

## **Finding and Funding Summer Research Opportunities in STEM Fields**

All Yale freshmen interested in science and engineering are encouraged to engage in research for 8-10 weeks during the summer. The Yale College Science & Quantitative Reasoning (QR) Office administers the Yale College Freshman Summer Research Fellowship in the Sciences and Engineering to support students who elect to carry out research with a Yale faculty member in the summer following their freshman year. Information about how to apply for this fellowship and others is available at <http://science.yalecollege.yale.edu/fellowships-grants>.

### ***Timetable***

Students should aim to have their summer research position lined up well before spring break, preferably by late January. By mid February, many laboratories will have filled any spaces that may be available. Most importantly, you want to have sufficient time to develop and write a fellowship proposal. The deadline for the Freshman Summer Research Fellowship is in March.

### ***How to Find a Summer Research Position***

Here are some suggested approaches to finding a faculty mentor for your summer research:

1. Talk to faculty in your science and engineering courses. They should be able to give you general guidance, and after you explain your interests, they may be able to steer you in promising directions with respect to specific departments or programs. Upperclass and graduate students are also good sources for advice and leads. Arrange to meet with Dean Hashimoto ([carl.hashimoto@yale.edu](mailto:carl.hashimoto@yale.edu)) for additional advice.
2. Search the web sites of relevant departments and research groups for faculty members who have research interests that overlap with yours. In addition to the science and engineering departments that offer majors in Yale College, many Medical School departments (e.g., Cell Biology, Genetics, Immunobiology) have substantial basic biomedical research programs. A good source of information about research in the biological and biomedical sciences is the website for the Yale BBS graduate program: <http://bbs.yale.edu/>.
3. Check out the Science & QR undergraduate research web site (<http://science.yalecollege.yale.edu/research-opportunities>), which has a comprehensive listing of Yale science and engineering departments with potential faculty mentors, along with additional suggestions on finding a research position.
4. Consult with the DUS (Director of Undergraduate Studies) in the department(s) of potential interest to you. Many DUSes canvass the faculty to see which labs anticipate being able to offer summer research opportunities for undergrads.

5. Students often look for a list of faculty "who will accept undergraduates," but this approach limits your imagination and such lists are usually inaccurate about the possibilities. Virtually any of Yale's 800+ science and engineering laboratories could be the right lab for you!

6. You are looking for a lab whose work excites you and makes you want to dive in. That's where you should set the bar. This summer, you should be thinking, "I can't believe they're paying me to do this."

### ***Talking to Faculty Members***

1. Any faculty member will become intrigued by a student who is excited about the lab's science, has read 2-3 of the lab's papers, and clearly wants to roll up his or her sleeves and get involved in research. So identify a couple of labs that excite you, then do this reading before contacting the professor.

In your initial contact, you want to be saying "I read about your discovery of X in *Nature* and I think it's just the sort of project I'd like to work on" rather than "I think I might be interested in genetics and wonder if I could work in your lab." Similarly, when a faculty member meets with a student, it's impressive when the student asks intelligent questions about where the lab's work is heading now.

2. It is VERY IMPORTANT when you discuss a summer research position with a potential faculty mentor to do it in person and in an organized manner. Email can be the most effective means of making initial contact. In your email, attach a resume that highlights relevant coursework and prior research experience if any. You should ask for an appointment to visit the person. This will allow you the opportunity to learn in detail what your summer project might entail. It also gives you a sense of the environment within which you will be working. Students usually find that the environment is as important as the science.

3. You increase your chances of getting an appointment (i.e., getting your foot in the door) if you mention that you will be applying for fellowships, so that your research mentor does not need to be concerned with providing your support.

### ***Mechanism of Support***

Summer support is provided through the Freshman Summer Research Fellowship Program, as described at <http://science.yalecollege.yale.edu/fellowships-grants>. The selection process is competitive, but Yale College has allocated support that should be sufficient to ensure that strong proposals from appropriately qualified students will have a high probability of success. Summer 2015 fellowship support for students doing research on campus was \$3440-\$4300 (\$430/week) for an 8-10 week full-time research experience. These fellowships are designed to cover living expenses so that the recipients can dedicate their full attention to their research. Full time means full time.

Fellowship recipients are not permitted to take summer courses or hold down an additional job.

### **Summer Research FAQs**

#### **1. How should I approach a potential research mentor?**

Unless you already have direct contact with your potential mentor, e.g., through a course, it is generally best to begin with a call or email to ask for a face-to-face appointment to explore the possibility of a summer student research position.

