**National Science Foundation Research in Undergraduate Institutions Impact Statements**The [Research in Undergraduate Institutions (RUI) funding mechanism](https://www.nsf.gov/pubs/2014/nsf14579/nsf14579.htm) supports primarily undergraduate institution (PUI) faculty research that engages them in their professional field(s), builds capacity for research at their home institution, and supports the integration of research and undergraduate education.

All RUI Grant applicants are required to provide a RUI Impact Statement ***up to 5 pages in length*** uploaded into the Supplementary Documents section of the Fastlane proposal. The RUI Impact Statement is intended to inform reviewers about the potential impact of the proposed research activity on the PI’s institution and department, and on the faculty and student participants. RUI proposals are evaluated competitively alongside other proposals submitted to a given program, and special RUI reviewer instructions, which call attention to the RUI Impact Statement and the special circumstances under which RUI investigators work, are supplied to reviewers.

This Impact statement must include

1. ***Information helpful for assessing the likely impact of the proposed research on:***

* ***the research environment at Wellesley***
* ***your career (and those of other faculty participants)***
* ***your department’s ability to prepare students to enter advanced-degree programs and careers in science and engineering; “*An enhanced departmental environment may be reflected in direct student training in research and in increased involvement of the faculty in competitive research. These factors, in turn, may lead to improved student preparation, curricular impact and faculty development.*”***

1. ***A brief description highlighting:***

* ***Wellesley’s record and your department’s record in educating undergraduates for science and engineering careers***
* ***your plans to attract qualified undergraduate students to the project, including selection criteria; provisions to increase participation by groups underrepresented in science and engineering; NSF defines underrepresented groups as “women, persons with disabilities, African Americans, Hispanic Americans, Native Americans, Alaska Natives, and Native Hawaiians and other Pacific Islanders”***
* ***any plans for measuring the effect of project participation on the participating students, both during and after students’ undergraduate years***
* ***(if applicable) anticipated contribution of any new research tools (instrumentation, databases, etc.) to both the education and research opportunities for students and faculty***

This Impact statement may include

* ***information about factors affecting research productivity, such as teaching loads, availability (or lack) of support personnel, nature of experimental and computational facilities, and features of the student population***
* ***a brief description of institutional support for student and faculty research activity and the effects of that support on the proposed project***

***Model Impact Statement***

The bracketed sections include instructions and sample language that you may adapt with your individual or department information.

***\*\*\*If you copy any portion of this statement verbatim into your grant, add:*** *”Some sections of this Impact Statement are adapted from institutional language provided by Wellesley College.”* ***at the bottom, to cover plagiarism concerns*.\*\*\***

**RUI Impact Statement**

***Institutional Environment***Wellesley College is a highly selective, private liberal arts college devoted to the undergraduate education of women. The current enrollment is approximately 2,350, including nearly 120 continuing education (non-traditional age) students. [For SBS proposals: *The largest major at Wellesley is economics, with 15% of degrees conferred in this major in 2015. OR In 2015, 46% of graduating seniors majored or double-majored in a social science.* For STEM proposals: *In 2015, 29% of graduating seniors majored or double-majored in a natural science.*] Wellesley is listed among the top ten colleges for diversity among liberal arts colleges by U.S. News & World Report. Overall, 45% of students identify as minorities, and 12% are international students. Five percent of full-time students identify themselves as African American, 1% as Native American, 21% as Asian American, 12% as Latina, and 6% as multi-racial. [For SBS proposals: *In 2015, of graduating seniors majoring in social and behavioral sciences, 21% were underrepresented minority students.* For STEM proposals: *In 2015, of graduating seniors majoring in STEM, 11% were underrepresented minority students.*] First-generation college students make up 12% of the student body. Students come from a wide variety of economic backgrounds, which is heavily supported by the College's need-blind admissions policy. In 2015, 63% of students enrolled in the College received financial aid [for SBS proposals: *and 17% of graduating seniors majoring in social and behavioral sciences were low-income students.* for STEM proposals: *and 17% of graduating seniors majoring in STEM were low-income students*].   
  
