How to build skills and get experience in the aquatic sciences

April 30, 2025

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The LEAPS program is supported by Marine Biology, the School of Aquatic and Fishery Sciences, and the School of Oceanography

Outline for today

Different ways to build skills + gain experience during the academic year

Undergraduate research

Ways to build develop skills and gain experience as an undergrad

- Coursework
- On-campus opportunities
- Off-campus opportunities
- Undergraduate research
- Other!

Remember: Skills can be learned in many different ways that don’t have to be directly related to your major!

Coursework isn't just for checking off a degree checklist!

DECLARE A MAJOR IN MARINE BIOLOGY

Marine Biology is an open major that can be declared at any time by currently enrolled UW undergraduates. To declare the major, set up an appointment with a Marine Biology Academic Adviser at https://marinebiology.uw.edu/students/advising/.

COLLEGE OF THE ENVIRONMENT GENERAL EDUCATION

Basic Skills (Credits vary)

English Composition "C" (5) ◆

- ☐ _____

Writing "W" (10) *8–10 credits fulfilled with major requirements*

- ☐ MARBIO 305 (3) or FHL 333 (3–5)
- ☐ FISH 323 (5)
- ☐ *Possible additional 2 credits needed* ◆

Reasoning "RSN" (10) *Fulfilled by Math requirements* ◆

- ☐ MATH 124/Q SCI 291
- ☐ MATH 125/Q SCI 292

Diversity "DIV" (5) *can overlap with AoI* ◆

- ☐ _____

Areas of Inquiry (AoI) (60 credits)

Arts and Humanities "A&H" (10 credits) ◆

- ☐ _____
- ☐ _____

◆ Equivalent course options available at Washington State Community Colleges.

Social Sciences "SSc" (20 credits) ◆

- ☐ _____
- ☐ _____
- ☐ _____
- ☐ _____

Natural Sciences "NSc" (20 total) *10 credits of NSc must be outside the major (i.e., not a major prefix and no overlap with major)* ◆

- ☐ _____
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- ☐ *Fulfilled with Foundation Courses in Science and Mathematics*
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10 additional AoI credits from any category

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  - FISH 454: Introduction to Quantitative Ecology
  - Some graduate-level courses are open to undergraduates
    - E.g., FISH 552: Introduction to R Programming for Natural Scientists

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- Consider taking field-specific courses earlier during your degree!

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- Teaching Assistant/Grader
  - Peer tutoring

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- Volunteer with local organizations
  - Examples: NW Straits Foundation, Snohomish-King County Marine Mammal Stranding Response, Friends of the Issaquah Salmon Hatchery, WDFW, Seattle Aquarium, Long Live the Kings
  - The degree of involvement is often flexible

Talk to people in the field to find out what they did as an undergrad!

- Informational interview/career conversation
  - Questions to ask:
    - What were the experiences that best prepared you for your current job?
    - What were you involved with as an undergraduate?
    - What do you wish you had done more of as an undergraduate?

Questions?

Introducing Undergraduate Research

Undergraduate Research is highly variable!

Undergraduate research assistant responsibilities

Some subset of the following:

- Sample collection
- Sample processing
- Support tasks (e.g., washing glassware, making solutions, organizing shelves)
- Data analysis/statistics
- Data visualization
- Manuscript writing
- Lots of other tasks!

Degree of involvement/integration with the lab

- The culture of research labs is highly variable with respect to relationships among members and how undergraduate researchers are integrated into the lab (or not)
- Who you work with directly will vary (grad student, postdoc, faculty member)
- How much time are you expected to commit? Typically somewhere in the 5-15 hours/week range

Undergraduate research and compensation/credit

- Ways that you may be compensated (or not):
  - Volunteer
  - Course credit
  - Capstone
  - Paid (hourly)
  - Paid (via Mary Gates or similar programs)
  - Stipend via program like IBIS

