

UPBM E-Newsletter

Undergraduate Program in Biology and Medicine



Happy December UPBM!

You did it! The Fall 2019 semester has come to a close. You all have worked so hard these last few months and your dedication truly shows.

Make sure to check the opportunities section at the end of this newsletter to see when the deadlines are for scholarships or summer research programs.

Have a great break and we'll see you in the new year!

Quick Links

- * [UPBM Website](#)
- * [UPBM E-News Archive](#)
- * [Department Website](#)
- * [Department Contact Information](#)

Table of Contents

Quick Notes	3
SGE's: Selfish Genetic Elements	4
Biology Graduate Student Offered National Institutes of Health Fellowship Grant	4
Graduate with Honors in Research/Defend a Senior Thesis	5
de Kiewiet Summer Research Fellowship	6
Independent Research Courses in Biological Sciences	8
Are you an undergraduate applying for discover grant funding to do research over the summer?	9
Opportunities	10
Graduate Studies	12
Feedback and Submissions	13
Contact Us	14

Quick Notes

Attention Seniors!

Don't forget to submit your photos for the Class of 2020 Senior Slideshow. Commemorate your time here at the University by taking a trip down memory lane.



You can submit photos by emailing them to [Marcie Sherlock](#)

Make sure to follow us on Facebook to keep up to date with the latest UPBM events, opportunities, and important deadlines!



University of Rochester
Undergraduate
Program in Biology and
Medicine UPBM

12/20: Winter recess begins

1/15: Spring semester begins

1/20: Martin Luther King Jr. Day
(no classes)



2/05: Last Day to add/
drop courses in current
schedule

Learned something interesting recently? Travelled somewhere new and want to share your experiences? Let us know and we can feature your story in upcoming e-newsletters.



You can email submissions to [Marcie Sherlock](#) in the UPBM office.

SGE's: Selfish Genetic Elements

According to Dr. Amanda Larracuenta a selfish genetic element is “anything that manages to increase its transmission to the next generation, but without doing anything good for the host genome.” Dr. John (Jack) Werren, along with his colleagues Dr. Uzi Nur and Dr. Chung-I Wu were the first to formally coin the term in 1988.

Many of the labs and researchers here in the Biology department study SGE's. Arvid Agreed, the Wenner-Gren fellow at Harvard University in the department of organismic and evolutionary biology has even gone on to say that “the University of Rochester has one of the highest concentrations of researchers working on selfish genetic elements in North America, if not the world.”

One of the main focuses of researchers here at the University is how SGE's have impacted evolution. This has helped synthetic biologists understand both the risks and the benefits of genetic systems. For example, biologists could engineer something to stop the spread of malaria in mosquitoes, or have impacts on human medicine.

To learn more about selfish genetic elements and the work researchers are doing in our labs, visit the video titled [Why are some genes selfish?](#)



Left to right: Jack Werren, Daven Presgraves, John Jaenike, Amanda Larracuenta, Tom Eickbush

Biology Graduate Student Offered National Institutes of Health Fellowship Grant

Marcus Kilwein '18 (MS), who is currently a PhD candidate in the biology program here at the University, was just offered a National Institutes of Health F31 fellowship grant. This grant is part of a federally sponsored program and will provide 3 years of financial support to students that are pursuing their doctorate or a research-related degree in health.

Kilwein's research is about lipid droplets. LD's are organelles that are “transported within cells and linked to fat metabolism and a multitude of human diseases, including obesity.” His project title is “*Effects of Cellular Lipid Droplet Allocation on Lipid Droplet Consumption and Drosophila Embryogenesis*”. Kilwein also works in the Welte Lab where he studies the implications of lipid droplet allocation.

He's also taken on mentoring an undergraduate student. When asked, he said “I mentor Ethan Fisher in the Welte lab who is graduating this semester and applying for jobs as a lab technician. I have trained Ethan in *Drosophila* genetics, microscopy, and scientific communication. He has developed into a competent scientist who I am glad to have had the opportunity to work with.”

