

# UPBM E-NEWSLETTER

## Undergraduate Program in Biology and Medicine



SUBS / Biology Department Pizza Break Thursday 12.12.2017

## Links

- ▶ [Biology Department Newsletter](#)
- ▶ [Senior Slide Show 2017](#)
- ▶ [UPBM Alumni - Where Are They Now?](#)
- ▶ [UPBM E-News Archive](#)
- ▶ [UPBM Home Page](#)

Hello UPBM and welcome back to the Arctic.

The fall semester went by in a blink which means the spring semester will be over in a hot Texas minute.

Graduation will be here before you know it, so seniors should send in pictures to the [UPBM office](#) of all the great moments captured at your parties and get-togethers this semester for this year's senior slide show.

The theme of this issue is OPPORTUNITY! Especially the ones that make the most of your summer and build CV's 'A' gamers, check out the links posted in the "Opportunities" section. So many advertisements have received over past few months it is difficult to capture this information centrally so be sure to check out the UPBM bulletin board in the Hutchison Hall, 4th-floor corridor and above all visit the Gwen Green Career and Internship Center. Remember everything happens with a plan so be sure to launch your investigations early.

Have an awesome semester.

UNDERGRADUATE PROGRAM IN BIOLOGY AND MEDICINE (UPBM) E-NEWS



Students with Dr. Sia during the Halloween Trick or Treat Meet and Greet sponsored by SUBS and the UCC on

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## UNDERGRADUATE PROGRAM IN BIOLOGY AND MEDICINE (UPBM) E-NEWS

## UPBM Poster Session

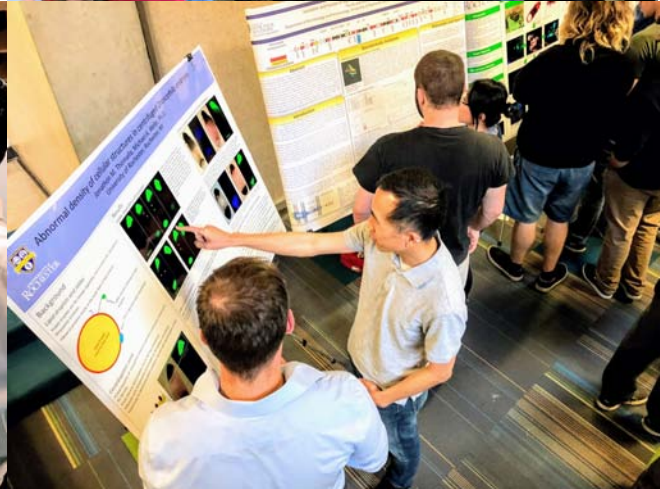
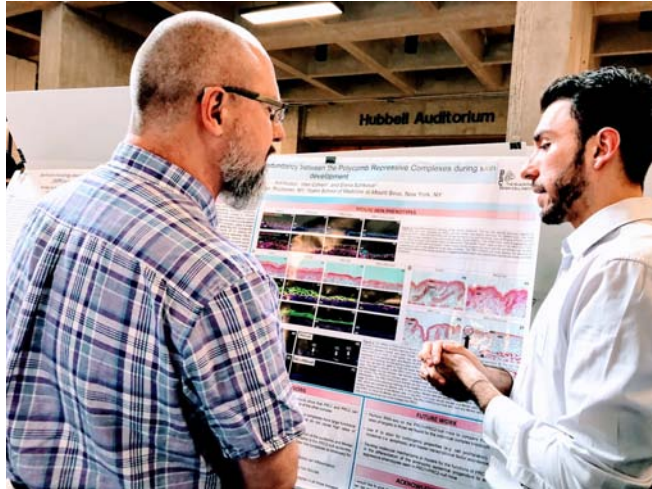
Turning it out Once Again in 2017

Many thanks to the 22 UPBM majors who presented their research in the 2017 UPBM poster session held on October 13th as well as to those who came out to support their colleagues.

The event was a huge success, and we are hoping to get even more presenters next year.

