



CENTER FOR  
UNDERGRADUATE RESEARCH

2018 FALL NEWSLETTER

# RESEARCH

2018 - 2019 KNOWLEDGE . DISCOVERY . INNOVATION



FLOURISH THROUGH  
UNDERGRADUATE RESEARCH



THE UNIVERSITY OF  
MAINE

# 2018-2019 CUGR Program Dates and Deadlines

## 2018-2019 Academic Year Fellowship Awards

- Online Application Deadline: Oct. 12, 2018 at 4:30PM
- Award Announcements: Oct. 29, 2018
- Performance Period: Nov. 1, 2018 - May 3, 2019



## Undergraduate Student Travel Grant Program

- Deadline: Open application window from Sept 1 to May 1.
- Awards: First-come-first-serve contingent upon funding availability



## 2019 Summer Fellowship Awards

- Online Application Deadline: Mar. 29, 2019 at 4:30PM
- 2019 Summer Fellowship Award Announcements: Apr. 10, 2019
- Performance Period: May 13, 2019 - Aug. 30, 2019



## 2019 UMaine Student Symposium

- Abstract Submission Deadline: Mar. 15, 2019 at 4:30PM
- Acceptance Notifications: Mar. 25, 2019
- Event Date: Apr. 10, 2019 at the Cross Center in Bangor



### Poster Printing Deadlines\*

- Wed Apr. 3, 2019 by 4pm (FREE Posters)
- Fri Apr. 5, 2019 by 4pm (50% discount)
- Mon Apr. 8, 2019 by 3pm (at own expense)

**\*If ordered and printed at UMaine Printing Services and proof reviewed by the above deadlines.**



“The Student Symposium is a great place to meet new people that you normally wouldn’t interact with. I was actually offered a summer internship after a company saw my presentation and encouraged me to apply for the position. It was an amazing opportunity.”

**- 2018 Student Symposium Undergraduate Presenter**



# Mission Statement & Vision

The Center for Undergraduate Research's (CUGR) primary mission is to increase, improve and enhance undergraduate students' participation and experiences in research, scholarship and creative activity. Undergraduate research allows motivated and interested students to become critically engaged in a culture of independent learning and participate in the creation of new knowledge. Through student-faculty collaborations and mentoring partnerships, students develop the tools and resources needed to achieve an authentic understanding of the research endeavor, the pinnacle of an educational experience. Undergraduate research, broadly defined and understood, incorporates current students into the fabric of the University and attracts prospective students who want to be active participants in their education. Undergraduate research also provides an opportunity for faculty to expand their own research programs and enhance mentoring skills through training new members of their disciplines.



CUGR achieves its mission by providing leadership, coordination and support for research activities across campus. We build upon UMaine's strengths and strategic goals as the state's leading research university, taking advantage of the hundreds of faculty and graduate students involved in research and creative projects who can teach and mentor undergraduate researchers/scholars. Specifically, CUGR serves to facilitate and promote undergraduate research and creative activity at UMaine through:

- Contributing to a campus environment in which undergraduate research/creative activity experiences are increased and expanded
- Identifying, recognizing and publicizing current undergraduate research/creative activity opportunities and initiatives
- Providing links between research/creative activity opportunities and interested undergraduate students and faculty
- Collecting and analyzing data pertinent to the undergraduate research/creative activity experiences of University of Maine students
- Identifying and exploring extramural funding sources for undergraduate research/creative activity
- Developing and fostering relationships among entities (on and off campus) providing opportunities for undergraduate research/creative activity
- Working to establish a University -wide grant program for undergraduate research/creative activity
- Participating with both the Council on Undergraduate Research (CUR) and the National Conferences on Undergraduate Research (NCUR)

# 2018 - 2019 At A Glance

October 2018						
Su	M	Tu	W	Th	F	Sa
	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30	31			

October		
10/12/18 (Fri)	AY1819 Fellowship Application Deadline	Deadlines
10/29/18 (Mon)	AY1819 Fellowship Award Announcements	Announcements

