what will

YOU
discover?

Washington University in St. Louis
Biology & Biomedical Sciences
620 students
more than 470 faculty
36 departments
12 programs
and one YOU.

what will YOU discover?

DBBS
Division of Biology and Biomedical Sciences
Washington University in St. Louis
dbbs.wustl.edu
This is an exciting and rewarding time to be a biological scientist, especially at Washington University in St. Louis. In the post-genome era, biological science has become an increasingly integrated enterprise. To meet the exponentially increasing demands of modern science, each scientist needs not only a thorough knowledge of his or her specialty, but also a familiarity with the information and skills of other disciplines.

The Division of Biology and Biomedical Sciences (DBBS) is ideally positioned to foster the interdisciplinary study and research that brings important scientific breakthroughs; such discoveries often occur at the interfaces of disciplines. For more than 40 years, the PhD programs administered by the Division have operated at those frontiers.

Washington University in St. Louis offers unique opportunities in translating basic science to practical application. The university's Biomed 21 initiative provides $300 million to support research that bridges the gap from bench to bedside; the project included construction of the BJC Institute of Health at Washington University School of Medicine, with approximately 215,000 square feet dedicated to such research. In addition, the Division's associations with internationally prominent, local institutions provide exciting opportunities: students in the biomedical sciences enrich their work with the clinical perspective of our outstanding medical school; students in plant, population, evolutionary and ecological sciences benefit from our close affiliation with the internationally renowned Missouri Botanical Garden and the Danforth Plant Sciences Center.

To help prepare graduates for a career in academia, government, industry, or another field of their choice, educational opportunities are offered for skills development and career exploration. Through our Career Talks program, professionals from a variety of fields, such as biotech start-ups and patent law, provide presentations and Q & A sessions to students throughout the year. In addition, through partnerships with groups such as the Teaching Center, the BALSA Group and ProSPER, students have additional opportunities to develop experiences relevant to future career goals.

I encourage you to explore the programs of study available at Washington University. The depth of the expertise of our faculty and our decades of commitment to a collaborative environment and interdisciplinary scientific education allow us to offer one of the most comprehensive and effective PhD programs available.

John H. Russell, PhD
Associate Dean for Graduate Education
As a graduate student at Washington University in St. Louis, you will discover a learning environment like no other. You will enjoy the freedom to explore endless areas of research, the friendship of diverse colleagues, and the mentorship of world-renowned faculty. In the end, you will not only earn a degree. You will also become an outstanding scientist.
The Division of Biology and Biomedical Sciences at Washington University in St. Louis offers exceptional doctoral training at one of the nation’s preeminent biomedical research centers. The Division offers 12 doctoral training programs, 10 of which are ranked among the nation’s top 10.*

A collaborative, interdisciplinary approach to research and education is a hallmark of Washington University and the Division. As a university-wide consortium, the Division transcends departmental lines and removes traditional boundaries of scientific fields. Faculty and graduate students regularly cross disciplines, devising novel questions and approaches that might otherwise go unexplored. The Division currently consists of more than 620 graduate students and more than 470 faculty members from 36 university-wide departments.

Graduate students in the Division are part of an elite research environment that includes one of the country’s top medical schools,** world-renowned researchers and the legacy of 18 Nobel laureates. In this exciting atmosphere of inquiry, students explore many areas of research before choosing their thesis project. The course of study is customized to each student’s interests. As a result, they gain a broad foundation of knowledge along with their areas of concentration and learn the critical skills to conceive, evaluate and test the scientific ideas that expand our understanding of living systems and improve human health.

*Academic Analytics’ faculty scholarly productivity index
**U.S. News & World Report and NRC Report graduate program rankings

Research led by Jeffrey Gordon, MD (center), has found an intimate connection between gut microbes and diet as a key factor in the path to obesity. One day, probiotics might be added to foods to treat or prevent obesity.
Washington University has historically been a national leader in biomedical research. Among the Nobel laureates: Joseph Erlanger, MD, and Herbert Gasser, MD, pioneers of neurophysiology; Carl Cori, MD, and Gerty Cori, MD, who explored enzyme regulation and whose lab trained seven other eventual Nobelists; Arthur Kornberg, MD, leader in understanding DNA replication; and Rita Levi-Montalcini, MD, and Viktor Hamburger, PhD, discoverers of nerve growth factor.