Undergraduate research: how you fit into the bigger picture

The structure of our college

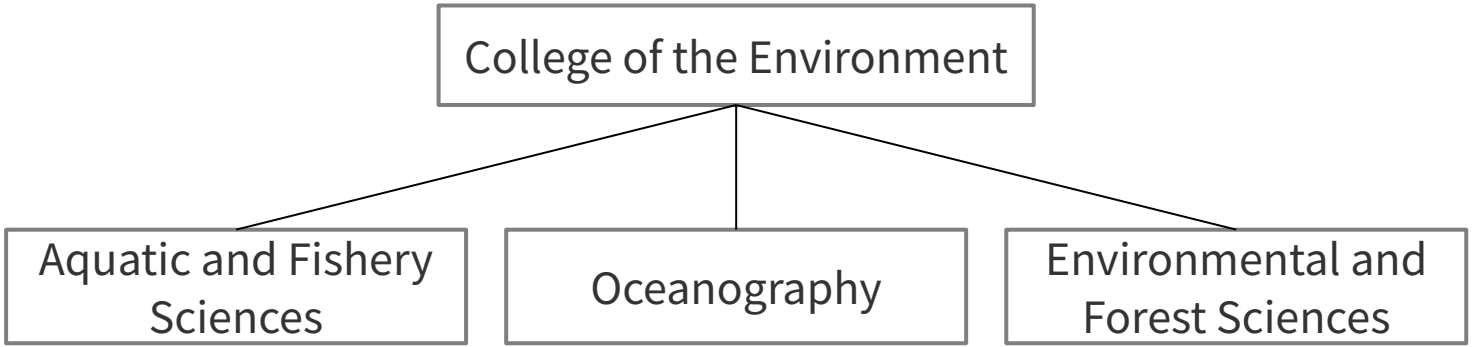
College

College of the Environment

The structure of our college

College

School/
Department



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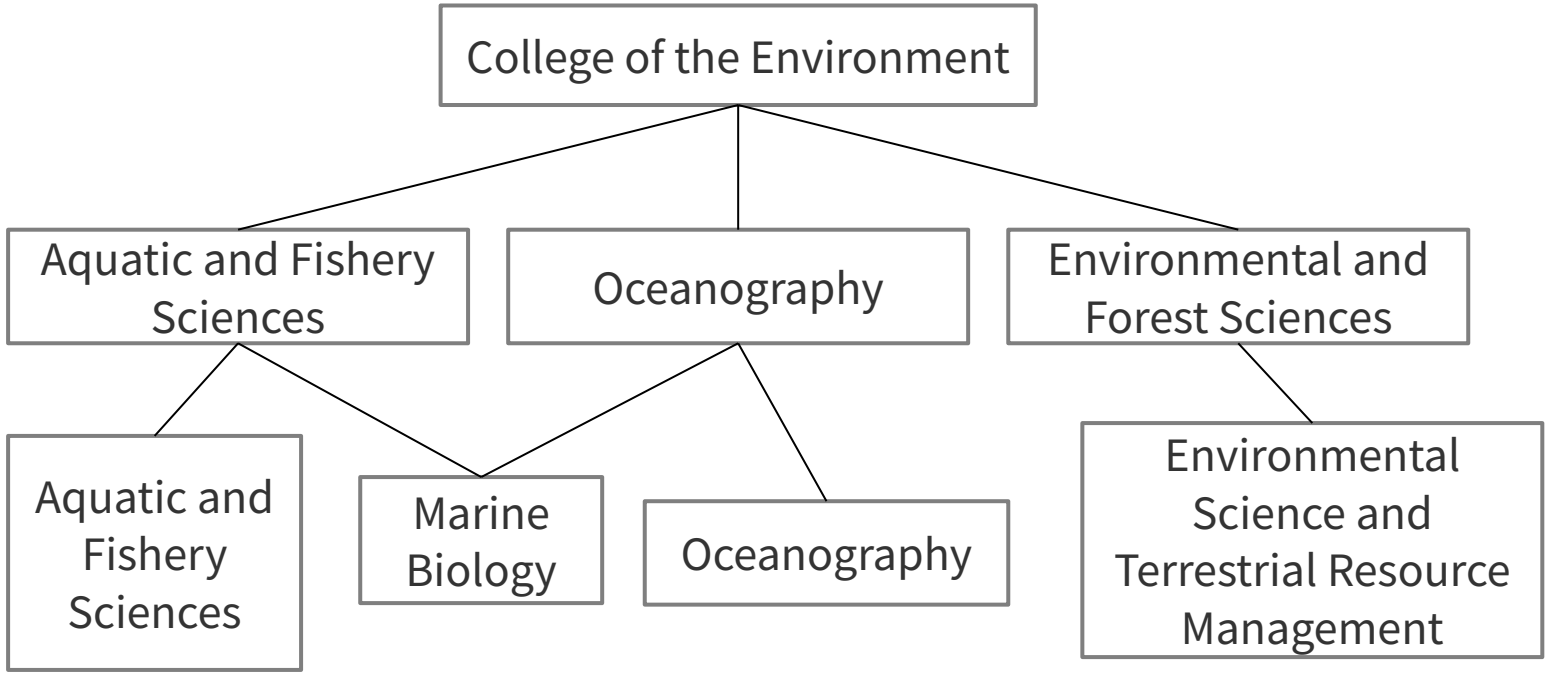

