The mission of the Purdue Research Foundation is to advance Purdue University’s quest for preeminence in discovery, learning and engagement through effective stewardship of assets.

The Foundation seeks to:

» Support Purdue’s discovery, learning and engagement priorities in close association with the University’s strategic plan implementation and related administrative functions.

» Provide flexibility of resources for their agile deployment to assist Purdue.

» Manage Purdue’s endowment portfolio.

» Advance giving to Purdue through the University Development Office.

» Develop, manage and deploy real estate and financial assets.

» Realize Purdue’s translation of research through the Office of Technology Commercialization.

» Oversee Purdue’s intellectual property management.

» Engage Purdue Foundry and Purdue Research Park to support startups and business incubation.

» Foster Purdue’s role in economic development.

Purdue Research Foundation celebrated another banner year in 2015.

Innovation and commercialization continued to take center stage in our strategic goals to advance the mission of Purdue University. For a second consecutive year, we posted record-breaking numbers in commercialization activities highlighted by 40 startups, of which 25 have licensed Purdue intellectual property. In addition, we received 178 issued patents, filed 317 invention disclosures and licensed 241 Purdue technologies to 131 entities.

In addition, Purdue’s patented technologies are licensed in more than 100 countries in five continents across the globe. This year, Purdue was ranked 16th in the world among universities granted U.S. utility patents in 2014, according to a new report released by the National Academy of Inventors (NAI) and the Intellectual Property Owners Association (IPO).

These numbers are not just about creating startups, but what happens once a startup is created. Through programs like the Purdue Foundry, we work to help them be successful. Of the 24 startups created in FY2014, 23 are actively advancing their product and service development; raising venture capital and other capital; creating jobs for Indiana residents; and moving our economy forward. For example, those same 24 startups brought in more than $25 million in local, state, federal and private funding in the first year following their formation. We are already receiving royalties from their products, but what matters even more than that is these startups are improving lives around the globe through the commercialization of Purdue innovations.

While working diligently to further advance the commercialization of Purdue technologies, we continue to support the other important aspects of our mission – purchasing and selling real estate, providing accounting and financial services, and holding gifts and endowments for Purdue.

As Indiana’s land-grant university and an internationally recognized research institution, Purdue has a tremendous responsibility to educate future leaders, serve our agricultural society, foster partnerships across the globe, conduct life-changing research and move innovations to the public. In this report, you will read about Purdue’s life-changing innovations, new initiatives developed and implemented, and the economic impact of the Purdue Research Foundation in its quest to fulfill its mission to Purdue University.

Dan Hasler
President and Chief Entrepreneurial Officer
Purdue Research Foundation
Our History

The Purdue Research Foundation was established in 1930, making it one of the oldest university-affiliated foundations in the United States. The Foundation was created on the tangible belief that as Indiana’s land-grant institution, Purdue University is committed to innovating and commercializing technologies that can help Indiana residents and our global society live longer, healthier, happier lives.

Two Indiana business and philanthropic leaders, David E. Ross, a prolific Indiana inventor, and Josiah K. Lilly, then president of Eli Lilly and Co., each provided $25,000 to establish the Foundation. Today the Foundation’s endowment is more than $3 billion.

The primary purpose of the Foundation is to support “new industries growing out of Purdue University research,” to foster collaborations with businesses and to serve the mission of the University, according to a 1946 biography about Ross.

The Foundation achieves these goals through the stewardship of the Purdue Research Foundation Office of Technology Commercialization, Purdue Foundry and Purdue Research Park, all entities that work to move Purdue innovations to the public through intellectual property protection, licensing deals, startup creation, business incubation, and corporate and public partnerships.

The Foundation also accepts gifts, acquires property and performs other actions to support the mission of the University.

In 2015, the Foundation established the Purdue Research Park Aerospace District near the west side of the University campus. This new Park is the fifth Purdue Research Park in Indiana. The 980-acre District encompasses the Purdue University Airport and the Maurice J. Zucrow Laboratories. Rolls-Royce became the first partner when it committed to move into a 40,000-square-foot facility where it will conduct R&D for jet engine components.

These improvements help Purdue Research Foundation serve Purdue University and transform our future.
2015 Strategic Highlights

Purdue Research Foundation introduced a number of strategic initiatives to further serve Purdue University and its students, staff and faculty as well as residents in the state of Indiana.

Detailed information about these initiatives is included in this annual report. Highlights include:

$2.019 billion “Ever True” campaign for Purdue

Purdue’s “Ever True” campaign goal is to raise $2.019 billion by 2019, the 150th anniversary year of Purdue’s founding and the 50th anniversary year of alumnus Neil Armstrong’s walk on the moon.

Purdue InnovationX License

Purdue InnovationX License provides qualified Indiana-based startups and established companies with an option to license a Purdue University patented innovation with minimal upfront costs and favorable license terms.

FoundryX

FoundryX invites industry leaders and business experts with early-stage startups to connect with Purdue innovations that are available to license and to collaboratively drive new technologies to market.

Purdue Research Park Aerospace District

The 980-acre Purdue Research Park Aerospace District in West Lafayette will house public and private aerospace research facilities that will provide jobs for Indiana residents and learning opportunities for Purdue students.

WomenIN

WomenIN will provide resources normally reserved for Purdue Foundry’s entrepreneurial clients, to all women in Indiana as a way to engage more women in technology and entrepreneurship.

Kurz expansion in Purdue Research Park

A $12 million, 60,000-square-foot expansion of the Herman and Heddy Kurz Purdue Technology Center will provide additional needed space for startups and established companies.

Purdue ranked 16th among worldwide universities granted U.S. patents

With 93 U.S. utility patents issued last year, Purdue was ranked 16th in the world among universities receiving patents, according to a new report released by the National Academy of Inventors and the Intellectual Property Owners Association.
980-acre Purdue Research Park Aerospace District opens, recruits first company

The Purdue Research Park Aerospace District in West Lafayette was created to house public and private aerospace research facilities that will provide jobs for Indiana residents and learning opportunities for Purdue students.

The aerospace district encompasses Purdue University Airport, Purdue Aviation (formerly Lafayette Aviation) and the Maurice J. Zucrow Laboratories. The site has been named an Indiana Certified Technology Park by the Indiana Economic Development Corporation.

Rolls-Royce became the first company to be recruited to the district, with Purdue Research Foundation constructing a 55,000-square-foot facility to house an R&D group for the company. The facility will assist Rolls-Royce in designing, developing and testing jet engine components; collaborating with Purdue researchers through corporate partnerships; and recruiting future talent of Purdue student interns and graduates.

The infrastructure and pedestrian area that run by the new aerospace district is under improvement as well through a $60 million West Lafayette project to be matched by Purdue University. The project includes two-way traffic lanes, wider walkways and separate bike trails over a two-mile stretch along State Street/U.S. 26 near and through the Purdue campus.

The project includes the purchase of Lafayette Aviation by Purdue aviation technology alumnus Scott Niswonger and Purdue Research Foundation.
“Being a Purdue Research Park tenant provides additional legitimacy to startup and early-stage companies because of the quality of the facilities and the strength of the Purdue brand. We have found Park officials to be very flexible and willing to work with us as we have grown, and will continue to grow - doubling our office space and creating 50 new jobs by 2019.”

- Mikel Berger, co-founder, DelMar Software Development
Purdue Research Park to build $12 million expansion

A $12 million, 60,000-square-foot expansion of the Herman and Heddy Kurz Purdue Technology Center in Purdue Research Park will provide needed space for startups and established companies. Although the new space won’t open until early 2017, about two-thirds, or 40,000 square feet, already has been leased.

The expansion plans include a 10,000-square-foot collaborative space for co-working and meetings; a café; built-in wet and dry lab space for research activities; an expanded business center for mail services, copying and other office needs; and an additional 110 parking spaces added to the current 316 for the facility.

Purdue breaks ground on $50 million Indiana Manufacturing Institute

Officials broke ground for the Indiana Manufacturing Institute, which is part of a $50 million project where Purdue researchers will advance research of composite materials manufacturing to develop more energy-efficient technologies.

The 62,000-square-foot institute, which is slated to open in mid-2016, is part of a $259 million U.S. Department of Energy initiative to support President Obama’s National Network for Manufacturing Innovation. About 30,000 square feet in the Purdue Research Park-based Indiana Manufacturing Institute will be used for Purdue research. The other 32,000 square feet is reserved for public or private enterprises interested in composite materials research collaboration with the university.
Joint partnership bolsters cybersecurity in Indiana

Lt. Gov. Sue Ellspermann, who chairs the Indiana Counterterrorism and Security Council, joined Purdue University Chief Information Officer Gerry McCartney and Intel Vice President Rick Echevarria to announce the opening of the state of Indiana Security Operations Center (SOC).

