



# The Research Enterprise at Virginia Tech

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# University Research

## PRIORITY AREAS

### Energy, Materials, and Environment

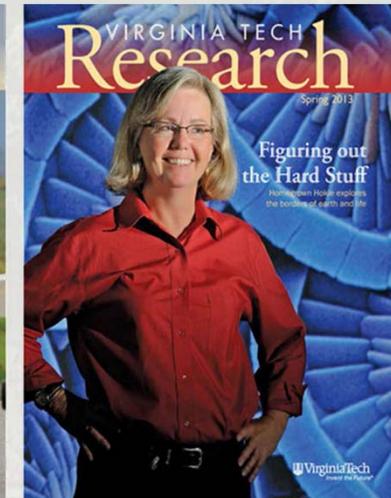
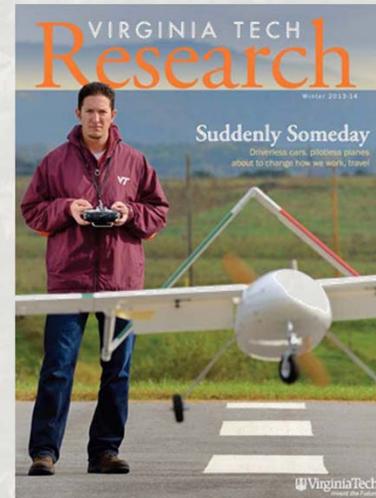
- Energy
- Environment and bioprocessing
- Materials and sensors

### Innovative Technologies and Complex Systems

- Business and manufacturing
- Communications, information technology, cybersecurity and mathematics
- Transportation

