Cover photos (clockwise from top left):
The Fall Undergraduate Research Forum; Chiboukem Amuneke-Nze; Sarah Craycraft; Andrew Muehleisen
Ohio State has a time-honored commitment to finding and developing solutions to grand challenges. Our undergraduate researchers are vital collaborators in the effort to bring the results of our research prowess to the community.

Joseph A. Alutto, Interim President

The Undergraduate Research Office connects students and faculty to a range of opportunities that spans our academic landscape—from studios to laboratories and from theatre to neuroscience. Recognized for excellence in undergraduate research programs by US News & World Report in September 2013, our real-time, mentored and collaborative research projects also help develop students’ critical, analytical and independent thinking skills. Thus, in addition to expanding students’ intellectual horizons and knowledge base, they also gain skills for every college course, skills for careers, and skills for life.

Joseph E. Steinmetz, Executive Vice President and Provost

Engaging in research at the undergraduate level has proven to provide significant positive benefits to the overall quality of education, within the specific subject area in which the research is grounded, as well as in all other subjects that the student is engaged in. It also has a similar positive impact on the student’s faculty mentor, and in fact the university at large sees the value of the experience.

Wayne E. Carlson, Vice Provost and Dean of Undergraduate Education

The Ohio State University is one of the world’s most outstanding and comprehensive research universities. The range of opportunities we provide for our students in the research arena is unparalleled. By working with our world-class faculty, our students truly do make a difference. We are proud of their contributions and impressed by the exciting careers they pursue after getting involved in research.

Caroline C. Whitacre, Vice President for Research
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Quote from an undergraduate researcher in 2013:

Research has added a completely new dimension to my undergraduate experience at Ohio State. I have been able to apply what I learned in the classroom to my research and vice-versa, which is often very exciting. I have also really enjoyed the investigative nature of research and finding the answers to new questions.

Leanne Diese (Animal Sciences)
Highlights

Since 2006, the Undergraduate Research Office (URO) has provided a central clearinghouse for information and a voice for undergraduate research at The Ohio State University. We strive to open new horizons for interested students from all academic disciplines. The URO has contributed to a surge of interest in research collaborations between students and faculty, and we are pleased to summarize our efforts in this report.

A few highlights from 2013:

- Ohio State University was recognized for excellence in undergraduate research programs by US News & World Report in September 2013, when OSU moved up two spots to #16 among the top 50 public national universities.

- The total number of students who completed a research thesis and graduated with “Research Distinction” or “Honors Research Distinction” rose from 339 in 2012 to 369 in 2013. Most of this increase represents non-Honors theses, an option that was instigated by our office and approved by the OSU Board of Trustees in February of 2011.

- The campus-wide Denman Undergraduate Research Forum continues to be the most significant undergraduate research event of the year, with 723 participants and >500 faculty judges in 2013. The number of participants increased by 24% compared to 2012.

- An all-time high of 156 students gave presentations at the Fall Undergraduate Research Forum, which we co-sponsored with University Libraries, up 26% compared to 2012.

- Our workshops, events, and short presentations in OSU classes reached more than 7,000 students, a 9% increase over 2012, including approximately 40% of the freshman class.

- More than 8,200 OSU students, faculty, and staff are registered to receive our email newsletters and announcements, compared to 6,700 in 2012. The URO website had a record number of over 52,000 unique visits, compared to 40,000 in 2012.

- An all-time high of 395 students took part in our Summer Undergraduate Research Institute (SURI), a 7% increase in participation over 2012. At least 183 OSU students were funded by summer research programs, 14% less than in 2012.

- 95 OSU faculty members used the URO recruiting service to find undergraduate researchers, up from 75 in 2012.

- Helene Cweren organized a workshop at the Undergraduate Research Program Directors Conference, National Council on Undergraduate Research, at Chapman University, California.

- Allison Snow gave the plenary talk, titled “When teaching and learning meet undergraduate research,” at the annual Faculty Retreat of the University of Illinois in Champaign/Urbana.
All of this work could not have been accomplished without the hard work of many URO staff, students, and collaborators. I greatly appreciate the many contributions of our assistant director, Helene Cweren, program assistants Jackie Lipphardt and Mara Penrose, graduate assistant Roxanne Kaercher, communications editor Samara Rafert, and a large crew of extremely enthusiastic volunteers and paid student assistants, including Jacob Bogart, Theresa Fisher, Rebecca Lieberman, Anthony Kiragu, Amanda Perrin, Stephanie Petrofski, Erika Sulecki, Emily Schueller, Radhika Tampi, Samantha King, Rashmi Borah, Alexander Tranovich, Kara Mattioli, and more than 200 student volunteers who serve as Peer Research Contacts and ambassadors for our office.

We also acknowledge on-going assistance from our Faculty and Student Advisory Committees, the Office of Academic Affairs, the Honors and Scholars Center, the Office of Research, and University Libraries. Ohio State’s increasingly talented pool of undergraduates, combined with world-class resources for research, continues to foster growth in faculty-directed student research projects. We are excited to support a campus-wide culture of helping students get involved in research.

Professor Allison A. Snow

Director
The Undergraduate Research Office (URO)

Strategic Vision
We seek to integrate the dual missions of research and teaching at The Ohio State University, to enrich the undergraduate experience, and to become known as a national leader of campus-wide undergraduate research programs.

Strategic Mission
The Undergraduate Research Office coordinates opportunities for undergraduate students to engage in meaningful research at The Ohio State University, a top public research university. The URO promotes many types of research-related activities and events for students in all academic disciplines.

Shared Values
As a unit of the Office of Undergraduate Education, we are committed to the core values of excellence and innovation, collaboration, community service, teamwork, inclusion and respect for diversity, integrity and personal accountability, openness, and trust.

Budget and Personnel

- 75% time Director
- Full-time Assistant Director
- Full-time Program Assistant
- 50% time Graduate Administrative Assistant
- 5 part-time undergraduate assistants

Budget for FY 2014: $369,573 for salaries, benefits, fellowships, supplies, and services.

The Undergraduate Research Office offers year-round programming to facilitate and promote undergraduate research. We are a small office with a large mission that contributes to recruiting and educating highly motivated students in all fields of study. Much of our work is carried out in collaboration with other academic units, especially the Honors and Scholars Center. Our annual budget supports programs and events, offices and other room fees, computer services, publicity, brochures, maintaining the URO website, wages for part-time student workers, $21,000 for six summer research fellowships (matched by $21,000 from the Office of Research), and travel by the director and assistant director to one professional meeting per year. This funding is adequate for our current needs, but additional funds will be required to provide better and more easily obtained research experiences for our students. In 2012, our financial status became more secure with the allocation of additional PBA annual funding from OAA.

Other major sources of annual funding for undergraduate research include more than $760,000 for research thesis scholarships (distributed by Honors and Scholars to college committees), $25,000 for educational enrichment grants (distributed by the Undergraduate Student Government), summer programs offered by other units, and funds from many other programs. The annual Denman Undergraduate Research Forum is funded by contributions from corporate and private donors, the Office of Undergraduate Education, and the Office of Research.
2013 Personnel

Director
Dr. Allison A. Snow
Department of Evolution, Ecology, & Organismal Biology

Assistant Director
Helene Cweren

Program Assistant
Jackie Lipphardt, Mara Penrose (through March)
Roxanne Kaercher (beginning August)

Graduate Administrative Associate
Jacob Bogart (beginning August)
Theresa Fisher (through May)
Rebecca Lieberman (through July)
Anthony Kiragu (through June)
Amanda Perrin (beginning August)
Stephanie Petrofski
Emily Schueller
Erika Sulecki (through May)
Radhika Tampi (beginning August)

2013-14 Faculty Advisory Committee

Allison Snow (Chair) Chair, Director of the Undergraduate Research Office
Department of Evolution, Ecology, and Organismal Biology

James E. Kinder Department of Animal Sciences
Department of Veterinary Preventative Medicine

Kendra McSweeney Department of Geography

Sarah Schoppe-Sullivan Department of Human Development and Family Science

Amanda A. Simcox Department of Molecular Genetics

Karl Whittington Department of History of Art

Jessica Winter Department of Biomedical Engineering
Department of Chemical & Biomolecular Engineering

Linn D. Van Woerkom Associate Provost and Director of the Honors & Scholars Center
Department of Physics

Ex Officio Members:

Wayne E. Carlson Vice Provost and Dean for Undergraduate Education
Department of Interior, Industrial, and Visual Communication Design

Janet M. Weisenberger Senior Associate Vice President, Office of Research
Department of Speech and Hearing
2013–14 Student Advisory Committee

Co-Chairs
Rashmi Borah | Microbiology/Philosophy
Samantha King | Chemistry/Microbiology

Secretary
Kerrianne Morrison | Psychology

Members
Rachael Billock | Microbiology
Kyle Boyd | Biology
Claudia Cash | Psychology
Katie Daehn | Materials Science and Engineering
David Danesh | Public Health
Zach Davidson | Biology/Public Health
Annelise Del Rio | Zoology
Sam Dubin | Neuroscience
Christine Fung | Biomedical Science
Brett Geiger | Biomedical Engineering
Jessica Haushalter | Psychology/Neuroscience
Grant Joslin | Accounting/Anthropology
Greg Kemper | Microbiology
Kara Mattioli | Engineering Physics
Jeremy Maylath | Neuroscience
Victoria Parsons | Public Affairs
Anastasia Purgianto | Food Science
Sara Schiavone | Criminology/Sociology
Emily Schueller | Anthropology
Katherine Stanfill | Biomedical Science
Zach Zins | Chemical and Biomolecular Engineering
Metrics of Participation in Undergraduate Research

The best indices we have found for evaluating trends in the numbers of undergraduate researchers at Ohio State include the numbers of research theses completed, numbers of students presenting at the Denman Undergraduate Research Forum, and the number of students enrolled for credit in research (Table 1). We view these data as indicators of research activity rather than comprehensive measures. A complete accounting of undergraduate research is difficult because not all research projects culminate in a thesis or a presentation, and research activity may go unreported by academic departments or colleges. Each year, many undergraduates are coauthors of journal publications and papers presented at professional meetings, but we have no reliable methods for monitoring all of these achievements. Nonetheless, the metrics presented here should be indicative of overall trends.

For simplicity, we report data for the Columbus campus only unless noted otherwise, recognizing that undergraduate research also is promoted at our regional campuses. Data on admissions, enrollments, and completed degrees were provided by Enrollment Services – Analysis and Reporting, (http://oesar.osu.edu/). Data are for the calendar year 2013 unless noted otherwise.

TOTAL STUDENTS ENROLLED
During the past three years, the total undergraduate enrollment increased by 3%, to 44,201, while the proportion of Honors students declined from 13.9% to 11.1% (Table 1). This reflects the University’s long-term plan to reduce Honors enrollments while promoting excellent educational enrichment for all students. In Autumn 2013, 92% of all incoming freshman were in the top 25% of their high school class, and 58% were in the top 10%. Over time, we may see decreases in the proportion of undergraduate research projects that are carried out by Honors students due to these enrollment trends.

RESEARCH THESES COMPLETED
In the 2012-2013 Academic Year, 364 students completed a total of 369 research theses and graduated with “Research Distinction” or “Honors Research Distinction,” compared to 339 theses in 2011-2012 (Table 1C). Most of this increase represents theses by non-honors students, which totaled 112 compared to 82 in the previous year (Table 2). This thesis option went into effect in February of 2011, when the Board of Trustees approved our proposal to change the Faculty Rules to allow non-honors students who complete a thesis to graduate with “Research Distinction” on their academic transcript, while Honors students may graduate with “Honors Research Distinction”.

About half of all research theses (51%) were completed by students in the Arts and Sciences, while 17% were written by Engineering majors (Table 3). Other well-represented colleges include Food, Agricultural, and Environmental Sciences, Medicine, and Education and Human Ecology, among others (Table 3). To some extent, the numbers of students who completed a thesis or poster presentation reflect enrollment patterns in each discipline, although Arts and Sciences majors represent only 37.4% of the total student population (2013 data) and are over-represented in research accomplishments, while business majors represent about 13.8% of the student population (2013 data) and rarely complete a research thesis or Denman Forum presentation.

FORUM PRESENTATIONS
The Denman Undergraduate Research Forum, created in 1996, continues to be our most visible, esteemed, and high-impact tradition for promoting undergraduate research. In 2013, participation in the Denman
Undergraduate Research Forum was 723 students, 24% more than 2012 (Table 1B). About half of the presenters (53%) were students majoring in the Arts and Sciences, similar to the pattern for research theses (Table 3). Compared to 2012, participation by Arts and Sciences students decreased somewhat, especially those with majors in Arts & Humanities, while the proportion of student presenters with Engineering majors increased from 11% to 19%. Participation by Honors students dropped from 54% in 2012 to 47% in 2013, consistent with changes in enrollment numbers (Table 1A) and with efforts to encourage non-Honors students to become involved in research.