Located in Purdue Research Park, the SOC is staffed by a combination of state employees and Purdue students who monitor security incidents across the state of Indiana’s computer network. The students are employed as part of the Purdue Pathmaker Internship Program, which provides career-relevant internships to students on or near campus.

Phytoption wins 2015 BioCrossroads New Venture Competition

Phytoption LLC was named the top company among six finalists in the 2015 BioCrossroads New Venture Competition during the Indiana Life Sciences Summit. The company transforms high-value, insoluble ingredients into soluble solutions for food, supplement, cosmetics and pharmaceutical uses.

NIH awards $1 million grant to life sciences firm

The National Institutes of Health has awarded a $1 million grant to bioVidria Inc. to further develop a chromatography column technology that helps identify impurities in protein-based drugs.

These drugs most commonly are used to help patients with cancer or autoimmune diseases like Crohn’s disease, multiple sclerosis, Type I diabetes and lupus. The company is based on research conducted by Mary J. Wirth, the W. Brooks Fortune Distinguished Professor of Chemistry at Purdue University.
Purdue Technology Center of Northwest Indiana celebrates 10 years

The Purdue Technology Center of Northwest Indiana celebrated its 10-year anniversary in 2015. It opened in 2005 at 9800 Connecticut Drive in Crown Point, Indiana, and was expanded in 2010 to 60,000 square feet.

The center was named a Certified Technology Park in 2006 by the Indiana Economic Development Corporation and is home to almost 30 companies engaged in health care, information technology, engineering and communication.

iPexpert Inc. offers Cisco certification prep classes

iPexpert Inc., a new tenant in the Purdue Research Park of Northwest Indiana, helps its clients prepare to take the CCIE Collaboration certification exam. CCIE certification is available on several subjects including Routing and Switching, Data Center, Wireless and Security.

U.S. Department of Energy recognizes Clean Cities leaders

The U.S. Department of Energy honored Carl and Lorrie Lisek for reducing northern Indiana’s and Wisconsin’s dependence on petroleum in transportation. Carl is executive director of South Shore Clean Cities, and Lorrie is executive director of Wisconsin Clean Cities. Both Clean Cities organizations are managed by the Lisek’s company Legacy Environmental.

From 2011 to 2014, South Shore Clean Cities reduced the equivalent of more than 41,100,000 gallons of gasoline and 280,000 tons of greenhouse gases. Wisconsin Clean Cities reduced the equivalent of more than 40,200,000 gallons of gasoline and almost 170,000 tons of greenhouse gases.
Boiling Point to market Purdue-discovered adhesive

Boiling Point LLC, which established a partnership with Purdue Foundry and Purdue Technology Center of Southeast Indiana to commercialize Purdue University innovations, has optioned an adhesive technology developed by a Purdue chemist.

The adhesive was developed by Jonathan Wilker, professor in Purdue’s Department of Chemistry. It synthetically mimics the adhesives produced by saltwater mussels to affix themselves to boats and rocks.

President and CEO Michael Pattison said the option allows Boiling Point to market the technology to prospective licensees including commercial adhesive manufacturers, biomedical companies and startups.

Poly Group commercializes Purdue antimicrobial coating

A Purdue University innovation that has been shown to limit long-term bacterial growth is being developed for commercialization by Poly Group LLC. The patented technology, called “Nouvex™,” is a polymer that may render treated materials antimicrobial with regard to bacteria, viruses and other harmful organisms.

“Nouvex has been tested and shown to kill 99.9 percent of most bacteria in less than 10 minutes and can stop the contamination cycle that spreads disease,” said Craig Kalmer, chief operating officer for Poly Group. “Nouvex does this without toxicity to the materials.”

The technology can be supplied as a solid or a solution in different solvents for ease of integration, and has the potential to be incorporated into a wide variety of products such as cleaners, textiles, coatings, paints, wall coverings and plastics.
DSTest Laboratories tests, develops dietary supplements

DSTest Laboratories LLC was founded in 2014 by Daniel Sliva, Ph.D., who has more than 20 years of experience in academic research in evaluating dietary supplements. The company can certify manufacturers’ claims of their products’ anti-cancer, anti-diabetic, anti-inflammatory and anti-obesity traits.

The company also has developed two dietary supplements under the 4PetsHealth brand: a natural anti-aging product and a natural anti-inflammatory product. These vegetarian supplements are available in capsule form.

Scale Computing expands into Canada

Scale Computing, the leader in hyperconverged storage, server and virtualization solutions for midsized users, has expanded its operations in Canada to support increasing demand for its HC3® solutions from partners and customers.

From its new hub in Toronto, including new sales and support staff, Scale Computing can nurture its growing channel relationships throughout the country.

Energy Harness Corp. manufactures LED lighting

Managers of commercial and industrial facilities as well as lighting installers, electrical contractors and resellers may benefit from work by Energy Harness Corp.

“At Energy Harness, we control our own manufacturing, which keeps the quality high. Our mission is to provide affordable lighting with a long lifespan,” said Patricio M. Daneri, managing director of the company’s Midwest region. “We currently manufacture more than 60 percent of our own products in the United States, and we are on track to bring the remaining 40 percent to the country by the second quarter of 2016.”
Purdue jumps to 16th among worldwide universities granted patents

Purdue’s patented technologies are licensed in more than 100 countries in five continents across the globe. Purdue was ranked 16th in the world among universities granted U.S. utility patents in 2014, according to a new report released by the National Academy of Inventors (NAI) and the Intellectual Property Owners Association (IPO).

This ranking in patent activity is up from the previous year’s spot of 27th. Purdue had 111 U.S. utility patents issued, on which the Purdue Research Foundation was listed as the first assignee.

These patents come from innovations in Purdue University’s core research areas including engineering, agriculture, science, computer science, technology, biomedicine, pharmaceuticals, health sciences, IT and veterinary medicine.


Purdue Research Foundation’s Office of Technology Commercialization maintains a list of patented and copyrighted innovations developed out of Purdue available for licensing. For more information visit:

- www.prf.org/otc/technologies/index.html
- youtube.com/PurdueResearchPark

Transforming the future through the translation of Purdue innovations

Purdue Research Foundation’s Office of Technology Commercialization operates one of the most comprehensive technology transfer programs among leading research universities in the United States. The Office’s primary responsibilities include protecting, translating and commercializing Purdue’s intellectual property.

The Office plays a leading role in the success of the economic development initiatives of the Purdue Research Foundation to benefit the University’s academic activities.

The professionals in the Office work closely with Purdue innovators through the process of understanding University policies, filing patents, licensing discoveries and commercializing inventions.

Purdue University innovation wins FDA Food Safety Challenge

The U.S. Food and Drug Administration awarded the 2014 FDA Food Safety Challenge grand prize to a team from Purdue University. The recognized technology could help government agencies and the food industry detect salmonella more quickly.

Purdue’s entry, “Physical method for concentrating Salmonella to detectable levels using automated microfiltration,” was developed by a team of researchers led by Michael Ladisch, distinguished professor in the Department of Agricultural and Biological Engineering and Weldon School of Biomedical Engineering and director of Laboratory of Renewable Resources Engineering. Other team members include Eduardo Ximenes, bioprocess research scientist at LORRE; Kirk Foster, senior research engineer, and Jim Jones, software development, in the Weldon School of Biomedical Engineering; Tommy Kreke and Xingya Liu, research staff; Seockmo Ku, graduate student, and Haley Roos and Dayanne Moras, undergraduate students in LORRE; and Amanda Deering, research assistant professor in the Department of Food Science.

The team received $300,000 in prize money to further develop the technology.

Peer Comparisons

The data in the above graph compares Purdue’s technology transfer activities to select peer universities in the following categories: total number of new disclosures, new U.S. patent applications and commercialization deals finalized.

* Based on 2014 peer institution data compiled by the Office of Technology Commercialization and the Association of University Technology Managers (AUTM). Note: 2014 data is the most current available from AUTM.

Purdue sets record in startup, commercialization activities for second year

For a second consecutive year, Purdue University posted record-breaking numbers in commercialization activities for the fiscal year ending June 30, 2015, highlighted by 40 startups, of which 25 are based on intellectual property licensed from Purdue.

Increases in commercialization activities from FY14 to FY15 filed through the Purdue Research Foundation Office of Technology Commercialization and Purdue Foundry include:

* Global and U.S. patents issued: from 156 to 178 for a 14 percent increase.
* Invention disclosures filed: from 284 to 317 for a 12 percent increase.
* Licensing deals: 241 technologies licensed to 131 entities.

