PRINCETON UNIVERSITY UNDERGRADUATE

RESEARCH PROGRAMS
Research Resources

Campus Resources
» Data and Statistical Services
» Listing of Grants and Fellowships
» Office of Research & Project Administration
» Social Science Reference Center
» Sponsored Project Rate Sheet (PDF)
» Sponsored Research Glossary
» Survey Research Center

Off Campus Resources
» Community of Science
» Electronic forms from Various Agencies
» Grant Proposal Writing Guides
» GrantsNet

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Grants and Fellowships

The Grants Manager recommends these sites:

- **Air Force Science and Technology** site - deadlines, contacts, opportunities, links, etc.
- **Alzheimer's Association** - research funding opportunities.
- **American Cancer Society** - extramural grants, forms and targeted research opportunities.
- **American Chemical Society** - information about grants, scholarships, awards and more.
  - ACS-Division of Carbohydrate Chemistry - home page.
  - ACS-Petroleum Research Fund - general information and links.
  - ACS-Scholars Program - opportunities for minority students.
- **American Diabetes Association** - national professional programs, regional meetings.
- **American Heart Association** - scientific statements, conferences and research grants.
- **American Physical Society** - fellowships and prizes for physical chemists.
- **Army Research Office** - deadlines, programs, and more.
- **Arthritis Foundation** - research opportunities and information.
- **AT&T Foundation** - funding opportunities for innovative technology and links to the AT&T local Corporate Contributions Program.
- **BF Goodrich Collegiate Inventors Program** - awards for students, post-docs and their mentor professors for scientific innovation.
- **Community of Science** - search for research opportunities by discipline.
- **Dana Foundation** - grant programs in brain research.
- **Department of Defense** home page - directories, research, etc.
- **Department of Energy - Division of Chemical Sciences** - information, deadlines, the DOE Financial Assistance Program Application Guide and more.
DOE's Notice 97-01 - details support for theoretical, environmental and biological chemists and for researchers in material science.

- Camile and Henry Dreyfus Foundation - foundation history and research funding information.

- Environmental Protection Agency - research programs, information for researchers, etc.

- Juvenile Diabetes Foundation - information about funding opportunities.


- National Academy of Science - includes fellowship and post doctoral research opportunities.

- National Multiple Sclerosis Society - research updates, the history of MS research and grant application procedures.

- NATO - Scientific & Environmental Affairs - grant possibilities, fellowships and more.

  NATO Postdoctoral Fellowships - awards through the NSF - Individual fellowships for the period May 1997 to June 1999.

- NIH home page - links to funding opportunities, policies, and forms.

  NIH - National Institute of Neurological Disorders and Stroke - funding information includes neurotoxicology and institutional awards.

  NIH Guide to Grants and Contracts - weekly NIH publication with program announcements.

  NIH Info on Modular Grants - effective 6/1/99 all RO1 proposals will require modular budgeting. This site explains modular grants.

  NIH Grants Policy Statement - terms and conditions of NIH awards, effective 10/21/98.

  NIH Review Criteria - from the June 27, 1997 NIH Guide.

- NIST - 1998 focused competition programs include DNA Diagnostics, Selective-Membrane Platforms and Catalysis and Biocatalysis.

- NSF Home Page - links to all Divisions and Programs.

  NSF Division of Chemistry - deadlines, announcements, personnel, addresses, etc.

  NSF Division of Materials Research - includes links to solid state chemistry and polymers, ceramics and electronic materials, MERSEC '98, and much more.

  NSF Division of Physics - target dates and programs for physical and theoretical chemists.

  NSF Custom News Service - register your individual "profile" and program announcements, new publications and other NSF news will be e-mailed directly to you.

NSF Grant Proposal Forms Kit - updated forms kit (99-3).

NSF Fastlane - information about NSF Fastlane application.

NSF Deadlines - link to important NSF deadlines and programs.

NSF POWRE (Professional Opportunities for Woman in Research and Education) - faculty awards, visiting professorships, reseach planning grants, and career advancement awards for women.

The NSF Research Experiences for Undergraduates (REU) Program - application procedures, limits, forms, etc. (Please contact the Grants Manager concerning deadlines which may be different than posted.)

NSF - Societal Dimensions of Engineering, Science, and Technology - ethics and values studies on research and technology: standard grants, awards, training grants, etc.

NSF E-Bulletin - weekly electronic newsletter of the NSF.

- Office of Naval Research home page - opportunities, deadlines, and more.

- The David and Lucile Packard Foundation - this site has fellowships for science and a scholars program for chemistry.

- The Pew Charitable Trusts - applying for a grant and grant making programs too.

- The Alfred P. Sloan Foundation - fellowships, direct support of research, careers in science, etc.

- TAPPI Foundation - the paper industry needs and funding opportunities.

- US Civilian Research and Development Foundation for the Independent States of the Former Soviet Union (CRDF) - biomedical grants and travel grants to the states of the former Soviet Union.

- The Whitaker Foundation - support of research in biomedical engineering.

