



AUBURN

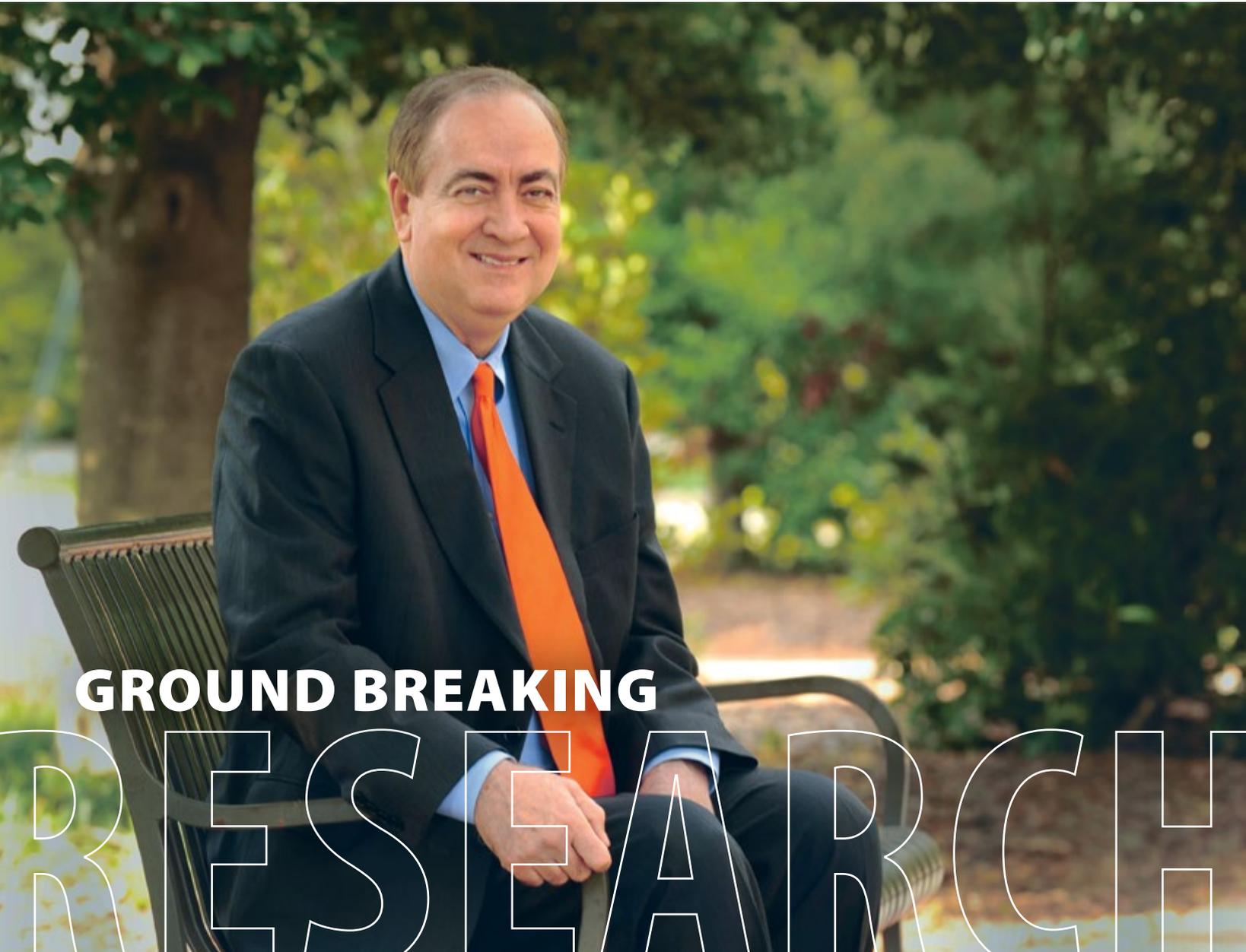
RESEARCH

2013 ANNUAL REPORT OF RESEARCH ACTIVITY



**THIS IS AUBURN RESEARCH.**

## Rising to the Challenge



**ELIZABETH LIPKE'S CHEMICAL ENGINEERING LAB AT AUBURN** is growing human heart cells outside the body—cells that actually “beat,” just like a heart. Her researchers take genetically modified stem cells from skin and guide them into becoming cardiomyocytes. By creating an environment *outside* the body that mimics the environment *inside* the body, Dr. Lipke’s team is creating huge potential for testing drugs and other heart treatments in the safety of the lab, rather than on actual patients.

Amazing research like this takes place at Auburn University every day. As a land-grant institution, we have a longstanding commitment to ground-breaking research in programs from agriculture to engineering. We translate our pure-science discoveries into applied, practical solutions that make life better for Alabama, the nation and the world.

