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**FACILITIES AND OTHER RESOURCES**

**FALL, 2023**

This page contains links to descriptions of many facilities and resources available to GW investigators. Resources are arranged alphabetically. You can also use the find function of your browser to search for the desired resource by title. Please note that URLs are allowed in NIH applications and are provided here only for more detail.

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**Instructions on information to provide in the NIH Resources section.** Answer the following questions:

What **facilities**will be used? Include the following subheadings (indicate N/A if not applicable):

* Laboratory (bldg. location, sq ft, lab facilities incl cold room, freezer, hoods, etc.)
* Animal
* Computer (number and type of computers, wireless network, shared computers and software)
* Office
* Clinical
* Other, e.g., machine shop, electronic shop.

**Biohazards**or Other Potentially Dangerous Substances – If you are using anything classified as Select Agent, describe here any special facilities used for working with these substances.

How will the **scientific environment**in which the research is to be done **contribute to the** **probability of success**? Describe:

* Institutional support;
* Physical resources; and
* Intellectual rapport

For **Early-Stage Investigators** describe:

* Institutional investment in your success, e.g., resources for classes, travel, and training;
* Collegial support, e.g., mentors provided through campus, college, division, departmental, or other process; career enrichment programs; assistance and guidance in the supervision of trainees involved with the project; and availability of organized peer groups; and
* Logistical support, e.g., administrative management and oversight and best practices training; and
* Financial support such as protected time for research with salary support.

**GENERAL TEXT**

**General environment at GW**

GW is a private, midsized research university with a main campus in the highly urban center of Washington DC. Founded in 1821 as Columbian College, the university has grown to contain 14 colleges and schools. GW has 11,000 undergraduate and 15,000 graduate students enrolled at all locations. Home to traditional disciplines, our research spans science, technology, health, policy, global security, arts, and humanities. The Foggy Bottom Campus contains most of the residential dormitories in which GW students live, as well as the GW Hospital, the medical school laboratories in Ross Hall, the Milken Institute School of Public Health, and the adjacent Science and Engineering Hall.

The GW School of Medicine and Health Science was established in 1824 and today has more than 3,000 faculty members, including 859 full-time and 2,165 limited-service members, who are committed to training the next generation of physicians and scientists. GW is a large medical school with some 750 medical students. GW has embarked upon an ambitious plan to increase research and researchers, and for the 2023-2024 academic year was ranked #58 in the category of best medical schools in Research (US News & World Report, 2023).

GW’s geographical location is within an hour of the Rockville technology corridor (including companies like MedImmune, AstraZeneca, and others), the National Institutes of Health, Food and Drug Administration, non-profit health advocacy and policy institutions (e.g. Research! America, American Society for Microbiology; Brookings Institute).

In 2010, the NIH awarded a C06 grant to renovate approximately $25,000 sft in the center's main building to create a state-of-the-art Research Center for Neglected Disease of Poverty. The renovation paved a way to the establishment of the Research Center for the eradication of HIV, with 4 new researchers as faculty members. GW was chosen as one of two sites for the first clinical trials of an HIV vaccine candidate, and MITM hosts the primary site of the AIDS and Cancer Specimen Resource, the largest collection of annotated HIV malignancy specimens globally.

Health Sciences programs provide a training ground for the nation's experts in patient care, healthcare quality, medical laboratory sciences, clinical management and leadership, and numerous other disciplines. Health Sciences offers four entry-level clinical training programs (Emergency Medical Services, Medical Laboratory Sciences, Physical Therapy, and Physician Assistant) in addition to professional programs for advanced training in a wide range of health fields including clinical research administration, regulatory affairs, clinical management, and leadership, clinical and translational research, translational health sciences, biomedical informatics, integrative medicine and health, health care quality, disaster response, and occupational therapy. The GW Physician Assistant program is ranked 3rd out of more than 225 accredited programs nationally. Health Sciences is active in continuing education and professional development activities, operates numerous military-affiliated programs, and jointly operates a health sciences academy with Alexandria City Public Schools. Health Sciences is a global leader in online and blended education, with national experts in curriculum development, instructional design, and program evaluation

**Commitment to research excellence**

[**https://smhs.gwu.edu/research**](https://smhs.gwu.edu/research)

The majority of extramural funds received are allocated for biomedical research. Research funding primarily is obtained on a competitive basis from the federal government, particularly NIH. In FY 2023, over 150 SMHS faculty reported expenditures over $53M million, with the majority from federal sources. There are 24 academic departments, numerous Research and three T32 training grants, the P30 DC-CFAR with the School of Public Health, three U01 and one UM1 Cooperative Agreement awards. Additional research funding is received from private research foundations, state and local government agencies, private philanthropy, and industry.

**Commitment to outstanding patient care**

[**https://www.gwhospital.com/**](https://www.gwhospital.com/)

[**https://www.gwdocs.com/research**](https://www.gwdocs.com/research)

Medical Faculty Associates (MFA) is an independent multispecialty physician group practice encompassing more than 52 medical specialties. MFA physicians serve as full-time faculty of the GW School of Medicine and Health Sciences providing mentorship and teaching to medical students, residents, and fellows.

The George Washington University Hospital (GW Hospital) continues to be a leader in providing the highest level of quality and compassionate healthcare for the D.C. Region. U.S. News & World Report has just released the 2023-2024 ratings and rankings, in which GW Hospital is recognized as the **Best Regional Hospital.** GW ranks 5th in the region, which includes hospitals in D.C. and parts of Maryland, Virginia, and West Virginia. GW Hospital achieved "High Performing" status in two specialty areas, Neurology/Neurosurgery, and Urology, along with receiving “High Performing” designations in 10 common procedure and condition areas. In addition, GW Hospital received the American College of Cardiology’s National Cardiovascular Data Registry Chest Pain – Myocardial Infarction Registry Platinum Performance Achievement Award for 2023. **GW Hospital is the only hospital in Washington, D.C., to be recognized for this service line.** Children’s National Hospital, GW Hospital’s NICU partner, was recently ranked the number two hospital in the country for neonatology by U.S. News & World Report. In addition to these recent U.S. News & World Report recognitions, GW Hospital also provides high-quality care in the region through its designation as a Level I Trauma Center and designation as a Comprehensive Stroke Center. The George Washington University Hospital was awarded a “B” in the Fall 2022 Leapfrog Hospital Safety Grade, a national distinction recognizing the hospital’s level of patient safety and quality of care.

**Commitment to outstanding education and training**

A key mission for SMHS is training the next generation of scientists and healthcare leaders. SMHS hosts more than 450 residents and fellows, more than 700 medical students, 130 physician assistant students, and 140 DPT students in our professional programs. SMHS functions as the administrative and quality control unit for ~75 IBS Ph.D. students enrolled in 5 Ph.D. programs, 65 students in Translational Health Sciences Ph.D. programs, and several master’s programs, undergraduate degree, and certificate programs.

**Commitment to diversity and Inclusion**

1. Health disparities in the DMV area. For instance, within a 10-mile radius, there is a 22-year gap in life expectancy between residents who live in the Woodley Park neighborhood of Ward 3 and residents who live in the St. Elizabeth’s neighborhood of Ward 8 ([DC.gov 2019](#_ENREF_12)). Inequities in disease incidence and mortality are the product of multiple determinants, including poverty, environmental threats, inadequate access to health care, individual and behavioral factors, and educational inequalities.
2. SMHS Representational Diversity. [**https://smhs.gwu.edu/smhs-workforce-diversity-snapshot**](https://smhs.gwu.edu/smhs-workforce-diversity-snapshot)

Enhancing diversity and inclusion in our biomedical workforce remains an important goal, as African American, Latinx and indigenous people make up about 30% of the US population but represent only about 10% of biomedical professionals.

