

**University of California, Santa Cruz  
Undergraduate Research Annual Report  
July 1, 2012- July 1, 2013**

Rebecca Anderson, Ph.D.  
Undergraduate Research Coordinator

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This report begins with a discussion of what information is necessary to provide an accurate overview of Undergraduate Research (UR) at UCSC. It continues with a new analysis of data from the University of California Undergraduate Research Survey (UCUES) that begins to explore the rates of UR participation at UCSC. The report then summarizes the UR Coordinator's activities from July, 2012 to July, 2013.

**Working Towards an Overview of UR at UCSC**

The University of California at Santa Cruz (UCSC) is a public research university, where professors and researchers are actively expanding the boundaries of their fields. In addition to the research done on campus, UCSC's location on the Monterey Bay and near Silicon Valley facilitates collaborations between the University, industry, government agencies, and other research organizations. By working with these professionals, both in academics and in business, the more than 15,000 undergraduates at UCSC have excellent opportunities to practice their discipline and contribute to the academic community by participating in undergraduate research (UR).

In this report, UR is defined as "an inquiry or investigation conducted by an undergraduate student that makes an original intellectual or creative contribution to the discipline" (<http://www.cur.org>). UR is pursued in each of the five divisions at UCSC – Arts, Baskin School of Engineering (SOE), Humanities, Physical and Biological Sciences (PBSci), and Social Sciences. In addition to scientific, engineering, and social scientific research, this definition includes artistic work, musical and theatrical performances, and other creative endeavors.

In order to provide an overview of UR at UCSC, we need basic data, such as:

- How many students participate in UR at UCSC?
- What factors influence participation rates? For example, does participation vary by division, department, or transfer status, or between students who are and are not the first in their family to go to college?
- What kinds of UR activities do the students participate in?
- How do students evaluate their UR experiences?
- What do students want the staff, professors, and administration to do to assist them in becoming involved, carrying out research activities, and communicating their work?
- How many students participate in UR away from UCSC? Where do they go?

This section of the report is a preliminary attempt at answering the first question and some aspects of the second question. While determining the number of students engaged in UR seems like a simple task, it becomes much more challenging when you consider that:

- Definitions of UR vary by division, professor, and student. For example, in the Arts Division, UR includes performance, composition, and criticism; as a result, all students in the division are involved in UR.
- While it is possible to determine the number of students in organized UR programs (see the next section of the report), most students involved in UR work with individual professors. Each professor works with fluctuating numbers of students, and it would be difficult to standardize the criteria used to include a student in a count (length of time involved, hours per week, level of independence, etc.) across departments and divisions.
- In some departments there are classes that involve research but are not organized research programs.
- Some students pursue research outside of UCSC during the academic year, during the summer, and while studying abroad.

One source of data we can use to estimate the number of students involved in UR at UCSC is the [University of California Undergraduate Experience Survey](#) (UCUES), which is an online census survey administered every other spring quarter. The survey asks undergraduates about their academic and extra-curricular activities. Dr. Anna Sher, UCSC Institutional Research Analyst, provided the following analyses of graduating seniors' responses to the 2010 and 2012 UCUES.<sup>1</sup>

The questions in the survey most relevant to UR as it is defined in this report asked students to respond “yes” or “no” to whether they were “doing now or have done at UCSC” the following:

1. Assisted faculty in research with course credit
2. Assisted faculty in research for pay without course credit
3. Assisted faculty in research as a volunteer without course credit
4. Worked on creative projects under the direction of faculty with course credit
5. Worked on creative projects under the direction of faculty for pay without course credit
6. Worked on creative projects under the direction of faculty as a volunteer without course credit

Four categories of UR experiences were created by combining answers for these questions as follows:

- “assisted in faculty research” = “yes” to at least one of questions 1-3,
- “assisted in faculty research AND worked on creative projects” = “yes” to at least one of questions 1-3 AND to one of questions 4-6,
- “worked on creative projects” = “yes” to at least one of questions 4-6,
- “neither assisted faculty in research nor worked on creative projects” = “no” to all 6 questions.

The results for 2010 and 2012 are shown in Table 1. Table 2 shows the analysis for the 2012 UCUES data by division.

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<sup>1</sup> “Graduating seniors” were survey respondents who said “probably yes” to the UCUES question: “Will you complete a bachelor degree this spring or summer?”

Table 1. Graduating seniors who assisted faculty in research and/or worked on creative projects under the direction of faculty, 2010 and 2012

	UCUES 2010	UCUES 2012
Assisted faculty in research and/or creative projects	57%	60%
<i>Assisted faculty in research</i>	18%	18%
<i>Assisted faculty in research AND Worked on creative projects</i>	15%	18%
<i>Worked on creative projects</i>	24%	24%
Neither assisted faculty in research nor worked on creative projects	43%	40%
Total Count	762	1147

Table 2. Graduating seniors by division who assisted faculty in research and/or worked on creative projects under the direction of faculty, 2012

UCUES 2012	Division				
	Arts	Humanities	Social Sciences	PBSci	SOE
Assisted faculty in research and/or creative projects	74%	51%	67%	60%	63%
<i>Assisted faculty in research</i>	1%	12%	16%	30%	27%
<i>Assisted faculty in research AND Worked on creative projects</i>	15%	13%	20%	18%	22%
<i>Worked on creative projects</i>	58%	29%	22%	12%	19%
Neither assisted faculty in research nor worked on creative projects	26%	46%	33%	40%	33%
Total Count	104	195	503	264	79

Based on the 2010 and 2012 UCUES surveys, about 60% of graduating seniors were involved in UR (Table 1) at UCSC as defined in this report. There was a wide range of participation rates among the divisions. A higher proportion of students in Arts and SOE engaged in UR (74% in Arts and 67% in SOE) relative to Social Sciences and PBSci (about 58% and 60% respectively), and a lower proportion in the Humanities (54%; Table 2).

We also examined whether the UR participation rate depended on when a student started at UCSC. Students who enter as frosh have more time at the University and may have more connections to faculty than students who enter as junior transfers. To address this, we compared rates of UR involvement for graduating seniors who entered UCSC as frosh with those for students who entered UCSC as junior transfers (Table 3A). For this analysis, “Yes” in Table 3A refers to any student who answered “yes” to one or more of questions 1-6, and “No” in Table 3A refers to any student answering “no” to all of questions 1-6.

Table 3A. Graduating seniors who assisted faculty in research and/or worked on creative projects under the direction of faculty by entrance status, 2010 and 2012

Entering Status		UCUES 2010		UCUES 2012	
		Frosh	Junior Transfer	Frosh	Junior Transfer
Participated in UR <sup>2</sup>	Count	319	102	545	144
	%	58%	51%	62%	51%
No <sup>3</sup>	Count	226	100	339	137
	%	42%	49%	38%	49%
Total	Count	545	202	884	281

The survey data in 2010 and 2012 consistently shows that about 50% of junior transfer students participate in UR by the end of their studies at UCSC. The 2010 and 2012 UCUES findings suggest that close to 60% of students who entered as frosh participated in UR, and that their UR participation may be increasing (by about 4%). Most importantly, there was a consistent and statistically significant difference in the UR rates of seniors who started as frosh and junior transfers (Chi-square test,  $p < .01$ ).

We also investigated whether students who enter UCSC as frosh make more connections to faculty than junior transfers by the time they graduate. The analysis showed that this is not the case. Regardless of their entrance status, graduating seniors, on average, knew two professors well enough to ask for a letter of recommendation in support of an application for a job or for graduate or professional school (2012 UCUES).