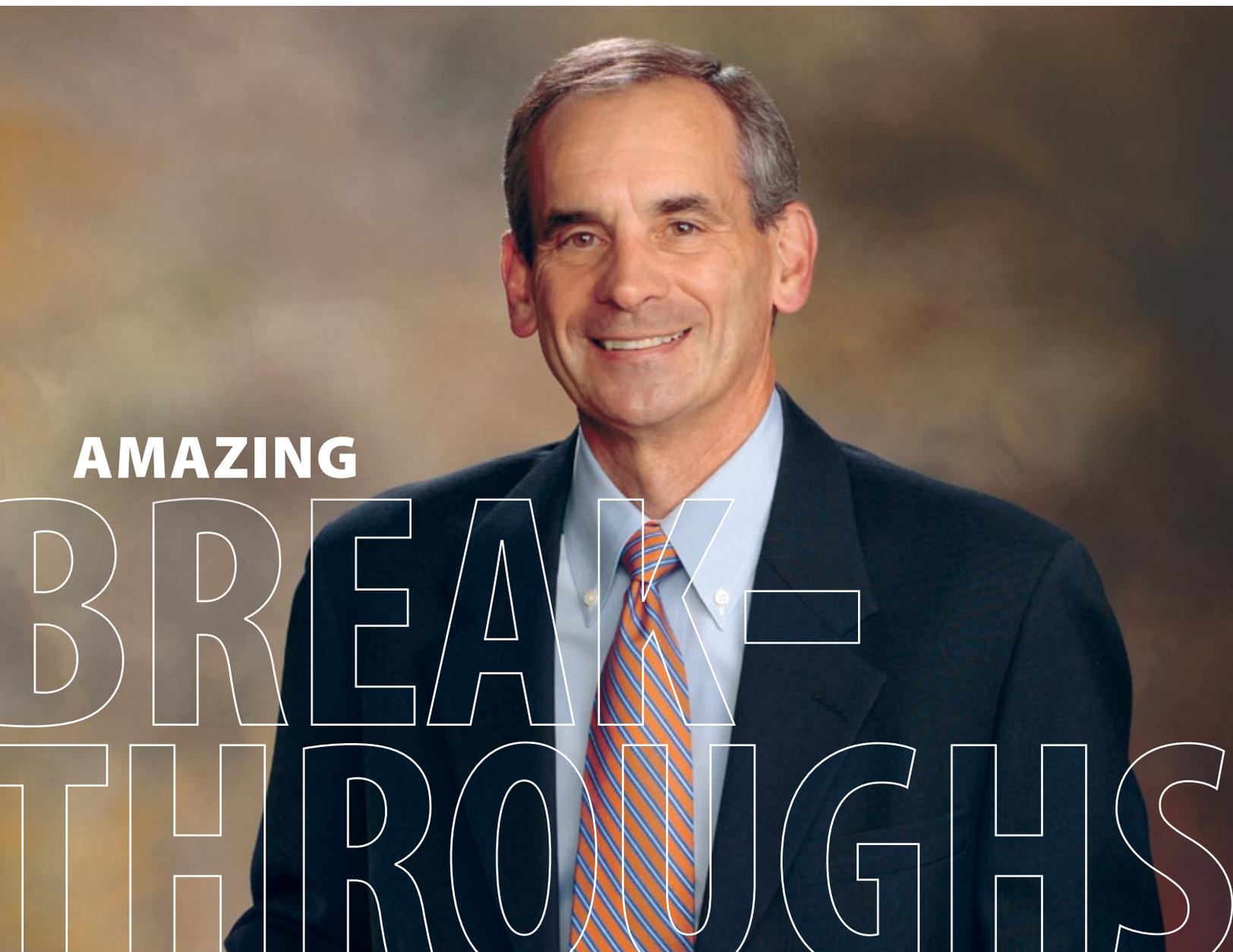
Already, Auburn contributes tremendously to Alabama’s economy. Now, as part of the University’s strategic plan, Auburn Research is taking even greater responsibility for economic development within our state. Our challenge is to provide the technological know-how that will push Alabama’s economic development efforts—and thus the state’s overall economy—to the next level. We must apply our vision for the future, leading to increased discovery and thus innovative solutions.

We have embraced this challenge eagerly. Auburn Research is preparing to lead Alabama in increasing economic security across the state and in improving the quality of life for all of us.

Jay Gogue, PhD

*President*

## Focusing on the Future



### THIS REPORT HIGHLIGHTS OUR FAR-RANGING RESEARCH ACTIVITY IN 2013.

From this solid foundation of success, we are building a future that will reach for new heights. Auburn University *will* become competitive with the nation's most productive research universities. We *will* give Alabama the technological edge in attracting new business and fueling economic development. This is our challenge, as laid out in the University's five-year strategic plan.

