School of MCB
Undergraduate Research Information Session

Tina M. Knox,
Assistant Director for Advising and Recruitment
January 31, 2024
Agenda

• Special information for biochemistry students
• What is undergraduate research?
• How to find a lab
• How to enroll in MCB 290/BIOC 290
• Student panel with research experience
• Graduation with Distinction, if time
Biochemistry Majors Only

- BIOC 290, independent laboratory research
- BIOC 492, senior thesis
- Student profile not necessary
- Paper forms signed by Alison Neff
  - Working on electronic forms for summer 2024
- Need 6 hrs of senior research for distinction in biochem
  - At least 4 hrs must be from BIOC 492. 7hrs can count as tech elective
- Email Alison for additional information, hantak@illinois.edu, Room 417 RAL, after March 18
What Is Undergraduate Research?

- A mentored investigation conducted by undergraduates that seeks to make a scholarly contribution to knowledge.

- Original work performed under the direction of a UIUC faculty member (P.I.), post-doc or graduate student.

- Earn course credit (MCB 290 or BIOC 290)
  - Earn a grade for their contributions to the lab

- Some paid positions exist (Campus Job Board)
  - Cannot earn money if earning credit
Why Research?

• Enrich your educational experience
• Make connections with faculty
• Develop skills in analytical thinking, communication and teamwork
• Determine if graduate studies may be a viable post-graduate goal
Why Research?

• Gain intensive practical knowledge using modern technology
• Explore issues and methods in your field of interest
• Build confidence
• Practice problem solving
Is Research Required?

• For PhD programs, YES!
• For most MD and DO programs, no, but helpful
• For MD/PhD program, YES!
• Research can help make you more competitive.
• Depends on Mission of institution
What is Your Why?

• You should not do research only to check a box for med/dent/pharm/vet school!
• Think about your interest and motivation.
• Try it out to see if it’s something you enjoy.
Eligibility for MCB 290/BIOC 290

- Must be a *declared* major in Biology, MCB, Neuroscience, or Biochemistry
- Conduct research in an *approved* laboratory at UIUC
- Good academic standing, recommended GPA of 2.75 or higher
- Cannot receive monetary payment, or any other form of academic credit, based on the research for which MCB 290 or BIOC 290 credit is earned.
- Must enroll in the course by the university deadline to add a
Typical Workload

• 1 credit MCB/BIOC 290 = approximately 5 hrs/week in lab/over a 16-week term (8-week summer sessions, 1 credit = 10 hrs/week)

• Keep in mind this is an average. You need to plan to stay until your work is done. Each lab will have own policies. Good to get this in writing.

• Make sure you have a clear understanding of the faculty expectations for credit and how your grade will be assessed.
Expectations

• Show dedication to the project. This should be a priority.
• Read primary research articles
• May need to come in at odd hours, including nights and weekends.
• May be expected to attend lab meetings.
• May be expected to present your data.
• May be expected to write a senior thesis.
Limits?

- A limit of 10 credit hours of MCB 290/BIOC 290 can be applied towards the 120 hours needed for graduation.

- However, you are encouraged to continue your research for as many terms as you wish.

- All MCB 290/BIOC 290 semesters and the assigned letter grades will appear on your transcript and count in your GPA.
How to Find a Lab

1. Determine when you want to start and how long you can commit; then plan your course/work schedule accordingly.
2. Review information on SMCB websites, talk with TAs and faculty in your classes.
3. Read about faculty and their research interests.
4. Make a list of faculty with whom you are interested in working.
5. Create an online student profile or resume/CV.
6. Contact faculty via email: Be professional and concise;
Campus Resources

• Office of Undergraduate Research
• Websites
• Academic Advisors
• Faculty
• Graduate Teaching Assistants
Apprenticeship Program

- Offers undergrad students with little or no research experience the opportunity to work with graduate students and post-doctoral scholars.
  - on their research projects
  - explore the culture and process of research
  - build on their existing abilities within a community of scholars.
- Runs each Spring semester, consists of two equally important parts
  - One-on-one research experience with their research mentor
  - Introduction to Research course.
  - Designed to complement the research mentoring experience, orienting undergraduate mentees to broader topics in the research process.
How to Find a Lab

