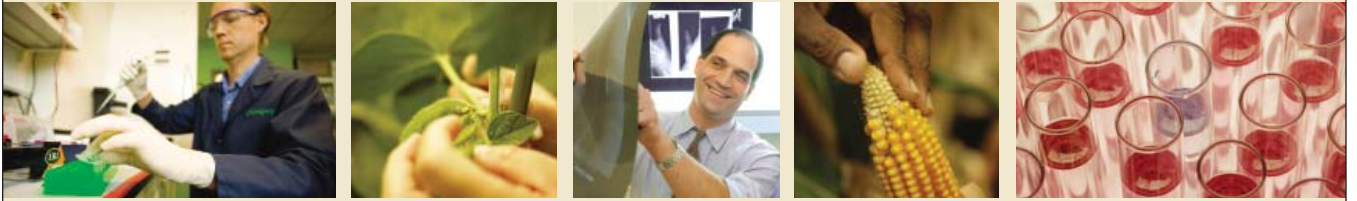


Plant and Medical Sciences



St!Louis
Perfectly Centered. Remarkably Connected.

The St. Louis area's Plant and Medical Sciences business cluster comprises companies and institutions engaged in the development and production of medicines, agricultural chemicals, organic chemical manufacturing, medical equipment manufacturing, and research and development.

The region is already a leader in the plant and medical sciences. It is home to:

- **Washington University in St. Louis-School of Medicine**, a national powerhouse in biomedical research, ranking third among medical research schools in the nation by *U.S. News & World Report's* "America's Best Graduate Schools" 2009. Washington University was ranked 15th among the Top American Research Universities in 2007 by the Center for Measuring University Performance.
- **Saint Louis University School of Medicine**, which opened the \$80.5 million Edward A. Doisy Research Center to focus on research in the health sciences.
- **Monsanto Co.**, a world pioneer in plant biotechnology and genomics. Monsanto is a leader in supporting the plant and life sciences in St. Louis.
- **Sigma-Aldrich**, a leading producer of biochemical and organic chemical products, which has a \$172 million downtown St. Louis campus, including a 145,000-square-foot Life Science Technology Center.
- One of the four major worldwide research centers of **Pfizer**, the world's largest pharmaceutical company, which recently completed a \$200 million research and development building. St. Louis is also Pfizer's global center for biologics. The company is doubling the size of its 60,000-square-foot good manufacturing pilot plant with a \$50 million expansion at its 200-acre campus in St. Louis.
- **The Missouri Botanical Garden**, one of the three leading research-oriented botanical institutions in the world, which operates the world's most aggressive research programs in tropical botany and employs about 30 Ph.D. botanists in research in St. Louis and another 20 around the world.
- Many new companies, including **Stereotaxis**, the developer of an advanced cardiology instrument control system; **Kereos**, which develops targeted therapeutics and molecular imaging agents that detect and attack cancer and cardiovascular disease; **Divergence**, a world leader in the application of genomics to parasitic and infectious disease in agriculture; and **Orion Genomics**, which develops non-invasive diagnostic tests for the early detection of cancer.
- **Donald Danforth Plant Science Center**, a research center formed in 1998 by the Danforth Foundation through a partnership between the Missouri Botanical Garden, Monsanto, Purdue University, University of Illinois at Champaign-Urbana, University of Missouri-Columbia, and Washington University in St. Louis. The first 110,000-square-foot building in the Bio-Research and Development Growth Park being developed by Wexford Science+Technology will open in June 2009. Building I features wet labs and office space.

That's only the short list. Additional significant assets include other major companies, university research centers, incubators, research centers, and venture capital. Small wonder that St. Louis is considered the heart of a region known as the BioBelt [www.biobelt.org].

These assets are growing in number and power — rapidly. The St. Louis area is strongly committed and united in its effort to drive the industry forward. Since 2001, the area's top civic and academic leaders have been joined in the Coalition for Plant and Life Sciences to coordinate the area's development as a center for research and commercial activity in the plant and medical sciences. The coalition is chaired by Dr. William H. Danforth, former chancellor of Washington University in St. Louis.

A report on the St. Louis biotech industries, issued in 2000 by the Battelle Memorial Institute noted, *"The St. Louis region has a mature, dynamic and wide-ranging set of plant and life sciences research and development entities that include universities, non-profit organizations and private sector plant and life science companies... The St. Louis region, unlike other leading competitor plant and life sciences regions, has an established leadership position in biomedical-related research and development, plant science, and agriculture-related biotechnology research and development upon which to build a highly robust and diversified plant and sciences industry base."*

"St. Louis has a mature, dynamic and wide-ranging set of plant and life sciences research and development entities..."