However, we found a significant difference among students who started as frosh and junior transfers in the extent to which students' connections to faculty members were related to their UR participation. Knowing more professors was significantly related to UR participation only for students who entered UCSC as frosh (Cramer's  $V = .3$ ,  $p < .001$ ). In other words, the more professors they knew well the more likely they were to have had UR experience (either research

<sup>2</sup> Answered "yes, doing now or have done at UCSC" to one or more of the following questions:

1. Assisted faculty in research with course credit
2. Assisted faculty in research for pay without course credit
3. Assisted faculty in research as a volunteer without course credit
4. Worked on creative projects under the direction of faculty with course credit
5. Worked on creative projects under the direction of faculty for pay without course credit
6. Worked on creative projects under the direction of faculty as a volunteer without course credit

<sup>3</sup> Answered "no" to the 6 questions above.

and/or creative activity). However, for seniors who were junior transfers, the number of professors they knew well was not related to having UR experience.

Table 3B examines the UR participation rates by division and entrance status.

Table 3B. The difference in UR participation rates between graduating seniors who entered as frosh and graduating seniors who entered as junior transfer who assisted faculty in research and/or worked on creative projects under the direction of faculty by entrance status, 2012

Division  Entrance Status		Participated in UR <sup>4</sup>		% and statistical significance <sup>5</sup> of difference between Frosh and Junior Transfer
		Frosh	Junior Transfer	
Arts	% within Division	80%	50%	30%**
	Count within Division	67	9	
Humanities	% within Division	58%	45%	13%
	Count within Division	77	28	
Social Sciences	% within Division	58%	56%	2%
	Count within Division	218	70	
PBSci	% within Division	62%	47%	15%*
	Count within Division	134	22	
SOE	% within Division	67%	75%	-8%
	Count within Division	40	12	
Total	%	62%	51%	10%**
	Count	536	141	

<sup>4</sup> Answered "yes, doing now or have done at UCSC" to one or more of the following questions:

1. Assisted faculty in research with course credit
2. Assisted faculty in research for pay without course credit
3. Assisted faculty in research as a volunteer without course credit
4. Worked on creative projects under the direction of faculty with course credit
5. Worked on creative projects under the direction of faculty for pay without course credit
6. Worked on creative projects under the direction of faculty as a volunteer without course credit

<sup>5</sup> Chi-square tests were performed to test a hypothesis of no statistical difference in frosh and transfer students' UR participation within each division. One star \* indicates that we can reject the hypothesis with a confidence level  $p < .05$ , \*\*  $p < .01$ , and \*\*\*  $p < .001$ . No star indicates that we failed to reject the hypothesis at  $p < .05$ ; in other words, no significant difference was found between started as frosh and transfer students' experiences in that division.

The significant advantage in UR participation (10%; Table 3B) that graduating seniors who enter as frosh have over graduating seniors who enter as transfer students provides an opportunity for students, faculty, staff, and the administration to work together to assist transfer students become involved in UR.

When we analyze these data by divisions, two divisions, the Arts and PBSci, had statistically significant differences in graduating seniors' UR experiences depending on whether they entered either as frosh or as junior transfer students. The difference in the Humanities was also rather high (13%), but not statistically significant. Graduating seniors' UR participation in the Social Sciences and SOE was relatively similar between the two groups and did not seem to be affected by the students' entrance status (Table 3B).

Specifically, in the divisions of the Arts and PBSci, seniors who started at UCSC as frosh had higher rates of UR participation than graduating seniors who entered as junior transfers (Table 3B). For the Arts, this result is unexpected; the survey questions asked about student experience with working on creative projects under the direction of faculty, and all students in the Arts are expected to have engaged in artistic work, musical and theatrical performances and other creative endeavors by the time they graduate. Perhaps the degree to which faculty "direct" students' creative projects varies in the Arts division and it affects students' responses to these questions. We will further analyze UCUES data to understand whether there are any differences in student responses by major. The PBSci division is cognizant that transfer students need additional assistance, including help in becoming involved in UR, to succeed at UCSC. In addition to helping establish the Undergraduate Research Coordinator position, the division is in the process of hiring a Science and Math Transfer Outreach Coordinator.

An additional facet of the strategy to help transfer students will include increasing outreach to transfers to help them learn about UR before or during their first quarter at UCSC. For example, [Services for Transfer and Re-entry Students \(STARS\)](#) has workshops for transfer students before classes begin in the fall quarter and a class, Successful Transfer to the Research University, that is targeted to transfer students in their first quarter at UCSC. This year in my role as UR Coordinator, I will be presenting at the workshops. I will emphasize the importance of building relationships with professors for multiple reasons, including doing well in the class, helping find UR opportunities, and getting reference letters. I developed a specific handout, [Tips for Transfers: Getting Involved in Undergraduate Research](#), to distribute at orientation and presentations. It is also posted on the [Undergraduate Research Opportunities](#) website, as a supplement to the general handout, [Preparing for Undergraduate Research](#), that is already available.

In the Social Sciences, Humanities, and the SOE there is not a significant difference in UR participation between graduating seniors who enter as frosh and those that enter as junior transfers (Table 3B). In the Social Sciences, one contributing factor may be that Psychology, one of the most popular majors on campus, has institutionalized UR in the department as an upper level class, Psychology 194: Advanced Research, that enrolls approximately 400 students a year. In addition, the Environmental Studies Internship Program provides a central location for

students to find opportunities.<sup>6</sup> While not all the opportunities include research, it is an excellent resource for students in the division.

We also looked at other questions on the survey that may reflect student participation in UR (Table 4). While 92% of the graduating seniors in the survey completed a research project, creative activity, or paper as part of coursework, this is likely not an accurate estimate of the percent of graduating students involved in UR. Papers are written in many classes, but most likely do not meet the definition of making "an original intellectual or creative contribution to the discipline," though how this is applied may vary substantially by field.

Table 4. Graduating seniors' participation in potential research activities, 2010 and 2012

Completion of...	UCUES 2010	UCUES 2012
a research project, creative activity, or paper as part of coursework		
<b>Yes</b>	<b>93.5%</b>	<b>92%</b>
No	6.5%	8%
Total N	788	1147
at least one student research course		
<b>Yes</b>	<b>64%</b>	<b>68%</b>
No	36%	32%
Total N	787	1145
at least one independent study course		
<b>Yes</b>	<b>44%</b>	<b>44%</b>
No	56%	56%
Total N	788	1143

While 68% of students report being involved in at least one student research course (Table 4), only 60% of students (Table 1) report that they were involved in research or a creative activity under the direction of a faculty member. The higher value for students taking research classes suggests that not all of the students in the research classes considered the work to be "research under the direction of a faculty member." Both values are much higher than the percent of students who do at least one independent study course, which is reasonable, since not all UR is done by independent study.

These UCUES surveys can both provide more information about the results in this report and be a baseline to compare data from the upcoming 2014 survey. For example, in the fall of 2013, we are going to do further analyses of the 2012 UCUES survey by major, including the analyses done above by division. Detailed information by major may help us interpret the results for the divisional data and suggest specific departments to use as models for excellent UR participation and inclusion of junior transfer students. After the 2014 survey, we plan to repeat the analyses for this report for the 2014 data. We are also considering adding questions to the survey for UCSC students that specifically define research and ask about the student's involvement and evaluation of the experience.

