internships, and 33.3 percent expressed interest in providing paid internships. (See Table 4.)

As to any immediate employment changes, 43 companies anticipate adding workers in 2007-2008, and 17 companies plan to maintain current staffing levels. A total of 357 new jobs will be added in the companies that responded to the survey, the majority of them professional researchers and technologists (124 jobs). Senior and other management positions comprise the second largest group of the anticipated new hires (76 jobs). The remaining jobs will be added in manufacturing, sales and marketing, office support and regulatory and legal positions. (See Table 5.)

Finding and hiring skilled technicians and specialized managers was singled out by survey respondents as the most important labor force factor impacting the operations of life sciences companies in Georgia. Only 12 respondents deemed the availability of skilled managers a strongpoint, while 23 respondents considered it Georgia's weakness. Conversely, 17 respondents said the lack of skilled technicians was a weakness, but 19 respondents thought there were enough of these specialists available here.

The need for managers and technical personnel combined with a perceived inadequate supply of these workers in the state means that prospective new hires could command

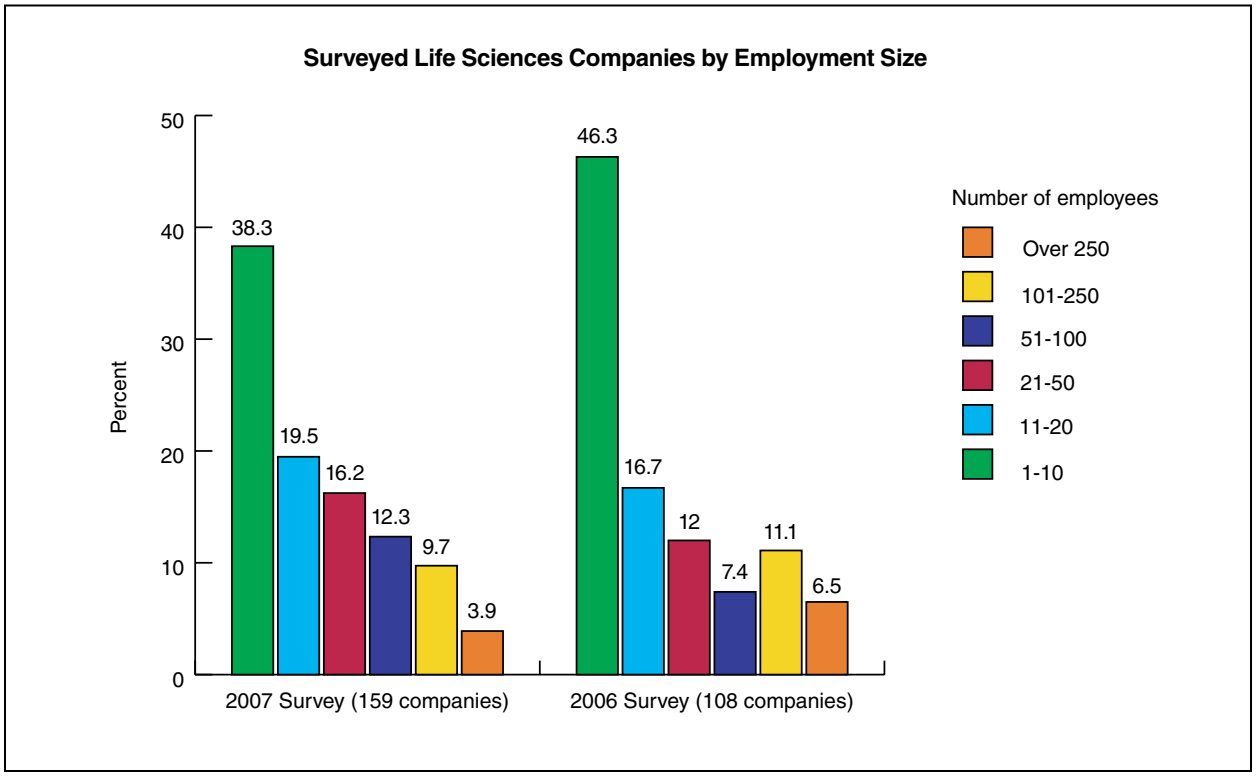


Table 4
Help Wanted

	Responses	Percent of Cases
Interested in hiring graduates of applied programs	45	75.0
Interested in providing unpaid internships	31	51.7
Interested in providing paid internships	20	33.3
Interested in providing financial support to the program	1	1.7
No interest at this time	13	21.7
Total valid responses	110	183.3
Missing	10	
Total valid cases	60	

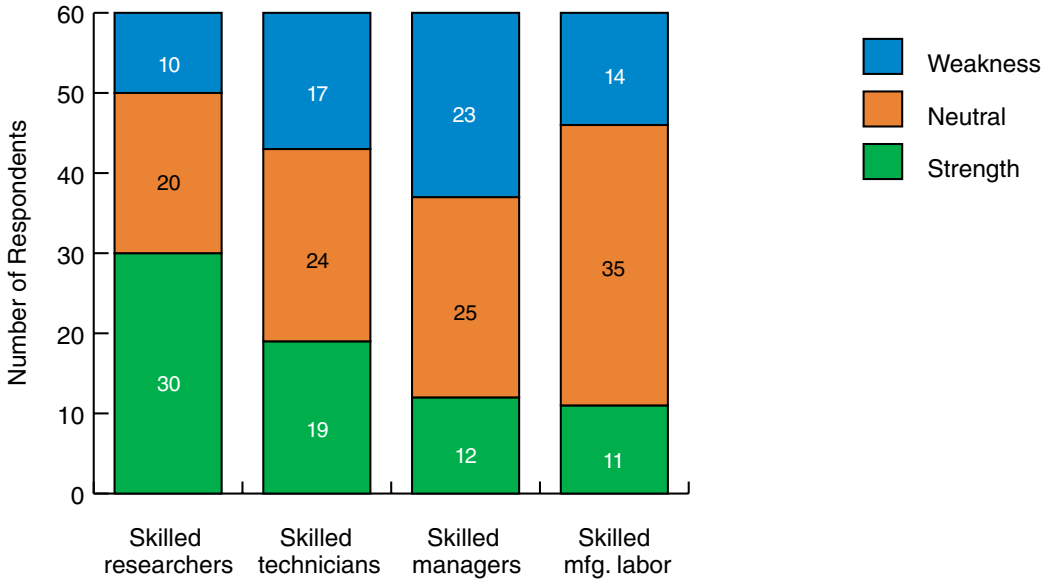
Based on 2007 Survey respondents (70 companies). Multiple-choice question. Percentages do not add to 100.

Table 5
Anticipated 2007-2008 Job Openings in Georgia's Life Sciences

Companies	Number	Percent of valid cases	Percent of all cases	Anticipated number of new hires
No change in employment	17	28.3	24.3	NA
Expand employment	43	71.7	61.4	357
Ph.D./M.S. scientists	26	43.3	37.1	68
Bench technologists	23	38.3	32.9	56
Manufacturing workers	14	23.3	20.0	40
Senior management	20	33.3	28.6	27
Management	25	41.7	35.7	49
Regulatory/legal	16	26.7	22.9	23
Sales/marketing	19	31.7	27.1	38
Office support	18	30.0	25.7	37
Other	6	10.0	8.6	19
Total Cases	70			
Missing	10			
Valid Cases	60			

Based on 2007 Survey respondents (70 companies). Multiple-choice question. Percentages do not add to 100.

Respondents' Viewpoint: Life Sciences Labor Force Availability in Georgia



Based on 2007 survey respondents (70 companies).

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 52 percent (32) of the responding companies, and most deemed the availability of researchers either a strongpoint, or an issue of no concern in Georgia. In fact, the availability of researchers received the smallest number of negative responses, and should be considered a bright star in the life sciences industry labor force in the state.

In 2006, Georgia ranked among the top ten in the nation in the number of epidemiologists (5), zoologists (6,), microbiologists (8), and soil and plant scientists (8,) in the workforce. Out of these categories, microbiologists in Georgia also ranked third in the country in terms of average and median annual salaries. Medical scientists, biochemists, and biophysicists, on the other hand, rank in numbers around the middle of the field (22 and 26, respectively), but earn the first and second highest respective median annual salaries in the nation. On the other hand, the number of life sciences industries technicians in Georgia ranks relatively low, compared to other states, and only forest and conservation technicians enjoy average annual wages ranking in the top ten. (See Table 6.)

