



Overview and Summary of Recent Initiatives

Central Indiana is pursuing a bioscience strategy developed by **BioCrossroads**, a cluster-development initiative operated by the Central Indiana Corporate Partnership, the region's CEO leadership group. This strategy targets agbiotech, biosensors, cancer, cardiovascular disease, evidence-based medicine, neuroscience, protein analysis, sports-centered life sciences, and bioimaging/biomarkers. Through collaboration with the **Indiana Health Industry Forum**, strategic initiatives are also serving other regions, such as the orthopedic device cluster near Warsaw.

Since the last BIO report, substantial new bioscience research capacity has opened at the state's principal research institutions. In addition, the public/private **Indiana Economic Development Corporation (IEDC)** replaced the Indiana Department of Commerce and assumed responsibility for managing the **21st Century Research and Technology Fund**, a state-backed multipurpose fund with the capability to make grants, loans, or investments in promising technology partnerships across multiple fields. In its most recent program announcement, the 21st Century Fund has sharpened its focus on projects that support commercialization by high-growth start-ups.

BioCrossroads also rolled out a new pre-seed investment fund designed to feed early-stage deals to venture funds that are investees of the privately managed Indiana Future Fund. IEDC also continued to implement the **Certified Technology Park** program, which will result in additional incubation capacity statewide including in several bioscience research parks.

Building Bioscience R&D Capacity

Recent state investments in facilities

State-funded bioscience investments have been made in Indianapolis, Bloomington, West Lafayette, and South Bend. Some of these programs at Indiana University (IU) are funded in conjunction with support from the Indianapolis-based Lilly Endowment and its INGEN (Indiana Genomics Initiative). IU recently announced a 10-year, \$1.3 billion fund-raising plan to add eight new buildings beyond those listed below.

Projects in Indianapolis near the IU School of Medicine at Indiana University–Purdue University Indianapolis (IUPUI) include the following:

- **Biotechnology Research and Training Center**, a three-story, \$26.9 million structure with 26,000 square feet of proteomic/genomic laboratories and 17,600 square feet for training

- **Medical Information Sciences Building**, a 161,000-square-foot, \$42.25 million structure built near the incubator in the canal district
- **Research III**, a 254,000-square-foot, \$83.3 million structure devoted to translational cancer research (in planning).

Indianapolis Downtown Inc. also estimates that Eli Lilly has \$880 million in construction under way including research, drug-discovery, and both pilot- and full-scale manufacturing at its corporate center south of downtown.

At IU Bloomington, new bioscience construction includes the following:

- **Simon Hall**, an 80,000-square-foot building that was the first new campus building devoted to research since 1962 (due to open in 2007)
- **Multidisciplinary Life Sciences Building II**, a 65,000-square-foot, five-story, \$42.4 million building (in planning).

At West Lafayette, Purdue continued buildout of its Discovery Park, a 40-acre zone dedicated to interdisciplinary academic industrial collaboration. Facilities recently opened with bioscience components include the following:

- **Bindley Bioscience Center**, a 50,000-square-foot, \$15 million facility that will include an Oncological Sciences Center, the Discovery Park arm of the Purdue Cancer Center
- **Birck Nanotechnology Center**, a 187,000-square-foot, \$58 million facility that will include biomolecular clean rooms and is connected by enclosed walkway to the Bindley Biosciences Center
- **Biomedical Engineering Building**, a 91,000-square-foot, \$25 million home for the Weldon School of Biomedical Engineering.

At its separate Research Park (below), Purdue also opened a new 12,000-square-foot, \$6.5 million, nonsterile cGMP manufacturing facility for its privately donated **Chao Center for Industrial Pharmacy & Contract Manufacturing**. The program will seek industrial contracts. It has full-time staff and will also provide experiential training for students in the School of Pharmacy.

In South Bend, Notre Dame University opened a 77,000-square-foot, \$23 million **Research Facility** that will house Notre Dame's Keck Center for Transgene Research. The facility is partly financed by lease payments from IU School of Medicine, which rented 46 percent of the building for its branch campus at South Bend.

Research programs

IU and Purdue have jointly designated \$250,000 for a Collaboration in Life Sciences and Informatics Research to initiate research projects with the potential to lever external federal or private funding.