Examples of groundbreaking work at Washington University include the first faithful in vitro eukaryotic gene transcription; the use of transgenic plants to combat viral diseases; investigations into neural development and brain mapping, including the creation of the first positron emission tomography (PET) scanner; and pioneering large-scale genome mapping and sequencing.
PROGRAM FEATURES
Prospective students apply to the Division rather than to an individual department. Students are admitted into a specific program but may change their program affiliation as their interests develop. Each program has its own steering committee, which provides students with guidance, addresses their needs and monitors progress. The committee also helps each student customize the course of study to match his or her individual needs. Each of the 12 programs establishes its own degree requirements. The PhD is granted by Washington University’s Graduate School of Arts & Sciences.

“Picking a lab is a big deal, and I did a fourth rotation to make sure I had as many options as possible. With 400-plus faculty to choose from, you’re essentially limitless.”

Paige Cooper
Molecular Cell Biology, Nichols Lab
Undergraduate Institution: Spelman College
Hometown: Grand Prairie, Texas
Biochemistry
Using concepts and approaches of chemistry to understand the molecular basis of biological processes.

Computational and Molecular Biophysics
Fusing the systems and processes of biochemistry and molecular biology with the theory and practice of physical chemistry, mathematics and physics.

Computational and Systems Biology
Bridging the gap between biological data and the computational methods needed to maximize its utility.

Developmental, Regenerative and Stem Cell Biology
Elucidating how single fertilized eggs produce complex adult organisms.

Evolution, Ecology and Population Biology
Applying population genetics, phylogenetic and ecological perspectives to study the origins and maintenance of biodiversity.

Human and Statistical Genetics
Studying the molecular basis of normal and disease phenotypes in humans.

Immunology
Examining how the mechanisms of host defense protect against pathogenic agents, fight cancer and cause autoimmune diseases, e.g., rheumatoid arthritis, multiple sclerosis.

Molecular Cell Biology
Elucidating essential cellular processes and the mechanisms that control them.

Molecular Genetics and Genomics
Determining how genes are inherited, modified, expressed and regulated in normal and diseased states.

Molecular Microbiology and Microbial Pathogenesis
Understanding comprehensive and modern approaches to microbes and the diseases they cause.

Neurosciences
Understanding how the brain works, how it develops and how it malfunctions in disease.

Plant and Microbial Biosciences
Employing prokaryotes, eukaryotic microbes, mosses and vascular plants to address important questions about biological regulation and complexity relevant to all organisms.

dbbs.wustl.edu/divprograms
The Division of Biology and Biomedical Sciences offers special-emphasis pathways to provide supplemental, specialized training undertaken as part of the student's regular course work. This training further exposes students to interdisciplinary and translational aspects of their fields. Some pathways are available by open enrollment, but some require an application process. More information is available at [dbbs.wustl.edu](http://dbbs.wustl.edu), under Current Students.

### Cancer Biology Pathway
Provides students with an integrated view of current cancer biology from the clinic to the lab bench and back.

### Cognitive, Computational and Systems Neuroscience Pathway
Trains graduate students to become leaders in interdisciplinary brain-related research in psychology, biology, and engineering.

### Genetics and Genomics of Disease Pathway
Introduces students to the use of genomic and genetic information in the diagnosis and treatment of disease, from current concepts and practice to gaps that need to be filled in achieving precision medicine.

### Imaging Sciences Pathway
Prepares graduates to specialize in one or more areas of imaging science, including technology development, chemistry and use of novel contrast agents, visualization/manipulation of macromolecular complexes and visualization of human disease states.

### Infectious Diseases Scholars Program
Trains doctoral students and postdoctoral fellows to explore issues at the interface between patient care, public health and basic research in microbial pathogenesis.

### Interface of Psychology, Neuroscience and Genetics Training Program
Designed for select students wishing to train for a research career at the interface of behavioral science and relevant biomedical science (neuroscience and/or genetics).

### Kauffman Fellowship Pathway in Life Sciences Entrepreneurship
Teaches entrepreneurship and business skills — a unique opportunity to learn how scientific discoveries are translated into successful commercial ventures. Taught in collaboration with the School of Engineering and Applied Science and the Olin School of Business.

### Lucille P. Markey Special Emphasis Pathway in Human Pathobiology
Introduces graduate students and research postdoctoral trainees to human disease states not generally covered in graduate courses to foster a more direct connection between basic science and clinical application.