***Research Environment***Wellesley College is committed to providing abundant support for faculty and student research. In 1998, NSF recognized Wellesley’s success in building and supporting an effective research community in the sciences with one of ten awards given nationally to undergraduate institutions for the integration of research and education (AIRE).   
  
Wellesley houses exceptional facilities for research and teaching in its integrated 277,000 square foot Science Center. The Science Center was built in 1977 and has undergone major additions and renovations in 1991 and 2008, and as a priority of the current capital campaign for campus renewal, Wellesley has begun a renovation of this facility that is expected to cost over $150 million in the next four years. The building houses the natural and physical sciences, computer science, mathematics, psychology, and cognitive and linguistic sciences departments, as well as the laboratory infrastructure to support research in these fields. By design, all science departments are co-located in one building with many collaborative spaces to encourage faculty and students to collaborate across disciplines and share resources.   
  
***Student Research***  
Among Wellesley’s greatest strengths is the clear vision and central commitment of faculty to mentoring students. Wellesley has a long tradition of engaging students in course-related laboratory work and collaborative research with faculty, encouraging students to discover principles for themselves, start research as early as possible, and perform hands-on experiments.

Every summer, the Science Center offers Summer Research Awards to students interested in spending their summer doing scientific research at Wellesley. Students do not have to be science majors to participate—the program is open to all students with an interest in scientific research. Students are given a list of available projects and apply to work alongside a faculty supervisor. Students must participate for the full 9-week program, including preparation of an abstract and poster for the summer research poster session. The College provides participants with an allowance for housing, subsistence, and transportation while they participate in the program.   
  
During the academic year, the College supports the Sophomore Early Research Program by providing 14 stipends of $2,000 each to sophomore students to carry out collaborative research projects with natural science and social science faculty mentors. The program also includes career seminars, workshops on how to succeed in science courses, and presentations by students to their peers.   
  
A number of recent innovations and interdisciplinary connections have expanded collaborative and mentoring relationships. These activities include:

1. The Annual Ruhlman Conference: This conference is a College-wide forum for presentation and celebration of student work in all fields. Classes are canceled for the day so that faculty, staff, and students can attend the talks, posters, panel discussions, and performances. A major focus of the event is interdisciplinary work.
2. First-Year/Sophomore Mentoring Program: To encourage more students from underrepresented groups to pursue scientific careers, Wellesley initiated a minority-mentoring program with funding from the Howard Hughes Medical Institute, GTE, and Wellesley College. The program has now been extended to also admit other disadvantaged students. In addition to research in a faculty laboratory, the program also includes regular study sessions and tutoring, career seminars, workshops on study skills, travel to local conferences, and oral and poster presentations.
3. The Annual Tanner Conference: The Tanner conference explores the learning that occurs through internships, service learning experiences, student teaching, international study, winter session programs, experiential learning in courses, independent study, and research conducted away from Wellesley. Classes are cancelled for the day for this College-wide forum.

Wellesley’s ten-year reaccreditation visiting committee report specifically noted that, “An area in which Wellesley faculty, especially in the natural sciences, have excelled is in establishing research partnerships with students. It has become the norm at Wellesley for science faculty to do research in collaboration with students, both during the summer and during the academic year ...Long a leader among ‘research colleges’ in the sciences, Wellesley is now extending this model into other areas...”

***Faculty Research***

The College invests significantly in the success of early-career faculty research projects. The start-up package at Wellesley consists of laboratory space dedicated to the PI’s research, access to shared laboratory spaces and major equipment as well as generous start-up funds. All faculty are entitled to $2,500 per year for travel to professional conferences, and an additional $3,000 per year (“Faculty Award”) may be competitively awarded for equipment, travel to maintain collaborations, or conference attendance. The dedication of Wellesley College to early-career faculty is evident in its policy for re-appointment and tenure, which includes a full year of pre-tenure leave for research with no teaching or service obligations: after six semesters of teaching (three academic years) and a positive review in the spring of the third year, the fourth year is an ‘Early Leave’ year (research sabbatical).   
  