Faculty development programs

Lilly Endowment has provided IU with a total of \$155 million in several waves of grants under the INGEN initiative. Most of these gifts have supported faculty recruitment and establishment of core facilities necessary for the recruitments.

Encouraging Academic/Industrial Interaction

The 21st Century Fund is now funded at \$75 million for the current biennium. It considers awards up to \$2 million. The fund emphasizes proposals that lever major federal grants or open up new sources of long-term support, encourages university/industry partnerships, and now especially emphasizes the formation of start-up businesses as vehicles for commercialization of funded research. The 21st Century Fund has the capability to make either grants or loans and has directly funded 25 start-ups. One example is the **Indiana Center for Applied Protein Sciences**, a for-profit provider of analysis and technology validation that was spun off by **Inproteo**, a joint venture owned by Lilly, IU, and Purdue.

Moving Technology into the Marketplace

Commercializing university technology

Purdue Research Foundation maintains an internally managed **Trask Venture Fund** that makes **Technology Innovation Awards** up to \$100,000 for precommercialization research on intellectual property held by Purdue and **Pre-Seed Awards** up to \$250,000 to help create start-up companies that can enter a business-acceleration process administered by the Purdue Research Park (see below).

Supporting bioscience entrepreneurs and emerging companies

The **Indiana Venture Center**, a freestanding nonprofit with connections to the state's major universities, acts as a business accelerator in several sectors including the biosciences.

Making Capital Available

Pre-seed and seed capital

Seed-stage investments ranging from \$50,000 to \$500,000 are available from the **Indiana Seed Fund I**, a \$4 million rate-of-return-oriented fund set up by BioCrossroads with additional investment from the state's **Indiana Finance Authority**.

Indiana's Venture Capital Investment Tax Credit provides an income-tax credit of the lesser of \$500,000 or 20 percent on investments in qualifying early-stage businesses that are certified by IEDC.

Finally, the 21st Century Fund continues to match Phase I SBIR/STTR awards up to \$100,000 as a way of capitalizing early-stage companies.

Venture capital

Seven venture capital firms with offices in Indiana and an interest in bioscience deals have received investments from the \$73 million **Indiana Future Fund**, a fund of funds managed by CS First Boston. Investors in the Future Fund include the state pension fund; Lilly; Guidant; Anthem; American United Life Insurance; IU; Purdue; and the endowment foundations of IU, Ball State, and Indiana State. The Future Fund requires that 60 percent of its money be placed in Indiana-focused or -based venture funds and 70 percent in funds that intend to invest in early- or seed-stage companies. It targets that 60 percent of these venture funds' ultimate investments be in the life sciences and in Indiana-based companies. Investee venture capital funds are as follows:

- **A.M. Pappas & Associates**, based in North Carolina
- **Burrill & Company**, of San Francisco
- **Pearl Street Venture Funds**
- **REI Ventures**
- **Spring Mill Venture Partners**
- **Triathlon Medical Ventures Fund.**

Two state agencies recently announced that they will support creation of a new \$30 million **MidPoint Food & Ag Fund**, managed by the author of the BioCrossroads strategic plan for the state's agricultural economy. The state Department of Agriculture will loan the fund \$500,000 for operating expenses during the fund-raising period, and the Indiana Finance Authority has agreed to invest \$3 million as a limited partner provided that the general partner can raise a minimum of \$27 million.

Providing Space for Bioscience Companies

Incubators

Bioscience incubators include the following:

- **Indiana University Emerging Technologies Center (IUETC)**, a 62,500-square-foot building with 28,000 square feet of wet-lab space, in the Canal District of Indianapolis
- **Purdue Technology Center**, which recently doubled in size to 120,000 square feet, and two associated multitenant wet-lab buildings at **Purdue Research Park** in West Lafayette
- **Northeast Indiana Innovation Center**, a 42,000-square-foot facility in Fort Wayne
- **Rose-Hulman Ventures**, a 35,000-square-foot incubator in Terre Haute established with a major grant from the Lilly Endowment (the bioscience focus is limited to devices and instrumentation).

