



VIRGINIA ADVANTAGES

Life Sciences



**VIRGINIA ECONOMIC
DEVELOPMENT PARTNERSHIP**

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Life Sciences Employment in Virginia

Virginia's Life Sciences Industry employs approximately 23,000 people at over 800 establishments in Virginia. Bio-Science Related Distribution accounts for 29% of Virginia's Life Sciences employment and 62% of its establishments. Research, Testing, and Medical Laboratories account for 48% of Virginia's Life Sciences employment and 22% of its establishments. Drugs and Pharmaceuticals production accounts for 20% of Virginia's Life Sciences employment and 8% of its establishments. The Medical Devices and Equipment production accounts for 6% of Virginia's Life Sciences employment and 6% of its establishments. Virginia's Life Sciences Industry has a direct economic output of \$6.5 billion and supports an additional \$4.0 billion in economic activity around the state.

Life Sciences in Virginia

- LifeScience-related research accounts for 50% of all academic R&D spending in Virginia (more than \$1.135 billion in 2010)
- Virginia is home to 11 Federally Funded R&D Centers and 22 FLC laboratories
- In 2012, Virginia ranked third in the U.S. with 338 SBIR awards (a total value of \$105.46 million)
- In 2012, there were 79 venture capital deals in Virginia (10th highest in the U.S.) including 12 in Biotech/Medical Devices
- In 2009, 344 clinical trials were initiated in Virginia with the highest number focused on cancer, heart disease, and neurological disorders

Medical Devices in Virginia

Virginia's Medical Devices Manufacturing Industry employs over 1,400 people and consists of approximately 50 firms focusing in Medical Devices and Equipment in Virginia, with many more focusing on solely distribution.

- Hollister Inc.
- K2M, LLC
- Foot Levelers, Inc.
- Microaire Surgical Instruments
- Computerized Imaging References
- Origio Humagen Pipets, Inc.
- Dynex Technologies, Inc.
- Avid Medical, Inc

Medical Devices Manufacturing Announcements, VA (2004-2013)

Company Name	Location	Added Employment	Added Investment (millions)
Hollister Incorporated	Augusta County	0	\$29.60
K2M, LLC	Loudoun County	249	\$8.40
MicroAire	Albermarle County	51	\$8.00
Avid Medical, Inc.	James City County	303	\$7.90
Kerma Medical Products, Inc.	Suffolk	0	\$5.50
Merit Medical Systems, Inc.	Chesterfield County	200	\$5.00
Merit Medical Systems, Inc.	Chesterfield County	75	\$1.00
BioLogics, Inc.	Prince William County	2	\$0.90
Kerma Medical Products, Inc.	Portsmouth	15	\$0.57
Foot Levelers, Inc.	Roanoke City	129	\$0.50
Soluble Systems, LLC	Newport News	40	\$0.50
Computerized Imaging Reference Systems	Norfolk	18	\$0.50
Tidewater Prosthetic Center	Portsmouth	5	\$0.25
ORIGIO	Albermarle County	9	\$0.20
AVID Medical, Inc.	James City County	300	\$0.00
K2M, LLC	Loudoun County	162	\$0.00
Innocoll, Inc.	Loudoun County	19	\$0.00
Care Rehab & Orthopedic Products Inc.	Charlotte County	18	\$0.00
Computerized Imaging Reference Systems	Norfolk	12	\$0.00
TOTALS:			
19 Announcements		1,607	\$68.82

MEDICAL DEVICE MANUFACTURING AND DISTRIBUTION REGULATION

Medical Device Manufacturing and Distribution is regulated throughout the country by the United States Food and Drug Administration (FDA), and the Virginia Department of Health requires Medical Device Wholesalers to have a permit to be able to distribute within the state. Information relating to the FDA regulation and procedures can be found at the following link: [FDA Regulations and Guidance](#). More information regarding Virginia's regulations can be found here: [Virginia Department of Health Regulations](#).

