



## Purdue Research Park named nation's top tech transfer program

*Association of University Research Parks awards 2005 Excellence in Technology Transfer*

**T**he Association of University Research Parks (AURP) in November recognized Purdue Research Park with the organization's 2005 Excellence in Technology Transfer Award.

The AURP, which represents leaders of more than 195 of the nation's university-affiliated research facilities, promotes the development and operations of research parks that foster innovation, commercialization and economic competitiveness in the global economy by supporting collaboration among universities, industry and government.

The AURP's Excellence in Technology Transfer Award is presented annually to the member park that best demonstrates success in the commercialization of university research through existing businesses or startup companies in a business incubation environment.

To date, Purdue Research Park's parent organization – the Purdue Research Foundation – has licensed technology to 49 startup companies, of which 33 are Indiana firms, with 19 firms resident in the research park. The diverse licensed technologies treat cancer, detect chemical weapons and stymie computer hackers.

"America's future depends on our ability to move ideas from the lab to the marketplace," said Martin C. Jischke, president of Purdue University and the Purdue Research Foundation. "This award challenges us to work even harder to share what we've learned in order to create the next-generation model for economic development."

Purdue Research Park was honored with the Outstanding Science/Research Park Award from AURP in 2004. ◀ [www.aurp.net](http://www.aurp.net)

## Purdue dedicates pharmaceutical center for drug manufacturing

**P**urdue Research Park's new pharmaceutical facility – The Chao Center for Industrial Pharmacy & Contract Manufacturing – opened in October 2005 with multiple contracts for drug development and manufacturing work as well as opportunities for Purdue University students to learn more about industry standards.

"I've always strived to stay true to my vision of a world with better health care, both through my company and on a personal level," said Watson Pharmaceuticals' chairman, president and CEO Allen Chao, who led the dedication

ceremony with his wife, Lee-Hwa. "With access to the Chao Center and its staff, Purdue graduates will come away more fully prepared for a career in the pharmaceutical sciences and all of the stringent requirements that come with drug manufacturing."

The Chao's, both Purdue alumni, donated \$5 million to build the 12,000-square-foot center, which is one of only five pharmaceutical plants in the country operated for the benefit of a university.

"This is a working facility where we give Purdue students an in-the-trenches perspective on the pharmacy industry unlike that available at any other university," said Craig Davis, the center's director.

The Chao Center will manufacture tablets and capsules for drugmakers as well as offer a full range of contract pharmaceutical services, such as drug development and testing. Under a contract with its first client, Indianapolis drugmaker Eli Lilly and Co., the center will become the sole producer of Seromycin, a generic equivalent of the antibiotic Cycloserine, for the United States.

"In addition to manufacturing much-needed supplies of medicines to treat multi drug-resistant tuberculosis, the Chao Center has helped to train and provide guidance of sound business management and good manufacturing practices for companies in China and India that are receiving Lilly's drug manufacturing technology," said Sidney Taurel, chairman and CEO of Eli Lilly and Co.

The center also is working with additional clients on several projects, including formulating a dosing procedure for a powder-based product, manufacturing placebo tablets to be used in a human clinical trial, and formulating and manufacturing a new drug-delivery technology (an oral spray).

Pharmacy students will be instructed by Chao Center executives on good manufacturing practices and guidelines, and civil engineering students will have the opportunity to design a rotary oxidizer kiln and associated support facilities for pharmaceutical waste. In addition, some of Purdue's management students will look at ways to improve material receiving and handling processes. ◀ [www.thechaocenter.com](http://www.thechaocenter.com)



Bryan Katzenmeyer, analytic chemist, explains research capabilities of the newly dedicated Chao Center for Industrial Pharmacy & Contract Manufacturing to Lee-Hwa and Allen Chao. The center includes dissolution test equipment (shown) that can simulate human digestive conditions to fine tune pharmaceutical delivery. (Photo/Vincent Walter)

## TRAIN OF THOUGHT



**JOSEPH HORNETT**  
Senior VP, Treasurer and COO  
Purdue Research Foundation

**W**e've been celebrating the 25th anniversary of a very important piece of legislation for Purdue Research Park – the enactment of the Bayh-Dole Act. With this single law, our nation unleashed the potential of its universities to be the drivers of change and economic development.