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 applications include, among others, human and animal health, environment, agriculture, and bio-energy. This year, however,

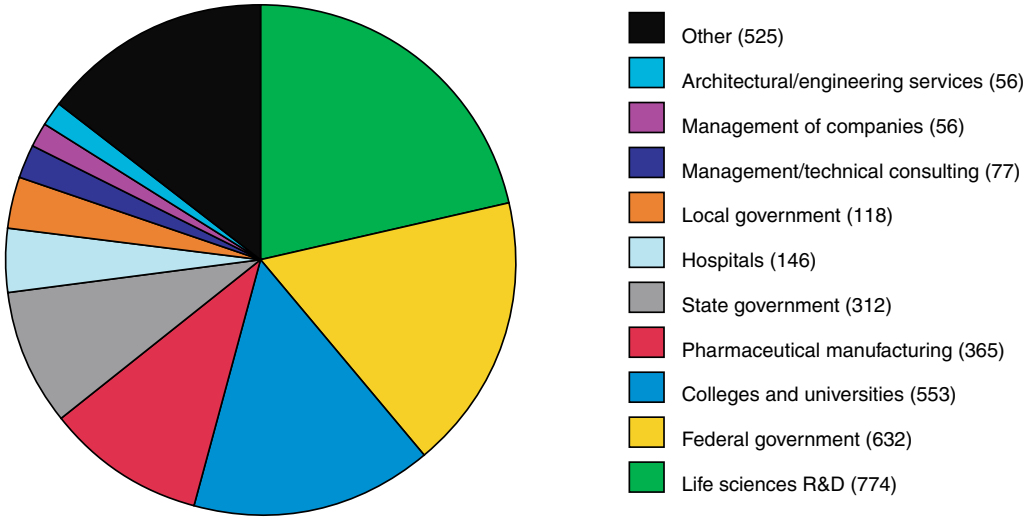
Table 6
Georgia's 2006 Life Sciences Workforce: Employment and Salaries

Occupation	Total employment	Annual average salary	Annual median salary
Animal scientists	65*	NA	NA
Food scientists and technologists	190	50,460	44,060
U.S. rank	18	27	23
Soil and plant scientists	350	57,410	54,670
U.S. rank	8	25	25
Biochemists and biophysicists	70	98,110	103,880
U.S. rank	26	2	3
Microbiologists	610	78,310	74,680
U.S. rank	8	3	3
Zoologists and wildlife biologists	630	45,920	42,570
U.S. rank	6	44	45
Biological scientists, all other	590	57,660	57,010
U.S. rank	13	35	40
Conservation scientists	160	59,180	59,900
U.S. rank	34	18	18
Foresters	230	56,740	56,010
U.S. rank	18	7	8
Epidemiologists	230	60,450	58,480
U.S. rank	5	11	13
Medical scientists, except epidemiologists	340	104,530	76,900
U.S. rank	22	1	5
Life scientists, all other	150	95,450	80,300
U.S. rank	16	2	1
Agricultural and food science technicians	349*	NA	NA
Biological technicians	880	34,750	33,040
U.S. rank	21	19	20
Environmental science and protection technicians, including health	470	32,610	32,230
U.S. rank	21	43	41
Forest and conservation technicians	240	38,240	36,500
U.S. rank	30	7	8
Life sciences occupations total	5,554		
U.S. rank	24		

*Estimated by the Selig Center for Economic Growth, based on national averages.

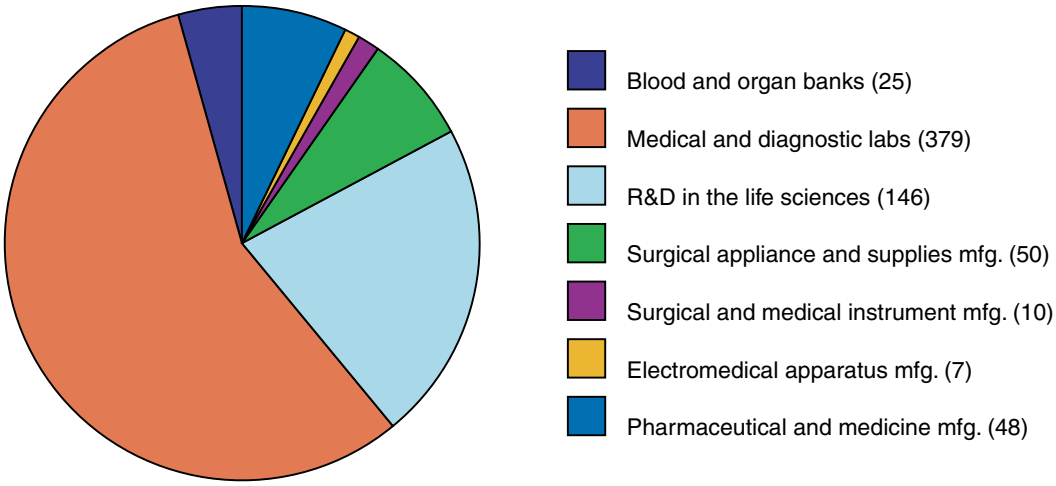
Source: Bureau of Labor Statistics, ranking by the Selig Center for Economic Growth. Ranking by the Selig Center for Economic Growth, Terry College of Business, The University of Georgia.

Number of Life Scientists Employed in Georgia by Industry, 2006



Source: Selig Center for Economic Growth, based on John I. Jones, "A Concise Look at Occupations in the Life and Physical Sciences". U. S. Bureau of Labor Statistics occupational data.

Number of Life Sciences Establishments by Industry in Georgia, 2006



Source: U.S. Bureau of Labor Statistics.

the discussion of surveyed companies in Georgia excludes the bio-fuel and bio-energy fields, because these fledgling industries are too new to provide reliable data.

Close to half of the 159 companies surveyed in 2007 focus on broadly defined pharmaceutical products. Close to a third of the companies specialize in medical devices, while a fifth of them focus on diagnostics. Almost 10 percent are industrial, agricultural, and bio-energy companies, while the remaining companies concentrate on platform technology, product discovery, services, and general research technologies.

Manufacturing is the most prevalent industry among the companies surveyed, with 60 (37.7 percent) companies specializing in it. Medical devices, pharmaceutical and industrial life sciences companies are most commonly engaged in some kind of manufacturing, but bio-fuel, diagnostics and biologics firms do so, too.

Emphasis on research and development is clearly visible across the spectrum of surveyed companies, but especially among pharmaceutical, biologics, medical devices, discovery, and general research technology firms (34.6 percent or

Table 7
Life Sciences Companies by Primary Focus

Primary Focus	Number	Percent of Cases
Pharmaceuticals/therapeutics	50	32.1
Medical devices	49	31.4
Diagnostics	32	20.5
Biologics	18	11.5
Biopharmaceuticals	17	10.9
Platform technology/discovery	13	8.3
Industrial	10	6.4
General research technologies	8	5.1
Services	6	3.8
Other	5	3.2
Bio-fuel/Bio-energy	3	1.9
Agricultural	2	1.3
	213	136.5

Based on 159 surveyed companies. Multiple response-question. Percentages do not add to a 100.

Table 8
Life Sciences Companies by Industry Sector

Industry Sector	Number of Responses	Percent of Cases
Manufacturing	60	37.7
R&D	55	34.6
Medical and diagnostic labs	26	16.4
Biotechnology	17	10.7
Sales/marketing/business services	16	10.1
Blood and organ banks	3	1.9

Based on 159 surveyed companies. Multiple response-question. Percentages do not add to a 100.

55 companies). Biopharmaceuticals, biologics and bio-fuels firms, as well as discovery and general research technologies are most likely to be involved in biotechnology, which 17 firms (10.7 percent) report as their main industry. Medical, diagnostic, and other testing also are prominent fields among life sciences companies.

For the second consecutive year, cancer and infections were the most commonly cited targets for pharmaceutical, biopharmaceutical, and medical diagnostic firms. Among pharmaceutical firms, inflammation, pain and neurological conditions were also among the top targets (over 20 percent of respondents). 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, and general, restorative devices. Neurological, reproductive/abdominal, and clinical/laboratory 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 and tissue products, in addition to vital vaccines and blood products. 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. Some companies specialize in sales, marketing, and other business services, while others provide a range of services dealing with development, manufacturing and testing processes. Sixteen respondents among the surveyed companies reported sales, marketing, and business services as their primary industry. Eighteen respondents said they provide services ranging from laboratory testing, contract research and development, clinical trials, quality assurance, and data management, among others.

The importance of the availability of service providers cannot be overstated. Among the respondents to the 2007 survey, only four deemed it unimportant to their company operations, and almost 50 percent of the valid responses stated that it was very important or even critical to their companies. While 18 respondents reported that the availability of service providers is a strongpoint, 15 said otherwise. Even though the survey did not ask specifically about services tailored especially for life sciences companies, clearly this area can be identified as a target in the further development of the life sciences in Georgia.

Product Development

The 2007 survey respondents currently have 297 products under development or pending approval, 211 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, however, may be a concern, since only a fraction of products in R&D eventually make it into pre-clinical and clinical trials.

The respondents also reported 161 marketed products (excluding 1,200 reported by just one company). If things go as expected, the number of marketed products will increase to 264 within the next five years.

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Industry Insight

Special Articles Contributed by
University and Industry Leaders

Industry Insight

UGA Research Critical to Industry Growth

Michael Adams, Ph.D.
President
The University of Georgia

The University of Georgia's historic strengths in agriculture, veterinary medicine and food safety have melded with more recent accomplishments in molecular medicine, biochemistry, vaccinology, public health, infectious disease and immunology to create a critical mass of talent and research infrastructure in this area.

This strength was recognized recently when the Department of Homeland Security selected Georgia as one of five finalists for the National Bio and Agro-Defense Facility (NBAF), a new $500 million national research facility dedicated to diagnostics and countermeasures for zoonotic diseases.

At UGA, the NBAF proposal builds on our continuing biomedical, health sciences and public health initiatives, distinguished recently by the opening of the Paul D. Coverdell Center, the Animal Health Research Center, a specialized biocontainment facility, and the Infectious Disease Center—a collaboration between our health and engineering-nanotechnology sciences.

UGA's commitment to the long-term growth of life science and technology-rich industries in Georgia starts with the answer to a single question: How can research and scholarship help Georgians live healthier, more productive lives?

Our premise is simple: UGA serves Georgia best by being competitive with the best in the world in providing solutions to today's greatest challenges. Let's consider two of the biggest concerns: energy and infectious diseases.

America's dependence on oil jeopardizes its national security, drains billions of dollars from the U.S. economy and contributes to global warming. There are alternative solutions to our energy needs, such as production of bioenergy from biomass. However, we need cutting-edge fundamental science to render alternative forms of energy production economically viable and cost-effective.

