

Pennsylvania A Life Sciences Powerhouse

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This is one of the few states that use tobacco settlement funds to support biomedical research

Located between New York City and Washington DC, Pennsylvania is home to the entire continuum of biosciences-research, emerging biotech, medical devices, and diagnostic companies, global pharmaceuticals, academia, and government. There are over 2,000 bioscience and directly related establishments employing over 85,000 people.

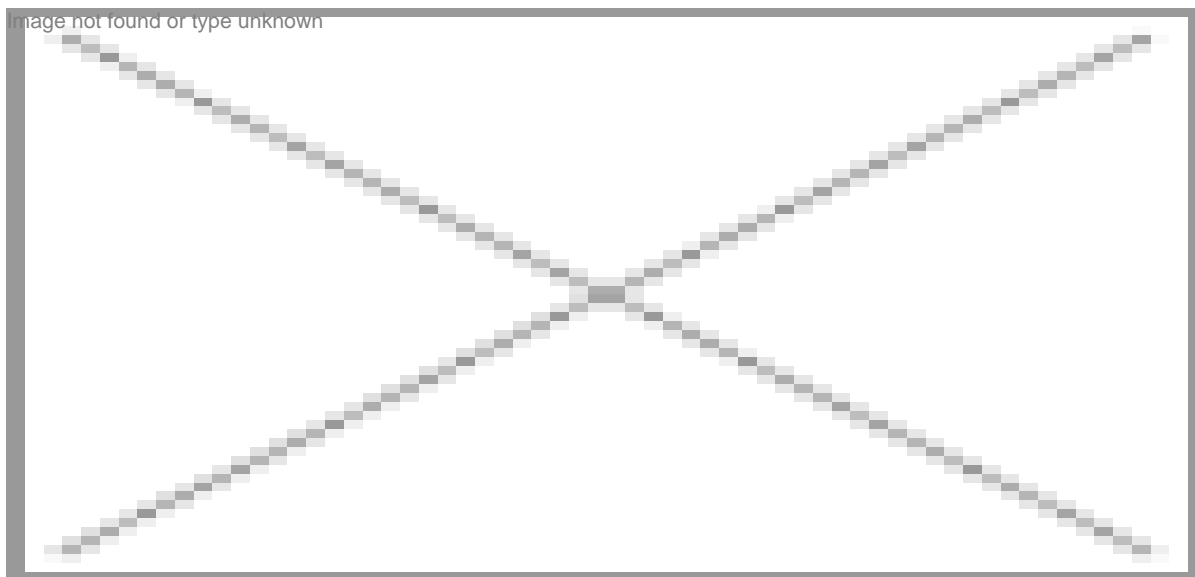
"The life-sciences industry plays a critical role in Pennsylvania's economic and strategic growth. The biotechnology, pharmaceutical, medical-device, and diagnostics companies are developing therapies, vaccines, and devices that will extend and improve the lives of patients globally. These companies are just one of the many reasons that the life sciences industry has become a key economic driver for the Commonwealth," said Governor Edward G Rendell. He added that alternative energy will become an economic driver by 2025.

Pennsylvania is the third largest cluster in the US in the life-sciences sector, according to various reports. This cluster comprises three key centers-Philadelphia, Pittsburg, and Harrisburg. "This region is creating business-savvy scientists and is the center of translational research," said Daniel Dolan, international marketing executive, Center for Direct Investment, Commonwealth of Pennsylvania.

The government has been very supportive of the growth in the life-sciences sector. Pennsylvania Governor Rendell, with the

help of a bi-partisan legislature, enacted a \$2.8 billion Economic Stimulus Package that would leverage an additional \$5 billion in matching funds, significantly boosting the capital available to bioscience companies and institutions of higher education.

The Stimulus Package includes vital programs that address life-sciences companies' needs like the New Pennsylvania Venture Investment Program, the New Pennsylvania Capital Investment Program, the Research and Development Tax Credit and its tradability, Keystone Innovation Zones, and Second Stage Life Guarantees. "We also created the Life Science Greenhouse Initiative to provide a flexible mechanism for the commercialization of biotechnology and other life-science business opportunities by accelerating technology transfer, enhancing collaboration, and attracting new business," added Governor Rendell.