Bioscience research parks

The state's **Certified Technology Park (CTP)** program allows research parks certified by IEDC (which seeks evidence of university involvement and a commitment to business incubation) to capture up to \$5 million in incremental tax collections for reinvestment in business incubators or similar facilities. The CTP law also authorizes IEDC to make grants up to \$2 million to each park for similar purposes, financed in part by tobacco funds. As of 2005, 14 CTPs had been approved. Among those with some bioscience orientation are the following:

- The district in which the IUETC was developed, which has plans for several additional buildings and will invest local TIF revenue in debt retirement at the incubator
- **Purdue Research Park**, a 150-acre park on a much larger site that will invest its TIF revenue in preparing an additional 40 acres for development

- **Northeast Indiana Innovation Center** (see above under “Incubators”), which is leveraging an orthopedic materials institute, and **Intelliplex** in Shelbyville, which is pursuing health-related information technology.

Addressing Talent Needs

Recruiting management talent

Several of the state’s business schools have established specializations in bioscience. For example, Purdue and Indiana Universities received a joint \$525,000 grant from the Guidant Foundation to establish a **Biomedical Entrepreneurship Program**. The program will link students from Purdue’s Weldon School of Biomedical Engineering with medical fellows at IU School of Medicine and MBAs at Purdue’s Krannert School of Management.

In addition, IU’s Kelley School of Business and its Johnson Center for Entrepreneurship have established a staffed satellite office at the IUETC incubator where MBAs can become involved in early-stage bioscience companies.

Specialized postsecondary programs

An industrially oriented **Biotech Degree** is now available from Ivy Tech, the state’s equivalent of a community college system, through an initiative of the Indiana Health Industry Forum, the regional industry, and IUPUI.

K-12 outreach programs

Biotech Bound is a pilot program to help at-risk young adults get into degree tracks at Ivy Tech Community College.

Contacts

Todd Pedersen
Director of Life Sciences Initiatives, Indiana Economic Development Corporation
One North Capitol, Suite 700
Indianapolis, IN 46204
(317) 233-5391
tpedersen@iedc.in.gov