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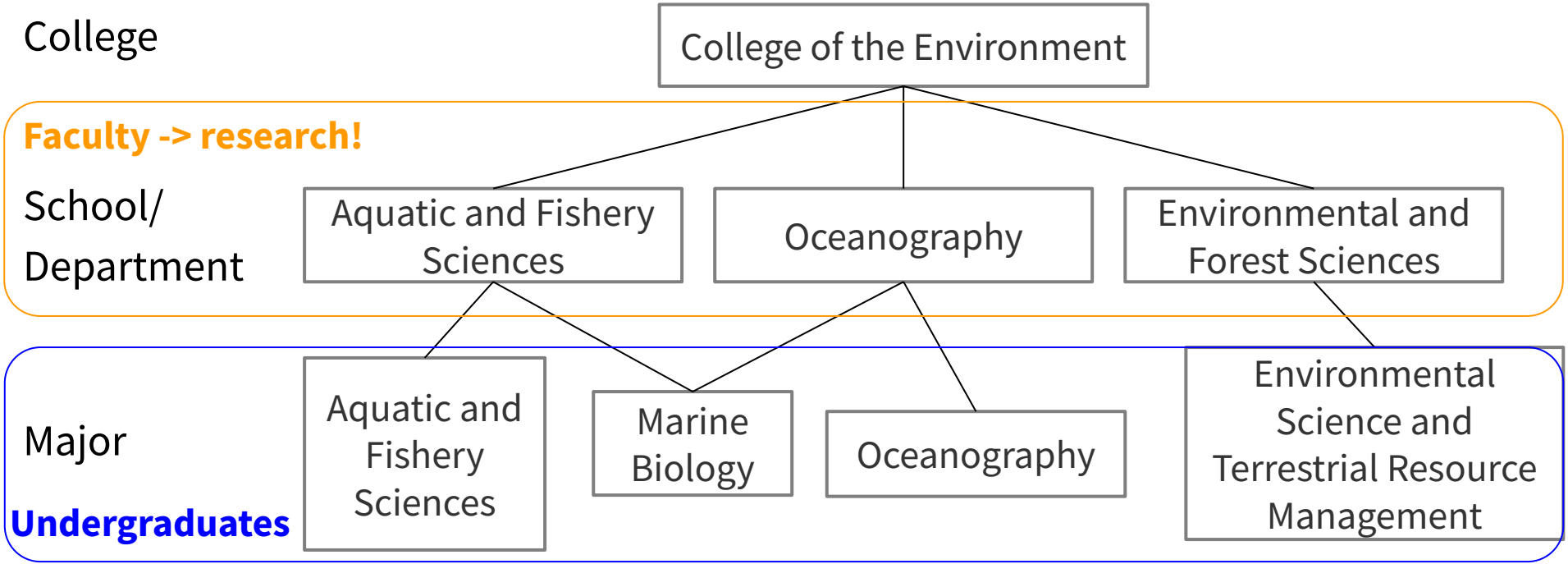