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<sup>6</sup> To further examine the experiences of Psychology and ENVS majors, we can conduct analysis of UR participation by major based on UCUES data.

## UR Coordination at UCSC

While excellent programs and opportunities for students to become involved in UR are found throughout UCSC, in the spring of 2012, there was not a central online location or a designated individual to provide information about UR to students. To address this, the Division of Physical and Biological Sciences, the Baskin School of Engineering, and the Dean of Undergraduate Education funded the new position of Undergraduate Research Coordinator.

I began to work in this position in late July, 2012. In the following sections, I list the goals associated with this position and how I am addressing them. Web addresses are listed in the Appendix.

The goals of the Undergraduate Research Coordinator are:

1. To assist all UCSC undergraduates in engaging in the world-class research at UCSC and/or through other programs or institutions
2. To provide a central clearing house to help faculty, staff, prospective students, and the community become aware of the wide array of research resources in the region available to undergraduates
3. To increase awareness of the important contributions of UCSC undergraduates to research.

**Goal 1:** To assist all UCSC undergraduates in engaging in the world-class research at UCSC and/or through other programs or institutions

To address this goal I:

- A. Created listings of summer, 2013 positions, which I made available in fall, 2012
- B. Built the UCSC Undergraduate Research Opportunities Website
- C. Built the Undergraduate Research Opportunities for UCSC and the region
- D. Gave presentations and workshops
- E. Tabled at events
- F. Advised students
- G. Assisted with UR funding
- H. Developed a pilot program for a mentoring activity for STEM undergraduates

*A. Listings of summer, 2013 UR positions in fall, 2012*

Since many summer UR programs have application deadlines in early winter, and students need to work on the applications in fall, I made multiple lists of summer programs for 2013 by division, with links and application deadlines, to distribute to students. I sent the listings to advisers, students, and clubs; the lists were also forwarded to the department newsletters and mailing lists.

## *B. Built the [UCSC Undergraduate Research Opportunities Website](#)*

The UCSC Undergraduate Research Opportunities website was built with the assistance of Tim Gustafson, Baskin School of Engineering Webmaster and Technical Lead.

The primary audience for the website is UCSC undergraduates who are exploring what UR is and how to get involved. The [homepage](#) (Figure 1) is designed to provide a menu of information for students. The page shows a series of photos of students engaged in many types of UR, from laboratory to artistic work, to demonstrate to students that there are UR opportunities, and students involved in UR, in every discipline. The tabs across the top of the homepage include links to an [overview](#) of UR, information [For Students](#) (described in more detail below), the [UR Opportunities Database](#), a [Calendar](#) of research events and application deadlines, and my [Contact](#) information. Below the slide show, there are blocks for application dates for UR programs (in the academic year) or links to student award winners (in June and July), [UR events](#), [student profiles](#), links to the [STEM Diversity](#) webpage, links to [Academic Support Programs](#), and [Frequently Asked Questions](#). Other portions of the page are not directed to students and will be discussed in other sections.

The “[For Students](#)” tab (Figure 2) organizes the information focused on undergraduates. The first item is a description of “[Research Ethics](#).” Then, to serve students with little or no experience in UR, “[Preparing for Undergraduate Research](#)” outlines the steps students need to take to become a strong candidate. Topical information is then presented for each division (see Figure 3 for an example), including: “Finding a Research Opportunity,” “Funding Your Project,” “Presentation Opportunities,” and “Student Organizations.” I solicited feedback from advisers, students, professors, and staff for each division’s webpage.

“[Join a Lab or Research Group](#)” (Figure 4) gives step-by-step instructions for finding a professor or research group, first contact with the professor (including email examples), and preparing for the first meeting.

Additional options under the “For Students” tab include a link to the [Database](#) (see the next section) and “[Other Research Opportunities](#)” (Figure 5), which includes links to databases and federal UR programs. There is also information related to other topics of interest to undergraduates, including UCSC UR awards and links to workshops.

The website includes a [database of undergraduate research opportunities at UCSC and in the region](#) (roughly Monterey Bay to San Jose). It can be searched by program name, major, contact name, or keyword (Figure 6). Database entries include a description of the program, contacts, and other relevant information. Figure 7 shows a partial entry. I worked closely with each program or group to ensure the entry correctly reflected the group’s goals. When possible, I also collect information on the number of UCSC students involved in each program. The database is updated continually. The next section provides more information about the specific programs in the database.

Figure 1. [UR Opportunities](#) homepage

**UNIVERSITY OF CALIFORNIA SANTA CRUZ** UNDERGRADUATE RESEARCH OPPORTUNITIES

OVERVIEW FOR STUDENTS FOR MENTORS DATABASE CALENDAR CONTACT

**CELEBRATING STUDENT ACHIEVEMENT**

- [Steck Award](#) (for best undergraduate thesis) to Kristoffer Hellén (History)
- [Deans' & Chancellor's Awards](#) (all Divisions)
- [History of Art & Visual Culture Awards](#)
- [Humanities Undergraduate Research Awards \(HUGRA\)](#)
- [Humanities 2013 Spring Awards](#) (page 21 for undergrads)
- [Irwin Scholars](#) (Art Department)
- [The Sociology of Race, Class and Gender Senior Thesis Award](#)

**EVENTS**

- UCSC Summer Undergraduate Research Symposium  
Thursday, August 22, 2013 11:00 AM to 1:00 PM
- First Annual Meeting of the California Student Chapter of the Society for Marine Mammalogy  
Saturday, October 26, 2013 9:00 AM to Sunday, October 27, 2013 5:00 PM
- "The Normal Heart" by Larry Kramer  
Friday, November 1, 2013 7:00 PM to Sunday, November 3, 2013 5:00 PM
- "The Normal Heart" by Larry Kramer  
Thursday, November 7, 2013 7:00 PM to Sunday, November 10, 2013 5:00 PM

[More Events](#)

**STUDENT PROFILES**

**Ariel Anders** (Computer Engineering) received multiple awards at national conferences for her undergraduate research presentations. "I was interested in research because it was an avenue I could actually apply the skills I was learning in my coursework," she recalls. [Read more](#) for her insights on undergraduate research.

**Lois Rosson's** (History & Art) talents and scholarship achieve recognition from both the popular media and academics. She was featured on the Santa Cruz Styles Spring Edition for her work as a DJ, Program Director, and host of her own weekly show at KZSC, UCSC's on-campus radio station. In addition, she recently presented her undergraduate research at a national symposium. [Read more](#) about the unique interaction of radio and research in her life.

[Links to more profiles](#)

**STEM DIVERSITY**  
UCSC is committed to increasing research opportunities to students from all backgrounds. We offer many

**ACADEMIC SUPPORT**  
UCSC has many programs to help you achieve academic excellence and your professional goals. [To learn](#)

**FREQUENTLY ASKED QUESTIONS**  
What is undergraduate research? How do I fund my project? I just got admitted to

**SUPPORT UNDERGRADUATE RESEARCH**  
UC Santa Cruz has always excelled at offering

Figure 2. “For Students” tab



Figure 3. For Students: [Physical and Biological Sciences Division](#)



Figure 4. [Join a Lab or Research Group](#)

## Frequently Asked Questions:

- Why should I work with a research group?
- When should I start?
- How do I find a research group to join?
- I've identified several professors whose work I find interesting. What do I do now?
- How should I contact the professor?
- What should I say or write to the professor?
- I have an appointment to meet the professor. What should I bring? How should I dress?