### Pathway in Disorders of Membrane Transport and Excitability
Provides students with the theoretical and practical tools to study the structure, function and regulation of ion transporters and channels and the role of disruptions in ion transport in disease processes.
Other schools might have expert faculty, or a supportive environment, or tremendous resources, or a great location. However, Wash U has all of that and more to offer. The variety of pathways, programmatic choices, student benefits packages and places to unwind are unrivaled.

Wayne Warner  
Molecular Cell Biology, Maher Lab  
Undergraduate Institution: California State University  
Los Angeles, California  
Hometown: New York, New York
The course of study consists of five distinct parts:

**COURSE WORK**
Course work generally requires two to five semesters and consists of four to nine courses in areas fundamental to the student's program. Students are expected to maintain a “B” average in graduate courses.

**LABORATORY ROTATIONS**
Selecting a thesis adviser is the most important decision a student makes in graduate school. To help each student make an informed, thoughtful choice, the Division builds in flexibility to explore options. Students usually participate in three lab rotations during their first year. Additional rotations can be arranged, and rotation lengths are flexible. Students usually begin their thesis research by the end of their first year.

**QUALIFYING EXAM**
After required course work is completed, each student takes a preliminary, or qualifying, examination to assess mastery of the field and the ability to integrate information across fields. Upon successful completion of the qualifying exam, the student concentrates on thesis research.

**THESIS RESEARCH**
Thesis research begins once the student has chosen a laboratory in which to work. With his or her mentor — the laboratory’s principal investigator — the student devises a thesis project and chooses an advisory committee. Typically between the end of their second year and middle of their third year, students present their thesis proposals to the thesis committee. Upon successful approval of the thesis proposal, the student officially becomes a doctoral candidate. For the rest of the student’s program of study, this committee monitors progress, meeting at least once a year to provide analysis and advice; it serves as the thesis defense committee when the thesis is ready for presentation. Most students complete and defend their dissertations by the end of their sixth year.

**SCIENTIFIC SCHOLARSHIP**
Keeping abreast of scientific developments is critical for faculty and students alike. The Division offers many ways to stay current. More than 15 weekly biology seminars provide excellent opportunities to meet outstanding scientists from outside Washington University. Several annual symposia bring internationally recognized speakers to campus. Journal clubs meet weekly for students, postdoctoral fellows and faculty to present and discuss current scientific literature. Program retreats allow for informal interaction among students and faculty. The Division also provides funds for each student to defray the costs of attending a national scientific meeting.
### TYPICAL SCHEDULE

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- Choose Thesis Lab
- Teaching Assistantship
- Communications Skills Development
- Ethics
- Leadership Development
- Thesis Proposal
- Thesis Updates
- Thesis Defense

**DBBS Student Publications 2011–2013**

- **STUDENT CONTRIBUTING AUTHOR**: 443
- **STUDENT FIRST AUTHOR**: 614

**TOTAL PUBLICATIONS: 1057**

Students are an integral component of the Division’s research enterprise. From 2011 to 2013, Division students published 1057 papers.

Stephanie Scherer, Alejandro Akrouh, Enrique Ramos and Christine Emnett in Bernard Becker Medical Library.
Washington University in St. Louis and the Division of Biology and Biomedical Sciences are committed to building a diverse, dynamic community of scholars. Division students come from 40 states and 25 countries, and from undergraduate institutions of all sizes, both public and private. As a group, they are diverse in their races, talents and backgrounds, but they have in common a love of science and the ability and desire to excel. Camaraderie is an overriding quality of the Division; students provide a built-in source of personal support and friendship for each other.

The Division is committed to providing an ideal learning environment for every student. With the freedom to explore many areas of research and so many outstanding mentors to choose from, finding the perfect match is virtually assured. The Division’s student-to-faculty ratio is less than two to one, which means every student gets hands-on attention and effective mentorship.

Washington University prides itself on providing a friendly, supportive learning environment. Although rigorous, the educational experience is collegial, not competitive. Faculty are accessible and are focused on helping you achieve your highest goals. That support continues all the way through graduation. As students complete their degrees, the career center assists them in building employment skills and exploring career options.

**DBBS STUDENT HOMELANDS**
The Association of Black Biomedical Graduate Students (ABBGS) enhances the graduate student experience through promoting diversity and encouraging cultural awareness. ABBGS hosts social events and seminars and provides opportunities and information for outreach in the St. Louis community.

The Graduate Association of Latin American Students (GALAS) represents the Hispanic/Latin community in the Division. GALAS promotes diversity through maintenance of a Hispanic/Latin resources network and organizes educational and cultural activities. Students from all backgrounds are welcome.