Before then, professors and researchers were seldom described as entrepreneurs. Bayh-Dole changed all that. It sparked a new wave of innovation and entrepreneurship by allowing universities to retain the rights to innovations created with federal funding. Prior to the act's passage, the federal government retained the title for any invention created with the use of federal money.

What impact has this had? According to Ernst & Young, in the biotech industry alone, the Bayh-Dole Act has led to the creation of more than 1,400 companies with more than \$330 billion in market capitalization. Nearly 190,000 people work for biotech firms spawned by Bayh-Dole, helping to generate \$42.7 billion in annual revenue.

Closer to home, looking at Purdue, we see the act has led to the creation of 40 startup companies, 23 of which are Indiana firms. The Purdue Research Foundation's Office of Technology Commercialization holds patents on technologies being used for everything from treating cancer and detecting chemical weapons to thwarting computer hackers and producing new varieties of apples.

Not bad for a piece of legislation that was virtually unknown outside certain academic and business circles.

## *Purdue behind legislation that re-energized university-driven economic development*

Some of the credit for this landmark legislation goes to Ralph Davis, who in the late 1970s was head of the Purdue Patent Office when he petitioned the federal government to allow Purdue to file patent applications and retain the rights to innovations developed there. He had been frustrated when the federal government denied his petitions.

Undaunted, Davis contacted then-U.S. Sen. Birch Bayh of Indiana, who took up the cause, which the Economist magazine describes as "perhaps the most inspired piece of legislation to be enacted in America in the past half-century."

We need to look no closer than our own Purdue Research Park to see the results. Think of the Chao Center. It's a direct product of the Bayh-Dole Act. If the past is indeed prologue, we can expect the Chao Center to inspire and nurture new products and new technologies. And we can expect similar centers of innovation to continue to grow and prosper on other college and university campuses across America, generating life-saving and life-changing innovations while, at the same time, creating jobs and feeding our economy.

It is fitting, then that the director of Chao is Craig Davis, the son of the man who helped make it all possible.

A quarter of a century ago, such things were not expected from college campuses. Today thanks to a single piece of legislation inspired by one man's passion, we can count on it.

*Joseph B. Hornett*

## VENTURE SPOTLIGHT

### IN Space LLC successfully test fires multiple-start rocket engine

**I**N Space LLC is a Purdue Research Park aerospace firm focused on the research and development of advanced propulsion technologies that have applications for low-cost launch systems and the emerging space-tourism market.



The company is collaborating with Purdue University's School of Aeronautics and Astronautics – with funding from the U.S. Department of Defense and industry partners – to develop a multiple-start ignition system for potential use in missile defense-related systems and small launch vehicles.

"The multiple-start aspect allows the engine to be used in separate mission phases, such as liftoff and landing. The ability to restart the engine also is a key safety feature for manned missions," said B. J. Austin, general manager of IN Space, which employs eight people. "We are now

focusing on improving the design and producing a flight-weight ignition system design for a 50,000-100,000 pound-force booster engine."

The research team's ignition system is being designed to make booster engines lighter and less costly, while increasing reliability. Engine configurations utilizing both hydrogen peroxide and kerosene-type propellants have traditionally used a staged-combustion approach whereby hydrogen peroxide is decomposed by a large, expensive catalyst reactor before it enters the combustion chamber.

