

SEE-Beyond Resources for Biology

The SEE-Beyond Award rewards students who take the initiative to find creative ways to apply their learning outside the classroom. This page provides suggestions about how to develop a project proposal that fits the goals of the SEE-Beyond award, some practical guidelines for contacting potential mentors, tips from previous successful student applicants, and samples of their applications. Skidmore faculty can also provide some specific suggestions about where to search for opportunities (such as reputable field schools or research labs that match your interests). But this is a chance for you to develop some independence in seeking out (or creating) the opportunities that will most benefit your academic goals – use the resources on this page as a starting point, and think broadly!

Goal of the SEE-Beyond Award

The following text comes directly from the SEE-Beyond website:

SEE-Beyond Awards invite students to explore new techniques, technologies, or modes of inquiry or expression; to apply their academic-year learning to real-world challenges; and to clarify the interrelationship between their educational and post-baccalaureate goals. Awards may be used to support:

- field or laboratory research in an area of the student's choice, with the permission of the host institution and research sponsor;
- internships with clearly defined learning goals that complement the student's academic plan;
- artistic residencies, workshops, apprenticeships, or productions.

This list is not exhaustive nor is it meant to be prescriptive. Unless otherwise stated by the chairperson or director of your department or program, *any experience that puts your classroom learning into practice or that deepens your knowledge or understanding of the discipline may be supported.*

How to develop a project

We highly recommend you attend the SEE-Beyond panel discussion offered by Academic Advising (see their website for date and location). Also, take advantage of the Biology SEE-Beyond Ambassador(s) (see below).

The SEE-Beyond award is very flexible – don't be afraid to think outside the box when developing a project proposal. Below are some suggestions to help you get started. This is not a comprehensive list – be creative!

Build off a previous internship/summer experience

A previous summer or academic year internship or research experience can provide the foundation for a project proposal. If you had a positive experience with a particular organization or laboratory, consider building upon this experience. What new project within your organization would you like to complete? What additional research question might you like to address? Contact your previous supervisor or mentor to discuss possible projects. Make sure that your proposed project matches the needs of your host organization or mentor.

Identify courses not available on campus

If you have a particular academic interest that can't be met at Skidmore, this is a great chance to apply for funding for off-campus study. Are you passionate about forensic science? Arctic ecology? Consider field schools or summer programs at other institutions that offer courses of interest. Applications will only be considered for courses not offered at Skidmore. However, a course that offers a significant field component (such as Marine Biology) will be considered even if a similar course exists at Skidmore, as long as the proposed course offers something substantively different than the Skidmore offering (field work, special or advanced topics, etc.).

Gain experience in an off-campus lab

If you have a particular research interest, consider approaching faculty members at other institutions about developing a summer research project. Do your homework – think carefully about the type of research you would like to do, and identify several faculty member(s) working in that field. Journal articles are a good way to figure out who's doing research that interests you – think about the exciting research articles you've read recently, and see where that work was carried out. Perusing departmental webpages at other institutions is an additional way to see what faculty members are doing – you'll usually be able to link to descriptions of their research interests.

This approach is most successful if you have a personal connection with your proposed mentor – for example, he/she is a collaborator of your advisor, a Skidmore alum that you met at a Career Panel, etc. You should have prior lab or field experience before taking this route. Start early (several months before the SEE-Beyond application is due) – if the person you hope to work with is not interested in supervising an internship, you will want time to contact a different lab or come up with a different project.

Combine academic interests

Consider how to combine your academic interests. This could be done through an existing internship, or in a project of your own design. For example, an internship at a natural history museum could focus on exhibit design, combining elements of biology and art. A position at a national park or nature preserve could focus on science education. Some magazines and public radio stations have internships that could allow you to explore science communication.

Explore existing internships

Search internship databases for existing internships that complement your academic goals. The SEE-Beyond award can be used to cover costs (such as travel, housing, meals) associated with the internship, and also provide you with some summer income. This is a way to take advantage of a useful summer internship that you might otherwise pass up in favor of paid employment.