Outgrads is an LGBTQIA group dedicated to developing community among Washington University graduate and professional students, faculty and staff of all genders and sexual orientations, promoting awareness of the issues that affect our communities, and facilitating community involvement by its membership. The organization is open to any member of the Washington University community. Visit outgrads.wustl.edu for more information.

The School of Medicine’s Office of Diversity Programs and the Division’s diversity steering committee assist current medical and graduate students in programming multicultural events. The role of the Office of Diversity Programs is to create an inclusive environment for students, staff and faculty within the Division and the Washington University community. The office supports cultural and educational programs, including the DBBS diversity lecture series and the annual minority research scholars symposium. In addition, it works to deepen understanding across various groups and to provide support to ABBGS and GALAS.

THE INITIATIVE FOR MAXIMIZING STUDENT DEVELOPMENT (IMSD) program is designed to train the next generation of leaders in the biomedical sciences. The goal of the IMSD Scholars program at Washington University in St. Louis is to increase the number of students from underrepresented groups who matriculate and complete their PhD in the biomedical sciences and enter careers in relevant fields. The benefits of the IMSD program include: a stipend, travel awards to conferences, academic and professional development workshops, supplemental advising and instruction and pre-matriculation curriculum.

The IMSD aims to provide a community for its scholars and all Division students through a variety of open activities to aid in the development of the individual student and to enhance their educational experience at Washington University.
RESOURCES
Students’ educational experiences are enriched by the university’s leading-edge research facilities and partnerships with local institutions.

Washington University

Core laboratories support collaborative research university-wide for all areas of clinical and basic research. Facilities include:
– Morphology/imaging/spectroscopy
– DNA sequencing/genetic analysis
– Transgenic support
– Protein/lipid analysis
– Cells and tissue culture
– Animal studies/clinical studies
– Biostatistics/bioinformatics
– Genomics/proteomics/lipidomics

The BJC Institute of Health at Washington University School of Medicine houses interdisciplinary research centers focusing on:
– The brain
– Cancer and personalized medicine
– Diabetes, heart disease and obesity
– Infectious diseases and global health
– Women’s and children’s health

Each center brings together researchers from different scientific disciplines and academic departments to work together in designated laboratory space. This cross-fertilization of disciplines and the close interactions among scientists provide new inspiration for endeavors that can transform scientific discoveries into bedside medicine.

The Genome Institute at Washington University, a world leader in large-scale genome sequencing, gives students unparalleled experience in genetics and genomics research training. Visit genome.wustl.edu for more information.

Affiliated Institutions

Donald Danforth Plant Science Center
Division students conduct research at this not-for-profit research institute, which focuses on improving the world’s food supply and the nutritional content of plants. Visit danforthcenter.org for more information.

Missouri Botanical Garden
Division students have full access to the staff, facilities, and laboratory and research opportunities of this world-class botanical research institution. It offers outstanding field-oriented tropical research opportunities and one of the globe’s leading collections of botanical samples. Visit mobot.org for more information.

GRANTS MANAGEMENT SERVICES
A dedicated grants manager is on hand to assist Division students in the grant application process. Although funding of graduate study in the Division is guaranteed, students are also highly successful in obtaining nationally competitive fellowships.
Since the Division of Biology and Biomedical Sciences’ first graduation in 1977, graduates have gone on to practice science or pursue related endeavors with the training they received at Washington University. A graduate-career-development specialist is available to Division students to assist them in building employment skills and exploring career options. After graduation, 80 percent of students go directly into a postdoctoral fellowship. Many Division alums currently hold academic faculty positions, while others occupy senior positions in industry and government. A good number of graduates pursue an eclectic and imaginative assortment of endeavors ranging from museum curator to science journal editor to intellectual property attorney to venture capital consultant. PhD training in the DBBS can open a variety of career possibilities. Learn more about our alumni at dbbs.wustl.edu/alumni.

“I have stood out in all phases of my career for thinking critically, listening willingly and solving problems creatively. This is largely because while training at Wash U, I was surrounded by intellectually curious people driven to succeed by the culture of collaboration and innovation established by the Immunology Program faculty.”

Ellen Cahir-McFarland, PhD
Senior Scientist, Translational Medicine–Virology
Biogen Idec, Inc.

“DBBS was an ideal place for me to complete my graduate work. It was and continues to provide an environment of profound scholarship mixed with an active social atmosphere that allowed me to grow as a scientist and a person. The experience has been a strong influence in shaping the character of my own laboratory.”

