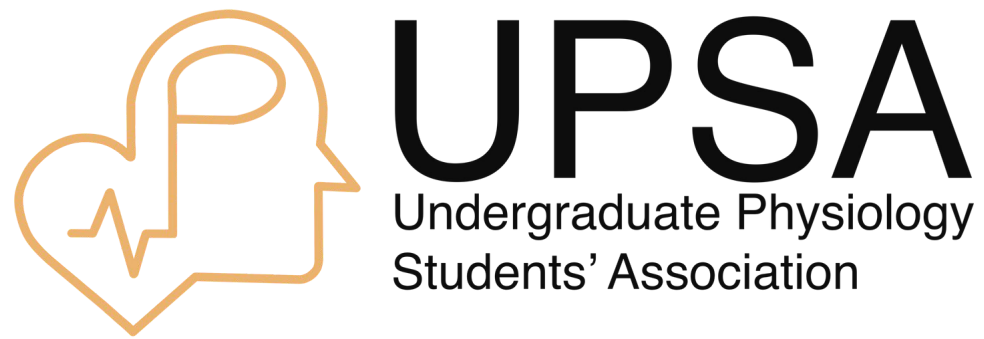
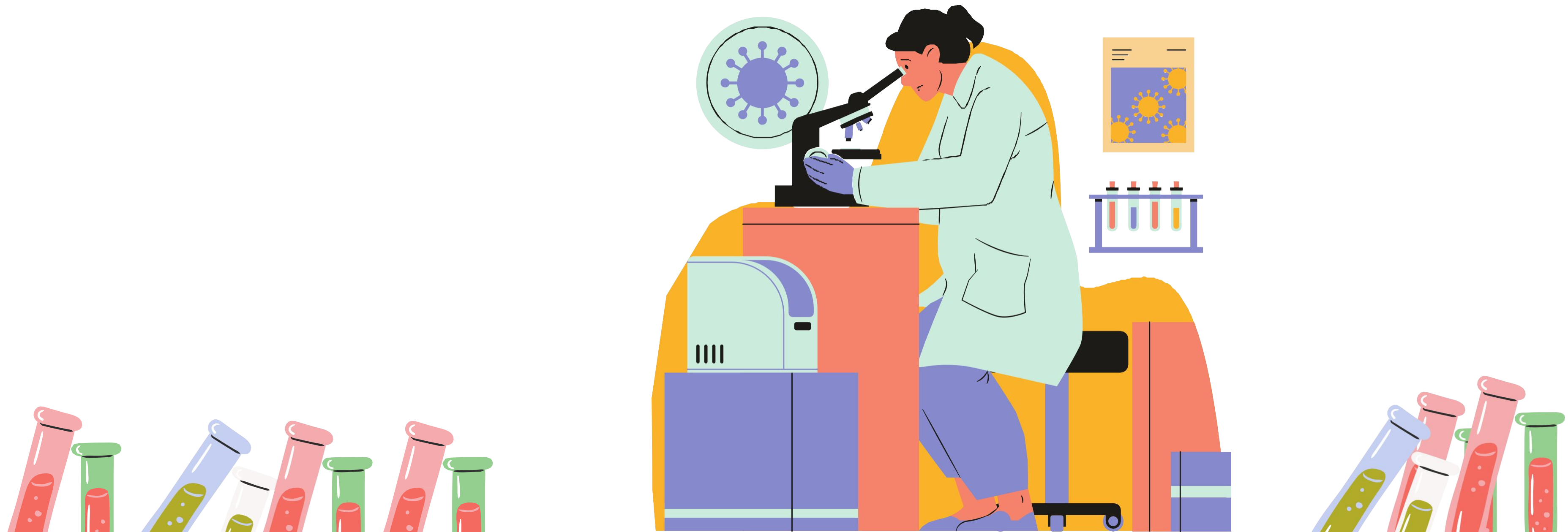




UAlberta 
Physiology



Research Available to You



DISCLAIMER

Several PHYSL research courses are geared towards the *honours* program.



NEW research course
for major program -
PHYSL 299!



Agenda

1

PHYSIOLOGY AND
RESEARCH

2

GETTING INVOLVED:
WHERE AND HOW?

3

SUMMER RESEARCH
AND FUNDING

4

PROFESSOR's POV:
DR. ELAINE LESLIE

Why Do Research?

Curiosity!



Pursue physiological topics that interest you.

Apply Knowledge



Use information from lecture in the lab.

Potential Career Path



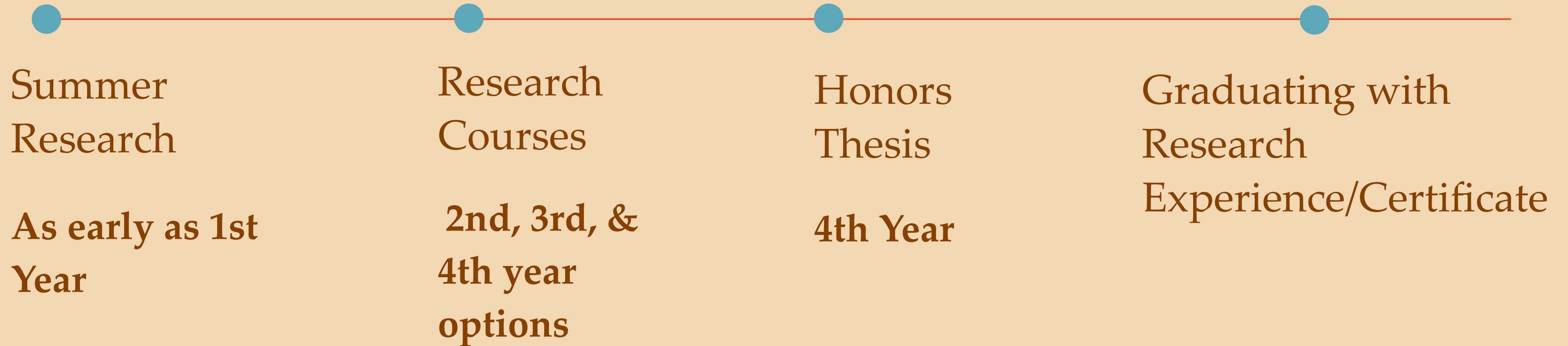
Research assistants, technicians, academic opportunities

Develop Professional Skills



Critical thinking, public speaking, interpersonal skills, networking

When?



Pathways in Physiology

- In fourth year, there are multiple streams you can choose
- **Literature-based stream:** PHYSL 463/464, PHYSL 466
- **Research-based stream:**
 - Non-thesis route: PHYSL 461 or 467
 - Thesis route: PHYSL 468/469
- Stay tuned for our Pathways in Physiology seminar this fall!

Getting Involved in Research



Finding Labs/Professors

- Use department or faculty directories to find professors!
- Browse websites of UAlberta affiliated research groups
- Undergraduate Research Initiative (URI)

Faculty of Medicine & Dentistry
Department of Physiology

Home About Us Undergraduate Program Graduate Program **Research** Find a Person News Contact Us

🏠 / Research / Research Areas

Research

Research Areas
Groups Centres Institutes

Research Areas

Cardiovascular Physiology

The function of the cardiovascular system is to provide blood flow to tissues in amounts adequate to meet the needs of the body. To accomplish this function, the human body has developed a system of pumps and distribution vessels of various types to provide cells with nutrients and remove waste products.

Members Involved

Sandra Davidge | Zam Kassiri | Gavin Oudit |

Cellular and Molecular Physiology

Cell Physiology is the study of how cells work, ranging from fundamental molecular and cellular processes to mechanistic, developmental and physiological events. It also incorporates studies dealing with systems integration of cells and tissue pathophysiological states.

Members Involved

Todd Alexander | Klaus Ballanyi | Joe Casey | Xing-Zhen Chen |
Emmanuelle Cordat | Elaine Leslie | James Young |

Endocrinology

Alberta Diabetes Institute

ABOUT CLINICAL RESEARCH RESEARCH

Home / Members / Members Directory

Members

Members Directory
Become a Member

Members Directory Faculty of Agriculture

Name	Title
Bell, Rhonda	Professor
Buteau, Jean	Associate
Chan, Catherine	Professor
Field, Catherine	Professor
Jacobs, Rene	Associate
Mager, Diana	Associate
Mazurak, Vera	Professor
Prado, Carla	Associate

Science Internship Program (SIP)

4-12 month work terms!

Gain hands on industry experience

- for example, biotech, pharm, lab tech, biomedical engineering etc.

