

ARIZONA

Research, testing, and medical laboratories represents the largest bioscience subsector in Arizona (6,741 jobs). Recent job growth was rapid in this subsector (up 35 percent) and also in medical devices and equipment (up 20 percent). Academic research expenditures in the biosciences totaled \$333 million in 2006, led by medical and biological sciences. Funding from the National Institutes of Health grew at 24 percent over the past 6 years. Bioscience venture capital investments over the past 6 years totaled \$278 million, distributed widely across several categories. A total of 882 bioscience patents in the same period fell mainly in the categories of surgical and medical instruments and drugs and pharmaceuticals.

Recent State Initiatives

In 2003, Arizona passed legislation that authorized \$440 million for construction of university research facilities, primarily in the biosciences. In the past 2 years, several major facilities have been constructed, including a second building at Arizona State University's (ASU) **Biodesign Institute**; the **Thomas W. Keating Bioresearch Building**, which houses the BIO5 Institute at the University of Arizona (UA); and the Applied Research and Development Facility at Northern Arizona University (NAU.)

In addition, ongoing annual funding continues at more than \$40 million a year from the Proposition 301 **Technology and Research Initiative Fund (TRIF)** effort for the biosciences; more than \$10 million is provided through **Arizona Biomedical Research Commission (ABRC)** funds from cigarette taxes and lottery; and in 2007 **Science Foundation Arizona** received an additional \$25 million from the Legislature, the first allotment of a 4-year commitment of \$100 million. The \$25 million was matched by the private philanthropic Stardust Foundation.

The **UA College of Medicine-Phoenix in partnership with ASU**, began offering classes in Phoenix in 2007. The Legislature included \$6 million in the FY 2007–2008 budget to double the class size in the fall of 2008 and \$10 million to design two major facilities needed to ultimately expand the class size to its goal of 150. A state budget line item to construct these facilities is pending.

Plans are advancing for the 65-acre **Arizona Bioscience Park** being developed by UA in Tucson; and a dedication was held in the fall of 2007 for the **Science, Technology, and Clean Energy Center** at the new Science and Technology Park in Flagstaff. **ASU's SkySong** innovation center has dedicated its first building, and global tenants and the University's technology transfer and entrepreneurial programs have relocated there.

State government, the Flinn Foundation, and other private and public sector leaders continue to support and implement Arizona's Bioscience Roadmap, with recent progress including establishment of an early-stage Arizona bio-focused **Translational Accelerator, LLC (TRAC) venture fund**; formation

Major Industry Developments and Recent Successes

- **Ventana Medical Systems**, the Tucson area's largest bioscience employer, was purchased for \$3.4 billion by Swiss pharmaceutical giant Roche. Roche indicated that Ventana, an international cancer-tissue testing firm with 660 Arizona employees, will maintain its Arizona headquarters and could expand locally.
- **Covance**, a global drug-development services firm, has broken ground on a major research facility in Chandler, a Phoenix suburb. The 200,000-square-foot laboratory will employ 300 to 400 workers.
- **W. L. Gore and Associates**, one of Arizona's largest bioscience employers, added 40,000 square feet to its campus in Flagstaff and opened a 133,000-square-foot manufacturing facility. The medical device manufacturer also launched plans to build a new campus in north Phoenix that could employ up to 800 or more at multiple sites in the Phoenix area.

of a new technology commercialization vehicle called **Catapult Bio**; and the recent announcement of a major \$45 million proteomics initiative with the Translational Genomics Research Institute (TGen), ASU, and others supported by the Virginia G. Piper Charitable Trust and the Flinn Foundation.

One unique statewide initiative is the **Arizona Translational Resource Network**, an initiative of the Arizona Biomedical Research Commission. This statewide initiative is focused on facilitating collaborations in clinical research, including harmonizing business practices and advancing Internal Review Board (IRB) education and collaborative IRB mechanisms.

Pending Proposals

Bills are pending in the Arizona Legislature to raise by 2 percent the tax credit for qualified R&D conducted in Arizona, phased in over 2 years.

For additional information on Arizona's bioscience policies and programs, please see <http://www.azcommerce.com> and <http://www.azbio.org>.