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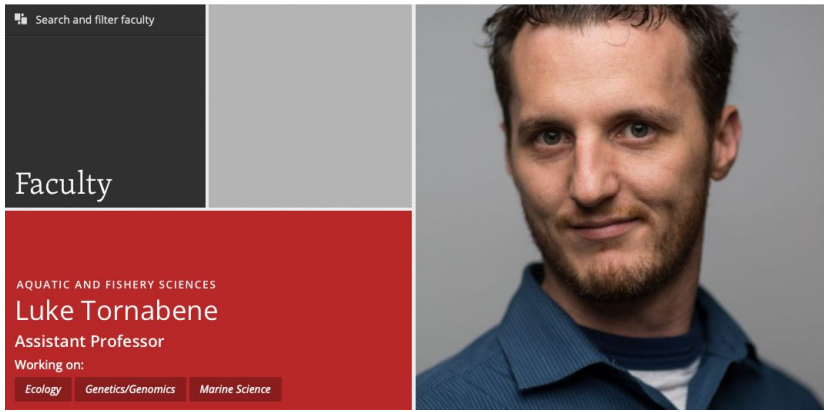
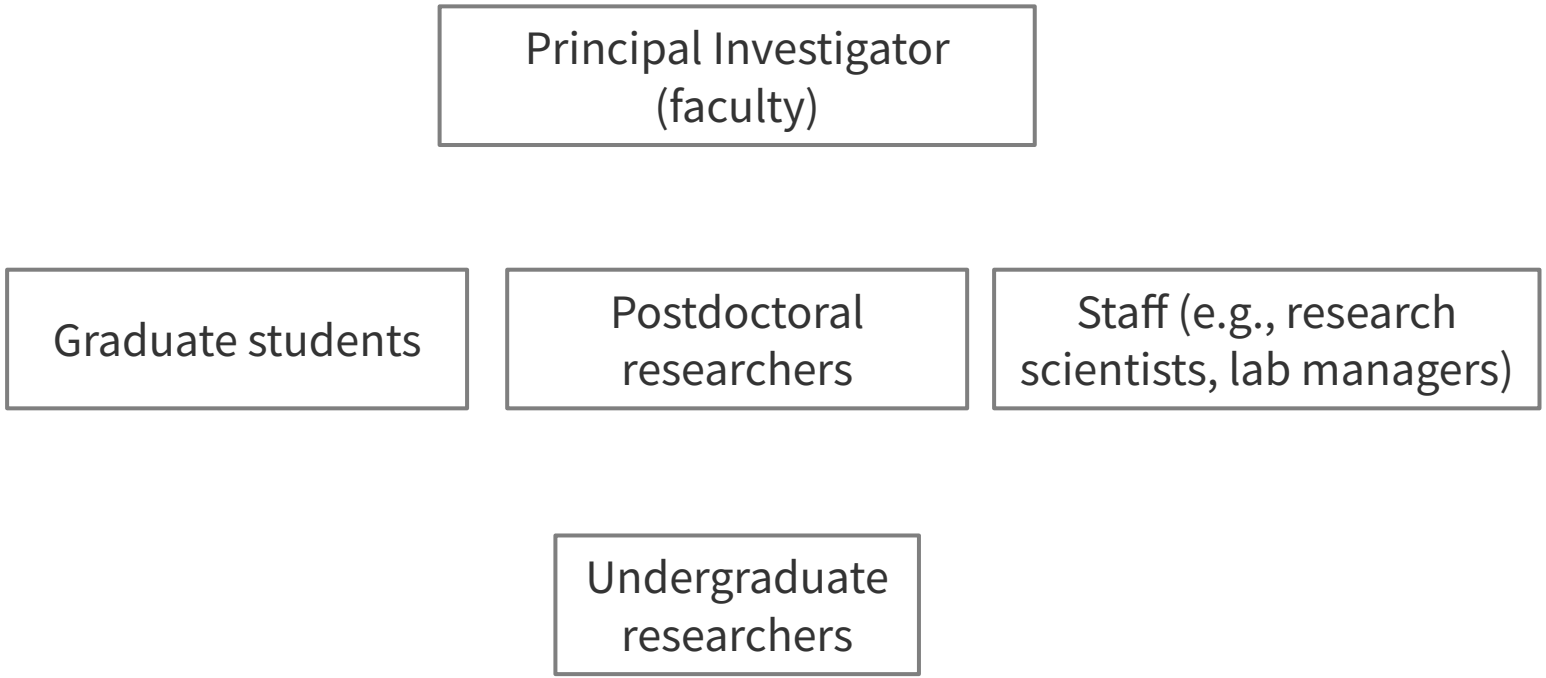


If a faculty member is listed as a “teaching professor” or a “lecturer”, their emphasis is on teaching; if the word “teaching” is not mentioned, they are research focused

Faculty research lab composition



Mechanics of finding a position I: Find a lab

What should you look to gain from undergrad research?

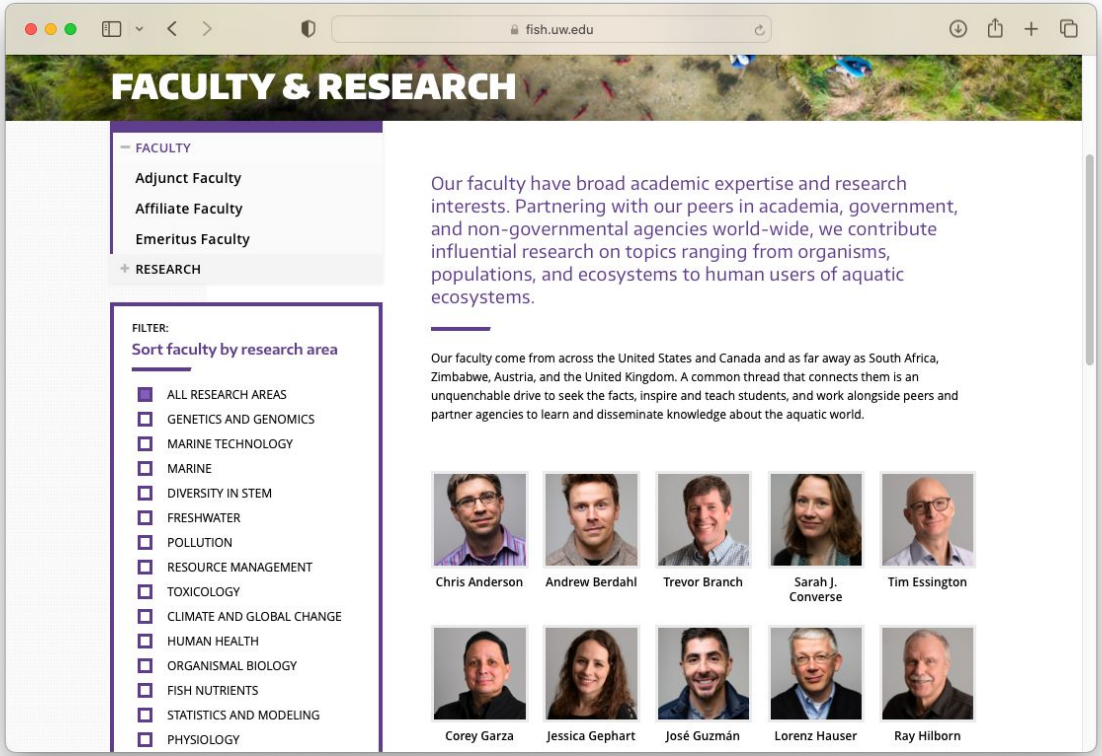
“It's more important to use your time in undergrad to cultivate an understanding of what research approaches you enjoy and are good at, and to really focus on developing those - in any lab that uses those methods, regardless of the organism. All of this can be done in a way that is relatively agnostic to taxon, and could later be applied to a variety of taxa. While it is useful to know the ecology of a particular group of species, that can be learned relatively quickly compared to the development of research skills, so research skills are much more highly valued by potential graduate advisors or employers.”

