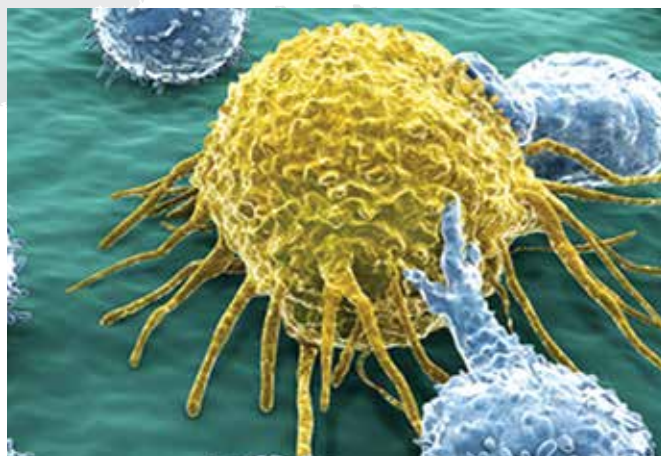
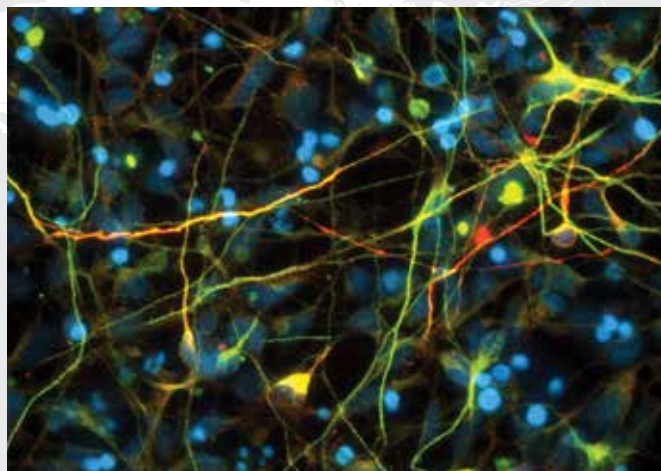


INNOVATION GATEWAY

*Moving new technologies
to the marketplace.*

2014 ANNUAL REPORT



The University of Georgia®

INNOVATION GATEWAY 2014



Vice President
for Research

**David
Lee**



Director,
Innovation
Gateway

**Derek E.
Eberhart**

As the state's most comprehensive land- and sea-grant university, the University of Georgia actively spurs economic development through its instruction, research and outreach activities. UGA faculty, staff and students continually strive to develop new approaches to address challenges in our state and beyond. These new discoveries are the foundation of innovative products and companies that help drive the future of Georgia.

We are very proud of our success in moving discoveries from UGA's labs and fields to the market, and their impact. To date, more than 525 new products and 130 startup companies based on UGA technologies and research have entered the marketplace. More than 900 jobs have been created from these companies, with an economic impact of \$100 million.

This year, we combined the resources of our technology transfer and startup offices under a single umbrella, the Innovation Gateway, to ensure that groundbreaking ideas emerging from UGA will reach their fullest commercial potential as efficiently as possible. Consolidating the full spectrum of licensing and startup company services will enhance the creation of new innovative companies and products based on UGA research and ultimately, improve the quality of life in our state and around the world.

Sincerely,

David Lee, Ph.D.
Vice President for Research
Executive Vice President of the University of Georgia
Research Foundation, Inc.

This annual report highlights some of 2014's successes in helping UGA researchers move their research breakthroughs into the marketplace through licensing and startups.

UGA consistently ranks among the top universities due in large part to our high level of licensing activity: Top 5 U.S. universities for total licenses and option agreements executed for the 7th consecutive year and Top 20 U.S. public universities in licensing revenue for the 10th consecutive year. Our diverse portfolio of licensed technologies generated over \$6.5M in licensing revenue in 2014.

Athens is becoming a hub for startups in Georgia, with UGA at its center. Five new startup companies were formed and four new resident companies moved into our business incubator this year, joining more than 130 startup companies based on UGA technologies and research that have been formed since 1972. UGA, long-recognized for its agriculture-related technologies and companies, is seeing increasing growth in biopharmaceutical and "green" technologies and companies. One new UGA startup is pursuing a cure for insulin dependent diabetes, and another is developing non-petroleum based biodegradable, bioplastics.

The new Innovation Gateway, dedicated to commercializing UGA research discoveries, will facilitate the identification and implementation of ideal pathways for commercialization of innovative technologies emerging from UGA's diverse research enterprise. Our team is committed to providing the highest level of technology transfer and startup support services at this very exciting time for UGA student and faculty innovation.