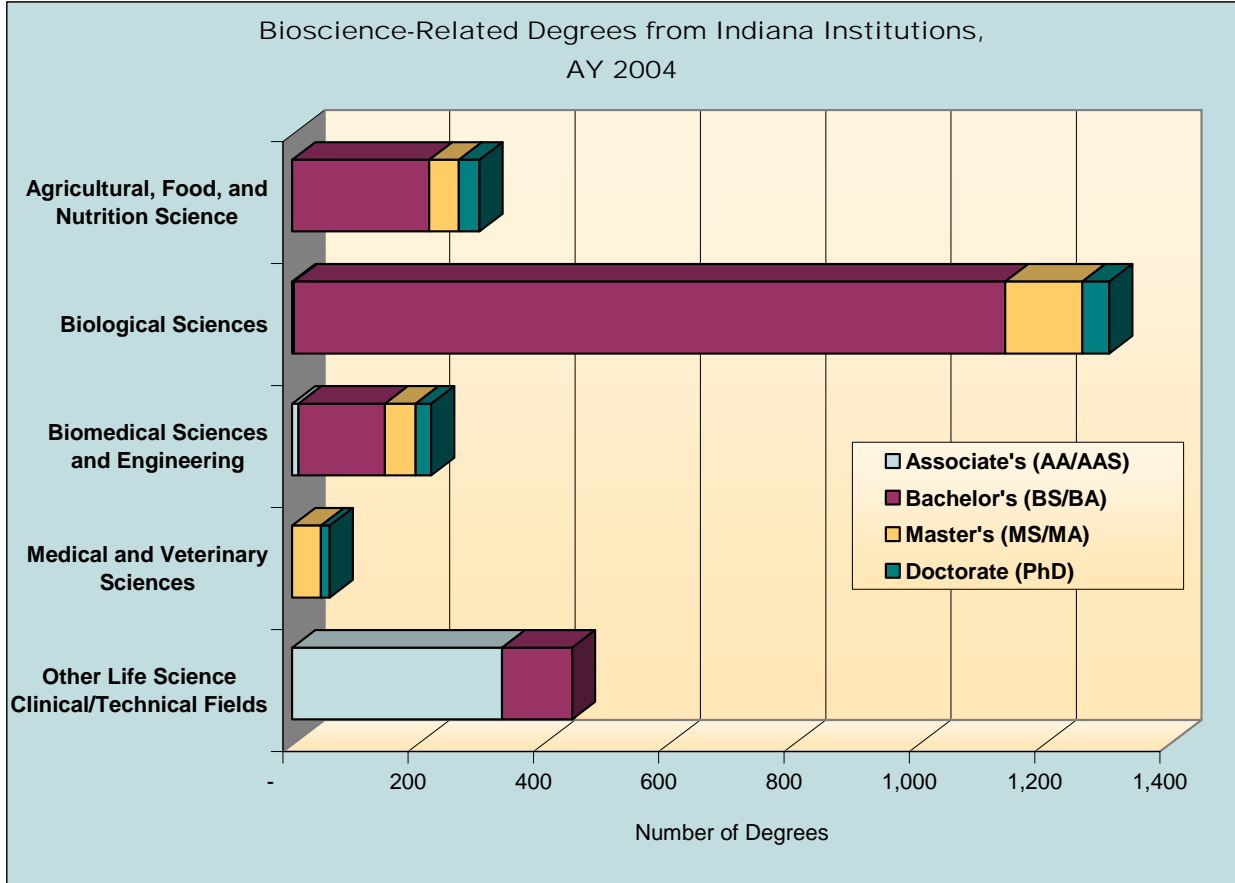
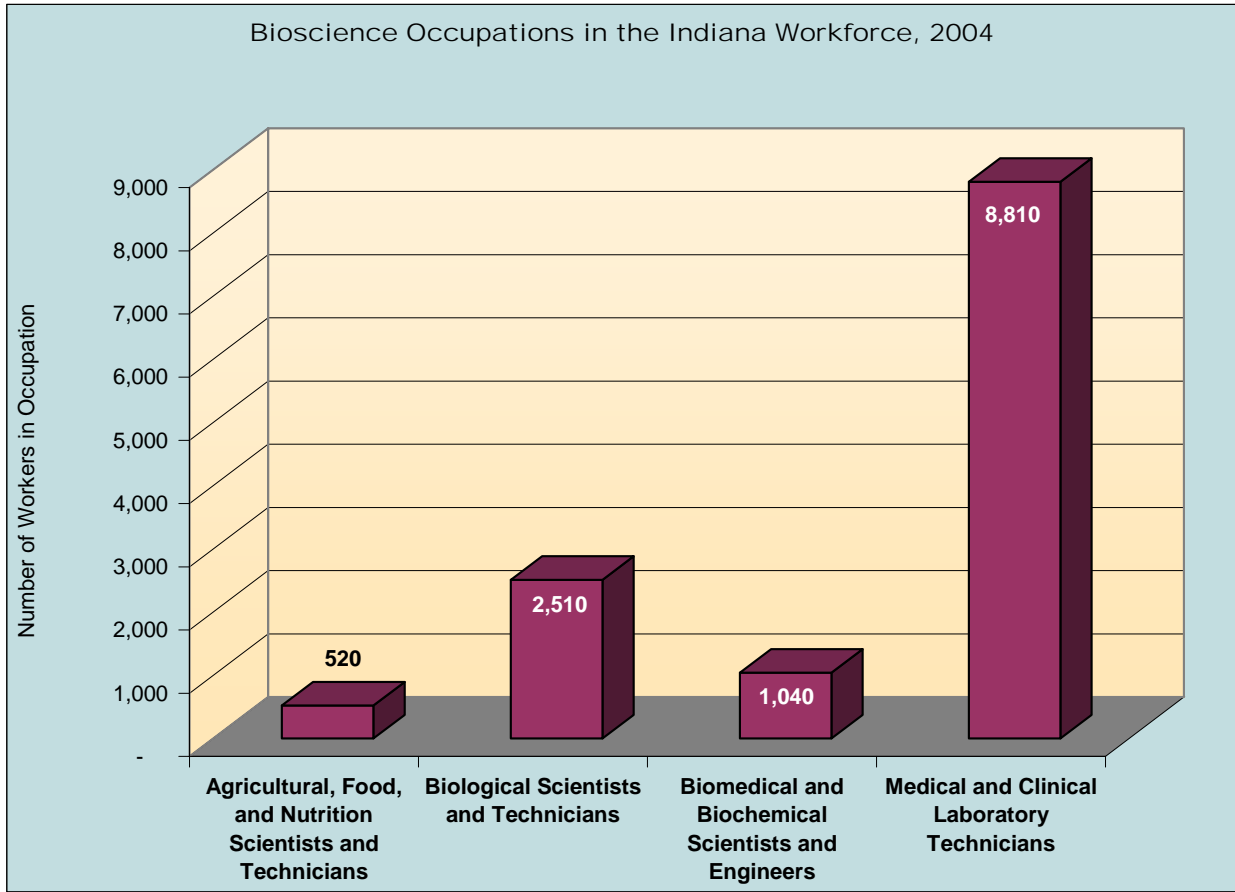
The Indiana Health Industry Forum (IHIF) is a not-for-profit, private sector organization; and its members represent a private/public alliance of manufacturers, suppliers, educational institutions, health care providers, service providers, and government. Its purpose is to position Indiana as a premier state for the creation and growth of health industry enterprises.