Because the large increase in Denman presenters in 2013 exceeded the capacity of the RPAC, we considered a range of options for how to accommodate more and more students each year. After surveying faculty and consulting with our faculty and student advisory committees, we developed a new strategic plan for the forum. For 2014, we decided to continue to use the RPAC, the best venue for this event, and to continue with a one-session afternoon format, while limiting participation to about 550 projects in 2014. This plan will be re-evaluated each year, based on staffing capacity, venue options, and feedback from students and faculty.

Meanwhile, the URO is working with other colleges and departments to promote other forums throughout the year. Many other forum opportunities are available and some, like the College of Engineering Undergraduate Research Forum, are growing (Table 4). Another large forum is the Arts and Sciences Division of Natural Science and Mathematics Undergraduate Research Forum, with 119 students in 2013. Overall, we estimate that at least 1288 student presentations were given at Ohio State in 2013 (Table 4). Students in creative and performing arts also participate in capstone exhibitions and events that are not captured by these numbers. The Fall Undergraduate Research Forum, organized by the URO to showcase summer undergraduate research accomplishments, reached an all-time high of 156 students in 2013 (26% more than 2012).

ENROLLMENTS FOR RESEARCH CREDIT

Here we report data on the numbers of students registered for faculty-mentored research courses (Table 1D). Due to the switch to semesters in 2012-13, we are not able to compare this year with previous years. Instead, we will use 2013 as our new baseline going forward.

Prior to the switch to semesters, the number of students who received credit for research (699 courses) and thesis research (783 courses) increased substantially over time (Table 1D). Note that students who enrolled for multiple terms were counted more than once in these summaries. Enrollment for research credits tripled from 2006-2012, reaching 2,454 course enrollments in the 2011-2012 academic year. This steady increase in undergraduate research is consistent with national trends, and reflects heightened expectations of our students and faculty for student engagement in research.

STUDENTS IN PAID SUMMER RESEARCH PROGRAMS

In 2013, we identified 183 OSU students who participated in various summer research programs at Ohio State, compared to 212 in 2012, for a decrease of 14% (Table 5). Most of these students received stipends for full-time research with an Ohio State faculty member. In 2012, due to a shorter, 8-week summer term preceding the conversion to semesters, programs provided lower stipends and were able to offer more funded opportunities to students. The number of funded opportunities in 2011 and 2013, both 10 week summer terms, are on par with each other.

Given the very high demand for summer research opportunities, we hope to see the numbers of funded programs increase further through departmental contributions, extramural funding, and contributions from
donors. An unknown number of students are funded by individual faculty members or off campus programs, such as those at other universities or national research labs; these students are not included in Table 5.

**FACULTY WHO USED THE URO WEBSITE FORM TO FIND STUDENT RESEARCHERS**

In 2013, **95 faculty members** used our targeted email announcements to find undergraduate researchers, compared to 75 faculty members in 2012. We continue to receive positive feedback about their success in finding talented, well-matched students as a result of our announcements. We hope the number of faculty using our services will continue to rise as more faculty, postdoctoral researchers, and senior-level graduate students learn about our activities. This approach is especially useful for new faculty members and for those in the College of Medicine and other large research centers who have little direct contact with undergraduate students.

**NATIONAL SURVEY FOR STUDENT ENGAGEMENT**

The National Survey for Student Engagement (NSSE) is administered every three years and was last conducted in 2013, but unfortunately the response rate was too low to be meaningful (data from Julie Carpenter-Hubin, OAA). In 2010, when the response rate was 25%, students in Rank 4 were asked if they have “worked on a research project with a faculty member outside of course or program requirements,” and 22.4% answered “yes”. Participation in research was especially high in natural and mathematical sciences (45.6%), social and behavioral sciences (23.8%), and engineering (23.9%).
Table 1. Overall student participation in undergraduate research, 2004-2013

<table>
<thead>
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<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>A) Total students enrolled and percent Honors students</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total number of students</td>
<td>37509</td>
<td>38479</td>
<td>40212</td>
<td>42082</td>
<td>42916</td>
<td>43058</td>
<td>44201</td>
</tr>
<tr>
<td>Honors</td>
<td>5128</td>
<td>4972</td>
<td>5232</td>
<td>5824</td>
<td>5785</td>
<td>5485</td>
<td>4208</td>
</tr>
<tr>
<td>Percent Honors</td>
<td>13.6%</td>
<td>12.9%</td>
<td>13.0%</td>
<td>14.3%</td>
<td>13.9%</td>
<td>13.1%</td>
<td>11.1%</td>
</tr>
<tr>
<td><strong>B) Number of Denman Undergraduate Research Forum presenters</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total number of students</td>
<td>276</td>
<td>354</td>
<td>415</td>
<td>540</td>
<td>580</td>
<td>582</td>
<td>723</td>
</tr>
<tr>
<td>Percent Honors</td>
<td>77%</td>
<td>66%</td>
<td>71%</td>
<td>64%</td>
<td>62%</td>
<td>54%</td>
<td>47%</td>
</tr>
<tr>
<td><strong>C) Number of research theses</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(per academic year; AY2013 is Summer 2012-Spring 2013)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total number of theses</td>
<td>292</td>
<td>277</td>
<td>285</td>
<td>292</td>
<td>314</td>
<td>339</td>
<td>369</td>
</tr>
<tr>
<td><strong>D) Number of students enrolled for research credit during the switch to semesters</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(per academic year; AY2013 is Summer 2012-Spring 2013)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Thesis Research Credits $783(H)/4999(H)$</td>
<td>701</td>
<td>680</td>
<td>660</td>
<td>792</td>
<td>744</td>
<td>857</td>
<td>690</td>
</tr>
<tr>
<td>Research Credits $699/4998(H)/3998(H)/2998$</td>
<td>66</td>
<td>148</td>
<td>687</td>
<td>1090</td>
<td>1455</td>
<td>1597</td>
<td>1217</td>
</tr>
<tr>
<td>Total</td>
<td>767</td>
<td>828</td>
<td>1347</td>
<td>1882</td>
<td>2199</td>
<td>2454</td>
<td>1907</td>
</tr>
</tbody>
</table>

---

1. Data on admissions, enrollments, and completed degrees provided by Enrollment Services – Analysis and Reporting, (http://oesar.osu.edu/) and represent the Columbus campus only.
2. Includes categories of Distinction, Research Distinction, and Honors Research Distinction; see Table 2.
3. Students were counted more than once if they enrolled more than once in the same academic year.
4. Comparing enrollments from quarters to the new semester system is difficult, especially given that students may enroll in more courses per semester, but also may be constrained by having to pay extra tuition if they enroll for more than 18 credits. Therefore, we will use 2012-2013 as a new baseline going forward.
5. Research credit was a new option in AY2003.
Table 2. Numbers of students graduating with Distinction\(^1\), AY 2011-2012\(^2\)

<table>
<thead>
<tr>
<th>Transcript Designations:</th>
<th>AY 2011-2012</th>
<th>AY 2012-2013</th>
<th>Difference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Distinction (D)</td>
<td>SU 2011-SP 2012</td>
<td>SU 2012-SP 2013</td>
<td>Difference</td>
</tr>
<tr>
<td>(includes Performing Arts, Pharmacy, and Math)</td>
<td>24</td>
<td>21</td>
<td>-3</td>
</tr>
<tr>
<td>Research Distinction (RD)</td>
<td>82</td>
<td>112</td>
<td>+30</td>
</tr>
<tr>
<td>Honors Research Distinction (HRD)</td>
<td>233</td>
<td>236</td>
<td>+3</td>
</tr>
<tr>
<td>Total D, RD, HRD Designations</td>
<td>339</td>
<td>369</td>
<td>+30</td>
</tr>
<tr>
<td>Total Students with D, RD, or HRD</td>
<td>338</td>
<td>364</td>
<td>+26</td>
</tr>
<tr>
<td>(a few completed two theses)</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

1. Those students who completed a thesis received the designation of “Research Distinction” or “Honors Research Distinction” on their transcript. We also included “Distinction” because this should be comparable to a thesis in most cases.
2. Source: OSU Registrar, compiled by A. Snow.
### Table 3. Percent of theses and Denman poster presenters by discipline, 2010-2013\(^1\)

<table>
<thead>
<tr>
<th>College or School</th>
<th>Theses</th>
<th></th>
<th>Posters</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Arts and Sciences</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Natural &amp; Math. Sciences</td>
<td>18</td>
<td>19</td>
<td>20</td>
<td>17</td>
</tr>
<tr>
<td>Social &amp; Behav. Sciences</td>
<td>18</td>
<td>21</td>
<td>16</td>
<td>20</td>
</tr>
<tr>
<td>Arts &amp; Humanities</td>
<td>20</td>
<td>15</td>
<td>17</td>
<td>14</td>
</tr>
<tr>
<td>Other</td>
<td>3</td>
<td>2</td>
<td>2</td>
<td>0</td>
</tr>
<tr>
<td>Engineering</td>
<td>14</td>
<td>14</td>
<td>17</td>
<td>17</td>
</tr>
<tr>
<td>Food, Ag., and Env. Sciences</td>
<td>5</td>
<td>6</td>
<td>9</td>
<td>9</td>
</tr>
<tr>
<td>Health &amp; Rehab. Sciences (formerly Allied Medical Professions)</td>
<td>7</td>
<td>5</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td>Education and Human Ecology</td>
<td>5</td>
<td>6</td>
<td>5</td>
<td>4</td>
</tr>
<tr>
<td>Nursing</td>
<td>4</td>
<td>5</td>
<td>5</td>
<td>4</td>
</tr>
<tr>
<td>Architecture</td>
<td>4</td>
<td>5</td>
<td>4</td>
<td>6</td>
</tr>
<tr>
<td>Pharmacy</td>
<td>2</td>
<td>1</td>
<td>&lt;1</td>
<td>2</td>
</tr>
<tr>
<td>Business</td>
<td>1</td>
<td>2</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Social Work</td>
<td>1</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total number of theses or presenters</td>
<td>292</td>
<td>314</td>
<td>339</td>
<td>369</td>
</tr>
</tbody>
</table>

---

1. Based on the college or school of the student's major; theses listed per academic year; AY2013 is Summer 2012-Spring 2013, etc.
<table>
<thead>
<tr>
<th>Term</th>
<th>Event</th>
<th>2011</th>
<th>2012</th>
<th>2013</th>
</tr>
</thead>
<tbody>
<tr>
<td>Spring</td>
<td>Denman Undergraduate Research Forum</td>
<td>580</td>
<td>582</td>
<td>723</td>
</tr>
<tr>
<td>Autumn</td>
<td>URO Fall Undergraduate Research Forum</td>
<td>89</td>
<td>124</td>
<td>156</td>
</tr>
<tr>
<td>Spring</td>
<td>Arts &amp; Sciences—Natural &amp; Math. Sciences Undergraduate Research Forum</td>
<td>97</td>
<td>88</td>
<td>119</td>
</tr>
<tr>
<td>Spring</td>
<td>College of Engineering Undergraduate Research Forum</td>
<td>31</td>
<td>19</td>
<td>84</td>
</tr>
<tr>
<td>Spring</td>
<td>College of Food, Agr., &amp; Env. Sciences Undergraduate Research Forum</td>
<td>33</td>
<td>41</td>
<td>32</td>
</tr>
<tr>
<td>Spring</td>
<td>Neuroscience Undergraduate Research Colloquium¹</td>
<td>-</td>
<td>-</td>
<td>31</td>
</tr>
<tr>
<td>Spring</td>
<td>Dept. of Psychology Undergrad Research Colloquium</td>
<td>24</td>
<td>21</td>
<td>26</td>
</tr>
<tr>
<td>Autumn</td>
<td>College of Pharmacy Research Day</td>
<td>0</td>
<td>11</td>
<td>15</td>
</tr>
<tr>
<td>Spring</td>
<td>Lima Campus Undergraduate Research Forum</td>
<td>13</td>
<td>13</td>
<td>12</td>
</tr>
<tr>
<td>Autumn</td>
<td>Mansfield Campus Undergraduate Research Forum</td>
<td>16</td>
<td>17</td>
<td>12</td>
</tr>
<tr>
<td>Spring</td>
<td>Arts Scholars Juried Exhibition</td>
<td>13</td>
<td>13</td>
<td>11</td>
</tr>
<tr>
<td>Spring</td>
<td>Newark Campus Undergraduate Research Forum</td>
<td>12</td>
<td>14</td>
<td>10</td>
</tr>
<tr>
<td>Summer</td>
<td>School of Earth Sciences—Shell Undergraduate Poster Forum</td>
<td>11</td>
<td>14</td>
<td>10</td>
</tr>
<tr>
<td>Summer</td>
<td>Young Mathematicians Conference²</td>
<td>-</td>
<td>-</td>
<td>10</td>
</tr>
<tr>
<td>Spring</td>
<td>Davis Heart &amp; Lung Research Institute Research Day²</td>
<td>-</td>
<td>-</td>
<td>8</td>
</tr>
<tr>
<td>Spring</td>
<td>Dept. of Dance Senior Thesis Presentations</td>
<td>19</td>
<td>20</td>
<td>7</td>
</tr>
<tr>
<td>Spring</td>
<td>Ohio State Medical Center Research Day</td>
<td>12</td>
<td>6</td>
<td>6</td>
</tr>
<tr>
<td>Autumn</td>
<td>Neuroscience Program Poster Day²</td>
<td>-</td>
<td>-</td>
<td>5</td>
</tr>
<tr>
<td>Spring</td>
<td>Dept. of East Asian Lang. &amp; Lit. Undergraduate Research Forum</td>
<td>6</td>
<td>7</td>
<td>4</td>
</tr>
<tr>
<td>Summer</td>
<td>Mathematical Biosciences Institute Capstone Conference²</td>
<td>-</td>
<td>-</td>
<td>3</td>
</tr>
<tr>
<td>Summer</td>
<td>Ohio Undergraduate Research Symposium/SROP Ohio State (sponsored by the Graduate School)</td>
<td>5</td>
<td>0</td>
<td>3</td>
</tr>
<tr>
<td>Spring</td>
<td>Dept. of Computer Sci. &amp; Engineering Research Poster Exhibition²</td>
<td>-</td>
<td>-</td>
<td>1</td>
</tr>
<tr>
<td>Spring</td>
<td>College of Education &amp; Human Ecology Honors Poster Presentations³</td>
<td>12</td>
<td>N/A</td>
<td>-</td>
</tr>
<tr>
<td>SP/AU</td>
<td>Dept. of Art BFA Exhibition⁴</td>
<td>91</td>
<td>73</td>
<td>-</td>
</tr>
<tr>
<td>Spring</td>
<td>Dept. of Design Spring Exhibition⁴</td>
<td>54</td>
<td>50</td>
<td>-</td>
</tr>
<tr>
<td>Summer</td>
<td>Plant Molecular Biology and Biotechnology—Summer Undergraduate Research Experience Poster Session⁵</td>
<td>2</td>
<td>0</td>
<td>-</td>
</tr>
</tbody>
</table>