November 2018						
Su	M	Tu	W	Th	F	Sa
				1	2	3
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29	30	

November		
11/01/18 (Thu)	AY1819 Fellowship Performance Period Begins	Performance Period

March 2019						
Su	M	Tu	W	Th	F	Sa
					1	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30
31						

March		
03/15/19 (Fri)	UMSS19 Abstract Submission Deadline	Deadlines
03/25/19 (Mon)	UMSS19 Accepted Abstract Announcements	Announcements
03/29/19 (Fri)	2019 Summer Fellowship Application Deadline	Deadlines

April 2019						
Su	M	Tu	W	Th	F	Sa
	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30				

April		
04/10/19 (Wed)	2019 UMaine Student Symposium	Event
04/03/19 (Wed)	UMSS19 Poster Printing, (FREE Posters) if submitted by 4PM	Note
04/05/19 (Fri)	UMSS19 Poster Printing (50% discount) if submitted by 4PM	Note
04/08/19 (Mon)	UMSS19 Poster Printing (will guarantee print job if submitted by 4PM) (No Discount)	Note

May 2019						
Su	M	Tu	W	Th	F	Sa
			1	2	3	4
5	6	7	8	9	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28	29	30	31	

May		
05/03/19 (Fri)	AY1819 Fellowship Performance Period Ends	Performance Period
05/13/19 (Mon)	2019 Summer Fellowship Performance Period Begins	Performance Period

## Category

Announcements
Event
Performance Period
Deadlines
Note

For more details on specific programs, deadlines, events, and application processes please go to our website. For update to date notices and announcements please visit our facebook.



[CUGR.UMAINE.EDU](http://CUGR.UMAINE.EDU)



[CUGR FACEBOOK](#)

# CUGR PROGRAMS



## Fellowships

The Academic Year and Summer Fellowships were established to help provide financial support for undergraduate students in hopes of creating an environment where students can become involved in meaningful faculty-supervised research. Students proposals are reviewed and scored by CUGR Advisory Committee. Awarded projects are selected based on the scores from the reviews and panel discussions. Each proposal must include: abstract, project description, timeline, budget table, budget justification, and a faculty commitment letter.

- **Academic Year Fellowships:** Each fellowship provides a \$1100 award for the student to help cover costs of the project, including stipend, supplies, qualifying travel, etc.
- **Summer Fellowships:** Each fellowship provides a \$3300 award for the student to help cover costs of the project, including stipend, supplies, qualifying travel, etc.

## Travel Grants

The UG Travel Grant is designed to help undergraduate students travel to academic seminars, professional meetings, and technical conferences to present their research projects and findings. This program accepts applications on a rolling basis, first come first serve, contingent upon funding availability

## Research Faculty Fellows

The CUGR Faculty Fellows Program supports faculty efforts toward improving undergraduate research and scholarship mentoring skills, expanding curricula to include research and scholarship experiences, and developing proposals for further funding specifically involving undergraduate students.

## UMaine Student Symposium: *Research & Creative Activities*

The student symposium jointly organized by CUGR and Graduate Student Government (GSG) is a student-centered forum to present research results for undergraduate students in form of poster, exhibits, performances, and oral presentations. This event is hosted annually each Spring and is open to all students enrolled at the University.



# AY1819 Research & Creative Activities Fellowship

## Call For Proposals

T

he Center for Undergraduate Research is pleased to announce the Undergraduate Research and Creative Activities Academic Year Fellowship 'Call for Proposals'. This program supports undergraduate student engagement in faculty-mentored research. Several fellowships will be awarded for the 2018–19 academic year on a competitive basis; the competition is open to all UMaine undergraduate students from all majors. Each fellowship provides up to \$1100 support for one student to conduct faculty-mentored research. The CUGR Advisory Committee will review research and creative activities proposals for clarity of objectives, importance to the field, proposed approach, appropriateness of the budget, and indication of the project feasibility.