Other helpful resources:

- Would you like an *Electronic OPAR* in a MS Word 6.0 version? Contact the Grants Manager if you would like a copy.

- FEDIX Alert Service - register and have grant and RFP's emailed to you by 26 federal agencies based upon your defined areas of interest. Receive a monthly email newsletter too.

- Grant Forms and Instructions - MAC and PC versions of all of the Chemistry Department's normally used forms.

- NCURA's Guide to Grant Proposal Writing - this site includes the NSF's proposal writing
guide, (among others).

- **NSF SBIR Internet Catalog** - a search tool for researchers and entrepreneurs competing for, performing or commercializing awards in the SBIR program. It is also useful for researchers interested in web sites for proposal preparation, teaming, locating R&D resources or commercializing technology.

- **The Foundation Center** - gateway to philanthropy on the WEB.

- **ONR On-Line Service** - search on-line for Naval Research project opportunities.

- **ORPA's Home Page** - includes the most recent **ORPA Red-border Memos and Important Notices**.

- **US Patent Office** - search the patent database, search AIDS patents, forms to download, fee schedules and more.

<table>
<thead>
<tr>
<th>Frick Business Services' Home Page</th>
<th>Department of Chemistry's Home Page</th>
<th>Princeton University's Home Page</th>
</tr>
</thead>
</table>

Return to the:
University Research: Sciences

These are the research groups with registered pages on Princeton's Web. To add a listing to this page, please use the Web feedback form.

Astronomy
- Astrophysical Sciences Department Research
- Apache Point Observatory (APO)
- Sloan Digital Sky Survey (SDSS)
- Wilkinson Microwave Anisotropy Probe (WMAP)

Chemistry
- Chemistry Department Research

Computer Science
- Graphics and Geometry Group
- Secure Internet Programming
- Scalable I/O Research
- Shrimp Multicomputer

Ecology and Evolutionary Biology
- Ecology and Evolutionary Biology Research
- Kremen Lab
- The Landweber Molecular Evolution Lab

Genomics
- Lewis-Sigler Institute for Integrative Genomics

Geosciences
- Geosciences Department Research
- ACCRETE - An Integrated Study of Continental Growth in the NE Pacific
- Center for Ocean Data Assimilation and Modeling
- Princeton Earth Physics Project (PEPP)
- Princeton Ocean Model - (POM)

Molecular Biology
- Molecular Biology Research

Physics
- Atomic Physics
- The Condensed Matter Group
- Cosmic Microwave Background: Data and Theory
- High Energy Physics
- Particle and Nuclear Astrophysics
- Physics Research Groups
- Princeton Pulsar Group

Psychology
- Center for the Study of Brain, Mind and Behavior
- Princeton Cutaneous Communications Lab

Related Institutions
- Geophysical Fluid Dynamics Laboratory
- Princeton Plasma Physics Laboratory
MCGILL UNIVERSITY UNDERGRADUATE

RESEARCH PROGRAMS
Undergraduate Research Awards and Employment Programs

NSERC undergraduate student research awards in universities

The School of Computer Science at McGill University offers undergraduate students the opportunity to work on research projects supervised by a faculty advisor, under the auspices of the NSERC summer undergraduate research award program. Undergraduate research is often the highlight of a student’s learning experience. The student is paid to stretch their imagination, and test their ingenuity and creativity. At the same time, they learn valuable problem formulation and presentation skills which will be useful in any career.

Information and application forms located at the NSERC website.

McGill information and deadlines located at the McGill website.

For information on the 2004 summer program at SOCS, please visit: http://cgm.cs.mcgill.ca/~breed/SummerNSERC04/ugrad.html

NSERC undergraduate student research awards in industry

These awards are meant to stimulate your interest in research in the natural sciences and engineering. They are also meant to encourage you to undertake graduate studies and to pursue a research career in these fields. If you would like to gain research experience in an industrial setting, these awards can provide you with financial support through your host company.

For the duration of the award, you will be an employee of the host company. Your activities will be governed by the terms and conditions of employment of regular employees engaged in similar work, and by any other conditions the company may impose.

Information, list of eligible companies and application forms located at the NSERC website.

McGill information and deadlines located at the McGill website.

NRC women in engineering and science program

NRC's Women in Engineering and Science (WES) Program is designed to encourage talented women students to pursue professional careers in engineering, science and mathematics. For more information and to download the WES program application form, visit the NRC web site WES program.

Please note that the application deadline is October 15, 2004.
Examining undergraduate research

MARK REYNOLDS | When McGill boasts that it is a "research-intensive university" what does that mean for students? What does it mean for teachers? That's a question that the Senate Subcommittee on Teaching and Learning will be looking at over the next few months.

A working group of the Subcommittee will be examining the report of the Boyer Commission on Educating Undergraduates in the Research University. This examination of American research universities suggests that large research universities like McGill need to seriously re-evaluate how they deliver undergraduate education.