* The Regular Faculty (SMHS total regular faculty, 2021, n= 1252) is affiliated with a variety of institutions such as CNH (54%), the GW Medical Faculty Associates (29%), SMHS (10%), the Veterans Administration (6%), and other organizations (1%). Overall, the regular faculty is 57% female, 56% White, 21% Asian, 9% African American; 4% Hispanic.
* The Ross Hall employee group (2021, n= 229) is 66% female, 51% White, 20% Asian,19% African American, and 7% Hispanic. The Research Full-Time subset (2021; n =77) is 66% female, 36% White, 36% Asian, 9% African American, and 13% Hispanic. The Staff Full-Time subset (2021; n=99) is 78% female, 53% White 7% Asian, 33% African American, and 4% Hispanic.
* The MD program (2021 entering class; n=183) is 61% female, 31% Asian, 12% African American, and 10% Hispanic. In addition, 11% of students describe themselves as disadvantaged by AMCAS eligibility. The Ph.D. program (2021 IBS; n= 63) is 70% female, 71% White, 13% Asian, 5% African American, 11% Hispanic. In addition, at least one student has a physical disability and 3% describe themselves as financially disadvantaged by NIH eligibility. The Physical Therapy Program (2020 + 2021; n=276) is 68% female, 61% White, 10% Asian, 2% African American, 10% Hispanic. The Physician’s Assistant Program (2020+ 2021) is 78% female, 49% White, 19% Asian, 7% African American, 13% Hispanic.

C. Pathway Programs, see <https://smhs.gwu.edu/2022-pathway-diversity-and-training-programs>, including:

* Precollege programs include 1)**The** DC Health and Academic Prep Program, a 4-week, pre-college program for rising high school juniors and seniors with an interest in healthcare professions; *2)* The GW SMHS Upward Bound Program serves grades 9-12 from partnered public and public charter schools in Wards 5, 6 and 7 in the District of Columbia; 3) The High-School-Mentored Experience To Expand Opportunities in Research (HS-METEOR) program 4) A new partnership with Virginia high school and community colleges to stimulate interest and bridge to the healthcare professions
* Medical Student- Mentored Experience To Expand Opportunities in Research (MD-METEOR) offers a competitive fellowship for 5 GW medical students from groups underrepresented in medicine who are interested in an academic research career.
* The University Office for Diversity, Equity, and Community Engagement led by Carolyn Laguerre-Brown has established support services for disability support, multicultural affairs, Title IX, community engagement, and bias incident reporting that underlie GW programs.
	1. Faculty Engagement. The **Anti-Racism Coalition (ARC**), housed within the SMHS Office of Diversity and Inclusion, was conceived from a grassroots discussion after the death of George Floyd. Through ARC, The medical faculty, staff, scientific educators, and a broad array of learners at The George Washington School of Medicine & Health Sciences (SMHS), the GW Hospital, and the GW Medical Faculty Associates (MFA) have implemented a multifaceted plan since June 2020, actively supported by and engaged with our executive leadership and working members at all levels, to identify, educate and eradicate all forms of racism in our educational processes, working environments and operational procedures.

**Research Infrastructure (buildings)**

**Ross Hall**

[**https://venues.gwu.edu/ross-hall**](https://venues.gwu.edu/ross-hall)

Steps from the Foggy Bottom metro station, the Walter G. Ross Hall is home to the GW School of Medicine and Health Sciences. Ross Hall features classrooms, laboratory spaces, and the Himmelfarb Health Science Library. The George Washington University’s Ross Hall was constructed in 1973 and houses facilities for their medical school program, including their Clinical Learning and Simulation Skills and CSA Simulation Center on the 4th floor. The building contains laboratory classrooms, administrative support space, and the Himmelfarb Health Sciences Library.

**Clinical Skills Assessment Simulation Center**

[**https://physicianassistant.smhs.gwu.edu/curricula-class-center**](https://physicianassistant.smhs.gwu.edu/curricula-class-center)

The 17,000 SF Clinical Skills Assessment (CSA) and Simulation Center renovation on the 4th floor of Ross Hall replaces an existing Simulation Center on the 6th floor. Replicating an actual healthcare setting for procedural training, the Simulation Center includes inpatient/outpatient rooms, control rooms, debriefing rooms, wet lab/dry lab, high-acuity simulation rooms utilizing electronic mannequins, reception, administrative offices, break-out space, and storage. Primary users include medical and health science students, residents, fellows, and practicing staff for educational purposes and professional development.

**George Washington University Hospital**

[**https://www.gwhospital.com/node/595**](https://www.gwhospital.com/node/595)

The mission of the George Washington University Hospital is to provide the highest quality healthcare, advanced technology, and world-class service to our patients in an academic medical center dedicated to education and research.

The George Washington University Hospital has approximately 395 beds, 20+ operating suites and 1 hybrid operating room along with a level III neonatal intensive care unit. The GW Hospital is accredited by The Joint Commission and licensed by the District of Columbia Regulatory Affairs Department. In 2021 there were 18,464 admissions, 23,611 surgeries, 2558 births, 46,976 emergency room visits and 171,761 outpatient visits More than 750 physicians cover 51 specialty and subspecialty areas. As a teaching hospital for the GW School of Medicine and Health Sciences (SMHS), physicians, medical students, and residents work together to deliver outstanding and compassionate clinical care while engaging in biomedical research that drives translation of breakthroughs to better health outcomes. GW achieved recognition as a “Best Regional Hospital” in the US News & World Report 2023-2024 ratings. This designation means that the GW University Hospital outperforms its peers in procedures and conditions that U.S. News & World Report evaluates, including risk-adjusted survival, patient experience, level of nursing care and successfully returning patients home following discharge.

**Science and Engineering Hall**

[**https://www.seas.gwu.edu/science-and-engineering-hall**](https://www.seas.gwu.edu/science-and-engineering-hall)

The SMHS experienced a strong increase in the number of funded investigators in the last five years with the completion of the strategic plan, bringing new research experts and energy to campus. In 2015, the University opened a $275M state-of-the-art, 500,000-square-foot Science and Engineering Hall. It is also hard to overstate the impact of hiring more than 40 biomedical faculty to the excitement on campus and the expansion of essential core facilities including flow cytometry, high-end microscopy imaging, genomics/proteomics, and bioinformatics for conducting research. State-of-the-art space for GW NIC’s nanofabrication clean room and microscopy suite. SEH houses the Engineering School, Chemistry, and select faculty from Biology, Physics, and eventually Medicine and Public Health.

# GW SMHS and MFA (Academic Medical Enterprise) Strategic Plan 2023-2026

[**https://strategicplan.smhs.gwu.edu/**](https://strategicplan.smhs.gwu.edu/)

The four pillars of the Academic Medical Enterprise Strategic Plan are [**Education**](https://strategicplan.smhs.gwu.edu/education), [**Research**](https://strategicplan.smhs.gwu.edu/research), [**Clinical Care**](https://strategicplan.smhs.gwu.edu/clinical-care), and [**Population Health and Health Equity**](https://strategicplan.smhs.gwu.edu/population-health-health-equity). In each of the four pillars of the strategic plan we aspire for local, regional, national and international recognition of excellence. These four pillars of our academic medical enterprise are built on the foundation of our three shared cultural values of promoting the wellness of our community, championing equity and inclusion, and being a welcoming and supportive environment for all.