Production of biomass for alternative energy production is a particularly attractive arena for Georgia's increasingly challenged agricultural economy, so UGA as a land-grant institution is doing its part to help provide future solutions.

Recently UGA scientists—led by the Complex Carbohydrate Research Center—teamed with researchers at leading universities, national research laboratories and industry in an intense national competition to win a $125 million grant for a research center that will seek new ways to produce biofuels. The center leverages UGA's considerable research strengths in plant biology, genetics and genomics, and microbial biochemistry and will bring $20 million to UGA over the next five years.

Yet another team of UGA scientists—led by our College of Agricultural and Environmental Sciences—has already received national attention for pioneering work in biorefining. UGA scientists are integrating various established refining technologies to convert biomass feedstocks into transportation fuels, energy and bioproducts.

Turning to another critical area, the dramatic health gains of the 20th century owe much to research and demonstrate the value of investing in new knowledge and technologies. Now, as it's become clear that infectious diseases of concern to humans are often those that can be transferred from animals to humans, research has stepped up to address the threat of these so-called zoonotic diseases.

Increasingly, we understand fighting infectious diseases in livestock not only ensures our economic vitality but also constitutes a front-line defense for human health.

In collaboration with the Georgia Research Alliance, UGA has recruited top scientific talent from around the world whose innovative and entrepreneurial energies have developed new companies and assisted many more, while educating the next generation of scientists in Georgia. UGA has more than a dozen GRA Eminent Scholars working in various fields, including the development of animal and poultry diagnostic tools, vaccines, therapeutics, and bioenergy.

Many research scientists have shown that they can be successful entrepreneurs; almost 90 companies have originated from UGA research since 1974, and the vast majority of these are still active. They generate a diverse range of products and services, most with high social utility. Human and veterinary drugs and diagnostics; agricultural equipment; hardy turf grass and improved floral varieties; and information management software are but some examples.

Fifty of the active companies are currently based in Georgia, and many of them have ties to UGA. Annual sales of these companies are about $20 million, and these Georgia companies have returned over $11 million in the form of research funding and licensing revenue. UGA-generated companies now employ some 500 highly trained workers in new knowledge-based jobs, and many of the employees are UGA graduates.

Couple our strengths at UGA with those at other institutions such as the Georgia Institute of Technology, Emory University, the U.S. Centers for Disease Control and Prevention and the Medical College of Georgia, and you'll see that we are enhancing the opportunities for economic development while meeting the needs of the people of the great state of Georgia.

Industry Insight

UCB Emerging as Global Biopharmaceutical Leader

Fabrice Egros
President
UCB, Inc.

It is an exciting time to be at UCB. It's one thing to say you want to be a world-class leader in the biopharma industry and another to actually position your company to become one.

Headquartered in Brussels, Belgium, UCB, Inc., is building a new type of company—a next generation biopharmaceutical company focused on securing a leading position in severe disease categories, such as epilepsy, Parkinson's disease, Crohn's disease and other autoimmune or neurological diseases as well as our early stage oncology pipeline.

UCB's new strategic approach to doing business is all about making connections—connecting patients, connecting science and connecting people—to better understand and address the complexities of treating severe diseases. This connectivity has also played a key role in our decision process of where to locate our U.S. operations. Selecting Georgia has given us the opportunity to flourish both in the highly competitive North American market as well as allowing us to continue our growth globally. We are of the opinion that Georgia offers a unique opportunity that will foster the mutual development of UCB and Georgia as the future leaders of the 21st century bioeconomy.

Our vision of the future is based on utilizing an innovative approach to drug discovery and development, with an unmatched combination of expertise in both chemically-derived medicines and biologics. We are implementing a strategic focus on severe diseases treated by specialist physicians covering three main therapeutic areas: central nervous system, inflammation and immunology, which include allergy and oncology.

Our dual pipeline approach to research and development encompassing both novel chemical entities (NCEs) and Novel Biological Entities (NBEs), allows us to address disease treatment through a range of targets and disease pathways.

As pharmacogenetics and other developments lead to more personalized treatments, the combination of large and small molecule therapies will enable us to tackle different disease states at different stages, which affords us the flexibility to balance risk and optimize the delivery of innovative new medicines to the market.

The transformation of UCB into a leading global biopharmaceutical company, concentrating on a dual pipeline of large and small molecules, began in 2004 with the acquisition of UK-based Celltech. During this time, UCB also divested its non-pharmaceutical activities. The combination of Celltech's leadership in antibody research and technology coupled with UCB's and Celltech's expertise in chemistry created a pure biopharmaceutical company.

The recent acquisition of Schwarz Pharma, with a late stage pipeline in movement disorders, will help accelerate UCB's transformation to a next generation biopharmaceutical company.

Despite the challenges involved with doing business on a global scale, including the language barrier, varying compliance and regulatory environments; different product marketing practices and diverse culture/business backgrounds, UCB has a strong global presence—employing more than 10,000 people in over 40 countries.

UCB is realizing its potential as a next generation biopharmaceutical leader with several key achievements. UCB filed its first biologic with U.S. and European regulatory authorities in 2006. The organization is a leader in the fields of epilepsy and allergy.

Global sales of anti-epileptic Keppra rose 36 percent. Overall, global net sales increased by 7 percent in 2006 with North America accounting for 46 percent of sales. The organization has 11 molecules in development and has invested 25 percent into its research and development efforts. Additionally, UCB has formed strong partnerships with other leading biopharmaceutical organizations to develop new generations of therapies.

UCB is making substantial progress towards its goal of becoming a next generation biopharmaceutical leader. By connecting patients, science and people in new ways, UCB anticipates giving millions of families the opportunity to lead positive, productive lives. For these millions of people living with the physical and social burden of severe diseases, biopharmaceuticals holds out the promise of a new generation of therapies and will help drive UCB on its continued path to success.

Industry Insight

Morehouse School of Medicine: Scene of Groundbreaking Life Sciences Research

Eve J. Higginbotham, M.D.
Dean and Senior Vice President for Academic Affairs

Sandra Harris-Hooker, Ph.D.
Vice President and Associate Dean for Sponsored Research Administration

Discoveries being made in the laboratories of the Morehouse School of Medicine today hold the potential to change disease treatment and management tomorrow.

Our premier programs in cardiometabolic syndrome and neurosciences are bolstered by our research efforts in global health and cancer. At Morehouse School of Medicine, researchers have made discoveries that are leading to new, more effective treatments, interventions, and vaccines, for such health issues as malaria, cholera, sexually transmitted diseases, high blood pressure and stroke, HIV/AIDS, and cancer. As these discoveries are translated from the bench to the bedside, and into the community, they could save millions of lives. Here are highlights of some of the scientific work of the faculty of Morehouse School of Medicine.

Byron Ford, Ph.D., associate professor in the Department of Anatomy and Neurobiology, has been awarded a five-year grant to explore the use of neuregulins-1 against lethal nerve agents, such as sarin. Dr. Ford is also developing a stroke medication that, if administered within the first 14 hours after occurrence, could reduce brain damage up to 90 percent and foster functional improvement for the stroke patient.

Jonathan Stiles, Ph.D., associate professor in the Department of Microbiology, Biochemistry and Immunology (MBI), has identified biomarkers that can predict the severity of such cerebral diseases as malaria. Fifteen percent of the 2 million fatal malaria cases each year are due to cerebral malaria. The markers identified by Dr. Stiles can be evaluated at the time the patient presents for treatment and that treatment modified, if indicated. Dr. Stiles is working with Dr. Ford to develop a treatment that could save millions of lives every year. This discovery also has implications for the military, tourists, expatriates, and business travelers.

Veena Rao, Ph.D., professor and co-director of the Cancer Biology Program, is exploring a genetic cure for triple-negative breast and ovarian tumors. The expectation is that she and her team will be able to:

- Develop diagnostic kits to check whether variation in the levels of expression of these isoforms can lead to cancer.
- Identify biomarkers that monitor tumor activity
- Correct cells that have lost functional BRCA1 by gene therapy using non-viral nanoparticles to introduce BRCA1 into cancer cells.
- Reduce cancer disparities among minority populations by developing drugs that can restore or mimic function of BRCA1, which might benefit patients with breast, ovarian and prostate cancer.
- Use tumor stem cells as targets for cancer therapy.

The laboratory team of Francis Eko, Ph.D., research assistant professor in the MBI department, is focused on developing vaccines against Chlamydia and HSV-2 based on the novel recombinant Vibrio cholerae ghost (rVCG) platform technology. They have constructed a novel recombinant bacterial ghost delivery system that has inherent adjuvant properties and is capable of simultaneously delivering multiple antigens from the same or different pathogens to the immune system. The murine model of genital infection is a reliable experimental system for studying the immunobiology of Chlamydia and HSV-2 and for evaluating vaccine efficacy. The central tenet evolving from this model is that control of infection correlates with the presence of a strong Thl response that provides IFN--required for inhibition of pathogen replication.

Cholera is an acute bacterial disease that is connected to contaminated drinking water and that exists in epidemic proportions in Africa. Jorge Benitez, Ph.D., associate professor in the MBI department, focuses on the pathogenesis of cholera and development of a vaccine.

Vincent Bond, Ph.D., associate professor, and Michael Powell, assistant professor, in the MBI department are currently testing a new hypothesis on the cause of AIDS that could lead to a vaccine that will block the ability of HIV to cause damage.