"One of the goals in the university is not just to transmit the corpus of knowledge as it exists, but to engage everybody in the process of contributing to new knowledge. That might mean giving undergraduate students a taste of what research means," said dean of students Bruce Shore, a member of the Senate Subcommittee.

The Boyer Report recommends that "research-based learning be the standard" and that students at research universities should have certain "rights." Among them are the expectation of and opportunity for work with talented senior researchers, access to first-class facilities in which to pursue research, many options among fields of study and directions to move within those fields, including areas and choices not found in other kinds of institutions.

Shore cautioned, however, that adopting the Boyer commission -- or any other university's -- model wholesale would probably not work. McGill's academic culture and budget do not allow the same kinds of programs to be instituted here as at MIT.

"You have to be very careful in what you mean by involving undergraduates in research. The simplistic understanding is that it means that undergraduate students will start hanging out in graduate research labs, and that's a physical impossibility --we hardly have enough room for graduate students," he said.

Shore said that McGill might adapt some Boyer recommendations where sensible, but added that several undergraduate research opportunities already exist.
Fred Sagel, SSMU vice-president university affairs, believes part of the problem is that students are often unaware of them. "Opportunities either do exist and they're not publicized enough, or they don't exist," he says.

"I think the ideal situation would be to see more students working with graduate students. I also think more professors should be teaching about their research -- to a certain extent that happens now, but a lot of it is in upper year seminars."

Sagel said that although the working group is a good first start, not enough has been done in the past.

"It's a question of community and a question of academic culture -- you can't have something on this scale coming from a single working group."

In a recent address to the University of Melbourne, Principal Bernard Shapiro noted that how to incorporate undergraduates into a university's research life is a question not just of education, but also of defining the very nature of the Institution.

"Research universities are not, after all, research institutes, and if research universities are to have a future -- remembering that their past is no more than 100 years old -- such a future can only arise from a productive realization of both its teaching and its research programs," he said.

Too often at research universities, top faculty try to avoid teaching undergraduates. Also, undergraduate programs are often geared toward creating graduate students, rather than students with a degree that is worthwhile in its own right.

"In such programs undergraduate students become a kind of 'cannon fodder' for the graduate programs, surely a betrayal of the implicit social contract under which universities are both supported and funded," said Shapiro.

Carman Miller, dean of Arts, said that his faculty recognizes the importance of exposing undergraduates to research.

"Some upper year courses are developed around a research project, for example around a set of archival records, where each student is assigned some aspect of [a] family's history. Then, at the end of the term, they hold a day-long seminar to present their research papers, reconstituting the family history from its various parts," he said as an example of research in one class. As well, some courses require a thesis or fieldwork.

Miller also pointed to the Arts Student Employment Fund (ASEF) as a program that encourages students to get involved in professors' research projects. ASEF is administered by the Arts Undergraduate Society, and allows professors to hire undergraduate students to do work-study on their projects.

"These are highly appreciated by arts students. We're giving the opportunity, but it's up to them to take the opportunity," said Rahim
Surani, vice-president academic of the AUS, of the placements.

Surani explained that the research jobs are valued by students planning on going into either graduate studies or into the non-academic job market. Not only do these jobs offer work experience and the chance to learn valuable skills, but they are also self-guided learning experiences.

They also offer benefits to the professors involved.

"What we're trying to do is encourage professors to hire students in research in any way possible. That way we're giving students a chance, and we're reducing the workload of the professor," said Surani.

So far this year more than 80 jobs have been funded through the ASEF program, and there are more than 30 other postings waiting to be filled.

Pharmacology professor Guillermina Almazan has had several undergraduate students do research projects in her lab, as part of a credit course. She said she wishes there were more opportunities like this for undergraduates.

"They should -- in science it's very important to get training on the bench," she said.

Almazan said that she finds the students who come to her lab are generally very hard working, and interested in learning how a lab works, although the short-term nature of the classes can sometimes be disruptive.

"It's difficult -- we're working with a very difficult system here. I like to take students for a year, to get them used to the lab," she said.

One who became very used to the lab was Shireen Hossain. Hossain came to Almazan's lab through the undergraduate program, and now plans to do her PhD -- a not uncommon occurrence. She said that the opportunity to see how a lab functions was invaluable to her education.

"It's a good experience, to get outside of the lecture room -- it's important to get hands-on experience and the opportunities to learn the scientific approach," she said.

Next: Kudos
NSERC Undergraduate Student Research Award

What's New

Effective Fall 2003, departments may no longer supply certified copies of McGill transcripts and other Canadian university transcripts for external fellowships competitions (including NSERC USRA).

Instructions for NSERC USRA transcripts:

- Official McGill transcripts must be ordered by students on Minerva by January 22. (see procedure under "Transcripts" below)

- Departments may initiate their review using unofficial advising transcripts, but they must join the official transcript when submitting to their faculty.

- Official transcripts from other Canadian universities must be ordered by the student directly from the other Canadian university as soon as possible.