How to contact potential mentors

If you're applying for an existing internship or research opportunity, you will have specific application directions. If you're interested in developing an independent project (such as working in an off-campus lab, or proposing an internship with an organization to combine your academic interests) you will need to contact a potential supervisor. For a laboratory research position, this will be the particular professor you hope to work with. For an organization such as museum, a private organization, or a non-profit, you'll need to do some research. Look on the website for contact information – there may be an individual in charge of outreach, for example. If not, address your first query to the person listed in the organization's 'contact' link.

Your initial query should include the following components

- First paragraph:
 - Introduce yourself as a Skidmore Biology major, including your class year.
 - Explain your goal briefly: to develop an internship with the organization (specify whether you would like to do lab research, science education, etc.).
 - State that you are applying for summer funding through your college to fund an internship.
- Second paragraph
 - In a few sentences, summarize what interests you about this organization/lab/etc. (for example, the particular area of research, the chance to be involved with public outreach/education, the combination of two fields of biology that interest you). Include a few specific details – for example, mention that you have read several primary literature articles on topic XX by this professor, and this led you to contact him/her.
 - State what type of internship you hope to set up (for example, a 10-week research experience, or a 10-week project learning how to apply artistic skills to developing museum exhibits).
- Third paragraph
 - Briefly highlight the skills and experience that have prepared you for your proposed internship (lab research, employment, etc.). State that your resume is attached as a separate document.
 - State that you look forward to hearing back from the individual if there is the possibility of developing an internship with him/her. Specify that you can be reached by reply email and/or phone (provide phone number with area code).
 - Thank the reader for his/her time.

Additional important tips:

- Attach a copy of your resume (work with Career Services to make sure your resume is professional and highlights relevant skills).
- Treat your email like a formal letter – no texting abbreviations, smiley faces, exclamation points, etc. Proofread carefully.
- If the person you're emailing has a PhD, your letter should be addressed to 'Dear Dr. XX.' Otherwise, 'Dear Mr. XX' or 'Dear Ms. XX'

- Keep it brief. If you get a positive response, you can discuss the proposed internship in more detail.
- Make sure you have a professional greeting on your voicemail.
- Consider the accessibility and professionalism of your online profile on Facebook, Twitter, etc. Restrict access to personal public media profiles such as Facebook, and make sure that they don't include inappropriate photos, etc.

How to submit an application

Refer to the See Beyond website for application instructions and deadlines. Make sure to follow the instructions for the Application Essay. **In addition**, explain the extent to which you have discussed your project proposal with your proposed supervisor or mentor. For example, if you have had several phone conversations or email exchanges discussing project goals, tell us – we want to see evidence that you have thought seriously about what you can accomplish, and that your potential supervisor or mentor is on board.

Links

The following resources may be helpful if you are searching for internships or field courses. These are just a fraction of the resources available – visit Career Services for additional guidance in searching for internships. If links do not work, please try doing a search using the title (links may change over time).

Start with the **Career Services internship page**

<http://www.skidmore.edu/career/interncentral/>

Links to multiple internship databases

Ecological Society of America listserv (Ecolog-L)

<https://listserv.umd.edu/archives/ecolog-l.html>

Postings for research assistantships/internships; also includes general discussion about teaching, research, etc. Hint: sign up for the 'digest' format if you don't want your inbox flooded

Brown University Biology Summer Internship Database

<http://biology.brown.edu/bug/summer-internship-database>

Both paid and unpaid internships in many fields of biology

Organization of Biological Field Stations

<http://www.obfs.org/>

Check the 'Field Courses' link for upcoming courses, and the 'News and Jobs' link for internship postings. You can also search the site for 'internship'

Texas A&M Job Board

<http://wfscjobs.tamu.edu/job-board/>

Primarily wildlife & fisheries opportunities; many field-based positions

See Beyond Ambassadors

Since these projects are student-driven, previous award winners are your best source of information - for everything from how to come up with a project to what to include in your application. The current student ambassador is Ben Bechand. You can contact him for advice at:

bbechand@skidmore.edu

If you are selected as a SEE-Beyond award recipient, you agree to serve as a Biology SEE-Beyond Ambassador – this involves answering questions about your SEE-Beyond experience to be posted on this page, and being available to answer student questions about the application process. It could also involve speaking about your experience at an information session.

Below each student name is a Q&A about designing a project, putting together an application, and reflection on the summer experience.