Sincerely,

Derek E. Eberhart, Ph.D.
Director, Innovation Gateway
Chief Licensing Officer of the University of Georgia
Research Foundation, Inc.

The University of Georgia Research Foundation, Inc. (UGARF) is a Georgia, non-profit corporation established in 1978 with the broad mission to support scientific, educational, and other charitable purposes. UGARF is a recognized collaborative organization to the Board of Regents of the University System of Georgia and maintains an important relationship with the University of Georgia. UGARF owns intellectual property developed by UGA personnel, and Innovation Gateway serves as the commercialization arm, working to appropriately protect and license UGARF's intellectual property portfolio.

FY 2014 BY THE NUMBERS

LICENSING

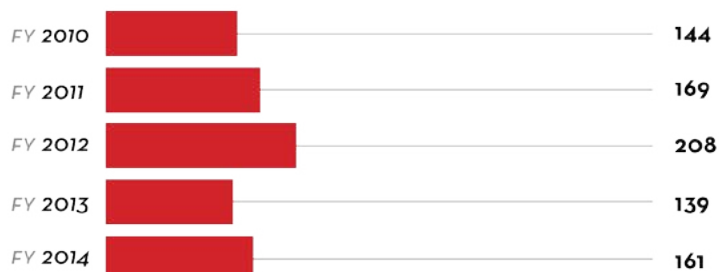
TOP 5

for the 7th consecutive year for
total licenses and options

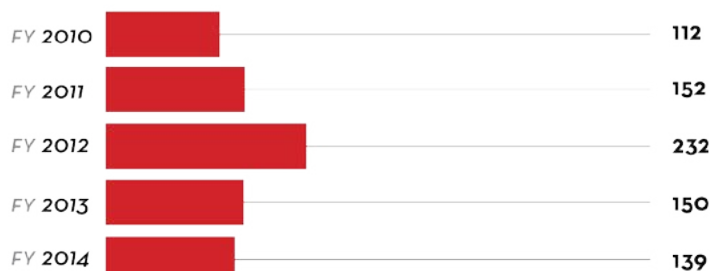
TOP 20

for the 10th consecutive year
among public universities
in licensing revenue

Invention Disclosures



Licenses and Options



STARTUPS

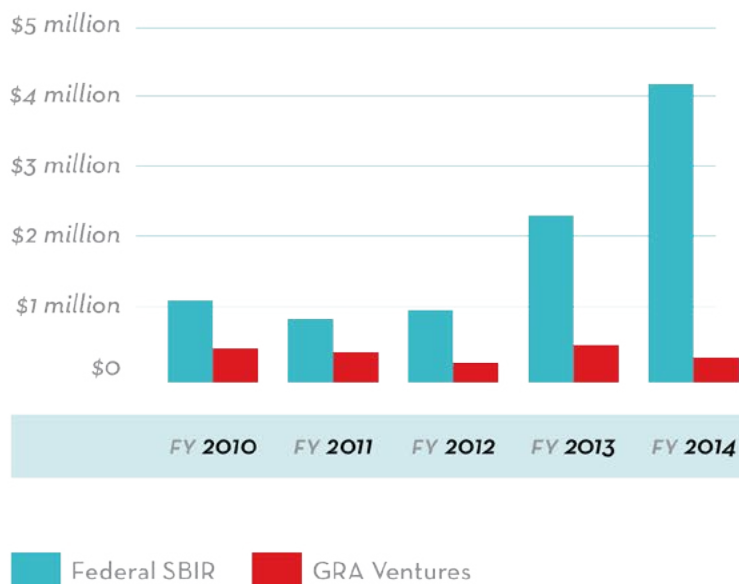
904

jobs created

\$100M

Economic impact from
job creation

External Grant Funding Awarded to UGA Startup Companies



INNOVATION GATEWAY

Promising Technologies

New inventions — from research tools to plant varieties, therapeutics, and vaccines — reflect the diversity of UGA's research enterprise and have widely varying commercial development timelines.

The Innovation Gateway team works with faculty to identify technologies with commercial potential, protect intellectual property, and delineate possible paths to the marketplace.

The optimal approach for moving a discovery from the lab to the market can vary depending on the type of technology and stage of development. In some cases, it means licensing the technology to an established company, while in other instances, launching a startup company is the best way to nurture the nascent technology.



CANCER DIAGNOSTICS

A glyco-biomarker that enables non-invasive screening for breast cancer as part of an early check-up.