Leading Corporations

Nearly 400 plant and medical science enterprises call the St. Louis region home, with about 17,500 employees. In addition to Monsanto, Pfizer, and Sigma-Aldrich, St. Louis is home to:

- **BJC HealthCare**, one of the largest non-profit health systems in the U.S. with 13 hospitals in St. Louis and the region. Barnes-Jewish Hospital/Washington University ranked 12th in *U.S. News & World Report's* 2008 annual list of "America's Best Hospitals."
- **Bunge North America**, an arm of Bunge, the global agribusiness and food company. Through its four divisions — grain, oilseed processing, milling, and oils — Bunge North America is a primary supplier of high-quality agricultural commodities and value-added, specialized food and feed ingredients, and food products to the global marketplace.
- **Centocor Biologics**, a member of the Johnson & Johnson family of companies which produces clinical stage and commercial biomedicines for use in therapeutic areas such as immune-related disease and oncology.
- **Covidien Imaging Solutions and Pharmaceuticals**, a global supplier of health care imaging and pharmaceutical supplies. Covidien was largely formed out of the former St. Louis-based Mallinckrodt. Covidien is currently investing \$100 million at two St. Louis area research facilities.
- **Express Scripts**, founded in St. Louis in 1986, which has grown to become one of the largest pharmaceutical benefit management (PBM) companies in North America by providing PBM services to more than 50 million members. Express Scripts completed a new \$50 million headquarters in May 2007, with room for nearly 1,600 employees, at a business park on the campus of the University of Missouri-St. Louis. A \$30 million expansion was started in 2007, and a third building is already in the plans.
- **Forest Pharmaceuticals**, a subsidiary of Forest Laboratories, Inc., which manufactures pharmaceutical products for cardiovascular, central nervous system, pulmonary, and women's health disorders.
- **bioMérieux Inc.**, a world leader in the in vitro diagnostics field, is investing \$9 million in a new LEED-certified facility.
- **The Solae Co.**, an alliance of Bunge Ltd. and DuPont that develops and makes specialty food ingredients, which in 2003 decided to locate both its headquarters and R&D operations in St. Louis. In 2008, they moved into their newly expanded headquarters building in the Center of Research Technology and Entrepreneurial Exchange (CORTEX) district.

Major St. Louis Area Plant and Medical Science Companies include:

bioMérieux Inc.	Monsanto
Chemir Analytical Services	Pfizer
Fleming & Co. Pharmaceuticals	Pharma Tech Industries Inc.
GlaxoSmithKline	Reliable Biopharmaceutical
G R X Holding LLC	Reliv International Inc.
Jost Chemical Co.	Sigma-Aldrich
ICL Performance Products	Solutia
Meridian Medical Technologies	Stereotaxis
Millipore Corp.	Tripos Discovery Informatics

