

The logo features a stylized globe at the bottom with glowing yellow and blue lines radiating from a central point in North America. Above the globe, the text 'greater washington' is written in a white, lowercase, sans-serif font. To the right of this, the words 'BIOTECHNOLOGY & LIFE SCIENCES' are stacked in a bold, uppercase, sans-serif font. Below that, 'Industry Report' is written in a smaller, lowercase, sans-serif font. The background is a solid orange color with a pattern of thin, white, curved lines that sweep across the page.

greater washington

**BIOTECHNOLOGY &  
LIFE SCIENCES**

Industry Report

PART OF A SERIES OF EXCLUSIVE RESEARCH BY:

**GREATER WASHINGTON  
INITIATIVE**

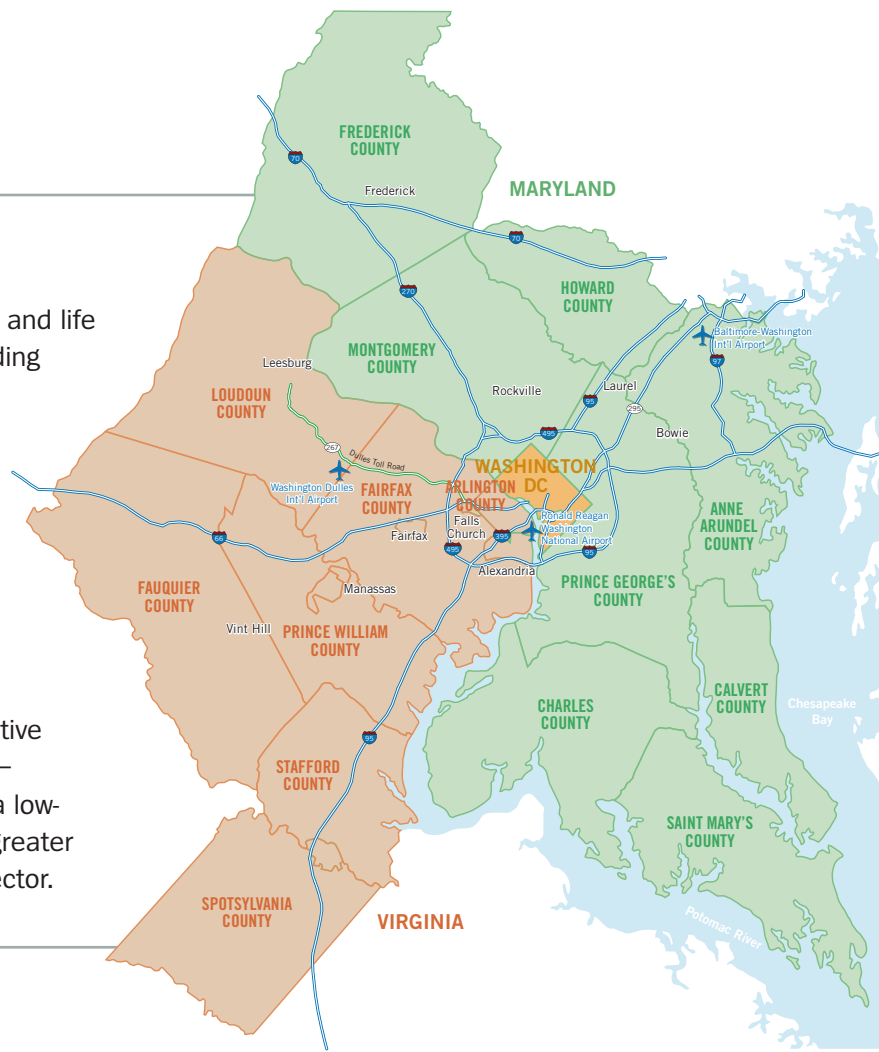
Regional Economic Development

Washington, DC | Maryland | Virginia

## GREATER WASHINGTON

During the past quarter century, the biotechnology and life sciences sector has played a critical role in extending and improving the lives of millions of individuals worldwide. In areas such as medical devices, the life sciences have produced extraordinary improvements in the treatment of heart disease and other chronic conditions.