**Total Number of Students⁶,⁷**  1120  1113  1288

¹ New event in 2013
² Began recording participation in 2013
³ Number of undergraduate presenters not available for 2013
⁴ Beginning in 2013, no longer recording
⁵ Did not occur in 2013
⁶ Some students presented at more than one event
⁷ Totals are different than reported in 2012 due to additional data on student presentations from previous years
Table 5. Summer undergraduate research fellowships at Ohio State, 2010–2013

<table>
<thead>
<tr>
<th>Program</th>
<th>2010</th>
<th>2011</th>
<th>2012</th>
<th>2013</th>
</tr>
</thead>
<tbody>
<tr>
<td>URO Summer Research Fellowships</td>
<td>13</td>
<td>13</td>
<td>13</td>
<td>13</td>
</tr>
<tr>
<td>Psychology—URO Summer Undergraduate Research Fellowships</td>
<td>2</td>
<td>8</td>
<td>13</td>
<td>11</td>
</tr>
<tr>
<td>EEOB—URO Summer Undergraduate Research Fellowships</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Holbrook Research Abroad Fellowships</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>University Honors Summer Research Scholarships</td>
<td>8</td>
<td>7</td>
<td>7</td>
<td>7</td>
</tr>
<tr>
<td>Mayers Summer Research Scholarships (Natural &amp; Mathematical Sciences, Arts and Sciences)</td>
<td>14</td>
<td>20</td>
<td>35</td>
<td>25</td>
</tr>
<tr>
<td>American Heart Association Summer Undergraduate Research Fellowships</td>
<td>6</td>
<td>5</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>Beckman Scholars Program in Biochemistry, Chemistry, &amp; Biomedical Science</td>
<td>6</td>
<td>5</td>
<td>2</td>
<td>-</td>
</tr>
<tr>
<td>Biology—Stone Laboratory REU (unpaid positions)</td>
<td>5</td>
<td>7</td>
<td>3</td>
<td>7</td>
</tr>
<tr>
<td>Center for Population Health and Health Disparities Undergraduate Summer Internships</td>
<td>-</td>
<td>2</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>CIC Summer Research Opportunities Program (SORP)</td>
<td>9</td>
<td>5</td>
<td>-</td>
<td>6</td>
</tr>
<tr>
<td>College of Dentistry Undergraduate Research Program—Dr. Rudy Melfi Research Fellowships</td>
<td>3</td>
<td>4</td>
<td>4</td>
<td>3</td>
</tr>
<tr>
<td>Economics-URO Summer Undergraduate Research Fellowships</td>
<td>-</td>
<td>-</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>Engineering Experimental Station Internships</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>NSF REU—Mathematical Biosciences Institute</td>
<td>7</td>
<td>2</td>
<td>9</td>
<td>0</td>
</tr>
<tr>
<td>NSF REU—Molecular Genetics &amp; Biochemistry</td>
<td>2</td>
<td>4</td>
<td>5</td>
<td>2</td>
</tr>
<tr>
<td>NSF REU—Nanoscale Science &amp; Engineering Center</td>
<td>2</td>
<td>1</td>
<td>10</td>
<td>1</td>
</tr>
<tr>
<td>Ohio State Biomedical Informatics Undergraduate Internships</td>
<td>-</td>
<td>6</td>
<td>4</td>
<td>6</td>
</tr>
<tr>
<td>Physics Summer Research Interns</td>
<td>10</td>
<td>8</td>
<td>9</td>
<td>11</td>
</tr>
<tr>
<td>Plant Mol. Biology &amp; Biotechnology Summer Undergraduate Research Experience/Center for Applied Plant Sciences (2012)</td>
<td>3</td>
<td>2</td>
<td>2</td>
<td>-</td>
</tr>
<tr>
<td>Summer Research Internships in Plant Pathology</td>
<td>6</td>
<td>4</td>
<td>-</td>
<td>7</td>
</tr>
<tr>
<td>Shell Undergraduate Research Experience—Earth Sciences</td>
<td>10</td>
<td>11</td>
<td>15</td>
<td>10</td>
</tr>
<tr>
<td>Summer Undergraduate Research Fellowships in the Pharmaceutical Sciences</td>
<td>6</td>
<td>2</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Summer Undergraduate Research Program in Astrophysics</td>
<td>7</td>
<td>4</td>
<td>6</td>
<td>2</td>
</tr>
<tr>
<td>Summer Undergraduate Research Program in the Department of Biochemistry/Chemistry</td>
<td>7</td>
<td>19</td>
<td>29</td>
<td>27</td>
</tr>
<tr>
<td>Undergraduate Community-Based Research</td>
<td>-</td>
<td>4</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Undergraduate Pelotonia Fellows (OSU Comprehensive Cancer Center)</td>
<td>7</td>
<td>35</td>
<td>21</td>
<td>24</td>
</tr>
<tr>
<td>Other</td>
<td>5</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td><strong>Total Ohio State students</strong></td>
<td><strong>144</strong></td>
<td><strong>185</strong></td>
<td><strong>212</strong></td>
<td><strong>183</strong></td>
</tr>
</tbody>
</table>

1. Numbers of Ohio State Students with scholarships or stipends; typically 10 weeks at 40 hours/week.
Year-Long Programming for Ohio State Undergraduates

OVERVIEW
The URO offers programs year-round to encourage and support student participation in research. We estimate that our workshops, events, and short presentations in classes reached approximately 7,000 students in 2013, a 9% increase over 2012. Autumn Semester presentations to freshman survey courses alone reached approximately 2,800 students representing 40% of the entering class.

Table 6. URO Programs in Spring and Autumn Semesters of 2013

<table>
<thead>
<tr>
<th>Programs</th>
<th>Spring</th>
<th>Autumn</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Informational Presentations/Workshops</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Guidelines for Keeping a Good Lab Notebook</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Join the Research Conversation (with University Libraries)</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Information Sessions (6 sessions per semester)</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>OSU Summer Research Fair</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Poster Presentation Basics</td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>IRB Training for Undergraduates (2 sessions per semester)</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Special Collections Program (with University Libraries)</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Summer Research Planning Workshop</td>
<td></td>
<td>X</td>
</tr>
<tr>
<td><strong>Student Panels</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>First Year Experience Success Series (4 sessions)</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>International Research Panel</td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>JUROS: Steps to Publishing Undergrad Research</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Spilling the Beans: The Secrets of Undergrad Research</td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>Table Talks: Peer Research Discussion by Field (4 sessions)</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>URO-JUROS Meet and Greet</td>
<td></td>
<td>X</td>
</tr>
<tr>
<td><strong>Faculty Panels</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Conflict &amp; Controversy in Genetic Research</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Faculty Perspectives on Undergraduate Research</td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>Global Health Initiatives Program</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td><strong>Denman Forum Workshops</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Intro to the Denman Forum</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Preparing and Presenting a Winning Poster</td>
<td></td>
<td>X</td>
</tr>
</tbody>
</table>
We offer many standard programs during the academic year (Table 6) and we continue to introduce new programming and collaborate with other offices. For example, in Spring 2013, we collaborated with the Bioethics Club to present “Conflict and Controversy in Genetic Research: A Faculty Panel” and in Fall 2013, we introduced a new workshop titled, “Guidelines for Keeping a Good Lab Notebook.”

In addition to scheduled programs, we offer individual advising, both walk-in and by appointment. URO student assistants met with approximately 200 students during open walk-in hours. URO Peer Research Contacts, who receive coaching and supervision from our office, are also available to students who have questions about getting started. More than 220 Peer Research Contacts are listed by discipline on our website. These student researchers reported answering around 100 student email inquiries in 2013.

In 2013, in partnership with University Libraries, we began offering peer advising 10 hours a week in Thompson Library. Thompson Library’s central location and large student traffic offered an excellent opportunity to extend outreach and help more students learn how to get started in research. Library Advising is still considered a pilot project as we continue to try various locations, signage, hours and advertising for this service. Attendance has not been high, but feedback from the student volunteers who have participated in Library Advising indicate that they think the effort is worthwhile. As one student volunteer recently wrote:

“I think it is a good opportunity for other students to get information and is a great starting point for many of the students that I was able to talk with. I think it would be a great idea to continue the program....”

COLLABORATORS
The URO actively seeks out other offices and individuals who share our interest in promoting undergraduate research. We gratefully acknowledge the ongoing contributions to our year-long programming of ASC Honors Advising, ASC Division of Natural and Mathematical Sciences, Center for Emergent Materials, Career Connection, the Department of Psychology, First Year Experience (FYE), the Honors & Scholars Center, the Mershon Center for International Security Studies, Office of Diversity and Inclusion, the Office of International Affairs, the Office of Responsible Research Practices, Second-Year Transformational Experience Program (STEP), Undergraduate Fellowship Office, the University Center for the Advancement of Teaching, University Libraries, and the Office of Research.

EVALUATIONS
We distribute, collect, and summarize evaluation forms at each URO-sponsored event. This feedback has been helpful for improving our programs. The URO Student Advisory Committee, which meets twice each term, also gives feedback on events and advice on proposed programs.

STUDENT INVOLVEMENT IN THE URO
Students’ enthusiastic participation is an essential part of the URO. Interested students have the option of getting involved as Peer Contacts, Student Advisory Committee Members, staff of the Journal of Undergraduate Research at Ohio State (JUROS), panel speakers, and volunteers at URO-sponsored events. We host a celebration each spring to recognize the many contributions of our students to Ohio State’s undergraduate research programs.

The URO continuously recruits experienced undergraduate student involvement in the office through a variety of means. Each year there is a formal call for new Peer Research Contacts and a mandatory orientation. However, recruitment of Peer Research Contacts is an ongoing effort, especially in
disciplines where greater representation is needed. In addition, underclass participants in the Denman Undergraduate Research Forum are invited to become involved with the URO, as are Ohio State participants in the Summer Undergraduate Research Institute (SURI) and winners of research funding and awards. URO staff also attend student poster forums around campus to speak directly with students about their research and about their interest in becoming more active within the URO. Informal identification of undergraduate research leaders occurs throughout the year.

PRESENTATIONS AND FAIRS
Over the course of 2013, URO staff and volunteers participated in approximately 191 research-promoting events at Ohio State—a 26% increase over the previous year. Such events included eight campus fairs, 54 presentations to freshman survey courses, 12 presentations to students in the Second-Year Transformational Experience Program (STEP), and 47 other invitations to talk about undergraduate research at OSU.

The roll-out of STEP in Autumn 2013 offered new and exciting opportunities to engage greater numbers of students in undergraduate research. Undergraduate research is one of 6 specified academic enrichment activities which STEP students can choose in order to receive funding. In addition to a URO presentation to all STEP faculty, the office was invited to give 12 presentations and/or panels—reaching nearly 1,000 sophomores—to introduce undergraduate research and how to get started. We anticipate additional interest in and requests for assistance from STEP faculty and students in future semesters.