**SPECIFIC FACILITIES AND RESOURCES**

**Animal Behavior Core**

The Animal Behavior Core is equipped with software to automatically record and analyze animal behavior. It allows trained users to perform various behavioral assays, including tests for motor activity (open field, ladder running), anxiety (elevated plus maze), social behavior, home cage behavior, and learning and memory (fear conditioning).

**Animal Research Facility**

[**https://research.gwu.edu/office-animal-research**](https://research.gwu.edu/office-animal-research)

The GWU Animal Research Facility (ARF) is fully accredited by the Association for the Assessment and Accreditation of Laboratory Animal Care International (AAALAC). The modern 17,000-square-foot facility at GWU is located primarily in Ross Hall and occupies facility housing and support space on five floors. The core is arranged in a vertical array with floors connected by a service elevator from the basement (B1) to floors 4, 5, 6, and 7. The facility also provides an examination and treatment room, quarantine, a diagnostic laboratory, isolation, cage sanitation, radiology, necropsy, and a surgery suite. The highly experienced and qualified ARF veterinary and laboratory animal care staff maintain eight species of research animals as well as multiple breeding colonies and provide animal care and technical support for the animal research community. The animal health care program is under the direction of a fully qualified veterinarian and managed by a facility manager who oversees the trained animal technicians. Animals in each room are observed daily for signs of illness by the animal technician responsible for husbandry. Routine veterinary medical care is provided to all animals by veterinary technicians under the direction of the attending veterinarian.

The animal facility is equipped with the Xenogen IVIS-Spectrum imaging system (Xenogen Corporation) to detect the bioluminescence imaging of a whole mouse. An additional 1500 sft fully serviced facility is available in the Science and Engineering Hall.

**Bioinformatics & Biostatistics**

[**https://smhs.gwu.edu/research/research-smhs/clinical-translational-research/biostatistics-bioinformatics**](https://smhs.gwu.edu/research/research-smhs/clinical-translational-research/biostatistics-bioinformatics)

Bioinformatics and biostatistical support is available through the Biomedical Informatics Center led by Dr. Qing Zeng PhD. Necessary statistical and computational expertise to analyze complex clinical and biological data including electronic medical records, advanced medical imaging, medical informatics, and high-throughput techniques in the -omics specialties. Please see <https://biomedinfo.smhs.gwu.edu/faculty-and-staff>. Additional core expertise is available through the Dept Genomics & Precision Medicine https://smhs.gwu.edu/isb/core-services, the McCormick Genomics & Proteomics Center <https://smhs.gwu.edu/mgpc/resources> and the GW Cancer Center <https://cancercenter.gwu.edu/research/shared-resources/cancer-informatics-core-pilot>

**Biomarker Discovery and Analysis facility**

[**https://smhs.gwu.edu/neuroscience/core-facilities**](https://smhs.gwu.edu/neuroscience/core-facilities)

Services in the Biomarker discovery and Analysis facility include 1) Quantitative PCR that allows analysis of transcripts in a 384 well platform and provides high-quality cDNA from tissues; 2) In situ hybridization on cryostat sections and access to a library of probes targeted to neural development and pathological conditions. Facilities include quantitative western blotting, luminescence and fluorescence microplate assays, primary cell culture, and electroporation systems, and a cell culture and ES cell facility.

**Biorepository Core**

[**https://smhs.gwu.edu/mitm-gwbiorepository/about**](https://smhs.gwu.edu/mitm-gwbiorepository/about)

The GW Biorepository assists researchers in the medical school by housing samples in the secured repository staffed with experienced biobankers and under the direction of the director. With more than 22 years of experience, the Director and staff oversee the integrity of over 100,000 biospecimens and clinical data, comprised of specimens related to HIV malignancies, neurology, and cancer cases at GW, as well as individual GW investigator specimens.

**Biostatistics Center**

[**http://www.bsc.gwu.edu/bsc/index.php**](http://www.bsc.gwu.edu/bsc/index.php)

The Biostatistics Center within the Milken Institute School of Public Health serves as the coordinating center for *large-scale multi-center clinical trials* and epidemiologic studies. The Center participates in population-based epidemiologic studies and conducts grant-supported research in biostatistical methods. The Biostatistics Center staff has extensive experience and expertise in biostatistics, epidemiology, clinical trial study design and data management, and administration and coordination of multi-center research studies.

The Biostatistics Center’s primary objective is to provide statistical leadership for the design, execution, and analysis of multi-center clinical trials and epidemiologic investigations. The Biostatistics Center includes activities in statistical methods, study design, data management, statistical analysis, and publications.

**Cancer Center**

[**https://cancercenter.gwu.edu/**](https://cancercenter.gwu.edu/)

GW demonstrated a strong commitment to cancer research with the establishment of the GWCC in late 2015. Since that time, the GWCC has grown to a membership of over 175 investigators and built several shared resources such as flow cytometry, small animal imaging, and cancer epidemiology that support our work. The GWCC brings together investigators focused on cancer research, clinical cancer care, cancer prevention and control, and community outreach and engagement across GW, GW University Hospital, the GW Medical Faculty Associates, the Milken Institute School of Public Health, Children’s National Hospital and affiliated health systems to offer a range of exciting research programs, seminars, and annual retreats. In 2022, the GWCC recruited Julie Bauman MD, MPH as Director of the GWCC. The GWCC is in an intensive growth phase expanding cancer research across clinical, basic, and population sciences to seek NCI designation within 3-5 years. The mission of the GWCC is to drive transformational research, personalized therapy, family-centered care, and cancer policy in the nation’s capital.

**GW Cancer Data Visualizer** <https://cancercenter.gwu.edu/cancer-data-visualizer>. This interactive shared resource web tool allows users to evaluate cancer-related data in the District of Columbia and surrounding counties in Maryland and Virginia along with data on social determinants of health (SDH)in our surrounding patient catchment area. Data presented in the DC Cancer Data Visualizer come from publicly available, de-identified data sets including: **Cancer incidence and mortality** data from the [*CDC*](https://www.cdc.gov/cancer/uscs/public-use/index.htm) and *DC Cancer Registry and* ***Population* demographics** from the US Census Bureau’s *American Community Survey*; Health behavior data from the DC Behavioral Risk Factor Surveillance Survey; Data on healthcare organizations, transportation, and other SDH  in the community from Open Data DC and Data.gov; Environmental exposure data from the US Environmental Protection Agency, such as data available through the EnviroAtlas.

**Cancer Clinical Trials Office**

[**https://cancercenter.gwu.edu/research/clinical-trials-office**](https://cancercenter.gwu.edu/research/clinical-trials-office)

The Clinical Trials Office (CTO) of the George Washington Cancer Center (GWCC) assists with the planning, conduct, and compliance of any cancer-related clinical trials, including those using pharmacologic or radiation therapies or investigational devices, as well as non-interventional trials. The CTO is overseen by an Associate Center Director of Clinical Investigations and a Senior Administrative Director and is staffed by nurses, regulatory personnel, data managers, and study coordinators. The CTO can provide protocol support regarding scientific review, HIPAA compliance, Human Subjects protection, and IRB requirements and submissions, as well as ongoing regulatory and reporting requirements. The CTO can also assist in the design, implementation, and execution of investigator-initiated clinical trials and correlative studies, including blood collection and processing and tissue procurement. A state-of-the-art software package for protocol and data management is being implemented.