We will achieve these goals by focusing the best minds in our 12 outstanding schools and colleges on interdisciplinary applied research in six strategic areas: Cyber Security and Systems; Transportation; STEM Education; Gulf of Mexico Research and Restoration; Energy and the Environment; and Health Sciences. We are fulfilling our traditional land-grant mission to fuel discovery and innovation in areas that impact the daily lives of Alabama's people and the economic health of our region.

We are seeking visionary regional, national and international partners to invest in this important work, generating new revenue streams that will allow our researchers to make amazing breakthroughs to benefit the wider world. Yes, we will continue to apply major research awards from federal agencies like the Department of Education, the National Science Foundation and the Department of Health and Human Services and from the state of Alabama. However, we also are taking greater control by actively growing endowed research programs—Auburn endowments that always will benefit Auburn programs and Alabama residents. We seek \$17.1 million in private funding of this type.

This is the future of economic development in the state of Alabama. This is Auburn Research.

John M. Mason Jr., PhD, PE

*Vice President for Research and Economic Development*

## Collaborating on Vital Concerns



**OUR VISION FOR THE FUTURE OF** Auburn Research cuts across department boundaries. We have examined the most pressing challenges both within the borders of Alabama and far beyond, from environmental risks in the Northern Gulf of Mexico to security in our cyber world. We have analyzed Auburn's existing strengths—great minds turning creative ideas into meaningful results in fields like biomedical imaging and STEM (science, technology, engineering and math) education.

Based on this insight, we have focused strategically on clear research objectives in six interdisciplinary hubs. Auburn Research is bringing together seemingly disparate interests to harness our intellectual power and passion toward vital common goals like curing cancer, sustainably meeting our energy needs and defining the future of transportation. This is how Auburn Research will move us from the world we have now to the world we want to have tomorrow.



**THIS IS DISCOVERY. THIS IS VISION.  
THIS IS THE PATH TO SOLUTIONS.  
THIS IS AUBURN RESEARCH.**

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## Focus



## Proof



### THIS IS FORECASTING.

Auburn researcher Dr. Puneet Srivastava goes far beyond “sunny with a high of 90” to forecast drought months in advance. His predictions give farmers time to plant drought-resistant crops or change planting dates, increasing harvests. He also helped the city of Auburn issue early water restrictions, resulting in a bigger water supply when dry times arrived.



### THIS IS CYBER SECURITY.

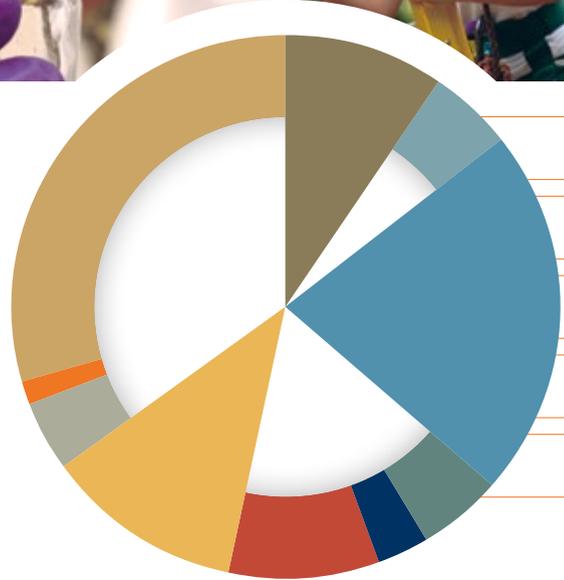
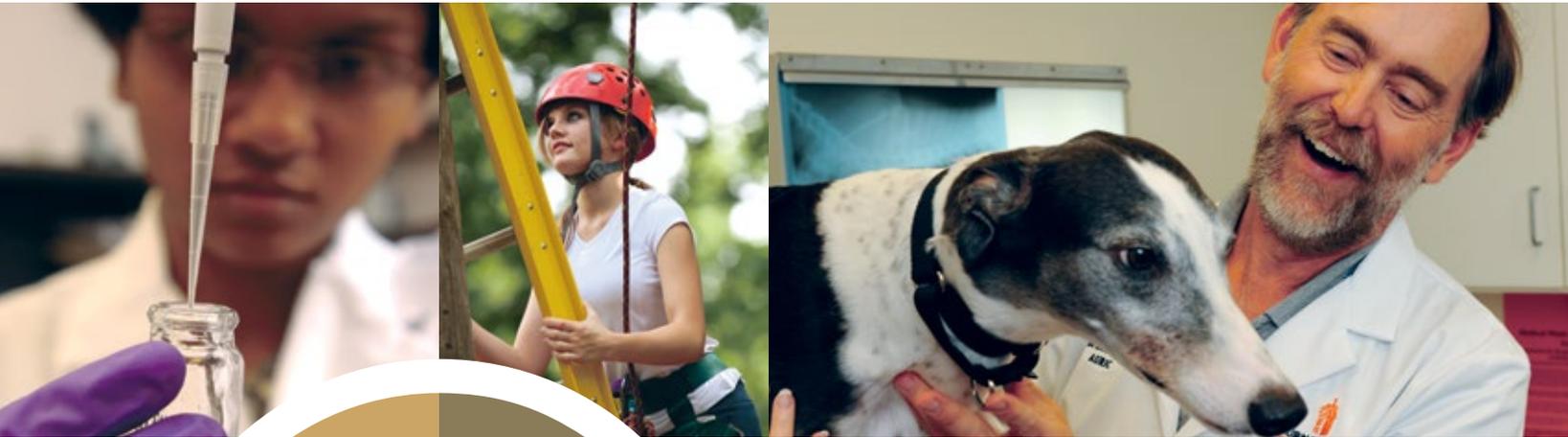
Cyber attackers often target a network with a flood of data. Dr. David Umphress picks up patterns in “Big Data” to trace the source of an attack, helping businesses and government agencies thwart intrusions that compromise data.