WHEN CAN YOU APPLY?

Applications open

Beginning September

Beginning January

Early May

Applications closed

End September

End January

Early June

Internships Abroad

UofA Education Abroad has many internship opportunities; China, Germany, UK, Singapore.

Physiology Major?

Honors Physiology enables a strong focus of research, but Physiology Major students also have some opportunities to try it out.

Other departments have research and literature review courses; usually you just need to find your own supervisor, and ask for consent by the department.

Some possibilities! Make sure you check with department when planning

Incomplete list of research courses you may be able to take

BIOL 299/399/499

BIOL 398

PSYCH 396

CELL 398/498

BIOCH 398

BIOL 390

ZOOL 441/442

ONCOL 425

Other department may also have 299s(1.5 credits)

Physiology Major?

Honors Physiology enables a strong focus of research, but Physiology Major students also have some opportunities to try it out.

PHYSL 299 - new course!

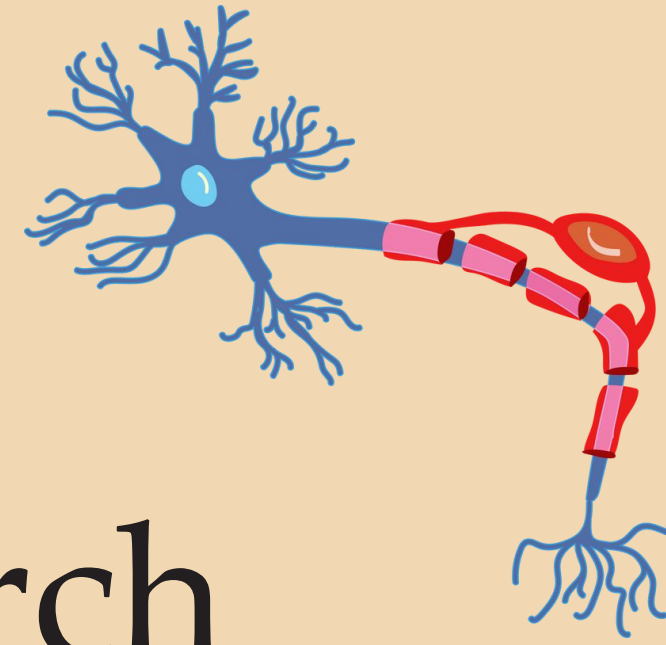
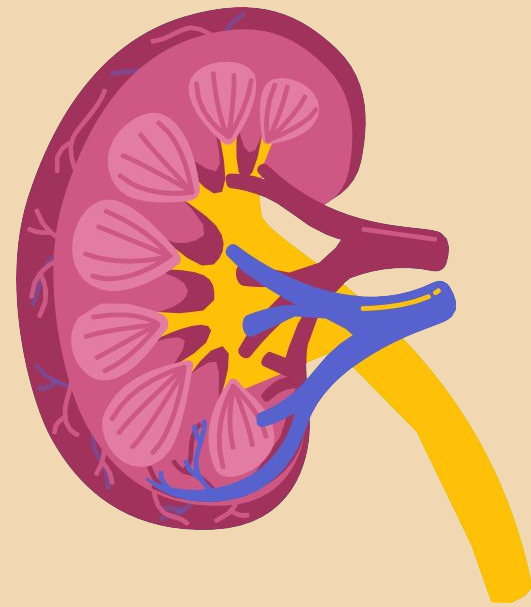
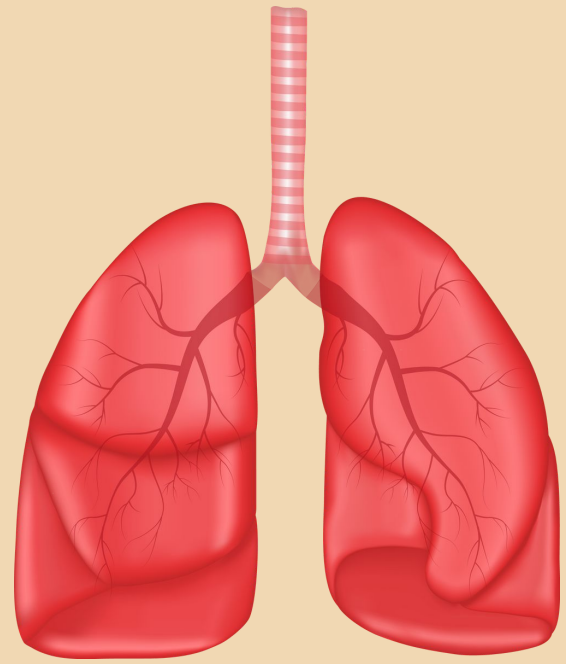
- 1.5 credit
- 10 seats/semester
- Pass/fail course
- Offered in both fall and winter semesters
 - can be taken twice

PHYSL 299 - Research Opportunity Program (ROP) in Physiology

1.5 units (fi 3)(EITHER, 0-0-4)

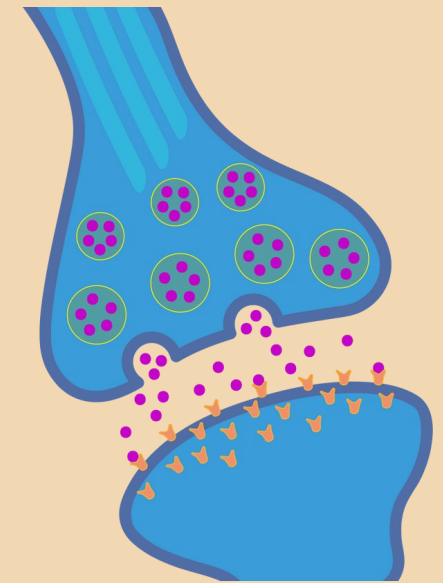
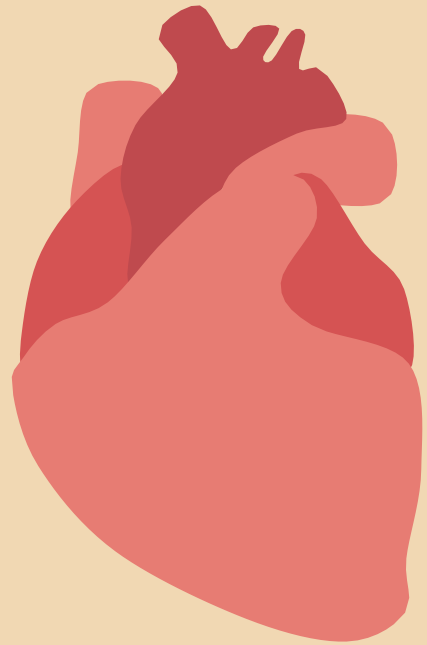
[Faculty of Medicine and Dentistry](#)

This course is designed to give students a hands-on introduction to research under the supervision of an academic member of the Department of Physiology. Recommended for students who have completed a minimum of 30 units in the Major in Physiology or Honors in Physiology programs. Note: Application does not guarantee a position. Credit for PHYSL 299 may only be obtained twice. Pre or corequisite: PHYSL 210 or PHYSL 212. Prerequisites: GPA of 2.5 or higher, and consent of the Physiology Department Chair.