- Certified copies of transcripts from non-canadian universities can be supplied by the department for these applications. (see special form under "Transcripts" below)

- Students must have cleared any Holds on their record for transcripts to be released.

NSERC USRA awards to be held at McGill University
Students must apply through the university where the research will take place.

- McGill Deadlines:
  Applications must be submitted to departments according to the following deadlines:
  - Agricultural and Environmental Sciences: January 27th, 2004
  - Engineering: January 22nd, 2004
  - Science: Students apply through the potential supervisor's school or department. Each unit has a quota of available awards, and has its own selection process. The deadline for units to submit applications to the Faculty is Monday, February 16th, 2004, so your department's deadline will be earlier.
・ Other Canadian university deadlines: check with university

Guidelines and Forms

・ Link to agency web site: http://www.nserc.ca/, under "For Students and Fellows"
  ○ For Guidelines, click "Undergraduate"
  ○ For Forms, click "Online Services" on top menu bar. Using the online form is strongly encouraged.
  ○ For instructions (including research codes), go to pdf forms and instructions.

・ NSERC USRA Information and McGill Form 2004
  Information for NSERC USRA applications at McGill. Includes a mandatory form.

・ Memorandum to students regarding NSERC USRA at McGill
  [f-nserc-usra-studentmemo-2004.pdf - PDF - 156.2 k]
  Instructions for students applying through McGill

Transcripts

・ Instructions to order transcripts via Minerva
  [f-nserc-usra-transcript-2004.pdf - PDF - 643.8 k]
  Step by step procedure to order transcripts on Minerva for NSERC USRA

・ Foreign Transcript Request Form - NSERC USRA
  To order certified copies, through departments, of transcripts from foreign universities for NSERC USRA 2004

NSERC USRA in Industry

・ Link to agency web site: http://www.nserc.ca/, under "For Students and Fellows"
  ○ For Guidelines, click "Undergraduate"
  ○ For Forms, click "Online Services" on top of the page.
・ The NSERC USRA in Industry program is not administered by the Universities.
・ Students apply through the eligible companies.

Next: FRSP USRA

McGill > Graduate and Postdoctoral Studies > Funding: Fellowships and awards > Undergraduate research awards > NSERC USRA

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2004-01-19

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Phone: 514-398-3990
Fax: 514-398-1626
Email
Unit detail
McGill School of Environment

Undergraduate Research Projects

Students in the Environment program are all required to undertake a research project in their senior year. Most students do this in the ENVR 401 Environmental Research course. This very demanding one-semester course involves group work on a focused project developed with a client in the Montreal area.

Each group produces a written report and gives an oral presentation at the end of the Fall semester. The presentations are open to the McGill community.

In previous years, students designed their own websites as part of their project. Some of these are available on a parallel site. However, projects for 2003-04 and subsequent years are hosted on the following pages of this site.

Next: 2003-04
Andrew Rudczynski

From: Ben Ware [Brware@syr.edu]
Sent: Friday, November 05, 2004 8:52 AM
To: abrud@pobox.upenn.edu
Cc: John Russell
Subject: Re: Undergraduate Research Opportunities

Hi, Andrew.

As you anticipated there is no simple answer to your question because there is such a wide variety of programs for undergraduates at SU. All of these programs include an opportunity for undergraduates to do some sort of practice or research as part of their program. In the Biology Department, it would include an opportunity to work in the laboratory of one of the professors doing some aspect of research in the life sciences. In the Drama Department it means being in a play. In Newhouse, it means developing and publishing new stories.

Undergraduates at SU are not required to do research or write a thesis, but many choose to do so, and we encourage that choice. It certainly enhances the undergraduate experience and it makes for better preparation for work or graduate study.

One formal mechanism of undergraduate research is the Honors Program. All students who go for upper-class honors designation must do some sort of research project and write an honors thesis. These theses are presented and graded in the spring. You can get more information on the web at http://honors.syr.edu/

I hope this helps.

--------------------
Ben Ware
Vice President for Research
Syracuse University
Syracuse, New York 13244
PHO 315-443-2492
FAX 315-443-1889

>>> "Andrew Rudczynski" <abrud@pobox.upenn.edu> 11/5/2004 8:25:58 AM >>>
Dear Dr. Ware:

I am writing as a Syracuse graduate, a member of the Biology Department’s Alumni Advisory Board, and member of a University of Pennsylvania committee charged to survey how research institutions are promoting research opportunities for undergraduates. Because Syracuse promotes itself as a “student centered research institution”, I was wondering if Syracuse has instituted formal undergraduate research opportunities? Is a research experience a requirement for any undergraduate program or honors designation? How do students find out about opportunities for research?

I know that these often are not simply answered questions so if you or others could point me to some sources such as those that might be used by an undergraduate seeking a research opportunity I would appreciate it.