**Cedar Hill**

To continue to address our commitment to the DC Metro patient catchment area, GW has broken ground on a new $375 million, 365,000 square foot, 136-bed full-service new “Cedar Hill” GW hospital including cancer services and ambulatory pavilion in Washington, DC’s Ward 8 community. SMHS Dean Bass, along with DC Mayor Muriel Bowser, DC Council members and leaders from GW, Children’s National Hospital, and Universal Health Services anticipate the opening of the new Cedar Hill Hospital and ambulatory pavilion in 2025. The new health complex will provide cancer services to a population facing alarming cancer health disparities.

**Cellular Therapy Laboratory at CNH**

[**https://research.childrensnational.org/labs/cellular-therapy**](https://research.childrensnational.org/labs/cellular-therapy)

The CTL is a Food and Drug Administration (FDA)-registered current Good Manufacturing Practices (GMP) facility charged with translating and manufacturing cell therapy products for use in clinical trials and stem cell transplantation. The facility is Foundation for the Accreditation of Cellular Therapy (FACT) accredited for processing of minimal and more-than-minimal manipulation products. It has expertise in manufacturing a broad array of cell therapy products, including dendritic cells, T cells, cell lines, monocytes, mesenchymal stromal cells (MSCs), and genetically modified cells. In addition to manufacturing the cells, the CTL supports quality assurance and quality control functions as required by the FDA, and has a quality program that details the process by which new cell therapy protocols are transferred to the CTL, including validations, process development, training, audits, documentation, product release, and also budget creation.

**Cell Therapy Unit at GW**

[**https://cancercenter.gwu.edu/research/shared-resources/stem-cell-transplantation-cell-therapy-laboratories**](https://cancercenter.gwu.edu/research/shared-resources/stem-cell-transplantation-cell-therapy-laboratories)

Led by Drs. Amarendra Neppali MD and Eric Yvon MD, the GW Cell Therapy Unit in Ross Hall provides centralized facility and resources for the preparation of therapeutic cellular products. This facility opened in 2023 and provides a centralized facility and resources for the preparation of therapeutic cellular products. Services include Hematopoietic Progenitor Cells (HPC) processing, CAR-expressing NK- and T-cell preparation, Antigen-specific cytotoxic T lymphocyte (CTL) generation, Regulatory T-cell (Treg) expansion, and Clinical grade vector production. The facility is Foundation for the Accreditation of Cellular Therapy (FACT) accredited for processing of minimal and more-than-minimal manipulation products.

**Classroom Resources**

[**https://acadtech.gwu.edu/classroom-search**](https://acadtech.gwu.edu/classroom-search)

Academic Technologies supports over 200 technology-enhanced classrooms and labs on the Foggy Bottom, Mount Vernon, and Virginia Science and Technology campuses. These learning spaces are equipped with innovative technology, which enhances the teaching and learning experience at GW. [GW Lecture Capture](https://acadtech.gwu.edu/lecture-capture) is also available in select spaces. Classroom selection is available at [**https://acadtech.gwu.edu/classroom-search**](https://acadtech.gwu.edu/classroom-search). They support the technological and educational needs of the faculty, staff, and students through 35 different classrooms, with seating sizes ranging from 8 to 180. They provide a multitude of services structured to support the teaching, learning, and research needs of the SMHS community. Videoconferencing, an equipment loan service, and on-site technical support are just a few of the services available.

**Computing**

The SMHS has a fully staffed IT unit that includes a director, network, and technical support staff to assist users with all projects and support requests. Our capabilities will allow for any required reference retrieval, any other data retrieval or exchange, and online database access. All faculty, staff, and students have access to electronic mail and collaboration software. SMHS faculty and staff members also have access to licenses that include an extensive range of word processing, analytic, graphics, mapping, and presentation software such as SPSS, Stata, SAS, Atlas.Ti, MPlus, Adobe Creative Suite, Nvivo, Qualtics, and ArcGIS.

All faculty, staff, and students have access to electronic mail, and collaboration software such as WebEx and Skype to convene and share documentation offsite. Faculty and staff members also have access to licenses that include an extensive range of word processing, analytic, graphics, mapping, and presentation software such as, SPSS, Stata, SAS, Atlas.Ti, MPlus, Adobe Creative Suite, Nvivo, Qualtics, and ArcGIS.

GW is connected to research and educational communities via wireless access service, Eduroam, a secure, worldwide roaming access service developed for the international research and education community. It allows users from member institutions to connect to the Internet when visiting other participating institutions. GW is also part of the Internet2Network, which is a computer networking consortium led by members from research and education communities, industry and government.

**GW Box** [**https://it.gwu.edu/box**](https://it.gwu.edu/box) GW Box is GW’s enterprise file-sharing service for online cloud storage and collaboration for GW faculty, staff, and students. GW Box uses a two-step authentication process for system access. Two-step authentication provides users with secured access to their online information utilizing a password plus a code sent to a smartphone or device. Users store regulated, restricted and public university data on GW Box.

**Data Use and Management**

**https://libguides.gwu.edu/data-management**

All GW members have the duty to protect University data from unauthorized generation, access, modification, disclosure, transmission or destruction. GW information security policy sets forth information security standards for the protection of non-public information within the University.

DUAs <https://researchintegrity.gwu.edu/data-use-and-sharing> Certain data require specialized protections, and in some circumstances, protections may be outlined through data sharing/transfer agreements otherwise referred to as Data Use Agreements (DUAs) with other parties. OVPR reviews the terms of proposed DUAs so that the data may be accessed and used as soon as an appropriate Data Management Plan has been approved.

DMPs Data Management Plans <https://researchintegrity.gwu.edu/data-management-plans> are generally required by data providers to document and address all requirements for protecting the data. GW requires a review and risk assessment of the plan for how incoming data will be securely stored or accessed by GW systems or investigators. DUAs generally impose specific security standards and risks on the receiving party hosting the data, which are addressed in a data management plan (DMP).

**DC Center for AIDS Research (DC CFAR)**

[**https://dccfar.gwu.edu/core-services**](https://dccfar.gwu.edu/core-services)

GWU has long been a leader in the nation’s response to HIV/AIDS. In response to the HIV surveillance challenges at the time, the DC Department of Health requested technical assistance from GW in August 2005. This led to the establishment of the foundational DC Health- GW public health-academic partnership, now in its 14th year, to improve HIV epidemiology and surveillance activities in DC. GW continues a unique commitment to our diverse community in DC, and this program incorporates key outreach training opportunities. In 2006, GW established the HIV/AIDS Institute to promote scientific collaborations across GW, Children’s National Health System, and the Veterans Affairs Medical Center. Soon after, Georgetown University and Howard University also joined this initiative. Together, in 2015, the DC Center for AIDS Research (DC CFAR), a unique city-wide consortium representing 230 HIV investigators at eight collaborating research institutions in Washington, D.C., achieved a full CFAR status. The DC CFAR is a part of a national network of CFARs funded by the National Institutes of Health to provide scientific leadership and institutional infrastructure for HIV/AIDS research. The DC CFAR is currently supporting two Scientific Working Groups (SWGs) – the HIV Cure SWG and the Ending the HIV Epidemic SWG; and five Scientific Interest Groups (SIGs) – on sexual and gender minorities, adolescents, women, opioids and malignancies. We leverage the unique research, clinical and community strengths of the DC CFAR in our research proposal.

