



## Overview and Summary of Recent Initiatives

Since the last BIO report, New Jersey became the first state to provide state funding for research on human embryonic stem cells when the **New Jersey Commission on Science and Technology (NJCST)** issued \$5 million in grants to 17 teams at research institutions across the state. These grants were preliminary to establishing the **New Jersey Stem Cell Institute**, created by memorandum of understanding between the University of Medicine and Dentistry of New Jersey (UMDNJ) and Rutgers University.

The **New Jersey Economic Development Authority (NJEDA)** inaugurated a series of programs aimed at technology-based companies under the **Technium** brand, with preferred access for companies in three **Innovation Zones** surrounding the state's public research universities. As part of the Technium initiative, NJEDA also expanded its investment in privately managed venture funds that target the life sciences and grew its tax credit sale program. Governor Jon Corzine has called for creation of an **Edison Innovation Fund** (see below under "Pending Proposals").

## Building Bioscience R&D Capacity

### Recent state investments in facilities

The state invested \$1 million to create a **New Jersey Stem Cell Research Bank** billed as the nation's first public cord and placental blood bank. Facilities were created at the **Coriell Institute of Medical Research** in Camden and Community Blood Services.

The most recent bioscience facility to receive public financing was the **Life Sciences Building** at Rutgers in Piscataway, a 75,000-square foot, \$28 million building that will house the genetics institute and bio-materials center. The UMDNJ has also announced plans for a new 160,000-square-foot, \$136 million **Biomedical Research Building** in Camden near Cooper Hospital.

### Research programs

During 2005 the NJCST allocated \$5 million to 17 research stem-cell projects across the five public universities, the Coriell Institute, and one private company. The average project size was just under \$300,000. Three funded projects involved embryonic stem cells.

The Stem Cell Institute is a collaborative established by memorandum of understanding between the UMDNJ and Rutgers, the state university. Long-term funding strategies will be considered by the current Legislature.

## Moving Technology into the Marketplace

### Commercializing university technology

During 2005 the NJCST made pools of funding available to each of the five major research universities (ranging from \$100,000 to \$300,000) to mount their own internal competitions for precommercialization research funding. The NJCST has announced its intention to provide **Entrepreneurial Partnering** grants up to \$500,000 directly to companies partnering with New Jersey universities to commercialize intellectual property.

### Supporting bioscience entrepreneurs and emerging companies

Under the **Innovation Zone** program, the NJEDA gives preference on all its various incentive programs to firms that agree to locate in zones surrounding the public research universities, principally in Newark, the Greater New Brunswick area, and Camden. This specifically includes all the grant and loan programs in Technium, as well as the state's existing business incentives. The long-term plan includes creation of actual physical facilities for commercialization and business acceleration in each of the zones.

Under the **Technology Business Tax Certificate Program**, New Jersey continues to allow firms that cannot use NOL or R&D tax credits because they are not yet profitable to sell these to other taxpayers for at least 75 percent of their value, subject to approval by the NJEDA. Since the last BIO report, the cap for this program was raised to \$60 million annually.

## Making Capital Available

### Pre-seed and seed capital

**Seed/Early Stage** loans from Technium provide up to \$100,000 at 4 to 8 percent to help early-stage businesses underwrite proof-of-concept and commercialization research, not necessarily university linked. **Emergent/Growth Stage** loans provide up to \$1 million to those that have met the proof-of-concept milestone, requiring a 1:1 match. Participants in both programs are provided access to mentoring services from a private consultant.

The Technium **Angel Guarantee** program guarantees up to one-third the investments made by the **Jumpstart NJ Angel Investor Network** in early-stage companies across all fields including the biosciences.

The Waterfront Technology Center at Camden (see below under "Incubators") is equipped with the **Camden Technology Fund**, a \$1 million low-interest revolving loan fund that will make loans up to \$100,000.

NJCST continues to offer \$50,000 bridge grants to support companies between Phases I and II of the federal SBIR program. In 2005, 12 such grants were issued.