Dr. Benyajati took several pictures so that you can “Relive the Magic.” Click on the following link to view slideshow:

<https://www.youtube.com/watch?v=qCseTIKsy3Y&t=4s>

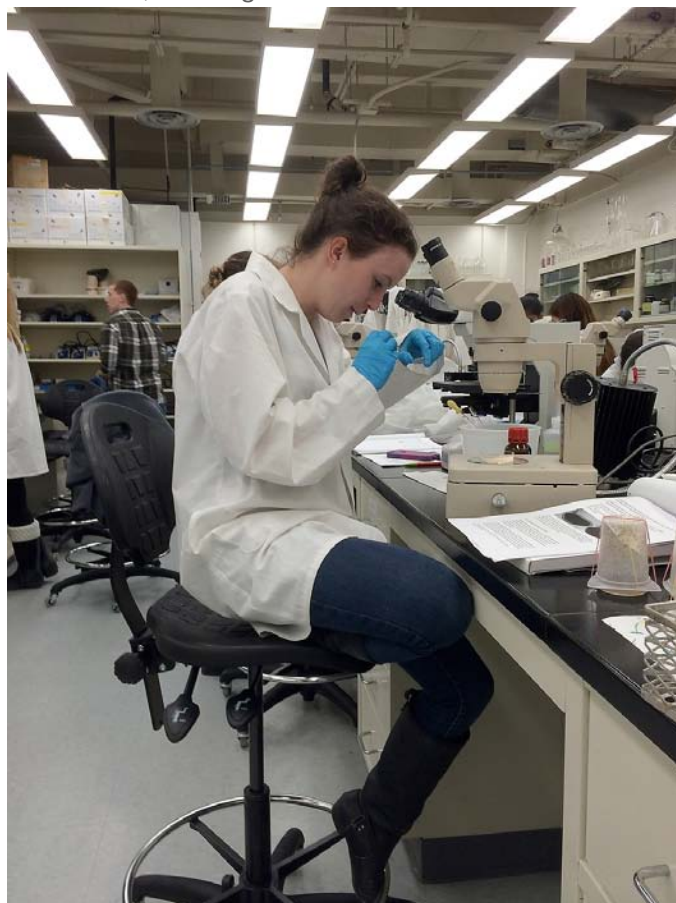


## Presenters of Research

- Hassan Beesley '18, BS BBC
- Abigail Benvie '18, BS BBC
- Seyed Ali Biashad '18, BS BMG
- Hayley Chang '19, BS BCD
- Anne Cheng '18, BS BBC
- Varun Chowdhry '19, BS BBC
- Emma Dudley '18, BS BMG
- Jason Glanzmann '18, BS BNS
- Kevin Hayes '18, BS BMG
- Arif Kodza '18 T5 ('19), BS BMG
- Jina Lee '18, BS BMB
- Monica Masterson '18, BS BCD
- Ena Oreskovic '19, BS BMG
- Reva Peer '18, BS BMG
- Andrew Pierle '18, BS BBC
- Karianne Sretavan Wong '18, BS BNS
- Keegan Stricker '18, BS BBC
- Jonathon Thomalla '18, BS BCD
- Thy Vo '18, BS BMG
- Clara Wolfe '18, BS BBC
- Isaac Wong '19, BS BCB
- David Yang '18, BS BNS

## UNDERGRADUATE PROGRAM IN BIOLOGY AND MEDICINE (UPBM) E-NEWS

## Independent Research Courses

Overview, Pre-Registration Form **New**

Independent Research (395) courses allow UR undergraduate students to gain research experience in biological science laboratories located in River Campus or the medical center during the academic year.

Students will need to find a faculty research mentor who works within their area of interest and will agree to instruct a research course. For tips on [how to find a research mentor visit website](#) or talk with your advisor or a [UBPM Peer Advisor](#) to gain their valuable insights.

Typically 4-credit classes need to start and be registered within the first two weeks of the semester (see Spring 2018 deadlines below).

Although independent research is not a typical lecture hall experience, it is still a course that requires defined objectives, learning outcomes, contact hours, and criteria for evaluation usually associated with any traditional credit-bearing course. Students and their 395 instructors should develop a mutual understanding of all of these details before going online to start the registration process.

The research associated with these courses must be rooted within the biological sciences and is non-clinical in nature. Although some scientific arguments may be inspired through clinical studies it is expected that the proposed research will yield data from experimentation that involves laboratory and/or computational methods that is performed and analyzed by the student enrolled in the course.