VIRGINIA'S MAJOR RESEARCH UNIVERSITIES

The University of Virginia (UVA) continuously ranks as one of the nation's best public universities and is highly regarded for its graduate engineering program and school of medicine. The University's Department of Biomedical Engineering (BME) is regularly recognized by *U.S. News & World Report* among the top 25 programs in the country for its research, educational and translational activities. The BME building is centrally located in the School of Medicine complex adjacent to a world-class Cardiovascular Research Center and Cancer Center. Faculty research, through direct and indirect grant support from federal and state agencies, corporations and private foundations, provided approximately \$311.1 million of the University's budget in 2012–13.

The Institute for Nanoscale and Quantum Scientific & Technological Research (nanoSTAR) is a dedicated multi-disciplinary team striving to advance research and development at the nanoscale. Research efforts focus on three main thrust areas: nano and quantum electronics, nanomedicine and nanotechnology for energy and the environment. (<http://www.virginia.edu>)

Virginia Tech is a leader in transgenic animal and plant technology and on the National Science Foundation's list of top research universities. Annual research expenditures were \$450 million in 2011, and Virginia Tech is aggressively pursuing its goal of becoming a top 30 research institution. Tech has 270 research faculty and 7,100 undergraduate and graduate students enrolled in life science curriculums through multiple colleges. The University's College of Engineering consistently ranks within the top 25 best engineering schools for graduate studies, and top 10 best Biological/Agricultural Engineering school in *U.S. News and World Report's* America's annual Best Graduate Schools survey.

Virginia Tech has several research institutes dedicated to the life sciences. One example is the Fralin Life Science Institute, an interdisciplinary research center that brings together scientists from different disciplines. Research supported by the Institute drives exploration and discovery in both biomedical sciences and biotechnology.

Other contributions to medical research at Virginia Tech include the Virginia-Maryland Regional College of Veterinary Medicine, collaboration with the Edward Via Virginia College of Osteopathic Medicine and the Virginia Tech-Wake Forest University School of Biomedical Engineering and Sciences. In addition, the Departments of Chemical Engineering and Biological Systems Engineering have expertise in cGMP and pharmaceutical separation and purification. Tech's undergraduate biochemistry program is one of the largest and most highly respected programs of its kind in the U.S. (<http://www.vtc.vt.edu>)

Virginia Commonwealth University (VCU) in Richmond is one of the largest academic health centers in the nation with schools of dentistry, medicine, nursing, pharmacy and allied health professions. VCU attracts more than \$225 million annually in sponsored research and is noted for both basic and clinical research with strengths in neuroscience, immunology, cancer (Massey Cancer Center), drug design/development and the genetic origins of disease. VCU is also recognized as the premier comprehensive neurotrauma center in the world.

In recent years, the school has seen a nearly 40 percent increase in the number of grants submitted to the National Institutes of Health and an increase in awarded NIH grant dollars during a time when many research institutions are seeing a decrease in funding. The VCU School of Medicine now accounts for almost half of VCU's sponsored research awards and for 87 percent of the university's NIH funding. (<http://www.vcu.edu>)

George Mason University (GMU) is located in Northern Virginia and was one of the first schools in the nation to offer a bioinformatics doctoral program. Research in the Department of Bioinformatics and Computational Biology addresses the integration of genomic, gene expression and clinical databases; the analysis of protein structure and function; models of molecular, cellular and metabolic processes and models of regulation networks. Located adjacent to the American Type Culture Collection on the Prince William Campus, the Department is rapidly developing broad capabilities in functional genomics. (<http://www.pwc.gmu.edu>)

Eastern Virginia Medical School (EVMS) in Norfolk is a private medical school that has grown to be the largest biomedical research institution in Southeast Virginia. The school sponsors significant research through centers such as the Jones Institute of Reproductive Medicine and the Strelitz Diabetes Institute, long recognized to be at the forefront of advanced treatment and research. (<http://www.evms.edu>)