Purdue food safety technology ready for commercial development

Quality control facilities in the food industry and the federal government can use new technology developed by a team of Purdue University researchers to speed up the process of detecting pathogens like Salmonella in fruits, vegetables, meat and other foods.

Michael Ladisch, distinguished professor in the Department of Agricultural and Biological Engineering and Weldon School of Biomedical Engineering and director of the Laboratory of Renewable Resources Engineering, led the team that created a method to process food samples much faster than traditional methods.

“The challenge the FDA, U.S. Department of Agriculture and the food industry face is being able to test more samples more quickly, so that the time between when a food pathogen might be present and when it is detected would be shortened,” Ladisch said. “Our technology makes it possible to process the samples more quickly, in hours instead of days.”

A video about the technology is available at youtu.be/pdJSDPnmIfs. For more information, contact OTCPatent@prf.org

Purdue researchers report sweet corn could make animal vaccines safer

Animal vaccine manufacturers could benefit from the work of two Purdue University researchers who are testing biomaterial made from sweet corn to make vaccines safer.

Harm HogenEsch, a professor in the College of Veterinary Medicine, and Yuan Yao, an associate professor in the College of Agriculture, are developing biomaterial from a non-genetically modified variety of sweet corn to use as an adjuvant in animal vaccines. Adjuvants are substances that are added to vaccines to stimulate an immune response and to improve the performance of vaccines.

“The conventionally used oil emulsions and aluminum are poorly biodegradable and can induce a long-lasting inflammatory response at the injection site. Especially for food animals, that’s an issue,” he said. “The corn-derived biomaterial being developed and tested at Purdue may address these issues in a sustainable way.”

For more information, contact OTCPatent@prf.org

Chemical genetic approach developed to identify substrates in breast cancer

Kavita Shah, the Walther Associate Professor of Chemistry in the College of Science at Purdue, developed a chemical genetic approach to identify additional AA substrates in breast cancer for use as potential targets for treatment of breast cancer. This approach led to the identification of several new substrates of AA, including PHLDA1.

This chemical approach has the potential for targeted therapy with fewer harmful side effects than chemotherapy.

For more information, contact OTCPatent@prf.org
Purdue-developed technology could provide real-time data, reduce cost, time overruns at construction sites

Project managers at construction, mining and agricultural sites could benefit from technology developed by Purdue University civil engineers that could provide an immediate overview and help control cost and time overruns.

Phillip Dunston, professor in Purdue’s Lyles School of Civil Engineering, and Joseph Louis, a doctoral candidate, have created technology that provides real-time, actionable insights to a project site manager. The technology combines sensors at the site and embedded on equipment with an operation model of the project site.

“Our technology puts the sensor data into the context of the operations, which allows the manager to monitor progress; make real-time, data-driven operational decisions; and automate the worksite at an operational level,” Louis said.

For more information, contact OTCPatent@prf.org

Sensor detects glucose in saliva and tears for diabetes testing

Purdue researchers have created a new type of biosensor that can detect minute concentrations of glucose in saliva, tears and urine and might be manufactured at low cost because it does not require many processing steps to produce.

“It’s an inherently non-invasive way to estimate glucose content in the body,” said Jonathan Claussen, a former Purdue University doctoral student and now a research scientist at the U.S. Naval Research Laboratory. “Because it can detect glucose in the saliva and tears, it’s a platform that might eventually help to eliminate or reduce the frequency of using pinpricks for diabetes testing. We are proving its functionality.”

The sensor has three main parts: layers of nanosheets resembling tiny rose petals made of a material called graphene, which is a single-atom-thick film of carbon; platinum nanoparticles; and the enzyme glucose oxidase.

Each petal contains a few layers of stacked graphene. The edges of the petals have dangling, incomplete chemical bonds, defects where platinum nanoparticles can attach. Electrodes are formed by combining the nanosheet petals and platinum nanoparticles, then the glucose oxidase attaches to the platinum nanoparticles. The enzyme converts glucose to peroxide, which generates a signal on the electrode.

For more information, contact OTCPatent@prf.org
Available Technologies

New system generates electricity from solar energy and heat

A Purdue technology generates electricity from solar energy and heat at a high efficiency up to 51 percent. It first splits the solar spectrum into two wavelength ranges, high and low energy photons, and then converts the high energy photons directly into electricity using photovoltaic cells, capturing the low energy photons as heat using a reflecting selective solar absorber. The heat is then converted to electricity through a thermoelectric generator, high-temperature heat exchanger, and mechanical engine.

This approach could have potential applications in solar, energy generation and thermoelectrics industries.

For more information, contact OTCPatent@prf.org

In-package plasma process quickly, effectively kills bacteria

Exposing packaged liquids, fruits and vegetables to an electrical field for just minutes might eliminate all traces of foodborne pathogens on those foods, according to a Purdue University study.

Kevin Keener looks for new ways to kill harmful bacteria, such as E. coli and Salmonella that contaminate foods and cause serious illnesses and deaths. His method uses electricity to generate a plasma, or ionized gas, from atmospheric gases inside the food package.

“Even in the most resistant bacteria-growing media, 45 seconds of treatment gave us complete elimination of the E. coli,” Keener said. “Under a microscope, we saw holes forming in the cell walls of the bacteria.”

For more information, contact OTCPatent@prf.org

New processing technology converts packing peanuts to battery components

Researchers at Purdue University have shown how to convert waste packing peanuts into high-performance carbon electrodes for rechargeable lithium-ion batteries that outperform conventional graphite electrodes, representing an environmentally friendly approach to reuse the waste.

Vilas Pol, associate professor in the School of Chemical Engineering and School of Materials Engineering, and Vinodkumar Etacheri, Purdue postdoctoral research associate, have shown how to manufacture carbon-nanoparticle and microsheet anodes from polystyrene and starch-based packing peanuts. Research findings indicate that the new anodes can charge faster and deliver higher “specific capacity” compared to commercially available graphite anodes, Pol said.

For more information, contact OTCPatent@prf.org
Wireless sensor enables study of traumatic brain injury

A new system that uses a wireless implant has been shown to record for the first time how brain tissue deforms when subjected to the kind of shock that causes blast-induced trauma commonly seen in combat veterans.

“Blast-induced traumatic brain injury, already one of the most significant wounds throughout Operation Enduring Freedom and Operation Iraqi Freedom, has become increasingly prevalent,” said Riyi Shi, a professor in Purdue University’s Department of Basic Medical Sciences, College of Veterinary Medicine, and Weldon School of Biomedical Engineering.

“About 167,000 blast-induced traumatic brain injury cases have been documented during both deployments alone.”

The consequences are dire, ranging from neurodegenerative diseases such as chronic traumatic encephalopathy to neuropsychiatric conditions such as depression and anxiety.

“These risks pose a substantial public health burden upon military members’ return to civilian life, as the conditions are generally chronic and involve lengthy and costly treatment courses both in terms of dollars and quality of life,” Shi said.

“To pursue targeted innovation of new preventative, diagnostic, and therapeutic measures, we must first develop a greater understanding of pathogenesis, the initiating mechanical events and the links between blast-induced damage and subsequent neuropathologies.”

The new research involves the use of a biocompatible “soft magnet” wireless sensor, inserted into the brains of laboratory rats. Because the gel-like magnet has mechanical properties similar to that of brain tissue, it is able to move with the brain when exposed to blast trauma, said Babak Ziaie, a professor of electrical and computer engineering and biomedical engineering.

For more information, contact OTCPatent@prf.org

“Smart capsule” is potential new drug delivery vehicle

A new “smart capsule” under development could deliver medications directly to the large intestines to target certain medical conditions.

“Usually, when you take medication it is absorbed in the stomach and small intestine before making it to the large intestine,” said Babak Ziaie, a professor of electrical and computer engineering at Purdue University. “However, there are many medications that you would like to deliver specifically to the large intestine, and a smart capsule is an ideal targeted-delivery vehicle for this.”

Such an innovation might be used to treat of irritable bowel syndrome, Crohn’s disease and a potentially life-threatening bacterial infection called Clostridium Difficile in which the body loses natural microorganisms needed to fight infection.

People are sometimes treated for C. difficile by transplanting feces from another person into the patient’s large intestine, which provides vital microbes. However, it might be possible to convert the microbes into a powder through freeze-drying and deliver them with smart capsules instead, Ziaie said.

Researchers tested the smart capsule with a “fluidic model” that mimics the gastrointestinal tract and also using an experiment that recreates the changing acidity and peristalsis of the stomach and intestines as food passes through the digestive system.