Presentations to the Preferred Pathway students at Columbus State and other Columbus State students who will be transferring to Ohio State were also initiated in 2013. Likewise the URO made 17 presentations to freshman and transfer orientation students and their families during Summer Term 2013. Informing incoming students about undergraduate research and the resources available to help them get started is an effort that will continue into the future.

The URO is now regularly invited to educate new undergraduate advisors throughout the campus about our office and the resources available to help students get started in research at Advisor Training Sessions sponsored by Undergraduate Education.

AUTUMN SEMESTER
Much of our effort during each Autumn Semester is devoted to outreach. In Autumn 2013 we gave 54 presentations to freshman survey classes, 12 presentations to STEP students, hosted 4 First Year Experience Success Series programs, 2 talks at Honors & Scholars, and participated in 7 campus fairs.

The main URO event during Autumn Semester is the Fall Undergraduate Research Week and Student Poster Forum, held in 2013 on Friday, September 20, in Thompson Library. This year’s forum was again co-sponsored by University Libraries, a significant partnership for the URO. The purpose of the Undergraduate Research Week and Student Poster Forum is two-fold: to allow students to present research from the previous summer, and to introduce incoming students to research opportunities at Ohio State. In 2013, 156 students presented 152 posters, and an estimated 750 students, staff, faculty and guests attended and viewed the Poster Forum; the total student attendance at the three panel discussions scheduled during the Research Week preceding the forum was 255.

Based on survey responses from 86 student presenters (56% response rate), we found:
• 84% were 3rd year students or higher
• 48% were presenting a poster for the first time
• 50% reported that they had been conducting their research for a year or more
• 87% expected to continue with their research in the coming semesters
• 49% were Honors students
• 55% utilized the URO’s website when working on their poster
• 49% reported that their faculty advisor stopped by to see their poster at the Forum
• 91% ranked the overall quality of the Poster Forum as above average or excellent

While the Student Poster Forum is not a judged event, the URO has endeavored to provide formal feedback on posters and presentations in an effort to make the experience more meaningful. Each student presenter was assigned one other poster to view, comment upon, and return a feedback form. In addition, we recruited and organized a group of 54 graduate student and staff volunteers to provide written feedback to student presenters.

SPRING SEMESTER
The highlight of Spring Semester is the Denman Undergraduate Research Forum. In 2013, the URO assumed the role of principal coordinator for this event, and are responsible for planning, publicizing, and hosting this nationally recognized event. The URO schedules pre-Denman workshops and markets the event on campus, in part with widely distributed publicity posters to encourage more students and faculty to attend the forum. We also coordinate the Distinguished Undergraduate Research Mentor Awards to recognize the role of faculty in undergraduate research (Appendix D).

The Denman 2013 grew at an unexpected rate (~24%), far outsizing the previous year’s participation, stretching the physical limits of the RPAC and the ability to provide a quality judged event. Due to the 2013 experience and a commitment to maintaining the integrity of the Denman, the 2014 Forum will be restricted to approximately 550 projects. This recommendation comes from a new strategic plan for the Denman Forum, compiled and vetted by the Denman Faculty Advisory Committee and the URO Faculty Advisory Committee.

SUMMER TERM – THE SUMMER UNDERGRADUATE RESEARCH INSTITUTE
The Summer Undergraduate Research Institute (SURI) provides ongoing communication and support, professional development and social programs, and a sense of community for undergraduate researchers on campus. Students accepted into formal, structured research programs and those working independently with a faculty mentor are all welcome to participate. We also encourage registration from Ohio State undergraduates conducting research off campus (e.g. at other universities or abroad), as a mechanism for staying in touch and including them in the Fall Student Poster Forum.

<table>
<thead>
<tr>
<th>Participation in SURI</th>
<th>2010</th>
<th>2011</th>
<th>2012</th>
<th>2013</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total number of participants</td>
<td>281</td>
<td>336</td>
<td>371</td>
<td>395</td>
</tr>
<tr>
<td>Change from previous year</td>
<td>+10%</td>
<td>+20%</td>
<td>+10%</td>
<td>+7%</td>
</tr>
<tr>
<td>in formal programs</td>
<td>63%</td>
<td>69%</td>
<td>70%</td>
<td>62%</td>
</tr>
<tr>
<td>from other universities</td>
<td>16%</td>
<td>13%</td>
<td>19%</td>
<td>19%</td>
</tr>
<tr>
<td>in STEM disciplines</td>
<td>87%</td>
<td>85%</td>
<td>90%</td>
<td>94%</td>
</tr>
</tbody>
</table>
SURI 2013 was the fifth year of the program and included 395 total students, 81% of whom were Ohio State students. Of the Ohio State students, 94% stayed on-campus or were in the Columbus area, and 6% conducted research elsewhere.

SURI participation in 2013 increased by 7% over 2012, more than doubling since 2008, the year SURI began. Non-STEM student researchers were only 6% of SURI participants, consistent with the observation that there are far fewer formal, structured programs and funding opportunities for these students.

SURI RECRUITMENT
Recruitment for SURI occurs during the Spring Semester when campus-wide communication is still possible. To reach potential participants, we take a two-pronged approach. First, we invite all summer research programs on campus (22 in 2013) to be listed as official supporters of and partners in SURI. Supporting programs share their lists of summer undergraduate students and email addresses, allowing us to contact and recruit our target audience; 62% of SURI 2013 participants were from these formal programs. Second, we directly recruit undergraduates through our usual communication channels, such as the URO email listserv, Buckeye Net News, campus advisors, H&S Weekly, etc. A drawing for Barnes and Noble gift certificates is used as an incentive to encourage self-registration in SURI.

SURI PROGRAMMING
Summer programming conducted over a 10 week period from June 3—July 26, emphasized not only professional development opportunities but also social and sports activities. Two to three events, plus sports activities are offered each week, including the following, listed in the order of most to least attended:

- Kickoff Celebration
- Personal Statement Workshop
- Resumes and Cover Letters Workshop
- Abstract Writing Workshop
- Graduate and Professional Student Panel
- JUROS-Steps to Publishing Undergraduate Research
- National-Level Fellowships
- Poster Presentation Workshop
- What Can I Do with a PhD?
- Strategies for Finding Scientific Literature

The URO continues to partner with other offices across campus and gratefully acknowledges Career Connection, University Center for the Advancement of Teaching, Center for Emergent Materials, Undergraduate Fellowship Office and University Libraries, for providing expertise and presenting many of the SURI professional development workshops, increasing cross-campus cooperation and awareness of undergraduate research on campus.

SURI 2013 weekly brown bag lunches featured five faculty member guests who met with students. These brown bag lunches provide students the opportunity to regularly discuss relevant topics and socialize in small groups.

Sports participation continues to be popular with 205 (52%) of SURI students indicating an interest in getting involved in sports at the beginning of summer. The URO helped students establish three intramural soccer teams, 1 intramural softball team, 4 intramural volleyball teams, yoga, tennis, and ultimate Frisbee weekly events. Sports involvement continues to provide an excellent way for student
researchers to balance their time doing research, manage stress, and to meet one another over the summer semester. The following comments from students reinforce the significance of SURI sports activities:

“...I met several people through SURI sports with similar interests and we became friends.”

“I enjoyed the SURI summer sports playing on a soccer team. I was able to meet other people doing research and some I had already known which made it fun to play.”

In addition to the above events, SURI participants received weekly emails from our 2013 student coordinator Rebecca Lieberman. These emails included program updates and advice in the form of a “topic of the week.” This year’s topics included: The Undergraduate Research Experience, Medical School Application Process, Graduate School Application Process, Tips for Doing Research, Writing a Thesis, Presenting Your Work, and Appreciate Your Work.

**SURI ASSESSMENT**
At the end of the Summer Semester, we administered an online exit survey, with a 15% response rate (61 replies).

Students’ favorite SURI program was once again the opening kickoff event, followed by the personal statement workshop. 34% reported that this was their first experience doing research; 95% of respondents were in their last two years at Ohio State. 92% indicated that the emails they received from the URO were helpful; the survey results confirm that email is the main source of information for SURI students. 59% indicated that they checked the website at least once during the summer. 96% said they would recommend SURI to other students. As one student summarized:

“...it does not require too much of a commitment if you are busy, but it can become extremely beneficial if you want it to.”

The URO added a new evaluation question to the SURI 2013 assessment:  Did participating in research this summer change or strengthen your professional or educational goals?  Students overwhelmingly reported that it confirmed their future goals:

“This summer strengthened my resolve to become a PhD...”

“...my goals did not change, but my research participation reinforced them...”

“Participating in research this summer has strengthened my educational goals and shown me what a career as a researcher would be like.”

“Yes, it made me realize how rigorous research work is but also how rewarding it can be. I am now pretty certain that I will pursue PhD research work in the future.”

“Yes, I came into this internship unsure of whether I would like to go to graduate school or medical school after I complete my undergraduate career. I am now confident that I would like to pursue a PhD in cancer biology.”
Publicity and Marketing

GOALS
As a campus-wide office, we strive to make our services known to all of the Ohio State community. We use a variety of digital and print, passive and active methods to stay in touch with students, depending upon the target audience and the type of announcement. Students begin hearing about undergraduate research from the Office of Admissions while they are still in high school, and we aim to serve their needs throughout their undergraduate years. Likewise, we strive to reach new and established faculty members who may be interested in serving as research mentors, as well as administrators who can collaborate with us to promote undergraduate research. We constantly seek new strategies for making our services available to a larger portion of the Ohio State community, including regional campuses. Our main venues for publicity and marketing are described below.

DIGITAL COMMUNICATION

**URO website**
http://undergraduateresearch.osu.edu

The URO website serves as a comprehensive, centralized, one-stop location for information about undergraduate research in general and more specifically about opportunities for Ohio State students. There were nearly 71,000 “hits” on our website in 2013—up over 30% from 2012—and more than 52,500 unique visits, as compared to 40,000 unique visits in 2012.

The website is updated frequently to provide students at all stages of research involvement with resources and information. The more we learn about the undergraduate research population at Ohio State, the more we are able to modify and add to the website to meet their needs. Original information on the website covered introductory topics, such as what research is and how to find research opportunities at Ohio State. Over time, new sections have been added to facilitate specific tasks such as producing a research poster, writing a research proposal, and completing a research thesis. We have added pages to feature services such as the Peer Research Contacts and the online form to help faculty members recruit student researchers. Other pages serve to publicize the accomplishments of student researchers, provide a link to facilitate donations, and link to *JUROS*, the journal of undergraduate research. One of the main changes made to the website in 2013 was to create a section specifically for Faculty. While the information is not necessarily new, it is easier to see and access. Improvements to the website are a priority for the office and will continue to be pursued in the future.

We are pleased that many OSU offices, departments, colleges, and regional campuses have webpages dedicated to undergraduate research, with links to the URO website. A few examples (out of many) are listed below:

- OSU: [http://www.osu.edu/research/](http://www.osu.edu/research/)
- OSU-Lima: [http://lima.osu.edu/students/research/](http://lima.osu.edu/students/research/)
- OSU-Mansfield: [http://www.mansfield.osu.edu/HTML/research/](http://www.mansfield.osu.edu/HTML/research/)
- University Libraries: [http://library.osu.edu/help/research-strategies/undergraduate-research/](http://library.osu.edu/help/research-strategies/undergraduate-research/)
- Honors & Scholars: [http://honors-scholars.osu.edu/Pages/College-Research.aspx](http://honors-scholars.osu.edu/Pages/College-Research.aspx)
- College of Arts and Sciences: [http://artsandsciences.osu.edu/students/undergrad-research](http://artsandsciences.osu.edu/students/undergrad-research)
- College of Engineering: [http://engineering.osu.edu/undergraduate/research](http://engineering.osu.edu/undergraduate/research)
- College of Food, Ag., and Env. Sci.: [http://cfaes.osu.edu/students/academics/undergraduate/research](http://cfaes.osu.edu/students/academics/undergraduate/research)
• Fisher College of Business: http://www.cob.ohio-state.edu/undergraduate/academics/research/
• College of Pharmacy: http://www.pharmacy.ohio-state.edu/research/res_ugrad.cfm
• College of Nursing: http://nursing.osu.edu/sections/research/undergraduate-research.html
• Dept. of Elec. And Comp. Eng.: http://ece.osu.edu/currentstudents/undergrad/ugresearch
• Dept. of Neuroscience: http://neurosciencemajor.osu.edu/4998
• Dept. of Psychology: http://undergrad.psy.ohio-state.edu/4998/

Undergraduate Research Office Email List
More than 8,200 students, faculty, and staff have joined this list to receive our weekly E-News, announcements about URO programs, research-related events, and research opportunities. Students can sign up at outreach events such as the Student Involvement Fair and URO-sponsored programs, or through our website. An “unsubscribe” option is offered with each outgoing message.

Email is the primary method for recruiting students to our events. As part of our evaluation of URO events, we ask attendees where they heard about the event; data from the past year showed that once again 69% heard through email (Table 8; pooled data from 771 student replies).

