



ST. LOUIS BIOBELT NEWS

The latest news and information from the St. Louis region.

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HEAL

St. Jude Children's Research Hospital Selects Washington University to Collaborate on Unraveling Genetic Basis of Childhood Cancers

Scientists at Washington University's Genome Center pioneered whole-genome sequencing of cancer patients' genomes



www.pediatriccancergenomeproject.org

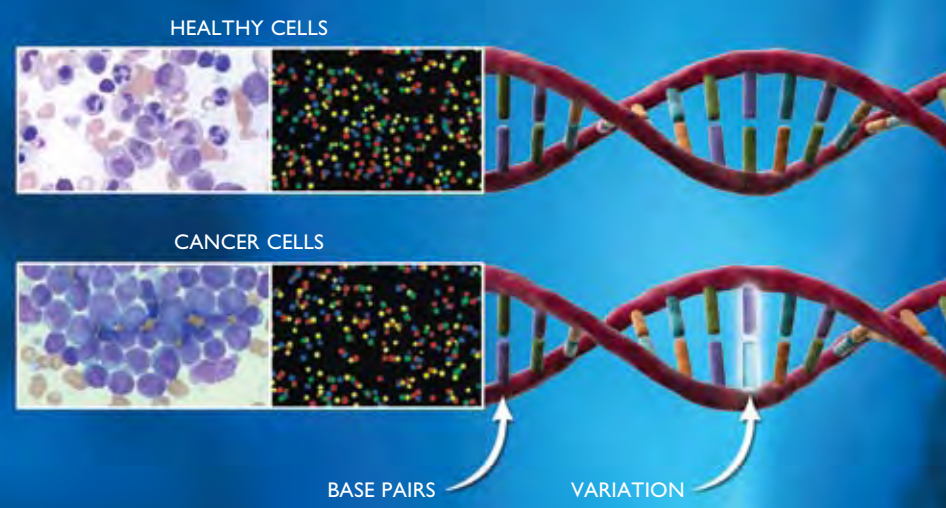
St. Jude Children's Research Hospital in Memphis selected Washington University School of Medicine in St. Louis as the partner in an unprecedented effort to identify the genetic changes that give rise to some of the world's deadliest childhood cancers. The team has joined forces to decode the genomes of more than 600 childhood cancer patients.

The St. Jude Children's Research Hospital-Washington University Pediatric Cancer Genome Project is the largest investment to date—at an estimated \$65 million over three years—and is aimed at understanding the genetic origins of childhood cancers.

St. Jude, which is funding the bulk of the project, is home to one of the world's largest and most complete repositories of biological information about childhood cancers. St. Jude will provide DNA from tumor and normal tissues of patients; Washington University's Genome Center will perform the whole genome sequencing, and both will participate in validation sequencing.

Scientists at Washington University's Genome Center pioneered whole-genome sequencing of cancer patients' genomes in 2008 when they decoded the complete genome of a cancer patient and traced the disease to its genetic roots. They have since sequenced the genomes of additional cancer patients, including those with breast, lung and ovarian tumors and glioblastoma, a type of brain tumor. These studies have identified intriguing and unexpected genetic connections between patients with different types of cancer that likely would not have been discovered using conventional approaches.

The new effort will focus on leukemias, brain tumors and sarcomas. To identify genetic changes associated with cancer, the researchers will sequence DNA from both the tumor and normal cells of each patient.



Scientists involved in the project will sequence the entire genomes of both normal and cancer cells from each patient, comparing differences in the DNA to identify genetic mistakes that lead to cancer.



Express Scripts Technology & Innovation Center Nears Completion

High-tech facility in St. Louis will create 270 new jobs

Express Scripts, Inc. (Nasdaq: ESRX), one of the largest pharmacy benefits management companies in North America, is completing construction on its new Technology & Innovation Center at NorthPark, a 550-acre business park near the company's corporate headquarters in north St. Louis County. The facility will include a state-of-the-art pharmacy automation center that will dispense, package and ship up to 110,000 prescriptions daily.

"The expansion of our operations aligns with Express Scripts' strategy to optimize service and cost savings for our clients and patients," said George Paz, chairman and CEO of Express Scripts. "I am especially pleased that our decision to bring highly advanced pharmacy technology to St. Louis is creating nearly 300 new jobs for the region."