After he receives his PhD, he hopes to receive a post-doctoral research appointment and then go on to becoming a professor. Marcus was a huge help with the May 2019 Diploma Ceremony and we couldn't be prouder of his achievements. Congratulations!



Click here to read more about Marcus and the other [NIH Fellowship recipients](#).

Graduate with Honors in Research/Defend a Senior Thesis



Want to be recognized for your outstanding accomplishments in research? Officially declared UPBM majors with a minimum biology GPA of 2.7 can apply in their senior year to graduate with honors in research.

Students must have “a novel body of work that includes publication-quality data” that will allow them to generate a senior thesis. Students will have to present and defend their thesis in front of a faculty examination committee in the spring semester. Students that are able to successfully fulfill these requirements will have “Honors in Research” noted on their transcripts and will receive a certificate at their diploma ceremony in May.

How to Apply

Students interested in applying should submit an [Application for Candidacy](#) by the first Monday in March of their senior year. For the Class of 2020 the due date is **March 2nd**. *If you are a Take-5 Scholar, you may choose to defend your thesis in your 5th year.

Planning the Senior Thesis

While the application for candidacy isn't due until March, students should start planning their thesis at the beginning of their senior year. It is wise to meet with your track advisor and research mentor to keep them up to date. You can use any research that you have obtained through internships, fellowships, voluntary work, or independent research courses to develop your thesis. You can also use data gathered from other institutions to support your claims, however all facts and figures should be derived from you and be part of a collaboration with your research mentor or another faculty member.

You will also need to compile a defense committee who will oversee your thesis defense. They should be 3 faculty members who field of study is relevant to your project. Typically your research mentor will be one of these committee members and will need to recommend one or two other faculty members who would be a good fit. These recommendations **MUST** be in your application for candidacy. Additionally, these recommendations need to be reviewed and approved by your major advisor.

Thesis Defense

Once your committee has been approved, it will be up to you to coordinate a date, time, and location for your thesis defense. It is advised to have the defense coordinated and the room reserved by mid-April due to the difficulty in room reservations the closer it is to the end of the semester.

Your thesis should be a minimum of 20 pages. It must be a scientific paper and have supporting text, figures, diagrams, and correct references. You must provide copies of your paper to your committee members and the UPBM administrator at least one week prior to your defense. The presentation should be 20 minutes and you must be prepared to answer questions afterward in an oral examination.

Your defense and the results must be communicated to the UPBM office in writing by the end of the first week in May.

de Kiewiet Summer Research Fellowship

Looking to complete research over the summer? Apply to be a de Kiewiet fellow for Summer 2020! Fellows will work for 10 weeks in June, July, and August in the lab of their research mentor. They will receive a \$4,000 stipend and will present their research at the UPBM Poster Session the following October.

Eligibility and Project Requirements

To be eligible to apply, you **MUST** be an officially declared UPBM major in your junior year. Your summer project must be rooted in the biological sciences and non-clinical in nature. This means that the data you yield will be through experimentation and will be analyzed through laboratory work and/or computational methods.

Application Process

1. Find a research mentor. They must be part of the UR teaching faculty. For [tips on finding a mentor](#), visit our website.
2. Submit [Intent to Apply](#) online form by **March 2nd**.
3. Prepare the following 3 documents and upload by **March 16th**.
 - **Formal Scientific Research Proposal** (6 pages)
 - Background and Significance (up to 2 pages)
 - Explain the background of the proposal and evaluate any existing knowledge. Make note of any data you obtained from current lab workers that is helping base your proposal. You must identify questions that your research/project is meant to answer as well as the significance of your proposed work.
 - Preliminary Studies Conducted by Applicant
 - Most students will not have any but if there is any preliminary data you have obtained related to your proposal, it must be noted.
 - Experimental Design (up to 2 pages)
 - You will need to outline and explain the rationale for the experimental approach you plan to take. List any new techniques you will need to learn in order to complete your research. Do NOT included experimental detail (i.e., buffer concentrations)
 - Literature Citations (only 1 page)
 - Citations should be in alphabetical order
 - **Relevant Professional Experience** (1 or 2 pages)
 - summarize any previous research experience and training that you have done
 - **Research and Career Goals** (1 page)
 - Explain why research is important to both your educational and career goals

