

# SCIENCE AND ENGINEERING HALL

## At a Glance

As the George Washington University's research enterprise ascends to greater heights, it is high time GW had cutting-edge facilities for the sharpest minds in Washington, D.C.

GW's new Science and Engineering Hall (SEH)—the largest academic building dedicated to these fields in the nation's capital—meets the needs of the university's growing research portfolio and will serve as a hub for discovery, providing new opportunities for cross-disciplinary collaboration. SEH's unparalleled location and state-of-the-art facilities enable students and faculty to strengthen existing partnerships and forge new ties with influential scientific and technical organizations. Indeed, SEH exemplifies GW's long-term commitment to educate the next generation of innovators, as well as support our faculty as they develop knowledge that will help improve the lives of millions worldwide.

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**THE GEORGE  
WASHINGTON  
UNIVERSITY**

WASHINGTON, DC



# CORE FACILITIES WITH A MISSION OF DISCOVERY

SEH epitomizes GW's investment in research infrastructure and facilities that enable innovative research and teaching. With these new facilities at their disposal, GW researchers are poised to expand the depth and breadth of human knowledge. Utilizing the building's **four specialized labs**, faculty members now possess the capabilities to conduct research on the Foggy Bottom Campus on everything from large aerospace structures to the next generation of nanotechnology.

## SEH FACTS AND STATS

# 80%

GW's research funding has grown during the past decade, increasing the need for state-of-the-art facilities to further our faculty members' cutting-edge experiments.

# 140

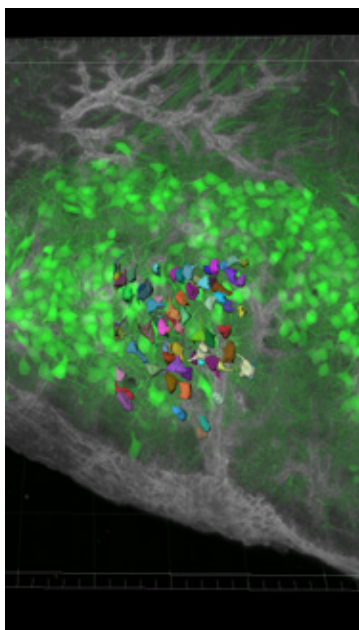
faculty members, approximately, from 10 departments within the Columbian College of Arts and Sciences and the School of Engineering and Applied Science, currently occupy the building. Researchers from the School of Medicine and Health Sciences' Cancer Center and Milken Institute School of Public Health are scheduled to follow in summer 2016.

# 500,000

Approximate gross square footage in the building.

# 2x

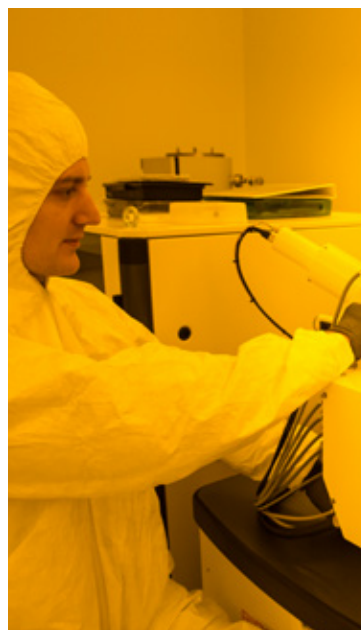
The approximate increase in the amount of space available to GW's science and engineering disciplines on its Foggy Bottom Campus due to SEH.



### IMAGING SUITE

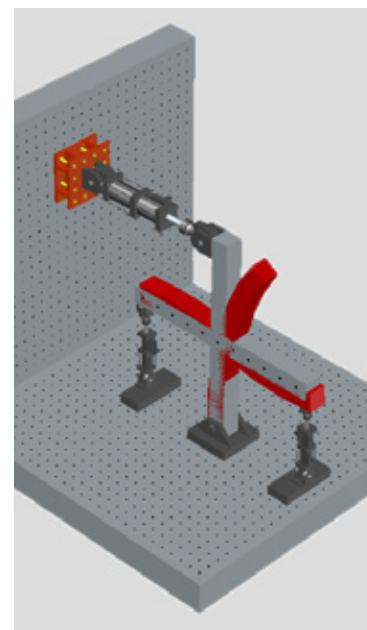
Five rooms—specially built to dampen vibrations from the nearby Metro—house high-resolution microscopy equipment, allowing researchers to study nanometer-sized samples in ultra-fine detail and create 3-D reconstructions of specimens.

**PICTURED:** 3-D rendering of mouse motor neurons using a confocal microscope



### CLASS 100 NANOFABRICATION CLEAN ROOM

In the cleanest parts of the lab, each cubic foot of air will have no more than 100 particles larger than 0.5 microns—roughly one-tenth the width of a red blood cell—facilitating the creation of devices that measure mere billionths of a meter.