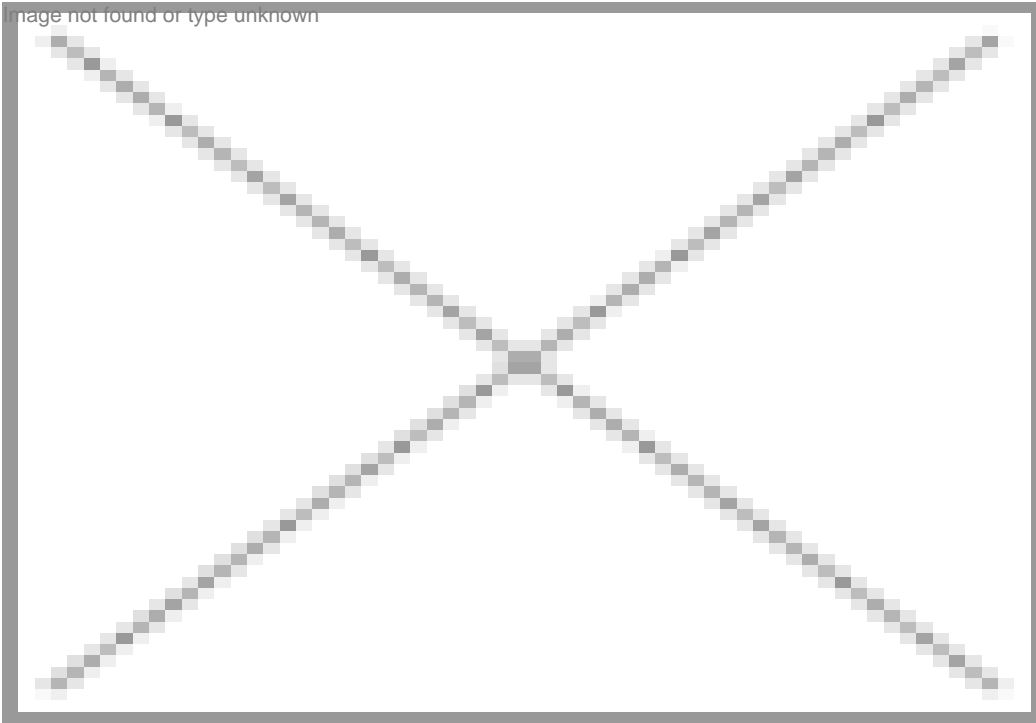
According to the Pennsylvania Bioscience Industry Report 2007, the impact of the three regional life sciences greenhouses (BioAdvance, the Life Sciences Greenhouse of Central Pennsylvania, and the Pittsburgh Life Sciences Greenhouse) is remarkable. The number of new bioscience companies created through greenhouse support totals 77, and these numbers are continually growing, as the greenhouses provide seed capital and other necessary services to startup companies.

As of June 30, 2006, the number of jobs created or retained due to the greenhouse initiative totals 1,576. The greenhouses have collectively committed \$30.4 million for direct investments into companies, and the additional funding received by portfolio companies totals \$222.5 million.

Philadelphia, Birth Place of Health Facilities and Pharmaceuticals

According to Russel Kaufman, president and CEO, The Wiser Institute, the region's tryst with pharma started as early as 1821, with the founding of the Philadelphia College of Pharmacy. The institute produced some of the best entrepreneurs, including John Wyeth, William Warner, Rogert McNeil, Henry Wellcome, Silas Burroughs, Josiah Lilly, Eli Lilly, and Gerald Rorer (Aventis). The biotechnology revolution too is claimed to have started in Philadelphia in the 1970s. In 1972, the first gene was cloned and the first monoclonal antibodies were discovered. In 1978, the first human gene was cloned. Centocor began its operations in Malvern, while Cephalon was founded in 1987.

The Philadelphia Life Sciences today has more than 100 hospitals, over 150 research labs, five medical schools, the leading children's hospital, and the second largest medical education and research center in the US. "The life sciences are the cornerstone of the Greater Philadelphia economy, with over 53,000 workers and \$14 billion in revenues; it is also the fourth in NIH funding," said Thomas G Morr, president and CEO, Select Greater Philadelphia. And eight of the world's largest pharmaceutical companies, including GlaxoSmithKline, Merck, and Johnson & Johnson, are located within a 50-mile radius of Philadelphia.