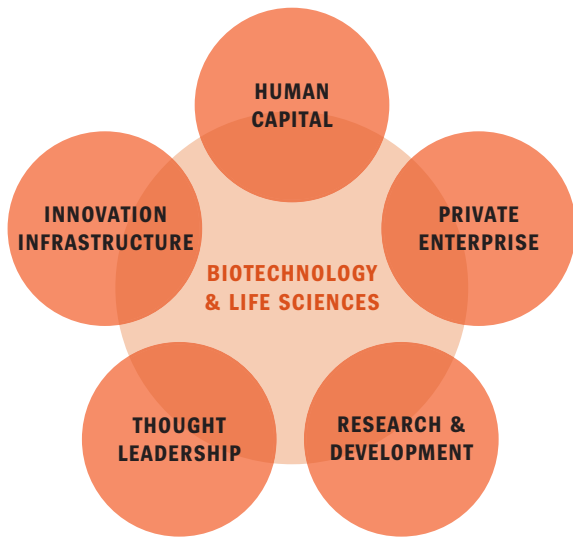
Advances in biotechnology have proven integral to the development of more effective treatments for numerous diseases, including cancer and HIV/AIDS. Outside of health care, biotechnology has extended its reach into new areas such as alternative energy. With the world's rapidly aging population — combined with growing pressures to transition to a low-carbon economy — the next 25 years hold even greater promise for the biotechnology and life sciences sector.



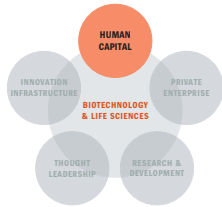
## GREATER WASHINGTON CONNECTS THE DOTS

Despite the efforts of communities throughout the world to promote biotechnology and life sciences, very few regions can fully support industry needs. Greater Washington is uniquely positioned and distinctly advantaged to support growth in this crucial sector, today and into the future.

Ultimately, Greater Washington creates strategic advantages for companies by connecting the dots of biotechnology and life sciences better than any other region in the world. Greater Washington's leadership and integration across a portfolio of assets — human capital, private enterprise, research and development, innovation infrastructure and thought leadership — will continue to nurture world-class biotechnology and life sciences firms.



We engaged a printer for the production of this piece that is 100% wind powered, carbon neutral, uses a waterless printing process, and is an EPA Green Power Partner and EPA Climate Leader. It was printed on FSC certified paper using vegetable-based inks.



## HUMAN CAPITAL

Greater Washington's human capital is without peer. The region leads the nation in educational attainment; 47 percent of residents in the region possess a bachelor's degree, and 22 percent have a master's or doctorate degree. Smart people are attracted to other smart people, creating a virtuous cycle of knowledge production and attraction. The resulting critical mass of highly educated individuals in Greater Washington provides the region with a workforce poised to produce the next generation of life-sustaining technologies in biotechnology and life sciences.

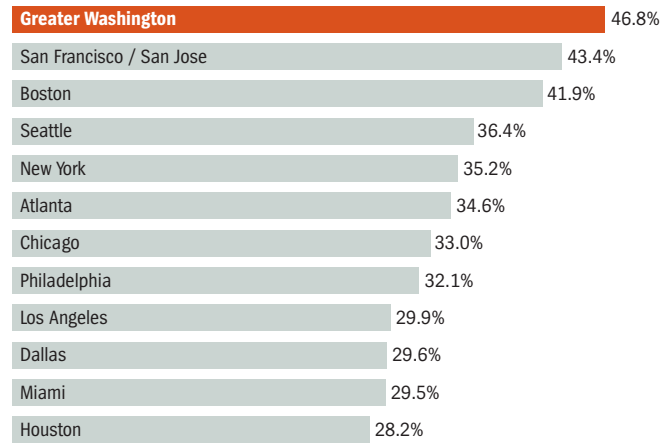
Among the country's leading metropolitan regions, Greater Washington features the third-highest concentration of life and physical scientists, including microbiologists, biological technicians and epidemiologists. In 2008, Greater Washington featured 9.1 life and physical scientists for every 1,000 workers — more than twice the national average. From established multinationals to nascent startups, biotechnology and life sciences firms enjoy unparalleled access to one of the world's richest pools of specialized talent.

Greater Washington's remarkable human capital is reflected in the region's proven employment capacity in biotechnology and life sciences. The biotechnology and life sciences industry employs more than 37,500 workers in Greater Washington. On a per capita basis, this represents approximately 130 biotechnology and life sciences professionals for every 10,000 workers — the fourth-highest concentration in the United States.