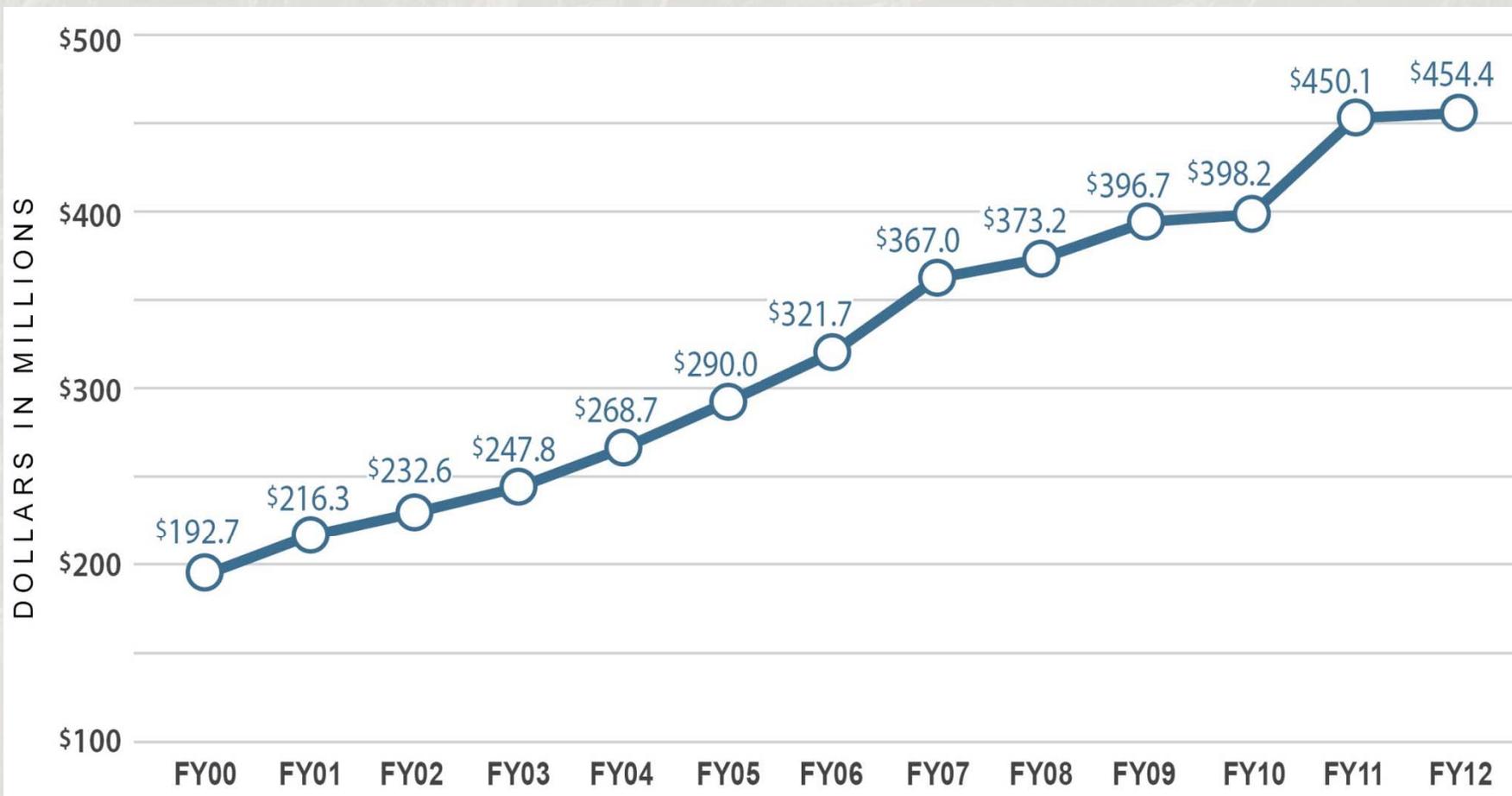
### Health Sciences

- Biosciences and biotechnology
- Food, Nutrition, and Health
- Life Sciences
- Neuroscience



# Research Expenditures

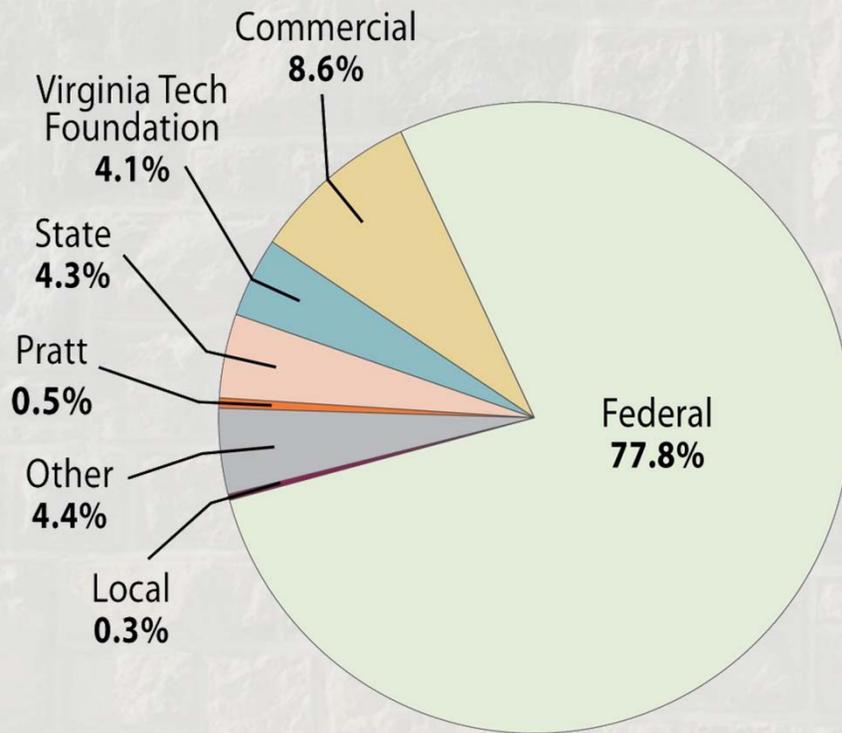
Actual NSF-reported expenditures – 2000-2012