4. Ask your research mentor and an additional faculty member to write a letter of support to the UPBM committee. The letter may be emailed directly to BioDeptUgOffice@rochester.edu by **March 16th**.
5. Ask your research mentor to prepare a [Statement of Authorship](#). This must be emailed to BioDeptUgOffice@rochester.edu by March 16th.

*All work is to be typed, double-spaced, 11-point font, with one-inch margins.

Selection Process

There are only a limited amount of positions available to students, therefore the fellowship is competitive. Once all submissions have been received, the UPBM committee will review and rank this information. The decisions should be made and conveyed to the applicants by mid-April.

For more information about the [de Kiewiet Summer Research Fellowship](#), please visit our website.

Past Research Fellows

2019



*First Row Left: Melissa Proven, Valeria Guerra, Michaela Burrell, Simon Ra, Daniel Barnett, Sylvia Lin
Back Row Left: Kamel Awayda, Alex Trapp, Austin Varela*

2018



Left to Right: Stephanie Busch, Iyad Sayed Issa, Hayley Chang, Abhishek Dede, Sarah Sandkuhler, Krista Pipho (Not pictured: Joshua Brown)

2017



Left to Right: Jason Glanzman, Andrew Pierle, Reva Peer, Bina Lee, Hasan Beesley, Keegan Stricker

Independent Research Courses in Biological Sciences

Have a research topic in mind and want to get academic credit for it? Take an independent research course this spring! The course can be taken for either two, three, or four credits.

Find a research mentor

Before you can register, you will need to find a faculty member in your area of interest that will agree to instruct your independent research course. Faculty members can work on River Campus or in the Medical Center. The only requirement is that they are part of the University's [teaching faculty](#). For tips on [how to find a research mentor](#), visit our website.

Develop a Course Description

Once a research mentor is found, the next step is to create a course description. The following components will be needed:

- Course Prefix
- Amount of credit hours
- Start Date
- Title (28 characters including spaces)
- Course objectives and learning outcomes (250 characters)
- Laboratory Techniques (250 characters)
- Criteria for how you will be graded (250 characters)
- Exposures to biohazards/safety training (250 characters)
- Instructors permission code

Fill out online UPBM Pre-Registration Form

To register the course with the Registrar's office, two IPC codes are needed. The first is obtained from your research mentor. The second is obtained by filling out the the online [UPBM Pre-Registration Form](#). Besides the course description information, you will need to submit dates for a meeting should any information need to be discussed further. The UPBM office will then follow up with your second IP code.

Submit the CCAS Independent Study Form

Once your course has been approved by the UPBM office, you will need to submit the online [CCAS Independent Study Form](#). Details for completing this form will be given to you upon approval of the previous step.

Important deadlines for Spring 2020:

4 Credit 395 Courses:

- Must start course by 1/24
- Submit UPBM Pre-Registration form by 1/31
- Submit CCAS Independent Study Form by 2/8

3 Credit 395 Course:

- Must start course by Friday 2/7

- Submit UPBM Pre-Registration Form by 2/14
- Submit CCAS Independent Study Form by 2/21

2 Credit 395 Course:

- Must start course by 3/6
- Submit UPBM Pre-Registration Form by 3/13
- Submit CCAS Independent Study Form by 3/20

For more detailed information visit our [Independent Research](#) webpage!

Are you an undergraduate applying for discover grant funding to do research over the summer?

