FROM IDEA *to* MARKETPLACE

CELEBRATING 35 YEARS

TECHNOLOGY COMMERCIALIZATION OFFICE

2013 ANNUAL REPORT

The University of Georgia
1785

David Lee

Vice President for Research

Derek E. Eberhart

Director, Technology Commercialization Office

The University of Georgia is deeply proud of its land grant heritage and its mission to improve the welfare and economic status of Georgians. Recently installed UGA President Jere W. Morehead has reiterated this message from his very first address, pledging all of the resources and assets of the University to promote economic development across the state.

There are many ways in which the University contributes to the state's economic engine, including through robust efforts to move research discoveries, new technologies and inventions into the marketplace. This is the responsibility of the Technology Commercialization Office within the UGA Office of the Vice President for Research, and this report describes its most recent efforts through aggregate numbers and individual stories.

We are proud of our record in technology commercialization, as reflected in data maintained by the Association of University Technology Managers, but we are by no means satisfied. We will continue to improve, expand and reinvent the ways in which we move UGA research from the fields, laboratories and offices into the market for the betterment of the state. This is our pledge as Georgia's comprehensive land grant university.

Sincerely,

David Lee

David Lee, Ph.D.

Vice President for Research

Executive Vice President of the University of Georgia Research Foundation, Inc.

In this year's annual report we reflect on the remarkable growth of the University of Georgia licensing program over the last 35 years. Thanks to our innovative research faculty and industry partners, UGA's technology commercialization program now ranks among the top U.S. universities for moving inventions into the marketplace.

The numbers – the dramatic increase in licensing agreements resulting in a concomitant increase in licensing revenues – tell part of the story.

What they don't convey is the impact of UGA's licensing program. Licensing agreements signed with industry partners have led to the development of hundreds of products that improve lives in Georgia and beyond. Products ranging from peanuts and hydrangeas to pharmaceuticals and educational software reflect our diverse intellectual property portfolio. In fact, more than 500 new products based on UGA technologies have entered the marketplace, including more than 40 new products in 2013.

Many of these products, particularly in the agricultural arena, provide significant economic benefit to the state of Georgia.

For example, UGA peanut cultivars accounted for 95 percent of the state's nearly $900 million peanut crop in FY2013, thus supporting Georgia's #1 position in U.S. peanut production. Georgia's poultry industry, with an estimated economic impact of $28 billion in the state, is protected by multiple vaccines developed by UGA's world renowned poultry research program.

While it is gratifying to reflect on our accomplishments, we look forward with anticipation to the opportunities provided by the expansion of UGA's research program in key areas such as the College of Engineering and the Center for Molecular Medicine. Our team is excited to see what the next 35 years brings as we strive to build on UGA's legacy of providing innovative solutions to needs here in Georgia and around the world.

Sincerely,

Derek E Eberhart

Derek E. Eberhart, Ph.D.

Director, Technology Commercialization Office

Chief Licensing Officer of the University of Georgia Research Foundation, Inc.

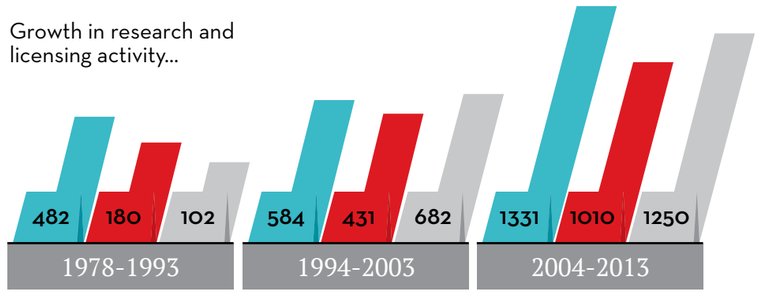
The University of Georgia Research Foundation, Inc. (UGARF) is a Georgia, non-profit corporation established in 1978 with the broad mission to support scientific, literary, educational, and charitable purposes. UGARF is a recognized collaborative organization to the Board of Regents of the University System of Georgia and maintains an important relationship with the University of Georgia. Pursuant to the Intellectual Property Administration Agreement between UGARF and the Board of Regents of the University System of Georgia, UGARF serves an important role as the owner of intellectual property developed by University personnel and is responsible for the protection and administration of such intellectual property. The Technology Commercialization Office licenses UGARF's intellectual property portfolio.