Bioscience Industry Base, 2006

Industry Subsector	Arizona		United States	
	2006	2001-06 Change	2006	2001-06 Change
Agricultural Feedstock & Chemicals				
Establishments	18	-28.4%	2,183	3.8%
Employment	502	-29.5%	105,846	-6.1%
Location Quotient	0.24		n.a.	
Direct-Effect Employment Multiplier	4.45		11.22	
Total Employment Impact	2,232		1,214,709	
Average Annual Wage	\$39,886		\$67,870	
Drugs & Pharmaceuticals				
Establishments	35	26.1%	2,654	1.9%
Employment	1,109	-1.4%	317,149	4.0%
Location Quotient	0.18		n.a.	
Direct-Effect Employment Multiplier	4.08		9.92	
Total Employment Impact	4,521		2,880,242	
Average Annual Wage	\$56,223		\$86,892	
Medical Devices & Equipment				
Establishments	262	6.5%	15,215	0.3%
Employment	4,792	19.6%	422,993	-0.9%
Location Quotient	0.58		n.a.	
Direct-Effect Employment Multiplier	2.62		4.85	
Total Employment Impact	12,557		1,980,128	
Average Annual Wage	\$48,958		\$59,441	
Research, Testing, & Medical Laboratories				
Establishments	317	24.0%	22,857	32.7%
Employment	6,741	34.6%	449,991	17.8%
Location Quotient	0.76		n.a.	
Direct-Effect Employment Multiplier	2.19		3.25	
Total Employment Impact	14,734		1,440,500	
Average Annual Wage	\$57,031		\$71,284	
Total Private Sector				
Establishments	147,203	25.8%	8,575,730	10.2%
Employment	2,225,700	17.7%	113,463,842	3.1%
Average Annual Wage	\$39,526		\$42,272	

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

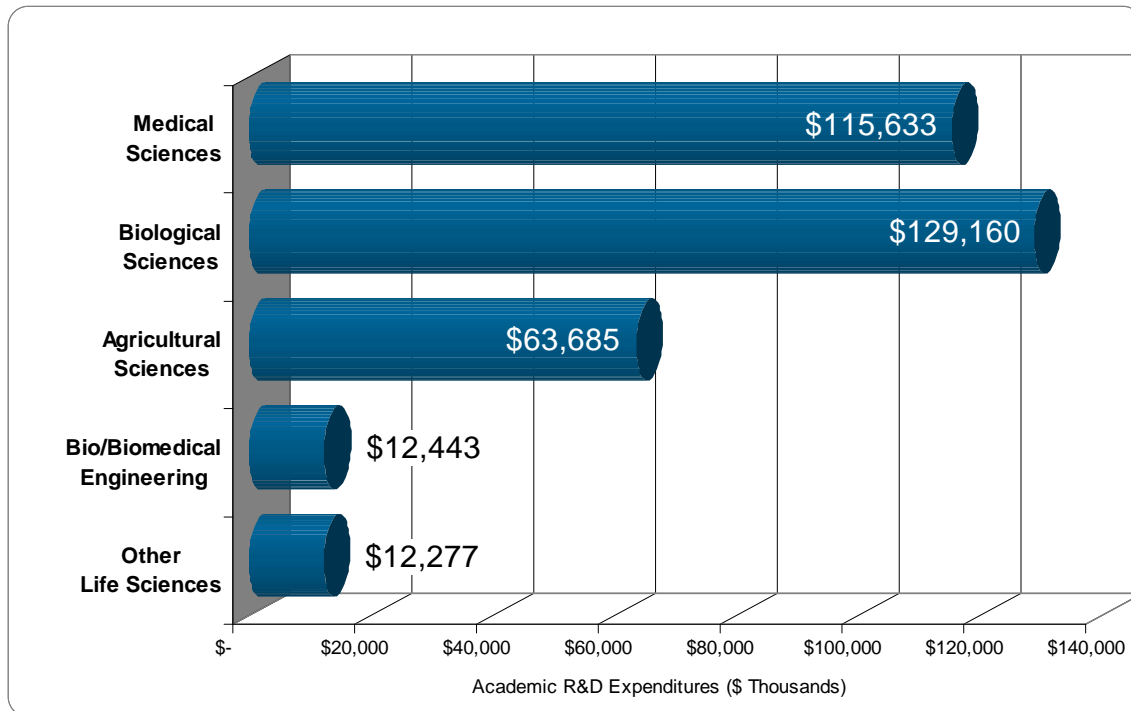
Additional Bioscience Performance Metrics