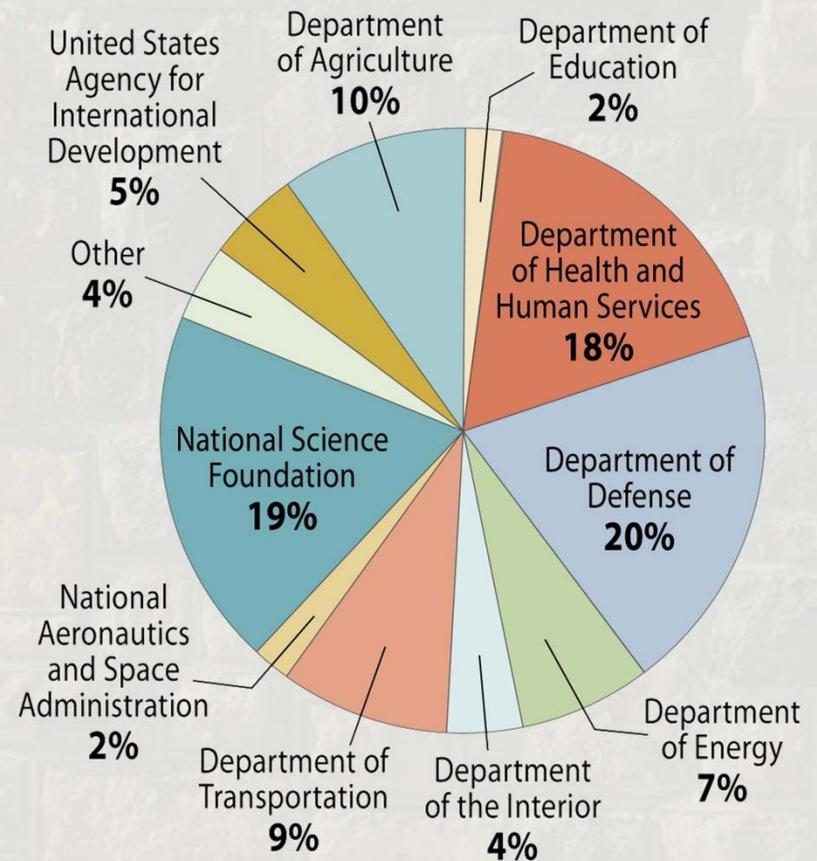
\$496.5 projected for FY13

# Overview of Virginia Tech Sponsored Research Portfolio

All Sources



Federal Sources



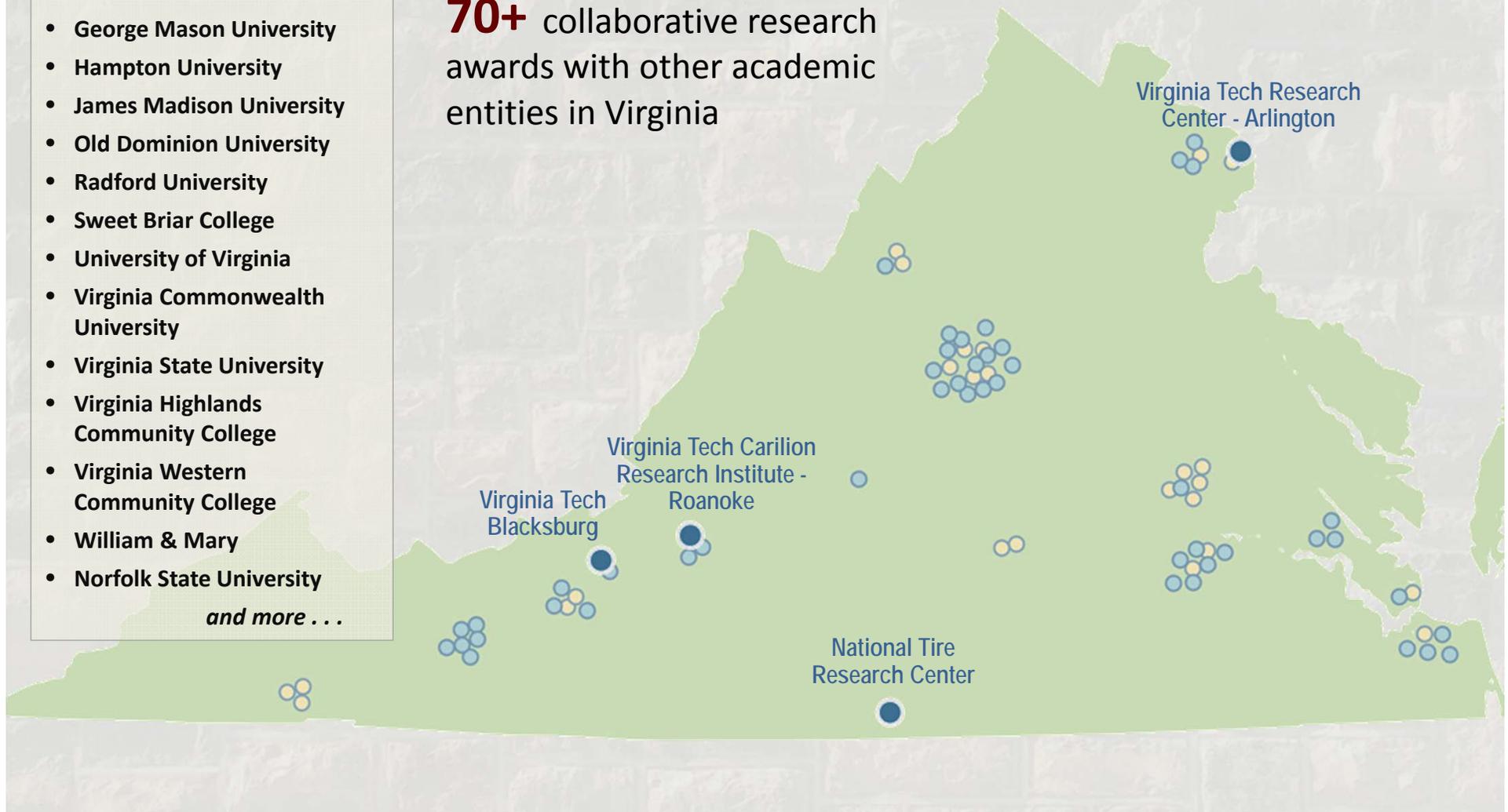
# Strategic Partnerships

## *Academic Collaborations*

- George Mason University
- Hampton University
- James Madison University
- Old Dominion University
- Radford University
- Sweet Briar College
- University of Virginia
- Virginia Commonwealth University
- Virginia State University
- Virginia Highlands Community College
- Virginia Western Community College
- William & Mary
- Norfolk State University

*and more . . .*

**70+** collaborative research awards with other academic entities in Virginia



# Virginia Tech Corporate Research Center

The Virginia Tech Corporate Research Center is the proud recipient of the 2010 Outstanding Research/Science Park Award given by the Association of University Research Parks (AURP).



- 150+ private high-technology companies and research centers
- 2,700+ employees
- 29 buildings totaling 1 million square feet
- 230+ acres of land

# Mid-Atlantic Aviation Partnership Unmanned Aircraft Systems (UAS) Test Site

The FAA Modernization and Reform Act of 2012 required the FAA to establish a program to integrate unmanned aircraft systems (UAS) into the National Airspace System (NAS) at six Test Ranges.

