“Washington University’s mission is to discover and disseminate knowledge, and protect the freedom of inquiry through research, teaching, and learning.”

“The Office of Undergraduate Research supports the larger mission of Washington University in St. Louis to advance and protect the process of inquiry by facilitating and promoting faculty-mentored undergraduate research experiences in all schools and all disciplines.”

Established in 2005, the Office of Undergraduate Research (OUR) is celebrating our 10th year of promoting and supporting undergraduate research.

By any measure, the OUR is a success. Each year we serve more students through Summer Undergraduate Research Awards, presentation and publication opportunities and travel awards.

Students enthusiastically report the deep knowledge and understanding they gain from their research experiences. Anecdotal evidence demonstrates these benefits continue long after graduation.

Faculty mentors confirm, just as enthusiastically, the impact undergraduate research has on student learning. They report that being a mentor is often just as valuable to them as it is to students.

We will mark our 10th anniversary by honoring past leaders and program alumni. We will look forward to the next decade with an awareness-building campaign so that all undergraduates at Washington University are informed of the opportunities for and benefits of research, regardless of school, discipline or career goals.

Housed in the College of Arts & Sciences, the OUR serves all undergraduates in all disciplines in all schools.
Students who participate in undergraduate research report that it improves their ability to take what they learn in class and apply it to a real-world experience.

**Why Undergraduate Research?**

The benefits of undergraduate research for students are well documented. Shortly after Hoopes’ award was established, a report from the Association of American Colleges and Universities (AACU) identified undergraduate research as a “high-impact practice” that fosters deep learning, emphasizing both acquiring information and understanding its underlying meaning.

**OUR History**

The initial funding for the OUR came from a forward-thinking donor, Catherine F. Hoopes, to support and promote undergraduate research in any discipline. Her legacy is the Summer Undergraduate Research Award (SURA), which allows students to spend up to 10 weeks conducting full-time faculty-mentored research. The OUR serves as a resource as students begin to explore the concept of undergraduate research, and then provides funding to conduct research. We also help student researchers share their work through conference travel, symposia and publications.

### Student-Reported Gains

<table>
<thead>
<tr>
<th>Student researchers’ confidence in their ability to:</th>
<th>Post-research response</th>
<th>Pre-research response</th>
</tr>
</thead>
<tbody>
<tr>
<td>Plan and execute tasks independently to pursue research objectives</td>
<td>92%</td>
<td>61%</td>
</tr>
<tr>
<td>Adapt research plan or objectives in response to new information or constraints</td>
<td>94%</td>
<td>67%</td>
</tr>
<tr>
<td>Draw on knowledge or skills from a class or other previous experience</td>
<td>98%</td>
<td>81%</td>
</tr>
</tbody>
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Source: 2015 SURA Pre/Post-Research Survey Benchmarks — results include Extremely and Very Confident responses
The Need

In the 10 years since the OUR was founded, student demand for research opportunities has risen sharply.

The University’s recognition of research as a high-impact practice and students' awareness of its benefits have fueled demand. The Admissions Office highlights undergraduate research as one of the benefits of attending Washington University and states:

You will receive the support of a large university, but with our signature personalized and inclusive style. No matter what you’re studying, you will find research opportunities that add meaning and depth as you contribute to the world’s body of knowledge.

An illustration of the increased demand is the number of students who received SURAs in 2015, which grew to 110, a 600% increase over 2008.

The number of conference travel awards, which allow students to share their research at professional conferences, gain presentation skills and network with others in their field, has increased 30 percent since 2011.

Visits to the OUR website, which includes detailed information on getting started in research, and SURA nomination and other program registration forms, have skyrocketed. AY 2014-15 saw a 50 percent increase in visits to the site, 70 percent of those from new visitors.

To meet this demand, the OUR is working closely with the Alumni and Development office to seek new sources of funding.

Summer Undergraduate Research Awards are vital. Nearly half of the 2015 SURA recipients reported they couldn't have conducted research without the award.
What was the most valuable outcome of your research experience?

Seeing the world through different eyes, opening their minds to a new way of thinking, doing something they previously thought impossible. These are the life-changing effects undergraduates say their research experiences have had on them.

“I can't pick one ‘best moment’ because every day of my project was filled with them. I was able to meet people and be involved in experiences which I didn’t think were possible. Through travel and meeting people across the country, I was able to open my mind to a different way of thinking.”

“...I did the second trial of the big final experiment completely by myself and I didn't make a single mistake. I handled the radioactivity safely and precisely and everything worked the way it was supposed to.”

“...my work will be out there, available for use by anyone with internet access. That will be the moment when I know it will make an impact on scholarship, however small.”

“My mentor was very helpful, and instead of giving me a solution, he always guided me to make my own decision.”