## Why should I work with a research group?

UCSC is a research university. Working with an active research group will give you the chance to participate fully in the university community and engage in the practice of science. It will also provide an invaluable complement to your coursework. While textbooks often present science as a series of topics and facts, in a research group you will participate in the activity of science, where answers to questions are not known, you build on the work of others, and collaborate with many people to formulate questions, design experiments, gather and interpret data, and present the results for peer review and feedback.

[Go Back To Top](#)

## When should I start?

You should start contacting professors about opportunities as early as the middle of your freshman or sophomore years. Often labs or research groups are full, but if a professor knows you are interested, it can help get you a position later on.

If a lab or research group is currently full, ask if there is a group or lab meeting you can attend. You will learn more about the group's research and will be in an excellent position when there is an opening for an undergraduate with the group.

In addition, you may find your interests change over time and that you would like to work in more than one lab or with more than one research group as an undergraduate.

[Go Back To Top](#)

## How do I find a research group to join?

Figure 5. [Other Research Opportunities](#)

**UNDERGRADUATE RESEARCH OPPORTUNITIES**

OVERVIEW FOR STUDENTS FOR MENTORS DATABASE CALENDAR CONTACT

Home » For Students

Research Ethics  
 Preparing for Undergraduate Research  
 Arts Division  
 Humanities Division  
 Physical and Biological Sciences Division  
 School of Engineering  
 Social Sciences Division  
 Join a Lab or Research Group  
 Application Tips & Deadlines  
 Research Opportunities Database  
**Other Research Opportunities >**  
 Academic Options & the Senior Exit Requirement  
 UCSC Undergraduate Research Awards  
 What's Next?  
 Calendar

## Other Research Opportunities

Here is a sampling of research opportunities and databases. Please note that we cannot guarantee the accuracy of the sites.

Select one of the following topics:  
**Databases & Comprehensive Listings**  
**Federal Agency Programs**  
**Additional STEM Programs**  
**Other Programs of Interest**  
**STEM Summer Schools**

### Databases & Comprehensive Listings

#### Cross-discipline

- From Pathways to Science
- UC Irvine's Opportunities Database
- CSUMB Summer Research Opportunities

[Go Back To Top](#)

#### Federal Agency Programs

- Internship and Fellowship Opportunities in Science with the US government
- Department of Energy's (DOE) SULI Programs – Science Undergraduate Laboratory

Figure 6. [Undergraduate Research Opportunities Database for UCSC and the Region](#)

Home

## Undergraduate Research Opportunities Database for UCSC and the Region

This database is continually updated. If you know of a program that should be added, contact [rlanders@ucsc.edu](mailto:rlanders@ucsc.edu). See Other Research Opportunities at <http://ugr.ucsc.edu/other> for additional programs, including Federal Programs.

Filter by Program Name  Filter by Description, Keyword, or Contact

Major(s)

- Anthropology
- Applied Physics
- Art
- Biochemistry and Molecular Biology
- Bioengineering
- Bioinformatics
- Biology
- Business Management Economics

Hold shift (PC) or command (Mac) to select multiple majors. If no majors are selected, then all programs are displayed.

[Water Teaching and Research Laboratory: WaterLab](#)  
[University of California, Washington Center \(UCDC\)](#)  
[University of California Leadership Excellence through Advanced Degrees \(UC LEADS\)](#)

Figure 7. An example of a database entry, [Minority Access to Research Careers \(MARC\)](#)

The screenshot shows the University of California Santa Cruz Undergraduate Research Opportunities database. The header includes the UCSC logo and the text "UNDERGRADUATE RESEARCH OPPORTUNITIES". A navigation menu contains links for OVERVIEW, FOR STUDENTS, FOR MENTORS, DATABASE, CALENDAR, and CONTACT. Below the menu is a "Home" link. The main heading is "Minority Access to Research Careers (MARC)". The content area includes the following text:

**Nature of Research/Program Description:**  
The MARC Program offers research training to participating students to help prepare them to compete successfully for entry into graduate programs leading to a Ph.D. in the biomedical sciences or a combined MD/Ph.D. The program consists of a laboratory-training program during the summer and laboratory research projects during the academic year. The program includes funding for travel to conferences and travel to graduate schools and program support for graduate school applications. MARC is an honors program.

**Keywords:** summer; fall quarter; winter quarter; spring quarter; 2 year; research; biomedical; Ph.D.; MD/Ph.D; laboratory research; conference funding; graduate school funding; graduate applications

**Contact:** Malika Bell

**Faculty Director:** Alan M. Zahler

**Website:**  
<http://stemdiv.ucsc.edu/imsd/>

**Location:**  
On-campus  
Off-campus

**Location Details:**  
Second summer off campus option

**Targeted Students:**  
Underrepresented students and those who have overcome socioeconomic hardships are strongly encouraged to apply. All applicants must be accepted or registered full-time UCSC students, complete specific classes (see webpage), be pursuing a graduate degree after college.

**Program Time Period:**  
Academic Year

### *C. Undergraduate Research Opportunities Database for UCSC and the Region*

As of July 1, 2013, the database includes 62 entries that are categorized below.

#### UCSC Programs Focused on UR

33 programs in the database (Table 5), ranging from College Research Fellowships to [STEM Diversity Programs](#), offer students the opportunity to work directly with faculty and graduate students to develop skills and gain UR experience. Numbers of participants range from 1 student every few years to 35 or more a year. Programs are listed alphabetically.

The total number of positions for UCSC students in established programs is approximately 740-850. This number does not include programs starting summer, 2013 or programs with variable numbers of students.

Table 5. UCSC Programs focused on UR

<b>Program Title</b>	<b>Number of UCSC students per year</b>	<b>UCSC Students Since Program Started</b>
California Alliance for Minority Participation (CAMP)	15	>400
Center for Games and Playable Media	12	25
Coastal Conservation Action Lab	25	>200
Crown Undergraduate Research Fellowship	Up to 8	42
FERNS Research Programme	1	4
Field Research at the UCSC Reserves	50	>100
Humanities Undergraduate Research Awards (HUGRA)	10	>100
Learning and Experimental Economics Projects (LEEPS)	up to 4	>40
Merrill College Undergraduate Mentorship Program	6	23
Minority Health and Health Disparities International Training Program (MHIRT)	About 10	>150
Minority Access to Research Careers (MARC)	14	>200
Network Management and Operations (NMO) Lab	8-12	>50
Pathways to Research Program, Educational Opportunity Program (EOP)	30-36	NA
Pinniped Cognition and Sensory Systems Laboratory	10-15	>100
Porter Research Fellowships	4-5	50
Psychology Department Advanced Research	400-450	NA
Research Mentoring Institute (RMI) and Diversity Fellowships	2	>50
Science Learning and Exploration with the Help of Sea Lions (SLEWTHS)	about 3	>50
Seymour Center at Long Marine Lab	variable	3
Sustainability Office- Student Research Internship	variable	1
The Advanced Studies Laboratories (ASL) Summer Internship Program	6-8	30
The Center for Agroecology and Sustainable Food Systems (CASFS)	6-10	>100
The Center for Integrated Spatial Research (CISR)	10-15	>50
The Initiative for Maximizing Student Diversity (IMSD)/Minority Biomedical Research Support (MBRS)	35 undergraduates	>800
The Santa Cruz Predatory Bird Research Group	20	>50
The Student Project Incubator (SPIN) Studio	New program	New program

UCSC Forest Ecology Research Plot (FERP)	40-50	>100
UCSC NSF REU-Summer Undergraduate Research Fellowship in Information Technology (SURF-IT)	3-4	40
UCSC NSF REU-Undergraduate Research in the Biological Effects of Climate Change (URBECC)	New program	New program
UCSC OpenLab	1-5	30
Undergraduate Research Apprenticeship Program (URAP)	8-14	about 200
University Affiliated Research Center (UARC) Systems Teaching Institute (STI)	Variable	NA
University of California Leadership Excellence through Advanced Degrees (UC LEADS)	10	>100
Water Teaching and Research Laboratory: WaterLab	2	17

#### UCSC Programs with Possible UR Opportunities

16 programs in the database are opportunities for students that have the potential to include UR. For example, the [Environmental Studies Internship Program](#) places hundreds of students a year in internships. Chris Krohn, the Environmental Studies Internship Coordinator, estimates that up to 10% of the positions include research. Other opportunities in the program focus on public policy, education, etc. Since it is difficult to determine which students are doing research, numbers of students are not generally included in these entries.