<table>
<thead>
<tr>
<th>Table 8. Sources of information for event attendance</th>
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<td>E-mail</td>
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<td>Advisor</td>
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<td>Other</td>
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Targeted Emails
We use the university’s emailer system provided by the Office of the Chief Information Officer to send emails to students based on college or department affiliation, class rank, Honors & Scholars affiliation, etc. This system allows us to inform targeted subsets of the student population about specific research opportunities, such as voluntary and paid research experiences with Ohio State faculty. In 2013, we received 95 faculty requests for assistance in finding student researchers, up from 75 in 2012. Many of those were repeat users of this method for recruiting undergraduate student researchers, and feedback from faculty who use this service continues to be extremely positive.

“…I was very pleased with the large number of extremely well qualified students who responded.”

“This matching process has been vital to allowing me to connect and work with OSU’s talented undergraduates.”

“It’s amazing! I have already got over 60 applications. I am sure that we will be able to find a match in this pool. I will give you an update once we have a final match. Thank you so much for your help!”
Social Media
We currently post all of our events to our Facebook page, and post status updates to remind students about upcoming events and bring attention to newly added Student Spotlights on the URO website. Photos from events are also posted periodically to stimulate readership. Our Facebook page has seen a 47% increase in followers from August 2013 to January 2014.

Social media complement and reinforce email and website communications offered by the URO, and provide a preferred option for some students. In-depth blog posts pertaining to many facets of undergraduate research and the summer events were posted online and links were included in the weekly SURI emails. Social media usage increases URO visibility at Ohio State and elsewhere. It is an expected feature of any academic office in today’s digitally connected university environment.

Early Semester Updates to the Faculty
At the start of each semester, the URO Director sends an email newsletter to all Ohio State faculty, via their deans and department chairs, listing recent developments and programs that will be offered by URO. This allows faculty to inform students in their courses about pertinent application deadlines, information sessions, and resources on the URO website.

Academic Advising Association of Ohio State (ACADAOS)
This professional development group for advisors has a listserv that we utilize. Event evaluations showed that 3% of students reported that they heard about the particular event through their academic advisors, most of whom are not faculty members. URO emails are also forwarded to every academic advisor on campus, whether a member of ACADAOS or not, by the Office of Undergraduate Education.

Honors & Scholars Weekly and Undergraduate E-Newsletter from Arts & Sciences
We post events and opportunities to reach all enrolled Honors & Scholars and Arts & Sciences students on a regular basis.

Office of Diversity and Inclusion
We forward all announcements to minority students on campus through the Office of Diversity and Inclusion.

First Year Experience (FYE)
This office advertises our events to first year students as appropriate.

BNN (Buckeye Net News)
This weekly newsletter goes out to the entire Ohio State student population. We use it weekly to advertise URO events and other important announcements.

OSU Today
When appropriate, we announce events and application deadlines on the university’s daily email, which is sent to Ohio State faculty and staff.

Ohio State Website Splash Page
This website reaches the Ohio State community and beyond. Our large events are frequently announced on this site. We have worked with staff from the University Communications and University Relations Offices on stories featuring student research projects from the Denman Forum, with links to the URO website. Undergraduate researchers are often featured in stories about summer experiences and outstanding
graduating seniors.

**Digital Bulletin Boards**
We take advantage of digital bulletin boards at the Ohio Union and the University Libraries to advertise services and events. The bulletin boards display images for about 20 seconds each, allowing us to email virtual posters to these sites instead of printing and hanging them, saving printing and labor costs while maintaining a visual presence around campus.

**PRINTED MATERIALS**

**URO Brochure**
In 2013, we updated and reprinted our original brochure advertising undergraduate research and the URO to distribute at events.

**URO Poster**
We post a large green poster entitled “Why Research?” all over campus, to encourage students to learn more about opportunities at Ohio State. We also deliver copies of this poster to advising offices on the Columbus and the regional campuses.

**Highlights of Undergraduate Research at Ohio State**
Each year we publish a booklet of nontechnical research summaries featuring the work of 16–20 students selected from those who presented their research at the most recent Denman Undergraduate Research Forum. This popular booklet serves as a general introduction to the exciting work that our students are doing as independent researchers. The booklet is distributed to academic leaders and advisors at Ohio State, is given out to students as appropriate, and is posted to our website. This booklet is also distributed to undergraduate research offices at CIC and other peer universities.

**Journal of Undergraduate Research at Ohio State (JUROS)**
*JUROS* is a student-run organization advised by the URO. See p. 23 for a full description of *JUROS*’ activities in 2013.

**Flyers**
We post program schedules, general information about getting involved in research, and flyers for special events all over campus at least once each term.

**Denman Forum Posters and Signage**
URO manages the printing and posting of Denman Forum advertisements in campus buildings, on CABS buses, in the onCampus Newspaper, and on digital bulletin boards.

**OnCampus**
We announce the Distinguished Undergraduate Research Mentor and Outstanding Research Mentor awards in an annual spring advertisement in onCampus.

**Fall Undergraduate Research Forum Abstract Booklet**
These abstracts are printed in an attractive booklet that is distributed at the forum, posted on our website, and mailed to key academic leaders.
National Conferences and Publications (2008-2013)

PRESENTATIONS


PUBLICATIONS


The Journal of Undergraduate Research at The Ohio State University (JUROS)

juros.osu.edu

2013-2014 Editor-in-Chief | Rashmi Borah
2012-2013 Assistant Editor-in-Chief | Kara Mattioli

JUROS Editorial Board & Staff
Darcy Doran-Myers | Head of Graphics and Photography
Kai Jiang | Head of Marketing and Advertising
William Lee | Head of Event Planning
Liz Bley | Head of Layout and Design

Faculty Editorial Board
Allison Snow | Evolution, Ecology, and Organismal Biology
Robert Cook | Anthropology (OSU Newark)
Lane Wallace | Pharmacy
Dawn Delfin | Biomedical Sciences
Ozeas Costa | Earth Sciences (OSU Mansfield)

2013 SUMMARY
JUROS is the student-run Journal of Undergraduate Research at Ohio State that is open to publication from all undergraduate students in all academic disciplines. JUROS has both an online journal and a printed journal, which is distributed once per academic year. Prospective authors have the opportunity to work with trained student manuscript editors to submit and edit their work before it undergoes a double-blind peer review process. Through extensive collaboration with University Libraries, JUROS has been able to utilize an open source digital publication system, through which authors may submit manuscripts and reviewers can retrieve and resubmit reviewed articles. JUROS also publishes feature articles, videos, and podcasts.

During the Spring and Fall Semester 2013, a new staff was trained in preparation for the 2013-2014 edition of JUROS: Oculus Award Edition. We are pleased to introduce four new heads of department (listed above), as well as new manuscript editors, layout editors, and assistants in the Event Planning and Marketing departments. Manuscripts have been submitted for the 2013-2014 publication cycle, and the staff is planning to publish the next issue of the journal during the Spring of 2014.

MAJOR MILESTONES IN 2013
This past year has been devoted to training new staff members and heads of department. All staff members (both new and current) underwent a one-hour training session for their positions. Training sessions included a summary of the job position, expectations of each staff member, and resources to complete necessary assignments. Additionally, manuscript editors were given an opportunity to demonstrate their understanding of the JUROS editing process by means of a mock editing assignment. All
manuscript editors successfully completed the assignment, and additional support was given to any staff members requiring further assistance.

A manuscript editing packet was designed in 2012 by the Editorial Board. Following the publication of the 2012-2013 issue of *JUROS: Oculus Award Edition*, the editing packet was subject to feedback by manuscript editors, and key changes were made both to ensure continued quality of editing, as well as to ease the process of editing the submitted manuscripts.

Training packets were also designed for the Layout, Marketing and Event Planning departments. All staff members have access to the resources required to complete their job duties, including contacts within the Ohio Union and within the University to assist in advertising and event planning duties.

All *JUROS* materials have been moved to a Buckeye Box account, which is accessible to all current staff members. All detailed protocols for manuscript editing, contacting authors, and retrieving articles are accessible at all times to prospective authors. The Box account will act as the main method of storage of all past *JUROS* materials, and serve as further resources for staff members while executing their respective job duties.

The 2014 semester will be primarily devoted to publishing the next issue of *JUROS*. We look forward to distributing the issue and recognizing the outstanding work done by our soon-to-be undergraduate authors.

A special thanks from the *JUROS* Editorial Board goes to all undergraduate authors, the staff members of JUROS, the advisors who have guided the research, the staff at the Undergraduate Research Office (including Dr. Allison Snow, Helene Cweren, and Mara Penrose), to the University Libraries (including Melanie Schlosser and Laura Seeger), and to our audience, composed of faculty, staff, and students at Ohio State.
Development Funds

CAMPUS CAMPAIGN FUNDS

The Office of Undergraduate Research Fund (Fund 312045—current value $3,768 in 2013)
Proceeds from this fund support grants and fellowships for students. University employees can request tax-deductible monthly paycheck contributions be made to URO Research Fund via the Campus Campaign for giving (campuscampaign.osu.edu). One-time contributions can also be made directly at http://go.osu.edu/urodonate.

ENDOWED FUNDS

Karen A. Holbrook Fund (Fund 663339—current value of $206,817)
This endowment was established to honor Ohio State past-president Karen A. Holbrook. The funds are used to support research through the Undergraduate Research Office and the Study Abroad Scholarships through the Office of International Affairs (OIA). Contributions can be made to this fund via: http://go.osu.edu/holbrookfund.

The current earnings from this endowment are sufficient to support 1–2 summer research fellows each summer for $3,500 each. URO and OIA collaborate to fund students who are conducting research projects abroad each summer. Two awards were given in 2013:

Leela Singh
Major: Theatre
Research Project: Preserving the “Fine Village”: The Commodification of Indian Folk Performance at Choki Dhani
Advisor: Jennifer Schleuter (Theatre)

Shelby Stults
Major: International Studies and Globalization Studies
Research Project: Regional Variation in the Brazilian Favela: The Case of Salvador
Advisor: Kevin Cox (Geography)
**SOLAR Foundation Research Fund (Fund 666787—current value of $75,634)**

The SOLAR Foundation Research Fund was established in 2009 by the Ohio State Board of Trustees with gifts from Dr. Emil Bisaccia (B.S. 1974 Biology) of the SOLAR Foundation of Morristown, New Jersey.

This endowed fund is used to support undergraduate students pursuing research in the fields of epidemiology, virology, HIV and AIDS education, other infections of the blood, and related subjects, and is administered by the Undergraduate Research Office. The 2013–14 student recipients of the SOLAR Foundation Research Grants ($500), their project titles, and their faculty mentors are:

**Greeshma Allareddy (Biology)**
Project Title: *The Coordinate Role of RNA Helicase A and Retroviral Oncoprotein Tax in HTLV-1 Biology*
Advisor: Kathleen Boris-Lawrie (Veterinary Biosciences)

**Doug Culbertson (Food Science)**
Project Title: *Inactivation of Human Norovirus Surrogates Internalized within Strawberries by High Pressure Processing and Gamma Irradiation*
Advisor: Jianrong Li (Veterinary Medicine)

**Samuel Dubin (Neuroscience)**
Project Title: *Characterizing the Immune Responses to Oncolytic Virus Therapy in Breast Cancer Brain Metastases*
Advisor: Balveen Kaur (Neurological Surgery)

**Brittany Hallgren (Biology)**
Project Title: *The Epigenetic Activity of PRMT5 During B-Cell Transformation*
Advisor: Robert Baiocchi (Hematology)

**Molly Osterhage (Biology, French)**
Project Title: *Deciphering the Rules of HIV Integrase Sequence Targeting for Safer Gene Therapy*
Advisor: Kristine Yoder (Molecular Virology, Immunology, & Medical Genetics)

**Jorge Salazar (Biology)**
Department: Microbial Infection and Immunity
Project Title: *Determining the microRNA-MRE Interplay in HIV-1 Regulation through a Model Renilla Luciferase System*
Advisor: Jesse Kwiek (Microbial Infection and Immunity)

**Poornima Venigalla (Biomedical Science)**
Project Title: *Receptor Expression on Immune Cells in Response to Mycobacterium tuberculosis Exposed to Human Lung Alveolar Lining Fluid*
Advisor: Jordi Torrelles (Microbial Infection and Immunity)
Appendix A:
Strategic Plan for the Undergraduate Research Office, 2012-2017

Note: Having largely met the goals of our previous Strategic Plan, we developed this plan for 2012-2017 in alignment with the overall Strategic Plan of the Office of Undergraduate Education.

About the URO

Strategic Vision
We seek to integrate the dual missions of research and teaching at The Ohio State University, to enrich the undergraduate experience, and to become known as a national leader of campus-wide undergraduate research programs.

Strategic Mission
The Undergraduate Research Office coordinates opportunities for undergraduate students to engage in meaningful research at The Ohio State University, a top public research university. The URO promotes many types of research-related activities and events for students in all academic disciplines.

Shared Values
As a unit of the Office of Undergraduate Education, we are committed to the core values of excellence and innovation, collaboration, community service, teamwork, inclusion and respect for diversity, integrity and personal accountability, openness, and trust.