35 YEARS OF PROGRESS

1978-2013

Disclosures, Licenses and Options

Growth in research and licensing activity...



License Revenues

1978-1993
$5.8 million

1994-2003
$25.6 million

2004-2013
$136.9 million

...has led to substantial increase in the number of products, which is reflected in license revenues.

FY 2013

TOP 5 for 6th consecutive year for total licenses and options

TOP 15 among public universities in licensing revenue

TOP 40 among public & private universities in licensing revenue

License Revenues

FY 2011
$6.9 million

FY 2012
$7.5 million

FY 2013
$8.3 million

More than 400 licenses contributed to revenue of $8.3 million in FY2013, the vast majority of which is re-invested in UGA's research enterprise to fund new discoveries leading to continued economic development for the state of Georgia.

UGA TECHNOLOGIES, 1978-2013

35 Years of Progress

The University of Georgia is committed to improving the emotional and economic well-being of the people of Georgia, the nation and the world through research.

1999-2002

TifSport, TifEagle, TifBlair Turfgrasses

The TeamUGA Turfgrass Breeding Program continues to develop superior turfgrass cultivars with increased tolerance to drought, disease, cold, shade and saltwater. In Georgia alone, the farm gate value of turfgrass exceeds $75 million.

1998

Electrostatic Sprayer

Attraction between electrically charged spray droplets and a target surface assure better coverage and less environmental impact. Applications range from agricultural spraying, sanitization, industrial coating and food safety.

1990-92

Poultry Vaccines

Cholervac PM®, PM ONEVAX® and Avinew® protect one of Georgia's most important economic industries.

1995

Optimmune

A UGA veterinarian developed a prescription drug to treat chronic dry-eye in dogs.

1978

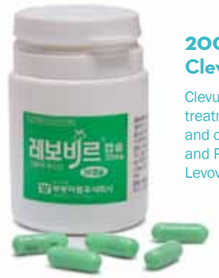
UGARF created

University of Georgia Research Foundation (UGARF) was created to protect and transfer technology to industry.

2004

Restasis

The active ingredient in the prescription drug Optimmune, initially developed for veterinary use, was found to be effective for relieving chronic dry-eye in humans, too. Dry-eye, which affects an estimated one million people in the U.S., can lead to serious cornea damage. Licensed to Allergan, the prescription drug Restasis® became a blockbuster treatment marketed in more than 35 countries and earning over $70 million for University of Georgia research.



2007

Clevudine

Clevudine, an antiviral drug for the treatment of hepatitis B, is approved and commercially sold in South Korea and Philippines under the names Levovir® and Revovir.®

2012

UGA College of Engineering established

2009

Hatchpak®Cocci III Poultry Vaccine

Georgia's poultry industry, one of Georgia's most important economic industries with a farm gate value of over $5 billion, is protected by multiple vaccines developed at UGA. Hatchpak®Cocci III was developed in partnership with Merial.

1978

Bradford Assay

The Bradford Assay, a classic colormetric method for rapidly measuring protein content, was one of UGA's first commercial products. It remains an essential tool for researchers today.

1993, '97, '06

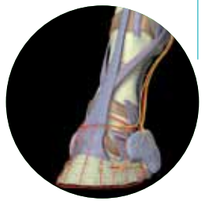
Georgia Peanuts

UGA peanut varieties account for more than 90% of southeast U.S. market share. Varieties such as Georgia Runner, Georgia Green and 06G are among the 19 elite peanut varieties developed through UGA's intensive breeding efforts focused on improving commercially desirable traits. UGA peanut varieties are the highest royalty-producing plant varieties for UGARF.

1992

Aequorin and Renilla Luciferase

Thanks to basic genetic research in a UGA laboratory on bioluminescence (the production of light by a living organism) in jellyfish and the sea pansy, researchers can now measure and visualize biological processes, such as the development of nerve cells in the brain or how cancer cells spread.