For more information, contact OTCPatent@prf.org

Purdue researchers develop oxygen generator to aid cancer treatment

Babak Ziaie and Song-Chu Ko, researchers at Purdue University have developed an ultrasonically powered, implantable micro-oxygen generator that can increase oxygen levels in a tumor target during radiation treatment.

The technology has the potential to increase the effectiveness of cancer radiation treatments, its small design, which can be implanted using a hypodermic needle, allows for easier implantation than current methods and the device is powered using an external source.

For more information, contact OTCPatent@prf.org
Purdue Research Foundation recognized almost 80 Purdue University faculty and staff members whose discoveries received patents during the fiscal year. The eleventh annual Inventors Recognition Reception was held in the Kurz Purdue Technology Center in Purdue Research Park.

Purdue faculty and staff whose inventions were patented in the 2014-2015 fiscal year were:

- Harvey Abramowitz, College of Engineering, Mathematics and Science, Purdue University Calumet
- Muhammad A. Alam, College of Engineering
- Jan P. Allebach, College of Engineering
- Joerg Appenzeller, College of Engineering
- Aaron Ault, College of Engineering
- Euiwon Bae, College of Engineering
- Saurabh Bagchi, College of Engineering
- Donald E. Bergstrom, College of Pharmacy
- Arun K. Bhunia, College of Agriculture
- Charles A. Bouman, College of Engineering
- William J. Chappell, College of Engineering
- Gary Cheng, College of Engineering
- Ji-Xin Cheng, College of Engineering and College of Science
- George T.C. Chiu, College of Engineering
- William S. Cleveland, College of Science
- Christopher W. Clifton, College of Science
- R. Graham Cooks, College of Science
- Mark Cushman, College of Pharmacy
- V. Jo Davission, College of Pharmacy
- David S. Ebert, College of Engineering
- Abdullah Eroglu, College of Engineering, Technology and Computer Science, Indiana University-Purdue University Fort Wayne
- Timothy S. Fisher, College of Engineering
- Suresh V. Garimella, Executive Vice President for Research and Partnerships and College of Engineering
- Arun Ghosh, College of Science and College of Pharmacy
- Michael Gulich, Office of University Sustainability
- Wei He, College of Business, Purdue University North Central
- E. Daniel Hirleman, Chief Corporate and Global Partnerships Officer and College of Engineering
- Tamm Hoggatt, Office of University Sustainability
- David B. Janes, College of Engineering
- Qing Jiang, College of Health and Human Sciences
- Kevin M. Keener, College of Agriculture
- David S. Koltick, College of Science
- Robert A. Kramer, College of Engineering, Mathematics and Science, Purdue University Calumet
- James Krogmeier, College of Engineering
- Michael R. Ladisch, College of Agriculture and College of Engineering
- Markus A. Lill, College of Pharmacy
- Verlin Lindley, Discovery Park
- David Love, College of Engineering
- Philip S. Low, College of Science
- Abish Malik, College of Engineering
- Scott McCluckey, College of Science
- Saeed Mohammad, College of Engineering
- Nathan Mosier, College of Agriculture and College of Engineering
- Issam Mudawar, College of Engineering
- Eric A. Nauman, College of Engineering
- Philip E. Nelson, College of Agriculture
- Corey P. Neu, College of Engineering
- William J. Chappell, College of Engineering
- David Nolte, College of Science
- Zheng Ouyang, College of Engineering and College of Science
- Steven D. Pekarek, College of Engineering
- Libbie S. W. Pelter, College of Engineering, Mathematics and Science, Purdue University Calumet
- Dimitrios Peroulis, College of Engineering
- D. Marshall Porterfield, College of Agriculture and College of Engineering
- Sunil Prabhakar, College of Science
- Bartek Rajwa, Bindley Biosciences Center
- Karthik Ramani, College of Engineering
- Sanjay G. Rao, College of Engineering
- J. Paul Robinson, College of Veterinary Medicine and College of Engineering
- Kaushik Roy, College of Engineering
- Farshid Sadeghi, College of Engineering
- Sandra San Miguel, College of Veterinary Medicine
- Cagri A. Savran, College of Engineering
- Sean Scott, College of Engineering
- Riyi Shi, College of Veterinary Medicine and College of Engineering
- Yung C. Shin, College of Engineering
- Garth J. Simpson, College of Science
- Mikhail Slipchenko, College of Engineering
- Scott D. Sudhoff, College of Engineering
- Bernard Tao, College of Agriculture and College of Engineering
- Lynne S. Taylor, College of Pharmacy
- David H. Thompson, College of Agriculture
- John J. Turek, College of Veterinary Medicine
- W. Jason Weiss, College of Engineering
- Yuan Yao, College of Agriculture
- Yuehwhern Yih, College of Engineering
- Babak Ziaie, College of Engineering

R. Graham Cooks, the Henry B. Hass Distinguished Professor of Chemistry at Purdue University, was awarded 20 patents in FY2015. Pictured are President Mitchell E. Daniels; Cooks receiving his awards; and PRF CEO Dan Hasler.
“I’ve thought about commercializing my collagen technology for several years, and with all the changes that have taken place in the past three years I knew the time was right. Purdue’s support system for university entrepreneurs is the best it has ever been. I now have the resources to develop a business plan, secure funding and publicize my startup.”

- Sherry Harbin
  Founder, GeniPhys LLC
  Professor of Biomedical Engineering and Basic Medical Sciences with more than 95 patents, Purdue University

Harbin was named winner of the 2015 Outstanding Commercialization Award for Purdue Faculty. The award is given annually to a faculty member in recognition of outstanding contributions to, and success with, commercializing Purdue research discoveries. The award was established with an endowment gift from the Central Indiana Corporate Partnership Foundation.

A video about GeniPhys is available at youtu.be/vMnM5kI3vDl
Purdue Research Foundation’s Innovator Hall of Fame recognizes the contributions Purdue researchers and innovators have made to positively impact our global society.

Criteria for being named to the Purdue Innovator Hall of Fame

- Filed patent(s) for innovation(s) through the Office of Technology Commercialization, or
- Discovered and developed a technology that is widely used to help the global society through licensing or partnering with a company, or
- Founded or co-founded a successful company to commercialize an innovation, or
- Named a Purdue Outstanding Commercialization Award winner, or
- Recognized by federal research support agencies as a national leader in research and development, or
- Received local, state or federal funding to research and develop life-changing innovations, or
- Recognized by Purdue as a strong facilitator of entrepreneurial activities

Members for 2015

- Rakesh Agrawal, Winthrop E. Stone Distinguished Professor of Chemical Engineering, College of Engineering
- Alina Alexeenko, Associate Professor, School of Aeronautics and Astronautics, College of Engineering
- Arun Bhunia, Professor of Food Science Microbiology, College of Agriculture
- Bryan Boudouris, Assistant Professor of Chemical Engineering, College of Engineering
- Jean Chmielewski, Alice Watson Kramer Distinguished Professor of Chemistry, College of Science
- David Ebert, Silicon Valley Professor of Electrical and Computer Engineering, University Faculty Scholar, College of Engineering
- Gebisa Ejeta, Distinguished Professor, College of Agriculture, 2009 World Food Prize Laureate
- Phillip Fuchs, Professor Emeritus of Chemistry, College of Science
- Arun Ghosh, Ian P. Rothwell Distinguished Professor, Organic Chemistry/Medicinal Chemistry, College of Science, College of Pharmacy
- Dan Hirliman, Chief Corporate and Global Partnerships Officer, Office of Research and Partnerships
- Nancy Ho, Emeritus Research Professor, School of Chemical Engineering, College of Engineering
- Christine Hrycyna, Professor of Chemistry (Biochemistry/Chemical Biology), College of Science
- Kyle Hultgren, Director, Purdue University College of Pharmacy’s Center for Medication Safety Advancement
- Hilkka Kentämäa, Professor of Analytical Chemistry and Organic Chemistry, College of Science
- Sophie Lelièvre, Professor of Basic Medical Sciences and Cancer Pharmacology, College of Veterinary Medicine
- Eric Nauman, Professor of Mechanical Engineering and Biomedical Engineering, College of Engineering, and Basic Medical Sciences, College of Venterinary Medicine
- Philip E. Nelson, Schollie Chair Professor in Food Processing, retired, College of Agriculture, 2007 World Food Prize Laureate
- Zheng Ouyang, Professor, College of Engineering, College of Science
- Phillip Owens, Associate Professor, Department of Agronomy, College of Agriculture
- Kinam Park, Showalter Distinguished Professor of Biomedical Engineering, College of Engineering, Professor of Pharmaceutics, College of Pharmacy
- Libbie S. W. Pelzer, Associate Professor of Chemistry, College of Engineering, Mathematics and Science, Purdue University Calumet
- Zygmunt Pizlo, Professor of Psychological Sciences, College of Health and Human Sciences
- Timothy L. Ratliff, Robert Wallace Miller Director, Purdue University Center for Cancer Research, Distinguished Professor of Comparative Pathobiology, College of Veterinary Medicine
- Jenna Rickus, Professor of Biological Engineering, Department of Agricultural and Biological Engineering, Professor of Biomedical Engineering, Weldon School of Biomedical Engineering, College of Engineering, College of Agriculture
- Michael Scharf, Professor and O.W. Rolls/Orkin Chair, Department of Entomology, College of Agriculture
- Elizabeth M. Topp, Head, Department of Industrial and Physical Pharmacy, Dane O. Kildsig Chair in Industrial and Physical Pharmacy, College of Pharmacy
The Purdue Research Foundation Office of Technology Commercialization announced the 25 startups that comprise the “Class of 2015.”