Strategic Scan

The External Environment
During the past decade, large research universities have joined the ranks of primarily undergraduate institutions in an effort to provide research experiences as an important component of academic enrichment and career development. Many studies have shown that students who are involved in research are more likely to complete their degrees, achieve greater academic progress, and pursue postgraduate training. Undergraduate research experience is now expected of applicants to many graduate and professional programs. OSU seeks to maintain and enhance our national profile by continuing to make undergraduate research part of our academic culture.

The Internal Environment
The Undergraduate Research Office serves undergraduates at the Columbus campus and at our regional campuses. With a staff of 2.75 regular employees (director, assistant director, and program assistant), we are a small office with a broad service mission. We work extensively with other offices, especially the Honors and Scholars Center. Our current staff is working at full capacity even as demand for our services is growing. Recently, each class of incoming freshmen has been better prepared and has higher expectations than the previous one. Also, the new STEP initiative (Second-Year Transformational Experience Program) will encourage more sophomores and juniors to get involved in research than in the past. In addition, starting in 2013, our office assumed responsibility for the annual Denman Undergraduate Research Forum, now in its 18th year. Given these increasing demands, we seek to be as efficient as possible in providing resources and programs for students.
Our highest priorities are to:

- Introduce students to rewarding research experiences with effective programs and individual coaching.
- Help students find faculty mentors and funding, and help faculty find student collaborators.
- Help students present their findings at local and national symposia.
- Support the Denman Undergraduate Research Forum and other forums at OSU.
- Coordinate the Summer Undergraduate Research Institute at OSU.
- Promote recognition of student research accomplishments on campus and beyond.
- Assist OSU colleges, schools, departments, and other offices with promoting undergraduate research opportunities and participation.
- Help forge new connections between teaching and research at OSU.

Areas Needing Improvement

1. Teaching and Learning
   - Improve current efforts to promote undergraduate research as a major component of academic enrichment and “high impact” education at OSU.
   - Contribute to STEP by informing students and faculty about undergraduate research opportunities, if current staffing levels permit.

2. Research and Innovation
   - Facilitate increased student participation in undergraduate research, despite constant or decreased funding in some areas.
   - Develop a campus-wide plan in which the annual Denman Undergraduate Research Forum is sustained as the premier celebration of undergraduate research, while other forums are established to meet increasing needs of undergraduate researchers in all academic disciplines.

3. Outreach and Engagement
   - Continue to increase student, faculty, and staff awareness of undergraduate research.
   - Continue to enhance OSU’s local and national reputation as a leader in undergraduate research.

4. Resources Stewardship
   - People: maintain sufficient staffing for increasing demands, while assisting our current staff with time management and professional development.
   - Continue to improve collaborations with other offices.
   - Continue to improve efficiency by developing a database system for tracking student success and expediting applications, data storage, and portions of our annual report.
   - Improve funding by seeking external and internal funding for unmet needs of our students, such as:
     - Sustained viability of the Denman Undergraduate Research Forum.
     - Other undergraduate research forums.
     - Summer research fellowships.
     - Travel to professional meetings.
Succeeding in Our Strategic Focus Areas

1. Teaching and Learning
   • Promote undergraduate research as a major component of academic enrichment and “high impact” education.
     • Maintain and enhance excellent programs and workshops to teach underclassmen about undergraduate research opportunities. Continue to assess the effectiveness of these services using student evaluations.
     • Improve communications with faculty and students at OSU’s regional campuses.
     • Reach out to students in underrepresented groups, in collaboration with other offices and programs.

2. Research and Innovation
   • Enhance student participation in undergraduate research.
     • Provide additional small grants and fellowships to support undergraduate researchers; encourage similar efforts by colleges and departments.
     • Encourage more students to present their work at forums and other opportunities for demonstration and celebration of students’ achievement in scholarly research, team-based projects, and artistic exhibition and performance.
     • Encourage more students to complete a thesis and graduate with “Research Distinction”.
     • Encourage more faculty to recruit undergraduate researchers through our office and independently.

3. Outreach and Engagement
   • Increase student, faculty, and staff awareness of undergraduate research.
     • Continue to produce and improve marketing and public relations materials, especially those that can be distributed electronically, to reach ever larger audiences.
     • Continue to work with University Communications and other offices to publicize achievements of undergraduate researchers.
     • Continue to enhance OSU’s national reputation as a leader in undergraduate research.
     • Remain active in the National Council for Undergraduate Research to enhance national recognition and contribute to national initiatives for undergraduate research.

4. Resources Stewardship
   • People:
     • Maintain and enhance staff performance, professional development, and diversity.
     • Obtain an additional staff position to meet increasing needs of students seeking undergraduate research experiences.
     • Continue to recruit large numbers of undergraduates to help with URO’s mission as volunteers and employees.
     • Maintain and enhance collaborations with other OSU offices, including the Honors and
Develop a database system for tracking student success and expediting applications, data storage, and portions of our annual report.

Seek external and internal funding for unmet needs of our students, such as:

- Sustained viability of the Denman Undergraduate Research Forum.
- Other undergraduate research forums.
- Summer research fellowships.
- Travel to professional meetings.

**Metrics for Tracking Our Performance**

1. *Teaching and Learning*
   - Number of workshops and events to teach underclassmen about undergraduate research opportunities, including students in STEP and those in programs for underrepresented groups.
     - Also, the numbers of students attending these events.
   - Add content to the URO website that is specific to students at regional campuses.

2. *Research and Innovation*
   - Enhancing student participation in undergraduate research:
     - Numbers of small grants and fellowships to support undergraduate researchers.
     - Numbers of students who present their work at forums and other venues that showcase students’ achievement in scholarly research, team-based projects, and artistic exhibition and performance. (Note that quantifying students’ artistic accomplishments outside of regular coursework is complex and our metrics are not exhaustive.)
     - Numbers of students who complete a thesis and graduate with “Research Distinction”.
     - Numbers of faculty who recruit undergraduate researchers through our office.

3. *Outreach and Engagement*
   - Numbers of visitors to the URO website and Facebook page.
   - Publication of our annual booklet, Highlights of Undergraduate Research.
   - Examples of news stories for the OSU community, including alumni, featuring undergraduate researchers.
   - Presentations at biannual meetings of the National Council for Undergraduate Research and other organizations.

4. *Resources Stewardship*
   - People:
     - Retention of current staffing level; excellent annual performance reviews of our current staff.
     - Addition of at least one new staff position to allow us to meet increasing demands related to the Denman Undergraduate Research Forum, STEP, small grants from OSU parking lease funds allocated to the URO, and other services listed above.
- Numbers of undergraduates who assist the URO as employees or volunteers, including students who volunteer as peer research contacts.
- Numbers of programs offered in collaboration with other OSU offices.
- Development of a database system for tracking student success and expediting applications, data storage, and components of our annual report.
- Additional external and internal funding for unmet needs of our students, such as:
  - Sustained viability of the Denman Undergraduate Research Forum.
  - Other undergraduate research forums at OSU.
  - Summer research fellowships.
  - Travel to present student work at professional meetings.
Appendix B: Undergraduate Research Offices at Benchmark and CIC Universities

Most large public research-intensive universities encourage participation in undergraduate research through an office, a website, a symposium or forum, or specific, funded programs. Many universities utilize more than one of these options. In this section, we compare programs among our benchmark and fellow CIC universities.

The trend toward having a central office that serves as an informational clearinghouse for the entire student population, the model adopted at Ohio State in 2006, is becoming more common nationally. A comparison of programs at our benchmarks and the CIC universities shows that 11 of 15 have a central, university-wide office, and all have a university-wide forum or symposium to celebrate and showcase undergraduate research accomplishments (Table B1). It is clear to us that offering a university-wide forum for undergraduate research is essential to maintaining our standing as a leading research institution.

BENCHMARK UNIVERSITIES

1. Pennsylvania State University
   http://undergradresearch.psu.edu/
   Penn State has a website and an undergraduate research forum. On their website, they advertise summer grants, conference travel grants, and the forum. The website also includes a database of faculty postings for undergraduate research opportunities which can be sorted by college or faculty.

2. The University of Arizona
   http://ur.arizona.edu
   The University of Arizona has 23 undergraduate research programs through the College of Science. They have a searchable database of faculty. The university has research poster sessions in various STEM disciplines, including the Undergraduate Biology Research Program and the NASA Space Grant Internship program, which have been in existence for 20 years. They also have awards, including Outstanding Seniors, Galileo Scholars, and Excellence in Undergraduate Research.

3. The University of California at Los Angeles
   www.ugeducation.ucla.edu/ugresearch/; www.gdnet.ucla.edu/asis/srp/srpinfo.htm
   UCLA has Research Centers for undergraduate research in Life & Physical Sciences and in Humanities & Social Sciences. Research Center websites include lists of fellowship and scholarship opportunities, student profiles, and announcements about workshops for getting started in research. UCLA also has a forum for students in Physical and Life Sciences and the UCLA Undergraduate Science Journal.

4. The University of Florida
   http://www.honors.ufl.edu/research.aspx; http://www.clas.ufl.edu/jur/
   The University of Florida offers a database of all research opportunities by field and programs for 1st and 2nd year students to begin research. Undergraduate research is coordinated through the Honors Program, where students can receive credit and financial aid for research. Florida also has a University Scholars Program for non-Honors students. Students can publish in a campus-wide Journal of Undergraduate Research.
5. The University of Illinois at Urbana-Champaign
http://provost.illinois.edu/our/index.html
The University of Illinois at Urbana-Champaign formed the Office of Undergraduate Research in 2012 and now has an official website which lists research opportunities and resources for students and faculty. In 2013, Illinois at Urbana-Champaign offered a travel award for current undergraduates to present their research posters at external conferences. The school sponsors an annual research symposium for undergraduates.

6. The University of Maryland
http://ugresearch.umd.edu
The University of Maryland has an office devoted to undergraduate research which offers seminars about applying to the NSF Graduate Research Fellowship, applying to graduate school, presenting at conferences, etc., with an online database listing research opportunities. The Maryland Summer Scholars program offers summer research funding. Maryland has an annual Undergraduate Research Day for presenting research.

7. The University of Michigan
http://www.lsa.umich.edu/urop/
The University of Michigan has a program for 1st and 2nd year students with a website, staff, alumni organization, a large, multi-session spring symposium to showcase student research accomplishments, and several externally-funded summer programs. Michigan obtained NSF funding to establish and evaluate its highly effective, nationally known program. After the grant expired, the university has continued its support for this program with more than 1,200 students and 700 faculty research mentors. Michigan does not yet have a campus-wide program that focuses on 3rd and 4th year students.

8. The University of Minnesota
http://www.research.umn.edu/undergraduate/
The University of Minnesota has a central office that is open to all undergraduates. Undergraduate Research Scholarships are granted through the admissions office, and current undergraduates may apply and be funded to do research through the Undergraduate Research Opportunities Program. There are campus-wide symposiums in the spring and summer.

9. The University of Washington
http://Washington.edu/research/urp/
The University of Washington has an Undergraduate Research Program with a campus-wide office that helps students find research opportunities and sponsors an annual symposium. The core program is centrally funded and collaborates closely with a large endowment that provides competitive scholarships; external and gift funds provide support for special programs including summer research. Their website includes a database of research opportunities, including programs for paid research experiences.

10. The University of Wisconsin-Madison
http://www.provost.wisc.edu/undergradresearch.htm
The University of Wisconsin-Madison supports an Undergraduate Research Scholars Program open to 1st and 2nd year students. There are numerous other content or discipline specific undergraduate research opportunities offered including a McNair Scholars Program and the Wisconsin Idea Fellowship. The university sponsors an Undergraduate Symposium for students in all disciplines, with several hundred participants.
CIC INSTITUTIONS

11. Indiana University
http://college.indiana.edu/undergradscinceresearch/;
http://scholarships.indiana.edu/scholarships/cox/Research.php
Indiana University has the Cox Research Scholars Program which selects up to 40 incoming freshmen each year. Recipients of this scholarship commit to year-long research or creative projects, renewable for up to four years. The scholarship has a total value of more than $60,000 over four years. Other undergraduate research initiatives include the McNair Program for underrepresented groups, the Science Technology and Research Scholars Program, and the Intensive Freshman Learning Experience, which involves six weeks of laboratory research during the summer between high school and college, accelerated freshman science courses, and a $1,000 scholarship. Indiana also has a state-wide undergraduate research conference.

12. Michigan State University
http://urca.msu.edu/
Michigan State University’s organization is similar to that of Ohio State, with a central office, personnel, a website, a large annual forum, and a university-wide approach. The University also has Venture, a database of research, scholarship, and creative opportunities to help undergraduate students find a project. Most funding for student researchers is distributed by other units on campus, and small, discipline-specific programs are offered by various colleges and departments.

