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

Office of the Vice President for Research
Research Expenditures
Actual NSF-reported expenditures – 2000-2012

$496.5 projected for FY13
Overview of Virginia Tech Sponsored Research Portfolio

**All Sources**
- Federal: 77.8%
- Commercial: 8.6%
- Virginia Tech Foundation: 4.1%
- State: 4.3%
- Pratt: 0.5%
- Other: 4.4%
- Local: 0.3%

**Federal Sources**
- Department of Defense: 20%
- National Science Foundation: 19%
- Department of Transportation: 9%
- Department of the Interior: 4%
- Department of Energy: 7%
- Department of Education: 2%
- United States Agency for International Development: 5%
- Other: 4%
- Department of Agriculture: 10%

Office of the Vice President for Research
Strategic Partnerships

70+ collaborative research awards with other academic entities in Virginia

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 . . .
Virginia Tech Corporate Research Center

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

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).
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
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

- 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**

<table>
<thead>
<tr>
<th>Grants</th>
<th>Total Value</th>
</tr>
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<tbody>
<tr>
<td>51 active grants</td>
<td>$42M</td>
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<tr>
<td>46 grants in submission</td>
<td>$32M</td>
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</tbody>
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**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**

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

27 states

17 countries

6 continents

Office of the Vice President for Research
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 5th nationally in wine grape production and the industry has an economic impact of over $360 million annually.

**Supporting an emerging Fine Wine industry**

**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