The 12-acre center is the company's third new building since relocating its headquarters to the campus of the University of Missouri-St. Louis in 2007. Some operations in the new center commenced this spring, and it is expected to become fully operational during the summer.



www.express-scripts.com

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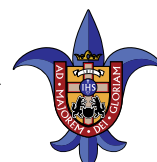
On April 1, *Forbes.com* included Express Scripts on its list of "The 10 Companies Hiring the Most." *Forbes* noted that Express Scripts had hired 3,500 in the previous year to bring its total headcount to 14,300. "The big pharmacy benefits manager has added 250 new salesmen as clients look for ways to save health dollars," the article stated.

New Research Center at Saint Louis University to Target Drug Discovery

Scientists will focus on medical needs of developing countries

Saint Louis University is launching a new research center that will be staffed by about a dozen former Pfizer scientists to target medical problems common in the developing world, as well as other unmet medical needs.

"The new research initiative, called the Center for World Health & Medicine, is another demonstration of Saint Louis



www.slu.edu

SAINT LOUIS UNIVERSITY

University's investment in the region," said University President Lawrence Biondi, S.J.

FEED

New Funding Validates Importance of Divergence's Work on Nematodes

Company was named "2009 Missouri Technology Company of the Year;" company official cites rich scientific talent in St. Louis region



www.divergence.com

St. Louis-based start-up Divergence, Inc. recently received two Small Business Innovation Research (SBIR) grants totaling \$500,000, along with renewed funding from the National Corn Growers Association (NCGA). The grants support advancement of the company's innovative work to prevent crop damage from nematodes, the largest unsolved pest problem in agriculture limiting the yield of crops worldwide and causing tens of billions of dollars in crop damage annually.

The SBIR grants were awarded through the U.S. Department of Agriculture (USDA) for development of crops with resistance to root nematodes and the National Science Foundation (NSF) for the development of novel, safe and effective nematicidal chemicals for crops, turf and ornamental plants discovered through Divergence's research platform, Harvest*. The NCGA continued funding to support work on nematode control in corn.

The company also was named "2009 Technology Company of the Year"

by Jeremiah ("Jay") W. Nixon, Governor of Missouri.

"Divergence is fortunate to operate in a region that is rich in scientific talent and science-based organizations, both academic and private enterprise," said Derek Rapp, Divergence's chief executive officer. "Divergence's achievements are, foremost, a reflection of the great team of scientists we have recruited both locally and nationally, but they are also a result of having a wealth of regional resources to support our growth as a company and the advancement of our technology."

Divergence operates from new state-of-the-art laboratories at the Bio-Research & Development Growth Park on the campus of the Donald Danforth Plant Science Center in St. Louis County.

Quick Fact

The Donald Danforth Plant Science Center employs more than 200 individuals, including 170 scientists and scientific staff, with more than 90 holding a Ph.D.

FUEL

Biofuels Consortium Led by Danforth Plant Science Center Receives \$44 Million Award From U.S. Department of Energy

Investment builds upon the St. Louis region's leadership in developing algal-based fuel production systems

The National Alliance for Advanced Biofuels and Bioproducts (NAABB), led by St. Louis County-based Donald Danforth Plant Science Center, was selected to receive \$44 million from the U.S. Department of Energy (DOE) under the American Recovery and Reinvestment Act to conduct advanced biofuels research to support the development of a clean sustainable transportation sector. The award is part of the DOE's continued effort to spur the creation of the domestic bio-industry while creating jobs.

NAABB is one of two cross-functional groups that will seek to break down critical barriers to the commercialization of algae-based and other advanced biofuels such as green aviation fuels, diesel and gasoline that can be transported and sold using today's fuel infrastructure. Biofuels generate more jobs than any sector of sustainable energy. As the industry grows, there is potential for hundreds of thousands of new jobs nationally.

"This award cements St. Louis as a center for the development of renewable energy from algae," said Dr. Richard



www.danforthcenter.org

Sayre, chief scientist, NAABB and director of the Enterprise Rent-A-Car Institute for Renewable Fuels at the Danforth Center.

A national leader in algal research, the Danforth Center was designated an Energy Frontier Research Center (EFRC) by the DOE in 2009. Along with the designation, the Danforth Center received a \$15 million, five-year award to establish a Center for Advanced Biofuels Systems (CABS), which is also led by Dr. Sayre. At the same time, Washington University also was designated an EFRC and received a \$20 million award to establish the Photosynthetic Antenna Research Center (PARC) also aimed at algal biofuels research.