Amy Van Cise
Assistant Professor,
UW SAFS

How do you find a research position?

- Summer research positions/internships tend to have formal advertisements. Academic year positions do not.
  - There are some centralized databases, like the UW Office of Undergraduate Research, but these are far from complete
  - You will see some ads being posted to listservs and news pages
- **The majority of undergraduate research positions are found by contacting faculty directly**

Faculty webpages



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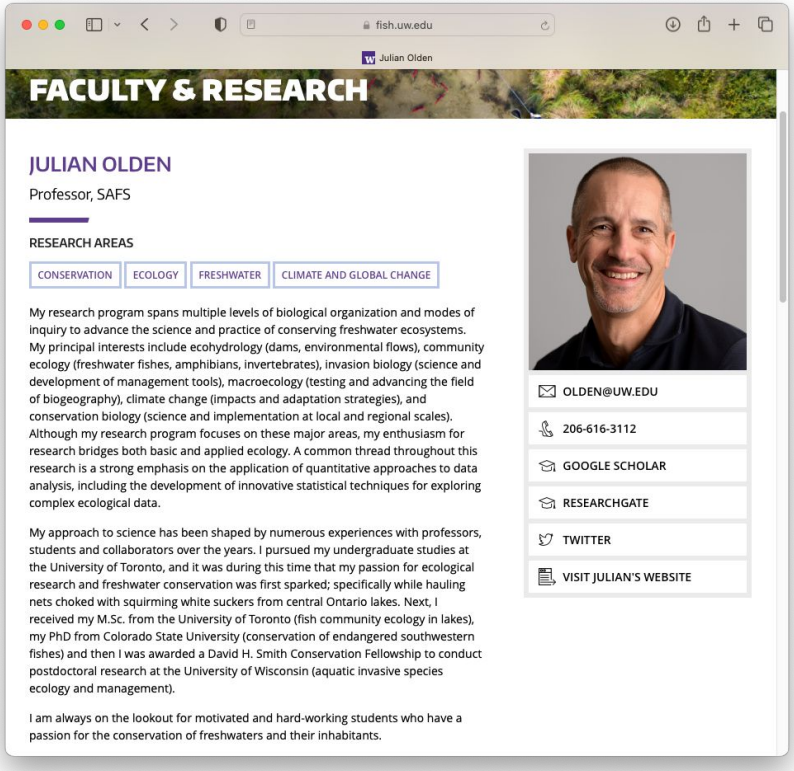