With the country's most educated workforce and collaborative initiatives that bring together government, universities and private employers, the Greater Washington region provides a remarkably supportive environment for biotechnology and life sciences companies. No other region has a workforce better equipped to improve the lives of millions of Americans through biotechnology and life sciences applications.

### Educational Attainment

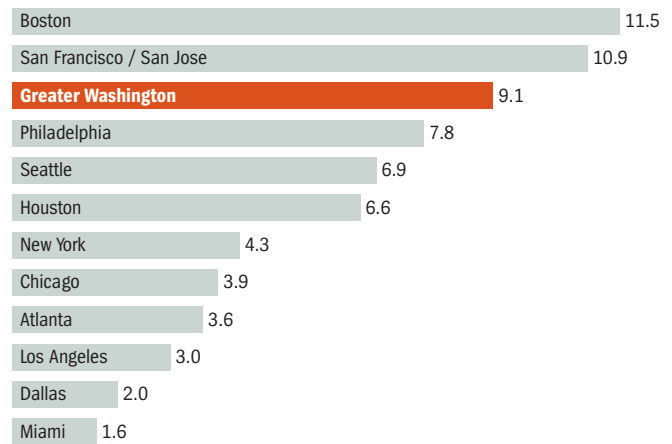
Percent of Population 25+ with Bachelor's Degree or Higher, 2008



SOURCE: US Census Bureau

### Biotechnology & Life Sciences Human Capital

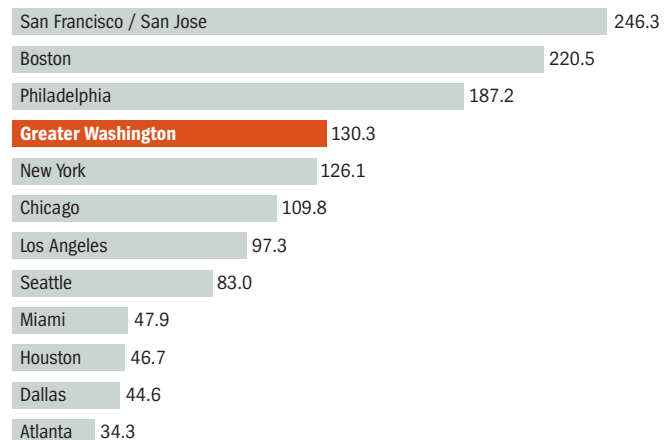
Life and Physical Scientists per 1,000 Workers, 2008



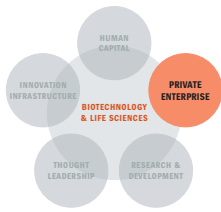
SOURCE: US Census Bureau

### Biotechnology & Life Sciences Employment Concentration

Biotechnology & Life Sciences Professionals per 10,000 workers, 2008



SOURCE: Bureau of Labor Statistics



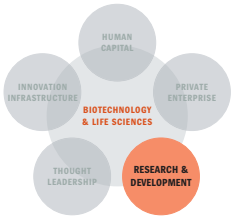
## PRIVATE ENTERPRISE

From ambitious startups to mature players in the biotechnology and life sciences industry, Greater Washington is home to some of the world's most innovative companies. Here is a representative sample of some of the region's exciting biotechnology and life sciences firms.