### Venture capital

The following venture capital funds have investments from NJEDA as a limited partner and will consider bioscience deals:

- **Garden State Life Sciences Venture Fund**, a \$40 million fund developed jointly with the Biotechnology Council of New Jersey, privately managed by **Quaker BioVentures**. The NJEDA investment was \$10 million.
- **New Jersey Technology Council Venture Fund**, an \$85 million fund.
- **Edison Venture Fund**, a family of funds with a broad mid-Atlantic focus. The most recent NJEDA investment was \$2 million.
- **NextStage Capital**, a fund now seeking to raise \$40 million of which \$10 million would be targeted at early-stage companies in New Jersey. The NJEDA investment was \$400,000, required to be matched 2:1 by nonstate investors.

## Providing Space for Bioscience Companies

### Incubators

At least one business incubator now exists in each of the Innovation Zones:

- **New Jersey Institute of Technology (NJIT) Enterprise Development Center** serves Newark. Buildings I and III are wet-lab equipped (50,000 and 80,000 square feet, respectively), and III is part of the University Heights Science Park (see below).
- **Commercialization Center for Innovative Technologies** is a 50,000-square-foot incubator within NJEDA's Technology Centre of New Jersey (see below). Based in North Brunswick, it serves the Rutgers/UMDNJ complex in New Brunswick and Piscataway.
- **Rutgers Technology Incubator** will move into NJEDA's new Waterfront Technology Center, a 100,000-square-foot, five-story, wet-lab-capable structure not far from the Rutgers-Camden campus.

### Bioscience research parks

**Technology Centre of New Jersey** is a research park set on a 50-acre former Johnson & Johnson campus acquired by the state. Developed by NJEDA in partnership with the AFL-CIO Building Investment Trust, the Technology Centre now has 400,000 square feet over several buildings, predominantly in bioscience use.

**University Heights Science Park** in Newark is a collaboration of NJIT, UMDNJ, and Essex Community College. Its anchor tenant is the **International Center for Public Health**, a 160,000-square-foot, \$66 million structure housing several related activities in infectious disease, microbiology, and genetics, also developed by NJEDA.

Rowan University in Glassboro also plans a **South Jersey Technology Park**, and NJEDA recently completed the **Waterfront Technology Center** in Camden, the first of six buildings planned for the zone.

## Addressing Talent Needs

### Recruiting management talent

Several of the state's largest pharmaceutical companies partner with Rutgers Graduate School of Management to sponsor an MBA in pharmaceutical management.

NJCST offers a \$55,000 **Technology Fellowship** that allows postdoctoral students in all fields, including the biosciences, to spend time with early-stage companies. In 2005, 14 company/postdoc pairs were selected for funding.

### K-12 outreach programs

The **HealthCare Institute of New Jersey** offers day-long tours of pharmaceutical and biotechnology companies for high school students. The **New Jersey Association for Biomedical Research** offers a **Summer Biomedical Research Fellowship** in which students visit a different research facility each day.

## Pending Proposals

Governor Corzine's proposed **Edison Innovation Fund** would focus on strategic investments to bolster R&D-based business growth. The program is likely to include both university centers of excellence and investment components.

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The mission of the Biotechnology Council of New Jersey is to: formulate and advocate policy positions to elected officials and regulators, acquire and coordinate resources and provide services to members regarding issues critical to building successful biotechnology enterprises, and enhance awareness and appreciation of New Jersey's biotechnology industry.