The startups are based on patented Purdue University intellectual property and innovations. They meet the criteria as set by the Association of University Technology Managers, which means the new companies have licensed an innovation from a university, have funding in place, as well as a leadership team and a viable business plan.

AccuPS
Adaptive RF Corp.
AddiLat Inc.
Ag Techinventures LLC
Agsoil Analytics Inc.
Akanocure Pharmaceuticals Inc.
Anfiro

Boilermaker Health Innovations Inc.
Doclu LLC
Emulatus LLC
Ento Bio
Environmental Concrete Products LLC
GeniPhys LLC
Hettich Imaging Technology LLC
High Performance Imaging
Imagine Medical Device Inc.
Legacy Hardwoods LLC
Prehensile Technologies LLC
PURSPEC Technologies
Qura Inc.
Savran Technologies
SmartGait LLC
TeraDeep Inc.
Titanium Laser Tech Inc.
VinSense

In addition, there are other startups originating from Purdue “know-how” or are Purdue student-owned.

BioProcol
Caktus Music Inc.
Dunmo LLC
Flocklife
Gbox LLC
General Solutions LLC
Get Involved – Be the Change Inc.
Guarders
MirrorMirror LLC
Tyler and Bailey Films LLC
Scooter LLC
Spotter LLC
Tunr
Uprint LLC
Vortex

For more information about the Startup Class of 2015, visit otc-prf.org/startups
Cook Biotech Inc.

Cook Biotech marked its 20th anniversary in 2015, celebrating a dynamic history of innovation and teamwork. The Purdue Research Park-based company develops and manufactures advanced biologic tissue grafts engineered from natural tissue sources. The company’s wound healing technology has been used in more than five million medical applications across the globe, and the company employs about 150 people in West Lafayette.

Cook Biotech is a division of Cook Medical in Bloomington, Ind.

For more information, visit cookbiotech.com

Endocyte Inc.

In 2015, Endocyte, a biopharmaceutical company and leader in developing targeted small molecule drug conjugates, announced that clinical trial results for both quarter one and quarter two achieved continued success in escalating the dose of the folate and PSMA-targeted tubulysin SMDC’s, progressing the likelihood of success in the company’s expanded trials.

The company also announced that Alison Armour, M.D. was appointed to the position of chief medical officer and David Mozley, MD, was appointed vice president of imaging.

For more information, visit endocyte.com

Mobile Enerlytics LLC

Mobile Enerlytics, a company based on Purdue University technology that can extend the life of smartphone batteries, was chosen as one of 16 teams to participate in the Alchemist Accelerator program. The program is designed to assist startups whose revenue comes from enterprises rather than consumers.

The company also announced an App Energy Challenge to pinpoint software coding that results in wasted energy dissipation of mobile apps that run on the Android operating system, and remove it on behalf of the creators of the apps. Company leaders said the battery saving app has already benefited many clients in the app industry, reducing their app battery drain by 60 to 80 percent.

For more information visit, mobileenerlytics.com

SensorHound Inc.

SensorHound is a high-tech startup that specializes in software products that could reduce the cost of developing and operating networked embedded systems.

The company was awarded a Phase 1 SBIR grant worth $150,000 from the National Science Foundation and has received $75,000 from the Emerging Innovations Fund with a potential to receive an additional $75,000. SensorHound was also chosen to participate in the San Francisco-based Alchemist Accelerator’s program and was selected to be in the FOUNDER.org Class of 2015.

For more information, visit sensorhound.com
Speak Modalities LLC

Oliver Wendt, co-founder of SPEAK MODalities, a startup commercializing a technology to improve communication for children and families affected by severe, nonverbal autism, received the Education Tech Award given by TechPoint Mira Awards, received top honors at the 2014 International GAIN-TEN Business Pitch Challenge, and received $20,000 from the Elevate Purdue Foundry fund in 2015. Wendt was also the recipient of the Autism Society 2015 Outstanding Research of the Year award.

SPEAK MODalities is commercializing the Purdue University innovations SPEAKall! and SPEAKmore!

For more information, visit speakmod.com

Symic Biomedical

Symic Biomedical is a company developing a new category of therapeutics that could offer an innovative approach to treating disease. Symic secured $15 million in Series A financing led by Indiana-based Lilly Ventures, and established a strategic alliance with Copenhagen-based Nordic Bioscience A/S.

The company was also awarded a $1.5 million in NIH Phase II SBIR grant to develop its proteoglycan mimetic therapeutics to reduce vascular access failures in end stage renal disease.

For more information, visit symic.bio

Spensa Technologies Inc.

Spensa Technologies, an agriscience company that develops and markets precision agricultural technologies and specializes in pest management technologies, announced plans to create around 40 additional jobs by 2019. Spensa will invest nearly $700,000 to expand its operations. The company also announced Series A funding of $2.5 million in 2015.

The company launched OpenScout, a Web and mobile enabled application to help growers and consultants more efficiently scout insects. Open Scout is the third technology developed by Spensa Technologies. The Z-Trap and Mytraps.com products are currently used in five continents around the globe.

For more information, visit spensatech.com

Zero UI Inc.

A technology of Karthik Ramani, the Donald W. Feddersen Professor of Mechanical Engineering, is creating strong buzz at the Consumer Electronics Show and is being called one of three “Best Maker-Friendly Technology” of CES 2016. The device, called Ziro, made its debut at this year’s Consumer Electronics Show, which is the largest consumer electronics event in the world. Ziro is a hand-controlled robotics kit that allows users to wear a glove that connects through Bluetooth to a four-wheeled robot. Moving a hand, closing fingers or turning a palm moves the robot forward or back and makes it turn.

The technology, which was funded in part by the National Science Foundation, is being commercialized by Zero UI, a Cupertino, California-based company that specialized in 3D modeling technology.

The company was founded by Ramani, who serves as chief scientist for Zero UI, and Raja Jasti, who serves as CEO for Zero UI.

For more information, visit zeroui.com
Coffee Coals Inc.

Purdue Foundry client, Coffee Coals has developed a faster, more environmentally friendly way to grill by using coffee briquettes made from coffee grounds. The Coffee Coals technology makes the charcoal briquettes rigid, allowing the coal to heat faster and maintain heat longer than conventional briquettes. The company was founded by Purdue Alumnus Rich Bruins.

Coffee Coals was market tested in Sunspot Natural Market in West Lafayette, Indiana, and D & R Market in Lafayette, Indiana, both health food stores. The product proved so popular that Bruins is gearing up to expand the market base to serve other locations through the assistance of the Kickstarter program, a global crowd funding platform based in the United States that helps entrepreneurs develop their startups.

For more information, visit coffeecoals.com

Get Involved - Be The Change Inc.

Get Involved – Be the Change, a startup created by Purdue apparel design and technology student Emily Mishler, also a Purdue Foundry client, raises funds for nonprofits by designing scarves and selling them online. Each season the company picks a nonprofit to work with to build awareness for the cause and donates 100 percent of the funds raised.

The company has launched eight collections since its creation in 2014 and has donated more than $5,500 to various charities.

For more information, visit getinvolvedbethechange.org

General Solutions LLC

Founded by a Purdue mechanical engineering student Gregory Stillinger, General Solutions LLC is a company in West Lafayette, Indiana providing design, prototyping and short-run manufacturing services. The company works on anything from furniture construction to physics research.