BLUEBERRY BIOSENSOR

A sphere-shaped biosensor small enough to detect damage during mechanical harvesting and post-harvest processing of blueberries and other small fruits.



CHEMICAL GLUE

Developing functional chemical surfaces for a wide range of products. The company's nano-polymer chemical surface technology can give a surface such as a countertop antimicrobial or hydrophobic properties.



DT-1 TURFGRASS

A drought- and traffic-tolerant bermuda-grass cultivar developed by UGA's Tifton turfgrass breeding program.



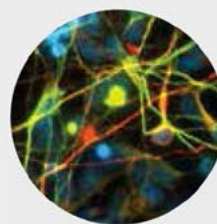
LICENSING

LICENSE-READY

Many newly disclosed inventions require additional research and/or proof-of-principle testing before they are attractive to an industry partner for further commercial development.

Enhanced Vaccine Production: Genes within a cell are modulated to increase viral replication, which can enhance production of vaccine antigens for animal and human diseases, ranging from polio to influenza.

HIV and TB Inhibitors: Dual-purpose compounds that are highly active against diverse HIV-1 isolates and *M. tuberculosis*. TB risk is estimated to be 26 to 31 times greater in people living with HIV infection.



STARTUPS

PRE-COMPANY

These early-stage business enterprises evaluate the potential for university technologies to address a market need via a startup company. Proof-of-concept studies and business assessments are conducted to determine the feasibility of launching a new venture.

Proventus Bio: Enhancing bioproduction of vaccines and biotherapeutics through genetic engineering of cell lines. The technologies developed by Proventus Bio have the potential to reduce production costs and increase the availability of much needed animal and human vaccines and therapeutics to meet growing world-wide demand for human and animal vaccines and therapeutics.

Ag Audit: Developing a biosensor capable of detecting fungal infections of agricultural crops and products at a very early stage. Early detection has the potential to reduce pesticide applications and costs for farmers and food processors. This is an NSF Innovation Corps project.



IN DEVELOPMENT

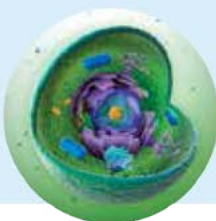
Licensed technologies require further development before reaching the market. Depending on the technology, product development can take just a few months or, for those products requiring extensive regulatory approval, up to 10+ years. Product development activities are conducted by industry partners that license the technology.



Rare Disease Treatments: A portfolio of inventions to genetically engineer chickens as “bioreactors” for the efficient production of therapeutic proteins is being used to develop treatments for rare diseases. Following the recent completion of clinical trials, the first drug produced using this platform has been submitted for FDA approval.

Targeted Cancer Drugs: Investigators have created a way to specifically deliver platinum-based anti-cancer therapeutics to the cell mitochondria. This focused delivery makes the cancer cells more susceptible to DNA damage and death. Focusing treatment on the powerhouse of the cell also circumvents genomic changes that make cancer cells less susceptible to these types of drugs.

PIV5 Vaccine Vector: Parainfluenza virus (PIV5) is an RNA virus that UGA researchers modified to allow it to be used as a vector for a variety of vaccines that protect against human and animal diseases.



ON THE MARKET

These technologies have been developed into commercial products. At this stage, the inventor and university may see a return on the resources invested in the technology many years prior through royalty revenue from product sales.

Restasis®: A treatment for chronic dry-eye in humans, now marketed in more than 35 countries. Restasis® is one of the first medicines ever developed first for veterinary use and then tested and approved for humans.

Poulvac® Bron GA 08: The first commercially available vaccine to combat respiratory disease caused by GA 08-type infectious bronchitis virus (IBV) in poultry.

Clevudine: Antiviral drug for the treatment of hepatitis B. Approved and commercially sold in South Korea and Philippines as Levovir® and Revovir®.



Georgia 06G: UGA peanut varieties constitute more than 90 percent of southeast U.S. market share, with Georgia 06G accounting for at least 75 percent of all peanut acreage in the region.

IN DEVELOPMENT

At this stage, companies are legally incorporated, have received funding through private investment or federal grants, and have established operations to develop their idea into a robust business venture.

Abeome: The company's development pipeline is powered by a patented method that vastly improves the development efficiency of monoclonal antibodies.

GlycoSensors & Diagnostics: Pioneering the use of advanced computational simulations to guide the development of carbohydrate-related technologies.



Phytosynthetix: A horticultural grow light company designing high-performance lighting systems for optimal plant growth.