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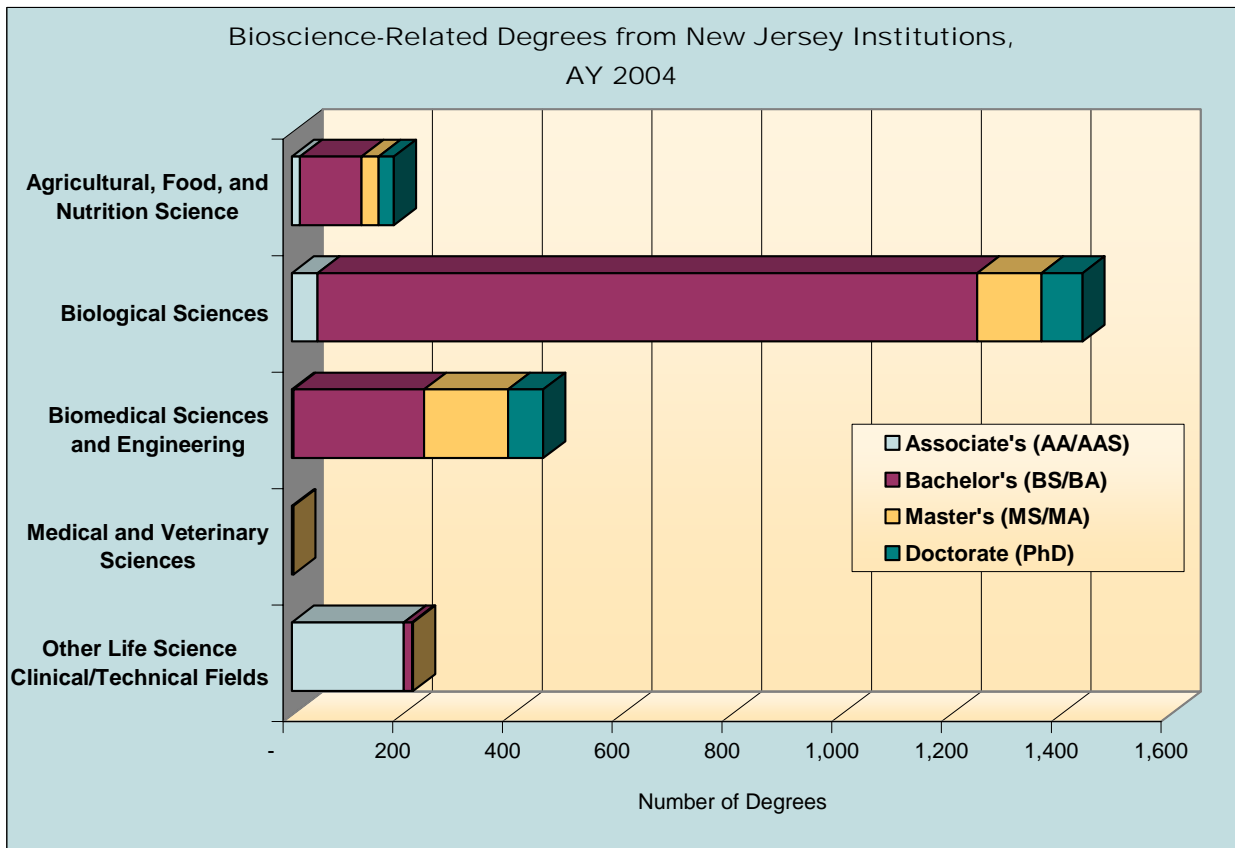
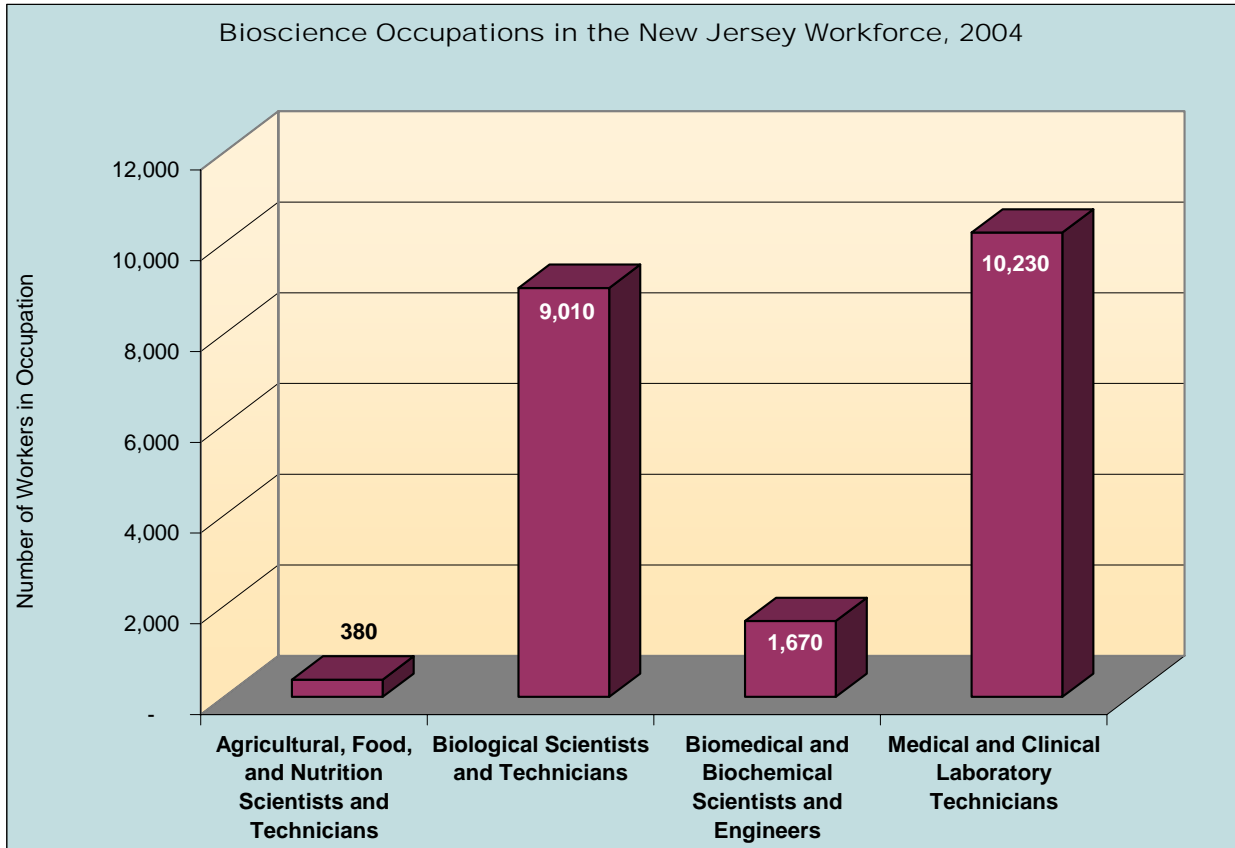
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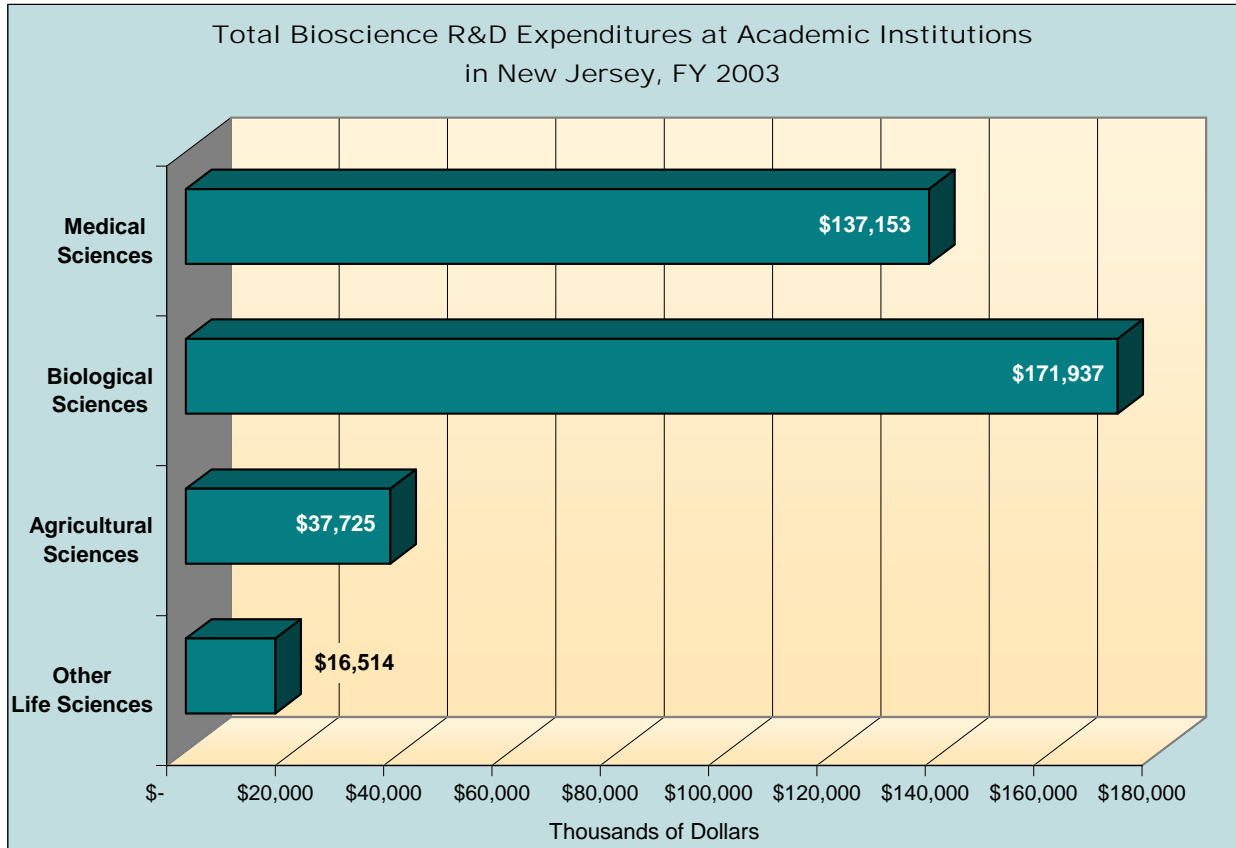
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Industry Subsector	New Jersey	United States
<b>Agricultural Feedstock &amp; Chemicals</b>		
Establishments 2004	57	2,111
2001-2004 Establishment % Change	-3.6%	0.4%
Employment 2004	3,869	104,893
2001-2004 Employment % Change	37.9%	-6.9%
Share of U.S. Employment	3.7%	100.0%
Location Quotient	1.23	n.a.
Average Annual Wage 2004	\$84,007	\$63,383
Direct-Effect Employment Multiplier	7.48	10.91
Total Employment Impact	28,930	1,212,094
<b>Drugs &amp; Pharmaceuticals</b>		
Establishments 2004	218	2,589
2001-2004 Establishment % Change	7.4%	-0.6%
Employment 2004	39,683	313,207
2001-2004 Employment % Change	4.6%	2.7%
Share of U.S. Employment	12.7%	100.0%
Location Quotient	4.22	n.a.