Review information on MCB websites

- Finding a research lab
- Eligibility and obtaining credit via MCB 290 and MCB 492 forms
- Determining work load
- Applying for a summer research fellowship (SURF)
- Submitting a senior thesis (optional)
How to Find a Lab

Read about faculty research interests in MCB and beyond

- [https://mcb.illinois.edu/research](https://mcb.illinois.edu/research)
- Google UIUC ______ research
- [https://experts.illinois.edu/](https://experts.illinois.edu/)

Make a list of faculty you want to contact
Interdisciplinary Centers

• Institute for Genomic Biology, IGB
• UIUC Beckmann Institute
• Cancer Center at Illinois
• The Microbial Systems Initiative
• Research Park
Supriya Prasanth
Professor and Head of Department of Cell & Developmental Biology

Faculty Profile

Research Interests

Chromatin Structure, DNA Biology, Protein-Nucleic Acid Interactions

Disease Research Interests

Cancer

Research Description

Eukaryotic DNA replication; Chromosome structure & maintenance; Heterochromatin organization; Cell cycle control

The initiation of DNA replication in eukaryotic cells is a highly regulated process that leads to the duplication of genetic information for the next cell generation. DNA replication, which occurs during S phase of the cell cycle, is intimately linked to mitotic progression and eventually cell division. Inaccurate DNA replication in turn leads to abnormal chromosome segregation resulting in aneuploidy and genomic instability, a hallmark of most cancerous cells. Thus the accurate duplication of DNA is of paramount importance and is governed by a number of proteins including the Origin Recognition Complex (ORC) which serves as a landing pad for the assembly of a multiprotein pre-replication complex. Other than its bona fide role in DNA replication, ORC proteins are involved in diverse functions including gene silencing, heterochromatin organization, cytokinesis and also in dendrite formation in postnatal neurons. The focal point of research in my lab is to study the events and uncover the mechanisms that regulate ORC in heterochromatin organization, chromosome segregation and cytokinesis, major focus being on the role of ORC in intercellular processes events.

The research project includes:

Role of ORC proteins in heterochromatin organization and chromosome structure

Contact Information

Department of Cell and Developmental Biology
University of Illinois at Urbana-Champaign
204 A New Science Laboratory
101 E. Goodwin Avenue
Urbana, IL 61801

E-mail: sp3533@illinois.edu

Research Areas

Cancer

Chromatin Biology

Protein-Nucleic Acid Interactions

Highlighted Publications


How to Find a Lab

Create an online Student Profile or a Comprehensive Resume/CV

**Using the MCB 290 Student Profile Database**

If you plan to contact MCB professors during your search for a research position, we recommend that you submit an electronic resume to the [MCB 290 Student Profile Database](#). Your on-line resume may be completed at any time and will remain active in the database for six months. During your search, this allows you to provide uniform information to all MCB professors whose research is of interest to you. Non-MCB faculty will not have access to this database, so you will need to send them your information in a Word document. Questions regarding the MCB 290 Profile Database can be directed to [mcb290help@life.illinois.edu](mailto:mcb290help@life.illinois.edu).
Resume/CV

Purpose of Your Resume/CV

Document that outlines your experiences and states your objective

- Professional/work
- Academic Extracurricular
- Skills you have acquired

Think of your resume as an advertisement for yourself. A strong resume should demonstrate your excellent written communication skills and make the reader want to interview you.

https://www.careercenter.illinois.edu/howtoresume
Resume/CV

Items to Include specifically for research Positions.