<p><b>Amarex Clinical Research</b> Amarex is a full-service contract research organization that provides clinical regulatory strategy and product development services for drug, medical device, and diagnostic kit approvals in the US and other countries.</p>	<p><b>Amgen</b> Amgen is the world's largest independent biotechnology medicine company. The company discovers, develops, manufactures and markets protein-based human therapeutics to fight anemia, arthritis, inflammation, and cancer.</p>	<p><b>Bode Technology Group</b> Bode Technology Group is a biotechnology company that provides forensic DNA analysis, advanced DNA collection products, and research services to law enforcement agencies, federal and state governments, crime laboratories, and disaster management organizations throughout the world.</p>	<p><b>Biogen Idec</b> One of the oldest independent biotechnology firms in the world, Biogen Idec is a global leader in the development and commercialization of oncology, immunology, and neurology biologics. Biogen Idec products include treatments for multiple sclerosis and non-Hodgkin's lymphoma.</p>	<p><b>Biovail Technologies</b> Canada's largest publicly-traded pharmaceutical company, Biovail applies advanced drug-delivery technologies to improve the clinical effectiveness of medicines. The company's innovations extended the lifecycles of numerous products. Biovail is currently developing pharmaceuticals that address central nervous system disorders.</p>
<p><b>CEL-SCI</b> CEL-SCI is involved in the research and development of immunotherapy products for the treatment of cancer and infectious diseases. The company's core capabilities include: drug discovery, research, development, and manufacturing of complex biological substances.</p>	<p><b>Ceres Nanosciences</b> Ceres is a biomedical nanotechnology company that develops platforms and research applications to advance disease screening, drug discovery, and diagnostic research. The company's patented Nanotrap technology promises to improve the efficiency, reliability, sensitivity and accuracy of a wide array of critical diagnostic processes.</p>	<p><b>Eli Lilly</b> The tenth largest pharmaceutical company in the world, Eli Lilly discovers, produces, and delivers pharmaceutical and biopharmaceutical medications in the areas of neuroscience, endocrinology, cardiovascular disease, oncology, and infectious disease.</p>	<p><b>Emergent BioSolutions</b> Emergent BioSolutions is a biopharmaceutical company focused on the development, manufacture and commercialization of vaccines and therapeutics that assist the body's immune system to prevent or treat diseases. The company's product pipeline targets infectious diseases such as tuberculosis, typhoid, flu, and chlamydia.</p>	<p><b>Eurofins Medinet</b> Eurofins Medinet provides the pharmaceutical industry with full central laboratory service packages. Eurofins Medinet's offerings include comprehensive support in genomic testing, microbiology testing in clinical trials, laboratory testing, data management, logistics services, project management, and highly specialized bioanalytical services.</p>
<p><b>Fisher BioServices</b> Fisher BioServices provides logistics and repository services that help support clinical studies and the research and development process. The company offers a comprehensive portfolio of products and services with respect to sample collection, processing, testing, storage, transportation, and relocation.</p>	<p><b>GenVec</b> GenVec is a pharmaceutical company that develops novel therapeutic drugs and vaccines for the prevention and treatment of infectious diseases and cancer. The company's gene-based product candidates help deliver medically beneficial proteins directly at the site of disease.</p>	<p><b>Human Genome Sciences</b> Human Genome Sciences works to create and develop novel medicines to treat autoimmune, cardiovascular, infectious, and metabolic diseases. Human Genome Sciences holds US patents covering genes, proteins, antibodies, and other proprietary technologies.</p>	<p><b>Life Technologies</b> Life Technologies Corporation is a global biotechnology tools company that supplies reagents and research consumables, provides innovative instrument systems and solutions to accelerate academic and clinical research, drug discovery and development, pathogen detection, environmental analysis, and forensic DNA analysis.</p>	<p><b>Lonza</b> Lonza is one of the world's leading suppliers to the pharmaceutical, health care and life sciences industries. Lonza is also a global leader in the production and support of active pharmaceutical ingredients, including both chemical, and biological agents.</p>
<p><b>MacroGenics</b> MacroGenics specializes in the discovery, development and delivery of novel biologics. The company's portfolio of product candidates includes three focus areas: autoimmune disorders, oncology, and infectious diseases.</p>	<p><b>MedImmune</b> MedImmune develops, manufactures and markets new therapeutic and preventive medicines in the areas of infectious disease, oncology, respiratory disease and inflammation, cardiovascular, gastrointestinal disease, and neuroscience.</p>	<p><b>Mediatech</b> Mediatech manufactures and supplies cell culture and molecular biology reagents to biopharmaceutical, academic and government research facilities, as well as biotechnology companies. The company's diverse portfolio includes cell culture media, basal salt solutions, antibiotics, sera, specialty media, and flexible packaging systems.</p>	<p><b>Pfizer</b> Pfizer is a global pharmaceutical company that discovers, develops and markets traditional and biotechnology-based medicines and products to advance wellness, prevention, treatments, and cures for most current diseases.</p>	<p><b>Qiagen</b> Qiagen is the leading provider of technologies to isolate and develop specific target biomolecules. The company develops and markets solutions for animal and veterinary testing, biomedical research, drug development, genetic identification, molecular diagnostics, environmental, and water testing.</p>
<p><b>TessArae</b> TessArae is a diagnostics company that develops microarray-based tools and services for the simultaneous detection and definitive identification of infectious disease agents, including natural and emergent viral and bacterial pathogens.</p>	<p><b>United BioSource</b> United BioSource is a global medical and research organization. The company designs and implements clinical development programs, conducts safety studies, provides scientific consulting and performs other support services that help biopharmaceutical and medical device manufacturers develop and commercialize their products.</p>	<p><b>United Therapeutics</b> United Therapeutics focuses on the development and commercialization of therapeutics for patients with chronic and life-threatening conditions. While the company's immediate focus is in the field of cardiovascular medicine, United Therapeutics is also investigating treatments for cancer and infectious diseases.</p>	<p><b>Wellstat Therapeutics</b> Wellstat Therapeutics is a biopharmaceutical company dedicated to the discovery, development and commercialization of innovative therapeutics. The company's focus includes the fields of oncology, metabolic, neurometabolic, and neurodegenerative diseases.</p>	<p><b>The Weinberg Group</b> The Weinberg Group is an international scientific and regulatory consulting firm that helps companies address regulatory requirements, improve manufacturing processes and support products in the legal system and the media.</p>