Application Process Changes in 2020

Students and faculty:

The Office of Undergraduate Research at the University of Rochester provides a number of funding mechanisms for supporting undergraduate research experiences. Historically, one of our most popular programs has been [the Discover Grant](#), which provides financial support for undergraduate research experiences during the summer.



Starting in 2020, we are making a number of important changes to this award. In brief:

- All research must take place under the mentorship of a UR faculty member
- The student competition will open in January and close on **March 20**. Supervisors and recommenders have until March 27 to submit their materials.
- All awards will be \$2,500 to support a minimum of 300 hours of research. There will be no partial awards
- Awards will be competitive (we anticipate a success rate of ~50%)
- After the 2020 award cycle, students may receive ONE Discover Grant during their time as an undergraduate (previous awardees may reapply in 2020 only)
- Factors that will be taken into consideration in evaluating applications include the merit of the research plan, educational impact of the research experience, and financial need
- Research supervisors must supply a brief mentorship plan as part of the application
- An optional letter of support will be accepted—from the research mentor, supervisor, or anyone. The letter is not required, although it may strengthen the student's application
- Researchers will be expected to present their work at a research symposium
- [Application preview available on our website.](#)

We are very excited about these changes as they will allow us to standardize the offerings of the program and fund students at a level that will enable them to carry out a full-time summer research experience. In the meantime, please do not hesitate to [contact our office](#) if you have any concerns or questions.

Sincerely,
Sina Ghaemmaghami
Director, Office of Undergraduate Research
Professor of Biology

Opportunities

Alaskan Observers North Pacific Ground Fish Observer

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

Albert Einstein College of Medicine

[Summer Undergraduate Research Program](#)

**Deadline to apply 2/1/20*

Amgen Scholars

[Amgen Scholars Program](#) **Deadline to apply 2/3/20 or 2/15/20 (dependent on program)*

Animal Care Sanctuary

[Pre-Veterinary and Animal Science Internships](#)

Boyce Thompson Institute

[Summer Internship](#) **Deadline to apply 2/7/20*

Caltech

[Wave Fellows](#) **Deadline to apply 1/12/20*

Case Western Reserve University

[Summer Programs](#)

Cincinnati Children's Hospital

[Summer Undergraduate Research Fellowship \(SURE\)](#) **Deadline to apply 2/1/20*

City Internships

[Program Overview](#)

Cleveland Clinic Center for Reproductive Medicine

[Summer Mentorship Program](#) **Deadline to apply 3/13/20*

Cold Spring Harbor Watson School of Biological Sciences

[Summer Undergraduate Research Program](#)

**Deadline to apply 1/15/20*

Cornell University

[Boyce Thompson Institute for Plant Research Internships](#) **Deadline to apply 2/1/20*

[Agritech](#) **Deadline to apply 2/2/20*

Coastal Marine Education and Research Academy

[Summer Field Research](#)

Davis Projects for Peace

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

Deutscher Akademischer Austausch Dienst (DAAD)

[Paid Research Internships in Germany](#)

**Deadline to apply 12/15/19*

Donald Danforth Plant Science Center

[Danforth Center Summer Internship Program](#)

**Deadline to apply 2/5/20*

Duke University

[Science & Society Leadership Award](#) **Deadline to apply 1/31/20*

EPA Internships

[Medical Research and Health Science Internships Available in Europe!](#) **Deadline to apply for summer session 2/1/20*

Fred Hutch Cancer Research Center

[Internships in Scientific Research or Medicine Summer Undergraduate Research Program](#)

**Deadline to apply 1/10/20*

Fulbright Scholarship

[US Student Program](#)

Gerstner Sloan-Kettering

[Summer Undergraduate Research Program](#)

**Deadline to apply 2/3/20*

GEHI

[Ghana Health and Education Initiative](#)

Goldwater (Barry) Scholarship

[Scholarship & Excellence in Education Program](#)

Harvard Forest

[Summer Research Program in Ecology](#)