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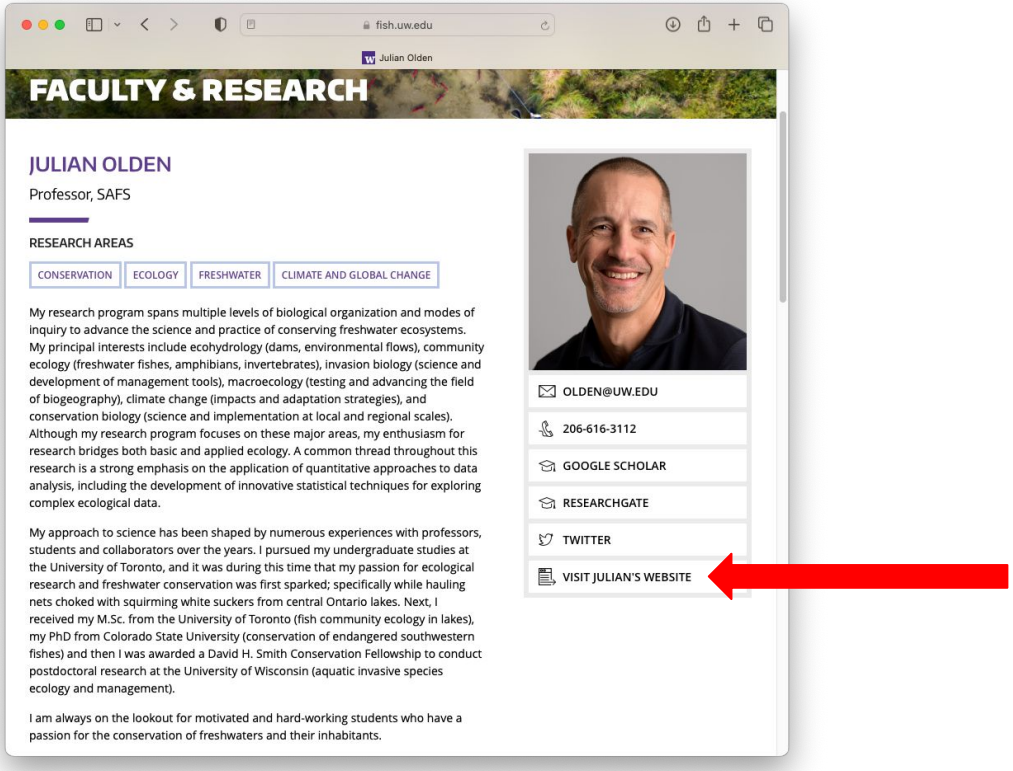
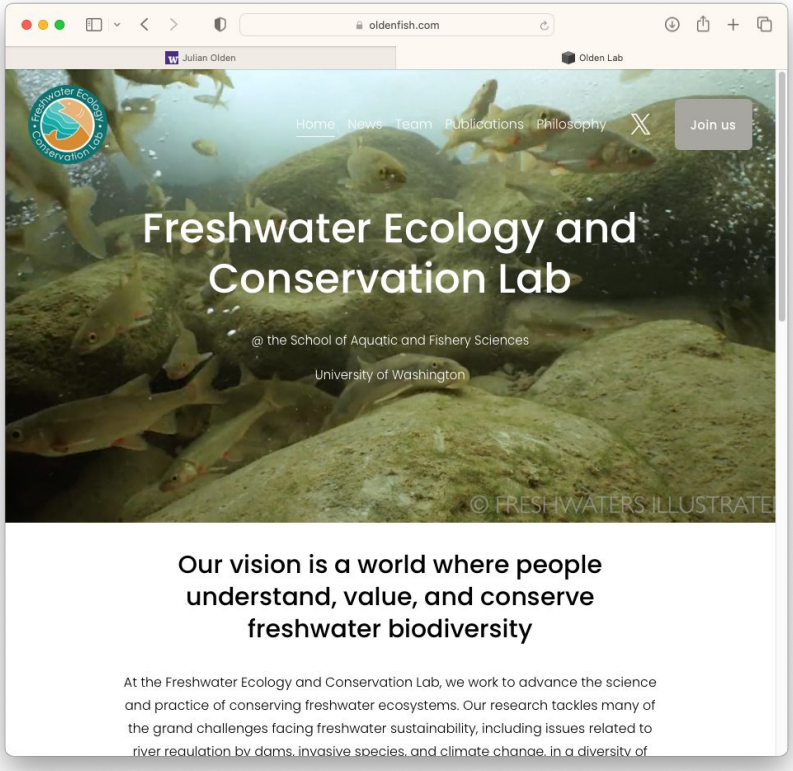
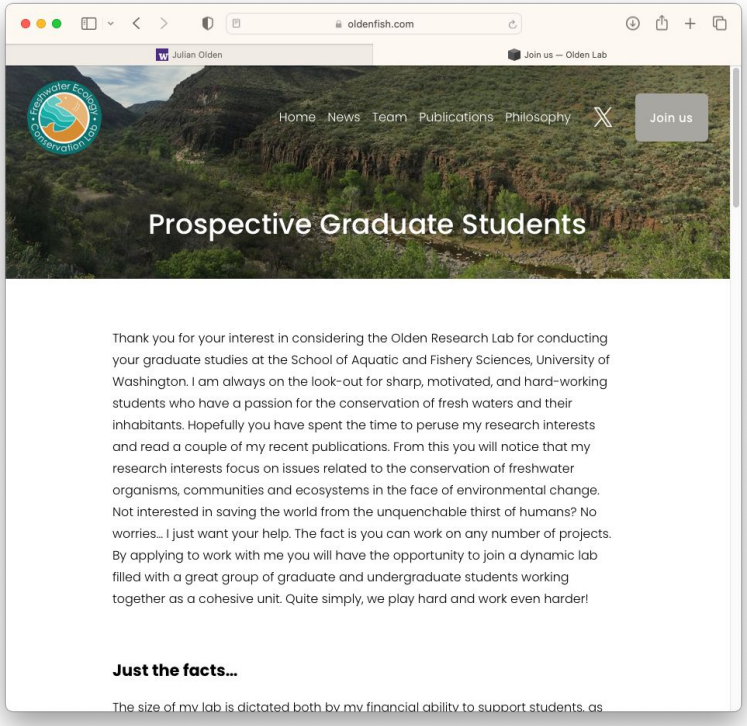