### Eligibility Criteria:

Any undergraduate student currently enrolled in a degree program at the University of Maine may submit a proposal in consultation with a faculty mentor. Preference will be given to students graduating in or after May 2019.

### Application Guidelines:

1. Applicants need to describe the research, placing it in the context of scholarly activities, while presenting in such a way that it is understandable to the reviewers from outside of the applicant's research field.
2. All proposals must be accompanied by a faculty mentor commitment letter submitted through the provided electronic link found in the application form.
3. Award Recipients must submit a report including technical and financial data by May 15, 2019. All recipients are required to submit an abstract and present the product of their research at the 4<sup>th</sup> Annual UMaine Student Symposium: Research and Creative Activity (UMSS19) on April 10, 2019.

Check out **samples** of previously awarded CUGR *fellowship proposals* and *budget worksheets* on the CUGR website – [SAMPLE PROPOSALS](#)

[CUGR.UMAINE.EDU](http://CUGR.UMAINE.EDU)

### Link to Apply:

<https://tinyurl.com/AY1819CFP>

**SUBMIT A PROPOSAL**

**Deadline: Oct. 12, 2018**

# 2018 Summer Fellowship Recipients

The Center for Undergraduate Research (CUGR) has announced the 2018 CUGR Summer Fellowship recipients. The center's advisory committee selected 17 proposals from 45 student submissions to be awarded \$3,000 each during the summer semester. Funding is provided by the UMaine Office of the Vice President for Research and NASA's Maine Space Grant Consortium.

Each proposal was reviewed by three judges and discussed at a panel for clarity of the proposed project, research objectives, importance to the field, timeline, budget and faculty commitment letter.

(Student Name, Academic Focus, Project Title, Adviser Name)

- **Charles Alexandre-Roy**, biological engineering, "Improving Cellular Uptake of Gold Nanoparticles," advised by Michael Mason;
- **Makenzie Baber**, business management, "Recipes as a Historical Timepiece: New Perspectives in the Political and Personal Life of Margaret Chase Smith," advised by Rachel Snell;
- **Ashleigh Beaulieu**, psychology, "Using Mouse Behavioral Assays to Detect Differences in Olfactory Bulb Neurogenesis," advised by Kristy Townsend;
- **Timothy Bruce**, computer science, "Geometer's Solar System," advised by Justin Dimmel;
- **Cameron Fudge**, biology, "Regulation of Energy Balance by Hypothalamic Tanycyte Populations," advised by Kristy Townsend;
- **Emma Garner**, biology, "Sympathetic Nerve Plasticity in Adipose Tissue," advised by Kristy Townsend;
- **Joshua Hamilton**, biological engineering, "Engineering a Biodegradable CNF Pad for IDEXX SNAP Tests," advised by Michael Mason;
- **Joseph Haney**, computer science, "Locomotion within Immersive Rendered Environment," advised by Justin Dimmel;
- **Tal Kleinhouse**, wildlife ecology, "Fire and Blood — The Effects of Temperature on Thermoregulation and Energetic Costs in Diurnal and Nocturnal Small Mammals," advised by Danielle Levesque;
- **Peter Larson**, civil and environmental engineering, "The Emergent Risks of Food Waste Recovery: Characterizing the Contaminants in MSW Organics from Different Sources," advised by Jean MacRae;
- **Jonathan Maurer**, marine sciences, "Gulf of Maine Sea-Surface Temperature During the Past 6,000 Years: Is Modern Warming Anomalous?" advised by Katherine Allen;
- **Emily Miller**, marine sciences, "Investigating the Relationship Between Southern Ocean Temperature Change and Iceberg Melting Around Antarctica," advised by Ellyn Enderlin;
- **Joshua Passarelli**, biology, "The Role of Adult Neural Stem Cells in Metabolic Control," advised by Kristy Townsend;
- **Gwyneth Roberts**, mathematics, "An Analytical Model of Tidal Propagation and Volume Transport in a Shallow and Narrow Estuary: An Application of the Navier-Stokes Equations," advised by Lauren Ross;
- **Hadley White**, secondary education, "Addressing the Foreign Language Teacher Shortage: How Can the Franco-American Center Support French Programs Under Pressure in Maine?" advised by Susan Pinette;
- **Brynn Yarbrough**, marine sciences, "Science Communication through Art and Neural Networks," advised by Nishad Jayasundara; and
- **Caitlin Young**, biological engineering, "Quantifying the Effects of Raman Laser Exposure on Osteoblasts Containing Gold Nanoparticles," advised by Michael Mason.