UNIVERSITY RANKINGS

2009 NIH AWARDS AMONG MEDICAL SCHOOLS	
Johns Hopkins University	\$434,868,750
University of California – San Francisco	\$409,002,859
University of Pennsylvania	\$368,754,181
Washington University in St. Louis	\$357,765,024

Source: "Award Data for Individual Organizations" National Institutes of Health (NIH)
Note: Above does not include funding through the American Recovery and Reinvestment Act

TOP MEDICAL SCHOOLS – RESEARCH MEDICAL SCHOOLS	
1. Harvard University	
2. University of Pennsylvania	
3. Johns Hopkins University	
4. Washington University in St. Louis (TIE)	
4. University of California – San Francisco (TIE)	
TOP LAW SPECIALTIES – HEALTH CARE LAW	
1. Saint Louis University	
2. University of Maryland	
3. Case Western Reserve University	

Source: U.S. News & World Report, May 2010



Monsanto Purchases 210-Acre Research Center Campus

World-class facility defines St. Louis as a leading research hub

St. Louis-based Monsanto Company (NYSE: MON) has acquired Pfizer's (NYSE: PFE) Chesterfield Village Research Center located in St. Louis County. Monsanto acquired the 210-acre research campus for \$425 million, and Pfizer will lease space to primarily perform biopharmaceutical research.

"This Chesterfield Village Research Center is truly a world-class facility, and our agreement with Pfizer will enable both of our companies to maintain our deep research roots in St. Louis for years to come," said Robb Fraley, Ph.D., Monsanto's chief technology officer.

The research campus comprises 1.5 million square feet and includes approximately 250 laboratories, 108 plant growth chambers and two acres of greenhouses. Monsanto had leased more than 400,000 square feet of property from Pfizer, and more than 400 Monsanto employees and contractors already work at the site, most of whom are researchers.

Monsanto expects the site to continue to support its robust pipeline focused on increasing agricultural productivity such as drought-tolerant corn and higher-

MONSANTO



www.monsanto.com

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yielding soybeans, which are among the tools needed to help farmers double yields in corn, soybeans and cotton by 2030.

Quick Fact

St. Louis-based Monsanto Company (NYSE: MON) was named "Company of the Year" by *Forbes* in the magazine's January 18, 2010 issue.

Missouri Botanical Garden Opens Center for Biodiversity Informatics

Center will make vast biodiversity data available to scientists around the globe

As the United Nations has declared 2010 to be the International Year of Biodiversity, the St. Louis-based Missouri Botanical Garden is introducing the newly formed Center for Biodiversity Informatics (CBI). CBI is working with colleagues around the globe to provide innovative technology solutions to the global community of life science scholars to mobilize, integrate and repatriate data about the world's biodiversity.

Efforts are under way to make the vast, decentralized resources of global diversity information available in digital form. Imposing compatibility among the scores of searchable databases on the world's biota is an enormous challenge within the field.

"By putting this core information about what plants exist on the planet, and detailed information about where they're collected and the environment around them [into digital form], this wealth of data can be inserted in other people's scholarship for studies like conservation assessments, tracking invasive species, land management practices

www.mobot.org



and many other kinds of research," said Chris Freeland, director of the CBI.

Earlier this year, the Missouri Botanical Garden Board of Trustees appointed Peter Wyse Jackson, director of the National Botanic Gardens of Ireland, as successor to internationally renowned Garden President Dr. Peter H. Raven. Recognized as one of the world's leading plant botanists and advocates for conservation and biodiversity, Dr. Raven transformed the Garden into a world-class center for botanical research, education and horticultural display.

Today, 151 years after opening, the Missouri Botanical Garden is a National Historic Landmark and a center for science, conservation, education and horticultural display.

Sigma-Aldrich's Knockout Rat Named to Top 10 List of 2009 Scientific Innovations

Michael J. Fox Foundation awards Parkinson's disease research grant to Sigma-Aldrich



St. Louis-based Sigma-Aldrich's (Nasdaq: SIAL) new genetically modified lab rats ranked fifth in the "Top 10 Innovations of 2009" by *The*

Scientist magazine. The scientific breakthrough detailed how Sigma-Aldrich's proprietary CompoZr™ Zinc Finger Nuclease (ZFN) technology was used to create "knockout" rats—animals with permanent, heritable gene mutations—that are now being used to develop novel genetically modified models for disease research. This advancement in transgenics has far-reaching implications for identifying and treating serious diseases and medical conditions.