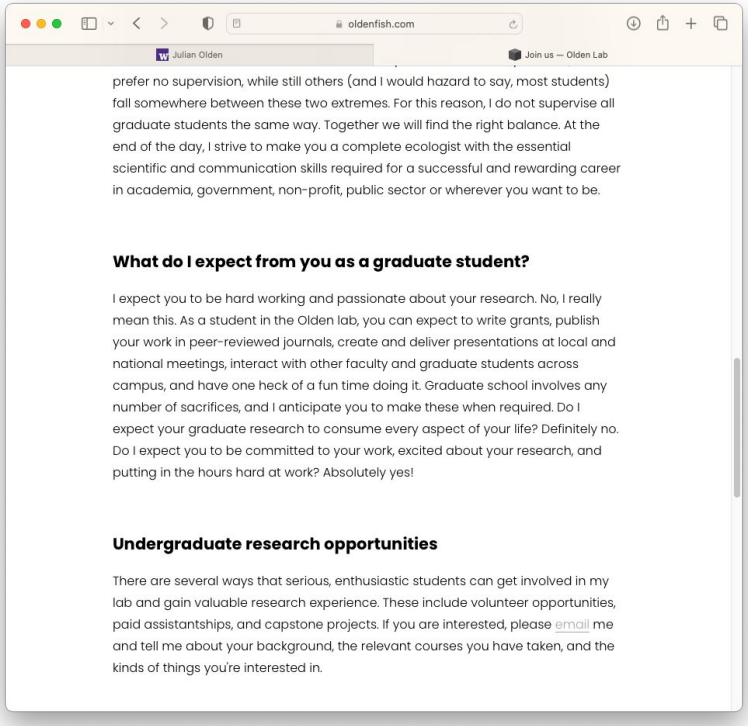
Get a sense of the lab from the website



- Faculty webpages are outdated to various degrees
- Go to research or publications to get a sense of what they work on - but remember that publications are by nature finished projects!

If you're interested, go to join us/prospective students





Exercise: Explore faculty webpages

1. What research questions do they ask?
2. How do answer those research questions?
3. Do they have information for prospective undergraduates?

Mechanics of finding a position II: Make contact

What are faculty looking for in undergraduate research assistants?

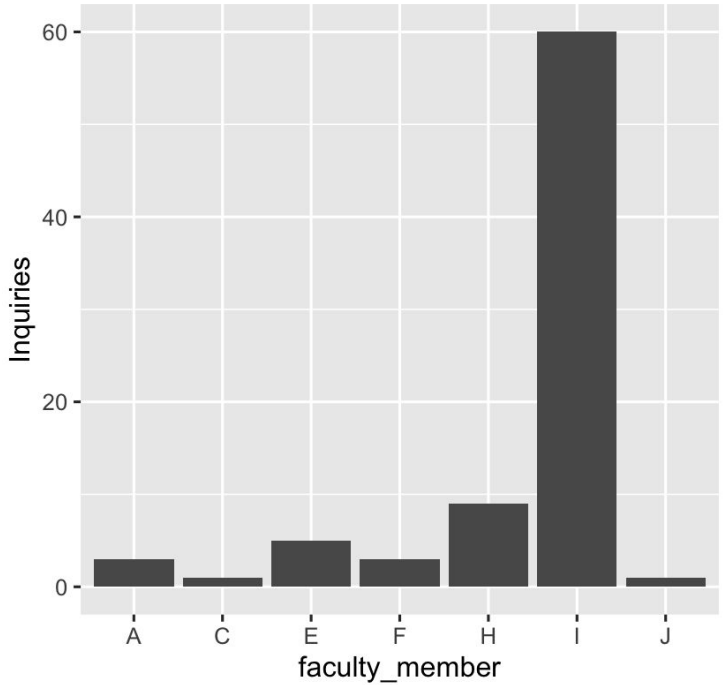
- General characteristics:
  - Enthusiasm
  - Dependability: responsible, on-time, organized, resilient, and hard-working
  - Curiosity
  - Honest about making mistakes
  - Attention to detail
  - Knows when to ask for help, but also able to be independent
  - Written and oral communication skills

What are faculty looking for in undergraduate research assistants?