Average Annual Wage 2004	\$99,521	\$79,303
Direct-Effect Employment Multiplier	6.81	9.51
Total Employment Impact	270,424	2,731,321
<b>Medical Devices &amp; Equipment</b>		
Establishments 2004	533	15,190
2001-2004 Establishment % Change	4.7%	0.2%
Employment 2004	15,801	411,460
2001-2004 Employment % Change	0.9%	-3.6%
Share of U.S. Employment	3.8%	100.0%
Location Quotient	1.28	n.a.
Average Annual Wage 2004	\$72,511	\$56,449
Direct-Effect Employment Multiplier	3.11	4.56
Total Employment Impact	49,079	1,817,705
<b>Research, Testing, &amp; Medical Laboratories</b>		
Establishments 2004	824	20,565
2001-2004 Establishment % Change	17.0%	19.4%
Employment 2004	23,093	413,550
2001-2004 Employment % Change	-6.0%	8.2%
Share of U.S. Employment	5.6%	100.0%
Location Quotient	1.86	n.a.
Average Annual Wage 2004	\$89,177	\$65,414
Direct-Effect Employment Multiplier	2.41	3.15
Total Employment Impact	55,597	1,272,936
<b>TOTAL PRIVATE SECTOR</b>		
Establishments 2004	260,278	8,156,137
2001-2004 Establishment % Change	3.3%	4.8%
Employment 2004	3,278,011	109,249,195
2001-2004 Employment % Change	-0.8%	-0.7%
Share of U.S. Employment	3.0%	100.0%
Location Quotient	n.a.	n.a.
Average Annual Wage 2004	\$47,608	\$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.





	New Jersey	United States	Rank
<b>University R&amp;D Expenditures, FY 2003</b>			
Total (\$ thousands)	\$747,481	\$40,104,621	17
Life Science R&D (\$ thousands)	\$367,262	\$24,062,088	22
Percent of Total R&D	49.1%	60.0%	
Life Sciences Per Capita	\$42.52	\$82.74	
Change in Life Sciences FY 1999–2003	50.1%	52.7%	
<b>NIH Support to Institutions, FY 2004</b>			
Total (\$ thousands)	\$274,114	\$22,556,459	22
Per Capita Expenditures	\$31.73	\$77.56	
Change in Expenditures FY 2000–2004	47.7%	53.2%	
<b>Higher Education Degrees in Bioscience Fields, AY 2004</b>	2,309	111,329	16
<b>Bioscience Occupations in the Workforce, 2004</b>	21,290	616,140	8