Cordially,

Andrew Rudczynski, Ph.D. '74 (Biology)

11/5/2004
CORNELL UNIVERSITY UNDERGRADUATE

RESEARCH PROGRAMS
From: David DeVries <DD75@cornell.edu>  
Date: Tue May 25, 2004 5:05:08 PM US/Eastern  
To: "James B. Lok" <jlok@vet.upenn.edu>  
Subject: Re: Undergraduate research at Cornell

Dear Professor Lok,

I am sorry to have been so slow in replying. Cornell is regrettably late in getting its students graduated—commencement is this coming weekend—and we are up to our necks in clearing seniors. I appreciate your kind words about our websites, but the truth of the matter is that, at least in the College of Arts and Sciences, things are in a bit of flux. I am approaching the end of my first year in the position of Associate Dean overseeing the large operation of Admissions and Advising for the college and one of the casualties of my much fuller calendar is the Undergraduate Research Program. I have identified a colleague who has agreed for the next year to take over directing the program and I have every confidence that he will reinvigorate it wonderfully.

To your questions. Cornell, as you may know, is a strangely hybrid institution with seven relatively autonomous undergraduate colleges, each of whom does things according to its own lights. Probably the best initial source of information for the over-all university would be the website maintained by the Vice Provost for Research’s office. It contains links to all the undergraduate colleges and to a variety of programs and departments across the campus. Here is the link for that page: http://www.research.cornell.edu/undergrad/.

In our college students most often enter research via two routes. If they are interested in being paid they work with the Work-study office from the Financial Aid office to find postings of for-pay positions in labs or individual faculty projects. These sorts of positions tend to be more menial labor rather than intellectually rewarding work. For the latter, students usually pursue independent studies so that they can receive course credit for the research they do. Nearly 500 students a semester do independent studies in our college. It is an extremely popular route into research in all areas. Biology, Psychology, Sociology, Chemistry, and Government lead the way in numbers of students doing independent studies, with History, English, Physics, Astronomy and a variety of other departments coming not far behind.

I would recommend checking back next year after my colleague, Jim Finlay, has had an opportunity to get himself immersed in the work of reanimating the Undergraduate Research Program in the college.

Sincerely,

David N. DeVries

At 12:08 PM 5/20/04 -0400, you wrote:

Dear Professor DeVries,

I was referred to you and your office by a friend and Cornell faculty member, Dr. Ross
Brann. I am on a University committee charged with reviewing undergraduate research at Penn and the administrative structures in place (or lack of them) to support and facilitate it. We are interested in all fields of undergraduate education, the humanities as well as the natural sciences. If anything, we are particularly interested in the humanities and social sciences since laboratory employment and apprenticeships have tended to provide undergrads with introductions to research, albeit on an ad hoc basis.

Ross indicated that you are a dean in Arts and Sciences and the head of the undergraduate research program. I and Penn's Council Committee on Research would be most grateful for any descriptive materials you could provide about programs and support offered to Cornell undergrads by your office. We are especially interested in mechanisms used to pair students with mentors, assign academic credit to and assess the quality of undergraduate research. Has Cornell dedicated physical facilities for undergraduate research? We would be interested in hearing about that as well.

In short, any information you or members of your office could provide to our committee would be greatly appreciated.

Many thanks to you, Dr. Devries.

Sincerely,

J. Lok

P.S. I just visited your excellent websites, both for Arts and Sciences and for the University. These are extremely helpful. Any additional information you have would be helpful.

--

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Undergraduate Research @ Cornell

Welcome to the website for Undergraduate Research at Cornell. Use this site as a starting point for learning about the diverse opportunities for undergraduate research at Cornell.

- Check out "Undergraduate Research 101" for how to find a project.
- Use the list of Cornell Undergraduate Research Programs to surf programs across campus.
- Get in contact with CURB, the Cornell Undergraduate Research Board, a student organization that fosters undergraduate research. Or, link to stories about undergraduate researchers from colleges/units across campus.
- Begin the search for Funding Opportunities on and off campus.
- Find the answers to your Frequently Asked Questions.

Check This Out

The new edition of "The Research Paper" is online:
http://www.pros.cornell.edu/research/

Undergraduate Research 101

Getting Started
What is undergraduate research, and how do I get started?

Cornell Undergraduate Research Programs

- College and Unit-level Sites
  - College of Agriculture and Life Sciences
  - College of Arts and Sciences
  - College of Engineering
  - College of Human Ecology
  - See also, HERA, the Human Ecology Research Association
  - Division of Nutritional Sciences
  - School of Continuing Education and Summer Sessions
  - School of Industrial and Labor Relations
  - Undergraduate Program in Biology

- See also, Cornell Undergraduate Research Advisors

- Department-level Sites
  - Astronomy and Space Sciences REU
  - Biodiversity Undergraduate Program on
  - Computer Science
  - Materials Science and Engineering
  - Mathematics REU

://www.research.cornell.edu/undergrad/
Physics
Shoals Marine Laboratory
News coverage about Shoals Marine Lab REU

Research Unit Sites
News coverage about Cornell Research Experience for Undergraduates programs