Universities

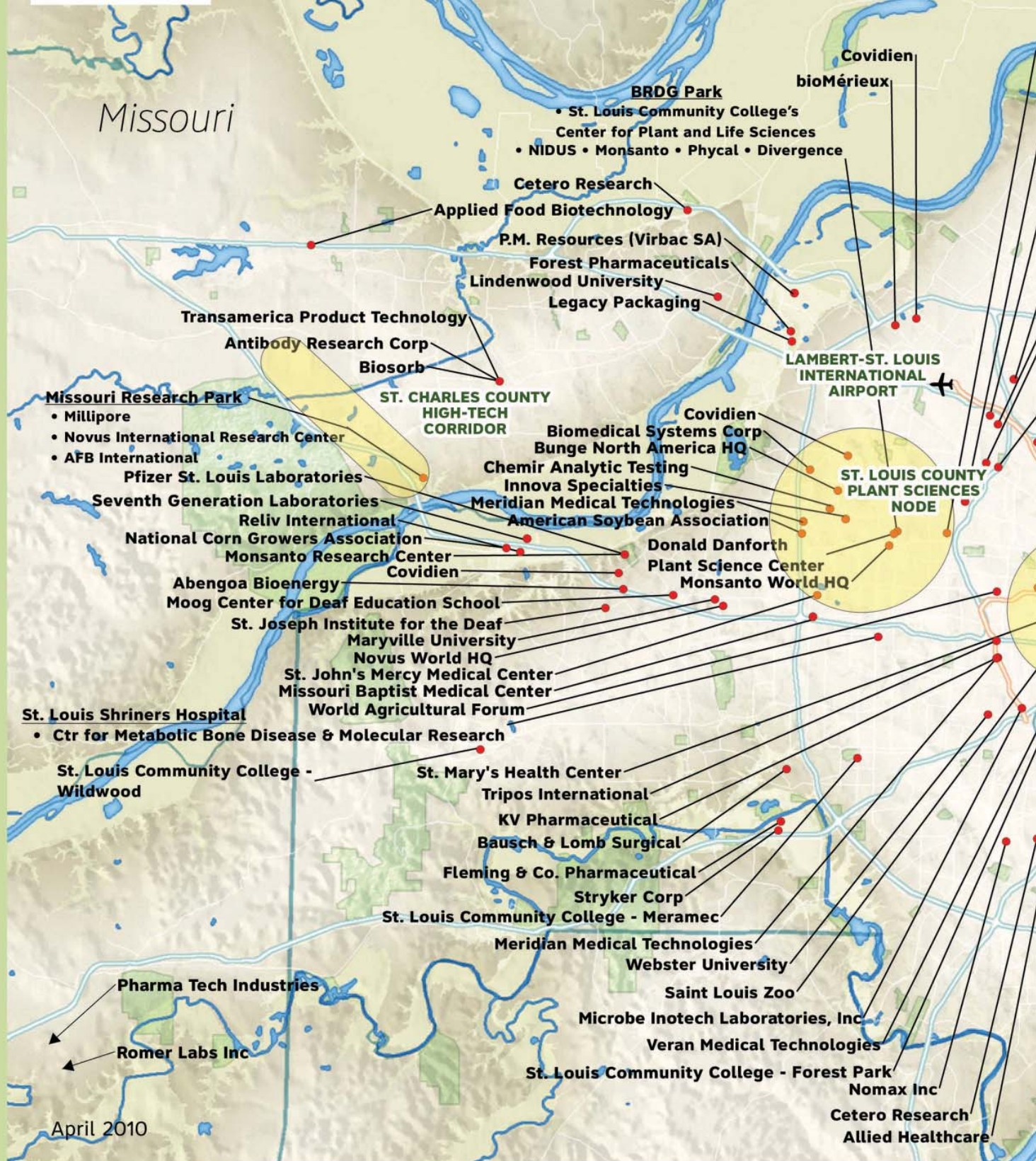
The four major research universities in the St. Louis region received approximately \$400 million in research grants from the National Institute of Health in 2007. More than 2,300 students at four-year institutions in the St. Louis region earn an undergraduate or graduate degree in a field related to plant or medical sciences each year.

Schools like Washington University in St. Louis and Saint Louis University, among others, continue to invest heavily in the plant and medical sciences.

- **The School of Medicine at Washington University in St. Louis** regularly ranks among the top four medical schools in the nation in funding from the National Institutes of Health; in 2008 it received \$350 million. Its Genome Sequencing Center (GSC) is internationally renowned for innovative high-speed sequencing of genetic material. Washington University and BJC HealthCare announced in 2007 that they are jointly building a 240,000-square-foot "BioMed 21" program research facility. This \$235 million center will be home to the BioMed 21 labs and two academic departments of the School of Medicine. This is in addition to the \$11 million BioMed 21 computing facility for the Genome Sequencing Center. The new BioMed 21 research facility will house five interdisciplinary medical research centers.
- **Saint Louis University's School of Medicine**, besides opening the \$80.5 million Edward A. Doisy Research Center, operates one of four U.S. Centers for Excellence in Biodefense and Emerging Infectious Diseases Research. The school is a pioneer in vaccine research, immunology, geriatric medicine, organ transplantation, chronic disease prevention, cardiovascular disease, and neurosciences, among other fields.



St. Louis Regional Plant Research



April 2010

Biotechnology & Medical Sciences & Development Nodes



Illinois

- **The University of Missouri-St. Louis**, with over 15,000 students, is one of the leading universities in the nation for tropical ecology, drawing students from 24 countries. UMSL administers two business incubators: CET and the IT Enterprises facility for emerging high-tech companies which includes significant wet lab space.
- **Southern Illinois University Edwardsville** has over 13,000 students, as well as, a dental school, a fully accredited nursing school, and a pharmacy school. The university's 330-acre campus includes the University Park, a research and technology business park.

Research Facilities

In addition to the universities and the Missouri Botanical Garden, the St. Louis area also boasts other major research facilities:

The Donald Danforth Plant Science Center, established here in 1998, is a not-for-profit research institute that reflects the area's commitment to growth in the plant and medical sciences. It is dedicated to enhancing plants to feed the hungry, preserve the environment, and improve human health, while contributing to the economic growth of the St. Louis region. It employs about 200 scientists.

Two St. Louis pharmacy schools also conduct research. Both the **St. Louis College of Pharmacy** and the new **Southern Illinois University Edwardsville School of Pharmacy** have active research programs in such areas as diabetes, molecular biology, genomics, and drug delivery devices.

The \$20 million **National Corn-to-Ethanol Research Center (NCERC)** is located at University Park on the campus of Southern Illinois University Edwardsville. The plant — the only one of its kind in the world — is seeking ways to significantly reduce the cost of producing ethanol for use as a renewable transportation fuel and for other high-value products.