Research

Available in
Physiology

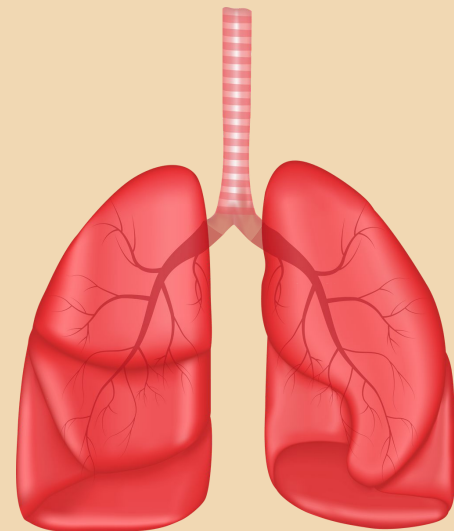


Dr. Pagliardini's Lab

Focus: Respiratory Physiology

Email: silviap@ualberta.ca

- 1-2 summer research positions available for 2027
- 1-2 thesis project (468/469) and 1-2 non-thesis project (467) available for 2027-2028 (next fall)
- 1-2 graduate student positions for 2027-2028
- Will Serve as a Co-Supervisor

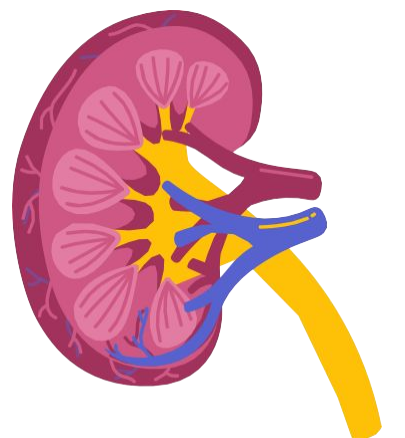


Dr. Cordat's Lab

Focus: Renal Physiology

Email: cordat@ualberta.ca

- 1-2 volunteer positions available for 2027-2028 (299)
- 1-2 positions available for thesis project courses (468/469) in 2027-2028
- 1-2 graduate student positions for 2027-2028
- Will Serve as a Co-Supervisor

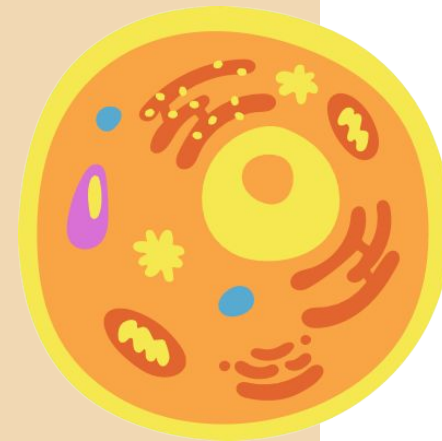


Dr. Leslie's Lab

Focus: Cell Physiology

Email: eleslie@ualberta.ca

- 1-2 summer research positions available for 2027
- 1-2 positions available for thesis courses (468/469) in 2027-2028
- 1-2 positions available for non-thesis courses (467) in 2027-2028
- 1-2 positions available for graduate students in 2027-2028
- Will Serve as a Co-Supervisor



Dr. Riddell's Lab

Focus: Reproductive and Cell Physiology

Email: mriddell@ualberta.ca

- 1-2 summer research positions available for 2027
- 1-2 positions available for thesis courses (468/469) in 2027-2028



Dr. Clugston's Lab

Focus: Lipid Metabolism (Vitamin A!)

Email: clugston@ualberta.ca

- 1-2 positions available for summer research in 2027
- 1-2 positions available for thesis courses (468/469) in 2027-2028
- 1-2 positions available for graduate students in 2027-2028
- Will act as a co-supervisor



Dr. Ng's Lab

Focus: Neonatal and Pediatric Neurophysiology

Email: cng2@ualberta.ca

- 1-2 volunteer positions available for 2027-2028
- 1-2 summer research positions available for 2027 (if students have funding)
- 1-2 positions available for thesis courses (468/469) in 2027-2028
- Will act as a co-supervisor



Dr. Schmolzer's Lab

Focus: Fetal/Neonatal Physiology

Email: schmolze@ualberta.ca

- 1-2 volunteer positions available for 2027
- 1 position available for thesis courses (PHYSL 468/469) in 2027-2028
- 1 position available for non-thesis courses (PHYSL 467) in 2027-2028
- Will act as a co-supervisor

Dr. Munz's Lab

Focus: : Embryonic Physiology

Email: mmunz@ualberta.ca

- 1-2 summer research positions available for 2027
- 1-2 positions available for thesis courses (PHYSL 468/469) in 2027-2028
- 1-2 positions available for non-thesis courses (PHYSL 467) in 2027-2028
- 1-2 graduate student positions available for 2027-2028
- Will act as a co-supervisor



Dr. Kolic's Lab

Focus: Diabetes

Email: jkolic@ualberta.ca

- 1-2 positions available for thesis courses (PHYSL 468/469) in 2027-2028
- 1-2 positions available for non-thesis courses (PHYSL 467) in 2027-2028
- 1-2 graduate student positions available for 2027-2028
- Will act as a co-supervisor



Dr. Olson's Lab

Focus: Fetal Physiology

Email: dmolson@ualberta.ca

- 1-2 summer research positions for 2027
- 1-2 positions available for thesis courses (468/469) in 2027-2028

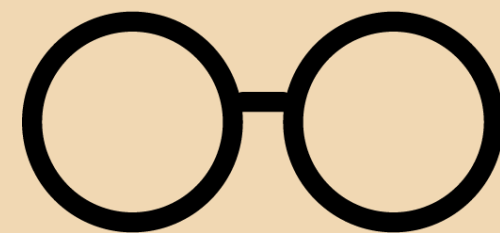
Dr. Carr's Lab

Focus: Sensory Physiology (Vision)

Email: bcarr1@ualberta.ca



- 1-2 positions available for summer research in 2027
- 1-2 positions available for thesis courses (PHYSL 468/469) in 2027-2028
- 1-2 positions available for non-thesis courses (PHYSL 467) in 2027-2028
- 1-2 graduate student positions available for 2027-2028



Dr. Yue's Lab

Focus: Metabolic and Neurophysiology

Email: jessica.yue@ualberta.ca

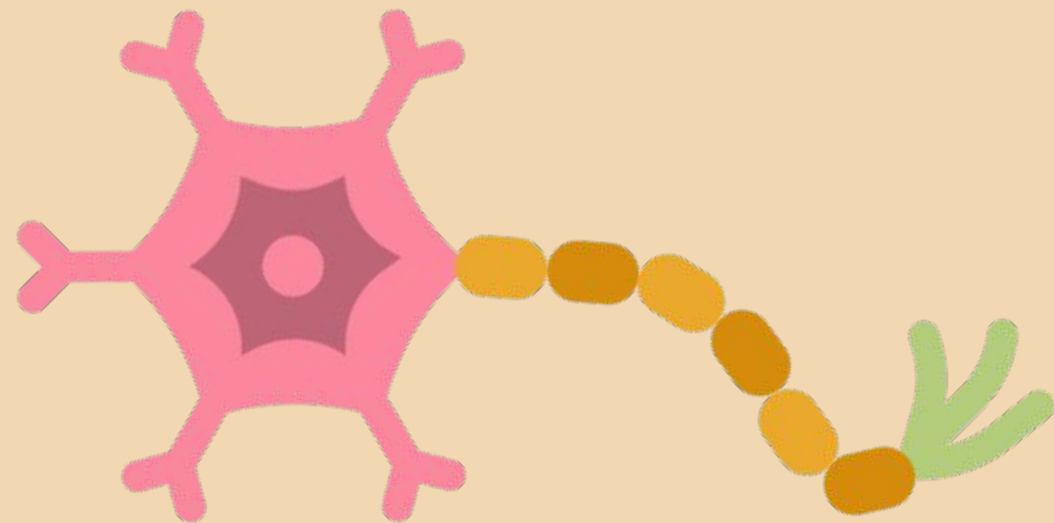
- 1-2 volunteer positions available for 2027-2028
- 1-2 positions available for summer research in 2027
- 1-2 positions available for thesis courses (PHYSL 468/469) in 2027-2028
- 1-2 graduate student positions available for 2027-2028