“Living in an island village and conducting interviews with local people about how their lives are changing, having a family in a different country, learning about the world and my place in the world.”

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“Student Researchers’ responses to post-research surveys
How does **mentoring an undergraduate doing research** benefit faculty?

Fresh perspective. Inspiration. Joy. These are but a few of the benefits faculty report they personally receive from mentoring undergraduate researchers. Comments from an anonymous survey of 2015 SURA faculty mentors were overwhelmingly positive:

“Working with undergraduate researchers gives senior students and postdocs in my lab an opportunity to work as bench mentors and for me to help mentor the mentors!”

“I’ve been able to prep a book project with the help of two summer research mentees. They were invaluable. Not only did they conduct bibliographic and archival research, but they were also great sounding boards for grant proposals and new ideas.”

“Students bring a fresh perspective and creative ideas. [They] help accomplish project goals and are fun to interact with. This is all very beneficial to my lab group and the advancement of my projects.”

“It is part of my job and my passion ... We always have undergrads in the lab. They bring joy and teach us to question everything.”

“I learn a lot from my students, and am inspired by them.”

*Faculty mentors’ responses to post-research surveys*
OUR Events and Programs

In addition to SURA, our flagship program, the OUR sponsors and participates in numerous events throughout the year to build awareness of undergraduate research and provide opportunities for students to disseminate their research.

- **Bi-annual research symposia** provide opportunities for students to share their research, peer networking and cross-disciplinary conversations and allow students to develop presentation skills.
- **Mentor Connections** allow students to explore research topics, practice networking and meet faculty mentors.
- **Travel Awards** for students presenting their research at professional conferences and give students presentation and networking experience.
- **Two publications** showcasing student work: **WUURD** (Washington University Undergraduate Research Digest), open to any student conducting research, and includes research abstracts and peer-reviewed articles and **WUSHTA** (Washington University Senior Honors Thesis Abstracts), open to seniors graduating with honors.
- **Workshops** on creating posters, writing abstracts and research ethics.
- **Poster printing services**.
- **The OUR website** ([ur.wustl.edu](http://ur.wustl.edu)) with detailed information for students about the benefits of research, how to get started in research, and research opportunities.
Outreach

Knowing the benefits of an undergraduate research experience, the OUR is committed to making all undergraduates aware of the importance of and opportunities available for research at Washington University. To that end, below is a sampling of our outreach efforts:

Department visits - As part of our 10th Anniversary celebration, OUR staff will visit academic departments to increase awareness of our services and to strengthen relationships.

Spring 2016 Undergraduate Research Symposium - OUR founding director Dr. Henry Biggs and OUR alums will be recognized.

New funding initiatives - The OUR is collaborating with the Office of Alumni and Development to spread the word that investing in undergraduate research pays untold dividends for individual students and to the world at large through the new knowledge their research creates.

Showcase videos - Working with the Office of Public Affairs and the College of Arts & Sciences, the OUR is producing videos to showcase students, alums and faculty.

In addition, OUR staff regularly attend campus events to build awareness of OUR programs and services.

“I had a great trip to the Midwest Political Science Association Conference in Chicago. I enjoyed the opportunity to share my research with other students and scholars and I learned a lot. I have really enjoyed my entire research experience at Wash U and it wouldn't have been nearly the same without the help of the OUR.”

- Chris Gibson
2015 Conference Travel Award Recipient
Global Impact

Washington University undergraduate researchers are making an impact across the globe. In the past five years SURA recipients have traveled to 37 countries, from Argentina to Zambia and Canada to Kiribati.

Research Topics

Undergraduate research topics are varied, timely, and relevant. Here's a sampling of 2015 research projects:

- The Global Wars on Terror: A Comparison of the United States’ and Russian Federation’s Counterterrorism Policies
- The Changing Role of Plant-Soil Feedback Loops in Maintaining Coexistence in the Face of Drought
- Mapping Air Pollution with GIS
- Identification of Rare Variants in Alzheimer’s Disease
- Barriers to Access: Obstacles to Obtaining Services for Bosnian Immigrant Survivors of Intimate Partner Violence in St. Louis
OUR Accomplishments

The OUR is at the forefront of issues of importance to the campus as a whole. We are:

- Assuming administering the competitive BioSURF program and collaborating with the biology department to assure continuation of this important opportunity.
- Working with campus leaders to track the number of undergraduates participating in research university-wide.
- Participating in conversations regarding protection of intellectual property and securing unpublished data, issues facing Universities across the country.