Biopharmaceuticals

Biotechnology & Life Sciences Services



## RESEARCH & DEVELOPMENT

With some of the country’s highest levels of venture capital funding, research and development expenditures, and innovation grants to small businesses, Greater Washington stands at the forefront of important advancements in biotechnology and life sciences.

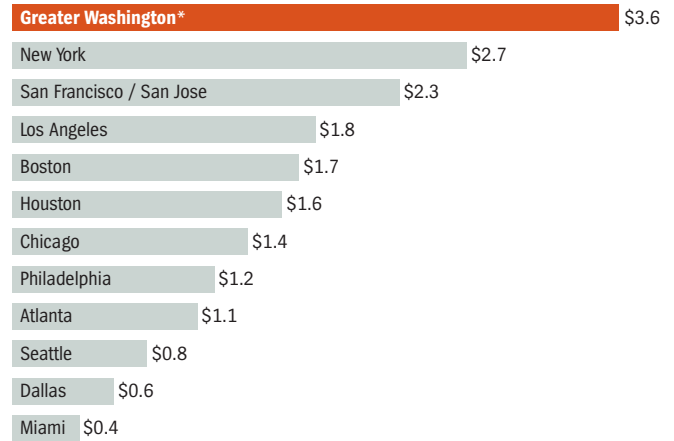
Creating a new biotechnology and life sciences product is a high-risk, high-reward venture. Producing a profitable and commercially viable treatment may take a decade or longer and cost more than a billion dollars. Basic university research and development is crucial in lessening the cost of development while simultaneously increasing the number of opportunities for success. Greater Washington features higher levels of academic funding than any other region in the country. In 2008 alone, area universities and colleges managed over \$3.5 billion in research and development expenditures — more than Atlanta, Dallas, Miami, and Seattle combined.

Entrepreneurship is crucial in transforming discoveries made in laboratories into life-saving and life-enhancing biotechnology and life sciences therapies. Two federal programs — Small Business Innovation Research (SBIR) Awards and Small Business Technology Transfer (STTR) Awards — are specifically designed to help fund small businesses engaged in promising research and development projects. In 2008, these two programs provided Greater Washington biotechnology and life sciences firms with more than \$28 million in funding. Often, these public investments are complemented by the private money of venture capitalists and angel investors.

Venture capital helped create the biotechnology industry, and such funding continues to play a pivotal role in supporting the broader life sciences sector. With the country’s fifth-largest biotechnology and life sciences venture capital market, Greater Washington provides an ideal environment for ambitious companies with compelling technologies. In 2009 alone, investors poured nearly \$100 million into Greater Washington biotechnology and life sciences firms.