* **Administrative Core**

[**https://dccfar.gwu.edu/administrative-core**](https://dccfar.gwu.edu/administrative-core)

The Administrative Core provides leadership for the DC CFAR cores and scientific working groups, promotes synergies across the six collaborating academic institutions, and supports partnerships with government, community, and academic collaborators. The core promotes multidisciplinary and multi-institutional science through administrative and fiscal oversight and management of resources and the facilitation of effective communication.

* **Developmental Core**

[**https://dccfar.gwu.edu/developmental-core**](https://dccfar.gwu.edu/developmental-core)

The core provides competitive pilot funding, mentoring, and educational and training opportunities to early-stage, new, and newly transitioning HIV investigators, with an emphasis on women and underrepresented minorities. Available services: Pilot Awards Program, Microgrants, Mentoring Program, and Education and Training.

* **Basic Sciences Core**

[**https://dccfar.gwu.edu/basic-sciences-core**](https://dccfar.gwu.edu/basic-sciences-core)

The mission of the core is to develop, refine, and provide services and training in relevant basic sciences to DC CFAR investigators. The Core offers virologic and molecular, immunological, and imaging services and training that are designed to support basic, clinical, and translational research in HIV/AIDS prevention, detection, and treatment.

* **Clinical and Population Sciences Core**

[**https://dccfar.gwu.edu/clinical-and-population-sciences-core**](https://dccfar.gwu.edu/clinical-and-population-sciences-core)

The Clinical and Population Sciences Core provides access to services, specimens, and clinical data and promotes collaborations between clinical, translational and population-based investigators. Services include consultative clinical, biostatistical, and epidemiologic design expertise as well as culturally appropriate community outreach to at-risk and HIV-infected populations.

* **Social and Behavioral Sciences Core**

[**https://dccfar.gwu.edu/social-and-behavioral-sciences-core**](https://dccfar.gwu.edu/social-and-behavioral-sciences-core)

The mission of the Social and Behavioral Sciences Core is to facilitate the development and implementation of research related to the prevention, treatment, and care of HIV/AIDS that utilizes social and behavioral perspectives and that is innovative, theoretically driven, methodologically rigorous, interdisciplinary, and high impact. The Core encourages collaborations between social and behavioral investigators and their counterparts in clinical and basic sciences. It also emphasizes the development of strong relationships with community partners in the DC area. In this way, the Core ensures that DC CFAR research is innovative and has maximum potential for impact.

**Electronic Health Records and Research**

**https://guides.himmelfarb.gwu.edu/HIT/EHR**

Researchers can access electronic medical records for secure studies. Researchers typically need an IRB, work with data analyst support, and secure storage space and tools. Both GW Hospital and CNH use Cerner as their electronic health record. For Cerner support at GW UH, please contact Nathan Bible. The MFA uses Epic. For Epic support, please contact Brian Choi, Chief Medical Information Officer, or Liz Owens, Analytics Manager, and request training on a self-service tool, **Slicer-Dicer**. Faculty at the VA use VINCI as the electronic health record.

**Flow Cytometry Core Facility**

[**https://smhs.gwu.edu/flow-cytometry/**](https://smhs.gwu.edu/flow-cytometry/)

Since its establishment in 2004, the Core has provided researchers access to well-characterized cytometry equipment for sophisticated cell sorting and cell analysis experiments, as well as services in data analysis, instrument training, and cytometry education. The Flow Cytometry Facility maintains 2 cytometers and a workstation for data analysis.

* Cell Sorter: 4-laser, 15-color BD Influx high-speed cell sorter

Features include:

- 4 nozzle size options-optimal for sorting a wide range of cell and particle sizes

- Small particle detector

- Up to 6-way sorting

- Plate with Index sorting

* Cell Analyzer: 3-laser, 12-color BD Celesta cell analyzer

Features include:

 - Automated QC

- High Throughput Sampler (HTS) compatible with 96-well and 384-well microtiter plates

* PC workstation with the latest cytometry data analysis software and educational resources.

**Genomics and Proteomics Core Resources at CNH**

[**https://www.ctsicn.org/gen-pro**](https://www.ctsicn.org/gen-pro)

The Genomics and Proteomics Core at CNH is housed in open laboratories totaling 22,000 sq. ft. of space. Specialized equipment dedicated to core proteomic facilities includes:

* **Thermo Q Exactive HF mass spectrometer for LC-MS and LC-MS/MS analysis.** This mass spectrometer is a quadrupole-orbitrap hybrid similar to our Q Exactive instrument but with an improved high-field orbitrap mass analyzer. The QE-HF is coupled online to a nano-flow EasynLC UPLC system.
* **Thermo Q Exactive mass spectrometer for LC-MS and LC-MS/MS analysis.** This mass spectrometer is a quadrupole-orbitrap hybrid that can acquire spectra at 12 Hz and 140,000 resolution. This system offers state-of-the-art speed, sensitivity, dynamic range, and resolution and is ideally suited for discovery and targeted proteomic applications. It is coupled online to a nano-flow EasynLC UPLC system.
* **Thermo LTQ-Orbitrap XL mass spectrometer for LC-MS and LC-MS/MS analysis**. This mass spectrometer has up to 60,000 resolution and 3 ppm accuracy and is coupled online to an Eksigent nano-hplc. The high resolution and fast scan speeds are ideal for protein identification and quantitation.
* **ABI 4700 MALDI-TOF-TOF mass spectrometer with an Nd:YAG laser** that can operate at 355 nm to ionize samples with pulses of 3 to 7 nsec. duration and frequency of 200 Hz resulting in high-speed analysis (1000 MS and MS/MS analysis per hour). Some other characteristics of the instruments are 10 to 15,000 resolution in reflection mode, up to 10 ppm accuracy and sensitivity in the subfmole range. GPS explorer software employing a web-based protein database and Mascot search engine is interfaced to the instrument for data analysis and protein identification.

The core is fully equipped to offer both Affymetrix and Illumina array services, utilizing their complete line of arrays (DNA /RNA/miRNA). The center houses two complete Affymetrix GeneChip® stations, including two GeneChip® Fluidics Stations, two GeneArray® scanners, and two GeneChip® hybridization ovens, in a dedicated room.

The core has an Illumina NextSeq500 next-generation sequencer (NGS). Related equipment includes a Covaris DNA shearing station, and Blue Pippin and Pippin Pulse (Sage Technologies) instruments for nucleic acid sizing. A ThunderBolts RainDrop NGS target enrichment and RainDrop SenseTM (RainDance Technologies) system is also available for generating NGS libraries and digital droplet PCR. An AutoGen QuickGene-810 system is available for automated extraction of DNA and RNA from a variety of tissues.

For direct digital counting of miRNA/mRNA and selected DNA applications, we also have access to a complete NanoString nCounter System, provided by agreement with the clinical pathology department. The core is also equipped with a MesoScale Diagnostics QuickPlex SQ 120 scanner for multiplex ELISA assays over a wide dynamic range.

Computational resources are continuously upgraded. Physical servers are virtualized to save energy, enabling robust internal cloud computing. This system accommodates most standard usage and in addition allows very active users to purchase their own blades for enhanced computational power as needed. For very data-intensive sequencing experiments, we also have individual accounts within the GWU super-cluster, Colonial One.