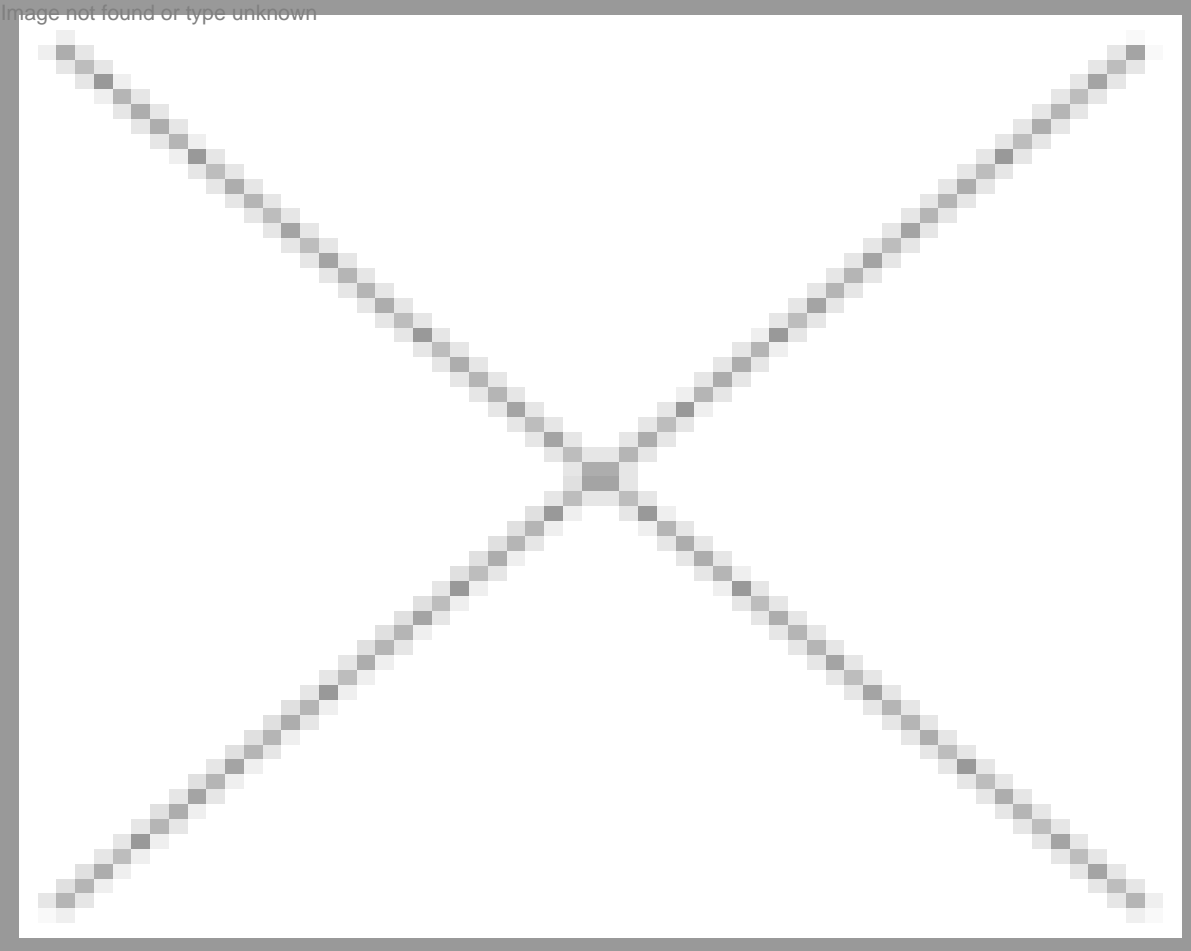


The Pittsburgh Region

The Pittsburgh Region is another key cluster for life sciences with nearly \$410 million spent per year on R&D in life sciences throughout the region (National Science Foundation). University of Pittsburgh ranks ninth in the nation for National Institutes of Health (NIH) funding, and receives the fourth most federal funding for R&D in medical sciences. According to Roger Cranville, senior vice president, global marketing, Pittsburgh Regional Alliance, Pittsburgh has more medical scientists than any region in the US, outside of Boston.

With \$20 million in venture capital available from the Commonwealth of Pennsylvania's tobacco settlement funds, venture capital investments have been growing faster in Pittsburgh over the last decade than in any other US metro, jumping from 36th to 11th (NVCA, Thomson Financial and PWC MoneyTree, US Census 2000). The Pittsburgh Life Sciences Greenhouse (PLSG), a private-public partnership, is facilitating the growth of the regional industry. It provides incubator space, funding, professional recruitment, network development, and workforce training programs.

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The region's life sciences industry is built on four pillars-drug discovery tools and targets; engineered tissues and organs (Pittsburgh ranks third nationally with seven companies in the field of tissue engineering); therapeutics for neurological and psychiatric disorders (Pittsburgh is ranked first in NIH funding for psychiatry); and medical devices and diagnostics (118 firms employing 5,200 in the Pittsburgh MSA).

Pennsylvania Bioscience Industry Report 2007

- 72,835 bioscience jobs across 1,751 business establishments, ranking Pennsylvania among the top six state employers in three of the four major bioscience sub-sectors (Second in research, testing, and medical labs; third in drugs and pharmaceuticals; and sixth in medical devices and equipment)
- 326,226 total employment impact, including bioscience jobs and jobs added through the ripple effect. Pennsylvania's employment multiplier for the total bioscience industry is 4.48
- \$69,474 in average annual wages for a bioscience worker in the Commonwealth, nearly twice the average private sector wage (\$38,055) for all workers in the state
- An overall employment specialization in the biosciences for Pennsylvania with a location quotient of 1.38 (38 percent more concentrated than the national average)
- Strong and specialized employment in two of the four major bioscience sub-sectors—drugs and pharmaceuticals, and research, testing, and medical laboratories
- Numerous sub-sector specialties among Pennsylvania metropolitan areas; 10 out of 14 metro areas have a specialization in at least one of the four bioscience sub-sectors and five are specialized in two sub-sectors
- Vibrant state innovation in terms of bioscience-related patents issued; nearly one quarter of all state patents are related to biosciences
- Venture capital investments in Pennsylvania bioscience companies were very strong in 2006, nearly reaching the \$500 million mark; the biosciences now account for the majority of all VC investments in the state.

Pennsylvania is also keen on helping companies from outside of the region and the country to set shop in the state.

Ch. Srinivas in Pittsburgh and Philadelphia