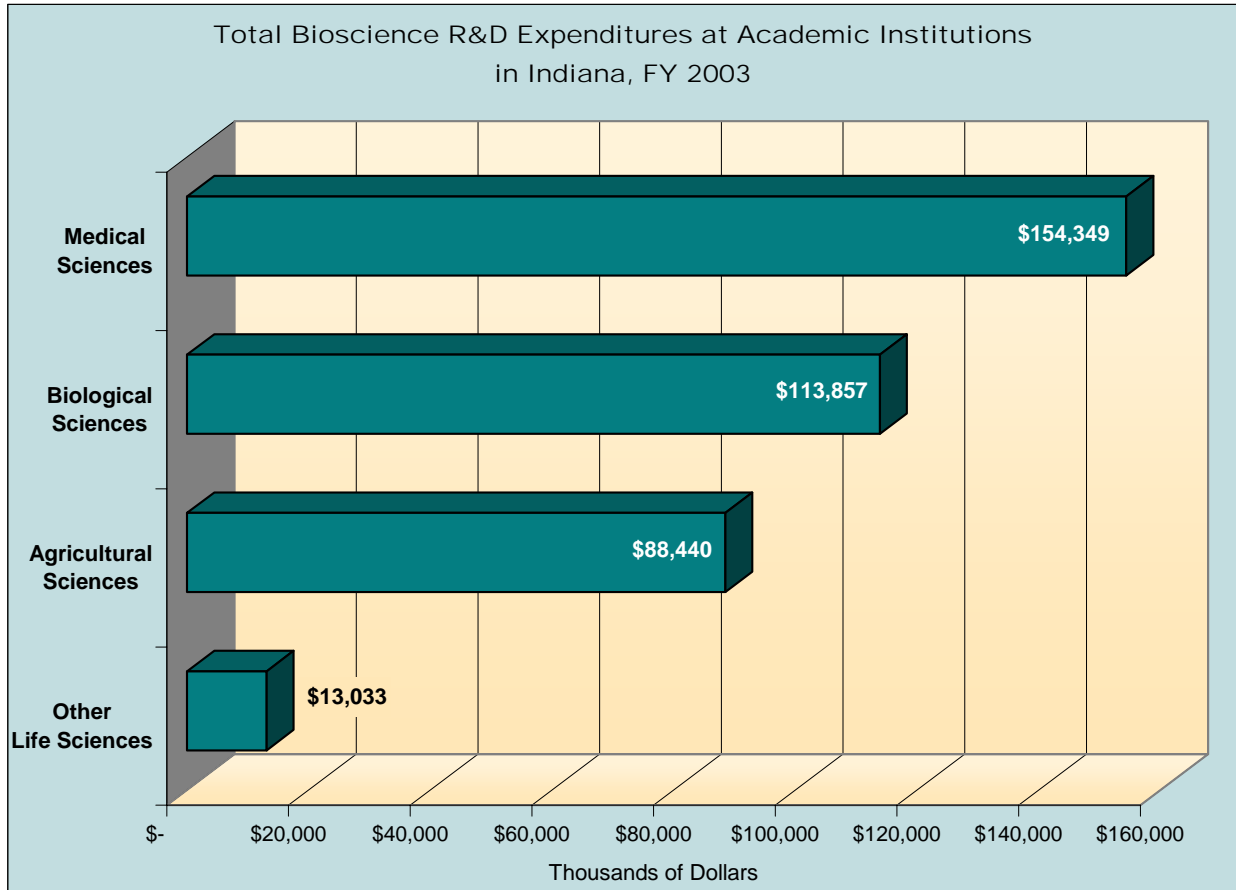
J. Mike Brooks
President and CEO, Indiana Health Industry Forum
351 West 10th Street, Suite 216
Indianapolis, IN 46202-4118
(317) 278-9972
mjbrooks@ihif.org