Despite the fact that AIDS has been recognized as a disease for over a decade, one of the fundamental questions that has remained unanswered is "How does infection with HIV result in the disease AIDS?" Currently, their theory is being tested in primates. If the theory is confirmed, then someday, individuals infected with HIV could remain infected, but would not suffer the loss of immune cells commonly associated with HIV. A full patent regarding these HIV Nef protein findings has been filed.

Morehouse School of Medicine currently holds several patents on the discoveries of our research faculty and we are in the process of licensing those patents. We look forward to partnering with members of Georgia Bio as we collaborate to strengthen the life sciences industry and burgeoning economy of the state.

Industry Insight

In Biofuels, the Rules Have Changed

Roger Reisert
President and CEO
C2 Biofuels LLC

Biofuels are here to stay. No longer will there be false starts in alternative fuels development. No longer will oil prices drop and demolish biofuels market development. Biofuels are now beyond the niche market label and are poised to make a meaningful impact on the liquid transportation fuels supply. There will undoubtedly be bumps along the way, because it is quite predictable that energy markets will continue their volatile behavior. But it is also predictable that handsome profits will be made in biofuels over time.

The U. S. driving public has proven clearly that $3 per gallon gasoline is not too high a price to pay, as witnessed by their unwavering increases in consumption. Add to that, an upcoming federal Renewable Portfolio Standard and carbon credits markets, and the long-term market for biofuels is assured.

Rural America get ready, you will be the primary beneficiary. And rural Georgia will be one of the early biofuels leaders using technologies like those being developed by C2 Biofuels.

The tipping point for biofuels came in early 2005 when gasoline prices remained over $2 per gallon long enough to spur a critical amount of private and public funding for alternative fuel sources. The early market entrants, such as C2 Biofuels, formed in May 2005, were able to take advantage of research that had been started after the energy crisis of the 1970s. Low oil prices in the late 1980s and 1990s reduced research funding, but advancements in biocatalysts over the last five years have been sufficient to enable enzymatic hydrolysis technologies, such as those used by C2 Biofuels, to become viable. Hurricanes Katrina and Rita provided a wake up call to

the U. S. public regarding the energy security risks when Gulf Coast oil production and refinery capacity were damaged and gasoline consumers were introduced to $3 per gallon fuel. Ensuing refinery capacity shortages during the spring and summer seasons again caused gasoline to spike to $3 per gallon in 2006 and 2007.

In spite of the high prices, U. S. drivers found that few alternatives existed for liquid transportation fuels. Ethanol is now well recognized as one of the very few possible gasoline substitutes that will be scalable to significant volumes.

Ethanol is currently produced primarily in the corn growing states of the Midwest. The ethanol is typically blended with gasoline and sold as E10 (10 percent ethanol) to extend the fuel supply and to be an oxygenate additive to help gasoline burn more cleanly. Ethanol's very high octane value also makes it useful in raising the octane of gasoline blends. Current production capacity is about 6.5 billion gallons per year, which is less than 4 percent of total U.S. gasoline usage. The total potential volume of U.S. corn based ethanol production is estimated to be about 15 billion gallons per year and is based on the quantity of corn which can be moved from food markets to the fuels market. The potential production of ethanol from cellulosic (or biomass) resources is much greater.

Congress, President Bush's Administration, and many state governments are now pushing for higher quantities of biofuels development and deployment. Proposals by the President and the Senate call for at least 36 billion gallons of production per year by 2022. Therefore, cellulosic ethanol technology development is being strongly supported through new policy and legislative actions.

Using recent advances in biocatalysts, C2 Biofuels LLC, a privately funded company, will be an early supplier of cellulosic ethanol technology.Initially pine woody biomass will be used, but the technology will be expanded to other sources of biomass that ultimately may be used to satisfy over 30 percent of the U.S. gasoline demand.

C2 Biofuels is working closely with faculty members from Georgia Tech's Strategic Energy Institute and the University of Georgia to develop the process technology.

Georgia and other southeastern states have an increasingly abundant pine resource that presents an unmatched opportunity for significant scalable feedstock supply. Infrastructure exists to harvest and deliver pine to cellulosic ethanol production facilities. The ethanol product can be moved into the states' current fuel distribution markets with minimal transition.

C2 Biofuels' technology, which will be licensed to manufacturers, can lead to considerable economic development opportunities in rural areas. Also it will provide significant environmental and energy security benefits for a sustainable energy future.

The motivation is overwhelming to push forward the technology development necessary to fill our tanks with biofuels and reduce our gasoline usage. Biofuels are here to stay.

Industry Insight

Nothing Ventured, Nothing Gained

John Richard
Managing Director
Georgia Venture Partners

Venture capital is the lifeblood of company formation in the life sciences industry. Due in part to regulatory requirements, biotechnology and medical devices companies need significant capital and years of development before they generate product revenue.

Venture capital plays a critical role in getting companies off the ground and funding their exciting new ideas to proof-of-concept before public investors (through an IPO) or large corporate partners will assist with the enormous capital needed to achieve product approval from the U.S. Food and Drug Administration and success in the global healthcare markets.

So what is the current climate for life science venture investing in Georgia? To answer that question, it is important to understand that there are different flavors of venture capital. The bulk of life sciences venture capital in the U.S. goes into established companies with an existing management team and well-defined products in development. For companies that meet these criteria, it is currently the best of times.

There has never been more venture capital available for late-stage life sciences companies. While there are a limited number of large venture capital firms with a footprint in Georgia, this late-stage capital will flow to attractive opportunities anywhere in the U.S., and Georgia-based companies have obtained their share.

CardioMems, Alimera Sciences, Altea Therapeutics, Carticept, Metastatix, Biofisica—and before them, AtheroGenics and Inhibitex—all attracted investment from topnotch national venture capital firms excited by the opportunities in Georgia.

For the early stage start-up, the venture climate is very different.While there are definite advantages to having more late-stage capital in Georgia, the critical need is for the earlier stage capital necessary to get companies from inception to a more established entity with experienced management and clinical proof of their products in human testing.

The earliest investment is often called seed capital, and represents investing at the time of highest risk (and hopefully reward)—when a new idea is being translated into a new company. This type of investing usually requires more hands-on involvement by the investor to establish a management team, find a facility, and secure patents. Because of the need for more involvement, seed investing tends to require local capital.

Over the past few years, the availability of life science venture capital in Georgia has continued to improve (both for late-stage and seed capital). H.I.G. Ventures, one of the largest and most successful Southeastern-based venture firms, has placed a life sciences partner in Atlanta. Home-grown Accuitive Medical Ventures recently raised a $175 million fund to finance new medical devices companies and technologies.

Other Georgia-based venture funds that invest in life sciences include the State of Georgia's ATDC Seed Capital Fund, HealthCare Capital Partners, Noro-Moseley, and Georgia Venture Partners (GVP).

GVP was specifically founded to address the lack of seed capital in Georgia, with a charter to get new companies positioned to attract national capital. The founding investors include Georgia Tech Research Foundation, Emory University, The University of Georgia Research Foundation, and The University Financing Foundation. The Coulter Foundation also played an important role.

Metastatix, one of GVP's seed investments, provides an example of how the process can work. Metastatix was founded by President and CEO Anthony Shuker, an experienced pharmaceutical scientist and entrepreneur, and by several world-class Emory University scientists, including Organic Chemistry Professor Dennis Liotta and Winship Cancer Institute Assistant Professor Hyunsuk Shim.

It was clear the Metastatix founders had the makings of a company with tremendous potential to develop treatments for cancer and HIV, but it is very difficult to raise growth capital for ideas while they are contained within a university setting.

GVP led a $500,000 seed round of investment in Metastatix, along with the ATDC Seed Capital Fund and Centrosome Ventures. The funding was enough to launch the company as an independent entity poised for success. Growth has come quickly for Metastatix, with product advancements and subsequent venture investments led by H.I.G. Ventures, and national firms SR One, Aurora Funds, Medimmune Ventures, and CM Capital.

Successful life science businesses require a critical blend of technology, management, and capital. Georgia has an abundance of exciting technology, but has had to work harder to develop management and capital resources. Georgia Venture Partners is committed to help entrepreneurs and scientists develop exciting new ideas into successful companies.

Industry Insight

Opening New Gates to Vaccines and Therapeutics

David S. Stephens, M.D.
Stephen Schwarzmann Professor of Medicine, Microbiology and Immunology,
Executive Associate Dean for Research,
Emory University School of Medicine

Two centuries after introduction of vaccination by Edward Jenner, vaccines have become one of the most cost-effective health maintenance measures ever derived. Vaccines and immunization strategies are one of the 10 greatest public health achievements of the 20th Century and have produced the global eradication of smallpox, polio elimination in most of the world, and the near elimination of diphtheria, tetanus, measles and rubella in the U.S.

New vaccines and vaccine strategies introduced for pneumonia, meningitis, mumps, varicella zoster (chicken pox), and pertussis (whooping cough) over the last two decades are now having a dramatic impact on the incidence of these diseases as well. Cancer has also become a vaccine target. Liver and cervical cancer rates are being reduced by the hepatitis B vaccine and a new papilloma virus vaccine, respectively, and therapeutic vaccines for bladder cancer and melanoma show promise. In the U.S., total savings per birth cohort by vaccination against ten common infectious diseases exceed $436 billion.

In addition, new antimicrobial therapeutics have allowed remarkable progress in the treatment of infections such as HIV/AIDS. In the future, the next-generation of vaccines and therapeutics are expected to target an even wider array of diseases, including non-infectious diseases (such as neurodegenerative, diabetes and cardiovascular disease) and diseases which cross over from animals into humans.