• Full name and preferred name, if different
• Illinois email address
• List your major(s) and declared minor(s)
• Expected graduation date (which semester and year)
• What year in school are you – by years, not by hours
• How many semesters do you anticipate being available for research?
• What is your overall GPA?
• What is your science or major GPA?
• Include a copy of your unofficial academic history or include a section with relevant courses taken, including class titles and grade earned.
  • MCB, IB, CHEM, PHYS, STAT, MATH, CS
• Include an objective paragraph explaining your interest in undergraduate research – 500 words or less.
• Include any past work history
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Student Profile Database

MCB 290 Undergraduate Research Student Application

For detailed information about the application process, please refer to: http://www.mcb.uiuc.edu/undergrad/research.html. Please contact mcb290help@life.uiuc.edu with any questions regarding this application.
MCB 290 Undergraduate Research Student Profile

For detailed information about the lab search process, please refer to: http://www.mcb.uiuc.edu/undergrad/research.html. Please contact mcb290help@life.uiuc.edu with any questions regarding completion or use of this profile system. Once submitted, MCB 290 Student Profiles are fact-checked and approved by the MCB Advising Program on a weekly basis. Notification of approval or denial will be received by email. Denials will include instructions for correction and resubmission of the profile. Once approved, your profile will remain active in the database for 6 months.

Completion of the profile is restricted to one hour. It is recommended that you compose your responses for the text boxes in a word processing program, then copy/paste them into the profile.

Campus Experience

Semester in school: 1 (NOT year in school)

Current Major: 
(Note: only biochemistry, biology and MCB students are eligible to use this profile system)

Major GPA: (ex. 3.51; The major GPA is based on all MCB, IB, CHEM, PHYS and MATH courses taken. Do NOT use your overall GPA. If you have declared your MCB or Biochemistry major, you can obtain your major GPA via a DARS audit at http://mar.cellar.edu/dars/generate.html. First semester students without a GPA should enter FRESH, indicating that you are a Freshman and do not have a GPA to report.)

Research Details

Semester Requesting: Summer 2015

Anticipated duration of research (if of semesters):

Are you considering a senior thesis (MCB Majors: MCB 492; BIOCHEM majors: BIOC 492) as part of your research experience? Yes No Don't Know

Have you previously conducted laboratory research? Yes No

Describe undergraduate research or relevant work experience already acquired:
Finding your Major GPA

- Run a Degree Audit for your major
- Scroll down to find “Major GPA Requirement”

**MAJOR GPA REQUIREMENT - YOUR GRADE POINT AVERAGE FOR ALL COURSES INCLUDED IN YOUR MAJOR GPA TAKEN ON THIS CAMPUS MUST BE 2.0.**

52.0 GPA HOURS EARNED  205.00 POINTS  3.94 GPA
Student Profile Database

- Profile information is checked for accuracy by MCB Advising, typically takes ~1 week for processing.
- Upon approval, you will receive an email with a link to your profile that you can send to MCB faculty.
- Profile is only active for 6 months, then must update
- Only available to MCB/BIOC/NEUR students
- Only viewable by MCB/BIOC/NEUR faculty
How to Find a Lab

Contact Faculty

✓ Send introductory email – preferred method
✓ Be professional (use greeting and signature)
✓ Be specific to each lab – why are you interested in their research?
✓ Be patient and persistent
  • May have to send a follow up email
  • Wait at least 5 days between emails
✓ Work in batches, contact 4 or 5 labs at a time
How to Find a Lab

Template for Introductory email

Dear Dr. Anakk,

My name is Tina Knox. I'm a sophomore in MCB and am very interested in undergraduate research as I’m considering graduate school in the future. In looking at your research website, I see that you study liver metabolism. I've learned a bit about metabolic pathways in my MCB classes and would love to get a deeper understanding of how they relate to disease in the body. Do you have space for an undergraduate in your lab next spring?

I've linked to my student profile here, studentprofilelink (or I’ve attached my Resume here). If you need any additional information, let me know. I hope to hear from you soon about opportunities in your lab.

