



Overview and Summary of Recent Initiatives

The board overseeing South Carolina's **Centers of Excellence** faculty recruitment program effectively steers the state's bioscience strategy, guiding both \$20 million to \$30 million per year in investments in faculty endowments and up to \$220 million in discretionary bonding authority for new-facilities construction in the same fields. Bioscience represents a considerable share of both types of funding.

Since the last BIO report, the **South Carolina Research Authority (SCRA)** was rechartered (under Act 113) to shift its focus from solely research-park development and contract research to include development of a series of incubator-like **Innovation Centers** at each of its three research parks. The state has also begun to implement the **Life Science and Venture Capital Investment Act of 2004** and rolled out a new bioscience association, the **Palmetto Biotechnology Alliance**.

Building Bioscience R&D Capacity

Recent state investments in facilities

The **Research University Infrastructure Act** loosened a cap on state borrowing to accommodate \$220 million in general obligation bonds for university projects in the same areas as endorsed by the Centers of Excellence faculty-recruitment program (see below). Projects currently under consideration for bonding support are as follows:

- The University of South Carolina (USC) is seeking \$58 million (matched by \$76 million in university funds) toward three buildings in the first phase of a 200-acre mixed-use campus/research park project in Columbia (see below) including two buildings for the biosciences, one academic and one commercial (privately financed).
- Clemson University and the Greenwood Genetics Center are seeking \$5 million toward a 20,000-square-foot graduate education center at Greenwood that will house a \$15 million **Genetics Collaborative**. Greenwood has donated the land as a matching commitment.

General public funding also supported the \$27 million, 108,000-square-foot **Biosystems Research Complex** at Clemson, which includes 40,000 square feet of greenhouses and 16,000 square feet of greenhouse support space.

Research programs

The Medical University of South Carolina (MUSC), USC, Clemson, and two hospital systems committed to form the **Health Sciences South Carolina** partnership, which will pursue research in the same areas supported through the Centers of Excellence faculty-recruitment program (see below).

Faculty development programs

The Centers of Excellence program offers \$200 million in Lottery funds through 2010 to match funds raised by the state's college and universities for Eminent Scholar endowments. Commitments have ranged from \$17 million to \$30 million annually over the past 3 years. Among the \$96 million committed in three rounds to date for faculty recruitment are the following bioscience initiatives:

- **Center in Applied Marine Genomics**, including MUSC, Clemson, and the College of Charleston (\$4 million)
- **Center for Proteomics** at MUSC (\$4 million)
- **Center for Neuroscience** at MUSC (\$3 million)
- **Brain Imaging Center of Excellence** between MUSC and USC (\$5 million)
- **Center for Regenerative Medicine**, including MUSC, USC, and Clemson (\$6 million)
- **Translational Cancer Therapeutics Center** with MUSC and USC (\$5 million)
- **Center for Drug Discovery in Cancer**, including MUSC and USC (\$5 million)
- **Center for Vision Science**, including MUSC and USC (\$4.5 million).

Together, MUSC, USC, Clemson, and participating hospitals project that they will receive \$120 million over 10 years, matched by an equal amount raised privately, to support faculty endowment in the biosciences alone.

Moving Technology into the Marketplace

Supporting bioscience entrepreneurs and emerging companies

SC Bio, a collaborative of the state's three research universities and the Greenwood Genetics Center, operates as a full-service commercialization center for the bioscience sector, based at the incubator on the Greenwood campus.

Making Capital Available

Venture capital

Board appointments are being made to the **South Carolina Venture Capital Authority**, which will manage a \$55 million contingent-tax-credit-backed fund of funds authorized by the Life Science and Venture Capital Act.

Providing Space for Bioscience Companies

Incubators

SC Bio operates the 22,000-square-foot wet-lab incubator at Greenwood.