Georgia has a strong and growing record of accomplishment in the areas of vaccines, immunology, and new therapeutics. The Georgia-based U.S. Centers for Disease Control and Prevention (CDC) leads national and global efforts to implement vaccines and vaccine strategies. The scientific talent of the major research universities of the state is unparalleled in these areas with key leaders in infectious disease research, im-

munology, molecular pathogenesis, cancer biology, carbohydrate research, virology, bacteriology, parasitology, global health and clinical trials.

In addition, the rapid emergence of a growing biotechnology industry that includes strong partnerships with academia has created a unique environment for discovery and development.

The Emory Vaccine Center, created in 1996 with the recruitment of Georgia Research Alliance (GRA) Eminent Scholar Rafi Ahmed, a world-renowned expert in immunology, is one example of the tremendous success of GRA investment. Over 60,000 square feet of space are now devoted to vaccine discovery and development in the center, including immunology, virology, flow cytometry, tetramer cores and a strong clinical trials unit. A vaccine policy program, an interdisciplinary vaccinology focus and global vaccines initiative, are also part of the center.

Over $200 million in funding has been received by the center, 43 invention disclosures have been recorded, 18 patent applications, 14 patents issued and 11 exclusivities licensed.

Major accomplishments are the development of a very promising HIV/AIDS vaccine, which Georgia-based GeoVax has moved into clinical trials, and the discovery of the PD-1 immune regulatory molecule important in chronic infections and cancer.

In the area of new therapeutics, Emory scientists Dennis Liotta, Professor of Organic Chemistry, and Raymond Schinazi, Professor of Pediatrics, have developed groundbreaking blockbuster drugs, such as 3TC and FTC that are now used worldwide as part of the combination therapies for HIV/AIDS.

Georgia is also home to many other established and emerging research centers that will impact the future of next-generation vaccine and therapeutic development. Examples are the Animal Health Research Center and the Complex Carbohydrate Research Center at the University of Georgia; the Cancer Research Center and the Immunotherapy Center at the Medical College of Georgia; and the Viral Immunology Center at Georgia State University.

Collaborations among the research universities of the state are also a major strength. Examples include:

- Recent efforts of the Georgia Consortium for Health and Agro Security led by UGA to compete for the National Bio- and Agro-Defense Facility (NBAF);
- The joint effort of Emory, Georgia Institute of Technology and Morehouse School of Medicine to attract a National Institutes of Health (NIH) Clinical and Translational Science Award;
- Strong collaborations in biodefense;
- The joint biomedical engineering program between Georgia Tech and Emory; and
- The new NIH-funded Emory/UGA Center of Excellence for Influenza Research and Surveillance.

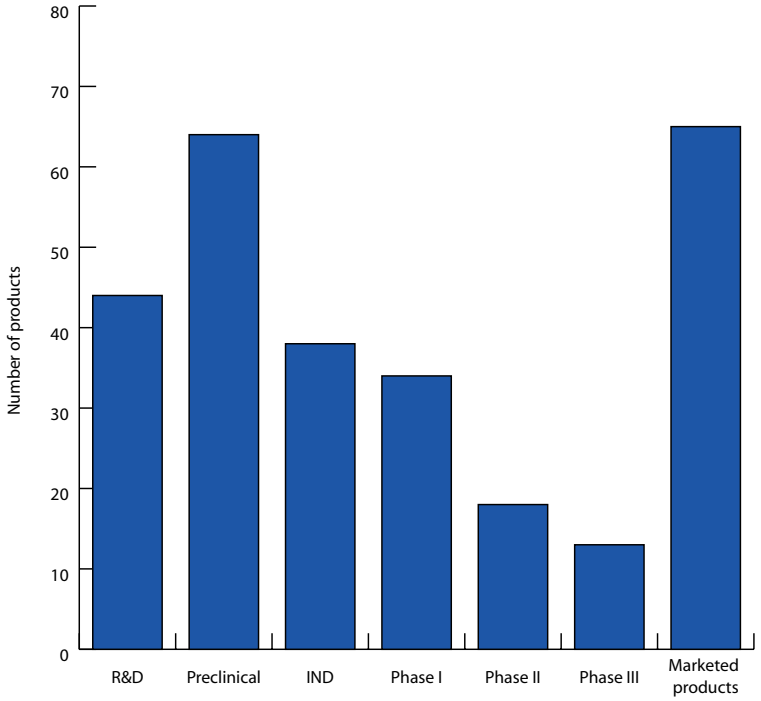
The potential for development in vaccines and antiviral therapeutics is exceptional with combined markets projected to exceed $34 billion in just three years, according to a recent GRA report.

Out of these strengths and opportunities has emerged a new initiative to develop the next generation of vaccines and therapeutics, led by the GRA and backed by Governor Sonny Perdue and the Georgia General Assembly. The goal is to make Georgia a world leader in the discovery, translation and production of the next generation of vaccines and therapeutics. The state has allocated $10 million in initial funding to launch the initiative in the current fiscal year.

The initiative will build on the strong base of scientific talent that already exists in Georgia and will focus on the recruitment of additional talent, such as GRA Eminent Scholars and GRA Distinguished Investigators. The initiative will also invest in world-class facilities that support the development and pilot-scale manufacturing of vaccines. Through joint research seed grant programs and scientific roundtables, the initiative seeks to make Georgia a model of collaboration among universities, the CDC and industry. The initiative is also designed to accelerate the commercial translation of vaccines that impact global health and can become the basis for new or expanded life sciences companies in Georgia.

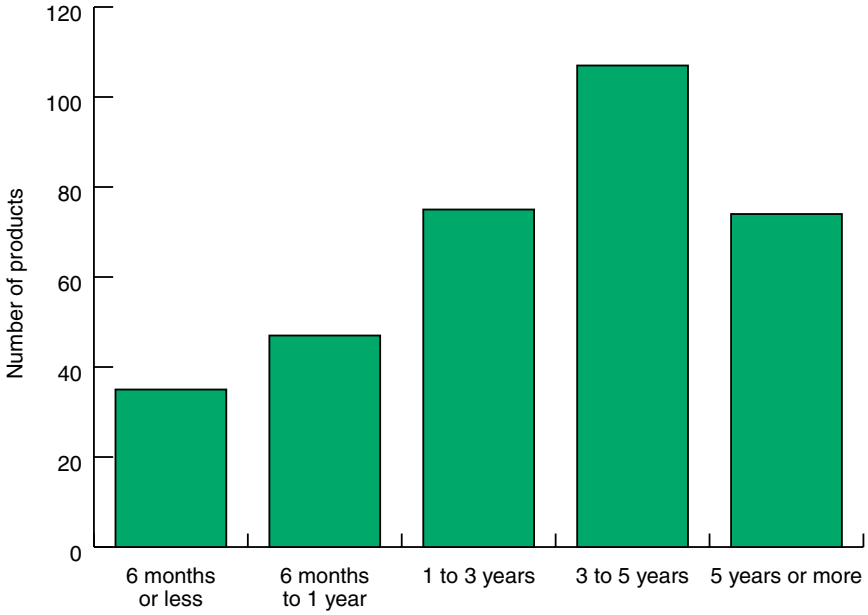
Continued from page 13

Number of Products by Stage of Development



Based on 2007 Survey respondents (70 companies).

Number of Products to Be Marketed



Based on 2007 Survey respondents (70 companies).

Funding

In 2007, 16 public life sciences companies were headquartered in Georgia. Together (including UCB) they employed over 3,800 staffers.

Of the 2007 survey respondents, 12 companies are public, and 58 are private.

Although most of the respondents found themselves in the lowest revenue category, one third of them reported revenues of more than $11 million in 2006. Also, in a departure from last year's survey, the 2007 survey respondents—as a group—were in the black, with 57 percent reporting income, and 43 percent reporting net loss this year.

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.

Access to capital and to government financial incentives was cited by 51 percent (31 respondents), and 47 percent (28 respondents), respectively, as the very important, or critical factor impacting their operations in Georgia. While 31 respondents considered access to capital a weakness in Georgia, 8 considered it a strongpoint, and 15 were neutral. The same group of respondents regarded access to government institutions somewhat more positively, with more respondents

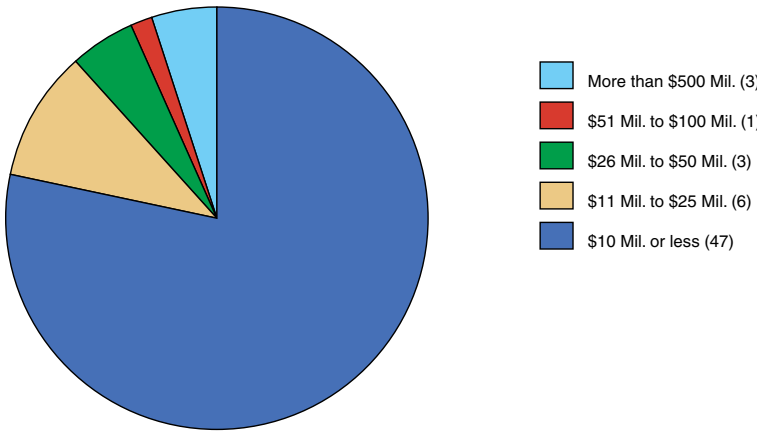
Table 9
Public Life Sciences Companies Headquartered in Georgia

Company	Employment in Georgia	Employment, all sites	Corporate Sales
AtheroGenics, Inc.	100	100	$31,674,845
Auriga Laboratories, Inc.	12	12	$1,200,000
Ciba Vision Corp. +	1,900	NA	$412,900,000
CryoLife, Inc.	235	363	$81,311,000
Elan Holding, Inc. +	200	NA	$50,000,000
GeoVax Labs, Inc.	10	60	$852,905
Health Discovery Corp.			$226,998
Immucor, Inc.	180	563	$183,506,000
Inhibitex, Inc.	80	80	$845,577
Microtek Medical Holdings, Inc.	65	1,863	$141,577,000
Noramco, Inc. +	100	NA	$19,500,000
Nova Biogenetics	3	3	$221,248
Porex Corp. +	300	NA	$86,000,000
Sciele Pharma, Inc.	78	78	$293,181,000
SpectRX	6	6	$997,000
Theragenics Corp.	140	315	$54,096,000
UCB, Inc. *	400	NA	NA
Solvay Pharmaceuticals, Inc. *+	260	NA	$86,200,000

*U.S. headquarters and offices of foreign firms.
+ Data is for Georgia subsidiary only.