Center for Nanoscale Systems REU
Cornell Center for Materials Research REU
Cornell NanoScale Science and Technology Facility REU
Laboratory of Elementary-Particle Physics REU
Nanobiotechnology Center REU
National Astronomy and Ionosphere Center/Arecibo Observatory REU
Protecting Water Quality REU

Program-level Sites
Career Services
Cornell Abroad
Cornell Presidential Research Scholars
Office of the Vice Provost for Research

Cornell Undergraduate Research Board

CURB is the only student-run organization in the country dedicated to fostering, encouraging, and supporting undergraduate research at a major research university. Each year, CURB sponsors a Fall Open House for students looking to get started in undergraduate research and a Spring Forum with a convocation and poster sessions showcasing student research. http://www.reo.cornell.edu/curb/

For more information

If you would like to include a link to your undergraduate research program, please contact the undergraduate research web coordinator in the Office of the Vice Provost for Research.

http://www.research.cornell.edu/undergrad/index.html
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CALS Undergraduate Research Opportunities

The Big Picture

There is an amazing variety and quantity of research being conducted in the College of Agriculture and Life Sciences. It covers both basic and applied research in agriculture, food and nutrition, life sciences, environmental sciences, and the social and behavioral sciences. Much of this research takes place in laboratories or greenhouses, but much involves work in the "field," under controlled environmental conditions; researchers can also be found collecting information in settings as diverse as food superstores, media organizations, farms, and tropical rain forests. Whatever its type or setting, all research conducted in the College is motivated by its relevance to society. It is designed to lead to the betterment of people's lives, in New York State, the nation, and the world.

CALS undergraduate students are often part of this research, joining teams composed of some combination of faculty members, graduate students, post-doctoral students, and others. In some cases they hold paid positions, in others they participate in honors research, and in still others they take part through credit-bearing courses. In the latter case, 600 or more CALS students enroll in Undergraduate Research 499 and Independent Study 497 each year. The experience can be positive for undergraduates in many ways. It can provide the opportunity to develop stronger ties to faculty members (often a sense of collegiality and sometimes mentoring relationships that last for years); become a valuable part of a research team; integrate research work with course work and career plans; design and conduct their own research projects; and experience the excitement of...
discovery. Additionally, some students have even become co-authors of significant papers published in refereed journals, co-inventors on patent disclosures, and speakers at national conferences.

While the overall picture for the involvement of CALS undergraduates in research activities is very positive, there are some limitations. For example, positions are not always available in a given facility or with a particular professor. Also, it is often necessary for students to work their way into positions, perhaps by taking certain courses or by starting out in a very routine role-performing setup or cleanup in a laboratory, for example. The most exciting positions usually go to the students who are very active in identifying, pursuing, and preparing for them. The following information should help students in that preparation. It focuses on opportunities in the College of Agriculture and Life Sciences and it provides general guidelines and specific computer links that will be helpful to CALS students who want to explore possibilities across campus as well. Whether with individual professors, research centers, or institutes, there are many exciting research possibilities. Students must take the initiative but help is available, as identified below.

\[\]

Research Honors Program

The Research Honors Program provides students with a special opportunity to work with a faculty mentor to experience the research process. Successful completion of this program requires a thesis written in the style of a master's thesis or professional journal in that area of Research. Original research often is published in a professional journal. Each year, CALS Research Honors Abstracts will be published as a compilation of abstracts of the honors theses.

The Bachelor of Science degree with "distinction in research" will be conferred upon those students who, in addition to having completed the requirements for the degree of Bachelor of Science, have satisfactorily completed the honors program in their area of major interest and have been recommended for the degree by the honors committee of that area. For more details, consult the CALS Research Honors Program web site.
Credit? Pay? Volunteer?

Undergraduates who become involved in faculty research sometimes receive academic credit for their involvement and learning, sometimes receive pay, and occasionally volunteer their time. What you do should be determined by your personal needs and interests as well as by the preferences and needs of those in the research setting. Following is some basic information on each of the potential options.

Credit
Courses are offered in each CALS academic department that provide an academic framework for undergraduate research. Typically, the department’s 499 course is reserved for undergraduate research and the 497 course for individual study. Students should consult with Courses of Study and their faculty advisors to explore this option. Research for credit usually lasts one or two semesters. The number of credits is assigned by the involved faculty member.

Pay
Many research positions are paid. Recent data show that 16 percent of working Cornell students are employed in a research-type position. While the student who is eligible for work/study funding is certainly at an advantage, paid positions that don’t require such eligibility also exist. The Office of Financial Aid and Student Employment can provide additional information.

Volunteer
A student volunteer would receive neither pay or credit. However, a volunteer position can enable a student to "get a foot in the door." Students, especially underclassmen, must sometimes work their way into an appealing research setting or project or need to develop basic skills that will enable them to become more qualified for the research work they want to do. Volunteering can also be a great way for a student to demonstrate enthusiasm for the research work of a professor.