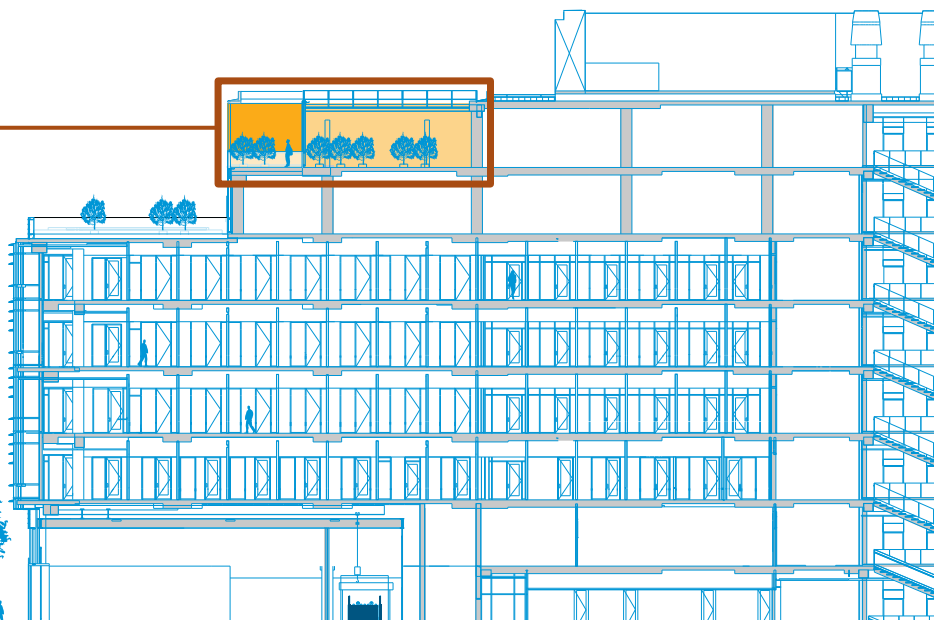
### HIGH BAY

This expansive, three-story lab features a reinforced "strong wall" and a "strong floor" to test the strength of enormous objects, like bridge beams. The lab includes a 20-ton crane, a dedicated loading bay and a machine shop.

**PICTURED:** AutoCAD depiction of an experiment that will take place in the high bay

### GREENHOUSE

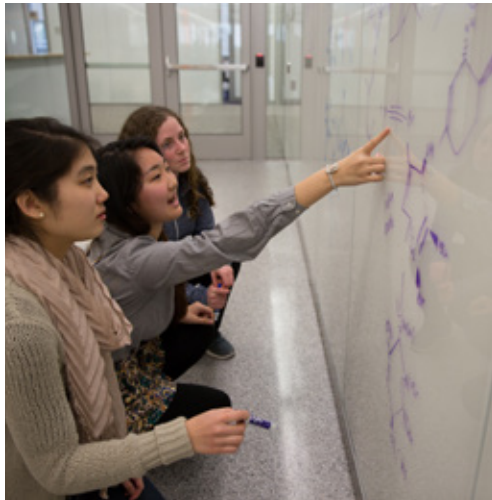
Opening in 2016, the climate-controlled rooftop greenhouse will keep the space hospitable for several species of plants during the high summer heat.



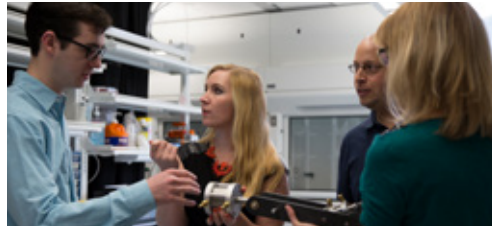
# RESEARCH THAT HAS AN IMPACT FAR BEYOND ITS WALLS

GW's faculty and students have a passion for changing the world, and nowhere is this passion more apparent than in the laboratories of SEH. GW's faculty members look for ways to improve everything from tissue regeneration and drug delivery to robotics and sustainable ecosystems. The work researchers conduct at SEH will have an impact far beyond its walls.

The building layout was purposely designed to concentrate researchers with overlapping interests into "research neighborhoods" to encourage cross-disciplinary collaboration.

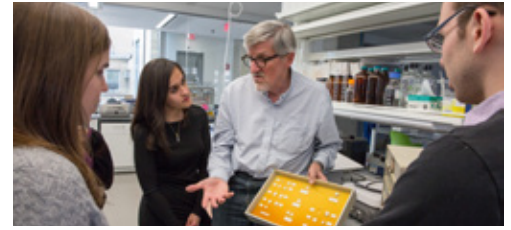


## EXPANDING OUR UNDERSTANDING OF NATURE



**Megan Leftwich**  
**MECHANICAL & AEROSPACE ENGINEERING**

Dr. Leftwich investigates the fluid dynamics of natural phenomena, such as human birth and pinniped (sea lion) swimming, and applying findings to engineering problems.