The startup received help from Purdue Foundry and participated in LaunchBox, a program that helps Purdue inventors and founders find the value proposition of their ideas. Stillinger also set up his new shop at the Anvil, Purdue’s student and community co-working space.
Meemees

Meemees is a company commercializing a new social media application for iOS smartphones that allows for a faster connection to family and friends. The company was co-founded by Purdue student, Ryan Ma and his uncle William Ma, and was developed at the Anvil.

Meemees technology features a social networking application that is advertisement-free and spam-free and utilizes emoji for users to interact in a quick and easy way. The application contains both a newsfeed and chat feature that allows for sharing of updates and pictures with those in a user’s network for increased efficiency.

Mimir LLC

Mimir, a student-run computer technology startup based out of the Anvil, is commercializing a cloud-based classroom for computing courses that allows instructors to develop and students to complete programming projects. The company was co-founded by Prahasith Veluvolu, Jacobi Petrucciani and Colton Voege, all students in Purdue’s College of Science.

The company expanded its services this year by adding a fully automated computer science course that high schools can now offer their students. The company was accepted into the Y Combinator seed funding program in Silicon Valley, received $20,000 through the Elevate Purdue Foundry Fund, and was also nominated for the TechPoint Mira Awards.

For more information, visit mimirhq.com

MirrorMirror

MirrorMirror is a company commercializing a technology that utilizes a household mirror as a seamless gateway into virtual reality. Timothy Vincent and Matt Molo from the College of Science, and Nick Molo, John Lee and Joshua Berg from the College of Engineering have developed a mirror that can display, the time, weather, latest news and latest social media updates. An open source framework allows for configuration of the modules which comprise the mirror and facial recognition automatically loads the user’s profile as soon as they look into the mirror. The technology is also capable of synchronizing your home by displaying information from home automation products such as wireless thermostats, electronic door locks, Wi-Fi enabled light bulbs and more.

For more information, visit mirrormirror.glass

Spotter

Spotter, a startup out of the Anvil founded by Purdue College of Technology students, Daniel Golant and Christopher Price, created a device to track weightlifters’ activity. The company was the winner of the second annual Boiler Mini-Accelerator competition and was selected to attend Disrupt NY 2015, a technology conference for startup founders, technologists and investors in New York City.

Spotter is a low-cost device that tracks metrics for weightlifters. The device records how much weight a user lifts, the number of repetitions, the number of sets and then communicates that information directly to a user’s mobile device.
Purdue Research Foundation provides several options to ease the licensing process for Purdue faculty, staff and students and provides numerous entrepreneurial resources to guide and support their technology transfer and startup goals. Some options also help Indiana residents interested in licensing a Purdue innovation.

**Elevate Purdue Foundry Fund** - A $2 million fund created through collaboration among Purdue Foundry, Elevate Ventures and the Indiana Economic Development Corporation. Qualified Purdue-affiliated startups may apply for two tiers of funding: the Black Award, a $20,000 convertible nonrecourse note, and the Gold Award, for up to an additional $80,000 debt or equity.

**Emerging Innovations Fund** - Created as a partnership between the Purdue Research Foundation and the Burton D. Morgan Center for Entrepreneurship, the Fund brings together ideas, management and money to accelerate the commercialization of early-stage technologies in the Purdue community.

**Express Start-Up License** - Purdue innovators who are the founders of their first new venture formed to develop and commercialize their innovation may apply for an exclusive express license under a standard form of license with pre-set terms.

**Foundry Investment Fund** - Established through a partnership between Purdue Research Foundation and Cook Medical, the $12 million not-for-profit fund seeks to join with other investors to fund companies that are based on Purdue technology or expertise in human and animal health or plant sciences.

**FoundryX** - FoundryX invites industry leaders and business experts with early-stage startups to connect with Purdue innovations that are available to license and to collaboratively drive new technologies to market.

**Innovation Assessment Process** - Purdue innovators who file a qualified technology disclosure with the Purdue Research Foundation Office of Technology Commercialization will receive a decision within six months on whether OTC will continue commercialization support of the disclosed innovation. Should OTC decline to continue commercialization support, the innovator(s) may request a reconveyance of the intellectual property at that time.

**Innovation and Commercialization webpage** - The site is user-friendly, easy to navigate and focused on marketing inventions by providing links so researchers can get the help they need in every stage of commercializing an invention. The site also will help investors and collaborators partner with the university, create a startup and invest in technologies.

The website, innovation-entrepreneurship-purdue.com, provides resources on how to:

- Start a company
- Look for space
- Protect a technology
- Fund an innovation
- Build a prototype
- Collaborate with Purdue
- Solve a research question
- Find entrepreneurial programs
- Find interesting technologies
- Find investment opportunities
Intellectual property policy for students - The policy offers students clear ownership rights as long as the resources used were part of a course and were available to all students in the course; that the student was not paid by the university or a third party; and the class or project was not supported by a corporation or government grant or contract.

Purdue InnovationX License - Purdue InnovationX License provides qualified Indiana-based startups and established companies with an option to license a Purdue University patented innovation with minimal upfront costs and favorable license terms.

Startup Guide - This guide, developed by Purdue Research Foundation Office of Technology Commercialization and Purdue Foundry, is designed to ease the commercialization and startup process by providing a high-level overview and guide for Purdue innovators and entrepreneurs. While not providing all the answers, this guide will provide innovators with the basic knowledge about moving innovations to the market through licensing and startup creation. It can drive entrepreneurs to the Purdue Research Foundation Office of Technology Commercialization and Purdue Foundry professionals, where they can receive expert assistance to protect intellectual property and commercialize innovations through various available channels.

Trask Innovation Fund - The Purdue Research Foundation-managed Trask Innovation Fund (TIF) is a Purdue development mechanism to assist faculty with support to further commercial potential of technologies disclosed to the Purdue Research Foundation Office of Technology Commercialization. Funds are awarded under the advisement of the TIF Advisory Council and financial support is designed to provide an individual technology portfolio up to $50,000 for a period of six months.

Zero-fee, first option-to-license for SBIR/STTR-funded innovations - The zero-fee, first option-to-license is for companies that receive Small Business Innovation Research (SBIR) or Small Business Technology Transfer (STTR) awards and use at least 30 percent of the granted budget to support further research and development at Purdue.

For further assistance in identifying funding sources, contact Purdue Foundry. purduefoundry.com
Since its creation more than two years ago, the Purdue Foundry, located in Discovery Park’s Burton D. Morgan Center for Entrepreneurship, has served nearly 70 startups and more than 150 entrepreneurs. The entrepreneurial hub is managed by the Purdue Research Foundation and its team of intellectual property, business development, venture capital experts, and entrepreneurial professionals, who provide a more integrated approach to support entrepreneurs and move Purdue innovations from the university to the market.

“We have been able to activate a thriving entrepreneurial community via various programs and events, along with hitting consistent startup numbers that have tripled over the past two years,” said Greg Deason, Purdue Foundry’s executive director.

This year the Purdue Foundry announced two new initiatives to help Indiana entrepreneurs.

» FoundryX, a program that invites industry leaders and business experts with early-stage startups to connect with Purdue innovations that are available to license and to collaboratively drive new technologies to market. FoundryX will provide Indiana entrepreneurs and companies with additional incentives to stay in Indiana or conduct their primary research in the state.

» WomenIN, a program aimed to enrich the statewide entrepreneurial ecosystem by providing resources normally reserved for Purdue Foundry clients, to all women, and also is aimed to engage more women in technology and entrepreneurship. Members of the WomenIN program will have access to Purdue Foundry resources such as online ideation workshops, entrepreneur-in-residence assistance, and open invitations to quarterly networking events and educational opportunities.

For more information, visit purduefoundry.com

FY15 Foundry Affiliate Startups

AccuPS, LLC
Agsoil Analytics, Inc.
Akanocure Pharmaceuticals, LLC
Emulatus, LLC
GeniPhys, LLC
High Performance Imaging, LLC
Imagine Medical Device Inc.
Legacy Hardwoods, LLC
Prehensible Technologies, LLC
PurSpec Technologies Inc.
Savran Technologies LLC
SmartGait, LLC
Tera Deep, Inc.
VinSense, LLC
BioProcol
Caktus Music Inc.
Dunmo LLC
Flocklife
Get Involved – Be the Change Inc.
Guarders
Spotter LLC
After its second year of operation, Purdue University's student-run entrepreneurship co-working space called the Anvil, announced it has been the incubator to 13 student startups. The center has been so successful that the mission to serve student entrepreneurs has expanded to include community entrepreneurs, providing co-working space, networking and professional development opportunities.