Independent Research Courses require regular supervision from an instructor who is a member of the UR "Teaching" faculty.

Please note that the process of registering a Bio Sci 395 course is different from the way students enroll in courses within other fields of study in that two online forms need to be submitted. A [pre-registration](#) and an [Independent Study](#) (IS) form. Additionally, Bio Sci 395 courses require 2 Instructor Permission Codes (IPC) codes. One IPC is received by 395 instructor and the other is received upon approval of the [pre-registration](#) form. Instructions for registration are as follows:

**Step 1:** Have a conversation with your faculty with respect to course title, number, credits, start date, description, lab techniques, how they will grade the course, instructor's permission code, and any safety training that might be needed.

**Step 2:** Submit [pre-registration](#) Form. These forms are reviewed by the major advisor and the UPBM Office. The advisor will contact students directly should they have questions or need to meet. Afterward, the form will forward to the UPBM office who will contact the student with the second instructor's permission code (IPC) and next steps needed to complete registration.

**Step 3:** Submit [Independent Study](#) form to the College for further review and registration onto transcripts:

**SPRING 2018 DEADLINES**

- 4 Credit 395 Courses:
  - Must start course by **Friday 1/26**
  - Submit [pre-registration](#) form by **Friday 2/2**
  - Submit [Independent Study](#) Form by **Wednesday 2/7**
- 3 Credit 395 Courses:
  - Must start course by **Friday 2/9**
  - Submit [pre-registration](#) form by **Friday 2/16**
  - Submit [Independent Study](#) Form by **Wednesday 2/21**
- 2 Credit 395 Courses:
  - Must start course by **Friday 3/2**
  - Submit [pre-registration](#) form by **Friday 3/9**
  - Submit [Independent Study](#) Form by **Wednesday 3/14**

Should the deadline for UPBM approval be missed, the course instructor will be required to e-mail the UPBM office to confirm that the course has been meeting regularly.

Please note, that students must submit a final report or poster that summarizes the research performed over the semester by the last day of exams. Students must produce a new and different final report or poster for each semester a 395 course is taken.

For more information on Bio Sci independent research courses visit: <http://www.sas.rochester.edu/bio/undergraduate/research/independent/index.html>.

**Related:**

- ▶ [Credit Regulations](#)
- ▶ [Finding a Research Mentor](#)
- ▶ [Requirements](#)
- ▶ [Research Connections Newsletter](#)

## UNDERGRADUATE PROGRAM IN BIOLOGY AND MEDICINE (UPBM) E-NEWS

## de Kiewiet Summer Fellowship 2018

Open to Junior UPBM Majors and Application Process



The de Kiewiet fellowship is an annual summer program that allows students the opportunity to research for ten weeks in a biological science laboratory located either on river campus or in the medical center during the summer between their junior and senior year. Also, fellows will also gain the experience of creating and presenting a poster of their research findings at the UPBM Poster Session in October of their fellowship year.

The Fellowship is open to officially declared UPBM majors in their junior only. Take five students are not eligible to apply to the fellowship in their 4th year.

The Undergraduate Program in Biology and Medicine (UPBM) include the following tracks:

- BA BIO (Biology)
- BS BBC (Biochemistry)
- BS BCD (Cell and Developmental Biology)
- BS BCB (Computational Biology)
- BS BEB (Ecology and Evolutionary Biology)
- BS BMB (Microbiology)
- BS BMG (Molecular Genetics)
- BS BNS (Neuroscience).

**How to Apply:**

1. [Find a research mentor](#)
2. Email "Letter of Intent" to [Marianne Arcoraci](#) by **Friday, March 2nd.**
3. Upload to Blackboard by **Monday March 19th:**
  - a. [Formal Scientific Proposal](#)
  - b. Summary of "[Relevant Professional Experience](#)"
  - c. Summary of "Research and Career Goals"
4. Ask the faculty who have agreed to mentor the project to submit a Letter of Recommendation and [Statement of Authorship](#) directly to the UPBM administrator by Monday March 19th
5. Ask another faculty member (preferably within the scientific field) to write a letter recommendation and send it directly to the UBPM Administrator by Monday March 19th.