Dr. Gosgnach's Lab

Focus: Neurophysiology

Email: gosgnach@ualberta.ca

- 1-2 graduate student positions available for 2027-2028

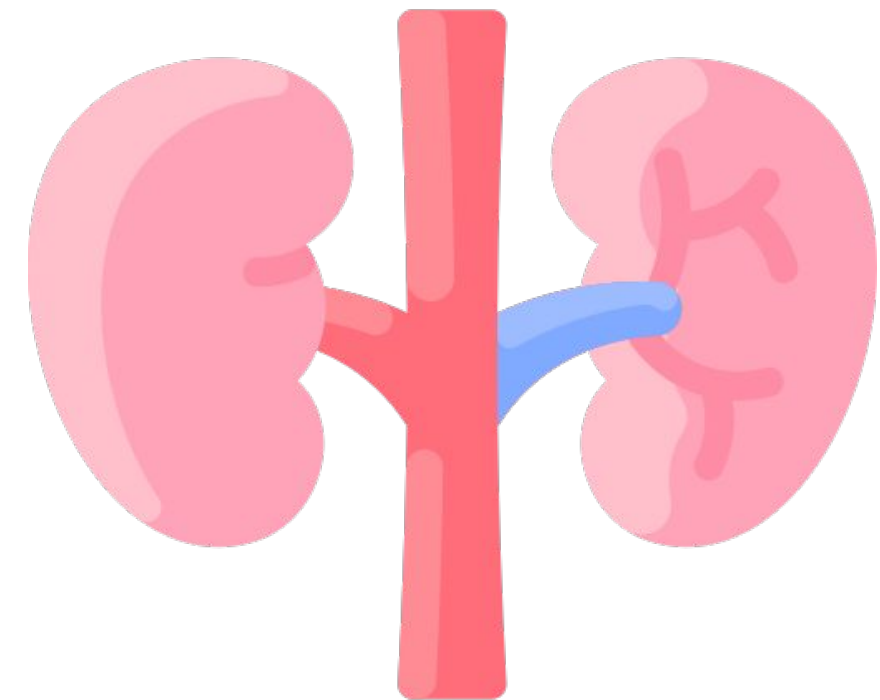


Dr. Alexander's Lab

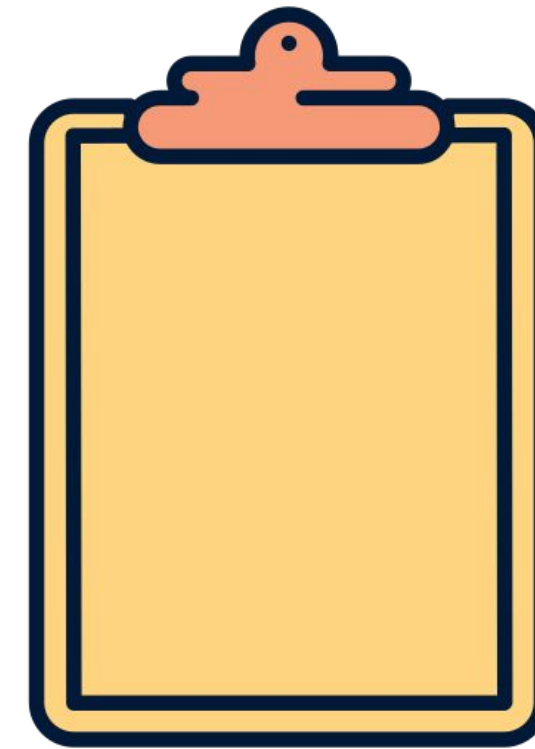
Focus: : Renal Physiology

Email: todd2@ualberta.ca

- Will act as a co-supervisor



- Dr. Kassiri (Cardiovascular Physiology)
Email: z.kassiri@ualberta.ca
- Dr. Hamza (Integrative Physiology)
Email: shamza@ualberta.ca
- Dr. Davidge (Reproductive and Cardiovascular Physiology)
Email: sdavidge@ualberta.ca



Available as Co-Supervisors

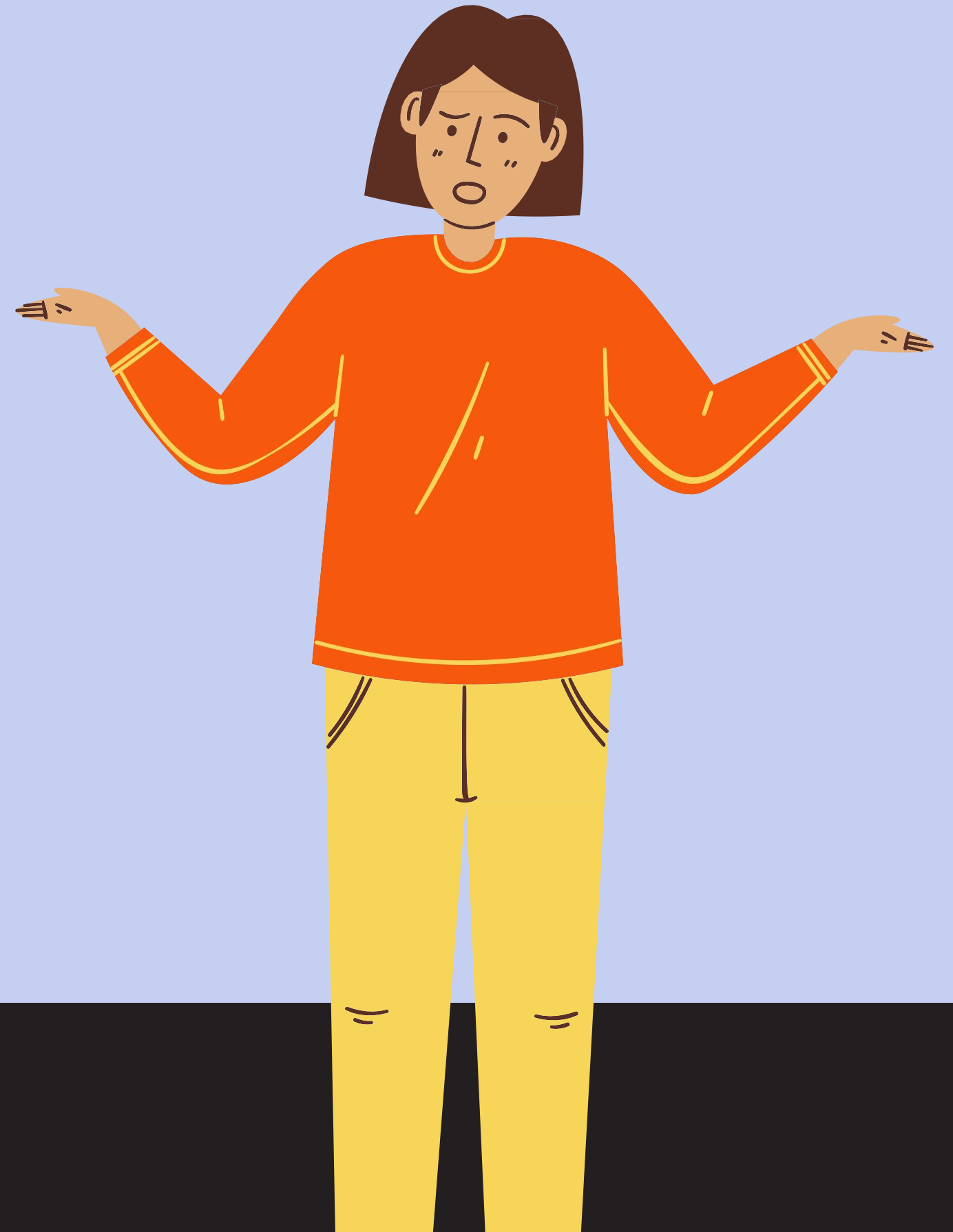
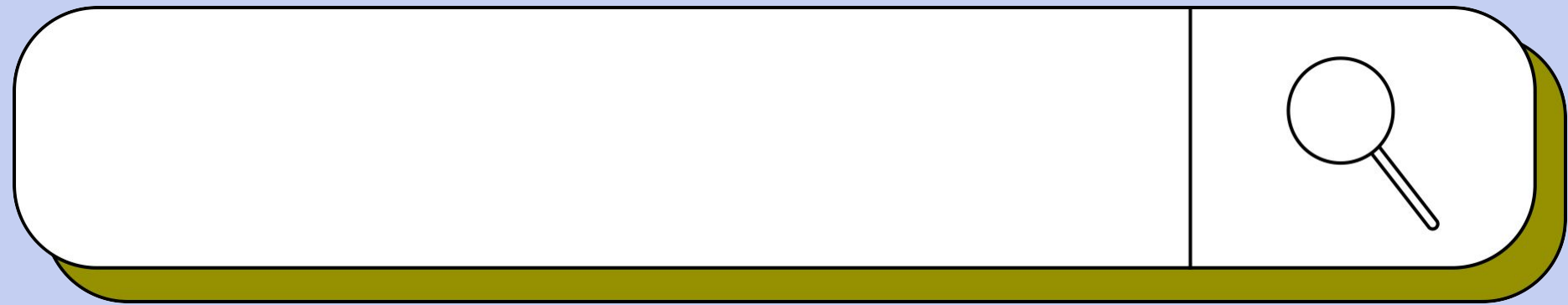
Other Professors:

- Dr. Braam
- Dr. Dickson
- Dr. Bourque
- Dr. Kerr
- Dr. Chen
- Dr. Ioannou
- Dr. Jackson
- Dr. Oudit



That's all for an intro to
some of the lovely profs in
our department!