More than 1,300 undergraduate and graduate students presented their work during the third annual University of Maine Student Symposium held at the Cross Insurance Center in Bangor on April 17.

The free public event, which was organized by UMaine Graduate Student Government and the Center for Undergraduate Research (CUGR) as part of Maine Impact Week, provided an opportunity for community members to meet student researchers and scholars, see their posters and exhibits, hear their presentations, and view short performances and art.

Awards and cash prizes were given to the symposium's top scholars and presentations in several categories:

(Category, Student Name(s), Project Title, Adviser)

- **Allied Health:** **Marisa Jolicoeur, Nyia Chituck, Darcey Fraser, Lindsay Nutter and Rebecca Dalrymple**, "Assessing Diet and Exercise in Pre-diabetics," advised by Patricia Poirier
- **Arts:** **Cara Doiron**, "Constructing Identity Through the Lens of Fashion," advised by Samantha Jones
- **Biomedical Sciences:** **Sarai Smith**, "Understanding the Role of Prophage in Mycobacterial Host Fitness and Gene Expression," advised by Sally Molloy; and **Ashley Soucy and Jeanne K. Dushane**, "IP3R-Mediated ER Ca<sup>2+</sup> Release Drives JCPyV Infection," advised by Melissa Maginnis
- **Business:** **Alexis Lindsay**, "Maternity Leave in the U.S.," advised by Stefano Tijerina
- **Education and Human Development:** **Jordan Houdeshell**, "Differences in Language Through the Comparison of Mathematical Word Choice in Chile and Maine," advised by Julie DellaMattera
- **Engineering and Information Sciences:** **Gabriela Constantin**, "Selective Ring-Opening Reactions on Thermal Deoxygenation Oils," advised by Scott Eaton; **Nicholas Aiken**, "VHF Near Field Antenna Design for Wireless Sensing Applications," advised by Mauricio da Cunha; and **Abigail Weigang**, "Selective Surface Modification of Paper Substrates for Controlled-Adhesion Diagnostic Devices," advised by Caitlin Howell
- **Interdisciplinary Collaboratives:** **Gabriela Adamus, Sarah Basquez, Hannah Connors, Morgan Jacobs and Genaya Loftis**, "A Collaborative Approach in Treatment of Selective Mutism in School Age Children," advised by Nancy Hall
- **Natural Sciences:** **Taylor Lanhan, Alicia Girardin, Jenny Woodbury, Erica Ogden, Jo-Ellen and Loring Jamieson**, "Sensory Integration Therapy in Individuals with Autism and the Incorporation of Speech-Language Pathology," advised by Nancy Hall; and **Faythe Goins**, "Environmental Impacts on Loggerhead Sea Turtle Nesting on Edisto Island, SC," advised by Kristina Cammen
- **Physical Sciences:** **Andrew Nolan**, "Discovery of Five Instabilities of Turner Glacier, St. Elias Mountains, Alaska, from 1984 to 2017," advised by Karl Kreutz; and **Tessali Morrison**, "Synthesis of Hydrogels Containing Quaternary Amine Polymers," advised by William Gramlich
- **Social Sciences:** **Brawley Benson**, "How Discourse Shapes Dam Decision Making: News Stories as Sites of Meaning," advised by Bridie McGreavy and **Tyler Quiring**; and **Jessica Champagne**, "Maine Understanding Sensory Integration and Cognition (MUSIC) Project: Can Music Learning Improve Cognition in Older Adults?" advised by Rebecca MacAulay



