**Research**

As one of the world’s leading research universities, Penn has a broad array of faculty conducting cutting-edge research in all disciplines. There are many routes into research involvement for undergraduates, including research-intensive courses, independent study with a faculty member, and summer programs of varying types and foci.

The Center for Undergraduate Research and Fellowships (https://www.curf.upenn.edu/research/) is a resource for undergraduates in all traditional programs who are interested in getting involved in research opportunities around campus and around the world. CURF helps Penn undergraduates become involved in research by helping you identify resources, narrow your search, and shape your initial inquiries so you can find appropriate faculty mentors and research funding.

- Penn Undergraduate Research Mentoring Program (https://www.curf.upenn.edu/content/penn-undergraduate-research-mentoring-program)
- Research Opportunity Directory (https://www.curf.upenn.edu/research-opportunity-directory)
- Research Grants (https://www.curf.upenn.edu/research-grants)
- Summer Humanities Research Internships (https://www.curf.upenn.edu/summer-humanities-internships)

**College of Arts and Sciences**

Research reinforces and instills mastery of academic skills: how to formulate a question or hypothesis, how to gather evidence, and how to answer that question or test that hypothesis.

One of the major advantages of being an undergraduate at a research university is the wide variety of opportunities available for scholarship. Research in the College encompasses a range of activities. In some disciplines, such as English, philosophy and history, students read original works, or the primary literature, and look for new connections and interpretations of these writings. In areas such as anthropology or history of art, students study artifacts, works of art or ancient languages, gaining insights on earlier civilizations and the lives of those who contributed to them. Some students do research in biology, chemistry or psychology, seeking insights on genetic coding, molecular structure or animal behaviors.

Sometimes, students may receive College credit for research activities and scholarship, or receive work-study funds or stipends from faculty grants.

For more information, visit: https://www.college.upenn.edu/research/.

**School of Engineering and Applied Science**

Our extraordinary faculty-to-student ratio provides great opportunities for undergraduate students to work in state-of-the-art research laboratories during the academic year and in the summer. Below are examples of student research, along with helpful information to guide undergraduates toward finding research positions at Penn Engineering.

For more information, visit: http://www.seas.upenn.edu/undergraduate-research/index.php.

**Finding a Research Mentor and Research Experiences**

Students are encouraged to explore the Penn Engineering Faculty Expertise Directory (http://www.seas.upenn.edu/directory/departments.php), featuring the School's standing faculty and is searchable by department, research center affiliation, and research expertise keyword. Users can identify which faculty are conducting research in a specific area and contact faculty members whose research interests them.

The Engineering Dean’s Advisory Board (EDAB) puts together a guide for fellow students that gives step-by-step instructions and tips on how to secure research positions as an undergraduate.

For Bioengineering majors, the Penn student chapter of the Biomedical Engineering Society (BMES) has assembled its own student guide on starting up research.

**Summer Undergraduate Research in Engineering (SURE)**

Penn Engineering’s world-acclaimed faculty, along with state-of-the-art research laboratories and highly interdisciplinary curricula, offers summer research opportunities for talented undergraduates who seek hands-on research experience. From robotics and computer animation, nanotechnology, genomics and biotechnology, Penn’s centers and institutes are at the forefront of research on multiple scientific and technological frontiers.

**International Summer Undergraduate Research in Engineering (iSURE)**

Opportunities for undergraduates are available during the summer to spend eight to 12 weeks on a research internship in one of Penn Engineering’s partner institutions abroad.

**Littlejohn Undergraduate Research Program**

Thanks to a generous gift by Angus Littlejohn, the School of Engineering is able to offer Summer Research Opportunities to Penn Engineering Students. The program is open to rising, sophomores, juniors and seniors.

The program intends to provide students the opportunity to get involved in hands-on engineering research under the supervision of a faculty member. Topics of research include all areas covered by the departments in the School of Engineering and Applied Science. Students will receive a stipend of $4,500 for a 10 week period.

**Rachleff Scholars Program**

This program offers Penn Engineering undergraduates the opportunity to gain valuable research experiences with standing faculty and to participate in a community of peers who share a common interest in research and scholarly inquiry.

**School of Nursing**

The Office of Nursing Research (http://nursing.livewhale.net/research/onr), along with our four research centers (http://nursing.livewhale.net/research/research-centers) and partnerships across Penn, provide students with resources and support that are virtually unparalleled in our field. Students, from undergraduates to doctoral students, have numerous opportunities to engage in research and work alongside some of the most recognized researchers in their fields.

For more information, visit: https://www.nursing.upenn.edu/research/.
The Wharton School

Research provides an individualized method of learning and an in-depth treatment of a topic of personal interest with input from a faculty expert. Research experience is helpful if applying for distinguished international fellowships and is important if going on to graduate studies in an analytical discipline. Research skills are useful for decision-making in the private and public sectors and are required in academic positions. Below you can find a variety of research opportunities and scholarship programs.

