Off-Campus Research

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Office of Undergraduate Research
& Graduate Opportunity (URGO)

Introductions

{ Name, School, Major/Interest area

- Competitive programs at research universities for undergrads
  - The research university environment
- 8-12 weeks of full-time research under a research mentor
  - Often a cohort model that can include professional development seminars, guest speakers, courses, cultural outings, GRE prep
  - Different programs: goals, targeted students, requirements
- Paid (+ housing and travel usually)

What is off-campus research?

- Why do research?
- Why do research off-campus?

Why do research?

- Explore topics in-depth and discover what interests you in your field
- Enhance your writing, speaking, and critical-thinking abilities
- Become a more competitive applicant

Why off-campus?

- Explore new sub-fields and specialty areas
- See what research at an R1 looks like
- Get to know a department's culture: faculty, grad students , work culture
- Possibilities of publishing
- Extend your network
- External letter of rec
- Explore a new city!

Why do research off-campus?
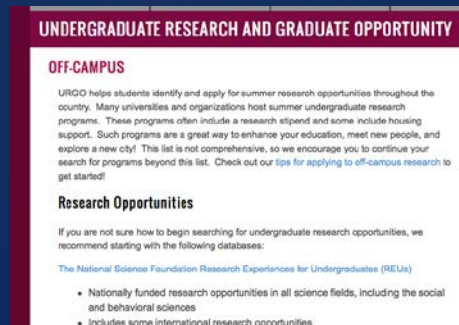
- Faculty
- Current and past students
- URGO's website
  - REUs
- Other colleges' databases
- Your field's professional org

{ Apply to 5-10

How to find opportunities

- Course completion requirements
- Academic standing (first-year, sophomore, etc.)
- Citizenship
- GPA
- Major
- Underrepresented as defined by the program
- Read carefully: sometimes programs are only accepting students from a region or particular schools
- Read preferences: programs might be looking for students from community colleges, underrepresented populations, those with no research experience, interested in PhD or health sciences

Eligibility

Community College Fit

- [Parkland - Biology](#)
- [Montana State Computer Engineering](#)
- [Kansas State - Chem](#)

Minnesota Programs

- [Computational Methods and Big Data](#)
- [Chemistry Lando](#)
- [SUMMIT](#)
- [Lillehei Heart Institute](#)
- [LSSURP](#)
- [Mayo Biomedical Ethics](#)
- [URGO website for more](#)

Highlighted Programs

Summer Health Professions Education Program Workshop

November 12, 2019
6pm
Hagfors 150A

Isaac Tade and Sandra Feahn will speak about their **SHPEP** experiences at Columbia and Nebraska.

What is the Summer Health Professions Education Program (SHPEP)?

- Increase access to resources in the health professions
- Prepare students for a successful application
- Strengthen academic proficiency and career development of underrepresented students (from communities of socioeconomic and educational disadvantages).

Contact Catherina Kipper at kipper@augsburg.edu to RSVP or if you have questions

Things to consider….

Application Components

- CV/Resume – get reviewed!!!

- Online application with biographical info

- 2 recommendation letters from faculty in your major or related fields

- Transcripts
  - Low grades might need explanation

- Personal statement or short answer questions

- Deadlines
  - Most due January – March
  - Winter break: list of programs, resume, drafting answers
  - Get feedback on multiple drafts

Please explain why you would like to participate in the program. Your answer should be approximately 400-1000 words. You may want to incorporate your reasons for seeking this type of experience, the appropriateness of your academic preparation for full-time lab research, any previous research, and/or your particular academic and career interests.

Sample Prompt – Single Essay

- 200 word prompts:
  - Why would you like to do research at the AMNH this summer?
  - What attracted you to your top choice project?
- What are your career goals?
- What other experience do you have that might be relevant for research?
- What skills do you hope to acquire during the summer program?

Sample Prompts – Multiple Responses

To prepare myself for graduate study, I would like an additional research experience. I come from a small college where undergraduate research opportunities in biology are limited. Conducting research at an institution like Boston University provides access to greater technology and learning through seminars as well as dialogue with established researchers. Having access to a larger lab and more advanced equipment would greatly benefit my research skills. Participating in SURF would aid me in becoming the well-rounded and skilled scientist I hope to become, one day supervising a lab at a university or in industry.

Tips – Fitting funder's mission:
Liberal arts and community colleges

I have realized my passion for research during my first year at community college. But, as a low-income, first-generation college student, there were few role models in my life who could guide me in finding the opportunities to gain skills and experiences in scientific research. My department at Minneapolis College is very supportive but does not have funding to provide research opportunities outside of coursework. Because I hope to be that role model for other students who come from similar circumstances, the opportunity at the University of Nebraska Summer Undergraduate Research Program will fill an important role in helping me develop as a researcher.