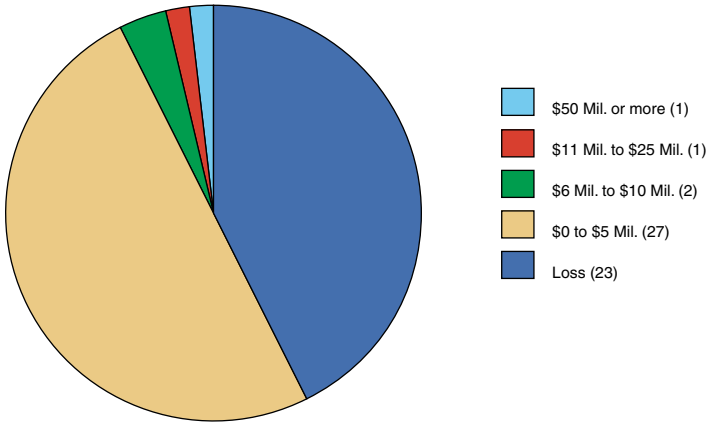
Source: Dunn and Bradstreet Million Dollar Database. Used by permission.

Levels of Revenues Generated by Survey Respondents in 2007



Based on 2007 Survey respondents (70 companies).

Company Income of Survey Respondents in 2007



Based on 2007 Survey respondents (70 companies).

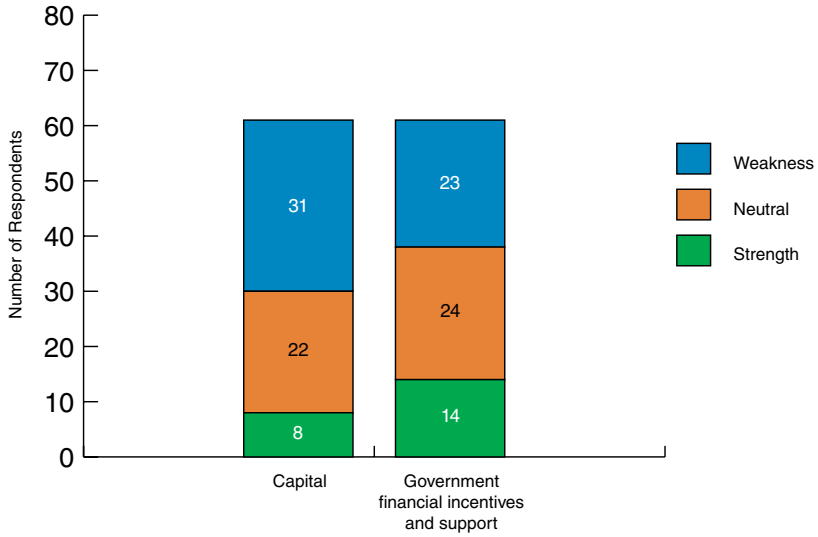
considering it a strongpoint or an issue of no concern (38 respondents) than those who saw it as a weakness in Georgia (23 respondents).

Between 2004 and 2007, survey respondents raised $711,798,833 in capital, and an additional $158,769,967 is anticipated in the remaining three quarters of 2007, for the total of $870,568,800.

For the first time since 2003, founders, family and friends were relegated to second place among the sources of funding anticipated for 2007. Now the majority of young firms cite angel investors as the most sought-after source of funding in the second half of 2007, with venture capital funding, grants, and private equity and partnerships also of prime importance. Although only one public offering was reported in the first quarter of 2007, four more are anticipated this year.

Private equity and partnerships consistently placed

Respondents' Viewpoint: Access to Capital and Government Support



Based on 2007 Survey respondents (70 companies).

Table 10
Capital Raised by Life Sciences Companies in Georgia

	Amount raised ($)
Capital raised 2004-2005	301,935,000
Capital raised 2006	249,621,333
Total capital raised 2004-2006	551,556,333
Capital raised 2007 to date	160,242,500
Capital to be raised by end of 2007	158,769,967
Total capital raised 2007	319,012,467
Total capital raised 2004-2007	870,568,800

Based on 2007 Survey respondents (70 companies).

Table 11
Life Sciences Companies' Funding Sources, 2004-2007

Responses 2004-2006	Number	Percent Percent	Percent of Cases
Founders, family, friends	20	26.0	48.8
Grants	13	16.9	31.7
Angels	12	15.6	29.3
VC funding	12	15.6	29.3
Early stage (Series A-B)	4	5.2	9.8
Mid stage (Series C-D)	1	1.3	2.4
Private equity/Partnership	11	14.3	26.8
Public offering	4	5.2	9.8
Total responses	77	100.0	187.8
Number of cases	41		

2007 to date	Responses Number	Percent	Percent of Cases
Founders, family, friends	11	28.2	
Grants	8	20.5	40.7
VC funding	6	15.4	29.6
Early stage (Series A-B)	3	7.7	18.5
Private equity/Partnership	5	12.8	22.2
Angels	5	12.8	18.5
Public offering	1	2.6	11.1
Total responses	39	100.0	3.7
Number of cases	27	144.4	

Anticipated (remainder of 2007)	Responses Number	Percent	Percent of Cases
Angels	10	20.4	31.3
Founders, family, friends	9	18.4	31.3
VC funding	9	18.4	28.1
Early stage (Series A-B)	2	4.1	12.5
Mid stage (Series C-D)	1	2.0	6.3
Late stage (Series E)	1	2.0	3.1
Grants	7	14.3	28.1
Private equity/Partnership	6	12.2	21.9
Public offering	4	8.2	18.8
Total responses	49	100.0	3.1
Number of cases	32		153.1

Based on 2007 Survey respondents (70 companies).

among the most important sources of funding for the 2007 survey respondents. In fact, 34 of the 70 respondents were interested in partnerships—and especially in R&D partners, with financing a close second. Sales, distribution, marketing, and licensing were also among the most often cited reasons for seeking partnerships.

Table 12
Interest in Partnerships

Not seeking partnerships	28
Seeking partnerships	34
Funding	10
R&D	12
Other	15
Missing or not applicable	8
Total	70

Based on 2007 Survey respondents (70 companies).

Georgia's Business Climate

Survey respondents singled out the access to capital as the most important factor for their companies' operations in Georgia, followed closely by the quality of life, and proximity to academic institutions. The cost of living, infrastructure, and the availability of service providers were most often cited as very important factors, 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 quality of life, cost of living, infrastructure, labor force and regulatory issues top the list.

Respondents were almost equally split on the issue of access to government financial incentives; but their preferences were more pronounced where access to capital and the availability of skilled researchers were concerned.

The state's image was considered as unimportant by only six respondents; five others considered it extremely important, or critical, and the remaining 50 respondents ranked it as either very, moderately, or slightly important (17, 17, and 16, respectively). (See Table 13 on page 32.)

It speaks well for Georgia business climate that most of the issues deemed vital for company operations were singled out as strengths by the majority of respondents, namely, the quality of life (46 respondents), proximity to academic institutions (45 respondents), and the cost of living (43 respondents).

Access to capital is a notable exception: 31 respondents consider it either extremely or very important, but only 8 see it as one of Georgia's strengths while 31 respondents consider it a weakness. The access to government incentives received a mixed response, with 14 respondents considering it a strongpoint, and 23 considering it a weakness. The state's image received a split vote, with 17 respondents indicating it a weakness and 13 responding positively. Labor force issues, especially the availability of skilled managers and technicians, were also cited as weaknesses by a sizable number of respondents. (See Table 14 on page 33.)

Table 13
Factors Impacting Life Sciences Companies' Operations in Georgia

	Not important	Slightly important	Moderately important	Very important	Extremely important/ critical
Funding					
Access to capital	17	9	4	7	24
Access to government financial incentives/support	19	7	7	11	17
Labor force					
Availability /cost of skilled manufacturing labor	23	10	12	7	9
Availability of skilled managers	8	5	14	18	16
Availability of skilled researchers	12	6	11	16	16
Availability of skilled technicians	7	4	14	22	14
Infrastructure and related issues					
Availability of suitable space and facilities	6	9	12	19	15
Availability/cost of land	21	10	16	9	5
Availability/Quality of service providers	4	11	16	23	7
Regulatory/legislative environment	5	6	16	17	17
Proximity to academic institutions/facilities	5	10	13	15	18
Infrastructure (e.g., traffic, energy, etc.)	1	3	19	25	13
Quality of life					
Quality of life	2	1	8	28	22
Cost of living (e.g., housing)	0	2	16	28	15
State's image	6	16	17	17	5

Total responses: 61
Based on 2007 Survey respondents (70 companies).