#### Programs:

- Chancellor's Undergraduate Internship Program (CUIP)
- Digital Art and New Media (DANM) Undergraduate Research Opportunities
- Environmental Studies Internship Program
- Impact Designs: Engineering and Sustainability through Student Service (IDEASS)
- Institute of Marine Sciences (IMS)
- Natural History Research at the UCSC Museum of Natural History
- Storage Systems Research Center (SSRC)
- Sustainability Office- Provost's Sustainability Internship Program
- The Cultural Arts and Diversity (CAD) Resource Center
- UCSC Arboretum
- UCSC Arts Division Internship Program
- UCSC SlugQuest and Employee Request System
- University of California Center Sacramento (UCCS)
- University of California, Washington Center (UCDC)

### Regional Programs Focused on UR

- Agricultural Research Service (ARS), United States Department of Agriculture (USDA)
- Monterey Bay Research Institute (MBARI) Summer Internship Program
- ACCESS
- NASA DEVELOP National Program Internship Opportunity (at NASA Ames)
- Field Research at Elkhorn Slough Reserve

### Regional Programs with Possible UR Opportunities

- Cabrillo Festival of Contemporary Music
- Earth Team, Natural Resources Conservation Service (NRCS)
- Equine Research Foundation
- Island Conservation Science Research
- Monterey Bay National Marine Sanctuary (MBNMS)
- Santa Cruz Biotechnology, Inc.
- State of California Coastal Conservancy
- The Community Agroecology Network (CAN)

### Website Utilization

The website was launched on October 26, 2012. Google Analytics reports that, as of June 30, 2013, there have been:

- Visits- 13,708
- Unique Visitors- 9,712
- Page Views- 51,711
- Pages/Visit- 3.77
- Average Visit Duration- about 3 minutes
- % New Visits- 70%

There have been visits to the site from every continent but Antarctica. Table 6 shows the 5 most visited webpages from October 26, 2012 to June 30, 2013.

Table 6. Most visited webpages from 10/26/12 to 6/30/13

<b>Webpage Title</b>	<b># of Pageviews</b>	<b>% of Pageviews</b>	<b># of Unique Pageviews</b>
Overview	9,380	18%	7,116
Undergraduate Research Opportunities Database	8,911	18%	5,390
General Examples of Emails to Professors	2,661	5%	2,399
Join a Lab or Research Group	2,605	5%	1,904
Physical and Biological Sciences Division	1,842	4%	1,241

#### *D. Presentations and Workshops*

Presentations and workshops are a critical component of the outreach I provide to students. I gave short presentations on getting involved in UR to student groups, a new class named “Navigating the Research University,” and at the Astronomy Research Socials in fall and spring. In addition, I gave short presentations to department advisers, managers, and staff to solicit feedback on the website and to inform them of the new resources. In late June, I also gave an overview of the website and my services to the Physical and Biological Sciences Division meeting of department chairs, department managers, and other division personnel.

I also developed two hour-long interactive workshops, which are posted as pdfs on the website.

- [\*Getting Involved in Undergraduate Research at UCSC\*](#)  
This is the general workshop I give to student groups and classes. It includes information for all divisions. I modify it each time to be appropriate for the group I am working with.
- [\*Secrets of STEM Research Groups- Structure, Function, & Dynamics\*](#)  
The goals of this workshop are to provide undergraduates with an overview of what a research group is, how it functions, and the importance of the group's culture to a student's success.

Both workshops were presented as part of the Professional Development Workshop Series sponsored by the [STEM Diversity Programs](#) and the [Research Mentoring Institute](#). In addition, I gave workshops for student groups, a college learning community, and student clubs. Each workshop began with a student explaining how he or she got involved in UR and how it had influenced his or her academic career. The workshops ended with a paper evaluation with open-ended questions that asked about the student’s goals for the workshop, if his/her goals were met, what information was helpful, and how the workshop could be improved. Before students left, I passed out a handout that listed important links mentioned in the workshop and my contact information. 38 students attended the “Getting Involved in Undergraduate Research at UCSC” workshops and 26 students filled out evaluations.

Key points from the evaluations:

- Most students (73%) came to learn more about research and how to get involved
- 88% had their goals for the workshop met
- The most useful part of the workshop was having important links put together in one handout (31%)
- Other useful aspects included having a student speaker (12%) and the Database (12%)
- Students wanted more information on application tips (8%), more time with the student speaker (8%), examples of emails to professors (8%), information on positions with specific professors (8%), and information on post-baccalaureate programs (8%)

“Secrets of STEM Research Groups- Structure, Function, & Dynamics” was given once, so there are not sufficient evaluations to draw conclusions. I am scheduled to give the workshop twice this summer for the STEM Diversity Programs.

### *E. Tabling at Events*

I provide informal advising to students after workshops, at presentations, and while tabling at events. Tabling involves standing at a specific location near a table that has appropriate informational material and talking to event participants. I tabled at several events that provided students with the chance to learn more about UR. In the fall, I talked to students in [ACE](#), the Academic Excellence Program, and in late spring I provided information for interested students at the annual Undergraduate Research Symposium for students in the Physical and Biological Sciences and Engineering.

### *F. Student Advising*

I do more formal advising through drop-in hours, appointments, and email. I am committed to keeping accurate records of these meetings. Before late June, 2013 I recorded the name of the student, the length of the session, and the topic we discussed. In late June, I built a FileMaker Pro database to record more detailed information, including email, major, department, expected year of graduation, type of communication, topic(s) of discussion, and duration of the event to include in the database. Some students received advising through email and in person, and multiple topics could be discussed at one meeting or in one email.

As of June 30, I advised:

- Students
  - Total- 71
  - In-person- 42
  - E-mail- 40
  - Amount of time- 33 hours
- Most frequent topics addressed:
  - How to get involved in UR and find a lab (53%)
  - General introduction to UR and the website (24%)
  - Summer programs (17%)
  - Communicating with professors (17%)

I am committed to consistently evaluating my advising services. In June, 2013 I developed a short Survey Monkey online evaluation with questions about the student's goals for the advising event, if the goals were met, and for suggestions to improve both the advising and the website. Starting on August 1, I will send the on-line evaluation to all students advised the previous month.