Awards were announced Dec 30, 2013 to:

- University of Alaska
- State of Nevada
- Griffiss International Airport (Rome, NY)
- North Dakota Department of Commerce
- Texas A&M University—Corpus Christi
- **Virginia Polytechnic Institute and State University (Virginia Tech)**



# Virginia Tech Transportation Institute

- **Second-largest university-level transportation institute** in the U.S.
- **\$38M in research expenditures in FY13** (including the National Tire Research Center)
- **More than 100 graduate and undergraduate students** supported annually
- More than **16,500 research hours** on the Smart Road
- **More than 200** annual research projects
- **More than 350 employees** (starting from 15 in 1988)
- More than **140 annual publications**

## VTTI's economic impacts in Virginia

- **Connected test-bed on I-66 corridor** has brought VDOT investment and state-of-the-art technology
- VTTI has created **more jobs** in Montgomery County than any other public or private entity since the Smart Road opened
- **National Tire Research Center** will have an economic impact of \$147M on southern Virginia during its first 10 years of operation
- More than **30 global customers** are already joining regional industry leaders coming to southern Virginia

## VTTI NATIONAL SPOTLIGHT

During 2013:

- White House Champions of Change
- ABC World News with Diane Sawyer
- CNN Newsroom
- Huffington Post
- Virginia Business
- Discovery Channel Canada
- NPR
- ABC Nightline
- The American Institute of Physics
- The Weather Channel
- Peer-Reviewed study in New England Journal of Medicine



## VTTI GLOBAL PRESENCE

- Conducting studies in China, Australia, Canada, France, and New Zealand in the near future
- Researchers invited to keynote international conferences and symposia
- Continually expanding international efforts



# Virginia Tech Carilion Research Institute

## 4 RESEARCH THEMES

### Brain

(autism, Alzheimer's disease, traumatic brain injury, psychiatric disorders, cerebral palsy, epilepsy, Parkinson's disease, addiction and substance abuse)

### Cancer

(tumor genetics, brain tumors, breast cancer, individualized therapeutics and diagnostics, theranostics)

### Heart

(cardiac developmental disorders, cardiac repair and regeneration, arrhythmias, sudden cardiac death)

### Infection/Immunity

(vaccine development, childhood infections, inflammation, emerging infections, immunology)



***MISSION: to make major scientific advances in understanding human health – developing innovative approaches to the prevention, diagnosis, treatment and cure of human disease.***

# Virginia Tech Carilion Research Institute

## VTCRI RESEARCH GRANTS

**51** active grants

annual value: **\$12M**

total remaining value: **\$42M**

**46** grants in submission

annual value: **\$11M**

total value: **\$32M**

Current VTCRI  
collaborations  
with other  
institutions: **75**

27 states  
17 countries  
6 continents

## ECONOMIC IMPACT OF VTCRI

- **152 jobs** created so far (includes 22 faculty research team leaders from 17 universities/institutions)
- **30 homes** purchased at > \$11,000,000
- Annual salary pool = **\$9,793,594**
- Average salary (all employees) = **\$64,432**
- Average employee salary (excluding students) = **\$79,581**
- > **2,000** annual flight seats from/to Roanoke
- **44** partner careers
- FY 13 expenditures ~ **\$23,000,000**

# College of Agriculture and Life Sciences

## Supporting an emerging Fine Wine industry



Researchers in the College of Agriculture and Life Sciences are leading a \$3.8 million multi-state effort funded by the USDA to establish a fine wine and grape industry in the eastern U.S.

Virginia is 5<sup>th</sup> nationally in wine grape production and the industry has an economic impact of over **\$360 million** annually.

## Enhancing Virginia's Bio-economy

- Development of energy crops with improved traits for bioenergy industry
- Developing advanced technologies for converting biomass to biofuels and bio-based products
- Goal is to enhance Virginia's bio-economy and create jobs



# The Hume Center for National Security and Technology



A center for academic excellence for the intelligence community, the National Security Agency, and the Department of Homeland Security.

Research expenditures since the Hume Center's inception total **\$14.6M**.

Approximately 100 faculty, staff, and graduate students conduct a wide range of research in a variety of classified domains, including **signals intelligence, electronic warfare, resilient systems and communications, and data to decision.**

As part of its education and outreach efforts, the Hume Center is

- An Intelligence Community Center for Academic Excellence
- A National Center of Academic Excellence in Information Assurance
- A CyberCorps Scholarship for Service school
- An NSF Security and Software Engineering Research Center partnering with L3 Communications



**Thank You**