The Michael J. Fox Foundation (MJFF) recently awarded a research



www.sageresearchmodels.com

grant to the new, multimillion-dollar Sigma Advanced Genetic Engineering Labs in St. Louis—an initiative of Sigma-Aldrich's Biotech business unit—to use the CompoZr ZFN technology in an effort to create superior preclinical research models critically needed for development of transformative treatments for Parkinson's disease.

Previous research into the genetic cause of Parkinson's disease has identified a strong connection to five particular genes. MJFF funding will allow Sigma-Aldrich's efforts to create five novel rat models with each of these genes knocked out.

Orion Genomics, Malaysian Palm Oil Board Sequence Oil Palm Genomes

New technologies are enabling palm oil to be transformed into renewable fuel

The Advanced Biotechnology and Breeding Centre of the Malaysian Palm Oil Board (MPOB) and St. Louis-based Orion Genomics have sequenced three oil palm genomes from two oil palm species, an important food and biofuel crop.

Used in cooking oil, margarine, baked goods and other foods, palm oil is the most consumed edible oil in the world. New technologies are enabling palm oil to be transformed into biodiesel, a promising renewable fuel.

"Knowledge of the genomics sequence of these oil palm varieties enables researchers to understand genetic differences between trees that are, for example, higher yielding or more resistant to disease than usual," said Datuk Dr. Mohd Basri Wahid, the director-general of MPOB. "Our goal in completing the oil palm genome sequence is to dramatically improve oil



www.oriongenomics.com

yields for the production of food, feed and fuel."

The consortium sequencing the oil palm genomes included St. Louis-based MOGene LC and the Genome Center at Washington University, South Korea-based Macrogen Inc. and Australia-based GeneWorks Pty Ltd.

Located in the Center for Emerging Technologies in St. Louis, Orion Genomics has active epigenetic biomarker discovery programs in cancers of the bladder, breast, lung, ovaries and colon, and the company offers genomics services to the medical, agricultural and bio-fuels research communities.

Quick Fact

Washington University in St. Louis has been awarded nearly \$100 million in funding from the American Recovery and Reinvestment Act to support a broad range of research and to expand the university's high-powered data center for genomics. Some \$87 million came from the National Institutes of Health (NIH), ranking Washington University among the top 10 academic institutions in NIH stimulus funds.

Ag Innovation Showcase Returns to St. Louis in May

Leading global event for agriculture industry leaders, venture capitalists and entrepreneurs

The Ag Innovation Showcase, the leading global event for agriculture industry leaders, venture capitalists and entrepreneurs, will be held at the Donald Danforth Plant Science Center May 24 and 25. The Danforth Center, located in St. Louis County, is the largest independent plant science research institute in the world.

The two-day program will spotlight cutting-edge entrepreneurs from around the world who are driving innovation in agricultural technologies such as ag-bio, food and nutrition, biofuels, sustainable materials, clean-tech, information technology and animal health. Leading capital providers, industry partners



www.agshowcase.com

and representatives from key public commercialization agencies also will attend. Last year's event attracted "a who's who" in the ag industry.

Selected entrepreneurial companies will have the opportunity to showcase their groundbreaking technologies to an elite group of leading agribusiness and life science companies and institutional investors.



Located on the campus of the Danforth Plant Science Center, the first building in BRDG Park includes world-class wet labs, office space, a prominent incubator and on-site technical work force training.

BRDG Park Earns Gold: Wins Top Environmental Honors for Plant and Life Science Laboratory Research Facilities

Gold LEED certification distinguishes BRDG Park among laboratory facilities for lease

Building 1 at Bio-Research & Development Growth Park (BRDG Park) at the Danforth Plant Science Center has become one of the only laboratory facilities available for lease to emerging plant and life science companies nationwide to earn the coveted Gold LEED certification from the U.S. Green Building Council. The building complies with elite sustainability criteria for energy-efficiency and green technology in construction, design execution and site management.

"As a science research facility that uses significantly more energy than an office building of comparable size, we are thrilled to set an environmental leadership standard for research park facilities available to emerging plant and life science companies," said Sam Fiorello, president of BRDG Park.

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www.brdg-park.com

Located on the campus of the Danforth Plant Science Center, the world's largest independent plant science research facility, the 110,000-square-foot building, which opened in June 2009, is the first of three buildings at BRDG Park. BRDG Park will ultimately encompass 450,000 square feet.

BRDG Park is being developed by the Maryland-based Wexford Science + Technology LLC, a privately held real estate developer that has developed major research parks nationwide.