2002

Glass Horse

An innovative, interactive program helps horse owners and veterinarians understand the anatomy of the equine gastrointestinal tract and what can go wrong in horses with colic. The Glass Horse concept now extends to other parts of the horse anatomy and dogs.

2011

SPARC

UGA chemists developed a predictive modeling system known as SPARC (SPARC Performs Automated Reasoning in Chemistry) to estimate chemical reactivity parameters and physical properties for a wide range of organic molecules. The system is used widely in academic, government and industrial laboratories.

sparc
SPARC Performs Automated Reasoning in Chemistry

2006-2007

Human Neural Progenitor (NP) Cells

UGA researchers developed technology allowing the production of neural cells derived from stem cells. These cells, commercialized by UGA startup company ArunA Biomedical, provide a unique platform for conducting biomedical research to help understand the causes of, and discover new drugs to treat, neurological disorders such as Parkinson's and Alzheimer's.

2008-2013

Interactive Software

UGA startup IS3D LLC developed science education software to help high school students understand challenging scientific concepts, like osmosis.

2004

Endless Summer Hydrangea

A UGA plant breeder discovered a new trait in hydrangeas, which enables plants to bloom on new growth, allowing multiple periods of blooming throughout the growing season. This new trait, now incorporated in the Endless Summer® line of hydrangeas, helped UGA hydrangeas account for over half of the total U.S. market share in 2012.

Products Discovered by UGA

The discoveries made by UGA researchers create unique opportunities to improve lives in Georgia and beyond. UGA's Technology Commercialization team helps turn discoveries into tangible products by facilitating partnerships with industry, thus bringing new inventions to market.

Over 500 products originating from UGA research have reached the market through partnerships with industry over the last 35 years.

2013

Products in the Marketplace

Over 40 new UGA products entered the marketplace in FY2013, adding to the university's legacy of noteworthy products. Among them were therapeutics, vaccines for animal and human health, plant varieties and education tools, including:

- Revalife™, a topical cream that promotes joint health, was launched in 2013 by International Nutraceutical Company of America, LLC. The product incorporates patented UGA technology.
- An Infectious Bronchitis Virus (IBV) vaccine developed at the UGA Poultry Diagnostic Research Center is in use by three Georgia-based poultry companies to protect flocks in Georgia and throughout the Southeast. The vaccine was licensed to three animal health companies that will produce commercial versions for distribution in the U.S. and worldwide.
- An interactive iBook on cell signaling, developed by UGA researchers and licensed to UGA startup IS3D, uses an interactive software platform to help high school students understand challenging scientific concepts.

GOOD FOR GEORGIA, GOOD FOR THE WORLD

Groundbreaking ideas that emerge from UGA research drive innovations and developments that hold promise for improving lives in Georgia and around the world.

INVENTOR OF THE YEAR / *Scott Nesmith*

Due in part to the efforts of D. Scott NeSmith, the blueberry has become Georgia's number one fruit crop, surpassing the famous Georgia peach. NeSmith, the head of the UGA Blueberry Breeding Program since 1998, has released and patented 10 new commercial blueberry varieties and two ornamental blueberry varieties. Using the latest scientific techniques, he is able to develop blueberries suited to different climates and growing conditions. His sought-after expertise has led to collaborations with farmers and researchers throughout the world, including South Africa, Japan, New Zealand and much of Europe. Blueberries like the ones NeSmith develops earned Georgia farmers approximately $134 million in 2010. Their popularity with professional farmers and the casual gardener continues to grow, thanks to NeSmith's tireless work.

ON TARGET / *Shanta Dhar*

Mitochondrial dysfunction is a key component of various human disorders including cancer, neurodegenerative diseases, obesity, and diabetes. The primary challenge in developing drug therapy to treat mitochondrial dysfunction is not the creation of the drugs themselves, but achieving targeted delivery of the drugs to the mitochondria of cells. Researchers in the chemistry department developed nanoparticles that effectively target the mitochondria. Recently published data demonstrate the efficacy of these nanoparticles against various disease states. This technology is licensed by UGA startup company PartiKula.