Damien Fair, PhD, PA-C
Oregon Health and Science University
Assistant Professor, Behavioral Neuroscience and Psychiatry
Assistant Scientist, Advanced Imaging Research Center
Students in the Division experience rewarding lives outside the laboratory. They possess many talents and interests beyond science and find time to relax and have fun, often with each other. The university’s graduate student community is social and cohesive, even across schools. Students come together to enjoy activities of all kinds, from intramural sports to museum visits to float trips.

**STUDENT ORGANIZATIONS**

Students’ commitment to university and community service is strong. Students regularly join forces to find outlets for self-expression and to devise practical solutions to important problems. More information on student organizations is available at dbbs.wustl.edu under Resources.

The **Association for Women in Science (AWIS)** regional chapter promotes a positive environment for women in science through education, advocacy and outreach. AWIS offers mentoring and networking resources and works to increase recognition for the accomplishments of female scientists.

The **Biotechnology and Life Science Advising (BALSA) Group** is a nonprofit organization operated entirely by graduate students, professional students and postdoctoral researchers from Washington University. Its mission is to provide participants with valuable real-world business experience via short-term consulting projects with local companies.

**Bioentrepreneurship Core (BEC)** is open to all Washington University affiliates (students, postdocs, staff, faculty) who share an interest in the interface between biomedical research and entrepreneurship. BEC organizes events to educate the community about entrepreneurial principles, forge connections between researchers and local entrepreneurs/businesses and raise awareness about resources available to startups. Many BEC activities also provide information for those considering alternative career paths outside of academia. Above all, BEC seeks to foster a spirit of innovation at the university that inspires researchers to pursue opportunities for their discoveries beyond the lab.

**Future Educators** is a student-run group including graduate students and postdocs who are interested in teaching and mentoring. Members are not necessarily committed to pursuing a teaching-focused career but share the opinion that learning and thinking about teaching will have positive effects on their current and future careers. The group meets regularly to discuss ideas related to teaching and mentoring in a research-based setting. It also serves as a resource for locating teaching opportunities in the St. Louis area and around the country.

**Student Advisory Committee (SAC)** is made up of students from the Division. SAC serves as the students’ advocate on issues of concern to the student body; represents the Division in the university community; organizes orientation activities; and sponsors informational and social events.

**Graduate Students Promoting Science Policy, Education, and Research (ProSPER)** is a university-wide graduate student group that promotes the use of science in policy-making through science advocacy and literacy, facilitating inter-professional communication, and increasing scientist participation in policy. The group holds a variety of events, including member education events, case studies on how scientists have been involved in science advocacy, and panel discussions.

**The Young Scientist Program (YSP)**, run by students and postdocs from the Division, School of Medicine and Graduate School of Arts & Sciences, encourages high school students from disadvantaged backgrounds to consider careers in science through activities that emphasize hands-on research. Division students also participate in science education in the local community by giving a variety of classes at local junior and senior high schools.

**International Graduate Students Association for Career Development and Networking (ICAN)** is designed to help international students improve communication skills, build networks and learn leadership skills by working on group projects with other members in an English-speaking and multicultural environment, thereby enhancing individual member’s professional development and job marketability.
“The possibilities at Washington University are endless. Regardless of your research and career interests, Washington University has the resources to help guide you in a way that best suits you. From basic to clinical science, and from academic to nonacademic career paths, Washington University makes an effort to expose students to all possibilities that exist to scientists. Washington University truly offers personalized education to fit each student’s needs.”

Vivian Lee  
Developmental, Regenerative and Stem Cell Biology, Mecham lab  
Undergraduate Institution: University of Washington  
Hometown: Tacoma, Washington
Situated at the confluence of two great North American rivers — the Mississippi and the Missouri — the St. Louis region has been a favored destination since Lewis and Clark began their historic westward “corps of discovery” here in 1804.

Today, the pioneers of St. Louis are the engineers, scientists, business leaders, educators, artists and other innovative and creative professionals who are working at the forefront of a multitude of fields and endeavors. Thanks in large part to Washington University, other regional universities and key Fortune 500 corporations, St. Louis has developed into a national hub for important research and business development, especially in the fields of biotechnology and plant science.

St. Louis’ affordability and friendly character make it an attractive location for graduate students, including those with families. Students find that their stipends go much farther in St. Louis than they would in other metro areas. Many students even buy houses during their stay. The city is large enough to offer quality cultural opportunities, but small enough to be livable.