Clemson has received \$5 million from Research Infrastructure bonds to build a 40,000-square-foot **Innovation Center** (incubator) at the Clemson Research Park (see below). The bond allocation is matched by \$1 million in federal grants, \$1.2 million from the county to acquire vacant land from the SCRA, and \$5 million from the SCRA itself, which will build a “companion structure” in the research park. The Innovation Center will be used to accommodate spin-offs, nonrelated start-ups, and “landing parties” partnering with Clemson.

Facilities financing

The Life Science and Venture Capital Act created eligibility for bioscience companies for discretionary incentives for company investments of \$100 million or more, creating 200 jobs and paying 1.5 times state per capita income.

Bioscience research parks

Bioscience is one of three fields (the others are alternative energy and nanotechnology) targeted under USC’s plans for the **Innovista** research campus. The first phase of five buildings includes a two-building **Bio-Medical Block**, comprising one academic and one commercial structure.

Greenwood Genetics Center hopes eventually to construct a research park surrounding its wet-lab incubator and the graduate center to be constructed in partnership with Clemson.

Addressing Talent Needs

Specialized postsecondary programs

Biotech training is available from the **Orangeburg-Calhoun Area Biotechnology Consortium**, through a \$1.1 million grant to a partnership of Orangeburg-Calhoun Technical College and the **South Carolina Biotechnology Center** at Claflin University, a historically black institution.

K-12 outreach programs

Clemson now hosts a **DNA Learning Center** in partnership with the Dolan DNA Learning Center at Cold Spring Harbor Laboratory in New York. Both centers focus on precollege preparatory courses.