13. Purdue University
http://www.admissions.purdue.edu/academics/research.php
Purdue does not appear to have a campus-wide research office for undergraduates. Individual departments have websites for undergraduate research. The University also has a program called Discovery Undergraduate Research Internship, where students can apply for part-time internships during the academic year and full-time internships during the summer to conduct research in any STEM field.

14. University of Iowa
http://icru67.wix.com/uiowa-icru
The Iowa Center for Research by Undergraduates at the University of Iowa promotes undergraduate involvement in mentored research and creative projects across all disciplines of study. Their new website, created in 2013, offers information on programs to support undergraduate research including funding and presentation opportunities. There have numerous research conferences and symposiums for undergraduate research each year.

15. The University of Nebraska
http://www.unl.edu/ucare/
The University of Nebraska has summer research programs in various disciplines and sponsors an annual research fair. The University also has the Undergraduate Creative Activities and Research Experiences Program, a two-year program for students in any field. Students are funded and receive course credit to assist in a mentor’s project during their first year and conduct their own project in the second year. Students are required to present their work at the end of the second year.
Table B1. Comparison of undergraduate research offices at Benchmark and CIC Universities

<table>
<thead>
<tr>
<th>Institution</th>
<th>Central undergraduate research office</th>
<th>University-wide forum</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indiana University—Bloomington</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Michigan State University</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Ohio State University</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Pennsylvania State University(^1)</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>Purdue University</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>University of Arizona(^1)</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>University of California, Los Angeles(^1)</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>University of Florida(^1)</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>University of Illinois, Urbana-Champaign(^1)</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>University of Iowa(^1)</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>University of Maryland(^1)</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>University of Michigan(^1)</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>University of Minnesota(^1)</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>University of Nebraska</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>University of Washington(^1)</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>University of Wisconsin—Madison(^1)</td>
<td>No</td>
<td>Yes</td>
</tr>
</tbody>
</table>

1. Ohio State’s benchmark universities as designated by the Office of Academic Affairs
Appendix C:  
URO Summer Research Fellows

The URO provides fellowships for undergraduate students who pursue full-time research during Summer Term under the supervision of an Ohio State faculty member. In 2013, 29 students received fellowships, including 13 funded by the URO, 2 students supported through the Holbrook Fund for International Research, 2 funded by the Department of Evolution, Ecology, and Organismal Biology, 1 by the Department of Economics, and 11 students funded by the Department of Psychology. Each fellow received a $3,500 stipend for 10 weeks of research and participated in the URO’s Summer Undergraduate Research Institute. The fellows presented their findings at the annual Fall Research Poster Forum.

We thank the Office of Undergraduate Education, the Office of Research, the Department of Psychology, the Department of Economics, the Department of Evolution, Ecology, and Organismal Biology, and donors to the Karen A. Holbrook Fund and URO’s Campus Campaign Fund for supporting this program. Thanks are also due to the staff in the Office of Student Financial Aid, especially Julianna Belyn, for help with disbursing funds to these and other award winners.

COMMENTS FROM 2013 FELLOWS

The responses from our 2013 Fellows, like those from previous years, have been overwhelmingly positive. This year’s fellows emphasized the benefits of total immersion on their projects and their exposure to the dynamic nature of research.

For many of our fellows, full-time summer research proved to be an enriching, transformative, co-curricular experience:

“"This fellowship has greatly increased my involvement with research in the laboratory, and I feel I have learned and accomplished more than I expected to in just ten weeks. This opportunity is something I never would have had the chance to experience in just a classroom setting, and I thrilled I had the opportunity to gain knowledge and to expand my skills.""

Rebecca Novotony, Health Sciences

“"Being given the opportunity to conduct research on a full time basis has made this summer one of my best summers so far at the Ohio State University."

Karl Ahlqvist, Human Nutrition

Research also affirmed students’ career goals and prepared them for the future:

“"I feel a great deal of personal accomplishment...I want to go to graduate school and receive a PhD and this is my first step towards the career goal, my first peek into a life full of research.""

Clancy Short, Entomology

“"The summer fellowship gave me the opportunity to actually try out a career for a few months and decide whether I was cut out to be a researcher. I’m happy to say now I’m not only confident that I am cut out to be a researcher, but also that this career might be the best one I could have picked.""

Tomas Moreno-Vasquez, Psychology
The opportunity to engage intensively with a faculty member is another frequently appreciated aspect of the summer fellowship:

“*My summer research project has been productive, engaging, instructive, and always challenging. It has been a pleasure to work with a helpful and committed faculty member as well as to work and learn on my own.*”

*John Conlon, Economics and Philosophy*

“The meetings I had with my research advisor, in which he would give me feedback and revisions on my work in the previous days, were more intellectually stimulating and enriching than anything I have experienced in the classroom.”

*Aaron Gabriel Englander, Economics*

Six fellows traveled abroad to conduct summer research and found this experience to be very rewarding. As one of these international researchers explained:

“These [geographic and social observations] allowed me to attach greater significance to the need for better urban planning, for more research on this subject area, and for the work of social movement organizations to a degree that would have been impossible without having spent time in the city of Salvador, Brazil.”

*Shelby Stults, International Studies and Globalization Studies (Holbrook)*

Self-discovery, both personally and professionally, a growing self-confidence, and greater awareness of the complex nature of research are benefits echoed by many of our summer fellows:

“*Being in a lab full time has taught me so much. I am now capable of planning my own experiments and realized how important it is to consider every aspect ahead of time.*”

*Poornima Venigalla, Biomedical Science*

While I’ve always heard that research is 99 failures for every success, it never seemed to sink in as much during the school year because I was not as involved in all of the little things.”

*Brian Upton, Neuroscience*

“I can’t believe my work is being used in the “real world” and am beyond thrilled to be co-authored on a published paper.”

*Chelsea Coble, EEOB*

“I am now much more confident in the work that I do, and I believe myself to be much more capable as an engineer overall.”

*Nicholas Blum, Chemical & Biomolecular Engineering*

“This has been an excellent experience, not only will it benefit me in my professional career, but it will benefit me in my personal life as well. I cannot put into words how valuable this summer has been. I learned a lot of lessons in the lab which will translate into aspects of how I live my life...”

*Morgan Sherer, Neuroscience*

Overall, the benefits of full immersion in research are immeasurable, and we believe this experience positively impacts these students undergraduate and post-graduate careers.
2013 URO Summer Research Fellows

Karl Ahlqvist
Major: Human Nutrition
Research Project: Barriers to Control of Asthma in Children Hospitalized with an Acute Exacerbation
Advisor: Gerd McGwire (Nationwide Children’s Hospital)

Nicholas Blum
Major: Chemical & Biomolecular Engineering
Research Project: Gasification of Biomass for the Production of Hydrogen using Calcium-Based Sorbents
Advisor: Liang-Shih Fan (Chemical & Biomolecular Engineering)

Abigail Camp
Major: Sociology and Criminology
Advisor: Irina Tomescu-Dubrow (Sociology)

Jordan Chambers
Major: Biomedical Science
Research Project: The Mechanism of Claudin-5 Reduction and the Development of Dilated Cardiomyopathy
Advisor: Jill Rafael-Fortney (Molecular & Cellular Biochemistry)

Gabriel Englander
Major: Economics
Research Project: Drivers of Demand for Carbon Offsets in Emissions Trading Programs
Advisor: Noah Dormady (Public Affairs)
<table>
<thead>
<tr>
<th>Name</th>
<th>Major</th>
<th>Research Project</th>
<th>Advisor</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Rebecca Novotony</strong></td>
<td>Health Sciences</td>
<td>Characterizing <em>Acinetobacter baumannii</em> Interactions with the Innate Immune System and in Polymicrobial Environments</td>
<td>Daniel Wozniak (Center for Microbial Interface Biology)</td>
</tr>
<tr>
<td><strong>Basem Rashwan</strong></td>
<td>Neuroscience and Psychology</td>
<td>Fatalism and Optimism in Post-Revolution Egypt</td>
<td>Craig Jenkins (Sociology)</td>
</tr>
<tr>
<td><strong>Taylor Sawyer</strong></td>
<td>Public Affairs and English</td>
<td>Stateless Nations and Environmental Preservation: The Role of Indigenous Communities in Preserving Ecuador’s Biodiversity</td>
<td>Sarah Brooks (Political Science)</td>
</tr>
<tr>
<td><strong>Morgan Sherer</strong></td>
<td>Neuroscience</td>
<td>The Potential Effects of SSRIs on Depression-Like Behavior and Structural Plasticity during the Postpartum Period</td>
<td>Benedetta Leuner (Neuroscience)</td>
</tr>
<tr>
<td><strong>Clancy Short</strong></td>
<td>Entomology</td>
<td>Does the Circadian Clock Stop during Insect Dormancy? Clock Gene Expression in the Flesh Fly <em>Sarcophaga crassipalpis</em> during its Overwintering Diapause</td>
<td>David Denlinger (Evolution, Ecology, &amp; Organismal Biology)</td>
</tr>
</tbody>
</table>
Carina Thiemann  
Major: Neuroscience  
Research Project: The Influence of Object, Color, and Location on Visual Processing  
Advisor: Julie Golomb (Psychology)

Brian Upton  
Major: Neuroscience  
Research Project: α7 Nicotinic Acetylcholine Receptor Activation in the Mesolimbic-stimulation of Prefrontal Glutamate Release: Implications for Schizophrenia  
Advisor: John Bruno (Neuroscience)

Poornima Venigalla  
Major: Biomedical Science  
Research Project: Receptor Expression on Immune Cells in Response to Mycobacterium tuberculosis Exposed to Human Lung Surfactant  
Advisor: Jordi Torrelles (Center for Microbial Interface Biology)

Leela Singh  
Major: Theatre  
Research Project: Preserving the “Fine Village”: The Commodification of Indian Folk Performance at Choki Dhani  
Advisor: Jennifer Schleuter (Theatre)

Shelby Stults  
Major: International Studies and Globalization Studies  
Research Project: Regional Variation in the Brazilian Favela: The Case of Salvador  
Advisor: Kevin Cox (Geography)
URO—Economics Summer Research Fellows

John Conlon
Major: Economics, Philosophy
Research Project: Training and Human Capital: Insights from Survey Data
Advisor: Karen Bernhardt-Walther (Economics)

URO—EEOB Summer Research Fellows

Chelsea Coble
Major: Evolution, Ecology & Organismal Biology
Research Project: Climate Change Effects on Yellow Perch
Advisor: Elizabeth Marschall (Evolution, Ecology & Organismal Biology)

Jennifer Foren
Major: Biology
Research Project: Eggshell Reflectance of Differing Nest Light Environments in Closely Related Species in the Family Parulidae, Passeriformes
Advisor: Jackie Augustine (Biology)

URO—Psychology Summer Research Fellows

Ravi Bhatt
Major: Psychology
Research Project: Listen to Your Heart: The Effects of Music Therapy on Acute Pain and Cardiovascular Functioning
Advisor: Julian Thayer (Psychology)
Claudia Cash
Major: Psychology
Research Project: Think About Your Heart: The Effects of Cognitive Dissonance on Cardiovascular Functioning
Advisor: Julian Thayer (Psychology)

Yana Dubrovsky
Major: Psychology
Research Project: Improving Decision-Making Confidence in Emotional Regret-Based Decision Makers
Advisor: Thomas Nygren (Psychology)

Oliver Fisher
Major: Psychology
Research Project: The Mechanisms Behind the Effect of Social Exclusion on Working Memory Capacity
Advisor: Jennifer Crocker (Psychology)

Mariam Hussain
Major: Psychology and Neuroscience
Advisor: Ruchika Prakash (Psychology)

Tomas Moreno-Vasquez
Major: Economics, Neuroscience, and Psychology
Research Project: The Effects of High Arousal on Long-Term Memory: A Study of Graphic Cigarette Warning Labels
Advisor: Ellen Peters (Psychology)
Kerrianne Morrison  
Major: Psychology  
Research Project: A Quantitative Analysis of Pragmatic Language in Adults with High-Functioning Autism  
Advisor: Laura Wagner (Psychology)

Braden Stevenson  
Major: Psychology and Criminology  
Research Project: Delay Discounting and Emotion Regulation: Developing an Avoidance Discounting Paradigm  
Advisor: Amelia Aldao (Psychology)

Monika Wanis  
Major: Anthropology and Psychology  
Research Project: Examining Neural Correlates of Emotion Regulation and Mindfulness Disposition in Older Adults  
Advisor: Ruchika Prakash (Psychology)

Qingqing Xia  
Major: Psychology  
Research Project: How Parents, Children, and Picture Books Correlate to Children’s Preferences on Picture Books  
Advisor: Laura Wagner (Psychology)

Huidong Yang  
Major: Psychology  
Research Project: Understanding Culture Matching Effects in Modern Advertising  
Advisor: Richard Petty (Psychology)
PAST RECIPIENTS OF URO SUMMER UNDERGRADUATE RESEARCH FELLOWSHIPS