The UPBM Advising committee will review and rank all proposals. Decisions are usually communicated by mid April.

## Health Professions Questionnaire (HPQ)

Deadline February 3rd, 2018

Are you planning to apply to Medical, Dental or Veterinary School this summer for 2019 matriculation? If so, you may be eligible to receive a Health Committee Letter from the University of Rochester in support of your application.

Most professional schools will look for a Health Committee Letter (HCL) from Rochester applicants. This letter is prepared through the Health Professions Questionnaire (HPQ), and will include information from your questionnaire, interview, academic record and relationship with the career advising staff in the Gwen M. Greene Center.

In order to receive a Health Committee Letter you must [complete the necessary steps](#) by the designated deadlines, which are strictly enforced. [The Health Professions website](#) has tips for making your application more competitive in addition to detailed application timelines.

If you have questions or need to review your candidacy, please schedule an appointment with a career advisor through [Handshake](#).

## UNDERGRADUATE PROGRAM IN BIOLOGY AND MEDICINE (UPBM) E-NEWS

# Honors in Research

Interested Seniors Submit Application for Candidacy by March 5, 2018

Students who have developed their skills in Biological research have the opportunity to receive honors by successfully writing and defending a thesis during their senior year. Officially declared UPBM majors with data of exceptional quality and a minimum BIO GPA of 2.7 qualify.

Candidates must have developed a novel body of work that includes publication quality data from which to generate a senior thesis. Also, candidates must successfully present and defend their senior thesis before a faculty examination committee.

The planning of a senior thesis begins before or at the beginning of the senior year. Students should consult both their major/track coordinator and research advisor before applying.

Research data obtained through Independent Research (395) courses, fellowships, internships, and voluntary work may be used to support the thesis. Also, research performed at other institutions may be used as long as the thesis is written under the supervision of a U of R full-time faculty member.

Data collected from other institutions outside of the university may be used to support a portion of the thesis; however, all facts and figures reported as results in the thesis must be derived by the candidate and must be part of the collaboration with the UR faculty who is overseeing the writing of student's thesis.

Interested students and the faculty who is supervising their thesis must submit an [Application for Candidacy](#) online by Monday, March 5th, 2018. The form will ask for some preliminary information, a summary of the thesis along with the student's and faculty's recommendations for 1 to 2 faculty to serve on the defense committee. All applications are reviewed and approved by the student's major advisor and the UPBM office. Further instructions

on committee formation are available on the [Application for Candidacy](#).

Once the candidate's application is approved the student must complete and submit a thesis to an evaluation committee approximately one week before the scheduled defense.

The defense consists of @ 20-minute open presentation to a faculty committee followed by a private evaluation.

A defense committee for a senior thesis consists of three UR faculty members who work within a relevant field of study and are qualified to examine the candidate's thesis.

The research mentor serves on the committee and will need to provide at least 1 - 2 names of "Teaching Faculty" who work within a relevant field of study, are qualified to evaluate the thesis and would be willing to serve. The candidate's advisor may also serve on the committee or may choose to delegate. Additionally, a fourth member may be added at the discretion of the student's advisor.

Please note that students do not need to register an Independent Research (395) course for a senior thesis unless necessary to complete experimentation.

Please visit the [Honors in Research Website](#) and application for more information on the senior thesis,, defense committees, and planning timelines.

Fourteen students from the class of 2017 successfully wrote and defended a senior thesis. See UPBM E-newsletter [June 2017 Edition](#) for further details on last year's participants.

**Related:**  
[Application for Candidacy](#)  
[Honors in Research Website](#)

## Discover & Research Innovation Grant Funding Applications

Trying to find a way to get your research funded over the summer? Visit the UR office of undergraduate research website to read up on available grant funding. and how to apply for it. Please note there are deadlines for each.