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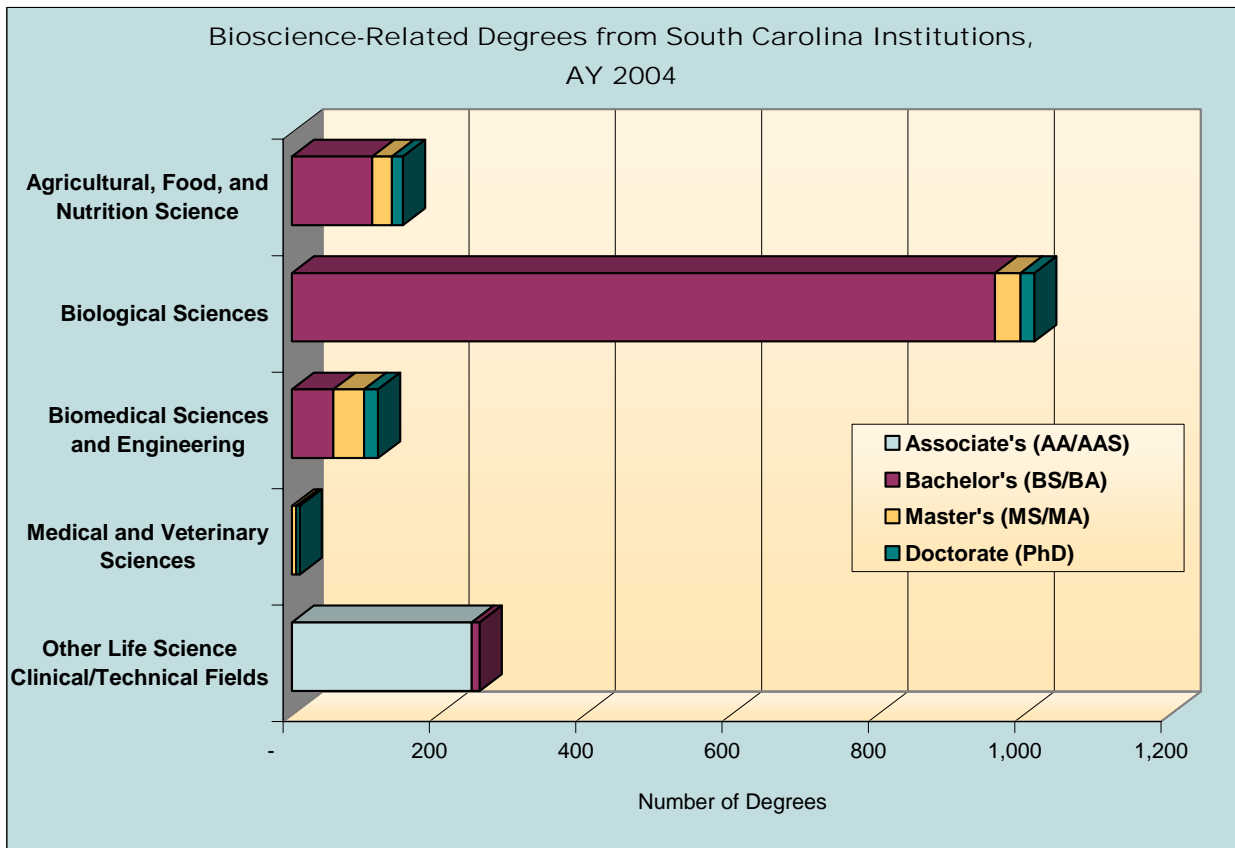
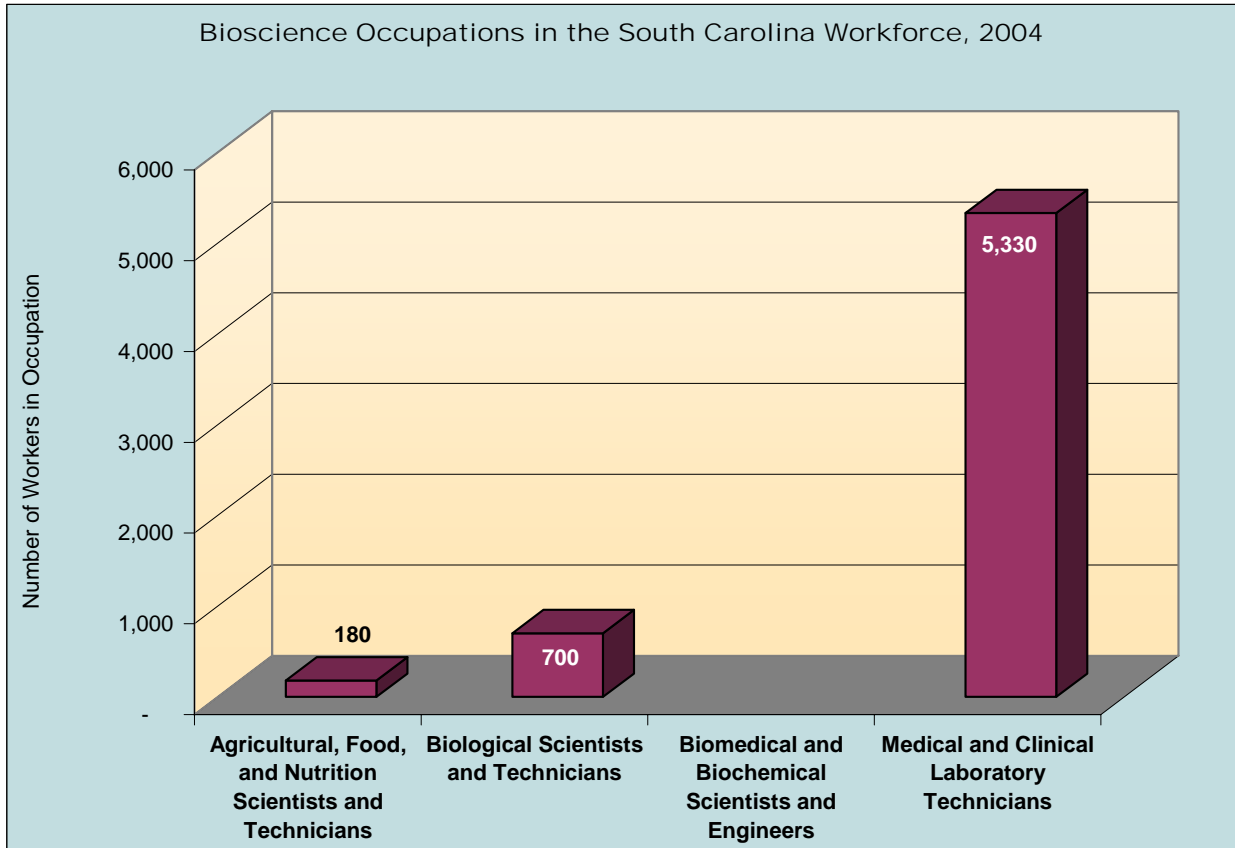
The Palmetto Biotechnology Alliance is a membership organization that acts as a catalyst in the expansion of the infrastructure requirements that create new jobs and promote life-science companies' growth in South Carolina.