*Funded by participating departments

SUMMER 2012:
Travis Billingsley—Psychology, Criminology*
Jacob Bogart—Globalization Studies, French*
Ross Butters—Political Science, History
Qijia Chen—Psychology *
Nicholas Deis—Economics*
Zhen Deng—Exercise Science
Nick Denton—Biomedical Science
Joseph Doherty —Psychology*
John Entingh—Psychology*
Matthew Fullwiler—Psychology*
Chad Gossett—Psychology*
Rebekah Kartal—International Studies, Spanish
Shelby Kretz—Psychology*
Jonathan Lampley—Jazz Studies
Andrew Muehleisen—Evolution and Ecology*
Thomas O’Connel—Psychology*
Anjini Patel—Psychology*
Jonathan Pentz—Psychology*
Joseph Pochiro—Psychology*
Achal Singhal—Aerospace Engineering
Mary Stone—Biology*
Sarah Swager—Biomedical Science
Maria Talarico—Biomedical Engineering
Amber Torelli—Linguistics, Spanish
Sai Pranav Uppati—Chemical Engineering
Carey Utz—International Relations, French*
Emily Weichart—Psychology, English*
David Weiner—Psychology, Economics*
Alexandra Wells—Nutrition
Jay Young—Biomedical Engineering

SUMMER 2011:
Emily Cason—Biomedical Science
Christine Castillo—Exercise Science
Rui Cao—Actuarial Science, Psychology*
Joseph Doherty—Psychology*
David Garman—German, International Business
Megan French—Psychology *
Dustin Homan—Agricultural and Extension Education
Derek Howell—Animal Sciences
Jonte Jones—Psychology*
Grant Joslin—Anthropology, Mathematics
Seva Khambadkone—Molecular Neuroscience
Kyle Olson—Anthropology, Near Eastern Languages and Cultures
Kimberly Rolley—Psychology, Neuroscience*
Katie Sasso—Psychology
Jacob Sawmiller—Biology*
Kristin Schafer—Biology *
Nicholas Shaffer—Psychology
Rachel Soltys—Animal Sciences
Samuel Stuard—Engineering Physics
Joshua Vidmar—Geography
Alexis Wagner—Psychology*
Rachel Weiskittle—Psychology*
Zheng Ye—Economics, Mathematics
Xuyan Zhao—Communication

SUMMER 2010:
Alisa Baron—Spanish
Ashley Bartman—Chemistry, History of Art
Shirley Li—Physics
Elan Leiber—Exercise Science
Lily Liu—Biomedical Science
Nathan McCullough—Sociology, Strategic Communications
Robert Nichols—Psychology*
Danielle Rickert—Psychology*
Justin Schulze—International Studies (Development), Economics
Mackenzie Schumer—Neuroscience
Suzanne Tabbaa—Biomedical Engineering
Hok Hei Tam—Chemical Engineering, Mathematics
Dan White—Jazz Studies, Music Education
Justin Hanson—English
Viral Patel—Economics, Microbiology
Micah Goldfarb—Psychology*
Suzanne Van Horn—Psychology, English

SUMMER 2009:
Andrew Campbell—Biology, International Studies
Jake Connors—Physics
Brianna Dance—Fine Art, Philosophy
Kevin Gabbard—Linguistics
Ravi Gupta—Political Science, Molecular Genetics
Carla Justiniano—Molecular Genetics
Ellen Manovich—History, English
Hudson McFann—Geography
Margaret Mehling—Psychology
Jessica Modlich—Mechanical Engineering
Scott Moreland—Physics, Mathematics
Jeremiah Santos—Electrical & Computer Engineering
Surili Sheth—Political Science, Economics
Adrienne Strong—Biomedical Science, French
Gregory Webb—English
Kevin Yang—Chemical & Biomolecular Engineering, Piano Performance

SUMMER 2008:
Gina Aloisio—Biomedical Sciences, Spanish
Kevin Bowen—Accounting
Allison Buenger—Fine Arts
Jennifer Chao—Biomedical Sciences
Katherine Clonan-Roy—Spanish, Psychology
Marc Coons—Chemistry
Kevin Giriunas—Civil Engineering
John Pate—Linguistics
Teresa Pratt—Linguistics
Andrew Rigney—Political Science, History
Caroline Sim—European Studies, English, French
Diane Smith—Microbiology, Spanish
Stephen Smith—Biomedical Science
Appendix D: 
Undergraduate Research Mentor Awards

2013 AWARDEES
A student committee selected the winners for Distinguished Undergraduate Research Mentor (for regular tenure-track faculty) and for Outstanding Research Mentor (for research & clinical faculty, auxiliary faculty, postdoctoral researchers, and graduate students) from 98 nominations made by presenters at the Denman Undergraduate Research Forum. Sample quotes from student nominations are included to illustrate the value of these mentor-student collaborations.

1) DISTINGUISHED UNDERGRADUATE RESEARCH MENTORS:

Christopher Callam—Chemistry and Biochemistry
“Throughout Chem 254, I saw organic chemistry intertwine with art, and I wanted to combine these concepts. He was excited to let me explore this idea and also invited me to work on another research project. Our project, The Aesthetics of Chemistry, was selected to be in the Denman Highlights book. Dr. Callam made my experience extremely unique because I was given independence and the opportunity to do something original, but, at the same time, he guided me through as we collaborated our ideas together for the art project.”

Mathew Coleman—Geography
“Mat is an exemplar of what it means to be a phenomenal resource for undergraduates within and beyond the classroom, and a testament to how impactful a single professor can be in determining a student’s future. I can honestly say that he is the reason I am a geographer, the reason that I decided to do research, and the reason I am pursuing graduate studies in geography.”

Carolyn Gunther—Human Nutrition
“Carolyn has allowed me to grow as a leader, creative thinker, public speaker, and researcher. Thanks to Carolyn’s mentoring, my scientific writing skills have vastly improved during my writing of a manuscript. Carolyn’s confidence in me has allowed me to tackle small projects independently which has allowed me to be creative and follow my own ideas.”

Anil Pradhan—Astronomy
“Over these last four years I have found guidance, direction, encouragement, mentorship, and friendship in Dr. Pradhan. My undergraduate experience would be very different without him and sometimes I doubt if I would be half as successful without him.”

Michael Tweedle—Radiology
“What makes Michael Tweedle a great mentor is his openness to support new initiatives and his humanity in giving his researchers his personal touch. While the initiatives he supports turn up undergraduate inventions, his personal interaction with the leaders of such project ensures that these initiatives never truly falter...Mike maintains a knack for drawing the strongest potential out of a student and then reaching his hand out to let them make the most of it.”
PAST RECIPIENTS OF DISTINGUISHED UNDERGRADUATE RESEARCH MENTOR AWARDS:

2012 Awardees
Helen Chamberlin—Molecular Genetics
W. Berry Lyons—Earth Sciences
Kendra McSweeney—Geography
Heather Powell—Materials Science
Daniel Strunk—Psychology

2011 Awardees
Bryan Mark—Geography
Manuel Martinez—English
Donna McCarthy—Nursing
Qingua Sun—Public Health
Jessica Winter—Biomolecular and Chemical Engineering

2010 Awardees
Franco Barchiesi—African American and African Studies
Yu-Ping Chin—Earth Sciences
Harvey Graff—English and History
Becky Mansfield—Geography
Mei Zhuang—Aerospace Engineering

2009 Awardees
Janet M. Box-Steffensmeier—Political Science
David L. Denlinger—Entomology
James W. Gregory—Aerospace Engineering
Charles Massey, Jr.—Art
Narasimham L. Parinandi—Medicine

2008 Awardees
Michael Boehm—Plant Pathology
Cynthia Clopper—Linguistics
Richard Hughes—Physics
Sarah Schoppe-Sullivan—Human Development and Family Science
Richard Swenson—Biochemistry

2007 Awardees
Robert Baiocchi—Internal Medicine
Donald Dean—Biochemistry
John Grinstead—Spanish and Portuguese
Irfan Nooruddin—Political Science
Brian Winer—Physics
2) OUTSTANDING RESEARCH MENTORS
The Outstanding Research Mentor Award was created by the Undergraduate Research Office in 2011 to recognize clinical and research faculty, lecturers, and graduate students who have provided outstanding mentorship and guidance to undergraduate researchers at Ohio State. Designed to be a complement to the Distinguished Undergraduate Research Mentor (DURM) awards which are reserved for full-time faculty members, the ORM Award acknowledges the powerful influences that other members of the Ohio State community can have on an undergraduate’s progress, and the integral roles they play in labs and classrooms. Presenters at the Denman Undergraduate Research Forum are eligible to nominate an individual for the ORM Award and a student committee then reviews nominations and selects a winner.

Kelsie Bernot—Molecular Virology, Immunology, and Medical Genetics
“Dr. Bernot is dedicated to the research learning process from start to finish – from experimental design, to execution, to analysis. In addition to teaching me laboratory skills like cell culturing and flow cytometry...Dr. Bernot not only guides my daily laboratory activities, but takes interest in my professional development as a young scientist. First, by encouraging me to participate in the manuscript writing process, Dr. Bernot has helped me earn second-authorship on an upcoming publication.”

Michael Mandel—Computer Science and Engineering
“Michael didn’t just spell out the best route to take, but encouraged me to experiment with different methods and then make determinations based on the results. In this way, I learned how to approach a problem that doesn’t already have a solution, and confidently draw conclusions about the outcome of the research.”

PAST RECIPIENTS OF OUTSTANDING RESEARCH MENTOR AWARDS:

2012 Awardees
Carmen Swain—Exercise Science
Sultana Nahar—Astronomy

2011 Awardees
Lisa Cravens-Brown—Psychology
Veronique Lacombe—Pharmacy Practice and Administration
Appendix E:
Priorities for Donors to the URO

Give to Ohio State URO Discretionary Fund for Donations (Fund 312045):
http://go.osu.edu/urodonate

We have many opportunities for donors to help students succeed, including the suggestions below.

GRANTS AND AWARDS

• *Summer research experience* (10 weeks, full time; coordinate with colleges)
  - $5000 per student (includes $1000 for faculty mentor) x 50 students per year = $250,000 per year
  - Possible name: “*(Donor’s Name) Summer Research Fellowships*”

• *Research and travel grants*
  - $500 per student × 100 students per year = $50,000 per year to cover research expenses
  - $1000 per student × 10 students = $10,000 per year for travel to conduct research or present completed research at forums
  - Possible name: “*Do Something Great Grants*”

• *Introduction to research targeting first- and second-year students*
  - Two tracks: library research, or internship within a research group
  - Student registers for independent research and receives 3–5 credits
  - Mentors (faculty, librarians, other researchers) receive $500 per student to pay expenses and serve as an incentive
  - $500 per mentor × 100 students per year = $50,000 per year
  - Possible name: “*Early Research Opportunities Program*”

• *Mentoring awards for graduate students*
  - $500 award (advanced Ph.D. candidates only) for supervising an undergraduate student’s research project
  - $500 × 100 per year = $50,000 per year
  - Possible name: “*Graduate Student Mentor Awards from URO*”

• *Mentoring awards for faculty*
  - Each year, URO will recognize five faculty members with outstanding records of sponsoring undergraduate research.
  - $1000 × five faculty members = $5,000 per year
  - Possible name: “*(Donor’s Name) Award for Outstanding Undergraduate Research Mentor*”

OTHER OPTIONS FOR GIVING:

1) Support the *Denman Undergraduate Research Forum* each spring. This forum serves as a showcase for over 500 students annually and as a huge celebration involving the entire university community. The forum presents the very best achievements of our most creative and resourceful students. However, long-term funding from generous
current donors is not guaranteed. We are actively seeking additional support to be able to continue this tradition of excellence. Total cost: **$125,000 per year** plus staff time.

2) **Summer Undergraduate Research Institute.** This expanded version of our current institute will provide programs and a sense of community for undergraduates doing research on campus during the summer. Funds are needed for coordination and for events. Funds for fellowships are listed above. **$25,000 per year; name after donor.**

3) **Fall Undergraduate Research Forum** to be held each year. Building on our current fall forum, this larger event will accommodate students who are unable to participate in the Denman Undergraduate Research Forum in Spring, especially students who did research during the summer, and will add another venue for students to present their research. Funding is needed for facility costs, refreshments, publicity, and awards. **$80,000 per year.** Possible name: “(Donor’s Name) Fall Forum for Undergraduate Research.”

4) **Summer Term Humanities Institute.** Support for research collaborations between a faculty member in the humanities ($7,000) and three undergraduate students ($4,000 per student). Three groups per summer for ten weeks of collaboration ($19,000 x 3 = $57,000). **Name after donor.**

5) **URO Sponsors Group.** A group of sponsors will provide discretionary funds for building the Undergraduate Research Program, including the objectives listed above.
   - Participating donors will contribute **$4,000 or more per year** per person.
   - Members will receive newsletters, invitations to URO events, and opportunities to meet student researchers.
   - **Possible name: “Friends of Undergraduate Research at Ohio State”**

6) **New staff position** for a program manager for events such as the Denman Forum and for more extensive communications and grant-writing. Estimated cost: **$65,000 per year** for salary and benefits.