- Courses (https://undergrad-inside.wharton.upenn.edu/research/courses)—Create “tools” in a research-methods course.
- Research assistantships (https://undergrad-inside.wharton.upenn.edu/research/assistantships)—Learn by executing research-related tasks while working on a project for a faculty member.
- Summer programs (https://undergrad-inside.wharton.upenn.edu/research/summer-programs)—Gain hands-on experience from proposal to presentation through a project commensurate with program duration.
- Scholars programs (https://undergrad-inside.wharton.upenn.edu/scholars-programs)—Gain hands-on, in-depth experience from proposal to presentation via a senior thesis and other activities.
- Wharton PhD Submatriculation Program (http://doctoral-inside.wharton.upenn.edu/submatriculation)—Submatriculate into a PhD program in Accounting, Finance, Health Care Systems, Insurance and Risk Management, Management, Marketing, Operations and Information Management, Business and Public Policy, or Statistics.
- www.upenn.edu/almanac/v44/n34/orresguide.html

For more information, visit: https://undergrad-inside.wharton.upenn.edu/research/.

Guidelines for Research in the Community

A significant number of Penn faculty and students are engaged in research that involves the study of the Philadelphia community, and, in particular, West Philadelphia, or that involves community members as research subjects. As in all research conducted under the auspices of the University, such research should adhere to the appropriate protocols for the protection of human subjects and must be approved by the University’s Institutional Review Board.

Although the Institutional Review Board does an excellent job of protecting individual subjects, community-based research raises additional questions about research protocols and approaches. The populations studied are often Penn’s neighbors, and as such, the approaches undertaken should reflect the importance of that relationship to Penn, and the values of mutual respect and trust that should guide all of our collaborative activities with the community. The University also recognizes that mutual respect and trust are necessary preconditions for the honest and open exchange of ideas that is essential to genuine learning and the advancement of academic inquiry.

The University views its relationship with the Philadelphia community as a partnership. Accordingly, and to the extent possible, Penn faculty and students should engage the community in helping to plan research projects. Also, the findings should be shared with the community so that all parties can benefit.

1. As in all research involving human subjects, undertaken under University auspices, research in the community must be approved by the Institutional review Board, and meet all of the required protections of human subjects.
2. Whenever possible, researchers investigating community issues should work with community-based organizations to discuss all aspects of the research process, including problem definition, hypothesis generation, study design, data analysis, and dissemination.
3. Whenever possible, researchers should have a dissemination plan that includes distribution or presentation of results to community members and organizations, particularly those who participated in the research.
4. Researchers should determine if other projects are underway in a community, and whenever possible, coordinate efforts with other research projects to minimize disruption and maximize positive impacts on community members and organizations.
5. In the spirit of mutual learning and benefit, researchers should consider how study results could be used to the benefit of the community whenever possible, and should make extra efforts to communicate those recommendations to appropriate community members.

(Source: Almanac, May 19/26, 1998, Volume 44, No. 34 (http://www.upenn.edu/almanac/v44/n34/orresguide.html))

Guidelines for Student Protection in Sponsored Research Projects

Participation in sponsored research may be an important part of a student’s undergraduate or graduate education, as well as an important source of his or her financial support. The University recognizes that the student must be protected in cases where the terms of the research project conflict with the student’s academic progress, and affirms that the student has the right to reject such funding if he or she chooses to do so. The University recognizes the sensitivity of these issues, since they pertain directly to the relationship of personal trust which exists between a student and his or her faculty sponsor; they are also fundamental to the development of the student’s intellectual and moral integrity. Therefore, the University adopts the following policy:

1. The University recognizes the central role of sponsored research in fostering educational opportunities for students at all levels and in every discipline and encourages the involvement of students in research projects. On rare occasions, the terms of a research agreement may contain limitations which may inhibit the participation of students, such as delays in publication of results which might conflict with a student’s academic schedule. In such cases, the University requires that careful consideration be given to the appropriateness of student participation and that the Faculty Sponsor or Principal Investigator assures in advance that students are fully aware of any such restrictions.
2. The University affirms the student’s right to know the source(s) of financial support for his or her educational and living expenses, individual research projects, or the research activities of a faculty sponsor in which the student is involved and from which the student obtains financial support. It is the responsibility of the faculty sponsor to make this information known to the student.
3. Should a student choose to reject financial assistance, the University affirms and upholds the student’s right to do so.
Policy on Undergraduate Students, High School Students and Non-affiliates Participating in Research in Penn Research Facilities

For the purpose of this policy, non-affiliates are individuals who are not University of Pennsylvania faculty, staff, graduate students or post-doctoral trainees. The Principal Investigator is responsible for assuring that all students and non-affiliates working in his/her laboratory are appropriately trained, supervised and comply with the requirements of this policy. At a minimum this training must include Profiler and all training determined by Profiler such as EHRS, HIPAA, IACUC, etc.

- Students who are not yet in High School are not permitted to participate in laboratory activities.
- Non-affiliates may not serve in laboratories as unpaid volunteers or trainees without University approval.