Exploring Possibilities

All interested CALS students can search out research opportunities and identify research efforts that they find intriguing, studies they would love to participate in, and professors whose work they admire. But, it does take some serious detective work! Here are some
suggestions:

- By reading the course descriptions provided by each CALS department and the departments outside the College, you will be able to get a feel for subject matter that catches your interest. Note who teaches the course(s) that you find most appealing.

- Check the web page for the department of your major and for others that interest you. While they vary in format, most will provide very helpful information about faculty research. Many include a statement of faculty research interests, current research projects, and a list of recent publications.

- Read articles written by the professors whose research appeals to you. This can both help you to determine which professors you want to meet with and prepare you to make a good impression on the professors.

- Talk to your advisor. He or she will be an especially good source of information regarding the research being conducted in your department and, perhaps, in other departments and units as well. Your advisor can often steer you toward the people whose research work matches your interests or make you aware of possibilities you have never considered.

- Attend symposia and seminars that focus on research projects that really interest you. Notices of such events are commonly posted on bulletin boards in the various departments.

- Take full advantage of the Explorations Program, which is offered as part of the lecture course in two large introductory biology courses: BioSci 101-102 and BioSci 105-106. Students select an "exploration" from a wide range of options, each offered by faculty in Biological Sciences and related departments. The explorations provide hands-on experience in laboratory and field research sites and are designed to give students a glimpse of what excites the faculty member.

If you're especially interested in biological research, visit the Biology Center in 216 Stimson Hall. Ask to see the notebooks containing faculty research
statements and the different possibilities for student involvement. Also included is information on the best way to set up an appointment, kinds of research activities available, and possibilities for summer research. Among other helpful resources at the center is the notebook of comments from undergraduates who have done or are doing research.

Conferring with Faculty

After you have completed some of the exploration activities described above, you should be ready to schedule a meeting with one or more faculty members. The main purpose of this meeting could vary according to your situation. If you are certain, based on information you have gathered, that you really want to be involved in a particular professor’s research, the main purpose of your meeting will be to make a great impression—to convince the professor to make you part of his or her team. If, however, you are still in the process of exploring the possibilities, the main purpose of your meeting will be to gather information. In the latter case, the information you seek may relate to the research the person is conducting, the possibilities for undergraduate involvement, the likelihood of an opening occurring in the near future, the requirements for the position, etc.

Whatever your situation, make the purpose of your meeting clear at the time you arrange an appointment and do so according to the professor’s preference. Some people may want you to contact a support staff person to set a day and time, others may prefer you use e-mail, and still others may suggest you stop by during their office hours. However, don’t be reluctant to approach faculty; most enjoy having undergraduates involved in their research work! Courtesy and polite persistence are key to success. Here are some additional suggestions to help you have a productive meeting:

- Bring a good resume with you when you meet with the professor. The CALS Career Development Office, 177 Roberts Hall, can help you with this. A well-written resume will help you to convey your strengths and help you to make a good impression.

- Be realistic in your expectations of the role you might play or when you might play it. It may be that you have to start by performing data entry
before working your way into a more challenging role. It may also be that you need to complete certain course work or gain specific background knowledge before you can be considered for the team.

- Remember that it's OK to "shop around." If that's what you're doing, tell the professor so. Don't give the impression that you would take a position if one were offered unless you really would. If you're offered a position but aren't ready to decide, ask when you need to reply. A direct, courteous approach will be appreciated.

- Expect some dead ends and disappointments. It is unlikely that you will be able to get involved in whatever research you want, whenever you want. But if you keep asking for referrals and doing your detective work, the odds are good that you'll make a nice connection.

- Don't necessarily expect to work directly with the faculty member. You may instead work with others in the research setting, especially graduate and postdoctoral students. The main goal should be to get involved with research that excites you and with people you enjoy.

- Ask to meet with the person who will supervise your research work. It's important that you can relate comfortably to this person and that you know the criteria upon which you will be evaluated.

- If the research is laboratory based, check out the lab ahead of time. Talk to student workers there. Try to determine if you would enjoy doing this kind of research in this setting with these people. You might also ask about the professor's style in overseeing the work of those on his or her team.

- "Remember that not all research takes place in laboratories. You may also want to consider field-based or social science research.

Undergraduate Funding Opportunities

While there is a variety of funding possibilities for undergraduates, they can be difficult to locate, given the complexity of Cornell. The list of sources and ideas below encompasses offices and information from across the university. It is comprehensive, but by no means exhaustive.
Fellowships*
Fellowships are endowments used to provide financial support to individuals pursuing advanced study or training. They can be for schooling, travel to certain countries, or projects within a given organization or group. See the Cornell University Fellowships Program for more information.

Financial Aid Office
This office has a plethora of outside scholarships and grants usually used for tuition purposes. They are available on a computer database (The College Fund Finder) in the lobby. Additional opportunities are posted on bulletin boards in 203 Day Hall.

CALS Research Funding
Several funding opportunities are available through the College. Access the web site for details, including proposal development and deadlines.