### Research & Development, 2008

Expenditures at Universities and Colleges (in billions)

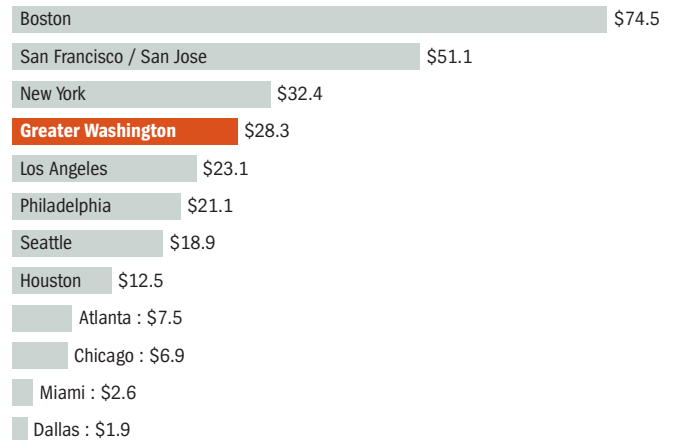


SOURCE: National Science Foundation

\*Includes Johns Hopkins

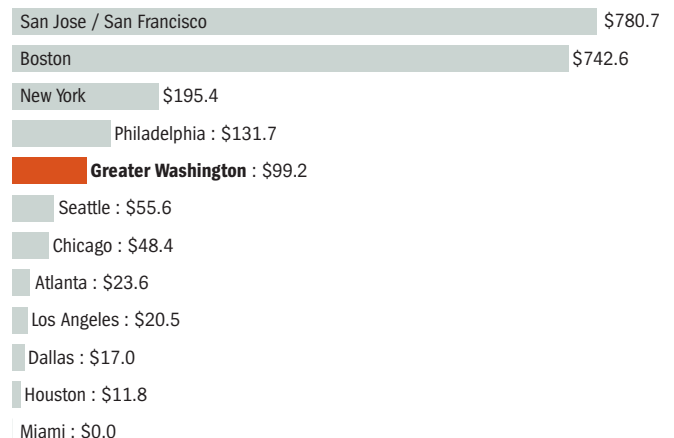
### Biotechnology & Life Sciences Small Business Innovation

National Institutes of Health SBIR & STTR Awards, 2008 (in millions)