By The Numbers:

20 Number of students awarded funds to travel to present their research at conferences in 2015
24 Number of disciplines represented among 2015 SURA recipients.
37 Number of countries student researchers have traveled to in the last five years. In 2015, students traveled to more than a dozen countries.
46 Percent of SURA recipients who said they could not have conducted summer research without OUR funding
70 Percentage estimate of the students who have participated in OUR programs and events who have gone on to do graduate work, including medical school, law school, doctoral and masters programs
110 Number of SURA recipients in 2015, a nearly 600% increase since 2008.
365 Number of participants in the two Undergraduate Research Symposia in AY 2014-2015
32,000 Number of visitors to the OUR website during AY 2014-2015, a 58 percent increase over the previous year
In 2014, Janice Cantieri and Mackenzie Findlay received Summer Undergraduate Research Awards from the Office of Undergraduate Research. Cantieri traveled to Kirabati to study how the island nation is dealing with climate change; Findlay researched healthcare options for pregnant women in Madagascar.

The May, 2015 graduates learned in June they had been selected for the Fulbright program. Both Cantieri and Findlay cite their undergraduate research experience as key to their acceptance into the prestigious program.

“My research definitely helped me win the Fulbright,” Findlay said. “My research experience in Madagascar was the most influential thing I did at Wash U.”

Cantieri agreed. “My research experience last summer is the single most important thing that secured my success with the Fulbright...I met people during the process of interviewing, researching, and living in villages in Kiribati that inspired my project proposal for the National Geographic Fulbright.

“I am so grateful to the OUR and especially Dean Kiefer for making this whole thing possible!”
From Mentee to Mentor

When Tim Bono came to WashU as a freshman in 2001, he met Psychology Professor Leonard Green. “I told him I wanted to be a professor. He asked me what kind of research I wanted to do.” Research? Bono thought. I just wanted to teach.

For Bono, research meant people in white lab coats huddled over petri dishes or opening an encyclopedia and writing a paper. Needless to say, Bono figured out that research is much more than what happens in a lab or a library.

Today, Bono has a Ph.D. in Psychology, is an assistant dean in the College of Arts & Sciences and lecturer in Psychology.

Bono’s entry into research came when he needed a mentor for his senior thesis. Bono contacted Randy Larsen, a Psychology professor whose class he especially enjoyed. With Larsen’s encouragement, Bono jumped into research with both feet. By the start of his senior year, he was working in three (see next page)

External Scholarships

Students affiliated with OUR are often found on an exclusive list: nominees, finalists and winners of prestigious external national and international scholarships, including the Churchill, Fulbright, Goldwater, and Rhodes awards. In 2014, Lauren Henley won a $34,000 Beineke scholarship, and Joshua Aiken was named a Rhodes Scholar.

In 2014, SURA recipient Lauren Henley won a $34,000 Beineke award and undergraduate researcher Joshua Aiken was named a Rhodes Scholar.
different psychology labs looking at three different aspects of how the brain works.

“The most important thing I gained from my summer research experience was the ability to ask good questions. Up to that point I was very good at learning what other people had to say, summarizing, answering questions on an exam.”

“Research was a whole new experience. There wasn’t already an answer. My job was to look at the questions that weren’t being asked. Could it be the current thinking on a subject might be incorrect? Just because it’s published in a book doesn’t mean it’s the final answer.”

Developing the ability to ask questions is an asset that will provide career-long benefits, Bono advises.

“The ability to ask questions is going to position you to be successful in any career. I can’t imagine any industry in which your ability to identify problems and the methodology to solve them wouldn’t provide great benefits.”

Bono’s undergraduate experience came full circle in 2015 when he mentored his first undergraduate researcher – a student from one of his classes.

“Having the opportunity to help my own students develop a deeper understanding of our field, in the classroom and through research, is at once humbling and exhilarating.”
Sharing New Knowledge

In anonymous surveys following each undergraduate research symposium, students are asked to describe a meaningful interaction they had during the symposium poster session. The responses illustrate that providing students with opportunities to present their work and discuss it with a diverse audience provide valuable and meaningful experiences.

“My research was on plant science and it was interesting talking to someone not in the sciences to view the potential of my research in a larger context of the environment and global sustainability rather than just in the small scientific community.”

Daniel Kahn explains his research on iodide nanocrystals to a fellow student at the Fall, 2015 Undergraduate Research Symposium

“A woman who had a family member suffering from the psychopathology that my research focused on personally thanked me for helping her understand the topic.”

At the Fall 2015 Undergraduate Research Symposium Lydia Zoells explains research she and Katherine Needham conducted on transcribing early modern plays

“Someone pushed me to explain my usage of the word ‘predatory annexation’ and when I tried to explain it I was caught off guard. It forced me to work through basic notions I think I understand until I’m confronted on them.”

Student researchers’ anonymous responses to post-symposium surveys
“Undergraduate research is one of the most powerful learning strategies for undergraduate students. Undergraduate research is also a significant contributor to American innovation and economic development. The skills students can develop through engagement in research will serve them well in their future careers.”

- Council on Undergraduate Research

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