Undergraduate Research Opportunities

Why do research as an undergraduate?

- Find out what interests you – or doesn't. This is a perfect time to explore a variety of fields, approaches, working styles, career paths.
- Shop around for graduate schools. Network with professors and researchers.

Summer vs. School-year Research

- Summer research programs are more intensive—you are generally expected to commit full-time to the research program without taking summer classes or working other jobs. Good summer projects are designed for you to get results quickly; you learn a lot in a short period of time.
- School-year research is part-time (typically 10 hours per week), with work hours arranged around your class schedule. Doing research during the school year requires time management, and progress can be slow. However, school year research may allow you to stay long-term on a project and is more likely to lead to senior thesis projects, publications and opportunities to attend professional meetings, as well as integration into a research group.

Going It Alone - Arranging Your Own Research Project with Individual Faculty

- Think about what interests you, then find out who does it – check out faculty webpages, ask your course instructors and TA's about research areas in their department.
- Approaching faculty or researchers - *be clear about what you're asking for!* Do you want your own research project or do you want to assist others? Do you want credits? Do you want a senior thesis project? Will you volunteer or do you need to be paid? What time commitment can you make?
- A note on talking to faculty about doing research in their lab- take a look at department/faculty webpages so that when you contact them you can mention the research you are particularly intrigued by and that you would like to talk with them about the potential for doing research in their lab. Mention your prior experience and attach a CV if you have one prepared. Don't be discouraged if they do not respond right away, send a follow up email after a week if you do not hear from them and drop by their office or talk to them at the end of class to arrange a time to meet. They are busy but many are very happy to talk to students interested in research.

Formal Summer Programs - How Do I Identify a Good Research Program?

- *Novice researchers* should look for organized research programs which provide programmatic support such as arranged housing, weekly group meetings, social activities with other research interns, etc. *Experienced researchers* can be more adventurous about finding their own placements, not necessarily within the scope of a formal program.
- Think about your *primary motivation* for doing research. If you are interested in graduate school, then look to the institutions where you might go. If a particular research area gets you most excited, then find out where that work is being done. Professors are an excellent source of information about who does what and where.
- *Interdisciplinary research* can be very exciting and challenging, and is an excellent way to learn about a wide variety of career paths that you might take with a given background/degree.
- *Use the web to go shopping*. If want to go to a specific institution, then go to their website and hunt around the academic department and research center websites.

How Do I Create a Competitive Application?

What do application reviewers most want to see? They want to see a convincing and appropriate motivation for doing research. They want some evidence that you are capable, reliable and mature. They want to see that you have done your homework.

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- *Statement of Interest Essay:* This is a critical piece, and demands your best effort. Discuss in detail your personal motivations, the WHY you want to do research. Sharing an experience or mentor that/who excited you about your particular interest is a good example. Do not write a generic multi-purpose essay for 10 different programs. Better to choose 3 to 5 programs and hand-tailor your essay to match the research focus or other attributes of each program.
- *Recommendation Letter(s): This* is the second most critical piece. Get letters from professors/instructors who know you personally, preferably someone who knows the full range of your abilities and who can write you a strong letter (don't be afraid to ask them if they will be able to write "a strong letter" for you). Letter writers should be from the same or related field/area as your research interest.

Other Things to Keep in Mind:

- *Application Deadlines for formal summer progr*ams are generally February to March. You should plan to start searching for programs in JANUARY.
- *Start and End Dates* will be very different for programs at semester-system vs. quarter-system schools. Contact the program coordinator to discuss the possibility of starting and ending late/early – some places will be very flexible.

WEBSITES for Undergraduate Research in Science and Engineering:

UCSB Programs Overview:

https://undergrad.research.ucsb.edu/

A Few of the Programs Organized at UCSB for UCSB Students:

California Alliance for Minority Participation (CAMP): Summer research for UCSB under-represented students.

http://www.mrl.ucsb.edu/CAMP/

Cooperative International Science and Engineering Internships (CISEI): Summer internships in Chile, the Netherlands, Ireland, England, China and Germany.

http://www.mrl.ucsb.edu/CISEI/

Early Undergraduate Research and Knowledge Acquisition (EUREKA!): Academic year research experience for freshman and sophomores.

http://eureka-csep.cnsi.ucsb.edu/

Gene Lucas Undergraduate Research Fund: Funding for STEM research projects

http://academics.sa.ucsb.edu/research-funds/gene-lucas-undergraduate-research-fund