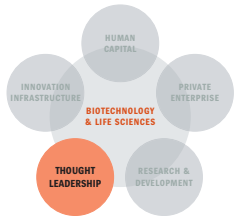


SOURCE: National Institutes of Health

### Biotechnology Venture Capital Funding, 2009 (in millions)



SOURCE: PricewaterhouseCoopers



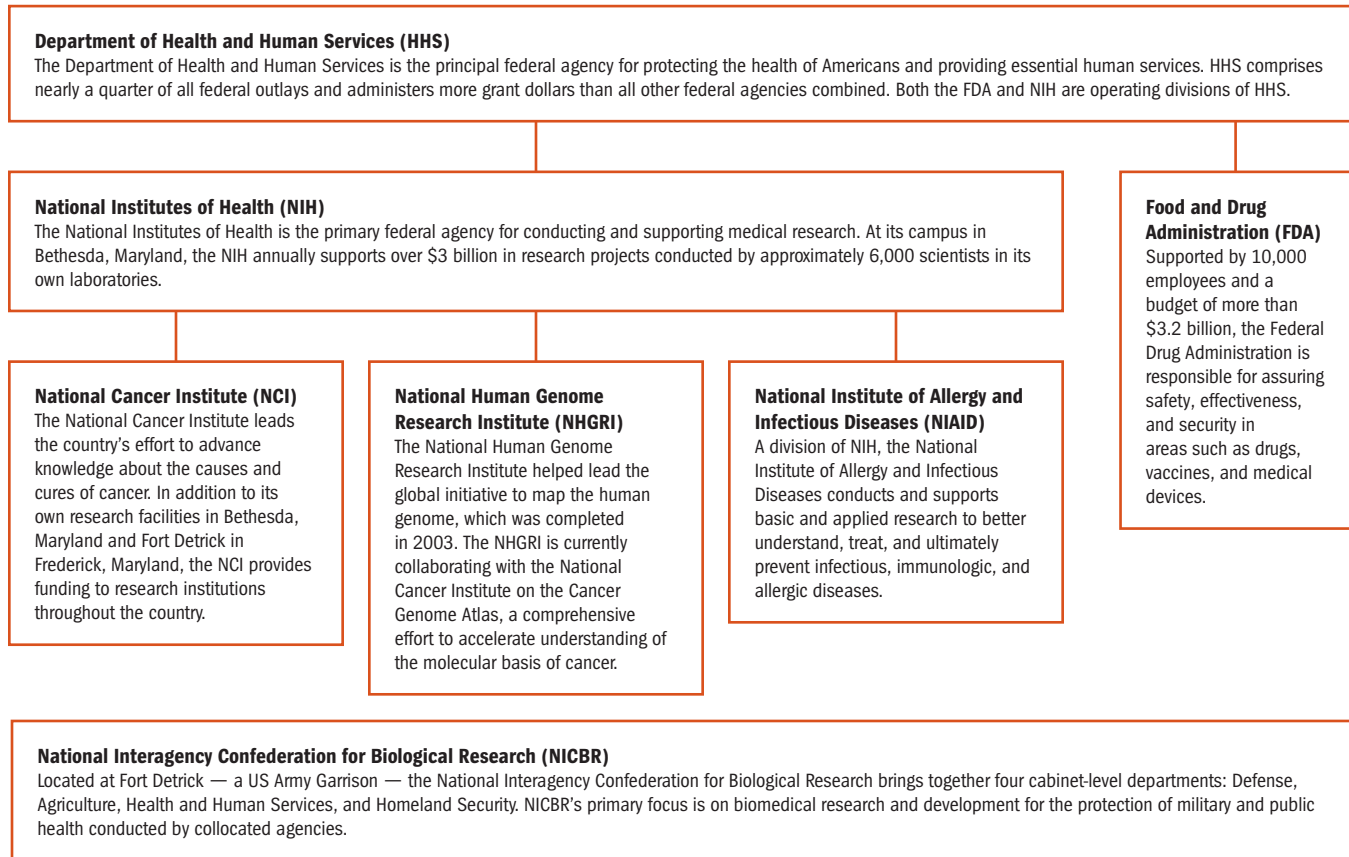
# THOUGHT LEADERSHIP

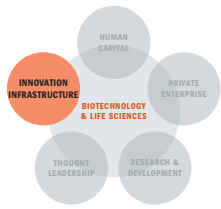
Greater Washington is home to the country's most important leaders and policymakers for biotechnology and life sciences, and represents one of the largest concentrations of research institutions in the world.

## ASSOCIATIONS & NON-PROFITS

<p><b>Association for Molecular Pathology (AMP)</b> AMP is a non-profit scientific society that supports the development of new technologies in molecular biology. The organization is dedicated to the advancement, practice, and science of clinical molecular laboratory medicine, as well as research based on the applications of genomics and proteomics.</p>	<p><b>Advanced Medical Technology Association (AdvaMed)</b> An association of medical technology companies, AdvaMed advocates for a legal, regulatory and economic environment that advances global health care by assuring worldwide patient access to the benefits of medical technology.</p>	<p><b>Biotechnology Industry Organization (BIO)</b> BIO is the world's largest biotechnology organization and provides advocacy, business development, and communications services for more than 1,200 members worldwide. The organization represents private-sector enterprises, state and regional biotech associations, service providers to the industry, and academic centers.</p>	<p><b>The Biotechnology Institute</b> The Biotechnology Institute offers educational and research programs for teachers, students, opinion leaders, and general audiences to raise awareness and understanding of biotechnology.</p>
<p><b>BIO Ventures for Global Health (BVGH)</b> BIO Ventures for Global Health is a non-profit organization whose mission is to save lives by accelerating the development, distribution and accessibility of novel biotechnology-based drugs, vaccines, and diagnostics to address the unmet medical needs of the developing world.</p>	<p><b>MdBio</b> A division of the Tech Council of Maryland, MdBio seeks to unify, empower and advance Maryland's bioscience industry, providing comprehensive support services to nearly 500 members and the broader community. Areas of emphasis include corporate and business development, networking and community building, education and workforce development, and communications.</p>	<p><b>Pharmaceutical Research and Manufacturers of America (PhRMA)</b> PhRMA advocates for public policies that encourage discovery of new medicines by pharmaceutical and biotechnology research companies. PhRMA represents the country's leading research-based pharmaceutical and biotechnology companies.</p>	<p><b>Virginia Biotechnology Association (VaBIO)</b> VaBIO promotes the bioscience industry in Virginia, expands the knowledge and expertise of Virginia's businesses concerning the life sciences, and enhances public awareness of the biotechnology industry in Virginia. VaBIO represents more than 150 member companies from all areas of the biotechnology and life sciences industry.</p>

## FEDERAL RESEARCH ASSETS





## INNOVATION INFRASTRUCTURE

In addition to being the genomic capital of the world, Greater Washington's innovation infrastructure supports many of today's groundbreaking technologies in biotechnology and life sciences.