In addition to the talented and motivated early-career faculty, Wellesley is home to world-class senior faculty in STEM departments with well-established research programs. Senior faculty dedicate time to the College’s formalized mentorship programs in place to support early-career faculty. Senior faculty offer substantial and clear advice in areas such as grant writing, expectations for undergraduate research students, and how to effectively grow a new laboratory. Because of Wellesley’s emphasis on research as an important aspect of faculty careers, all faculty benefit from a 2-2 teaching load which allows ample time for research and a very generous sabbatical policy (one semester every three years or a full year every six years). Full salary support is available during research sabbaticals (including the Early Leave year) with the condition that the individual applying for leave has made a strenuous effort to obtain external grant support.

In addition to the resources described above, the College competitively awards small grants of up to $5,000 to support faculty research expenses for which external grants are not readily available. The overall aim is to support both new research avenues and to enable good, campus-based research that may not rise to the scope required for extramural support.  
  
***Impact on the Career of the PI(s)*** Funding for this project would make it possible to[complete this section with specific information regarding how this proposal will allow you to improve your research (e.g. a bigger scale project) and how it will support your career development. Describe any past grant involvement and how this has aided in your career development; focus on NSF-funded grants or other grants that relate to this RUI proposal. Also describe any special arrangements with Wellesley that will facilitate your work on this grant].

[Complete this section by describing how the teaching load at Wellesley affects (if it indeed does) your research productivity. Include examples of your research or curricular successes despite any difficulties. Be sure to include how the students at Wellesley have aided you in your endeavors. Also address any other factors that affect your productivity, such as support personnel, available facilities, and features of the student population.]

***[Your Department] at Wellesley College***The primary mission of the [Your Department] is to sustain and nurture the academic interests of our students, and to encourage some to seek advanced training at graduate and professional levels. We expose all our students to the most exciting aspects of [your field] in their introductory courses and provide them with opportunities to experience the rewards and frustrations of research first-hand. This approach is flexible, designed for students bound for graduate school in [your field] and for those seeking careers in [relevant or common career paths in your field] and other areas where knowledge of basic facts and theories in [your field] and the ability to interpret critically this knowledge are valuable skills. [Then include a sentence or two describing numbers of department grads choosing relevant career paths and recent post-graduate awards.]

[Finish this section by discussing specific departmental information (like faculty numbers), equipment, effect of research on curricular development, specific examples of outstanding students involved in research, special departmental funding, or other unique attributes of your department that will help stimulate student interest in your field or help support your proposal.]

[Sample from Chris Arumainayagam:

*The Chemistry Department has its own traditions of strength in teaching and research going back 125 years. Members of the department have garnered many of the College’s teaching awards as well as external awards related to teaching. The research of faculty members in the Chemistry Department has appeared in numerous publications and presentations at regional, national, and international meetings, and has led to major research grants and invitations to speak at other institutions. Undergraduate students, especially those doing research during the summer, have co-authored most of the presentations and papers that come out of this department.*

*The goal of the Chemistry Department’s summer research program, of which I was the director for the past eight years, is to encourage bright young women to pursue research careers in science and medicine through their participation in a research project as early as possible in their academic careers. The key components of the program are a student research project supervised by a Chemistry Department faculty member; weekly meetings in which students give oral presentations of their work; weekly seminars by visiting scientists; field trips to nearby industrial and academic research labs; career and graduate school panels; skills workshops in public speaking, scientific writing, and poster presentations; and a campus-wide poster session at the end of the program. In addition, our summer program builds on and expands interdisciplinary connections between Chemistry and other departments such as Physics and Biological Sciences.*]  
  
***Educating Undergraduates for Science and Engineering Careers***Wellesley College has a long-standing commitment to excellence in research and to preparing undergraduate women for STEM careers. The strong emphasis on research sets Wellesley apart from many peer undergraduate liberal arts institutions.   
  