Tips – Fitting funder's mission:
Underserved students

In my computer science classes I am learning to determine what an algorithm does, as well as how to create algorithms to solve problems, such as sorting lists of data. I am building on my previous experience, expanding my understanding and comprehension of what it means to be a computer scientist. For example my Introduction to Java class comes fairly easy to me not because I have programmed in Java before, but instead because I have used object oriented languages such as Swift and ObjectiveC for IOS devices. Math courses in Calculus I and II, along with Introduction to Statistics have really helped me understand the multitude of different relationships between complex theorems, such as the fundamental theorems of calculus. With a strong background in math I can more easily create simple solutions to complex problems.

Tips - Coursework

I completed 400-hour research project under the supervision of Dr. Matthew Beckman. The focus of the lab is working with a single-eyed crustacean, *Daphnia magna*, to illuminate the genetic origin of this anomaly. I had the task of conducting a side project looking at a closely related crustacean, focusing on its eye development along with *hedgehog* gene expression. I collaborated often with my lab mates and established a close rapport with my mentor. From this, I gained confidence in my decision making and learned new methods pertaining to molecular biology such as using RT -qPCR comparative Ct method to measure gene expression. I successfully completed my work having developed a protocol for culturing the animals, designing and validating a primer and probe set, as well as giving a written and oral report on my findings.

Tips – Prior research or extensive class project

I learned that research is an exercise in delayed gratification, much different than the immediate results I experienced while completing lab work for my courses. For example, when validating my primer and probe set for qPCR, it took far longer than I originally thought it would. Another challenge was devising a method to culture animals that the lab previously had no success with. Despite this, I forged on and was able to begin collecting preliminary data. While some days I would be frustrated with the lack of results, even the slightest promise of newfound knowledge kept me returning each day.

Tips – Reflection on past experiences

What skills do researchers need?

- Research experience
- Class projects
- Leadership experience
- Work experience
- Skills: writing, problem-solving, critical thinking, time management, learning from mistakes, working in a team
- Attributes: detail-oriented, self-motivated, persistent, adaptable, hard-working, curious, reliable

Tips- Other relevant items

NIST laboratories are the perfect fit for my interest in cutting-edge research in spectrometry or applied mathematics and simulation. A position at NIST would aid me in making decisions about a graduate research focus and provide me with necessary experience working in a large lab. It would help better identify the type of research environment that is the best match for my interests and abilities and provide direction for my scientific career…. A research position at NIST will help expand my research skills, my knowledge, and my experience, all of which I am determined to improve. I would like to improve my communication skills while at NIST through the communication I will have my mentor and other scientists. I want to advance a NIST project this summer with my participation and I want get the most I can out of my time at NIST.

Tips -Why this program?

Comparative genomics along with genetics are also fields that greatly interest me. This is why I find the project on Myxozoan Parasites of Amazonian Fishes so compelling. It is clear that these microscopic organisms are a widespread issue for farmed fishes as well as wild populations. Just reading a few articles left me eager to delve into the genetics of their parasitism. I have experience working with small amounts of genetic material to amplify and this is a process I would like to continue and develop. The prospect of working on a largely genetics-based project excites me, in addition to learning how to apply bioinformatics to findings. Because I am considering graduate study in genomics, it is important that I learn how to analyze complex data. I strive to become more interdisciplinary, and this project would give me a new perspective on problem-solving.

Tips – What research interests you?

Participation in Cornell's Microbial Friends and Foes program will contribute another important step in achieving my academic and professional goals. Whether I am looking into disease resistance with Dr. Gary Bergstrom or Dr. Rebecca Nelson or looking into nutrient acquisition and plant-fungi symbiosis with Dr. Maria Harrison, I know that I will learn a great deal about plant pathology no matter who I work with. Following my time at Augsburg I hope to attend graduate school so I can participate in research either in an industry position or in an academic setting. With my graduate degree, I hope to further the knowledge of plant genetics and plant-microbe interactions, as these fields have such great potential in supplying food in the most efficient way for an ever growing global population.

Tips – Future plans and goals

- Acceptance notifications vary by program – some notify quickly, some take months.
- Short time to make a decision
- Most have waitlists
- What to do when accepted to more than one opportunity

What happens next?

- urgo@augsburg.edu
- Hagfors Center 101

Contact for Augsburg Students