Table 14
Georgia's Business Environment, Strengths and Weaknesses

	Strength	Weakness	Neutral
Funding			
Access to capital	8	31	22
Access to government financial incentives and support	14	23	24
Labor Force			
Availability of skilled researchers	30	10	21
Availability of skilled technicians	19	17	25
Availability of skilled managers	12	23	26
Availability and cost of skilled manufacturing labor	11	14	36
Infrastructure and related issues			
Availability and cost of land	28	6	27
Availability of suitable space and facilities	30	13	18
Availability/quality of service providers	18	15	28
Proximity to academic institutions	45	3	13
Regulatory/legislative environment	14	15	32
Infrastructure (e.g., traffic, water, energy)	19	19	23
Quality of life			
Quality of life	46	1	14
Cost of living	43	2	16
State's image	13	17	31

Total responses: 61
Based on 2007 Survey respondents (70 companies).

Appendix

LIST OF 269 SURVEYED COMPANIES

	Company	Location	MSA
Covered	Abbott Laboratories	Lizella	Macon
Respondent	Abeome, Inc.	Athens	Athens
	Adagen Medical International Inc	Atlanta	Atlanta
Respondent	Aderans Research Institute	Marietta	Atlanta
Covered	Advanced Applications Institute	Atlanta	Atlanta
	Advanced Biotechnologies, Inc.	Madison	
Respondent	Advanced Technology Pharmaceuticals Corporations	Dacula	Atlanta
	AerovectRx Corporation	Norcross	Atlanta
	Agri Biofuels, Inc.	Camilla	
Covered	Agrinostics, Inc.	Watkinsville	Athens
	AgTeck Industries, LLC	Stone Mountain	Atlanta
	Ajay North America, LLC	Powder Springs	Atlanta
Respondent	Alcott Chromatography, Inc.	Norcross	Atlanta
Respondent	Alimera Sciences, Inc.	Alpharetta	Atlanta
Covered	Alliant Pharmaceuticals	Alpharetta	Atlanta
	Allied Diagnostic Imaging Resources	Norcross	Atlanta
Respondent	Alpha Omega Engineering	Alpharetta	Atlanta
Respondent	Altea Therapeutics	Tucker	Atlanta
	Alterra Bioenergy of Middle Georgia	Macon	Macon
	American Clinical Laboratory	Stone Mountain	Atlanta
	American Medical Devices, Inc.	Atlanta	Atlanta
	AMMI, Inc.	Martinez	Augusta
Covered+	Ana-Gen Technologies, Inc.	Atlanta	Atlanta
	Analytical Development, Inc.	Lawrenceville	Atlanta
	Analytics, Inc.	Atlanta	Atlanta
Respondent	Angionics	Athens	Athens
Covered	Any Test, Inc.	Kennesaw	Atlanta
Respondent	Apeliotus Technologies, Inc.	Atlanta	Atlanta
Covered+	Applied PhytoGenetics, Inc. (APGEN)	Athens	Athens
	AptoTec	Athens	Athens
	Aqua Solutions, Inc.	Jasper	Atlanta
Covered	Archaea Solutions	Tyrone	Atlanta
Respondent	Aruna Biomedical	Athens	Athens
Respondent	Athens Research and Technology, Inc.	Athens	Athens

	Company	Location	MSA
Respondent	AtheroGenics, Inc.	Alpharetta	Atlanta
Covered	Atlanta Biologicals, Inc.	Lawrenceville	Atlanta
Respondent	Atlanta Center for Medical Research	Atlanta	Atlanta
Covered	Atlanta Pathology Professional	Atlanta	Atlanta
	Atrium Imaging Group of America	Dalton	Dalton
Respondent	Augusta Laboratory Inc	Augusta	Augusta
	AuraZyme Pharmaceuticals, Inc.	Kennesaw	Atlanta
Covered	Auriga Laboratories	Norcross	Atlanta
Respondent	AviGenics, Inc.	Athens	Athens
	Axona	Atlanta	Atlanta
	Bacterial Barcodes	Athens	Athens
Covered+	Bard Medical Division (C.R. Bard)	Covington	Atlanta
Covered	Bard Urological Division (C.R. Bard)	Covington	Atlanta
	Beocarta Romega, Inc.	Rome	Rome
Respondent	BIMECO, Inc.(Lxu Healthcare Co.)	Tyrone	
Respondent	Biofisica, Inc.	Atlanta	Atlanta
Respondent	Biomedical Design, Inc.	Dunwoody	Atlanta
	Biomedical Disposal, Inc.	Norcross	Atlanta
Covered	Bioniche Animal Health USA, Inc.	Bogart	Athens
	BioSante Pharmaceutical, Inc.	Smyrna	Atlanta
	BioSentry, Inc.	Stone Mountain	Atlanta
Respondent	BioStrategies	Marietta	Atlanta
	Biosystems, Inc.	Stone Mountain	Atlanta
	Brace International Inc	Atlanta	Atlanta
Covered+	BresaGen, Inc./Novocell, Inc.	Athens	Athens
Covered	Bristol-Myers Squibb	Atlanta	Atlanta
	Burdox, Inc.	Griffin	Atlanta
	C A P S Pharmacy	Norcross	Atlanta
	C2 Biofuels	Atlanta	Atlanta
Covered	Caire, Inc.	Marietta	Atlanta
Respondent	CardioMEMS, Inc.	Atlanta	Atlanta
Respondent	Cell Design, LLC	Smyrna	Atlanta
Respondent	Cell Dynamics, LLC	Smyrna	Atlanta
	Celliance	Norcross	Atlanta
Respondent	CeloNova BioSciences	Newnan	Atlanta
	Century Systems Inc	Atlanta	Atlanta
Covered+	Cerebral Vascular Applications, Inc.	Duluth	Atlanta
Covered	CIBA Vision Corp.	Duluth	Atlanta
Covered+	CIS Biotech, Inc.	Atlanta	Atlanta
Respondent	ClariPath Laboratories, Inc.	Augusta	Augusta
Covered	Clinical Laboratory Services	Winder	Athens

	Company	Location	MSA
Respondent	Clinimetrics Research Associates, Inc.	Atlanta	Atlanta
Covered	Corautus Genetics, Inc.	Atlanta	Atlanta
Respondent	CryoLife, Inc.	Kennesaw	Atlanta
Covered	Cybercare Technologies		Atlanta
	D S M Nutritional Products, Inc.	Pendergrass	
Covered	Dade Behring, Inc.	Atlanta	Atlanta
	Design Science, Inc.	Atlanta	Atlanta
Respondent	Doctors Laboratory, Inc.	Valdosta	Valdosta
Covered	Dornier MedTech America	Kennesaw	Atlanta
	ECO Solutions, LLC	Chatsworth	Dalton
Covered+	Effcon Laboratories, Inc.	Marietta	Atlanta
Covered	Elan Holdings, Inc. (Elan drug delivery)	Gainesville	Gainsville
Covered	Elekta Holdings U S, Inc.	Norcross	Atlanta
	Emerble Clinic	Atlanta	Atlanta
Respondent	EmTech Biotechnology Development, Inc.	Atlanta	Atlanta
	EMThrax, LLC	Augusta	Augusta
Respondent+	Encompass Pharmaceutical Services, Inc.	Norcross	Atlanta
	Enviropac LLC	Peachtree City	Atlanta
Covered	Enzymatic Deinking Technologies, LLC (EDT)	Norcross	Atlanta
Respondent	EPD Pharma Solutions	Alpharetta	Atlanta
Covered	ERBE USA, Inc.	Marietta	Atlanta
	ERMI, Inc.	Decatur	Atlanta
	Essential Consultants, Inc.	Chamblee	Atlanta
Covered	Ethicon	Cornelia	
	ExtRx Corporation	Roswell	Atlanta
Covered	Facet Technologies, LLC (Div. of Matria Healthcare)	Marietta	Atlanta
Respondent	Femasys	Suwanee	Atlanta
	First United Ethanol	Camilla	
	Fisher Scientific Research	Suwanee	Atlanta
Covered	FOB Synthesis, Inc.	Kennesaw	Atlanta
Respondent	GE Healthcare	Atlanta	Atlanta
	Gene Probe, Inc.	Atlanta	Atlanta
	GeneCure Biotechnologies	Norcross	Atlanta
Covered	Genentech	Atlanta	Atlanta
	geneRx	Atlanta	Atlanta

	Company	Location	MSA
Covered	Genesis Technologies International, Inc.	Lawrenceville	Atlanta
	Genzyme Corporation	Roswell	Atlanta
Covered	Geoplasma Inc.	Atlanta	Atlanta
	Georgia Alternate Fuels, LLC	Dublin	
Respondent	Georgia Biofuels Corp.	Loganville	Atlanta
Respondent	GeoVax, Inc.	Atlanta	Atlanta
	Given Imaging, Inc.	Norcross	Atlanta
	Glades Pharmaceuticals, Inc. (Div. of Stiefel Laboratories, Inc.)	Duluth	Atlanta
	Glass Horse Project, LLC	Watkinsville	Athens
	Global Cardiac Solutions	Snellville	Atlanta
	Grace Labs, LLC	Decatur	Atlanta
	Guided Therapeutics	Norcross	Atlanta
	Health Discovery Corp.	Savannah	Savannah
Covered	Horizon Molecular Medicine, LLC	Atlanta	Atlanta
Covered	Howmedica Osteonics	Atlanta	Atlanta
	IIIrd Millennium, Inc.	Alpharetta	Atlanta
Covered	Immucor, Inc.	Norcross	Atlanta
Respondent	Inhibitex, Inc.	Alpharetta	Atlanta
Respondent	Innogenetics, Inc.	Alpharetta	Atlanta
Respondent	Innovation Factory	Atlanta	Atlanta
	Insectigen	Athens	Athens
Covered	Integrated Science Systems	Augusta	Augusta
Respondent	Inviro Medical Devices	Duluth	Atlanta
Respondent	KB Visions	Atlanta	Atlanta
	Kendall Healthcare Products/ TYCO Healthcare Products	Augusta	Augusta
Respondent	Kiel Pharmaceuticals, Inc.	Gainesville	Gainesville
	KPS Technologies	Atlanta	Atlanta
	Laboratory Corporation of America	Columbus	Columbus
Respondent	Lee Laboratories	Grayson	Atlanta
	Leven, Inc.	Bogart	Athens
Covered	Lexicor Medical Technolgies	Augusta	Augusta
Respondent	Life Therapeutics	Clarkston	Atlanta
	Lifescape Biosciences	Atlanta	Atlanta
	Lightyear Technology, Inc.	Roswell	Atlanta
	Marietta X-Ray, Inc.	Marietta	Atlanta
	Mddatacor, Inc.	Alpharetta	Atlanta
	Mean Green Biofuels	Lakemont	
Covered+	Medical Device Marketing	Lawrenceville	Atlanta