### THIS IS IMPACT.

A love for solving real-world problems spurs Dr. Bill Walton's dual mission of research and extension. His oyster aquaculture work focuses on boosting the livelihoods of Gulf of Mexico oyster farmers.

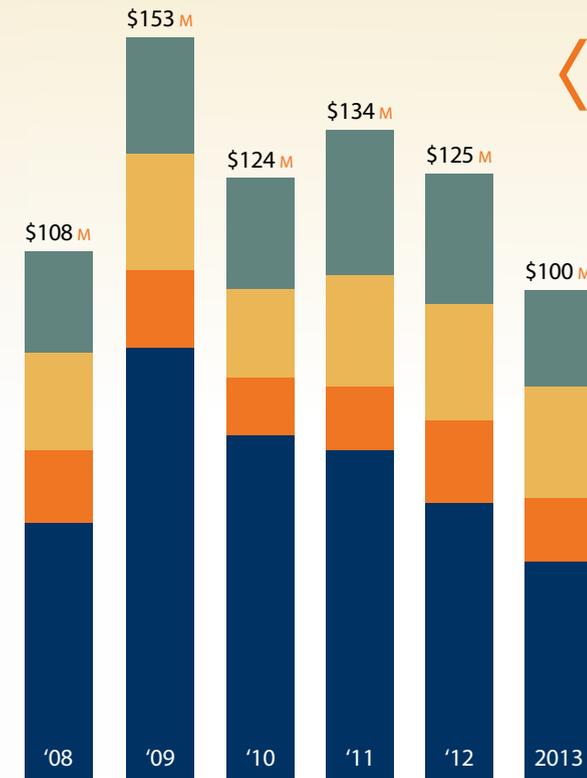
## Sponsored Awards by Unit



Agriculture	9.70%	Sciences and Mathematics	8.87%
Education	4.81%	Veterinary Medicine	11.68%
Engineering	22.07%	Forestry	4.38%
Human Sciences	5.01%	Pharmacy	1.42%
Liberal Arts	2.89%	Other units	29.17%

Less than 1%: Architecture, Design and Construction; Business

## Sponsored Awards



The value of sponsored awards fell by 20 percent over the past year, influenced in large part by the nationwide decline in federal funding. However, federal research dollars still account for the largest share (45 percent) of our sponsored awards.

Alabama  
Other  
Industry  
Federal

45%

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### 2013 Awards By Sponsor

State of Alabama	\$20,255,325	Department of Interior	\$427,165
Industry	\$12,767,225	NSF	\$10,231,829
Department of Defense	\$4,695,539	USDA*	\$3,725,573
Department of Education	\$16,982,926	Other Federal	\$2,365,199
Department of Energy	\$1,450,000	Other Sponsors	\$22,655,522
Department of Health and Human Services	\$4,709,831		

\*Does not include federal appropriations for Hatch, Smith Lever or McIntyre Stennis

# Office of Technology Transfer Metrics

Technology transfer remains strong, helping to fuel economic development as well as University income; option and license income has grown by more than 20 percent over the past four years.



65

Invention Disclosures

9

Standard U.S. Patent Applications Filed

86

Provisional U.S. Patent Applications Filed

9

Other U.S. Patent Applications Filed

22

U.S. Patents Granted

182

Active U.S. Patents

7

Licenses/Options Executed

85

Active Licenses/Options

16

Total Active Startup Companies

\$835,897

Option and License Income





**AUBURN**  
RESEARCH

**Office of the Vice President for Research and Economic Development**

202 Samford Hall  
Auburn University  
Auburn, Alabama 36830

**phone:** (334) 844-4784  
**e-mail:** [vpresea@auburn.edu](mailto:vpresea@auburn.edu)



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