**High Performance Computing**

**https://hpc.gwu.edu/**

 GW’s flagship compute cluster is Pegasus (<https://colonialone.gwu.edu/new-colonial-one-info/>). Building on the success of GW’s inaugural HPC cluster in 2013, Colonial One, Pegasus has been in operation since 2018 and is located on the Virginia Science and Technology Campus. Pegasus is managed by the Research Technology Services team in GW IT, including 24-hour monitoring. Pegasus <https://hpc.gwu.edu/pegasus/> is connected to GWU's robust 100-Gigabit fiber optic network and comprises 210 compute nodes, using Dell R740s and C4140 servers, plus Data Transfer Node featuring the Globus research data management service. Pegasus features a total of 8,112 CPU cores and 614,400 CUDA cores in several configurations, with a total compute specification of over 2 petaflops of single precision operation. The Pegasus cluster has both a primary (NFS) storage system and an Infiniband-connected high-speed scratch (Lustre) storage system, each with approximately 2PB of usable capacity, as well as access to other research file systems. Access to Internet2 is available through the Capital Area Advanced Research and Education Network (CAAREN) that is part of a cooperative community of higher education and networking technology to reduce barriers to research, education and health applications.

**Colonial One (Division of GW IT)**

[**https://it.gwu.edu/colonial-one-high-performance-computing**](https://it.gwu.edu/colonial-one-high-performance-computing)

Colonial One is a high-performance computing cluster available to support research needs that use computing for data analysis. Colonial One’s initial compute capacity features a total of 2,924 CPU cores and 1132,288 CUDA cores. Colonial One is housed in an optimal facility featuring:

* Professional IT management by the Division of IT, including 24-hour on-premise and remote environment monitoring with hourly staff walkthroughs.
* Redundant power distribution, including UPS (battery) and generator backup.
* Redundant cooling systems using a dedicated chilled water plant and a glycol refrigeration system.
* Direct network connectivity to GW's robust 100-Gigabit fiber optic network.

**Human Research Office**

[**https://humanresearch.gwu.edu/research-tools**](https://humanresearch.gwu.edu/research-tools)

The Office of Human Research (OHR) is the administrative support office for The George Washington University Institutional Review Boards (IRBs). The IRB is responsible for the review of all research activities that involve human subjects in accordance with federal regulations.

**Impact Initiative and SMART Lab**

[**https://smhs.gwu.edu/impact/smartlab**](https://smhs.gwu.edu/impact/smartlab)

The SMART Lab (Supported Media for Administration, Research, and Teaching) provides assistance related to the technical design and development of course materials and any technology issues. The SMART Lab supports faculty and staff in producing and using media, technology, and novel instructional methods to create state-of-the-art learning experiences and curricula.

**Initiatives to Enhance SMHS Workforce Diversity**

[**https://smhs.gwu.edu/smhs-workforce-diversity-snapshot**](https://smhs.gwu.edu/smhs-workforce-diversity-snapshot)

As a major school at GW and one that trains future clinicians and scientists, GW SMHS continues a deep commitment to students from different cultural and ethnic backgrounds, sexual orientations, socioeconomic backgrounds, and those with a range of previous life experiences. The medical school works to diversify the MD class.

The SMHS Office of Diversity and Inclusion coordinates several diversity outreach and recruitment programs that augment the proposed summer undergraduate program, including:

* The DC Health and Academic Prep Program (DC HAPP) led by Dr. Haywood is a pre-college program for rising high school juniors and seniors with an interest in a medical education and career. During a four-week summer experience and clinical internships during the academic year, DC HAPP scholars learn about potential healthcare professions and are mentored through the college application process.
* The GW SMHS Upward Bound Program led by Jessica Castillo serves grades 9-12 from partnered public and public charter schools in Wards 5, 6, and 7 in the District of Columbia. The program identifies students with an interest in medical and allied health careers and offers Saturday Academy, Tutorial Services, Summer Institute, SAT seminar, and student ambassador program.
* The Mentored Experience To Expand Opportunities in Research (METEOR) program offers a competitive fellowship for medical students from groups underrepresented in medicine who are interested in an academic research career to matriculate into GW’s M.D. program. Dr. Alison Hall, Ph.D. coordinates this program, as well as the School of Medicine Research Scholarly Concentration that encompasses about 50 MD students per year.
* The MD Pre-Matriculation four-week Program for about a dozen incoming medical students invited by the Committee on Admissions to develop skills needed to successfully navigate through the medical school curriculum.
* PhD Programs in the School of Medicine are coordinated through the Institute for Biomedical Sciences (IBS). Established in 1996, the IBS has over a hundred faculty members who participate in the PhD programs focused on Genomics, Microbiology & Immunology, Cancer Biology, Neurosciences, and Pharmacology & Physiology.

**International Medicine Programs**

[**https://smhs.gwu.edu/imp/programs**](https://smhs.gwu.edu/imp/programs)

For over 23 years, the Office of International Medicine Programs (IMP) at the GW School of Medicine and Health Sciences (SMHS) has cultivated global partnerships to develop and facilitate transformational mutual exchange in medical education, training, and research. As a pioneer in international medical education, training, and research, IMP has developed, coordinated, and completed over 150 projects in over 50 countries, touching the lives of more than 15,000 healthcare professionals, students, and patients around the globe. IMP promotes international research partnerships by convening SMHS and international researchers at scientific summits In addition, IMP partners with GW faculty to design and implement medical and research training programs both at GW and abroad. IMP further serves the SMHS community by, providing safety and security resources for SMHS faculty and student travelers, and supporting incoming international students and visiting scholars.

**Internet2**

[**https://internet2.edu/**](https://internet2.edu/)

Establishing the nation’s newest regional research network Capital Area Advanced Research and Education Network (CAAREN). CAAREN connects to Internet2’s Advanced Layer 2 Service, a nationwide 100G software-defined network (SDN). GW is part of the Internet2Network, which is a computer networking consortium led by members from research and education communities, industry, and government.  It gives our researchers the ability to use ultra-high-speed networking speeds when working with large dataset transfers that are used in much of our current research.

**Integrated Biomedical Sciences PhD Program**

[**https://smhs.gwu.edu/ibs/**](https://smhs.gwu.edu/ibs/)

The five biomedical science Ph.D. programs in the GW School of Medicine and Health Sciences stem from the Integrated Biomedical Sciences (IBS) program. This interdisciplinary umbrella admissions and oversight program brings together a wealth of research opportunities at the GW School of Medicine & Health Sciences and Children’s National Hospital. The common IBS core curriculum includes interdisciplinary cell and molecular biology and physiology courses, biostatistics, and professional skill courses in scientific writing, biomedical careers, and responsible conduct. Foundation courses in each Ph.D. program begin in the second semester, and still allow student flexibility. Students participate in three rotations in the first year of graduate training in order to identify a faculty research advisor. NIH T32 training grants support PhD training in Cancer Biology or HIV Persistence and many students win independent fellowships. Program-specific Graduate Program Directors guide and oversee students through the completion of remaining coursework, a grant-style qualifier examination, and dissertation research. Over 60 faculty members participate in one or more of the 5 Ph.D. programs, and our current student enrollment numbers are approximately 70. Ph.D. alumni go on to research careers in academia, industry/biotech, and government/nonprofit, as well as careers in science communication, science teaching, and science policy.

**Laboratory Safety Office**

[**https://labsafety.gwu.edu**](https://labsafety.gwu.edu)

OLS is a service organization within the Office for Vice President for Research with specialized knowledge and expertise in biological, chemical, and radiological health and safety. OLS manages a broad range of regulatory obligations for George Washington University and works closely with allied departments (Office of Health & Safety, Police, Facilities Management, Risk Management, etc.) within the University and in our surrounding communities.