Contacting Professors



Connecting with Labs/Professors

- Speak to your professors before/after lectures
- Attend research seminars/symposiums/ conferences
- Attend UPSA's Lab Tours!
Inquire EARLY! (many do interviews in late fall)
- **URI Undergraduate Research Portal**



Undergraduate
Research
INITIATIVE

Email Checklist



- Name, program, and year
- Reason for your interest in their lab, read some of their papers!
- Ask if there are any lab opportunities
- Attach resume/CV and transcript
- State your intentions (looking to do summer research, research course, etc)

Subject: Getting Involved in Cardiovascular Disease Research

Good Morning Dr. Coolresearcher,

My name is Promising Undergrad and I am currently in my second year of a Bachelor of Science degree in Biological Sciences. I have taken many introductory science lab courses, and am looking for opportunities to gain more experience through undergraduate research.

I am fascinated by the complexity and interaction of body systems, and I want to develop research skills relevant to a career in clinical sciences. Your research, especially in the realm of cardiovascular disease and insulin release, are of great interest to me as my family has a medical history of diabetes and heart problems. After reviewing some of your recent papers, I am very interested in the drugs you are currently testing for heart failure.

Could we please meet to further discuss your lab's studies and opportunities for students to contribute in this field? I bring a positive attitude, strong work ethic and eagerness to learn to the table.

Thank you for considering my interests.

Regards,

Promising Undergrad

Major/Minor, Class of 20xx

Contact/Interview Etiquette (Tips)

Show Interest in the Research

- Don't just reach out to all professors
- Be intentional

Don't Hesitate

- Start reaching out early - mid semester
- Spots fill up very quickly

Concise Emails

- Indicate info from checklist
- Be short and to the point

Look + Be Professional

- When meeting a professor, arrive on time
- Dress well

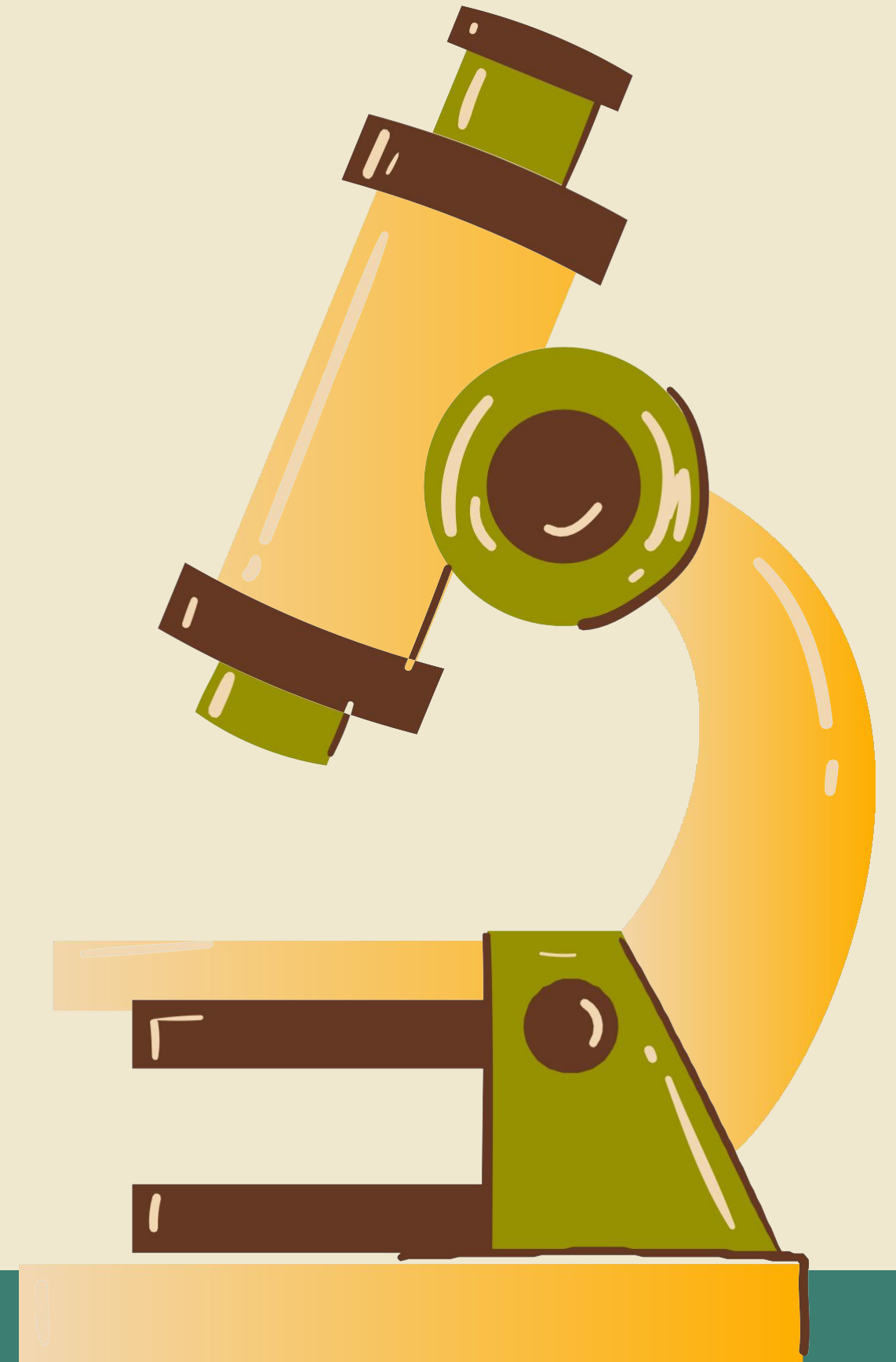
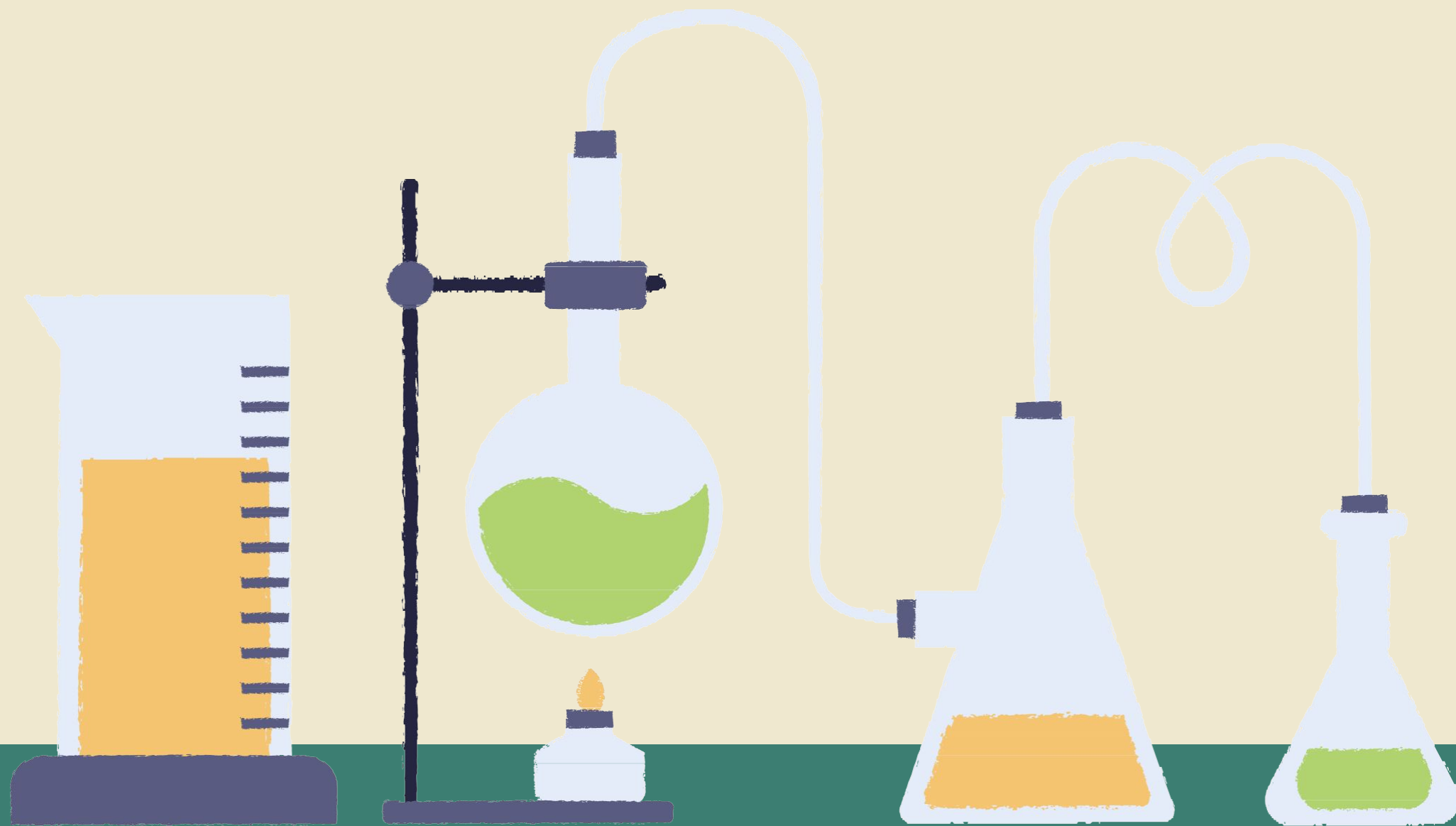
Ask Questions