In a survey of science and engineering doctoral recipients in U.S. institutions graduating between 2002-2011 conducted by the National Center for Science and Engineering Statistics, Wellesley was ranked 34th among the top 50 producers of students who went on to receive science and engineering doctorates, averaging 6.5 Ph.D.s per 100 undergraduate degrees conferred. This survey included both large research universities and small liberal arts colleges.  
  
Many of our alumnae credit the one-on-one research experience at Wellesley as the most significant factor in shaping their choice of a scientific or medical career. Wellesley is consistently listed among the most productive institutions nationally in numbers of women graduates entering medical, dental, and veterinary schools, with an acceptance rate typically around 70%, well above the 45% national average.   
  
In a 2005 survey of 183 graduates from the classes of 1997 through 2001 who had participated in undergraduate science research (with a 52% response rate), nearly half participated in two or three different projects, and more than two-thirds participated both in the summer and academic year research programs. Three-quarters of the respondents majored in biology, chemistry, or biochemistry, and 44% wrote an honors thesis based on their research. Approximately 49% are in pure or applied science while 43% are in medicine or an allied field; only 8% have left science. Two thirds were currently in graduate training, and another 9% planned to enter graduate programs in the near future.  
  
Wellesley’s career services office is currently undergoing a major revitalization to better tailor services for today’s career environment in the sciences and other fields. Supported by a historic $50 million gift, the largest in the College’s history, the new model will focus on building connections and communities among students, faculty, graduate programs, and employers. Through an individually tailored, holistic approach to career education, the model will provide students with strategies to be competitive candidates in whatever field they choose to pursue and to receive continued support as they advance through all stages of their careers.

***Plans to Attract Qualified Undergraduate Students to the Project***[Describe how you will attract qualified undergraduate students to your project. Describe how you and your research students typically connect. For many, students in our courses or majors may take the initiative to ask if we are accepting research students. Or you may approach students with promising qualities (intelligence, organization, curiosity, responsibility) who are currently in one of your courses and ask if they want to work in your lab. Or you may ask colleagues to recommend promising students. There is no single successful strategy nor any optimal strategy that works across all disciplines. However, the more concretely you can describe and explain your recruitment process the better.

Focus on provisions to increase participation by groups underrepresented in science and engineering (defined by NSF as “women, persons with disabilities, African Americans, Hispanic Americans, Native Americans, Alaska Natives, and Native Hawaiians and other Pacific Islanders”). Language on some of Wellesley’s current initiatives appears below:

*As a diverse women’s college, Wellesley is perfectly positioned to tangibly support an increase in the proportion of women and underrepresented minority (URM) students participating in research. Wellesley students are extremely bright and motivated undergraduates, many of whom already work in the lab during the academic year and full time during the summer. Multiple pathways have been put in place to encourage students to get involved early in scientific research, such as the Sophomore Early Research Program mentioned earlier, which emphasizes participation by underrepresented minority students in conducting research as work-study. During Wintersession, Wellesley offers an intensive, introductory biochemistry lab research program for students. The primary goal of this program is attracting first- and second-year students who have expressed an interest in science and who belong to a group that has traditionally been underrepresented among science majors at Wellesley (URM, first generation, and/or low income backgrounds). Students are not required to have any laboratory background, and those coming from high schools with poor or no experimental labs are encouraged to apply. This program has been incredibly successful; 95% of program participants end up majoring in a biomedical science.*

*Wellesley faculty have found that some URM students are hesitant to seek out or ask to participate in research. To address this issue, Wellesley’s Associate Provost and Academic Director of Diversity & Inclusion, Robbin Chapman, Ph.D., created the Research Invitation Program in which faculty members specifically invite URM students to participate in research. This program has significantly increased participation rates. In summer 2015, Wellesley achieved a 36% URM student participation rate in science summer research (up from a previous high of 14% in 2011) as a result of faculty encouraging students to apply.*