- Alignment with the lab
  - Experience or interest in the **type of work done in the lab**
    - Not one faculty member mentioned anything taxon-specific!
  - Desire to learn those skills and techniques used in the lab
  - If it is more advanced, will want someone with specific skills or experience (e.g., field work or analysis)

Mechanics of finding a position III: Setting appropriate expectations

How often are you contacted each quarter regarding undergraduate research opportunities?



Range: 1-60!

Remember, faculty typically have between 0 and 5 undergraduates

The undergraduate research search timeline

Re: Interested in Undergraduate Research

Inbox ×

Barber, Paul <pa...Tue, Sep 27, 2016, 8:25 PM

to me

Hi Markus,
Thanks for your email and interest in our lab. It's great that you are looking into this as a sophomore. I'd love to support you, but right now, we don't have any openings. However, I would encourage you to keep checking in over the course of the year. Things change and spots open up.
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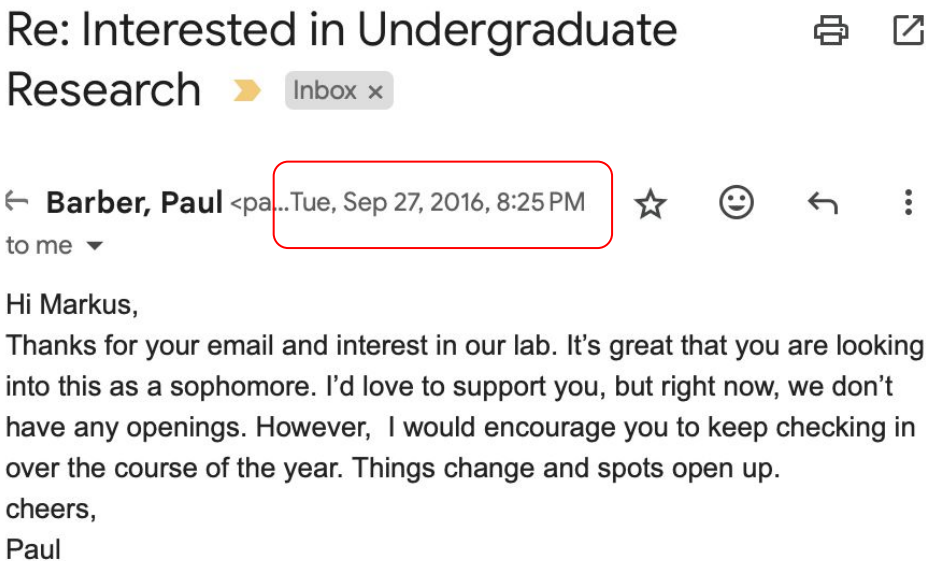

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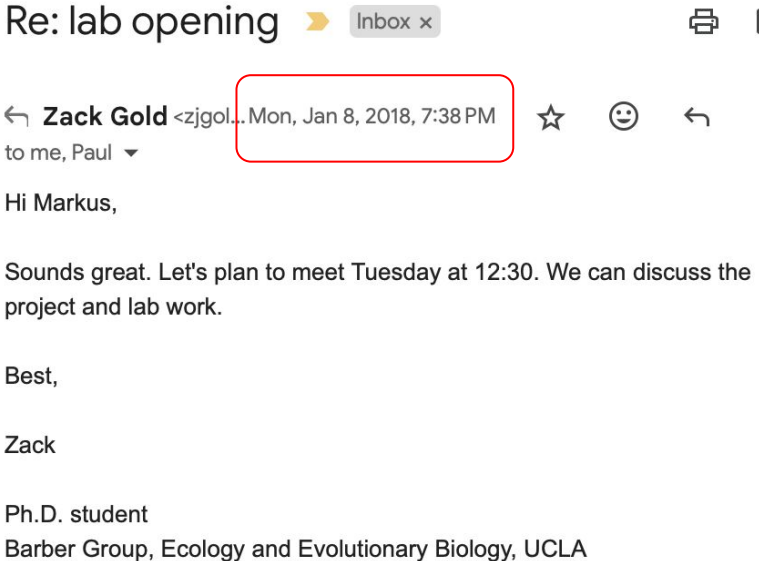

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  - Recognize that a lot of this is out of your control - funding, research needs, current graduate student projects are the main factors that determine whether or not a lab can take you on
  - Remember: There are a lot more undergraduates who want to do research than there are positions

Please take three minutes to fill out this survey and help us improve this workshop!