- Who will train me?
- What project(s) will I be involved in?
- What is the expected time commitment

Answer Questions

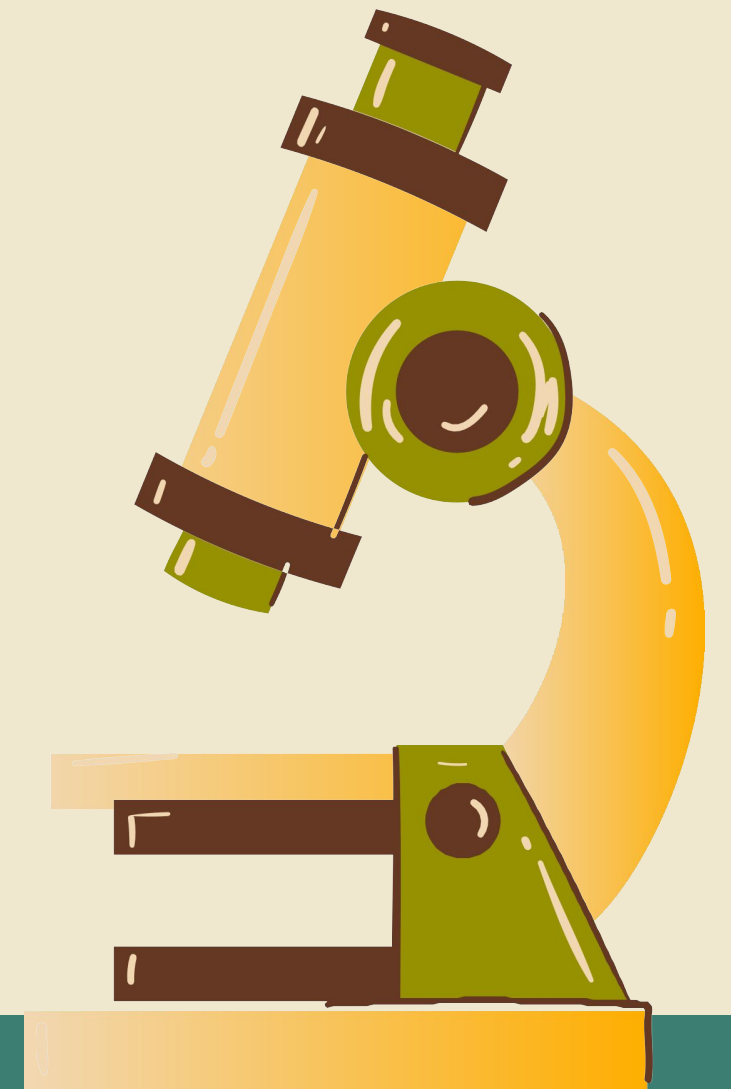
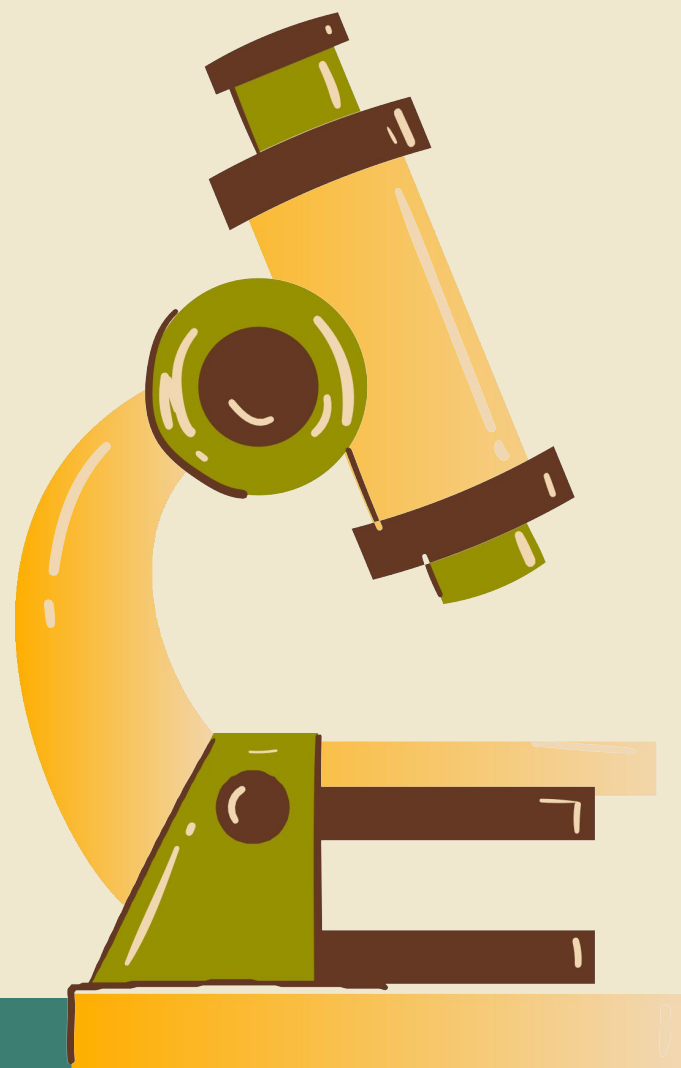
- Why are you interested in this research?
- Qualification?
- Availability?

Summer Research



Summer Research Benefits

- Establish a rapport with your PI and lab team
- Great addition to the resume
- Experience will add appeal to your graduate/professional program applications



Funding Opportunities

Alberta Innovates SRS

Check out their homepage for more info



NSERC

Full time research only



Funding Opportunities

URI Stipend

For U of A Students, not based on GPA.