Math Summer Research Program: 8-week summer research internship in Math at UCSB

http://math.ucsb.edu/REU/index.html

Maximizing Access to Research Careers: Two-year scholars program for undergraduates interested in PhD degrees and careers in biomedical and behavioral research.

http://marc-csep.cnsi.ucsb.edu/

McNair Scholars Program: Academic year and summer research programs for UCSB underrepresented students.

http://mcnair.ucsb.edu/

Partnership for Research and Education in Materials (PREM): UCSB science and engineering students acquire research experience in interdisciplinary materials science at UT El Paso.

http://www.mrl.ucsb.edu/education/undergrad/prem

UC Leadership Excellence through Advanced Degrees (UC LEADS): Two-year program including research internships at two UC campuses.

http://www.graddiv.ucsb.edu/admissions/outreach/uc-leads

Undergraduate Research and Creative Activities (URCA): Funding for undergrad research projects.

http://www.lsugeducation.ucsb.edu/urca

Research Interns in Science and Engineering (RISE): School Year internships are for UCSB students only.

http://www.mrl.ucsb.edu/RISE/

Programs at UCSB Primarily for non-UCSB Students:

Condor: Partnership between Oxnard College and UCSB. Invites students who are interested in STEM disciplines to apply for a two week summer experience with UCSB researchers.

http://condor-csep.cnsi.ucsb.edu/

Cooke Bridges Program: Brings science, engineering, and mathematics community college students to the Santa Barbara campus for a one week science intensive
residential program hosted at CNSI

http://cooke-csep.cnsi.ucsb.edu/

Internships in NanoSystems Science, Engineering and Technology (INSET): Summer internships for California community college students.

http://csep.cnsi.ucsb.edu/cc/inset

Math Summer Research Program: 8-week summer research internship in Math at UCSB

http://math.ucsb.edu/REU/index.html

National Nanofabrication Infrastructure Network (NNIN): Summer internships.

http://www.nnin.org/nnin_reu.html

Research Interns in Science and Engineering (RISE): Summer internships are primarily for non-UCSB students.

http://www.mrl.ucsb.edu/RISE/

Summer Applied Biotechnology Research Experience (SABRE) Summer experience for science and engineering undergrads and grads.

http://www.icb.ucsb.edu/sabre/

Summer Institute in Mathematics and Science (SIMS): Brings science, engineering, and mathematics incoming freshmen to the UC Santa Barbara campus for the Summer Institute in Mathematics and Science, a 2-week science intensive residential program hosted by CNSI.

http://csep.cnsi.ucsb.edu/k12/sims

IGERT Internship in Network Science: Brings STEM sophomore and junior undergraduates to the UC Santa Barbara campus for an 8-week summer research experience.

http://networkscience.igert.ucsb.edu/undergraduate-internships

Nation-Wide One-Stop Shopping:

National Institute of Health (NIH): For biomedical-related research only:

https://www.training.nih.gov/programs/sip

National Science Foundation (NSF): "Research Experience for Undergraduates" (REU) programs, for all science, engineering and mathematics fields, including behavioral and social sciences:

http://www.nsf.gov/crssprgm/reu/reu_search.cfm

Oak Ridge Institute for Science and Education: Lists programs sponsored by a range of government agencies, including EPS, Dept of Energy, Dept of Defense, NOAA, etc.

http://www.orau.gov/orise/edu/uggrad/undergrads.htm

Other National Major Agencies and Laboratories:

National Aeronautics and Space Administration (NASA): Undergraduate Student Research Program, at several institutions:

http://www.epo.usra.edu/usrp/

http://intern.nasa.gov/

National Oceanic and Atmospheric Administration (NOAA): NOAA Coastal Services Center:

http://www.csc.noaa.gov/cms/fellows/undgrad_opportunities.html

National Laboratories Science Undergraduate Laboratory Internships:

http://science.energy.gov/wdts/suli/

National Nanofabrication Infrastructure Network (NNIN): Summer internships.

http://www.nnin.org/nnin_reu.html

Additional listings of Undergraduate Research Opportunities:

UCSB URCA site provides a list of non-UCSB opportunities:
http://www.urop.uci.edu/frame_opportunities_off_campus.html

UC Irvine site includes application deadlines to selected programs:
http://www.urop.uci.edu/frame_opportunities_off_campus.html