### *G. Assisting with UR Funding*

I have facilitated UR opportunities by informing professors of potential funding opportunities and by assisting with grant proposals. In late summer of 2012, I emailed professors with ongoing National Science Foundation (NSF) and National Institutes of Health (NIH) grants who were eligible to apply for supplemental funding to support undergraduates. In fall, 2012 Malika Bell and I contributed to a grant proposal led by Professor Enrico Ramirez-Ruiz in Astrophysics for an NSF Research Experience for Undergraduates (REU) program at UCSC. We outlined the professional development and community-building activities. After the grant was funded, Enrico emailed the contributors and stated, “In particular, I would like to acknowledge Rebecca's help and insight.” In addition, I assisted Professor Barry Bowman with data for the renewal of the [Initiative for Maximizing Student Diversity \(IMSD\)/Minority Biomedical Research Support \(MBRS\)](#). I am also working with Professor Amy Ralston on an NSF grant that would encourage students, particularly undergraduates, to see research and academic careers as compatible with a rich personal and family life. The website for the program will be integrated into the UR website.

### *H. Mentoring Activity for STEM Undergraduates*

In spring quarter I collaborated with the UCSC chapter of Women in Science and Engineering (WiSE) on a pilot mentoring activity for STEM undergraduates. Thirteen mentors (graduate students and professors) and fifteen undergraduate mentees participated. We had an initial meeting early in the quarter to provide information on mentoring and to gather information to match mentors and mentees. I solicited feedback for the activity through two on-line evaluations, one mid-quarter and one at the end of the quarter. Based on these evaluations and consultations with expert staff such as Dr. Zia Isola of the [Research Mentoring Institute](#), I am developing a more substantial activity with Professor Tesla Jeltama in Physics for fall, 2013.

**Goal 2:** To provide a central clearing house to help faculty, staff, prospective students, and the community to become aware of the wide array of research resources in the region available to undergraduates

In addition to providing information for current UCSC undergraduates, the website is a resource for faculty and staff to learn about UR at UCSC. Academic and College Advisers, in particular, have told me that the website is very helpful; when I add new material to the site, I send an email to the adviser list-serve and it often is then sent to department email lists.

To provide information to staff and faculty, I gave presentations that featured the website to:

- Academic advisers of Physical and Biological Sciences and the School of Engineering
- Department staff at the Arts Division and Humanities Division
- The College Preceptors and Friends (including college advisers)
- The Physical and Biological Sciences Department Chairs and Directors meeting
- Individual faculty and staff in the Social Sciences Division

I communicate with prospective students to help them understand the opportunities at UCSC and the importance of getting involved early, getting to know their professors, and getting good grades. I have a webpage that addresses “[Preparing for Undergraduate Research](#)” (Figure 8). I handed out a flier with the same information when I tabled at the Spring Spotlight, a spring event for accepted students to learn more about UCSC. I also respond to emails and have individual meetings with prospective students.

The website is also a communication tool to help demonstrate the importance of UR to the Santa Cruz community. For example, I am working with Malika Bell from STEM Diversity and Frankie Melvin from UCSC Development on a document to give to prospective donors that outlines UR funding opportunities. I have met with Frankie Melvin multiple times to demonstrate features of the website that he could show to donors and to clarify the definition and role of UR at UCSC. In addition, the website gives donors the opportunity to give specifically to UR by division (Figures 9A and B).

Figure 8. [Preparing for Undergraduate Research](#)

The screenshot shows a website page with a navigation bar at the top containing tabs for OVERVIEW, FOR STUDENTS, FOR MENTORS, DATABASE, CALENDAR, and CONTACT. Below the navigation bar is a breadcrumb trail: Home > For Students. On the left side, there is a vertical menu with the following items: Research Ethics, Preparing for Undergraduate Research (highlighted with a right-pointing arrow), Arts Division, Humanities Division, Physical and Biological Sciences Division, School of Engineering, Social Sciences Division, Join a Lab or Research Group, Application Tips & Deadlines, Research Opportunities Database, Other Research Opportunities, Academic Options & the Senior Exit Requirement, and UCSC Undergraduate Research Awards. The main content area has a large heading "Preparing for Undergraduate Research" and the following text: "To find out additional information for your field of study, go to the related webpage for the division/school:" followed by a list of links: Arts, Engineering, Humanities, Physical & Biological Sciences, and Social Sciences. Below this list, the text reads: "Undergraduates do research in every division and department at UC Santa Cruz. Since UCSC is a research university, active participation in research should be an integral part of your education. For examples of UR in each division, see student profiles." and "For specific information about each division, look under the For Students tab." Further down, it says: "If you are transferring to UCSC STEM field, consider attending WEST. Workshops for Engineering & Science Transfers (WEST) is designed to give students transferring from other institutions a jump-start on entering UCSC science and engineering majors." and finally, "To get involved in UR, you need to be well prepared."

Figure 9A. Lower section of [homepage](#) showing the link to the donation page

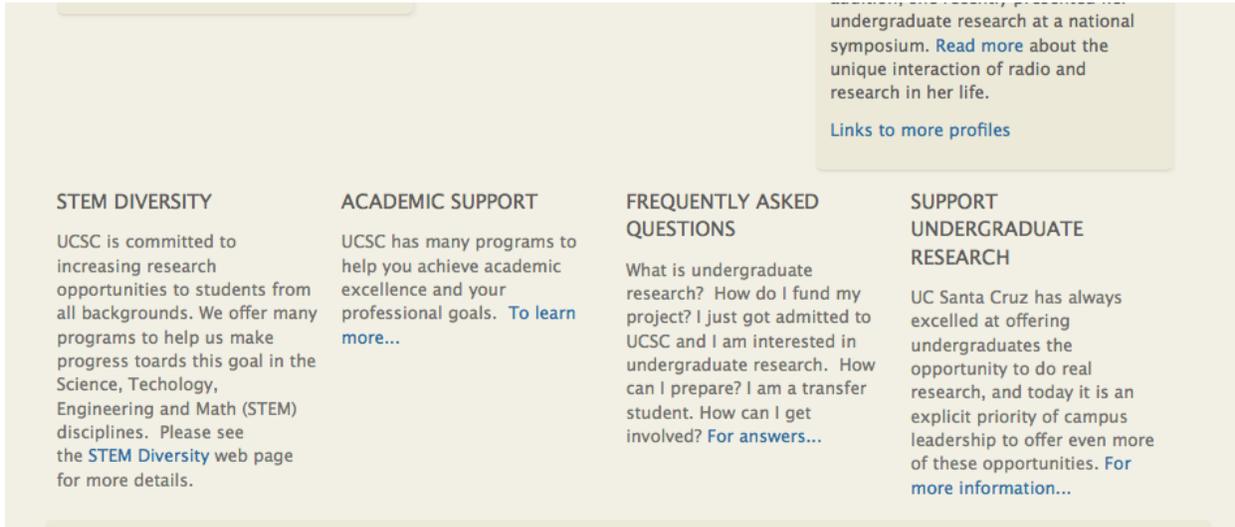


Figure 9B. [Support Undergraduate Research](#) for funding UR by division



**Goal 3:** To increase awareness of the important contributions of UCSC undergraduates to research

The website provides a central location to highlight the excellent work of UCSC undergraduate researchers. I have written two detailed profiles, of [Ariel Anders](#) from Engineering and [Lois Rosson](#) from History, and I am currently compiling a profile of Eric Curiel from Biology. Short descriptions on the homepage (Figure 10) lead to full-page profiles focused on how the student became involved in UR, their research, and the impact on the students' academics (Figures 11 and 12). The Google Analytics data demonstrates the popularity of the profiles: Ariel Anders' profile was posted on February 1, 2012. From April 1 to June 30, it was the 38<sup>th</sup> most visited webpage, with 144 pageviews and 110 unique visitors. Lois Rosson's profile was posted on April 26 and from then until June 30 it was the 12<sup>th</sup> most visited page on the website, with 188 pageviews and 157 unique visitors.