SPECIAL DELIVERY / *Donald Harn*

Vaccines remain the single greatest public health asset for combating infectious diseases. Researchers devised a vaccine delivery method, termed VacSIM, whereby the vaccine injected as a liquid becomes a gel when it enters the body. Animal studies have demonstrated that the new method results in a better immune response than conventional immunization approaches. The delivery technology shows promise for animals as well as human health.

SUGAR SIGNALS / *Mike Pierce*

Researchers at the Complex Carbohydrate Research Center discovered specific kinds of glycans, tiny sugar molecules found on the outside of proteins, which appear in blood and tissue during the earliest stages of cancer formation. These glycomarkers may allow for early detection of cancer through new, non-invasive tests that physicians could use to screen for cancer. UGARF recently secured an issued patent for a breast cancer-specific glycomarker and is in discussions with potential industry partners.

WHAT WE DO

TECHNOLOGY COMMERCIALIZATION TEAM

Derek Eberhart, Ph.D.
Director and Chief Licensing Officer
dereke@uga.edu

Gennaro Gama, Ph.D.
Senior Licensing Manager
gjg@uga.edu

Rachael Widener, Ph.D, RTTP
Licensing Manager
rwidener@uga.edu

Shelley Fincher, M.S.
Licensing Manager
Plant Variety Program
shelleyf@uga.edu

Brent Marable, M.A.L.
Licensing Manager
Plant Variety Program
marable@uga.edu

Kathleen Burggraf
Administrative Manager
burggraf@uga.edu

Debbie Kuppersmith, CPA
Senior Financial Accountant
debkup@uga.edu

Kim Fleming
Administrative Associate
kimf@uga.edu

Angela Watson
Administrative Associate
Plant Variety Program
agwatson@uga.edu

Gage Guess, J.D.
Contracts Manager
gguess@uga.edu

Joy Emery
Administrative Specialist
jlmilam@uga.edu

Jessica Orbock, Esq.
General Counsel, UGARF
jkorbock@uga.edu

Not pictured:
David Lee, Ph.D.
UGA Vice President for Research
Executive Vice President, University of Georgia Research Foundation

The University of Georgia Technology Commercialization Office (TCO) serves the university community by connecting industry with university expertise and inventions for the public good, promoting economic development and increasing research visibility. Services include:

- **Receive and evaluate inventions** for patentability and commercial potential
- **Protect intellectual property (IP) rights** (patents, copyrights, trademarks, etc.)
- **License technologies** to industry for commercialization
- **Negotiate and manage all IP-related agreements/contracts** (including license, option, material transfer, confidentiality, collaborative research)
- **Perform compliance and diligence** function including federal reporting
- **Receive and distribute** license income
- **Support and advise** faculty, students and staff on IP-related matters
- **Develop and strengthen strategic partnerships** with universities, industry and government
- **Identify and contact companies** having interests aligned with UGA's research to develop licensing and sponsored research opportunities
- **Enforce IP rights**
- **Increase UGA's research visibility** throughout the world

Cover photos:
The Bradford Assay, 1977: European Molecular Biology Laboratory (EMBL); TifEagle, 1999: The Landings Club;
The Glass Horse Project, 2002: Science In 3D, Inc.; Human Neural Progenitor Cells, 2006-2007: ArunA Biomedical, Inc.;
Yellow Buzz Lantana, 2004: Michael Dirr; Interactive Case Studies, 2008-2013: UGA & IS3D LLC

The University of Georgia

TECHNOLOGY COMMERCIALIZATION OFFICE

808 BOYD GSRC
200 D.W. BROOKS DRIVE
ATHENS, GA 30602-7411 USA

PHONE +1 (706) 542-1404
FAX +1 (706) 542-3837
EMAIL TCO@UGA.EDU
WEB WWW.OVPR.UGA.EDU/TCO/

Office of the Vice President for **Research** at the university of georgia

THE UNIVERSITY OF GEORGIA **researchfoundation**