Students partner with the Anvil on free coding club for youth
A junior high student and a Purdue University student have partnered with the Anvil, to bring an international coding organization for young people to Greater Lafayette at no cost to parents. The West Lafayette CoderDojo chapter has partnered with the Anvil to establish CoderDojoAnvil. The organization's mission is to be an open-source community that provides young people with free tools and guidance they need to learn to code.

Entrepreneurs to speak during Forge Innovation Series
This year the Anvil hosted the Forge Innovation Series, a speaking series that showcases Midwestern innovators and entrepreneurs, including a co-founder of Kickstarter, a company that helps people find funds for startups and other creative projects. Other speakers included Kristian Anderson, founder of Studio Science and co-founder of Gravity Ventures, TinderBox, Lessonly, Visible.vc and Pathagility, Johnny Park, CEO and founder of Spensa Technologies, and Illya Rehkter, CEO and co-founder of DoubleMap.

Workout technology startup wins 2nd annual Boiler Mini-Accelerator Competition
Spotter, a student-startup that created a device to track weightlifters' activity, took top honors and $5,000 during “Demo Day” at the second annual Boiler Mini-Accelerator Competition. The Boiler is a student-run business competition hosted by the Anvil. The competition takes place over eight weeks, and participants receive mentoring from industry leaders and experts, office space, workshops and funding to enable their startups to reach the next level.

Purdue student startup creates printing app to allow access to printing from smartphones
Purdue University students have developed an app that helps users print documents from smartphones to selected printers on campus, which could cut down on the time it takes to print. UPrint is a startup out of the Anvil, a co-working space at Purdue and was one of five finalists of the Boiler Mini-Accelerator Competition.
**Purdue Research Foundation**

- Gold Award, Newsletter/Newspaper Category, Tech Transfer Express eNewsletter
- Silver Award, Special Purpose Print Brochure, Helping Our Global Society: Purdue Startup Guide
- Silver Award, Special Purpose Website, Innovation and Entrepreneurship Landing Page

**Purdue Research Foundation University Development Office**

- Best of Show, Electronic, ADDY Awards
- Gold ADDY, American Advertising Federation ADDY Awards
- Silver ADDY, American Advertising Federation ADDY Awards

**Animated Dynamics**

- Mira Award – Tech Innovation of the Year
- BioCrossroads New Venture Competition, Third Place

**Nutrabiotix**

- EDGE Award, Established Businesses Category – Indiana Small Business Development Center

**Novilytic**

- R&D 100 Award – Novilplex Plasma Collection Card

**Phytoption**

- 2015 BioCrossroads New Venture Competition, First Place

**Scale Computing**

- Best of Show-Premier Award, Midsize Enterprise Summit West (MES) Conference
- Best Demonstration of ROI, MES Conference
- Best Midmarket Solution, Hardware, MES Conference
- Best Boardroom Case Study Presentation-Premiere, MES Conference
- Virtualization Company of the Year, Storage, Virtualization, Cloud (SVC) Awards

**SPEAK MODalities**

- Mira Award – Education Tech Award
- Autism Society – Outstanding Research of the Year

**SpeechVive**

- R&D 100 Award – IT/Electrical – R&D Magazine

**Ian Klein, Spero Energy**

- 30 Under 30 in Manufacturing & Industry – Forbes magazine

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Purdue Research Foundation’s Department of Marketing and Communications directs all earned, owned and paid media for the Foundation, Purdue Research Park, Purdue Foundry, Anvil and Purdue Office of Technology Commercialization.

The Department’s marketing strategies for the past year emphasized technology transfer activities of Purdue innovations and an increased focus on deliverables of patented technologies resulting from sponsored research activities of Purdue University researchers.

The Department also managed several entrepreneurial-focused initiatives including the Purdue Innovator Hall of Fame, Volume 3, a strategic project to recognize Purdue University’s outstanding innovators.

Other strategic commercialization activities were highlighted by a campaign to promote the 25-member Purdue Startup Class of 2015. The project included creation of videos, photography, brochures, social media, web and digital posts through earned, paid and owned media opportunities. The Purdue Startup Class of 2014 has already generated more than $25 million in grants, sponsored research and investments.
The Purdue Research Foundation’s Department of Human Resources provides leadership and guidance for all Purdue Research Foundation departments and divisions including Purdue Foundry, Purdue Research Park, Purdue Office of Technology Commercialization, Office of Investments and the University Development Office.

The Department of Human Resources provides employee relations assistance, recruiting, benefits administration, educational initiatives and other services to support the employment needs of the Foundation’s 320-plus employees.

The Department manages:

» Organizational staff through talent recruitment, screening and interviewing program; counseling managers on candidate selection; and conducting and analyzing exit interviews.

» Orientation and training programs for new employees.

» Planning, monitoring and appraisal of employee evaluations.

» Managing employee benefit programs by studying and assessing needs; processing claims; and developing and conducting educational training on available benefits.

» Legal compliance by monitoring and implementing applicable human resource federal and state requirements; conducting investigations; maintaining records and representing the organization at hearings.
Purdue Research Foundation’s Real Estate Department strengthens the development and expansion of the University, its satellite campuses and the five-site Purdue Research Park network through land purchases, sales and other property transactions.

The Foundation in conjunction with the University uses Purdue University’s Master Plan for real estate planning and direction for the next 40-plus years by designating potential areas for academic and campus expansion and areas for student, staff and faculty housing.

**Highlights for FY2015 include:**

- Work began to upgrade and develop recreational sports fields for use by Purdue students for soccer, lacrosse, rugby, cricket, ultimate Frisbee and other sports.
- Relocation of Todd’s Creek to a more natural location within Horticulture Park.

**Commercial Real Estate**

The Foundation owns commercial real estate that meets the consumer needs of students and faculty. Purdue West, at 1400 State Street, serves the far west end of campus with several shops, restaurants, bookstores and financial establishments.

**Residential Real Estate**

The Foundation provides rental housing appropriate for University students, staff and faculty on or near the West Lafayette campus. The properties are considered prime locations for most students and occupancy rates in the rental units is nearly 100 percent in FY15.
Purdue Research Foundation’s Information Systems Department provides several products and services to startups and established businesses based in the five-site Purdue Research Park network. Its professionals travel throughout the state to service clients’ needs.

Information Systems manages McClure Services, which was established in 2007 under the Indiana Business Flexibility Act. McClure Services conducts administrative activities for companies residing in the Purdue Research Park network and external statewide businesses.

In 2015, the Department implemented a new SAN (Storage Area Network), increasing performance and storage. This reduced the number of physical servers from more than twenty to four by leveraging modern virtualization technologies.

It also streamlined inter-park connectivity to use a direct, Layer 2 connection that improved speed and reliability.

**Help Desk Ticketing System**

The help desk ticketing system is an important avenue to serve internal and external requests for information or information technology support. The system received more than 4,300 requests for assistance in the past fiscal year.
This year, Purdue University President Mitch Daniels announced “Ever True: The Campaign for Purdue University.” The goal is $2.019 billion raised by 2019, the 150th anniversary year of Purdue’s founding and the 50th anniversary year of alumnus Neil Armstrong’s walk on the moon.

The comprehensive campaign, the largest in the university’s history, encompasses the Purdue Moves initiatives – Affordability & Accessibility, STEM Leadership, World-Changing Research and Transformative Education – and reinforces the university’s overarching commitment to keeping a rigorous college education within students’ financial reach.

The campaign’s goals include:

» $400 million–$500 million for student support, including scholarships and graduate and professional student support.

» $400 million–$500 million to fund a 50 percent increase in the number of endowed professorships, headships and deanships, including named positions for early career faculty.

» $400 million–$500 million to expand interdisciplinary research across the university, to further cancer research, and to increase Discovery Park’s impact and visibility as a preeminent research hub solving society’s grand challenges.

» $400 million–$500 million to expand interdisciplinary research across the university, to further cancer research, and to increase Discovery Park’s impact and visibility as a preeminent research hub solving society’s grand challenges.

» $300 million–$400 million to improve and better utilize Purdue’s physical infrastructure through renovations.

» $300 million–$400 million in unrestricted funds over the course of the campaign, to be allocated where university needs are greatest.

The campaign will also include Purdue’s regional campuses: Purdue Calumet, Purdue North Central and Indiana University-Purdue University Fort Wayne.

“Every gift to this campaign matters,” said Amy Noah, vice president for development at the Purdue Research Foundation, which is leading the campaign. “Private giving is essential to Purdue’s future, and we look forward to building the future together with participation from alumni, friends, parents, faculty, staff, students and the local community.”

The “Ever True” theme comes from Purdue’s fight song, “Hail Purdue!” The lyrics were written in 1912 by student James Morrison. Today, the century-old song is memorialized on the Hail Purdue Wall, including the well-known phrase, “Ever Grateful, Ever True.”