	Company	Location	MSA
	Medical Edge Technologies, Inc	Atlanta	Atlanta
Covered	Medical Molecular Therapeutics, LLC	Lakemont	
	Medical Specialty Innovations	Alpharetta	Atlanta
Respondent	Merial Limited	Duluth	Atlanta
Covered	Merial Select	Gainesville	Gainesville
Respondent	Metametrix, Inc.	Norcross	Atlanta
Covered+	Metastatix	Tucker	Atlanta
	Metro Vascular PC	Decatur	Atlanta
Covered	Micro-Macro International, Inc.	Athens	Athens
	Microtek Medical Holdings, Inc.	Alpharetta	Atlanta
	Middle Georgia Biofuels, Inc.	Dublin	
Covered	Mikart, Inc.	Atlanta	Atlanta
Respondent	Millennium Cryogenics	Athens	Athens
	Molecular Therapeutics, LLC	Athens	Athens
	Mölnlycke Health Care U.S.	Norcross	Atlanta
	Monsanto Company	Augusta	Augusta
	Montgomery Chemicals	Greensboro	
Respondent	Mullins Pathology and Cytology	Augusta	Augusta
Respondent	Myelotec	Roswell	Atlanta
	Nanomist Systems, LLC	Warner Robins	Warner Robins
	National Diagnostics, Inc.	Atlanta	Atlanta
Covered	Neotonus, Inc.	Marietta	Atlanta
	NeoVista, Inc.	Duluth	Atlanta
Covered+	Neural Signals, Inc.	Atlanta	Atlanta
	NeurOP	Atlanta	Atlanta
	NeuroTrials Research, Inc.	Atlanta	Atlanta
	Newton Laboratories, Inc.	Conyers	Atlanta
	NitrOsystems	Augusta	Augusta
Respondent	Noramco, Inc.	Athens	Athens
Covered	North American Bioproducts	Duluth	Atlanta
Covered	North American Science Assocs.	Kennesaw	Atlanta
Covered	Nova Biogenetics, Inc.	Atlanta	Atlanta
	Novoste Corporation	Norcross	Atlanta
Covered	Octogen Pharmacal Co., Inc.	Cumming	Atlanta
Covered+	Omega Bio-Tek, Inc.	Norcross	Atlanta
Respondent	Omni International, Inc.	Marietta	Atlanta
Respondent	Oncose, Inc.	Athens	Athens
Covered+	Opti Medical Systems (formerly Osmetech Critical Care)	Roswell	Atlanta
Covered+	Orthonics, Inc.	Atlanta	Atlanta

	Company	Location	MSA
Respondent	P3 Laboratories	Winder	Athens
	Parexel	Lawrenceville	Atlanta
Covered	Pathogen Control Associates	Norcross	Atlanta
Respondent	Pathology Consultants of Georgia	Dahlonega	
Covered	Pfeiffer Pharmaceuticals	Atlanta	Atlanta
	Pfizer Corp.	Augusta	Augusta
	Pharm Data Inc/Premier Research	Marietta	Atlanta
	PhyGen	Athens	Athens
Covered	Porex Porous Products Group	Fairburn	Atlanta
Covered	Porex Surgical, Inc.	Newnan	Atlanta
	Precision Medical, Inc.	Hoschton	
Covered+	Primagen, Inc.	Alpharetta	Atlanta
Respondent	Prizm Medical, Inc.	Duluth	Atlanta
	Proactive Labs, Inc.	Lithia Springs	Atlanta
	Professional Formulators, Inc.	Douglas	
	Q Care International, LLC	Marietta	Atlanta
	Quality Assurance Service Corp.	Augusta	Augusta
	Quest Diagnostics	Tucker	Atlanta
Covered	Quintiles Laboratories Limited	Smyrna	Atlanta
Covered	RayBiotech, Inc.	Norcross	Atlanta
	ReachMDconsult, Inc.	Augusta	Augusta
Respondent	Recombinant Peptide Technologies, LLC (Peptide)	Bogart	Athens
Respondent	Reddy US Therapeutics, Inc.	Norcross	Atlanta
	Research Think Tank, Inc.	Alpharetta	Atlanta
	Respironics, Inc.	Kennesaw	Atlanta
	RFS Pharma	Tucker	Atlanta
Respondent	RITA Medical Systems, Inc.	Manchester	Atlanta
Covered	Rx PHI Beta Group S A, Inc.	Marietta	Atlanta
Covered	S S S Company	Atlanta	Atlanta
Covered	SaluMedica, LLC	Atlanta	Atlanta
	ScheBo Biotech USA, Inc.	Marietta	Atlanta
Covered	Schering-Plough	Suwanee	Atlanta
Covered	Sciele Pharma, Inc. (formerly First Horizon Pharmaceutical Corp.)	Atlanta	Atlanta
Covered+	Scientific Adsorbents (Div. of Apyron Technologies, Inc.)	Atlanta	Atlanta
Respondent	Sebia, Inc.	Norcross	Atlanta
Respondent	Sector Electronics, LLC	Acworth	Atlanta
Covered	Sero-Immuno Diagnostics	Tucker	Atlanta
Covered	Severn Trent Laboratories, Inc.	Savannah	Savannah

	Company	Location	MSA
Respondent	Sigvaris, Inc.	Peachtree City	Atlanta
	Skalar	Norcross	Atlanta
Respondent	Slainte Bioceuticals	Marietta	Atlanta
	Sleepmed, Inc.	Jonesboro	Atlanta
	Sleepmed, Inc.	Kennesaw	Atlanta
Covered+	Smisson Cartledge Biomedical	Macon	Macon
Covered	Smithkline Beecham Corp.	Columbus	Columbus
Respondent	SMO-USA, Inc.	Conyers	Atlanta
	Snowden Pencer, Inc.	Tucker	Atlanta
Respondent	Solvay Pharmaceuticals, Inc./ Unimed Pharmaceuticals, Inc.	Marietta	Atlanta
	Southeast Laboratories, Inc.	Athens	Athens
	Southern Neurophysiology, LLC	Alpharetta	Atlanta
Covered	SpectRx, Inc.	Norcross	Atlanta
Covered	Starkey Laboratories, Inc.	Norcross	Atlanta
Respondent	Sterimed, Inc.	Cartersville	
Respondent	Stheno Corporation	Atlanta	Atlanta
Covered	Stiefel Laboratories, Inc.	Duluth	Atlanta
Covered+	Summit Industries, Inc.	Marietta	Atlanta
	Syntermed, Inc.	Atlanta	Atlanta
Covered	TAP Pharmaceuticals	Atlanta	Atlanta
Covered+	Technical Products, Inc. of Georgia, USA	Lawrenceville	Atlanta
Covered+	Technology Resource International Corporation (TRI)	Alpharetta	Atlanta
Covered	Theragenics Corporation	Buford	Atlanta
	Thione International, Inc.	Atlanta	Atlanta
Respondent	Tikvah Therapeutics, Inc.	Atlanta	Atlanta
Respondent	Trimex Medical Management, Inc.	Macon	Macon
Respondent	Trs Labs, Inc.	Athens	Athens
	U.S. Biofuels Inc.	Rome	Rome
Respondent	UCB, Inc.	Smyrna	Atlanta
Covered	Ultra Scan, Inc.	Suwanee	Atlanta
Covered	Unimed Pharmaceuticals	Marietta	Atlanta
Covered	Unisplint Corp.	Norcross	Atlanta
	UPPI (United Pharmacy Partners)	Suwanee	Atlanta
	UPPI-PET	Macon	Macon
	VersaPharm, Inc.	Marietta	Atlanta
Covered	Viro-Med Laboratories, Inc.	Marietta	Atlanta
Covered	Vitalabs, Inc,	Jonesboro	Atlanta
Respondent	Vivonetics, Inc.	Atlanta	Atlanta

	Company	Location	MSA
Covered	Wingo, Inc.	Watkinsville	Athens
Respondent	Wynden Pharmaceuticals, LLC	Marietta	Atlanta
Covered	Xytex Corp.	Augusta	Augusta
Respondent	Xytex Research	Augusta	Augusta
	Z Technologies, LLC	Atlanta	Atlanta
Respondent	Zygogen, LLC	Atlanta	Atlanta

Covered signifies companies for which publicly available data was used.

Covered+ signifies 2006 Survey respondents, whose answers were used in 2007 Survey, where applicable.