Industry Subsector	Indiana	United States
Agricultural Feedstock & Chemicals		
Establishments 2004	37	2,111
2001-2004 Establishment % Change	10.5%	0.4%
Employment 2004	4,867	104,893
2001-2004 Employment % Change	-8.1%	-6.9%
Share of U.S. Employment	4.6%	100.0%
Location Quotient	2.07	n.a.
Average Annual Wage 2004	\$74,138	\$63,383
Direct-Effect Employment Multiplier	5.98	10.91
Total Employment Impact	29,084	1,212,094
Drugs & Pharmaceuticals		
Establishments 2004	39	2,589
2001-2004 Establishment % Change	-4.9%	-0.6%
Employment 2004	20,057	313,207
2001-2004 Employment % Change	8.2%	2.7%
Share of U.S. Employment	6.4%	100.0%
Location Quotient	2.85	n.a.
Average Annual Wage 2004	\$88,364	\$79,303
Direct-Effect Employment Multiplier	6.31	9.51
Total Employment Impact	126,658	2,731,321
Medical Devices & Equipment		
Establishments 2004	281	15,190
2001-2004 Establishment % Change	-2.4%	0.2%
Employment 2004	16,688	411,460
2001-2004 Employment % Change	13.7%	-3.6%
Share of U.S. Employment	4.1%	100.0%
Location Quotient	1.81	n.a.
Average Annual Wage 2004	\$58,931	\$56,449
Direct-Effect Employment Multiplier	3.19	4.56
Total Employment Impact	53,181	1,817,705
Research, Testing, & Medical Laboratories		
Establishments 2004	310	20,565
2001-2004 Establishment % Change	15.5%	19.4%
Employment 2004	6,423	413,550
2001-2004 Employment % Change	-2.5%	8.2%
Share of U.S. Employment	1.6%	100.0%
Location Quotient	0.69	n.a.
Average Annual Wage 2004	\$53,427	\$65,414
Direct-Effect Employment Multiplier	2.24	3.15
Total Employment Impact	14,369	1,272,936
TOTAL PRIVATE SECTOR		
Establishments 2004	147,829	8,156,137
2001-2004 Establishment % Change	1.1%	4.8%
Employment 2004	2,451,640	109,249,195
2001-2004 Employment % Change	-1.4%	-0.7%
Share of U.S. Employment	2.2%	100.0%
Location Quotient	n.a.	n.a.
Average Annual Wage 2004	\$34,724	\$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.





	Indiana	United States	Rank
University R&D Expenditures, FY 2003			
Total (\$ thousands)	\$725,752	\$40,104,621	18
Life Science R&D (\$ thousands)	\$378,368	\$24,062,088	20
Percent of Total R&D	52.1%	60.0%	
Life Sciences Per Capita	\$61.07	\$82.74	
Change in Life Sciences FY 1999–2003	61.7%	52.7%	
NIH Support to Institutions, FY 2004			
Total (\$ thousands)	\$202,775	\$22,556,459	25
Per Capita Expenditures	\$32.73	\$77.56	
Change in Expenditures FY 2000–2004	43.6%	53.2%	
Higher Education Degrees in Bioscience Fields, AY 2004			
	2,332	111,329	15
Bioscience Occupations in the Workforce, 2004			
	12,880	616,140	16