**Bernard Wood**  
**ANTHROPOLOGY**

Dr. Wood studies how to better classify and reconstruct evolutionary relationships among hominins, the lineage that led to our own species, *Homo sapiens*, with a particular focus on skull and tooth fossils.

## CREATING NEW SOLUTIONS THROUGH TECHNOLOGICAL INNOVATION



**Sameh Badie**  
**CIVIL & ENVIRONMENTAL ENGINEERING**

Dr. Badie's research focuses on reinforced and prestressed concrete structures. This includes testing full-scale concrete components, such as deck panel systems and prestressed concrete girders, that will help build safer, more earthquake-resistant bridges and buildings.



**Akos Vertes**  
**CHEMISTRY**

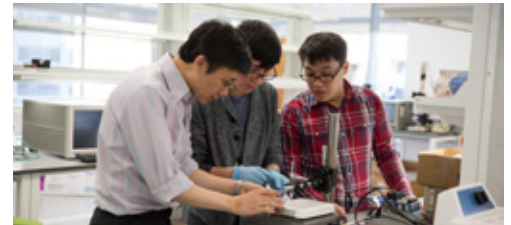
Dr. Vertes is developing tools to rapidly identify the root cause of biological and chemical threats. Under a \$14.6 million award from the U.S. Defense Advanced Research Projects Agency (DARPA), Dr. Vertes and his collaborators are tasked with reducing to 30 days this process that can otherwise take years.

## ADVANCING HUMAN HEALTH



**Cynthia Dowd**  
**CHEMISTRY**

Dr. Dowd engages in several interdisciplinary projects related to antibiotic drug discovery and structure-based design. Her research focuses on the development of inhibitors for specific targets implicated in the survival of disease-causing bacteria.



**Zhenyu Li**  
**BIOMEDICAL ENGINEERING**

Dr. Li's research integrates microfluidics and nanophotonics, i.e. optofluidics, for biomedical applications, particularly single cell analysis for stem cell and cancer research. Additional projects include handheld biosensors for point-of-care diagnostics, and bendable, stretchable microelectronics for wearable sensing.

# WHERE STUDENT OPPORTUNITIES BECOME MORE ABUNDANT

SEH will serve as the academic home for thousands of undergraduate and graduate students and will expand opportunities for learning inside and outside the classroom.

## TEACHING LAB SPACE

With numerous instructional lab spaces, students will reap the benefits of the state-of-the-art facilities and rigorous courses that teach them to develop and apply their knowledge to challenging problems.



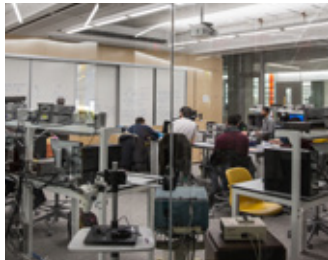
ROBOTICS



CHEMISTRY



BIOLOGY



COMPUTER SCIENCE



NANOTECHNOLOGY

## BROAD COMMON AREAS AND OPEN WORKSTATIONS

Students take advantage of these areas to study, socialize and share ideas.



## INTERNSHIPS AND RESEARCH OPPORTUNITIES

Hands-on research, often in conjunction with some of the most important scientific organizations, has become a hallmark of GW's STEM education. In fact, our students have recently engaged in internships and learning experiences in conjunction with Facebook, Google, NASA, Siemens and the Smithsonian Institution, among many others. With a **new career center** housed within SEAS at SEH, GW is ensuring that its students are well prepared by facilitating internships and other professional development activities.

# BUILDING FEATURES OF NOTE



## LEHMAN AUDITORIUM

is a multi-functional room that will serve as a premier convening venue where GW faculty, students and leading scientific experts can come together for classes, high-profile lectures, symposia and other events.

## SUSTAINABILITY

- **A rooftop rain cistern** will help save roughly 850,000 gallons of water per year. Rainwater from the cistern will be filtered and used to flush toilets.
- **Sharing Ross Hall's co-generation power system** will reduce the building's would-be carbon footprint by more than half, saving 8,100 metric tons of carbon dioxide each year. That's the equivalent of taking 1,500 vehicles off the road.
- **Gold** is the Leadership in Energy and Environmental Design (LEED) certification SEH is targeting, which would make it GW's ninth LEED Gold certified project, underscoring the university's commitment to building green.

## BEEFSTEAK

is a new restaurant from world-renowned chef and adjunct GW professor José Andrés occupying the first floor of the SEH building. The restaurant takes its name from the beefsteak tomato and will employ a menu that revolves around vegetables.



To learn more about GW's Science and Engineering Hall, [visit seh.gwu.edu](http://seh.gwu.edu).