*Other examples of activities taking place across campus include:*

* *Two Mathematics faculty members offer the Wellesley Emerging Scholars Initiative that provides student workshops in which students tackle challenging calculus problems, emphasizing a problem-based approach to high-level work application of calculus rather than remediation and theory. This approach is based on research into the learning habits of URM students, which reveals that URM students learn best in cooperative vs. competitive environments and that they are “field dependent” learners (i.e., they prefer student-centered learning, small-group activities, and like to see concepts related back to their life experiences).*
* *Dr. Chapman provides hands-on workshops and individual coaching for STEM faculty on cross-cultural communication and creating inclusive learning spaces. She acts as a resource and mentor, providing guidance and advice to STEM faculty to support them in promoting self-development for their URM students.*
* *In summer 2016, Biological Sciences faculty members participated in a Scientific Teaching workshop sponsored by the National Academies of Sciences and HHMI. This group is now working with others in the Biological Sciences department to focus on implementing scientific teaching in their curriculum, which will increase retention of all students with interests in science.*]

***Impact on Training of Students***This section should include specific information about how your research program will train undergraduates, and any plans for measuring the effect of project participation on the participating students, both during and after the students’ undergraduate years. What skills will they hone? What will the students get from working with you? How will working with you prepare them for careers in or related to science, or at least make them better consumers of scientific information? Addressing these questions shows you have thought carefully about how your proposed work will enhance students’ experiences. The more you think about these issues the more your students will get from the experience. Following are some points to address in this section:

* Explain the skills your students will learn, including knowledge of particular kinds of instrumentation or standard research protocols as well as procedures unique to your work. Explain exactly how the students will learn these things. In some cases you will work with them personally until they attain proficiency; in other cases you may have experienced students train new students. Given an idea of the time course of a typical training experience so that reviewers can see how much a typical student will take from the research experience if he or she works for a semester, a full year, or longer.
* Also explain in a broader sense what you hope each student will get from the experience. Students may learn more about how science “really” happens, or about making data-based decisions, or they may learn more about their own capabilities. Many students will not go on to careers in a science but their experiences with you should affect their views and uses of science as educated citizens.

At this point you might be wondering how mentoring undergraduate researchers will help you and your research program. Many Wellesley undergraduates are capable of more than they (or you) might believe. Provided the students are given adequate training, build confidence, and receive continued support when needed (and are left alone sometimes, too) undergraduate research assistants can help your research program realize often surprising achievements. If you have already had such experiences relate them here.

For example, perhaps some of your students have presented work at a national conference or developed a new procedure that improves the lab’s productivity. Perhaps a student initiated a fruitful collaboration with another lab via contacts with friends, or brought something he or she learned from a course into your research. These accomplishments bring recognition to your work and to Wellesley and broaden your professional horizons. If you have not had such experiences yet, anticipate them.  
  
***Contribution of New Research Tools***Include this section only if applicable. Describe any new instrumentation, databases, or other research tools that will contribute to both the education and research opportunities for students and faculty.

*Some sections of this Impact Statement are adapted from institutional language provided by Wellesley College.*

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**For help, contact the Office of Sponsored Research:**

* [www.wellesley.edu/sponsoredresearch/staff](http://www.wellesley.edu/sponsoredresearch/staff)

**Helpful resources used to develop this model statement:**

For college “mission” language and general info:

* Wellesley website [About pages](http://www.wellesley.edu/about#sKrosJByEmYcflwg.97)
* [Department and program descriptions from the Course Catalog](http://wellesley.smartcatalogiq.com/en/2016-2017/Course-Catalog/2016-2017-Course-Catalog/Departments-and-Programs)
* [Departmental home pages](http://www.wellesley.edu/academics/deptsmajorprog#U0D4F2d8hs7ajZcs.97)

For institutional statistics:

* [Office of Institutional Research](http://www.wellesley.edu/oir#7IetHymsDGSchIGs.97)

For grants information and financial research support:

* [Office of Sponsored Research](http://www.wellesley.edu/sponsoredresearch/staff#kHcpxfr58ssYUCm4.97)

For student research program information:

* [Student Research and Funding Opportunities.](http://www.wellesley.edu/sciencecenter/students/opportunities#b2FTUVj5EixhYo5q.97)