In late 2005, IN Space successfully demonstrated ignition and steady-state operation of a new ignition system in which both propellants enter the combustion chamber as liquids, eliminating the need for the large reactor and allowing for a substantial reduction in chamber volume and weight. Testing, which showed the company's hydrogen peroxide- and hydrocarbon-fueled liquid rocket engine is capable of producing 8,500 pounds of thrust, was conducted at Purdue's High Pressure Laboratory - one of six Maurice J. Zucrow Laboratories.

Austin said Purdue has the most comprehensive capability to test storable liquid propellants of any university in the country. ◀ [www.inspacellc.com](http://www.inspacellc.com)

# INCUBATION STATION

## QuadraSpec raises several million

QuadraSpec Inc., a Purdue Research Park protein-diagnostics company, closed a \$3.9 million Series A round of venture financing in November that will allow it to further develop its patented BioCD.

"QuadraSpec was able to pull together a tremendous amount of funding for an early-stage company, and we were able to do it here in the Midwest," said QuadraSpec's president and CEO Chad Barden. The investor leading this round is Carmel-based Spring Mill Venture Partners. All other investors in this round are individuals from Indiana.

QuadraSpec is developing Purdue-licensed technology that has the ability to perform advanced blood screening for disease detection. The company's BioCD is scheduled for release prior to July. ◀

[www.quadraspec.com](http://www.quadraspec.com)

## Arxan announces new president, expands commercial division

Immediately following word that Michael Walsh was joining Arxan Technologies Inc. as president, the company announced plans to extend its software protection technology to a wider variety of commercial applications.

Walsh, co-founder of Austin-based Nascentric Inc., said protecting critical software assets from reverse engineering and tampering is a tier-one problem for embedded products companies.

"Arxan's ability to implement self-healing and self-defending software – independent of the development process and with minimal run-time performance hit – positions our technology to become the next industry standard," Walsh said. ◀

[www.arxan.com](http://www.arxan.com)

## SFI Systems wins competition

In late November, SFI Systems won the top \$25,000 prize in the Opportunity for Indiana Business Plan Competition, sponsored by the Lilly Endowment, the Burton D. Morgan Center for Entrepreneurship and Purdue Research Park.

The research park startup designs and distributes software for creating, managing and controlling entertainment lighting. CEO Michael Dwan said the company will use the prize money for "paychecks and growth."

Two other park companies, Seyet LLC and En'Urga Inc., won third and fifth place prizes, respectively. ◀

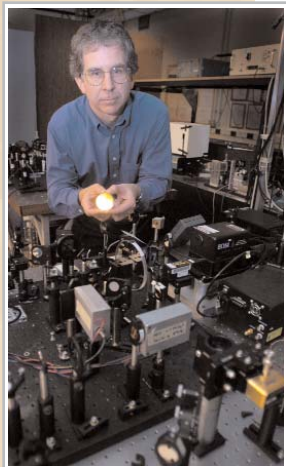
[www.purdue.edu/discoverypark/opportunity](http://www.purdue.edu/discoverypark/opportunity)

## CST/berger settles in at park

Since CST/berger moved its headquarters to Purdue Research Park from Watska, Ill., in June, its corporate office staff has grown by 12 employees.

"Our growth objectives necessitated an infusion of new talent," said Ash Puri, CST/berger's president and CEO. "Purdue University and Lafayette/West Lafayette will be key components to our success."

CST/Berger – Stanley Works' fastest growing division – designs and manufactures equipment for surveyors, contractors and engineers. Eventually, the company plans to expand its engineering department, where future staffers would be utilized by other Stanley divisions. ◀ [www.cstsurvey.com](http://www.cstsurvey.com)



Purdue physics professor David Nolte (shown above) holds a prototype BioCD that he developed with Fred Regnier, a Purdue professor of chemistry. BioCDs use a modified version of the technology already in use in standard CD players, but instead of containing digital data, the surface holds molecules that detect levels of proteins in blood samples. (Purdue News Service photo/Dave Umberger)



Michael Dwan, CEO of SFI Systems located in the Purdue Research Park, makes the winning \$25,000 presentation in the Opportunity for Indiana Business Plan Competition. (Purdue News Service photo/David Umberger)

## Internship program benefits Park companies, Purdue students

Since the program was established one year ago, more than 20 companies in Purdue Research Park have served as hosts for interns participating in Purdue University's Interns for Indiana program.