Summary of State Performance in Selected Bioscience-related Metrics

	Arizona	United States	Rank
Academic R&D Expenditures, FY 2006			
Total (\$ thousands)	\$766,873	\$47,760,402	20
Bioscience R&D (\$ thousands)	\$333,198	\$29,307,628	28
Bioscience Share of Total R&D	43.4%	61.4%	
Bioscience R&D Per Capita	\$54.04	\$98.10	
Change in Bioscience R&D FY 2002–2006	31.7%	36.9%	
NIH Funding, FY 2007			
Total (\$ thousands)	\$170,898	\$21,066,389	27
Per Capita Funding	\$26.96	\$69.84	
Change in Funding, FY 2002–2007	24.4%	11.2%	
Higher Education Degrees in Bioscience Fields, AY 2006	2,028	143,433	24
Employment in Bioscience-related Occupations, 2006	5,730	588,520	29
Bioscience Venture Capital Investments, 2002-2007 (\$ millions)	\$277.5	\$51,260.9	20
Bioscience and Related Patents, 2002-2007	882	121,817	32

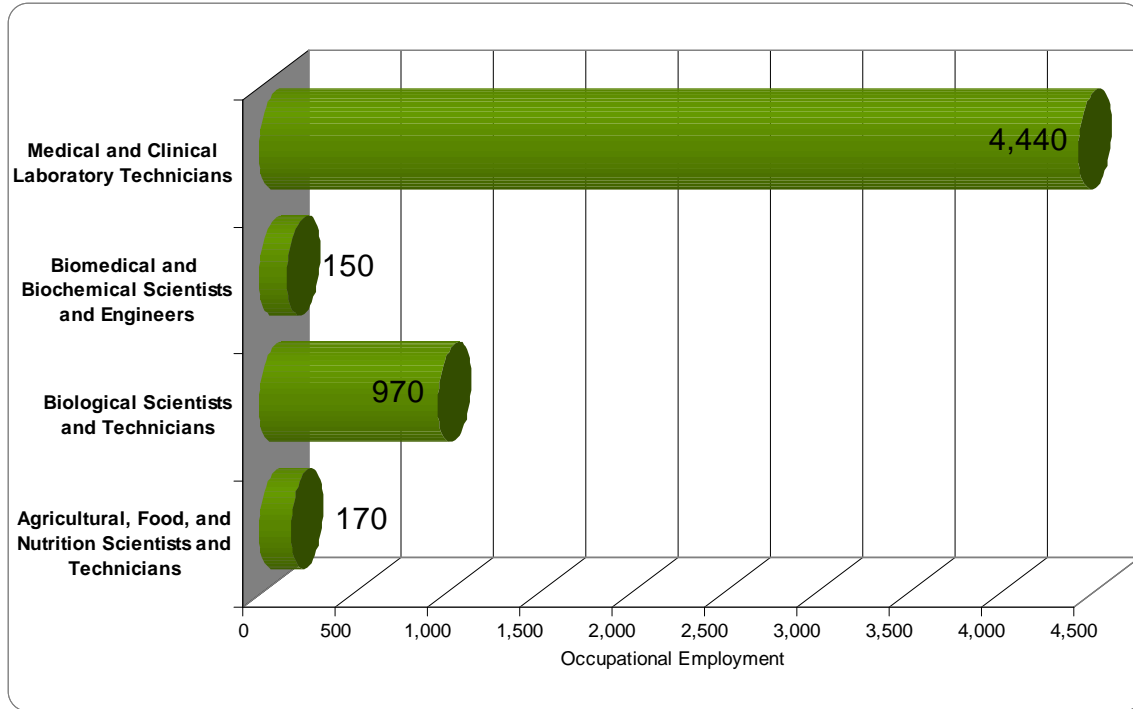
Bioscience R&D Base

Bioscience Academic R&D Expenditures in Arizona, FY 2006

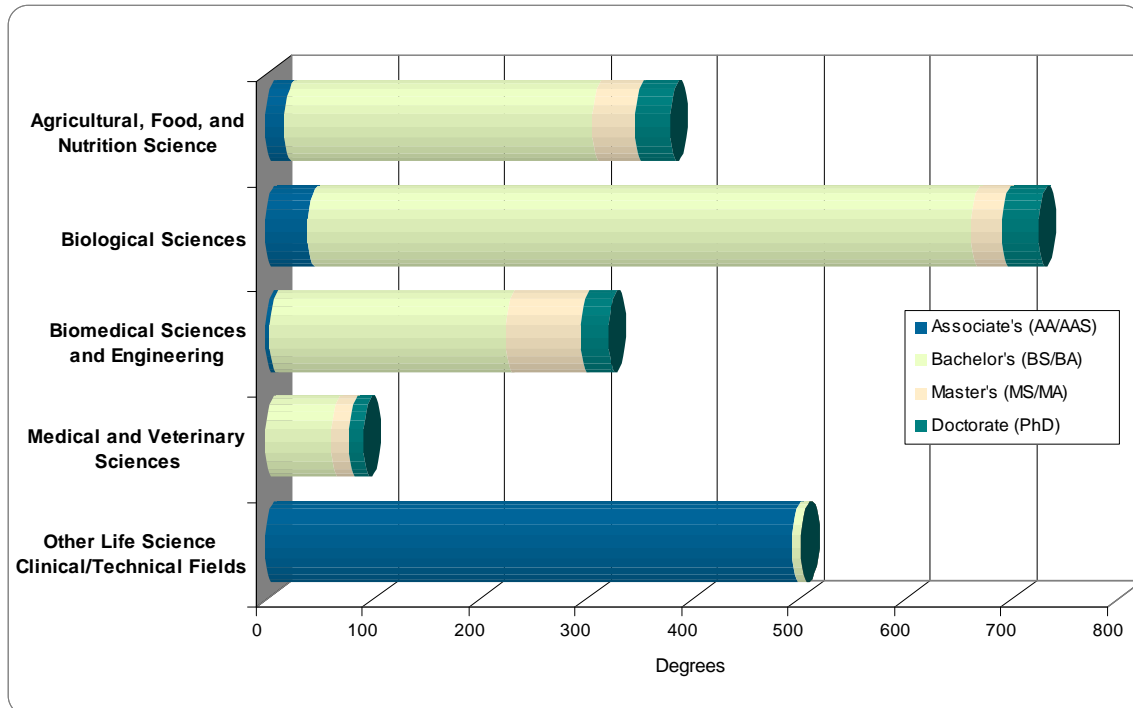


Bioscience Talent Base

Bioscience-related Occupational Employment in Arizona, 2006

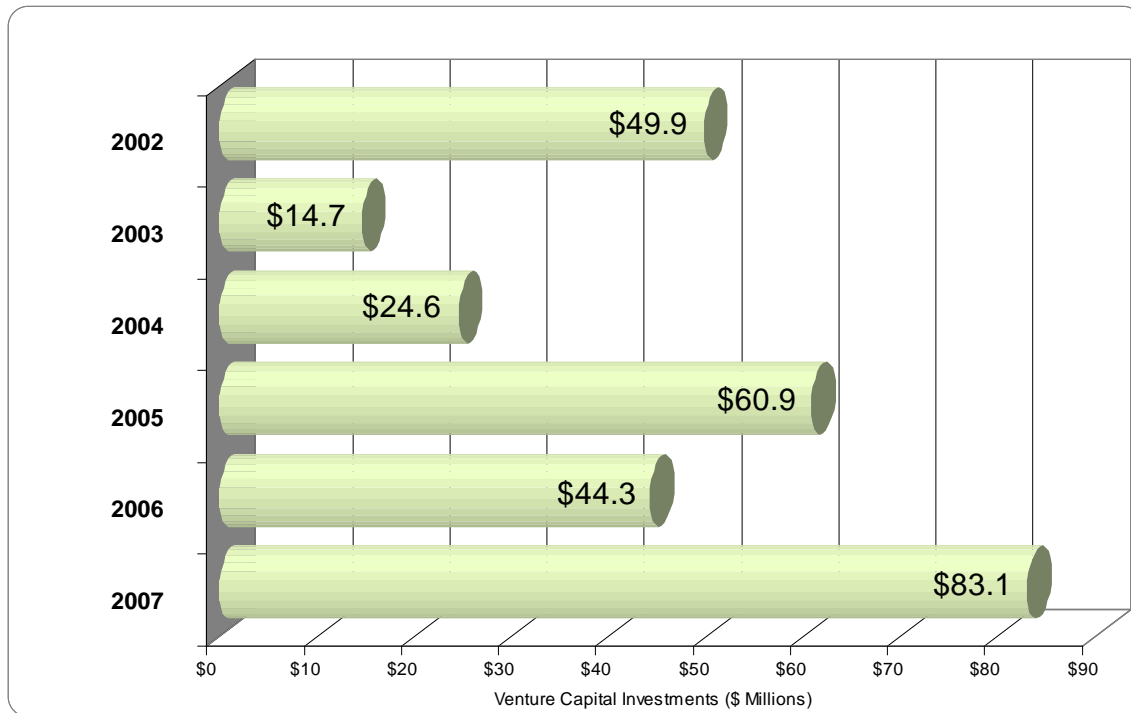


Bioscience-related Degrees in Arizona, AY 2006

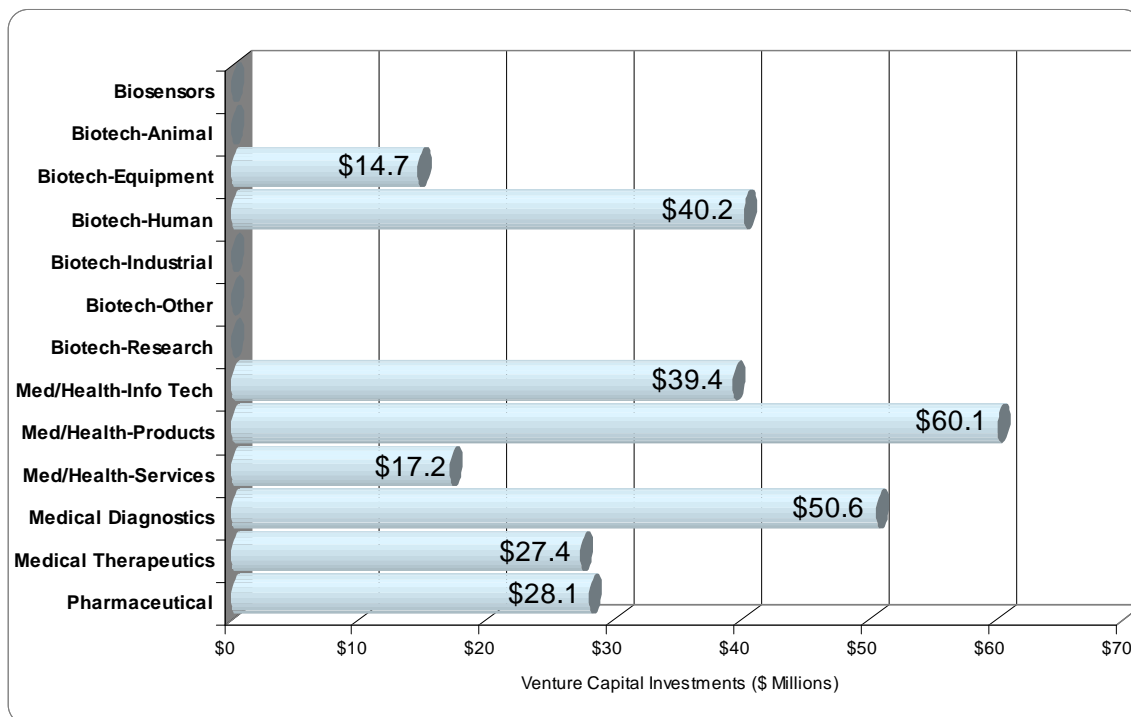


Bioscience Venture Capital

Bioscience-related Venture Capital Investments in Arizona, 2002–2007

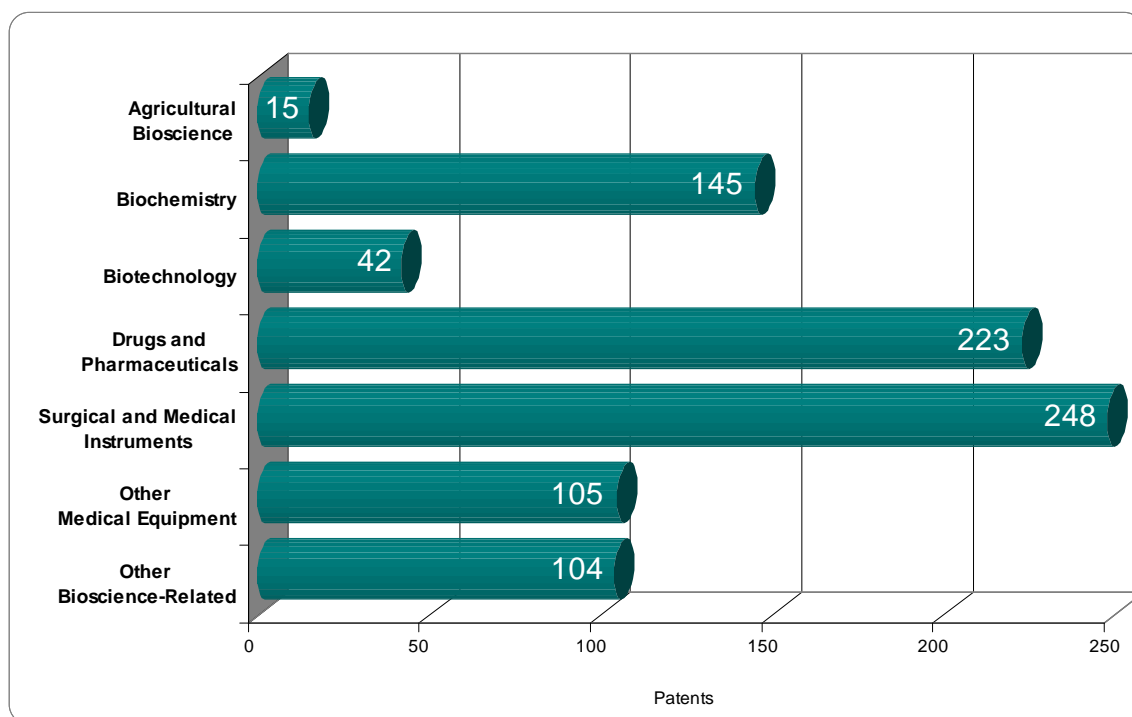


Bioscience-related Venture Capital Investments in Arizona by Segment, 2002–2007