An additional webpage provides links to [profiles of UCSC undergraduate researchers](#) across a wide range of disciplines from other sources (Figure 13). I highlight these profiles at the top of the relevant division page under the "For Students" tab. In addition, at the end of spring quarter, for the campus-wide Student Achievement Week, I temporarily replaced the "Application Date" block with a "Celebrating Student Achievement" block on the homepage (Figure 1).

Figure 10. UR profile introductions



The image shows a student in a dark tank top working in a laboratory. In the background, there is a water cooler, a blue mesh cup, and various lab equipment. A sign on the wall reads "NON-CONTAMINATING SHARPS".

CELEBRATING STUDENT ACHIEVEMENT	EVENTS	STUDENT PROFILES
<p><a href="#">Steck Award</a> (for best undergraduate thesis) to <a href="#">Kristoffer Hellén (History)</a></p> <p><a href="#">Deans' &amp; Chancellor's Awards</a> (all Divisions)</p> <p><a href="#">History of Art &amp; Visual Culture Awards</a></p> <p><a href="#">Humanities Undergraduate Research Awards (HUGRA)</a></p> <p><a href="#">Humanities 2013 Spring Awards</a> (page 21 for undergrads)</p> <p><a href="#">Irwin Scholars</a> (Art Department)</p> <p><a href="#">The Sociology of Race, Class and Gender Senior Thesis Award</a></p>	<p>▪ <a href="#">UCSC Summer Undergraduate Research Symposium</a> Thursday, August 22, 2013 11:00 AM to 1:00 PM</p> <p><a href="#">More Events</a></p>	<p><b>Ariel Anders</b> (Computer Engineering) received multiple awards at national conferences for her undergraduate research presentations. "I was interested in research because it was an avenue I could actually apply the skills I was learning in my coursework," she recalls. <a href="#">Read more</a> for her insights on undergraduate research.</p> <p><b>Lois Rosson's</b> (History &amp; Art) talents and scholarship achieve recognition from both the popular media and academics. She was featured on the <a href="#">Santa Cruz Styles Spring Edition</a> for her work as a DJ, Program Director, and host of her own weekly show at <a href="#">KZSC</a>, UCSC's on-campus radio station. In addition, she recently presented her undergraduate research at a national symposium. <a href="#">Read more</a> about the unique interaction of radio and research in her life.</p> <p><a href="#">Links to more profiles</a></p>

Figure 11. [Ariel Anders' profile](#)

University Home | MyUCSC | People | Calendars | A-Z Index | SEARCH

UNIVERSITY OF CALIFORNIA SANTA CRUZ UNDERGRADUATE RESEARCH OPPORTUNITIES

OVERVIEW | FOR STUDENTS | FOR MENTORS | DATABASE | CALENDAR | CONTACT

Home

## Undergraduate Researcher Profile: Ariel Anders



Ariel Anders graduated from UCSC in 2012 and is currently a graduate student at the Massachusetts Institute of Technology continuing to research in robotics at the [Computer Science and Artificial Intelligence Laboratory](#). Before coming to UCSC from Bakersfield, she did not know anyone involved in research. Programs in the [Division of Physical and Biological Sciences](#) and the [Baskin School of Engineering](#) introduced her to research at UCSC.

**How did you become interested in research?**

"During employee orientation at ACE (ACademic Excellence), I heard about the MARC (Minority Access to Research Careers) program from Malika Bell and Yuli Ortega" who run the [STEM Diversity Programs](#), and "through [Success in Engineering Summer Bridge](#) I heard first hand experiences from students that were currently in the [[MARC](#), [IMSD](#), [CAMP](#), [UC LEADS](#), [RAD](#)] programs. I was interested in research because it was an avenue I could actually apply the skills I was learning in my coursework."

When Anders went on a tour of the [Bionics Lab](#) with [Professor Jacob Rosen](#), she was impressed by the surgical robots and exoskeletons. The tour was part of the Computer Engineering course, Statistics and Dynamics in BioMechanics (CMPE 9). "At this time we were covering the dynamics of pulleys. During office hours I told him about my previous interest in medicine...; at the end of office hours he offered to show us the Raven 2, the surgical robot, that uses a complex pulley

Figure 12. [Lois Rosson's profile](#)

## Undergraduate Researcher Profile: Lois Rosson (History & Art)



Lois Rosson graduated from UCSC in 2013 with degrees in history and art. "I'm interested in oral history, and the way that sound recordings maintain a dimension that textual accounts flatten. Sound recordings allow you to preserve the audible qualities of first-hand testimony, and the internet allows you to share those recordings instantly. You don't need to transcribe anything, and the account remains faithful to the speakers account. Improvements in recording technology and editing programs make sharing and archiving personal narratives on the internet easy."

"My goal is to rethink historical documentation in terms of the 'Digital Humanities.' The web-based tools available to contemporary historians are still new and relatively unexplored; I want to test out different ways of presenting historical documentation. Maybe narratives don't have to be linear to be accurate reflections of history. Our reliance on books and textual accounts to convey historical information has existed since the advent of writing, as a result, we conceive of history as a chronological linear progression. I don't think this is wrong, I just think there are other ways to chronicle progression with respect to time. Also, I think our relationship to information is hinged on accessibility, and re-contextualizing academia in digital space is a great way to share it instantly."

Given her interest in the ability of sound to directly reach people, it is not surprising that she is involved in radio and music. In addition to her roles as DJ and Program Director at [KZSC](#), Lois has her own radio show. It "is called [Celestial Boob Tube](#), and it's been on the air for about a year. I play new material that comes into the station from our promoters, and occasionally host live musicians. The premise of the Boob Tube (as it is affectionately known), is to provide a space for up and coming artists who don't get airtime anywhere else. It's a fairly free-form format, and sometimes I incorporate prerecorded spoken word and other miscellaneous noises. It's on Wednesday nights, from 8:30-10:30pm. You can tune in

Figure 13. [Profiles of UCSC Undergraduate Researchers](#)

The screenshot shows the website for UCSC Undergraduate Research Opportunities. At the top, there is a navigation bar with links for OVERVIEW, FOR STUDENTS, FOR MENTORS, DATABASE, CALENDAR, and CONTACT. Below the navigation bar, the main heading reads "Profiles of UCSC Undergraduate Researchers". The content is organized into two main sections: "Arts, Humanities & Social Sciences" and "Physical & Biological Sciences and Engineering".

**Arts, Humanities & Social Sciences**

- [Lois Rosson](#), B.A. History & Art, 2013  
Profile by Rebecca Anderson
- [Kristoffer Hellén](#), B.S. History, 2013  
Winner of 2013 Steck Award for the best undergraduate senior thesis
- [Ashley Young](#), Majoring in Film and Digital Media and Legal Studies  
YouTube video produced by Woody Carroll and Nick Dulin. ©UCSC Film & Digital Media Department

**Physical & Biological Sciences and Engineering**

- [Ariel Anders](#), B.S. Computer Engineering, 2012  
Profile by Rebecca Anderson
- [Xochiti Rios](#), B.S. Chemistry, 2013  
Profile from UCSC Development
- [Amanuel Zeryihun](#), B.S. 2013  
Profile from [CAMP-NSF 2013](#)

**Also see:**

- [Student Profiles](#)  
From UCSC Development
- [10 grads in 10 days](#)  
From 2011 UCSC News

## Conclusion

I am eager to continue my work in the coming year to educate UCSC undergraduates about UR: what it is, how they can become involved, and how they can succeed. I will continue to develop relationships with faculty and staff to assist with my outreach to students. The website is a solid beginning, but clearly there is a significant amount of work to be done educating entering students, both frosh and transfer, about the importance of planning and preparing to do UR before they are close to graduation.