As part of the program, which is supported by a three-year, \$3.5 million grant from Lilly Endowment Inc., Purdue identifies students for internships and places them in startup companies statewide to get hands-on work experience.

"We've gotten phenomenal feedback from companies from all over Indiana about the quality of work and professionalism of the students who are acting as the most positive kind of ambassadors to help support the state's economy," said Don Gentry, special assistant to the Purdue provost.

The fields in which students interned called for experience in a wide variety of areas, including computer programming, Web design, marketing, human resources, management, technical writing, foreign language translation and even aerospace engineering.

Students have interned in companies throughout the state in cities such as Valparaiso, Michigan City, Portage, Chesterton, Carmel, Indianapolis and Fort Wayne. More than 20 companies in the Purdue Research Park in West Lafayette served as hosts for interns who have helped with projects as varied as writing software help manuals, testing explosives, researching alternative fuels and developing health-care products.

Julie Sievers (shown right), a senior in materials engineering from Peoria, Ill., has been working at Swift Enterprises, a company in Purdue Research Park that performs research and development in propulsion, prototyping of power and propulsive hardware. She has been trying different methods to enhance the performance of fuel cells in order to bring down the price of fuel.

"We were given projects at the beginning of the summer with specific goals," Sievers said. "It's been really exciting because we know what we are working on will eventually be put to use."

Many companies report benefits from having Purdue interns on staff. Candice Kissinger, senior vice president of research at Bioanalytical Systems Inc. in Purdue Research Park, said her company accepted a student for a specific task, but he has been able to expand the scope of his duties to work on another problem.

"I've seen far more progress in the past six weeks than I'd seen in the several years that we've worked on this problem," Kissinger said. "He has contributed fresh insights and energy to the project, which I hope will soon evolve into a product that we fully intend to manufacture, sell and also use in our own contract research labs." ◀



# TECH TALK

*Purdue's 'Technology Roadshows' bring technologies directly to investors, entrepreneurs*

**P**urdue University is taking its emerging technologies on the road, looking for entrepreneurs and investors who are interested in bringing these innovations to market.

In 2005, Purdue held "Technology Roadshows" in Indianapolis, Anderson, Fort Wayne and West Lafayette.

The purpose of Purdue's Early Stage Showcase II events is to interest participants in becoming more involved with the successful commercialization of new startups formed from the results of research and development conducted at Purdue.

During each showcase event, an audience of approximately 50 people listens to a handful of 20-minute presentations featuring the technologies.

"We're taking an aggressive approach to business formation by marketing our technologies directly to management teams from groups, such as Indiana's entrepreneurs and angel investors. They, in turn, develop relationships with our inventors that accelerate our commercialization efforts," said Joseph B. Hornett, Purdue Research Foundation's senior vice president, treasurer and COO.

Among the innovations highlighted were software- and hardware-based solutions for people with disabilities; software and hardware for network security implementations; technology to improve hardwood tree nurseries; advanced nano-biomaterials with applications in cardiovascular, orthopedic implants, neural and soft tissues; technology for hydrogen fuel generation for micro-scale fuel cell devices; and a biomedical device for intubation of patients with greater accuracy.

These technologies are in various stages of commercialization, some developing under a company structure and others fresh out of the university's laboratories.

"One of our top priorities is to broaden the availability of these technologies to the entrepreneurial communities and angel investment network across the state," said Steven Gerrish, the foundation's director of the Office of Business Development.

For more information on upcoming roadshows, contact Gerrish at (765) 496-7378 or [srgerrish@prf.org](mailto:srgerrish@prf.org).



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