This policy applies to the three categories listed below.

A. High School Students (HSS): HSS are permitted to participate in laboratories at Penn provided that all of the following conditions are met and none of the prohibitions set forth in item (7) are violated.

1. All programs for HSS must comply with the requirements described in the Vice Provost for University Life current year’s “Special Summer Programs Protocols.”
2. Each HSS must have a Principal Investigator or Sponsor who agrees to supervise and be responsible for the HSS while the student is present in the laboratory. The HSS must be appropriately supervised at all times when in the laboratory.
3. HSS may not be employed in laboratories nor perform the duties and responsibilities of an employee. (HSS participating as trainees in officially sanctioned and approved programs may receive a stipend in connection with the program.)
4. A Consent/Signature sheet must be submitted to the Principal Investigator/Sponsor with signatures from the HSS and his/her parents.
5. The Principal Investigator/Sponsor must provide the HSS with hazard specific information and appropriate personal protective equipment and instruct the student in its use and disposal.
6. Each HSS must attend Laboratory Safety training provided by EHRS before the laboratory activity begins. If a student is working in a lab where radioactive materials are used, Radiation Safety Training is also required.
7. HSS are not permitted to participate in the following activities in laboratories:
   i. Work with recombinant or synthetic DNA (EHRS r-s-DNA online training)
   ii. Limited work with radioactive materials is permitted. Work must be performed under the supervision and in the physical presence of a trained radiation worker. Only H-3, C-13, P-32 and S-35 in amounts less than 100 uCi may be used.
   iii. HSS who will work with live animals must be associated with a specific ARIES animal research protocol, have their qualifications or training described and the specific procedures that they will be performing/assisting identified. Prior to working with animals, HSS must complete all necessary IACUC-related training associated with the HSS’ role on the protocol.
   iv. HSS who will work with non-human primates or tissue/body fluids from non-human primate must complete specialized IACUC-related training in addition to standard training for other species.

B. Undergraduates (UG): UG from Penn or from other institutions are permitted to participate in laboratories at Penn provided that all of the following conditions are met and none of the prohibitions set forth in item (4) are violated.

1. Each UG must have a Principal Investigator/Sponsor who agrees to supervise and be responsible for the UG while the student is present in the laboratory.
2. The Principal Investigator/Sponsor must provide the UG with hazard specific information and appropriate personal protective equipment and instruct the student in its use and disposal.
3. Each UG must attend Laboratory Safety training provided by EHRS before the laboratory activity begins. If a student is working in a lab where radioactive materials are used, Radiation Safety Training is also required.
4. UGs are not permitted to participate in the following activities in laboratories:
   i. Any laboratory or facility designated as BSL-3
   ii. Any laboratory or facility in which Select Agents or Explosives (as defined in OSHA Hazard Communication Standard Appendix B) are used or stored.
5. UGs are permitted to participate in the following activities in laboratories after completing specialized training:
   i. Work with recombinant DNA
   ii. Operate farm machinery
   iii. Work in machine shops
   iv. Work with radioactive material if over age 18. Undergraduate students under the age of 18 must follow the same restrictions as High School Students for this component.
6. UGs who will work with live animals must be associated with a specific ARIES animal research protocol, have their qualifications or training described and the specific procedures that they will be performing/assisting identified. Prior to working with animals, UGs must complete all necessary IACUC-related training associated with the UGs’ role on the protocol.
7. UGs who will work with non-human primates or tissue/body fluids from non-human primate must complete specialized IACUC-related training in addition to standard training for other species.

C. Non-Affiliates (NA) with undergraduate degrees: Post graduates including visiting scholars and trainees (not Penn faculty, staff or students)
1. NA must have a Principal Investigator/Sponsor who agrees to supervise the NA while he/she is present in the laboratory.

2. The Principal Investigator/Sponsor must provide the NA with hazard specific information and appropriate personal protective equipment and instruct the NA in its use and disposal.

3. Each NA must affirm that he/she completed a Laboratory Safety course at his/her home institution or complete relevant Laboratory Safety training offered by EHRS before the laboratory activity begins.

4. A NA is permitted to participate in the following activities after completing specialized training:
   i. A laboratory or facility designated as BSL-3 or ABSL-3
   ii. A laboratory or facility in which Select Agents (DHHS Security Risk Assessment Approval required) or Explosives are used or stored.
   iii. Work with recombinant DNA
   iv. Work with radioactive materials
   v. Operate farm machinery
   vi. Work in machine shops.

5. NAs who will work with live animals must be associated with a specific ARIES animal research protocol, have their qualifications or training described and the specific procedures that they will be performing/assisting identified. Prior to working with animals, NAs must complete all necessary IACUC-related training associated with the NAs’ role on the protocol.

6. Work with non-human primates or tissues/body fluids from non-human primates requires specialized IACUC-related training in addition to standard training for other species.

(Source: Almanac, April 22, 2014, Volume 60, No. 31 (http://www.upenn.edu/almanac/volumes/v60/n31/ofrecord.html))