Research Honors Program
For undergraduates doing original research while at Cornell, the Research Honors Program will supply eligible students with up to $350. Students must have a minimum GPA of 3.0 and an identified area of interest. Contact Don Viands in 155 Roberts Hall.

Hughes Undergraduate Research Opportunity
This is open to sophomores and juniors who are conducting biological science research on campus during the summer. Participants receive $2,500 and are expected to continue their research during the following academic year. The junior deadline falls in late January and the sophomore deadline in late February. Contact Laurel Southard in 216 Stimson Hall.

Libraries*
Olin Library provides a whole section on grants and scholarships. It is extensive and helpful. Contact the reference desk librarian. Mann Library reference can also help. In the "L" section there are some great resources such as: Free Money for College from the Government, and Foundation Grants for Individuals.

Minority Research
Research funding is available to underrepresented minority students in CALS for the academic year and summer to encourage faculty-student relationships. Average funding is $500. Contact Don Viands in 140 Roberts Hall for an application or print it from the web.
Office of Academic Programs*
This office lists graduate and undergraduate research grants available to Cornell students. The web site provides details of funding eligibility, and proposal deadlines. Contact Don Viands at 607-255-3081 if you need more information.

Sigma Xi, The Scientific Research Society*
This society provides grants to undergraduate and graduate research projects in any field. It offers general research funding, especially travel and equipment expenses. You can apply to both the Cornell chapter and the national headquarters for funding.

Student Employment Office
This office subsidizes wages for students with work-study during the academic year and during the summer. The "Develop Your Own Internship Program" provides summer subsidy for students with work-study. "Students Helping Students" provides summer wage subsidy for nonwork-study students. Funding is available until money runs out, so apply early. Call 607-255-9051 for more information; or visit the office in 203 Day Hall.

Networking will be your best tool. No single source, including this one, will identify all the possible options. People are the best source. Contact as many individuals in as many different environments as possible. Ask for ideas and leads and pursue each one. The CALS Career Development Office can provide you with helpful information sheets on the networking process. You may also want to check their list of Faculty and Staff Career Representatives. These are people in the academic departments of the College who serve as official liaisons with the Career Development Office. They can be a great starting point for your networking.

*These offices and programs include graduate study and research. Also check the Graduate School Fellowships and Financial Aid Office in 155 Caldwell Hall.

Other Related Web Sites

- Cornell University Undergraduate Research
- Cornell Undergraduate Research Board
• Cornell Presidential Research Scholars

We advise students to work with faculty members to develop their proposals.
Undergraduate Research Program
The College of Arts and Sciences has long encouraged its students to gain first-hand experience in research, or whatever form discovery takes in the discipline that interests them. In 1976 this program was established to help faculty and students with similar interests to connect, so that the students might become scholar-apprentices in faculty research projects. Besides learning research methods that are appropriate to the discipline, students gain awareness of their own research interests and abilities, self-discipline, new insight into the subject matter, and the pleasure of working with professors and other students who share a common interest. At present about 400 undergraduates engage in such projects for course credit each term. Others work as paid assistants in research projects, and many engage in research in the summer, either here or elsewhere.

Emily Alisa Posner
Major: Communications

What phenomena are you naturally curious about? What issues do you wish there were more answers to? At Cornell each student has the chance to partake in cutting edge research at the university level...That is one of the reasons I was first attracted to Cornell. The opportunity to work with inventors, philosophers, and revolutionaries who change the world, from sites right here on campus, is something I appreciate each day...Opportunities here are endless, and a research experience at Cornell will only create more opportunities later!

Elizabeth Vassallo
Major: Biology

Before this semester, the only laboratory experiences I’d ever had were those I’d gained in a classroom setting. As a first semester sophomore, I realized that although I enjoyed lab courses, I wanted to be doing my own research on a topic that would interest me. I never realized how friendly or helpful the professors here could be until I met the professor with whom I currently work. I had always been too nervous to approach professors with ideas for research, but once I finally made that first step, the rest came naturally. Since then, I have come to realize that the majority of the faculty members here are eager to help students to gain experiences outside of the classroom.

Gabrielle Bloom
Major: Biology

I am a junior biology major in the college of Arts and Sciences. I began doing independent research in the spring of my sophomore year. My project deals with the occurrence of lactose intolerance in the worldwide population. One widely supported hypothesis that explains the distribution of lactose intolerance points to the selective pressures that have arisen due to dairying practices adopted by many populations in the relatively recent history. Through investigation into previous research and data on lactose intolerance and other potentially relevant factors I am testing my own hypothesis, which places more of a prophylactic significance on the inability to digest lactose.

Getting involved in this project couldn’t have been easier. I approached a professor after a particularly captivating lecture and questioned him about the type of research involved in what he was calling “Darwinian medicine”. He then sent me away to think about other questions that could possibly be answered through this method of research. When I came back to him with the idea of challenging the current ideas regarding lactose
intolerance he met me with enthusiasm and we have been working together ever since.

Questions or comments about the content or format of this website?
Please email David DeVries, Director, at dd75@cornell.edu

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