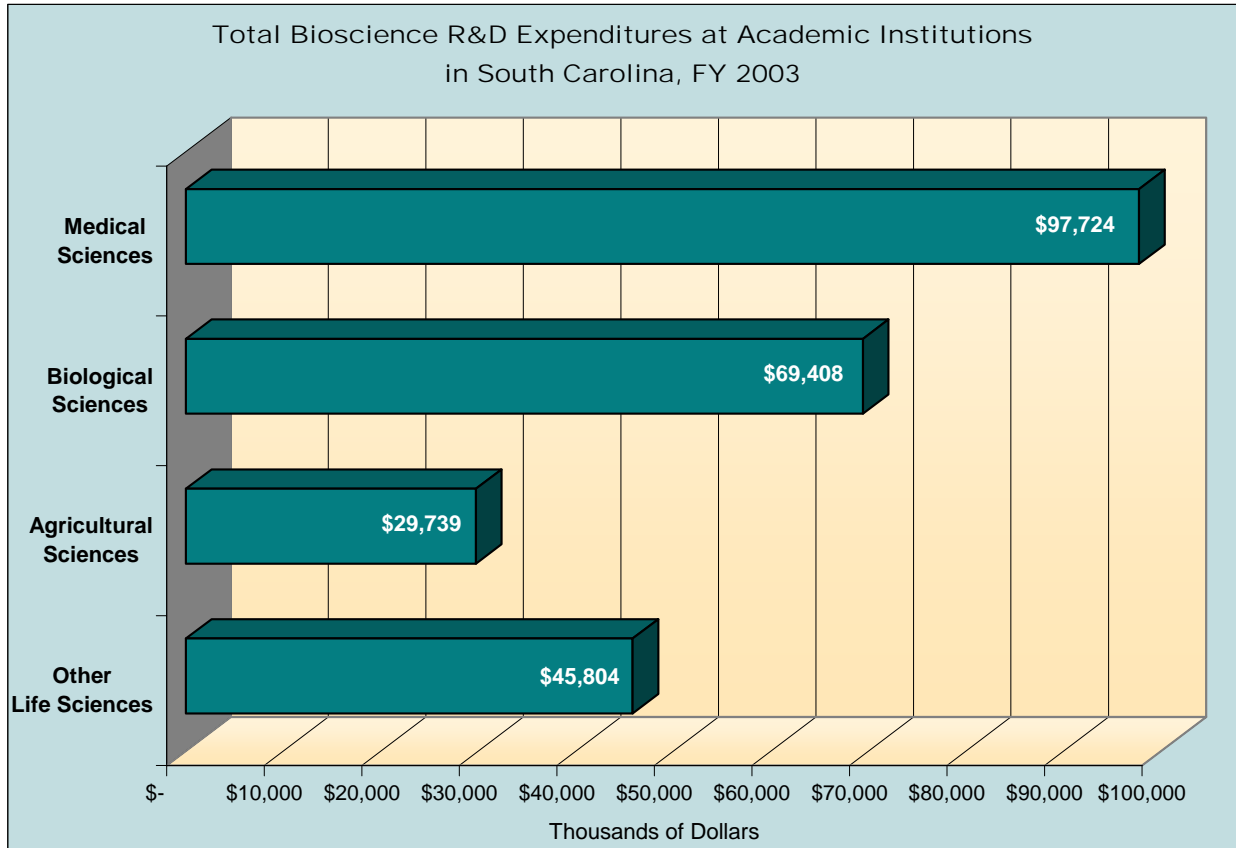
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Industry Subsector	South Carolina	United States
Agricultural Feedstock & Chemicals		
Establishments 2004	36	2,111
2001-2004 Establishment % Change	10.9%	0.4%
Employment 2004	1,506	104,893
2001-2004 Employment % Change	7.2%	-6.9%
Share of U.S. Employment	1.4%	100.0%
Location Quotient	1.06	n.a.
Average Annual Wage 2004	\$52,670	\$63,383
Direct-Effect Employment Multiplier	5.35	10.91
Total Employment Impact	8,053	1,212,094
Drugs & Pharmaceuticals		
Establishments 2004	24	2,589
2001-2004 Establishment % Change	-14.6%	-0.6%
Employment 2004	2,681	313,207
2001-2004 Employment % Change	8.9%	2.7%
Share of U.S. Employment	0.9%	100.0%
Location Quotient	0.63	n.a.
Average Annual Wage 2004	\$44,833	\$79,303
Direct-Effect Employment Multiplier	3.58	9.51
Total Employment Impact	9,606	2,731,321
Medical Devices & Equipment		
Establishments 2004	113	15,190
2001-2004 Establishment % Change	-13.1%	0.2%
Employment 2004	4,000	411,460
2001-2004 Employment % Change	10.4%	-3.6%
Share of U.S. Employment	1.0%	100.0%
Location Quotient	0.72	n.a.
Average Annual Wage 2004	\$37,729	\$56,449
Direct-Effect Employment Multiplier	2.62	4.56
Total Employment Impact	10,472	1,817,705
Research, Testing, & Medical Laboratories		
Establishments 2004	215	20,565
2001-2004 Establishment % Change	38.1%	19.4%
Employment 2004	1,495	413,550
2001-2004 Employment % Change	17.2%	8.2%
Share of U.S. Employment	0.4%	100.0%
Location Quotient	0.27	n.a.
Average Annual Wage 2004	\$48,691	\$65,414
Direct-Effect Employment Multiplier	2.15	3.15
Total Employment Impact	3,217	1,272,936
TOTAL PRIVATE SECTOR		
Establishments 2004	108,900	8,156,137
2001-2004 Establishment % Change	-2.7%	4.8%
Employment 2004	1,476,822	109,249,195
2001-2004 Employment % Change	0.1%	-0.7%
Share of U.S. Employment	1.4%	100.0%
Location Quotient	n.a.	n.a.
Average Annual Wage 2004	\$31,297	\$39,003

Source: Battelle calculations -- based on Bureau of Labor Statistics QCEW data from the Minnesota Implan Group, RIMS II Employment Multipliers from the Bureau of Economic Analysis, and the Census Bureau's Economic Census.

Note: n.a. = metric is not applicable.





	South Carolina	United States	Rank
University R&D Expenditures, FY 2003			
Total (\$ thousands)	\$435,328	\$40,104,621	28
Life Science R&D (\$ thousands)	\$247,665	\$24,062,088	29
Percent of Total R&D	56.9%	60.0%	
Life Sciences Per Capita	\$59.72	\$82.74	
Change in Life Sciences FY 1999-2003	84.1%	52.7%	
NIH Support to Institutions, FY 2004			
Total (\$ thousands)	\$120,764	\$22,556,459	32
Per Capita Expenditures	\$29.12	\$77.56	
Change in Expenditures FY 2000-2004	92.0%	53.2%	
Higher Education Degrees in Bioscience Fields, AY 2004			
	1,553	111,329	28
Bioscience Occupations in the Workforce, 2004			
	6,210	616,140	30