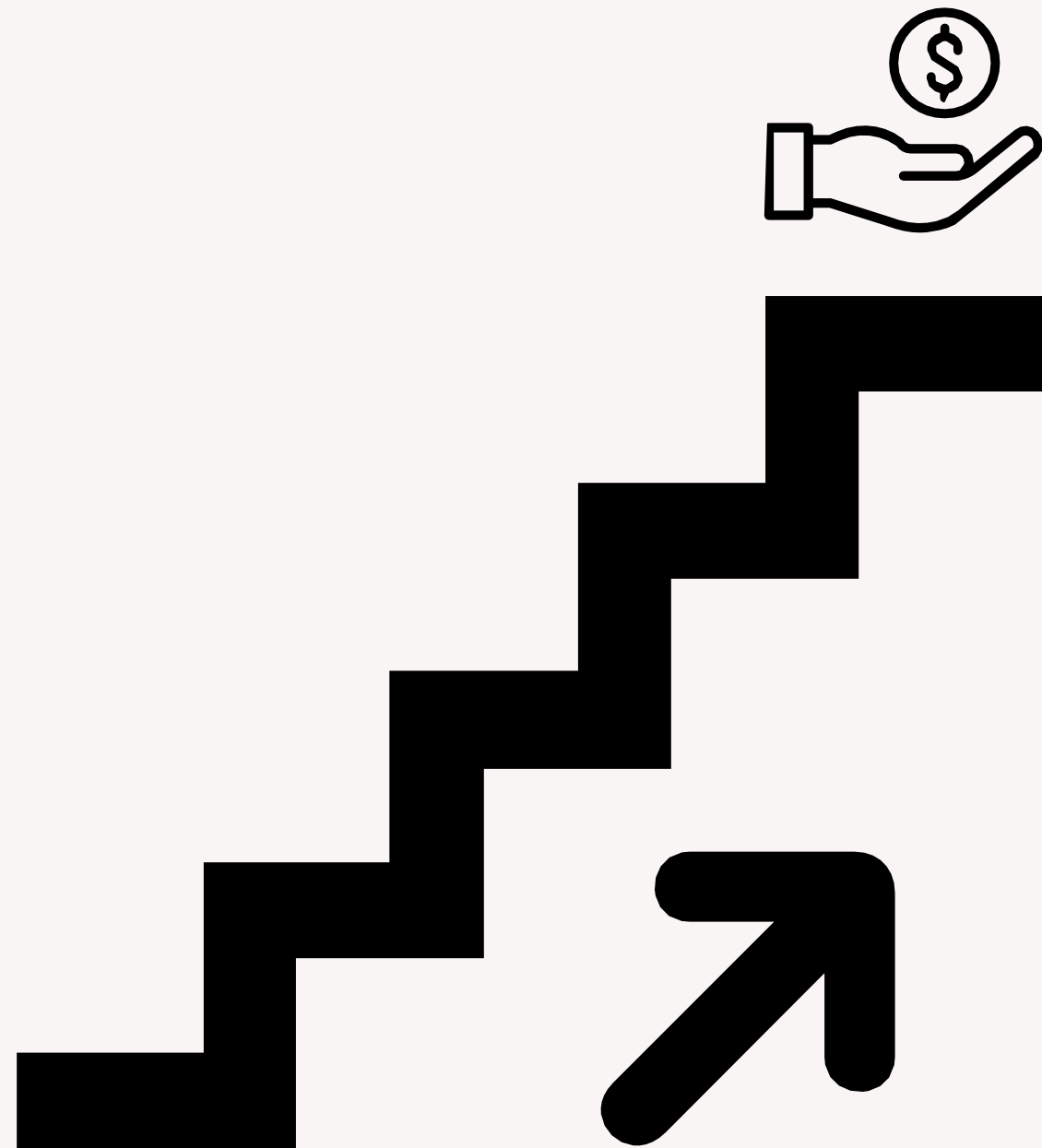


Specific Research-Based Awards

- Alberta Diabetes Institute (ADI),
- Faculty of Medicine and Dentistry (FoMD)
- Alberta Transplant Institute (ATI)
- Cancer Research Institute (CRINA)
- Alberta Respiratory Centre, etc...



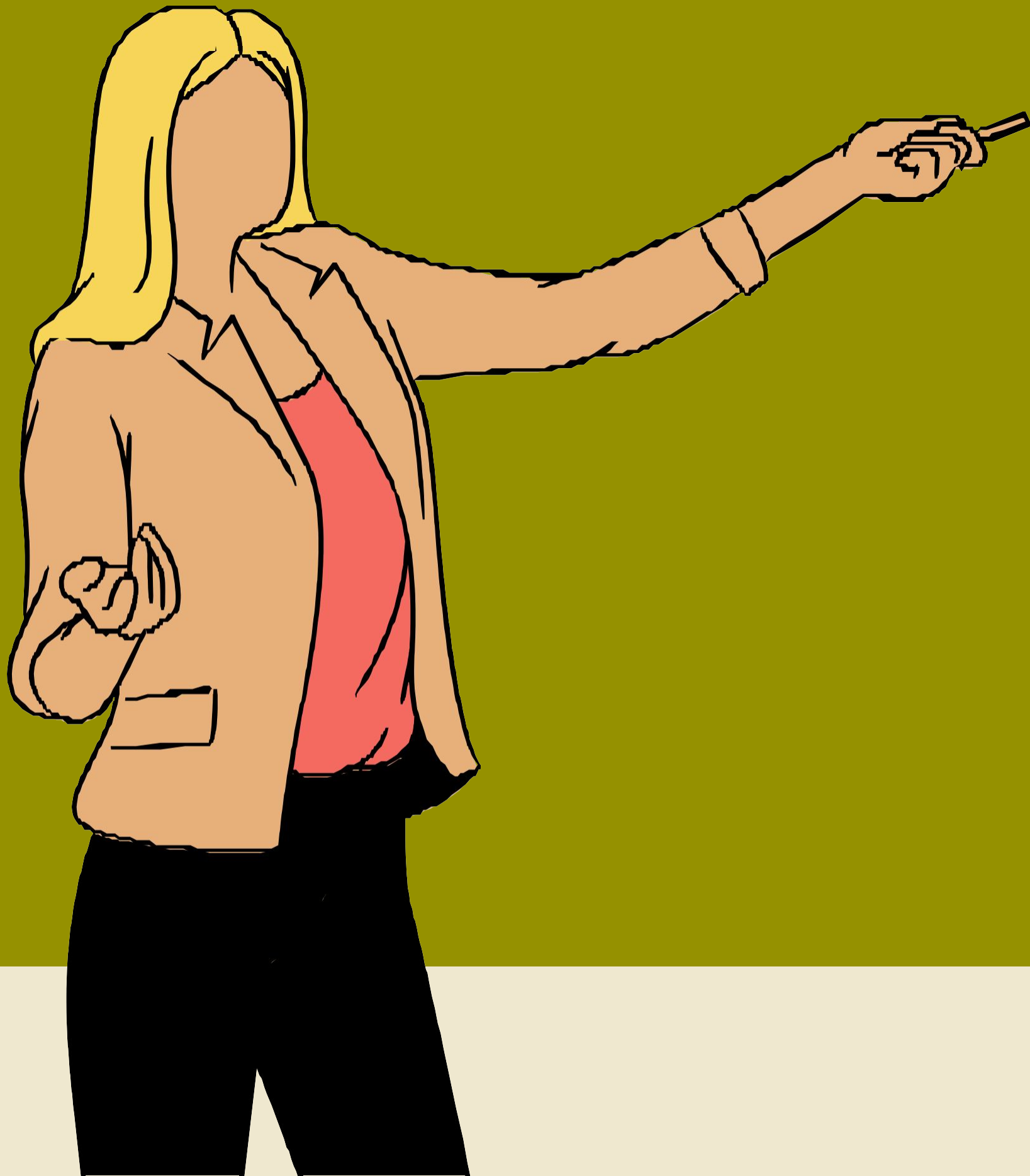
General Steps to Acquire Funding



- 1 Do your research (eligibility, deadlines, etc.)
- 2 Discuss options with PI
- 3 Write and submit application
- 4 Accept funding and make the most of this experience!

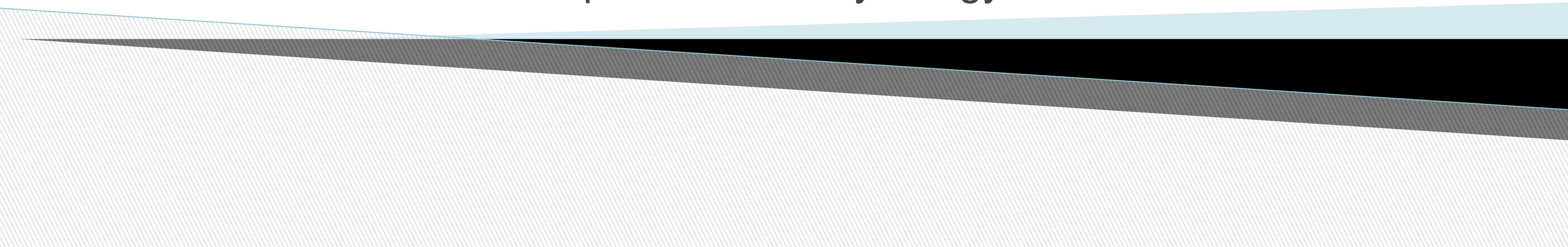
Professor Experience

Guest speaker: Dr.Elaine Leslie



Summer Research Session: Professor Experience

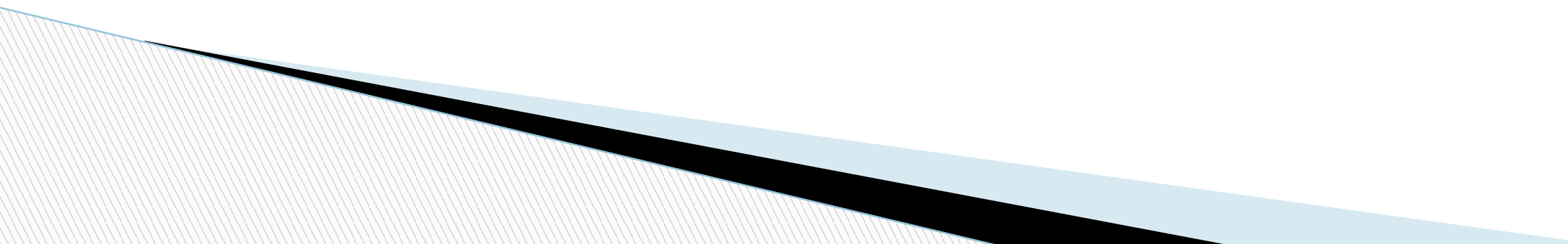
Elaine M. Leslie, PhD
Professor
Department of Physiology

The bottom of the slide features a decorative graphic consisting of several overlapping, wavy horizontal bands. From top to bottom, the colors are light blue, black, dark grey, and light grey. The light grey band at the bottom has a fine, diagonal hatching pattern.