**Discover Grants for Undergraduates**  
<https://www.rochester.edu/college/ugresearch/discover.html>

**Research and Innovation Grant**  
<https://www.rochester.edu/college/ugresearch/rig.html>



## UNDERGRADUATE PROGRAM IN BIOLOGY AND MEDICINE (UPBM) E-NEWS

### Upcoming Dates

Will email majors more information as we get closer to the events

03.02.2018 (Friday)	de Kiewiet Fellowship Letter of Intent e-mail due (Juniors only)
03.05.2018 (Monday)	Honors in Research Application for candidacy due (Seniors only)
03.19.2018 (Monday)	de Kiewiet Fellowship application materials due (Juniors only)
May 2018 (TBD)	UPBM Pizza Break - usually during reading period
05.04.2018 (Friday)	Honors in Research candidates must defend thesis by first Friday in May
05.20.2018 (Sunday)	Biology Department Diploma Ceremony (Commencement)

### College Supplemental Fund **New**

For Programs, Conferences Competitions, and Events

Students may complete the College Supplemental Fund Application in order to request supplemental funding to attend or participate in academic, professional, or experiential programs.

Funding is available on a rolling basis. Relevant departments may be asked to contribute funding toward the overall need as indicated on the application. Students may request funds as individuals, or on behalf of a group. Only one representative from each group should complete an application.

The College Supplemental Fund Application is not intended to replace existing funding opportunities, such as the funding available from the Student Association Appropriations Committee (SAAC). Groups that would like to request funding from the Student Association are required to complete a separate application through the Campus Community Connection.

Process

- 1.) Prepare Familiarize yourself with the application components by reviewing the sample application.
- 2.) Discuss Meet with your Primary Advisor or Sarah Van Munster in the College Dean's Office to discuss the activity and application as needed.
- 3.) Submit Submit complete College Supplemental Fund Application in Perfect Forms.
- 4.) Review Watch for an email from the College Funding inbox to notify you of departmental contributions.

Visit the following website for more information: <http://www.rochester.edu/college/student-funding/college-supplemental-fund.html>

### Hutchison Hall Trick or Treat Meet and Greet

Sponsored by the Society of Undergraduate Biology Students (SUBS) and the



The Society of Undergraduate Biology Students (SUBS) together with the Undergraduate Chemistry Council (UCC) held the Hutchison Hall Trick or Treat Meet and Greet on Friday, October 27th. Students visited the instructors listed on the passports provided and were able to network while enjoying candy, cider, and donuts!

“We hold these truths to be self-evident: that all scientists are created equal, that they are endowed by the University with certain unalienable rights, that among these are life, liberty, and the pursuit of Halloween candy”- Excerpt from the Declaration of SUBS AND UCC“

**Related:**

[Society for Undergraduate Biology Students Website](#)  
[On-line SUBS T-shirt Order Form](#)

## UNDERGRADUATE PROGRAM IN BIOLOGY AND MEDICINE (UPBM) E-NEWS

What I Did Last Summer: “*My Summer Abroad*”

By Audrey Goldfarb '19, BIO



This summer, I worked in Professor Richard Festenstein's Lab, which studies epigenetic mechanisms and disease, at the Hammersmith Hospital campus of Imperial College London. This experience was funded in part by a Discover grant from the University of Rochester.

To find a position, I emailed dozens of PIs around London to inquire if they were able to take on a summer student. Only two were able to accommodate an intern. I decided upon the Festenstein Lab after interviewing in December during a visit to London, finding myself fascinated by Professor Festenstein's work.

Epigenetic modifications of chromatin play many roles in chromatin structure and gene expression. It has been suggested that abnormalities in the epigenetic code might lead to sexual dimorphic diseases. Heterochromatin protein 1 (HP1)-alpha, beta and gamma are epigenetic modifiers of chromatin important for regulating gene expression, centromere stability, and telomere capping. Unlike the other two HP1 isoforms, HP1 $\gamma$  is present in both euchromatin and heterochromatin, and previous data shows that it plays a role in both the repression and expression of genes in a sexually dimorphic fashion. This finding that HP1 $\gamma$  is crucial for regulating sexually dimorphic autosomal gene expression has important implications for understanding physiological sex differences and sex bias in disease. I began working on a project with a Ph.D. student and Masters student to elucidate the mechanism with which this protein functions. Once I became acclimated in the lab and had familiarized myself with some of the lab's preliminary results and the literature on HP1 $\gamma$ , I began my own side project to investigate the role that HP1 $\gamma$  plays in telomere maintenance.