To participate in “Ever True: The Campaign for Purdue University,” visit purdue.edu/EverTrue or connect with #PurdueEverTrue on social media.
The consolidated statements of financial position and departmental activities for the fiscal year ending June 30, 2015 are presented.

Brian Edelman was named the Purdue Research Foundation Chief Financial Officer and Treasurer in FY15.

Finance and Investments

The Finance and Investments division supports all the activities of the Purdue Research Foundation and is involved in all the operations, activities, compliance and governance that allow the Purdue Research Foundation to function as a nonprofit corporation.

Scott Seidle was appointed as the Foundation’s Senior Vice President of Finance & Investments in FY15.

Office of Investments

The Purdue Research Foundation’s Office of Investments manages the combined Purdue University and the Purdue Research Foundation endowments of $2.397 billion and the Purdue University Purdue Investment Pool – Cash (PIPC).

All funds are managed according to the policies established by the Foundation’s Board of Directors under the direction of the Board’s Investment Committee. As of June 30, 2015, funds under management including endowed funds, trusts, annuities and cash totaled $4.001 billion.

David Cooper was named in FY15 as the Foundation’s Chief Investment Officer and will provide the leadership for the investments of the assets.
# Consolidated Statement of Activities

**June 30, 2015 (In Thousands)**

## Revenue and support

<table>
<thead>
<tr>
<th>Description</th>
<th>Unrestricted</th>
<th>Temporarily Restricted</th>
<th>Permanently Restricted</th>
<th>Total</th>
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<tbody>
<tr>
<td>Amounts received for Purdue University research projects</td>
<td>$3,591</td>
<td>$</td>
<td>-</td>
<td>$3,591</td>
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<tr>
<td>Payments to Purdue University</td>
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<tr>
<td>Contributions</td>
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<td>Income on investments</td>
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<td>Net unrealized and realized gains on investments</td>
<td>(641)</td>
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<td>Change in value of split interest agreements</td>
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<td>(2,432)</td>
<td>-</td>
<td>(2,432)</td>
</tr>
<tr>
<td>Decrease in interest in perpetual trust</td>
<td>-</td>
<td></td>
<td>(339)</td>
<td>(339)</td>
</tr>
<tr>
<td>Administrative fees</td>
<td>27,439</td>
<td>-</td>
<td>-</td>
<td>27,439</td>
</tr>
<tr>
<td>Rents</td>
<td>14,364</td>
<td>-</td>
<td>-</td>
<td>14,364</td>
</tr>
<tr>
<td>Royalties</td>
<td>5,105</td>
<td>-</td>
<td>-</td>
<td>5,105</td>
</tr>
<tr>
<td>Other</td>
<td>6,148</td>
<td>-</td>
<td>-</td>
<td>6,148</td>
</tr>
<tr>
<td>Net assets released from restrictions</td>
<td>96,849</td>
<td>(96,849)</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

**Total revenue and support**

- $154,684
- $(7,897)
- $2,903
- $149,690

## Expenses and losses

**Expenses for the benefit of Purdue University:**

<table>
<thead>
<tr>
<th>Description</th>
<th>Unrestricted</th>
<th>Temporarily Restricted</th>
<th>Permanently Restricted</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Contributions to Purdue University</td>
<td>$19,233</td>
<td>$</td>
<td>-</td>
<td>$19,233</td>
</tr>
<tr>
<td>Patent and royalty</td>
<td>3,654</td>
<td>$</td>
<td>-</td>
<td>3,654</td>
</tr>
<tr>
<td>Grants</td>
<td>52,595</td>
<td>$</td>
<td>-</td>
<td>52,595</td>
</tr>
<tr>
<td>Services for Purdue University</td>
<td>830</td>
<td>$</td>
<td>-</td>
<td>830</td>
</tr>
<tr>
<td>Other</td>
<td>3,596</td>
<td>$</td>
<td>-</td>
<td>3,596</td>
</tr>
</tbody>
</table>

**Total expenses for the benefit of Purdue University**

- $79,908
- -
- -
- $79,908

**Administrative and other expenses:**

<table>
<thead>
<tr>
<th>Description</th>
<th>Unrestricted</th>
<th>Temporarily Restricted</th>
<th>Permanently Restricted</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Salaries and benefits</td>
<td>27,108</td>
<td>$</td>
<td>-</td>
<td>$27,108</td>
</tr>
<tr>
<td>Property management</td>
<td>13,601</td>
<td>$</td>
<td>-</td>
<td>13,601</td>
</tr>
<tr>
<td>Professional fees</td>
<td>10,744</td>
<td>$</td>
<td>-</td>
<td>10,744</td>
</tr>
<tr>
<td>Supplies</td>
<td>1,578</td>
<td>$</td>
<td>-</td>
<td>1,578</td>
</tr>
<tr>
<td>Interest</td>
<td>4,403</td>
<td>$</td>
<td>-</td>
<td>4,403</td>
</tr>
<tr>
<td>Research Park</td>
<td>2,541</td>
<td>$</td>
<td>-</td>
<td>2,541</td>
</tr>
<tr>
<td>Other</td>
<td>10,035</td>
<td>$</td>
<td>-</td>
<td>10,035</td>
</tr>
</tbody>
</table>

**Total administrative and other expenses**

- $70,010
- -
- -
- $70,010

**Change in net assets**

- $4,766
- $(7,897)
- $2,903
- $(228)

**Net assets, beginning of period**

- $121,178
- $703,155
- $131,799
- $956,132

**Net assets, end of period**

- $125,944
- $695,258
- $134,702
- $955,904
To continue its practice of transparency, Purdue Research Foundation is providing detailed answers to the below questions.

» **Why does PRF buy land for Purdue?**

The Foundation’s mission is to serve Purdue University. One of the ways we do this is by purchasing land as it becomes available to meet the University’s short- and long-term campus plan. This allows the Foundation to carry the financial burden of this land until needed by the University, thus keeping costs and tuition down.

» **Why does PRF cover the costs of donor events or travel for Purdue administrators and faculty, and why aren’t these costs publically reported?**

The Foundation provides funding for social events and business travel as a service to Purdue and to help keep expenses down for the University. Social events are held at the request of alumni with a goal of learning more about Purdue and to build an alumni network for the benefit of the alumni and the University. This network subsequently supports the University and its mission. PRF covers a portion of travel expenses for Purdue’s faculty and innovators when they are asked to present research papers or give talks before large groups around the world. These outreach efforts increase awareness about Purdue to our state, national and global communities.

» **PRF has a $1 billion endowment and manages Purdue’s $2 billion endowment – why doesn’t the Foundation use that money to help reduce costs for Purdue students?**

Almost 100 percent of the endowments that the Foundation manages are restricted funds, meaning the monies cannot be used for anything other than the designated requirements as designed by the donor or the grant stipulations. While the Foundation manages these funds, it does not have access to these funds.

» **The Purdue Office of Technology Commercialization brings in millions in royalty – what do you do with these funds?**

Royalty monies are divided evenly three ways: one-third to the innovator, one-third to the innovator’s respective college and one-third to the Trask Innovation Fund to support the commercialization of future innovations.
“We are honored to serve Purdue University and its important endeavor of educating tomorrow’s leaders by providing “Higher education at the highest proven value.” We expect that 2016 will bring the same exciting levels of dynamic change and growth as we:

» Assist with the “Ever True” campaign to raise $2.019 billion by 2019 – the 150th anniversary of Purdue University.

» Develop the Purdue Research Park Aerospace District where students will have opportunities to intern and conduct research.

» Expand the Purdue Research Park of West Lafayette to make space for Purdue faculty, staff, students and alumni to grow their startups.

» Provide the same high level of leadership in real estate, accounting and financial support, holding gifts and endowments for Purdue.

» Increase opportunities for innovation, commercialization and transformation.

These goals and others will be a driving force of our strategic initiatives as we look ahead to 2016.”

Dan Hasler, President and Chief Entrepreneurial Officer, Purdue Research Foundation
For More Information

Send correspondence to:

President and Chief Entrepreneurial Officer
Purdue Research Foundation
Herman and Heddy Kurz Purdue Technology Center
1281 Win Hentschel Blvd.
West Lafayette, IN  47906

Visit these Web sites for more information about the Purdue Research Foundation and its divisions:

» www.prf.org
» www.prf.org/otc
» giving.purdue.edu
» www.purduefoundry.com
» www.prf.org/researchpark
» www.innovation-entrepreneurship-purdue.com
» www.prf.org/investments

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