Thanks for your consideration,

Tina Knox
Interview Tips

• Casual dress, but professional
• Come prepared to talk generally about lab projects and why you are interested
• Ask about expectations!!!!
  ➢ When/how often are you expected to be in lab?
  ➢ How will your grade be determined?
• Be honest about your availability
  ➢ Academics should come first?
• Send a brief thank you email
How to Enroll in MCB 290

• Fill out online form before add deadline.
• Note if this is an official MCB lab or Non-MCB lab
• Note if this is a first request or renewal
• Need netid of PI – not grad student or post-doc
  • For Non-MCB labs, attach 1 page research proposal
How to Enroll in MCB 290

• You will receive a notification email confirming the form has been submitted.
• Automatically sent to PI for approval.
• After PI approves, automatically sent to MCB for approval.
• Once approved, you will receive email from MCB290@mcb.Illinois.edu with the CRN to register.
• You must register for the class on your own before the deadline! Will default to one credit hour.
Academic Deadlines
Last Day to Add a Course

• 10th day of fall/spring semester at 5:00 PM
• 7th day of summer session II at 5:00 PM
• Must renew every semester by the deadline using online form.
Non-MCB Labs to Consider

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<thead>
<tr>
<th>Integrative Biology</th>
<th>Chemistry</th>
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<tr>
<td>Psychology</td>
<td>Kinesiology</td>
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<td>Neuroscience program</td>
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<td>Bioengineering</td>
<td>Veterinary Medicine</td>
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<td>Physics</td>
<td>Pathobiology</td>
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<td></td>
<td>Comparative Biosciences</td>
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<tr>
<td>Crop Sciences</td>
<td>Animal Sciences</td>
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<tr>
<td>Beckman Institute</td>
<td>Institute for Genomic Biology (IGB)</td>
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Safety

Before beginning research, your PI should ask you to complete safety training specific to your lab.

- Wear appropriate Personal Protective Equipment (PPE) or other protective equipment as required by your lab or other research setting.

- Take online lab safety training through the Division of Research Safety. [https://www.drs.illinois.edu/](https://www.drs.illinois.edu/)
Know Your Rights

• “It is the policy of the University not to engage in discrimination or harassment against any person....”

• If you feel your rights have been violated, please consult the Office of the Dean of Students or reach out to your Academic Advisor for help finding resources.
<table>
<thead>
<tr>
<th>Name</th>
<th>Year</th>
<th>Major</th>
<th>Lab/Program</th>
<th>Email</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ben Shapiro</td>
<td>Junior</td>
<td>4th semester, chemistry</td>
<td>Jefferson Chan lab</td>
<td><a href="mailto:bas11@Illinois.edu">bas11@Illinois.edu</a></td>
</tr>
<tr>
<td>Mia Rode</td>
<td>Junior</td>
<td>5th semester, integrative biology</td>
<td>Daniel Miller lab</td>
<td><a href="mailto:miaer2@Illinois.edu">miaer2@Illinois.edu</a></td>
</tr>
<tr>
<td>Rujuta Chikodikar</td>
<td>Senior</td>
<td>5th semester + SURF, comparative</td>
<td>Qiao lab</td>
<td><a href="mailto:rujutac2@Illinois.edu">rujutac2@Illinois.edu</a></td>
</tr>
<tr>
<td>Gabrielle Nathan</td>
<td>Sophomore</td>
<td>1st semester, bioengineering</td>
<td>Pablo Perez Pinera Lab</td>
<td><a href="mailto:gnathan2@Illinois.edu">gnathan2@Illinois.edu</a></td>
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Graduation with Distinction

Eligibility for MCB 492 and/or distinction:

• Spend a minimum of 2 semesters in the same lab before final semester
• Earn a minimum of 2 credit hours MCB 290 each semester in that same lab
• Have support of faculty - they will have to write a letter of support
• Give oral presentation within the academic year prior to graduation
• For high/highest distinction consideration, register for MCB 492 in final semester of degree program and write a senior thesis
• For distinction consideration, register for MCB 290 in final semester of degree program

https://mcb.illinois.edu/academics/undergraduate-programs/molecular-cellular-biology/graduation-distinction-mcb
Take Home Points

- Earn course credit and a grade for research experience
- Start early – Be aware of deadlines
- Understand faculty expectations
- Be professional and responsible
- Have fun and learn as much as you can
Questions

Tina Knox, tmknox@Illinois.edu
Alison Neff, hantak@Illinois.edu

https://mcb.illinois.edu/research