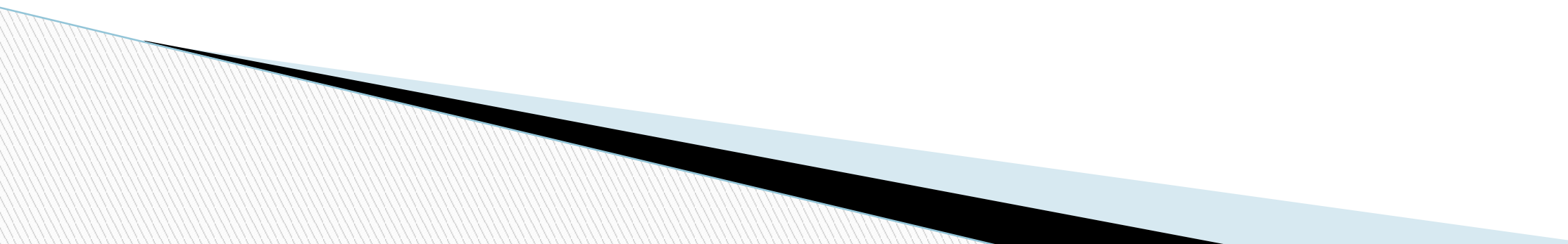
Why I have undergraduate students in the lab.

- Summer students:
 - Ask questions that make everyone in the lab think.
 - Give an opportunity for graduate students to learn teaching/mentoring skills.
 - Add a lot of energy and fun to the lab.
 - To give students a chance to:
 - Gain research experience.
 - Explore research as a career path
 - Potential recruitment for MSc/PhD students
- 

Why do summer research?

- Find out if research might be a career path for you
 - This might change your life!
 - Apply what you have learned in class
 - Learn a technique (for real) before you learn about it in class
 - Life skills for all career paths:
 - Trouble-shooting
 - Critical thinking
 - Writing/documentation
- 

What do summer research students do in my lab?

- It takes a long time to become a well trained scientist.
 - Paired with an experienced member of the lab for training.
 - Get trained
 - Safety (biosafety, chemical safety, radiation safety)
 - Other certifications
 - Techniques
 - Do experiments, do experiments, do experiments
 - Read literature, write abstracts, prepare presentations, etc. (with lots of guidance)
 - Help with lab tasks (wash dishes, chemical inventory, etc.)
- 

What kind of projects have they had in the past? What experimental techniques have they used?

Example 1:

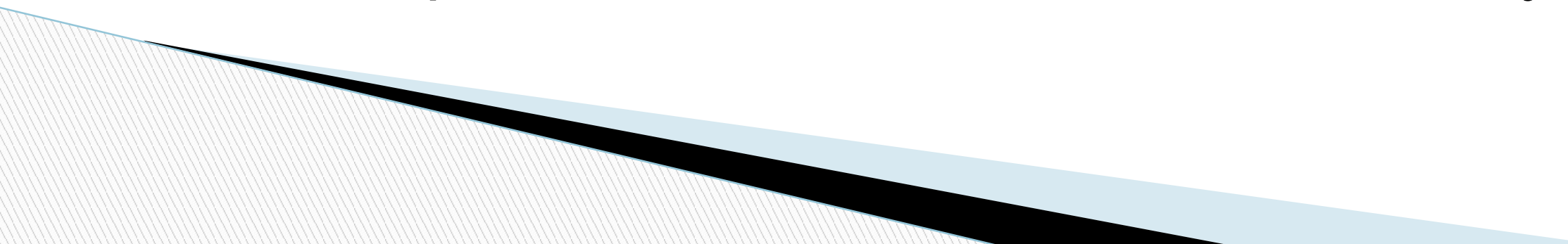
- Determine if a transporter protein protects cells from an environmental toxicant (e.g., arsenic).
 - Cell culture
 - Cytotoxicity assays
 - Western blots
 - Possibly transport assays.

What kind of projects have they had in the past? What experimental techniques have they learned?

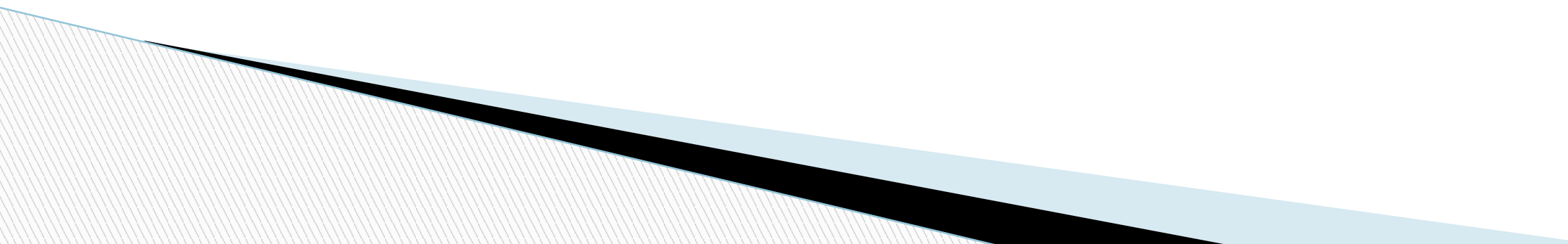
Example 2:

- Characterize a genetic variant of the transporter protein MRP1 (or MRP2 or MRP4).
 - Make variant (PCR, grow bacterial cultures, prepare DNA)
 - Express mutant in a mammalian cell line (transfection techniques, subcellular fractionation, western blots).
 - Characterize function of the variant (whole cell transport assay, plasma membrane vesicle transport assay)

What expectations do you have of your summer research students?

- Be engaged and interested in your project—read (about your project) when you are not busy in the lab.
 - Pitch-in at the lab---e.g., wash dishes, help organize, be a part of the team.
 - Be “trainable”, safe, follow the lab and EHS rules, work when others are working.
 - Be courteous to your PI and lab mates. Show up on time for meetings. Be respectful of their time.
 - Participate in summer student research day (poster, talk).
- 

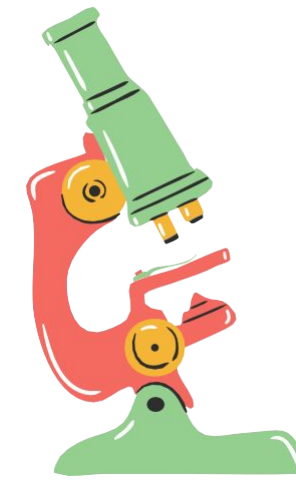
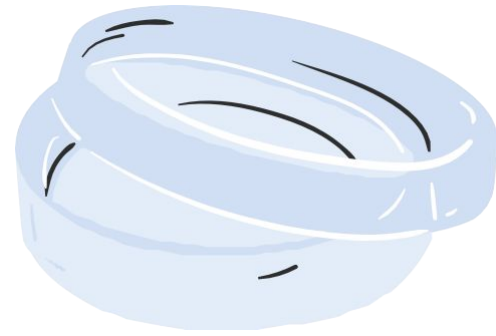
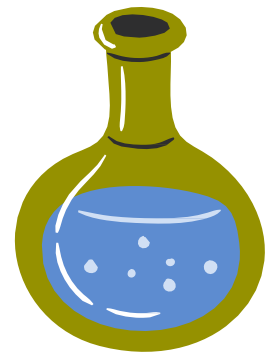
Remember....

- You will get out of the research experience what you put into it
 - Take the opportunity seriously and put your best effort forward.
 - You are a trainee. You will make mistakes in the lab. Learn from them.
 - Have fun.
- 

Questions???

Advice from Your Profs

- Start looking for research opportunities early and don't give up if you can't find a spot right away!
- Work in a lab/lab group with multiple undergraduates.
- Do not take 'no' personally.
- Widen your scope beyond the Physiology department .
- Seek out areas that genuinely interest you!



**Thank you for
listening!**

Q+A