Ben Bechand

Project: Molecular analysis of fungi, Wadsworth Center, New York State Department of Health

Q&A WITH BEN BECHAND

THE APPLICATION

How did you come up with your proposed project? For example: Did you find the opportunity advertised as an internship? Build off of a previous job/internship experience? Develop a project that could let you explore opportunities not available on campus?

Last summer I volunteered for this lab and built a good relationship with the supervisor and other staff members. I put a lot of effort into volunteering and proved myself as an organized and dedicated researcher so that the chief investigator was happy to offer me a full-time internship this summer.

It was vital that I find an internship in a mycology lab because I hope to focus on fungi during grad school but Skidmore does not offer any mycology courses.

What timeline did you follow in developing your project, writing your application, etc.?

After discussing some options with the program director, a couple of different projects were highlighted that I could choose from. I chose the validation of MALDI-TOF for yeast identification because it would allow me to learn a cool new microorganism identification method and do a great service for the mycology

lab. After I had the project finalized I began searching for different funding options which included applying for SGA's RCIA award, an REU, and the See-Beyond award.

How did you develop the details of your project proposal? For example, did you discuss project goals with a potential supervisor or faculty mentor?

The goals in my project were things that I legitimately hoped to accomplish during this summer. I wanted to work in a mycology lab to gain extra knowledge about fungi to supplement my Skidmore education. Also I wanted experience working in a clinical lab to prepare me for pharmacy grad school where students spend a portion of their time working in clinical research labs as part of the curriculum.

What general suggestions do you have for students applying for a See Beyond award?

Find a project that you are really passionate about and then let that passion show through into your application.

THE EXPERIENCE

Describe the overall goal of your project

The goal of my project was to complete a validation packet for MALDI-TOF MS. MALDI-TOF is a very new microorganism identification method that the mycology lab wanted to incorporate into their workflow, but before that could happen there first has to be a study performed resulting in a validation packet. Additionally, it was my personal goal to use this opportunity to gain experience working with yeast and molds.

What was the most positive outcome of your See Beyond experience?

I got the opportunity to learn how to operate a new piece of equipment that I foresee becoming a staple in clinical labs. I also made really good connections with the other lab scientists and the program director who is now one of my letter of recommendation writers for grad school.

How does your See Beyond experience relate to your academic and/or career goals?

From this internship I have received three things that are invaluable to my education and post-graduation plans: experience leading my own research project, clinical lab experience, and mycology knowledge.

This was the first time in my education that I ever had a research project where I was the head researcher (I was even assigned two undergraduates to be my lab assistants). In college research you always have a professor who is an expert in the field and can guide you through the process. Since MALDI-TOF is a very new technique, there was no one in the lab who was an “expert” on how to use it. It was my job to become the expert and then teach my operating procedure to the rest of the lab. I was forced to rely on my mind to work through trouble shooting and result analysis, which greatly increased my confidence and critical thinking ability as a researcher.

My post-graduation plans center around attending pharmacy school and becoming a pharmacist. Doctors, pharmacists, and clinical labs are all closely related even though they may be at different locations. A patient will come to a doctor who will collect samples and send them to a clinical lab. The clinical lab will perform extensive testing and provide the results to the doctor to aid him or her in the diagnosis and treatment plan. Then it is the pharmacist’s role to dispense and oversee this treatment plan. By spending a summer in a clinical lab I now have a strong understanding of how this pillar of patient care functions. In the lab I got a chance to learn about a number of testing methods such as ITS, API, real-time and conventional PCR, and of course MALDI-TOF MS. During pharmacy school there are rotations not only in pharmacy settings but also in clinical labs and this internship will certainly give me a leg-up when I come to this point in my education.

I sought out this lab specifically because it is a mycology lab. Ever since doing mycology research with Sue Van Hook my freshman year of Skidmore I have been fascinated by fungi. In grad school I hope to incorporate mycology into my pharmacy education with the end goal of studying how fungi can be used in drug design or synthesis. Unfortunately mycology is not a popular field of study and it has been difficult for me to find hands on experience with it. During this summer many of my mentors and supervisors were veteran fungal researchers and I was able to gain a great amount of knowledge from them including ecological information and classical/morphological identification methods. This internship was a perfect opportunity for me to obtain extra mycology knowledge to complement my Skidmore education and prepare me for grad school.