Harvard School of Public Health

[Summer Program in Biological Sciences Public Health](#) **Deadline to apply 2/1/20*

Institute for Health Metrics and Evaluation (IHME)

[Post-Bachelor Fellowship](#) **Deadline to apply 1/6/20*

Journal of Young Investigators

[Article Submission Requirements](#)

Louisiana University Marine Consortium
[Research Experience for Undergraduates](#)
**Summer 2020 details coming soon*

MATCH Education
[Teacher Residency](#) **Priority deadline 12/2/19*

Mayo Clinic
[Summer Undergraduate Research Fellowship](#)
**Deadline to apply 2/1/20*

MedLife
[Student Opportunities](#)

Michigan State Veterinary
[Enrichment Summer Program](#) **Deadline to apply 1/31/20*

National Collegiate Research Conference (NCRC)
[NCRC 2020 Applications](#) **Deadline to apply 12/15/19*

Nemours/Alfred I. duPont Hospital for Children
and Nemours Office of Health Equity and
Inclusion
[Summer Undergrad Research Scholarship](#)
**Deadline to apply 1/15/20*

Nobel Research Institute
[Scholars in Agriculture](#) **Deadline to apply 12/31/19*
[Scholars in Plant Science](#) **Deadline to apply 12/31/19*

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

PIRG - Job Openings for Graduating Seniors
[Jobs](#)

Roswell Park Cancer Institute
[Summer Research Experience Program in Cancer Science](#) **Deadline to apply 1/17/20*

Southern Teaching Agency
[Spring Job Fairs](#)

Stowers Institute for Medical Research
[Stowers Summer Scholars](#) **Deadline to apply 2/3/20*

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

Teach for America
[Opportunities](#)

Texas Tech University Health Sciences Center
[Summer Accelerated Biomedical Research Internships](#) **Deadline to apply is 2/15/20 or 3/15/20*

The UNCF Merck Science Initiative
[Science Scholarships and Fellowships](#)

University of Iowa
[Summer Undergraduate MSTP Research Program](#) **Deadline to apply 1/21/20*

University of Michigan
[Summer at Michigan for Undergraduate Research Training](#) **Deadline to apply 1/17/20*

University of Missouri
[MU-ARTSS Internship](#) **Deadline to apply 2/16/20*

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

University of Rochester
[deKiewiet Summer Fellowship](#) **Intent to apply due 3/2/20. Subsequent documents due 3/16/20*
[Research Initiative Award for Undergraduates](#) **Deadline to apply 11/22/19*
[Udall Undergraduate Scholarship](#) **First deadline due 11/25/19*
[Undergraduate Research Exposition \(URE\)](#) **Deadline to apply 3/1/20*

University of Texas South Western
[Amgen Scholars Program](#) **Deadline to apply 2/3/20*
[Summer Undergraduate Research Fellowship SURE](#) **Deadline to apply 2/3/20*

University of Utah
[Summer Program for Undergraduate Research \(SPUR\)](#) **Deadline to apply 1/26/20*

University of Virginia / Mountain Lake Biological
Station
[Summer Research Experiences of Undergraduates](#) **Deadline to apply 2/20/20*

Upstate Medical University
[Summer Undergraduate Research Fellowship](#)
**Deadline to apply 2/3/20*

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

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

Graduate Studies

Albert Einstein College of Medicine
[Biomedical Sciences](#)

Arizona State University
[Science and Technology Policy](#)

UC Berkley
[Metabolic Biology](#)
[Molecular Toxicology](#)

Cedars-Sinai Medical Center
[Ph.D. in Biomedical and Transitional Sciences](#)

Cornell University
[Ecology & Evolutionary Biology](#)

Duke University
[Neurobiology](#) | [Program in Genetics & Genomics](#)

George Washington University
[Environmental Resource Policy Program](#)

Harvard Medical School
[Master of Medical Science in Immunology](#)