EVMS and **Old Dominion University** partnered to develop the Frank Reidy Research Center for Bioelectrics (CBE) in 2002. The CBE has grown to over 40 researchers with expertise in engineering, physics, immunology and molecular biology. Research at the center ranges from fundamental studies of electric field and plasma effects on biological cells to applied research including medical and commercial applications. Cutting edge research being conducted at the Center includes vaccine development, gene delivery, membrane physiology, biomechanical properties and tumor treatment. The Center also coordinates an International Consortium on Bioelectrics, including groups in the U.S., Japan, Germany and France. (<http://www.odu.edu/engr/bioelectrics/>)

Virginia is a Leading Gateway to the World

- Two of the nation's largest railroads, CSX Corporation and Norfolk Southern Corporation, have extensive infrastructure throughout the State
- Eleven railroads operate on nearly 3,400 miles (excluding trackage rights) of railway in Virginia, of which more than 2,800 miles are Class I—one of the strongest rail networks in the nation
- Six major interstate highways, I-95, I-85, I-81, I-64, I-77 and I-66, provide quick access to Northeast, Southeast and Midwest markets
- 14 commercial airports serve the Commonwealth, including two of the nation's busiest, Washington Dulles International and Ronald Reagan Washington National
- The Port of Virginia offers world-class shipping facilities and schedules to over 80 foreign ports and more than 200 foreign countries

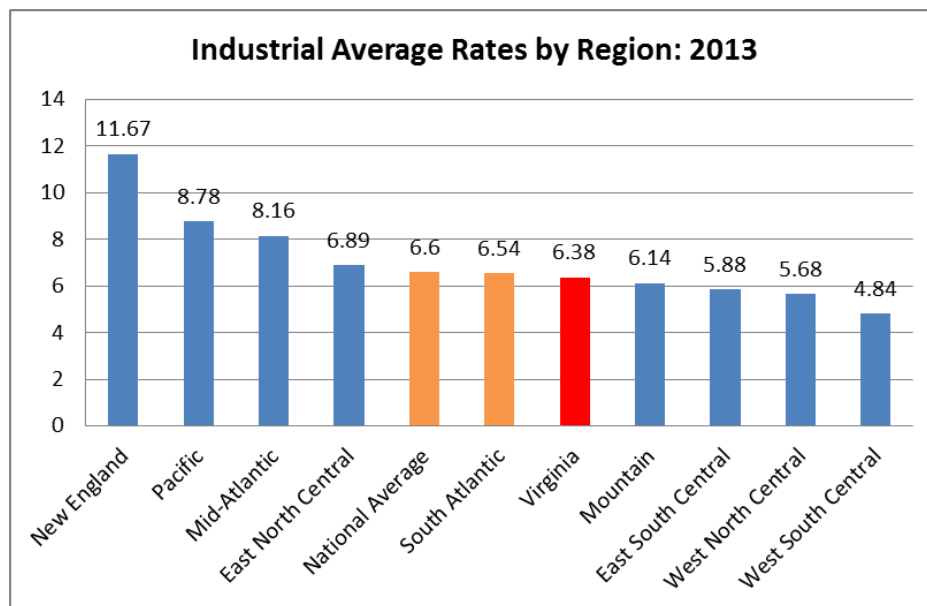


Virginia's Resources

- Stable energy resource pool to serve present and future residential, commercial, industrial and transportation needs
- 10 natural gas companies serve the State with an extensive network of underground pipes and other gas facilities
- Highly skilled and productive workforce – ranks among the top ten states in labor productivity

Average Industrial Rates

- Extremely reliable electric service with very competitive rates
- Average cost per unit of electricity for the industrial sector – 6.38 cents



Rates (In cents/kilowatt-hour)

Source: Edison Electric Institute, Typical Bills and Average Rates Report, Winter 2013