Venture Capital

The St. Louis biotech industry is attracting the interest of venture capitalists from around the world. The area has become home to 16 funds with nearly \$1.7 billion under management, much of which is dedicated to biotech. This growth coincides with a rise in the area's reputation in venture capital circles. A September 2005 survey of venture capital firms by Cleveland-based BioEnterprise found that the St. Louis area has one of the best reputations in the Midwest among healthcare investors. St. Louis also ranked among the top cities for biopharmaceutical-focused funds.

Reflecting the opportunities in the region, two venture capital firms — Prolog Ventures and Oakwood Medical Investors — recently raised new funds in the biotech sector here. In addition, an \$81.5 million fund-of-funds, Vectis Life Sciences Fund I, recently began making investments in life science venture capital funds with ties to the region.

To complement the area's venture capital resources, the St. Louis Arch Angels were established in January 2005. Arch Angel members provide seed and early-stage capital in the range of \$250,000 to \$2 million, an investment range not generally served by VCs. The members, who are business leaders from the St. Louis area, also mentor, coach, serve on boards, provide contacts, and assist with team-building, strategic planning, and fundraising.

Incubators

Advanced technology incubators in St. Louis bring increasing levels of support and collaborative opportunities for plant and life sciences startups. The two leading plant and life sciences incubators here, both with national reputations, are:

- **The Center for Emerging Technologies** [<http://www.emergingtech.org>]. A 92,000-square-foot private, not-for-profit in the city of St. Louis, it develops startup companies in biotechnology, biomedical engineering, advanced materials, and electronics. Stereotaxis, the developer of an advanced cardiology control system for use in surgery, became the first of its companies to complete a public offering. The CET has been recognized by the National Business Incubation Association as one of the top 10 incubators in the country, and it received an Award for Excellence in Tech-Led Economic Development from the U.S. Economic Development Administration. The CET is planning a new \$27 million medical wet lab building.
- **The Nidus Center for Scientific Enterprise** [<http://www.niduscenter.com>]. This non-profit incubator, serves plant and life science entrepreneurs preparing new technologies for market. Established in 2000, it currently houses about half a dozen companies and has graduated several others. The Nidus Center will move into new space in the Bio-Research and Development Growth Park in July 2009.
- In addition, **Southern Illinois University Edwardsville** operates a biotechnology laboratory incubator, providing individual wet labs to house up to 12 entrepreneurial companies engaged in biological, chemical, biochemical, and life science research.

Other Resources

CORTEX — the Center of Research Technology and Entrepreneurial Exchange — is a collaboration of Washington University in St. Louis, Saint Louis University, University of Missouri-St. Louis, Barnes-Jewish Hospital Foundation, and the Missouri Botanical Garden. It recently completed a \$36 million, 170,000-square-foot laboratory and office building in midtown St. Louis and is seeking to establish one of the nation's largest biotechnology districts in the area between the medical schools of Washington University and Saint Louis University. This area contains one of the highest concentrations of NIH-funded scientists in the United States.

BioGenerator [<http://www.biogenerator.org/>] — A virtual commercialization and technology transfer center, it is designed to harness the world-class research under way in the St. Louis region and channel it into a steady flow of startup companies.

National Corn Growers Association — Based in St. Louis, the association advocates the interests of its members in such areas as ethanol and co-products, biotechnology, research and business development, farm and rural development, trade, and transportation.

American Soybean Association — Also based in St. Louis, it represents U.S. soybean farmers through policy advocacy and international market development.

Employment

A breakdown of the St. Louis area's Plant and Medical Sciences cluster looks like this:

Plant and Medical Sciences Subsectors	Employment	Number of Firms	NAICS Code
Basic Chemical Manufacturing	3,763	50	3251
Agricultural Chemical Manufacturing	360	20	3253
Pharmaceutical and Medicine Manufacturing	2,222	23	3254
Medical Equipment and Supplies	3,169	153	3391
Scientific Research and Development Services	7,934	132	5417
Total	17,448	378	

Source: "Quarterly Census of Employment and Wages" U.S. Bureau of Labor Statistics, 2007.

In a report published in 2005, the Battelle Memorial Institute commented: *"St. Louis has made more progress in its implementation of the plant and life sciences strategy than any other region in the country and is well on the road to becoming the leading center for plant sciences and a major center for life sciences."*

The St. Louis Regional Chamber & Growth Association (RCGA) is the chamber of commerce and economic development organization for Greater St. Louis, which includes 16 counties in Missouri and Illinois. RCGA markets the St. Louis region nationally and internationally to attract targeted industries to the area. It further spurs economic development by aiding the expansion and startup of companies within the region.

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