Bioscience Patents

Bioscience-related Patents by Classification Group in Arizona, 2002–2007



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Source Notes:

Employment, Establishment, and Wage Data: U.S. Bureau of Labor Statistics, Quarterly Census of Employment and Wages (QCEW) industry data provided by the Minnesota IMPLAN Group, 2001 and 2006.

Employment Multipliers: U.S. Bureau of Economic Analysis RIMS II Employment Multipliers, 2005 (most currently available).

Academic R&D Expenditures: National Science Foundation (NSF) Survey of Research and Development Expenditures at Universities and Colleges, 2002 and 2006.

NIH Funding: National Institutes of Health – Office of Extramural Research, Award Trends – Dollars Awarded by State, 2002 and 2007.

Higher Education Degrees: National Center for Educational Statistics, Integrated Postsecondary Education Data System (IPEDS), 2006.

Occupational Employment: U.S. Bureau of Labor Statistics, Occupational Employment Statistics (OES) survey data, 2006.

Venture Capital: Thomson Reuters VentureXpert Database, 2002-2007, as of May 1, 2008.

Patents: U.S. Patent & Trademark Office data as available from the Thomson Reuters' Delphion Patent Analysis Database, 2002–2007, as of May 1, 2008.

For a more detailed discussion of the data and methodology used please see the Appendix to the full national report.