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

Icahn School of Medicine at Mount Sinai
[Graduate School of Biomedical Sciences](#)

Indiana University
[Biochemistry Graduate Program](#)

Louisiana State University
[Biological Sciences Pharmacology & Experimental Therapeutics](#)

World Teach
[Programs](#)

Yale Autism Center of Excellence
[Yale Fellowship in Developmental Neuroscience of Autism](#) **Deadline to apply 1/15/20*

Michigan State University
[College of Veterinary Medicine Graduate Programs](#)

Penn State College of Medicine
[Ph.D. Programs](#) | [MS Programs](#)

Salisbury University
[Master of Science in Applied Biology](#)

Seton Hall University
[MS Biology](#) | [MS Microbiology](#) | [Ph.D. Molecular Bioscience](#)

St. Jude Graduate School
[Biomedical Sciences](#)

Stowers Institute for Medical Research
[Stowers PhD Program](#)

Stony Brook University
[Neuroscience Masters and Ph.D. Program](#)

Texas Tech University
[School of Biomedical Sciences](#)

University at Buffalo
[Ph.D. Biomedical Science](#)

University of California, Los Angeles
[Ecology & Evolutionary Biology](#)

University of Colorado
[Structural Biology & Biochemistry Program](#)

University of Iowa
[College of Medicine Degree Programs](#)

University of Maryland
[Biophysics Program](#)

University of Massachusetts Dartmouth
[Marine Science and Technology](#)

University of Michigan
[Medical School Program](#)

University of Pennsylvania
[Graduate Program in Biology](#)

University of Pittsburg
[Biological Sciences Programs](#)

University of Rochester
[Graduate Program TEAM-BMTD](#)
[Department of Biostatistics and Computational Biology](#)

University of South Florida
[Graduate Programs](#)

University of Texas South Western
[Biomedical Sciences Programs](#)

University of Utah
[Bioscience Programs](#)

University of Virginia
[School of Medicine](#)

Upstate Medical University
[Graduate Studies | M.D./Ph.D.](#)

Van Andel Institute
[Ph.D. in Molecular and Cellular Biology](#)

Vanderbilt University
[Neuroscience Graduate Program](#)

Virginia Tech
[Molecular and Cellular Biology Ph.D. Program](#)

Watson School of Biological Sciences
[Ph.D. Program](#)

Wake Forest University
[M.S. and Ph.D. in Biology](#)

Woodrow Wilson Graduate School
[Graduate School of Teaching and Learning](#)

Helpful Links

- * **[Athletics](#)**
- * **[Biology Department](#)**
- * **[Center for Excellence and Teaching](#)**
- * **[Center for Study Abroad](#)**
- * **[Counseling Center](#)**
- * **[Dining](#)**
- * **[Directory](#)**
- * **[English Language Program](#)**
- * **[The Greene Center for Career Education & Connections](#)**
- * **[Facilities](#)**
- * **[Journal of Undergraduate Research \(JUR\)](#)**
- * **[Kaplan Test Prep and Admissions](#)**
- * **[Libraries](#)**
- * **[Multidisciplinary Studies Center](#)**
- * **[Pre-Med and Allied Health Professions Advising](#)**
- * **[Research Connections Newsletter](#)**
- * **[Rochester Academy of Science](#)**
- * **[Undergraduate Program in Biology and Medicine](#)**

Feedback and Submissions

Have any interesting stories or events coming up you want featured in future newsletters? Please let us know! We would also love to hear your feedback so that we can improve upon future newsletters. You can email marcella.sherlock@rochester.edu with comments, questions, or concerns.

UPBM e-news is produced by the Department Of Biology, Undergraduate Program in Biology & Medicine during the academic year. You are receiving this message as a member of the UPBM community. Please note that the opportunities noted in this issue are not an endorsement. Do not forward this newsletter to other distribution lists. If you are receiving multiple copies or believe this message was sent to you in error, please contact the UPBM Administrator.

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