Based on preliminary data suggesting that HP1 gamma binds preferentially to female telomeres, we hypothesized that HP1 gamma plays a sexually dimorphic role in telomere maintenance. In this preliminary study, wild type and HP1 $\gamma$  knock-out primary mouse embryo fibroblasts were assayed for telomere instability, fusion and loss. Our results obtained from HP1 $\gamma$   $-/-$  female cells showed significantly higher telomere instability compared with cells from wildtype littermates. These results implicate HP1 $\gamma$  in preventing telomere fragility, which, due to its preferential binding to female telomeres, may provide a novel mechanism for sexual dimorphism.

In females, the inactivated X chromosome may be acting as a sink for HP1 $\gamma$ , resulting in the observed sex dimorphism. Experiments are currently underway to test this hypothesis.

During my time as a student researcher there, I was able to attend talks by leading researchers from all around Europe, present my work at the annual London Institute of Medical Sciences Retreat, and speak with DNA damage repair researchers at the Francis Crick Institute. As well as having an amazing learning and research experience at Imperial College London, I also had the opportunity to travel to Paris, Bath, Bristol, Wales, and Edinburgh. Exploring London as well as other areas of the U.K. and Europe made the summer a truly valuable and unforgettable experience.





## UNDERGRADUATE PROGRAM IN BIOLOGY AND MEDICINE (UPBM) E-NEWS

## Opportunities

Alaskan Observers North Pacific Ground Fish Observer  
[North Pacific Ground Fish Observer Position Openings](#)

Albert Einstein College of Medicine  
[Summer Undergraduate Research Program](#)

Amgen Scholars  
[Amgen-UROP Scholars Program](#)

Amgen Scholars  
[Program Homepage](#)

Cornell University  
 Boyce Thompson Institute (BTI)  
[Summer Internships in Plant Genomics and Bioinformatics](#)

Case Western Reserve University  
[Summer Programs](#)

Chariot Learning  
[GRE Prep Courses](#)

Cincinnati Children's Hospital  
[Summer Undergraduate Research Fellowship \(SURF\)](#)

City Internships  
[Program Overview](#)

Cleveland Clinic Center for Reproductive Medicine  
[Summer Internship Program](#)

Cold Spring Harbor Watson School of Biological Sciences  
[Summer Undergraduate Research Program](#)

Columbia University / Barnard College  
[Amgen Scholars Summer Research Program](#)

Cornell University  
[Boyce Thompson Institute for Plant Research Internships](#)

Danforth Plant Science Center  
[REU Summer Internship Program](#)

Davis Projects for Peace  
[Kathryn W. Davis Projects For Peace](#)

Deutscher Akademischer Austausch Dienst (DAAD)  
[Paid Research Internships in Germany](#)

Duke University / Robert Noyce  
[Teacher Fellowship Program](#)

EPA Internships  
[Medical Research and Health Science Internships Available in Europe!](#)

Fred Hutchinson Cancer Research Center  
[Summer Undergraduate Research Program](#)

Fulbright Scholarship  
[US Student Program](#)

Gerstner Sloan-Kettering  
[Summer Undergraduate Research Program](#)

GEHI  
[Ghana Health and Education Initiative](#)

[Global Health Corps fellowship](#)

Go Eco Volunteer  
[Volunteer Opportunities](#)

Goldwater (Barry)  
[Scholarship & Excellent in Education Program](#)

Harvard School of Public Health  
[Summer Program in Biological Sciences Public Health](#)

Harvard University  
[Harvard Forest Summer Research Program](#)

Hutchinson (Fred) Cancer Research Center  
[Summer Undergraduate Research Program](#)

Hutchinson (Fred) Cancer Research Center  
[Internships in Scientific Research or Medicine](#)

Homeland Security DHS Education Programs  
[HS-STEM Summer Internship Program](#)

Institute for Health Metrics and Evaluation (IHME)  
[Post-Bachelor Fellowship](#)

Journal of Young Investigators  
[Author Guidelines Requirements](#)

Kaplan Test Prep  
[Study Support](#)

Louisiana University Marine Consortium  
[Summer Field Course Information](#)

MATCH Education  
[Teacher Residency](#)

Mayo Clinic  
[Summer Undergraduate Research Fellowship](#)