The Washington University campuses are located in the cosmopolitan neighborhoods of the Central West End, University City and Clayton. Student lifestyles are accommodated by affordable apartments near bookstores, coffee houses and sidewalk cafes. Students also enjoy the amenities of Forest Park, located adjacent to the university.

The Saint Louis Symphony Orchestra is among the country’s best, and several outstanding theater companies practice their art here. The Fox Theatre presents Broadway shows, dance performances and concerts. Blues, jazz and rock bands are hot attractions in local clubs, and a large outdoor venue draws major concerts. Sports fans enjoy the St. Louis Cardinals, St. Louis Blues and St. Louis Rams.

St. Louis’ central location makes exploring nearby cities easy and inexpensive. Outdoor activities can be found within and around the metropolitan area; bike trails line both the Mississippi and Missouri rivers, and the Ozark mountains and river valleys are perfect for backpacking, camping, fishing, canoeing and spelunking in some of Missouri’s more than 6,000 caves. Learn more about St. Louis’ many attractions at explorestlouis.com.
FOREST PARK

Washington University’s Danforth and medical campuses sit on either side of Forest Park — a massive green space that many consider the crown jewel of St. Louis. At 1,300 acres, it is one of the nation’s biggest city parks, 500 acres larger than New York’s Central Park. Forest Park features countless facilities for athletics, cultural activities and fun for all ages.

PUBLIC TRANSPORTATION

Washington University’s U-pass provides all students with free use of MetroLink light rail and Metro buses. MetroLink connects students to all Washington University campuses, downtown, Forest Park, Clayton and Lambert St. Louis International Airport.

“...will tell you that Wash U is world-class. They’re correct. The quality of education cannot be overstated. I am constantly challenged and have immensely developed how I formulate and approach scientific questions. I have learned how to critically evaluate data, form coherent written and oral arguments, and communicate science effectively.”

Scott Karney-Grobe
Developmental, Regenerative and Stem Cell Biology, DiAntonio lab
Undergraduate Institution: University of California, San Diego
Hometown: Yorba Linda, California
Approximately 80 PhD students matriculate into the Division of Biology and Biomedical Sciences each year. If an application is reviewed favorably, the applicant is invited to visit St. Louis for an interview. The Division pays most travel expenses up front. The interview is an excellent opportunity for the applicant to meet faculty members and current students, explore the vibrant and collegial community of Washington University and experience the comfortable and convenient city of St. Louis. Visit dbbs.wustl.edu/prospstudents/phdadmissions for more information.

**STIPENDS AND SUPPORT**
- Each student accepted into the Division is guaranteed a generous stipend, provided all academic standards are upheld.
- Tuition is provided for all full-time students in the Division for the duration of training, provided all academic standards are upheld.
- Many students hold national fellowship awards, such as those offered by the NIH and NSF.
- Funds are provided for students to attend and participate in a scientific meeting.

**THE ADMISSIONS PROCESS**
Applications are available online in early September at dbbs.wustl.edu.
- Review of applications begins in mid November, and early application is encouraged.
- Application deadline: December 1.
- Students are admitted for the fall semester only.
- Requirements for admission to the doctoral programs of the Division include:
  1. A baccalaureate degree in the natural, mathematical, physical or engineering sciences or psychology.
  2. Courses in calculus, general and organic chemistry, physics, a core sequence of basic courses in biology.
  3. A strong background in quantitative sciences.
  4. Test scores: The general GRE test is required, earned within the past five years; the subject test is optional. International students must submit scores from the Test of English as a Foreign Language (TOEFL) earned within the past two years.
  5. At least one year of undergraduate or postgraduate research experience is required. Letters of recommendation concerning research experience and accomplishments are particularly important.
- **No application fee.**
- Qualified applicants are invited to an interview in St. Louis. The Division pays most travel expenses up front within the U.S. and Canada. International applicants will be reimbursed for travel from the port of entry in the U.S. to St. Louis.

**BENEFITS**
- Health, life and disability coverage are provided.
- Students in the Division enjoy access to all of Washington University’s educational, entertainment and recreational resources.
- MetroLink connects students to all Washington University campuses, downtown, Forest Park, Clayton and Lambert St. Louis International Airport.

Yehuda Ben-Shahar, PhD, assistant professor of biology, (left) and Xingguo Zheng, a PhD candidate in neuroscience examine fruit flies in the lab.