#### **2. What will I do during my summer research program?**

When you interview with potential mentors, tell them your course background, prior work history, future career and academic interests and then ask them what are the sorts of projects they might suggest that you participate in. Often you will not have your "own" project, but will collaborate with a more advanced scientist (upperclass student, grad student, post-doctoral fellow, or faculty member) and assist with a component of the ongoing research. While you may be expected to do a small amount of routine laboratory support work, such as lab maintenance, library research, etc., you should not take a position in which your major duties are glassware washing, xeroxing for the faculty member, or other such positions which do not fully expose you to the active research of the research group.

#### **3. Can I apply to do field work with a Yale mentor off-campus?**

Yes, if that's where the faculty member and her or his laboratory carry out summer research. Many Yale faculty members do their research at other locations: e.g., ecology studies elsewhere in the U.S. or abroad, astronomy studies at the Yale telescope in Chile, or high energy research at CERN. Dean Hashimoto will want to have a conversation with your proposed mentor before final approval.

#### **4. Can I do summer research at a University in my hometown?**

Yes, but you will not be eligible to receive Yale College Freshman Summer Research Fellowship support. Your non-Yale mentor or the host institution may be able to provide financial support or you can apply for various fellowships that are not limited to Yale. Some of these are listed on the Yale Student Grants Database (<http://studentgrants.yale.edu/>), but you should be aware that Yale funding for research elsewhere is limited. Some programs have deadlines in the December-February time frame, so think about these early.

#### **5. What are the supported areas of research?**

All areas of the natural sciences, engineering, mathematics, and computer science. Some areas of study in Psychology or Cognitive Science may be appropriate. In general, behavioral studies on animals are eligible for support, but Freshman Summer Research Fellowship-funded studies on humans are appropriate only if the primary focus is on the biology going on 'inside the box,' such as through MRI imaging studies. Students interested in pursuing other types of behavioral research or research in other social sciences may be eligible for support through the Dean's Research Fellowship in

the Humanities and Social Sciences or other grants listed on the Yale Student Grants Database.

**6. What are the dates for participation in summer research?**

The dates of your participation are by agreement between you and your mentor. Your start date may be any time after your last exam and your finish date may be any time before the beginning of classes for the fall term.

**7. What about taxes?**

Your stipend is reported by Yale as taxable income. You will have to report the income in your annual IRS filing and pay taxes if required based on your income and filing status. International students are subject to special regulations governing tax withholding from the stipend payments, and should contact Ms. Donalee Slater in the Science and QR Office for instructions on the completion of documents required for employment and for proper tax treatment of stipends.

**8. Can I take a Summer Session course while I am doing research?**

Not if you are receiving fellowship support. Freshman Summer Research Fellowships are intended to provide support for a full-time experience of 8-10 consecutive weeks, with no distractions or other commitments, including courses or jobs.

**9. Does the Fellowship Program provide housing?**

No, the Fellowship Program does not provide housing. You must make your own living arrangements for the summer. Typically, groups of students have jointly taken summer sublets near campus. Yale Off Campus Housing, <http://offcampus.yale.edu/>, maintains a database of available short-term rentals, sublets, and shares in the New Haven area. In previous years, the Department of Conference Services & Events has offered limited on-campus housing to students during the summer. Information about summer availability and rates will be posted as it becomes available.

**10. What are the time deadlines for participation in summer research?**

During winter recess and the first few weeks of the spring semester, but if possible earlier during the fall semester, you should investigate research areas, initiate contacts, and begin discussing projects with potential research mentors. You should finalize your plans as early as you can, but you must submit your proposal by the March deadline for the Freshman Summer Research Fellowship.

**11. Where can I get help with the research proposal for the fellowship application?**

You should be able to get help from your summer research mentor and members of her or his lab. Their input can be invaluable in writing a compelling research proposal.

**12. What is expected of me in the way of a final report, etc.?**

You are obligated to provide the Freshman Summer Research Fellowship Program with a two-page summary of your research at the end of the summer.

13. **Will I have an opportunity to present my research?** You should have the opportunity to present your research in front of your summer research mentor's research group. In addition, you can apply to present your research at the symposium in September sponsored by the Yale Undergraduate Research Association. Finally, some students with approval from their summer research mentors have the opportunity to present their research at a national conference.