### AMERICAN TYPE CULTURE COLLECTION (ATCC)

The American Type Culture Collection is an independent, private, non-profit biological resource center and research organization. ATCC provides biological products, technical services and educational programs to private industry, government and academic organizations. ATCC's mission is to acquire, authenticate, preserve, develop and distribute biological materials, information, technology, intellectual property and standards for the advancement and application of scientific knowledge.

### BIOTECHNOLOGY PROGRAM AT NORTHERN VIRGINIA COMMUNITY COLLEGE

Northern Virginia Community College's Associate in Applied Science Degree in Biotechnology helps support Greater Washington's growing biotechnology sector. Students enrolled in the program acquire skills such as quality control measures, basic chemical safety precautions, attributes of cell membranes, and sampling techniques. These skills help support research aimed at developing new drugs to cure diseases such as cancer, AIDS, Alzheimer's, and diabetes.

### CENTER FOR ADVANCED RESEARCH IN BIOTECHNOLOGY (CARB)

The mission of CARB is to advance biotechnology by integrating molecular and biological science, as well as develop new technologies for measurement, analysis, and design. The center is a partnership between the University of Maryland Biotechnology Institute, the National Institutes of Standards and Technology, and Montgomery County, Maryland.

### CENTER FOR BIOSYSTEMS RESEARCH (CBR)

Established in 1987, the Center for Biosystems Research is an interdisciplinary research center with state-of-the-art laboratories at Shady Grove and College Park. CBR helps integrate discovery and application by fostering multidisciplinary research, embracing new technologies, and forging strategic partnerships.

### DRUG DISCOVERY PROGRAM (DDP) AT GEORGETOWN UNIVERSITY

The Drug Discovery Program helps bridge the basic science discoveries to the clinic by identifying candidate molecular targets and compounds, validating targets and compounds in pre-clinical studies, and developing technologies to enhance the progress of potential candidate molecules. Ultimately, the DDP strives to shorten the drug discovery process and increase the rate of new therapeutic discovery.

### HOWARD HUGHES MEDICAL INSTITUTE (HHMI)

Founded in 1953 by aviator Howard R. Hughes, the Howard Hughes Medical Institute is headquartered in Chevy Chase, Maryland and employs more than 3,000 individuals across the United States. In addition to advancing biomedical research and science education nationally, HHMI's conducts research at its Janelia Farm Research Campus, a world class research facility. At the Janelia Farm Research Campus, outstanding scientists from diverse disciplines use emerging and innovative technologies to pursue biology's most challenging problems.

### INSTITUTE FOR BIOMEDICAL SCIENCES (IBS) AT THE GEORGE WASHINGTON UNIVERSITY

The Institute for Biomedical Sciences is the administrative and academic home for interdisciplinary Ph.D. training in the biomedical sciences. Established in 1996 to integrate its partner institutions, including The George Washington University Medical Center, the Columbian College of Arts and Sciences and The Children's National Medical Center, IBS brings together a wealth of teaching and research opportunities.

### NATIONAL CENTER FOR BIODEFENSE AND INFECTIOUS DISEASES (NCBID) AT GEORGE MASON UNIVERSITY

The National Center for Biodefense and Infectious Diseases (NCBID) is an integral part of George Mason University's life sciences program. Founded in 2001 to address the challenges to national and international security posed by the threat of biological terrorism, the scope of the center has evolved to include the study of infectious diseases that are emerging from populations around the world.

## **GREATER WASHINGTON INITIATIVE** **Helping Companies Make Informed Decisions**

The Greater Washington Initiative (GWI) is the regional private-public economic development organization representing Washington, DC, Northern Virginia, and Suburban Maryland. GWI's complimentary, confidential services provide companies and site selection consultants with the information they need to make informed decisions about relocating or expanding into the Greater Washington region.

**For more statistics and information about the region, visit [www.greaterwashington.org](http://www.greaterwashington.org).**

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**[www.greaterwashington.org](http://www.greaterwashington.org)**

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