**Library Facilities**

[**https://library.gwu.edu/**](https://library.gwu.edu/)

Our network of on-campus libraries includes the Eckles (main) Gelman, Himmelfarb, joint Milken Institute SPH and the Medical School, plus Virginia Sciences and Technology libraries. Faculty, staff, and students also have access to eight additional branches located throughout the Washington, DC metropolitan area – including the Library of Congress, the libraries of the National Institute of Health, and the National Library of Medicine – that permit inter-library loans.

**Lifebridge Regional Medical Campus**

[**https://smhs.gwu.edu/academics/md-program/admissions/regional-medical-campus-lifebridge-health**](https://smhs.gwu.edu/academics/md-program/admissions/regional-medical-campus-lifebridge-health)

The regional campus provides GW medical students the opportunity to train in a community-focused health system with strong emphasis on primary and continuity care in a population health environment. Relationships developed during their clinical training as students may lead to continued training in LifeBridge Health graduate medical education programs or as future as LifeBridge Health physicians. LifeBridge Health receive the first cohort of third-year students in the Spring of 2023.

**The McCormick Genomics and Proteomic Center (MGPC)**

[**https://mgpc.smhs.gwu.edu/**](https://mgpc.smhs.gwu.edu/)

The McCormick Genomic and Proteomic Center (MGPC) is a genomic research center at the interface

of computational genomics and wet laboratory within the School of Medicine and Health Sciences. The mission

of MGPC is to promote and support genomic research at GWU through the discovery, generation and/or

experimentally validation of new hypotheses, and unraveling key molecular events in normal and diseased cells. MGPC possesses a human data dedicated server, specifically protected for storage and analysis of human genomic datasets in compliance with the NIH requirements, and GWU IRB-approved protocols. Provides wet laboratory, proteomics and computational genomics support to GW researchers. The center’s focus is to harness emerging, in-house genomic, transcriptomic, proteomic, and bioinformatics knowledge to build and test new biologically relevant hypotheses. The MGPC team has valid licenses for the following commercial software tools and databases:

* Geneious: A genome browser reference mapping and sequence assembly tool. Features include:
	+ NGS Analysis and Genomics
	+ Sequence and Chromatogram Analysis
	+ Alignment and Tree Building
	+ Molecular Cloning
	+ Searching, Sharing, and Automation
* HGMD (Human Gene Mutation Database): A gold standard resource for comprehensive data on published human inherited disease mutations
* TRANSFAC (Transcription Factor Database): A tool that provides data on eukaryotic transcription factors, their experimentally-proven binding sites, consensus binding sequences, and regulated genes
* Oncomine: Compute gene expression signatures, clusters, and gene-set modules, for extracting biological insights from the data
* MetaCore: A high-quality biological systems content in context, producing essential data and analytical tools to accelerate scientific research
* Ingenuity® Pathway Analysis (IPA®): IPA is a powerful analysis and search tool that uncovers the significance of ‘omics data and identifies new targets or candidate biomarkers within the context of biological systems. IPA may be used for the analysis, integration, and interpretation of data derived from ‘omics experiments, such as RNA-seq, small RNA-seq, microarrays including miRNA and SNP, metabolomics, and proteomics.
* OriginLab: Data analysis and graphics software to make technical charts for scientists and engineers displaying 2D and 3D plotting, statistics, curve fitting, and peak fitting

**Medical Student Research, OSPE**

**https://ospe.smhs.gwu.edu/**

Medical student research is supported by the director for medical student research , Drs. David Leitenberg and Ioannis Koutroulis, and may pursue scholarly concentrations, conferences, etc through the Office of Student Professional Enrichment.

**MyResearch**

[**https://sponsoredprojects.gwu.edu/myresearch**](https://sponsoredprojects.gwu.edu/myresearch)

MyResearch is GW’s integrated online system for proposal development and sponsored award management.

**Nanofabrication and Imaging Center**

[**https://nic.gwu.edu**](https://nic.gwu.edu)

The GW Nanofabrication and Imaging Center (GWNIC) features state-of-the-art microscopy instrumentation and a Class 100 cleanroom. GWNIC provides university-wide core infrastructure for research in engineering, chemistry, physics, biology, public health, medicine, and biomedical sciences. The GWNIC provides access, training, and use of confocal microscopes, a Leica Multiphoton confocal microscope, Thermo Fisher Scientific (FEI) electron microscopes (SEM, FIBSEM, TEM) in the Imaging Core and Raith Pioneer and Voyager E beam lithography instruments, deposition and etching tools, along with measurement, characterization and analysis tools in the Cleanroom.

**Office of Clinical Research**

[**https://clinicalresearch.gwu.edu/**](https://clinicalresearch.gwu.edu/)

The George Washington Office of Clinical Research (GW OCR) is committed to providing high-quality support for the efficient execution and management of impactful clinical research while ensuring the highest level of research participant safety. OCR provides investigators with access to highly trained study coordinators, biostatistics consultation, grants and contracts and regulatory elements. A series of Bootcamps (PI Responsibilities and Study Frameworks; Study Team, Budgeting & Contracts; Participant Recruiting, IRBs and Consent; Mastering Event Reporting) that featured resources and personnel at each site. We invest in software programs and standard operating procedures to streamline CTR (i.e., OnCore, Forte, Protocol Builder, ACRP training, etc.). Consultation biostatistics support is available to advise on study design, data analysis plans, and sample size considerations during a study’s planning phase. Additional support for study operations and regulatory support, as well as statistical data analysis and results interpretation to address research questions. This centralized office serves as a resource for faculty and staff involved in clinical and translational research.

**Office of Postdoctoral Affairs**

**<https://gradpostdoc.gwu.edu/current-postdocs/benefits>**

Postdoctoral fellows are represented by the Office of Graduate and Postdoctoral Affairs to provideboth financial and academic support as well as career development advice. Postdoctoral trainees have a well-developed GW Postdoctoral Association with active programming and a September retreat.

**PI Dashboard**

[**https://sponsoredprojects.gwu.edu/pi-dashboard**](https://sponsoredprojects.gwu.edu/pi-dashboard)

The Office of the Vice Provost for Research has partnered with GW's Business Intelligence Services to provide principal investigators with a powerful tool for accessing clinical trial information. The tool provides information on the financial and human resources status of awards.

**REDCap**

[**https://redcap.smhs.gwu.edu/**](https://redcap.smhs.gwu.edu/)

REDCap (Research Electronic Data Capture) is a secure web application for building and managing online surveys and databases. While REDCap can be used to collect virtually any type of data, it is specifically geared to support online data capture for research studies and operations. Redcap enables rapid project development and provides users with advanced functionality, complete autonomy and control of a project, and direct exports to common statistical packages. REDCap surveys and databases are HIPAA compliant and include audit trails.

**Research Pathology Core**

[**https://smhs.gwu.edu/pcl/**](https://smhs.gwu.edu/pcl/)

The Pathology Core Laboratory is available to provide research services for both human and animal tissues, including tissue processing, embedding, sectioning, routine H&E and special stains, frozen sections, optimization and performance of immunohistochemistry, and electron microscopy. Pathology consultative services are also available.

**GW IT Research Technology Services**

[**https://it.gwu.edu/**](https://it.gwu.edu/)

George Washington Information Technology (GW IT) provides several research computing services for GW students, faculty, staff, and community members. Research Technology Services (RTS) operates as an official service center enabling cross-disciplinary research by delivering shared platforms and services and conducting applied research with GW, regional and national research partners.