BiotecEra: Developing a method to bioengineer pathways of compounds such as 5-HTP, an over-the-counter anti-depressant that is currently derived from plants. The new method would increase product safety and eliminate price fluctuations.

Cogent: Developing and commercializing interactive, inquiry-based 3-D educational materials to increase student performance and interest in science, technology and engineering as potential careers.



ON THE MARKET

These companies have developed into financially sustainable businesses, established in the market, with significant economic and societal impact.

Aruna Biomedical: Discovers, manufactures and commercializes new technologies in human embryonic stem cell research for use in drug discovery and neuroscience research.

Molecular Therapeutics: Manufactures the FDA-cleared antimicrobial solutions Silvion™ and Silvaklenz®, which kill most pathogenic bacteria and fungi, including multiple-drug-resistant bacteria.

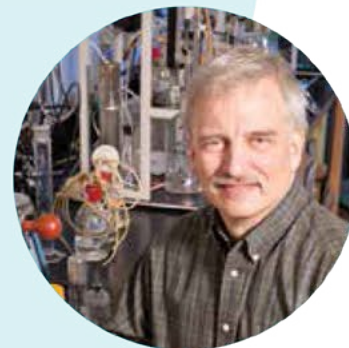


Munirem: Provides a range of environmental remediation services and sustainable green technologies.

SUCCESS STORIES

INVENTOR OF THE YEAR / *Mark A. Eiteman*

Mark A. Eiteman, professor, UGA College of Engineering, is the inventor of multiple technologies that help reduce dependence on fossil fuels by using microorganisms to produce a variety of commodity and specialty chemicals. Technologies licensed to several multinational companies include methods to produce amino acids used in nutritional supplements; precursors to many chemicals and therapeutic agents; and a group of organic acids used to manufacture polymers, cosmetics and pharmaceuticals. Eiteman also developed processes and engineered organisms for the simultaneous microbial fermentation of pentoses and hexoses leading to the production of biofuels and multiple commodity chemicals.



ENTREPRENEUR OF THE YEAR / *Robert Woods*

Robert Woods, professor of biochemistry and molecular biology, and chemistry, and researcher in the Complex Carbohydrate Research Center, is a leading expert in the fields of glycomics and computational chemistry. The co-founder and president of biotechnology company Glycosensors & Diagnostics developed the patent-pending LectenZ biotechnology, which has applications in disease biomarker detection and in the production and development of therapeutic antibodies and other biologics. With NIH Phase I and II contracts from the National Cancer Institute to further develop LectenZ, G&D is at the forefront of a rapidly growing area in the global pharmaceutical sector.

Licensing / POLIO PROTECTION

Although eliminated in most of the world, polio still cripples young children in some developing nations. With funding from a Grand Challenge Award from the Bill & Melinda Gates Foundation, Ralph Tripp, GRA Eminent Scholar of Vaccine Development and professor, College of Veterinary Medicine, and colleagues have identified methods to increase production of polio vaccine by genetically engineering cell lines used to produce vaccines. This discovery could increase access to much needed vaccines by lowering production costs. Thermo Scientific and researchers from the Centers for Disease Control and Prevention are collaborators.



Startups / OBESITY GENETICS



A research team led by Richard Meagher, Distinguished Research Professor of Genetics in UGA's Franklin College of Arts and Sciences, is working on a new method to isolate fat cells and analyze the genetic changes in obese fat that may contribute to diabetes, cardiovascular disease, cancer, and other obesity-related diseases. The scientists at UGA and Emory University have teamed up with biotechnology company Abeome, founded by Meagher and housed at Innovation Gateway's incubator, to create hundreds of different antibodies that can be used to develop clinical diagnostics and drug therapies that target specific fat cells.

ABOUT OUR TEAM

THE INNOVATION GATEWAY TEAM serves the university's research enterprise by assisting in the translation of ideas and discoveries into products, services, technologies, and companies, thereby catalyzing economic development. Channeling the innovative capacity of UGA creates new opportunities for improving the quality of life in our community, state, and around the world.



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FY 2014 HIGHLIGHTS

LICENSING

525+

products in the marketplace

28

new products in FY 2014

STARTUPS

132

companies started based on UGA research

5

new startup companies in FY 2014

Top Product Categories

1. peanuts
2. pharma and biotech
3. turfgrass
4. ornamentals
5. horticultural food crops
6. small grains
7. diagnostics and research tools
8. poultry vaccines
9. forage and range crops
10. soybeans

Top Market Sectors

1. biotech
2. pharma
3. agriculture
4. software
5. green tech
6. scientific services
7. animal health
8. diagnostics
9. consumer products
10. healthcare

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