MedLife

## UNDERGRADUATE PROGRAM IN BIOLOGY AND MEDICINE (UPBM) E-NEWS

Nemours Health Equity Summer Scholars Program  
[Summer Undergraduate Research Opportunity](#)

NYC Teaching Fellows  
[Your Guide to a Fulfilling Career in Education](#)

One Heart Source  
[Volunteer Opportunities in Africa](#)

One Start  
[Your chance to win US\\$150k to realize your biotech business idea](#)

PIRG - Job Openings for Graduating Seniors  
<http://jobs.studentpirgs.org/>

Roswell Park Cancer Institute  
[Summer Research Programs](#)

Scribe America  
[Scribe Training and Management](#)

Smart Scholarship Program  
[About Smart](#)

Southern Teaching Agency  
[Spring Job Fairs](#)

SUNY Oswego Global Laboratory  
[Summer Science Research Abroad](#)

Teach for America  
[Opportunities](#)

TecBIO REU  
[Training and Experimentation in Computational Biology](#)

Texas Tech University Health Sciences Center  
[Summer Accelerated Biomedical Research Internships](#)  
 The UNCF Merck Science Initiative  
[Science Scholarships and Fellowships](#)

University of Iowa  
[Summer Undergraduate MSTP Research Program](#)

University of Michigan  
[Summer at Michigan for Undergraduate Research Training](#)

University of Missouri  
[Summer Research Programs](#)  
[Cell and Molecular Biology Summer Research Positions](#)

UNIL / University de Lausanne  
[The School of Biology Summer Undergraduate Research Programme](#)

University of Notre Dame Environmental Research Center  
[Research](#)

University of Rochester, RC Libraries  
[Research Initiative Award for Undergraduates](#)

University of Rochester, UPBM  
[deKiewiet Summer Fellowship](#)

University of Texas South Western  
[Summer Undergraduate Research Fellowship SURF](#)

University of Utah  
[Undergraduate Research Programs](#)

University of Virginia / Mountain Lake Biological Station  
[Summer Research Experiences of Undergraduates](#)

Upstate Medical University  
[Research Programs in Biomedical Sciences](#)

West Virginia University Center for Neuroscience  
[Summer Undergraduate Internship SURI Program](#)

World Teach  
[Programs](#)

Woodrow Wilson National Fellowship Foundation  
[Teaching Fellowship](#)

Yale Early Social Cognition Lab  
[Research Fellowship](#)  
 Duke University  
[Masters in Bioethics & Science Policy](#)

Harvard Medical School  
[Master of Medical Sciences of Immunology](#)

Harvard School of Public Health

## Opportunities

Duke University  
[Masters in Bioethics & Science Policy](#)

Harvard Medical School  
[Master of Medical Sciences of Immunology](#)

Harvard School of Public Health  
[Ph.D. Program in Biological Sciences in Public Health](#)

Harvard School of Public Health

[Multidisciplinary International Research Training \(MIRT Program\)](#)

University of Colorado  
[IQ Biology Ph.D. Program](#)

University of Maryland  
[Biophysics Program](#)

Salisbury University  
[Masters in Applied Biology](#)

## UNDERGRADUATE PROGRAM IN BIOLOGY AND MEDICINE (UPBM) E-NEWS

## Helpful Links

[Athletics](#)  
[Biology Department](#)  
[Center for Study Abroad & Interdepartmental Programs](#)  
[Center for Excellence Teaching and Learning](#)  
[Counseling Center](#)  
[Dining](#)  
[Directory](#)  
[Employee Discounts](#)  
[Gwen Green Career and Internship Center](#)  
[Career Communities](#)  
[Handshake](#)  
[Health Professions Advising Office](#)  
[Facilities](#)

[Information Technology](#)  
[Journal of Undergraduate Research](#)  
[Libraries](#)  
[Research Connections Newsletter](#)  
[Rochester Academy of Science](#)  
[Student Fellowships Office](#)  
[Undergraduate Program in Biology & Medicine](#)  
[Undergraduate Research Office](#)  
[University Health Services](#)  
[Writing Speaking and Argument Program](#)

## Contact the UPBM Office

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 Phone: 585-275-5181  
 UPBM Website: <http://www.sas.rochester.edu/bio/index.html>

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