I am also very interested in making my program more data-driven. I will do this by continuing to develop and deploy my own evaluation materials, and also by working with staff such as Dr. Anna Sher to make maximum use of existing tools like the UCUES. This will broaden our understanding of who is involved in UR at UCSC, how the experience influences their education, and what groups of students might benefit from targeted intervention. It will allow me to design my programs so that they make the most efficient use possible of the resources available, and will also help the campus's UR program develop new resources by providing solid data for use in grant proposals and development materials.

**Appendix-** Websites listed in the text in alphabetical order

Website	Web address
<a href="#">Academic Excellence Program (ACE)</a>	<a href="http://ace.ucsc.edu/">http://ace.ucsc.edu/</a>
<a href="#">Calendar</a>	<a href="http://ugr.ue.ucsc.edu/calendar">http://ugr.ue.ucsc.edu/calendar</a>
<a href="#">Contact</a>	<a href="http://ugr.ue.ucsc.edu/contact">http://ugr.ue.ucsc.edu/contact</a>
<a href="#">Council on Undergraduate Research</a>	<a href="http://www.cur.org">http://www.cur.org</a>
<a href="#">Environmental Studies Internship Program</a>	<a href="http://envs.ucsc.edu/internships/">http://envs.ucsc.edu/internships/</a>
<a href="#">For Students</a>	<a href="http://ugr.ue.ucsc.edu/for_students">http://ugr.ue.ucsc.edu/for_students</a>
<a href="#">Forest Ecology Research Plot</a>	<a href="http://ugr.ue.ucsc.edu/FERP">http://ugr.ue.ucsc.edu/FERP</a>
<a href="#">Frequently Asked Questions</a>	<a href="http://ugr.ue.ucsc.edu/node/97">http://ugr.ue.ucsc.edu/node/97</a>
<a href="#">Getting Involved in Undergraduate Research at UCSC workshop pdf</a>	<a href="http://ugr.ue.ucsc.edu/sites/default/files/getting_involved_may_17_to_post.ppt.pdf">http://ugr.ue.ucsc.edu/sites/default/files/getting_involved_may_17_to_post.ppt.pdf</a>
<a href="#">Humanities Undergraduate Research Awards (HUGRA)</a>	<a href="http://ugr.ue.ucsc.edu/HUGRA">http://ugr.ue.ucsc.edu/HUGRA</a>
<a href="#">Initiative for Maximizing Student Diversity (IMSD)/Minority Biomedical Research Support (MBRS)</a>	<a href="http://stemdiv.ucsc.edu/imsd/">http://stemdiv.ucsc.edu/imsd/</a>
<a href="#">Institute for Humanities Research</a>	<a href="http://ihr.ucsc.edu/">http://ihr.ucsc.edu/</a>

<a href="http://ugr.ue.ucsc.edu/join_a_lab">Join a Lab or Research Group</a>	<a href="http://ugr.ue.ucsc.edu/join_a_lab">http://ugr.ue.ucsc.edu/join_a_lab</a>
<a href="http://ugr.ue.ucsc.edu/MARC">Minority Access to Research Careers (MARC)</a> database example	<a href="http://ugr.ue.ucsc.edu/MARC">http://ugr.ue.ucsc.edu/MARC</a>
<a href="http://ugr.ue.ucsc.edu/other">Other Research Opportunities</a>	<a href="http://ugr.ue.ucsc.edu/other">http://ugr.ue.ucsc.edu/other</a>
<a href="http://ugr.ue.ucsc.edu/overview">Overview</a>	<a href="http://ugr.ue.ucsc.edu/overview">http://ugr.ue.ucsc.edu/overview</a>
<a href="http://ugr.ue.ucsc.edu/PBSci">Physical and Biological Sciences Division UR</a> webpage	<a href="http://ugr.ue.ucsc.edu/PBSci">http://ugr.ue.ucsc.edu/PBSci</a>
<a href="http://ugr.ue.ucsc.edu/prep">Preparing for Undergraduate Research</a>	<a href="http://ugr.ue.ucsc.edu/prep">http://ugr.ue.ucsc.edu/prep</a>
<a href="http://ugr.ue.ucsc.edu/Profiles_list">Profiles of UCSC Undergraduate Researchers</a>	<a href="http://ugr.ue.ucsc.edu/Profiles_list">http://ugr.ue.ucsc.edu/Profiles_list</a>
<a href="http://psychology.ucsc.edu/undergraduate/undergrad-opportunities/undergrad-research.html">Psychology 194: Advanced Research</a>	<a href="http://psychology.ucsc.edu/undergraduate/undergrad-opportunities/undergrad-research.html">http://psychology.ucsc.edu/undergraduate/undergrad-opportunities/undergrad-research.html</a>
<a href="http://ugr.ue.ucsc.edu/Research_ethics">Research Ethics</a>	<a href="http://ugr.ue.ucsc.edu/Research_ethics">http://ugr.ue.ucsc.edu/Research_ethics</a>
<a href="http://cbse.soe.ucsc.edu/diversity/rmi Ug">Research Mentoring Institute</a>	<a href="http://cbse.soe.ucsc.edu/diversity/rmi Ug">http://cbse.soe.ucsc.edu/diversity/rmi Ug</a>
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<a href="http://stars.ucsc.edu/">Services for Transfer and Re-entry Students (STARS)</a>	<a href="http://stars.ucsc.edu/">http://stars.ucsc.edu/</a>
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<a href="http://ugr.ue.ucsc.edu/">UCSC Undergraduate Research Opportunities homepage</a>	<a href="http://ugr.ue.ucsc.edu/">http://ugr.ue.ucsc.edu/</a>
<a href="http://ugr.ue.ucsc.edu/database">Undergraduate Research Opportunities Database for UCSC and the Region</a>	<a href="http://ugr.ue.ucsc.edu/database">http://ugr.ue.ucsc.edu/database</a>
<a href="http://ugr.ue.ucsc.edu/Profile_Anders">Undergraduate Research Profile: Ariel Anders</a>	<a href="http://ugr.ue.ucsc.edu/Profile_Anders">http://ugr.ue.ucsc.edu/Profile_Anders</a>
<a href="http://ugr.ue.ucsc.edu/Rosson">Undergraduate Research Profile: Lois Rosson</a>	<a href="http://ugr.ue.ucsc.edu/Rosson">http://ugr.ue.ucsc.edu/Rosson</a>
<a href="http://studentsurvey.universityofcalifornia.edu/">University of California Undergraduate Experience Survey</a>	<a href="http://studentsurvey.universityofcalifornia.edu/">http://studentsurvey.universityofcalifornia.edu/</a>
<a href="http://ugr.ue.ucsc.edu/events">UR events</a>	<a href="http://ugr.ue.ucsc.edu/events">http://ugr.ue.ucsc.edu/events</a>
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