**Research Workforce Development**

[**https://smhs.gwu.edu/research/research-workforce**](https://smhs.gwu.edu/research/research-workforce)

The Office of Research Workforce Development enhances research professional skill development at all career levels including undergraduate, medical student, postdoctoral fellow, and faculty. A searchable faculty researcher database, push funding announcements in 25 research themes and specialized tools for faculty, graduate students and postdoctoral trainees enhance researchers are provided. Individual assistance in the development of NIH F, K, T and related mentored training activities and applications and scientific and professional development workshops and grant writing courses are available.

**Responsible Conduct of Research**

[**https://research.gwu.edu/responsible-conduct-research**](https://research.gwu.edu/responsible-conduct-research)

The George Washington University offers the following assistants to faculty and staff to become familiar with ethical standards in academia and research:

* **Responsible Conduct of Research Training**
All faculty and students participating in research are required to complete the Responsible Conduct of Research training provided at GW.
For the NIH RCR Training Plan, eight (8) hours of live RCR training must be undertaken at least once during each career stage throughout a scientist’s career: i.e., at the undergraduate, post-baccalaureate, predoctoral, postdoctoral, and faculty levels. This training is required at a frequency of no less than once every four years.
* Online RCR course offered through GW’s arrangement with the Collaborative Institutional Training Initiative (CITI) found at[https://www.citiprogram.org/.](https://www.citiprogram.org/)
* The major introductory course required in the first year is **BMSC 8217 “Ethics and Grantsmanship,”** a course led by Dr. Ljubica Caldovic, that includes:
* (1) Format: 11 face-to-face lectures consisting of discussion and student projects. This course uses texts and cases from Steneck, NIH Office of Research Integrity website, Macrina Scientific Integrity 4th edition and Bulger, Bioethics.
* (2) Subject matter: Ethics of biomedical investigation and principles behind the use of animals in research, research misconduct, human/clinical experimentation, data acquisition and management, stem cell research, responsible authorship and publication, peer review, mentoring, conflicts of interest and commitment, collaborative relationship.
* (3) Faculty participation: NIH-funded and training faculty facilitate lectures and small group discussions, with administrator subject matter experts as appropriate. In 2022, faculty facilitators included Drs. P. Marvar, J. Bethony, A. Fiorillo, C. Heier, A. Polter, D. Mendelowitz, J. Triplett.
* (4) Duration of instruction: The graduate course occurs with 11 hours over a semester.
* (5) Frequency: Instruction occurs once during PhD study.
* (6) Compliance. Participation is confirmed by class registrations with the Institute of Biomedical Sciences (IBS) and is documented in all lectures by a sign-in sheet and headcount.
* In addition, IBS PhD students complete**BMSC8216 “Scientific Writing”** on how science writing differs from other kinds of writing, focusing on the writing of various types of scientific documents including abstracts, scientific papers, summaries of research findings from the literature, and utilizes a Scientific Writing textbook with exercises designed around research findings. A final course in **BMSC 8219 “Careers in Biomedical Science**” engages speakers from multiple research career sectors.
* **Collaborative Institutional Training Initiative (CITI).** George Washington University offers Collaborative Institutional Training Initiative (CiTi) on-line responsible conduct of research training program, including (1) Introduction to the Responsible Conduct of Research; (2) Research Misconduct; (3) Data Acquisition and Management; (4) Responsible Authorship and Publication; (6) Peer Review; (7) Mentoring; (8) Conflicts of Interest and Commitment, and (9) Collaborative Relationships.
* **Continuing Education in RCR** involves a combination of ongoing lectures and refreshers. PIs are encouraged to use best practices in their own research groups (Antes, A. L., *PLoS One*, 2019). Additional specific topics in RCR are regularly discussed in Bosque lab meetings such as responsible authorship and conflicts of interest and commitment, data acquisition and storage, and collaborative relationships, as well as rigor and reproducibility of data in the primary literature.

**Shared Equipment**

[**https://smhs.gwu.edu/research/research-toolbox/smhs-shared-equipment**](https://smhs.gwu.edu/research/research-toolbox/smhs-shared-equipment)

The availability of equipment for discovery and translational research is a hallmark of an outstanding research environment. These elements are evaluated on grant applications and are important for recruiting research-active faculty, trainees, and staff. A list of shared equipment and contacts is updated regularly.

**Translational Health Sciences PhD**

[**https://smhs.gwu.edu/translational-health-sciences/**](https://smhs.gwu.edu/translational-health-sciences/)

This online program enrolls 15-20 students per year, preparing candidates with the knowledge and skills needed to facilitate and lead innovation in health care. This program prepares early career professionals to take leadership roles as change agents in rapidly evolving healthcare environments. Students develop expertise in complexity theory, organizational analysis, mixed methods research design, program theory and evaluation. As a low residency program, most learning occurs online. Students are on campus at VTSC two weekends per semester to participate in collaborative, interactive workshops that integrate material across courses in that semester.

**Vice President for Research Office (OVPR)**

[**https://research.gwu.edu**](https://research.gwu.edu)

The OVPR provides grants management services from pre-award through post-award. The OVPR provides support for many of GW’s core facilities. OVPR coordinates research salons designed to connect and engage GWU faculty from diverse disciplines in collaborative intellectual and scholarly exchange around research-themed issues, questions, and challenges.

* **GW’s Research Enhancement Unit (REU) Provides** the necessary training, environment, support, and information to enable them to further develop their skills and pursue research opportunities. REU helps GW investigators increase the competitiveness of their research proposals by providing consultative and scientific editing services; delivering professional development workshops, training and seminars; and facilitating collaboration for large, complex, international and multi-/cross-disciplinary proposals. <https://research.gwu.edu/research-enhancement-unit>
* **Research Commons** serves as a dynamic web portal network connecting students and faculty researchers with research opportunities, fellowships, jobs, events, and grant funding. <https://researchcommons.gwu.edu/>
* **From Spark to Impact Series** services are intended to increase a scholar’s capacity or boost the impact of outcomes. The series will introduce the people and offices that assist our scholarly community from the time they conceptualize a new project until they publish or present their findings. <https://research.gwu.edu/spark-to-impact-series>
* **Office of Health and Safety** works with the laboratory researchers, Primary Investigators, and the Office of Vice President of Research to provide a safe and healthy work environment within all George Washington University laboratories. They provide education through training and assist in the development and implementation of emergency response procedures for university laboratories. They’ve developed environmental and occupational health and safety workplace policies and programs for the safety of the GW community. <https://safety.gwu.edu/environmental-health-safety>
* **Office of Human Research** provides guidance, education, and oversight for the protection of human participants in research. It provides administrative support for GW Institutional Review Boards (IRBs). https://humanresearch.gwu.edu/
* **Office of Research Integrity** partners with members of the research community to ensure that our research programs comply with all federal, state, and local regulations and university policies. https://researchintegrity.gwu.edu/
* **Office of Research Safety** provides training, consultation, and services in the areas of biosafety, radiation safety, laser safety, and animal welfare. They provide administrative support to the Institutional Biosafety Committee (IBC), the Radiation Safety Committee (RSC), and the Institutional Animal Care and Use Committee (IACUC). https://researchsafety.gwu.edu/

**Writing Resources**

[**https://writingcenter.gwu.edu**](https://writingcenter.gwu.edu)
 GW also offers a variety of resources to assist students and faculty in academic writing. RefWorks is an online tool supported by Gelman Library that helps writers organize their research and create bibliographies. The WID Studio offers a range of resources and references on writing.