## STUDENT EMPLOYMENT

### Available Positions:

- Communication Coordinator
- Administrative & Event Planning Assistant
- Technical Support

### Interns are compensated through one or more of the following:

- Work-study pay
- Acknowledged volunteer hours
- Academic credit
- Regular hourly pay



For more information including job descriptions, required skills, and how to apply, go to:



[CUGR.UMAINE.EDU](http://CUGR.UMAINE.EDU)

## Responsible and Ethical Conduct of Research (RCR)

### Overview:

The National Institutes of Health (NIH) defines 'Responsible and Ethical Conduct of Research' (RCR) as, "the practice of scientific investigation with integrity. . [involving] the awareness and application of established professional norms and ethical principles in the performance of all activities related to scientific research."

### Responsible & Ethical Research Shared Values

- Honesty – conveying information truthfully and honoring commitments,
- Accuracy – reporting findings precisely and taking care to avoid errors,
- Efficiency – using resources wisely and avoiding waste,
- Objectivity – letting the facts speak for themselves; avoiding improper bias.

For more information: [Office of Research Compliance \(ORC\)](#)

**Important:** Undergraduate students participating in CUGR Fellowship sponsored research are required to be trained in the Responsible Conduct of Research. It is not required to be trained prior to submitting an abstract for the award. RCR certification needs to be completed and submitted to CUGR prior to the end of the performance period of the research. This requirement is not meant to be onerous, and could be satisfied by comparable certifications. Please contact the CUGR office to confirm fulfillment of this requirement through previous certification completion.

## 2018-2019 CUGR Advisory Committee

- **Ali Abedi**, Assistant VPR & CUGR Director
- **Francois Amar**, Dean, Honors College (ex-officio)
- **Judith Andre-Rosenbaum**, Assistant Professor of Communication & Journalism
- **Jim Artesani**, Associate Dean of Graduate Education, Research, and Outreach, EDHD
- **Laura Artesani**, Associate Professor, Music Education Coordinator
- **George Criner**, Associate Dean, NSFA
- **Sally Dixon**, Honors Preceptor of Genomics, NSFA
- **Lee Karp-Boss**, Associate Professor, Marine Sciences
- **Jean MacRae**, Associated Professor of Civil and Environmental Engineering
- **Mayellen Mahoney-Oneil**, Associate Dean for Academic Services, EDHD
- **Patricia Poirier**, Associate Professor of Nursing
- **Stefano Tijerina**, Adjunct Assistant Professor, Political Science
- **Student Representatives**, Nominated by Student Government (1 JR, 1 SR)



### Become an Engaged Black Bear (EBB) Research Scholar!

Level 1 - **Participate**

Level 2 - **Engage**

Level 3 - **Demonstrate Leadership & Initiative**

**EBB** is an innovative digital badging initiative, created to aid the University of Maine in meeting its vision to become the “most distinctively student-centered and community engaged of all the American Research Universities.”

Level III Research Scholar Badge earner, see page 12

**For more information go to:**

<https://umaine.edu/engagedblackbear/learning-pathways/undergraduate-research/>

# Why Participate in Undergraduate Research?

## What do students gain through the research or creative achievement experience?

Through research and creative opportunities, undergraduates learn to problem-solve using a variety of methods to find answers. They can hone their abilities to communicate and put ideas together, to organize and write, and to investigate and ask questions. Research provides an opportunity for a mentor-mentee relationship different from a teacher-student relationship. In that context, the learning is invaluable.

## Why is undergraduate research, scholarship, and creative achievement important?

More and more institutions of higher education and employers recognize that the skills developed through research and endeavors of scholarship and creative achievement make an individual more competitive in a global society. Students with early research and scholarship experience develop better critical thinking and problem-solving skills and stronger content knowledge. A less direct benefit is the balance between independence and collaboration. Research is often performed in teams, and one must learn to balance a collaborative effort in the laboratory with what one is capable of accomplishing independently.

## How can undergraduate students get involved in research/creative activity?

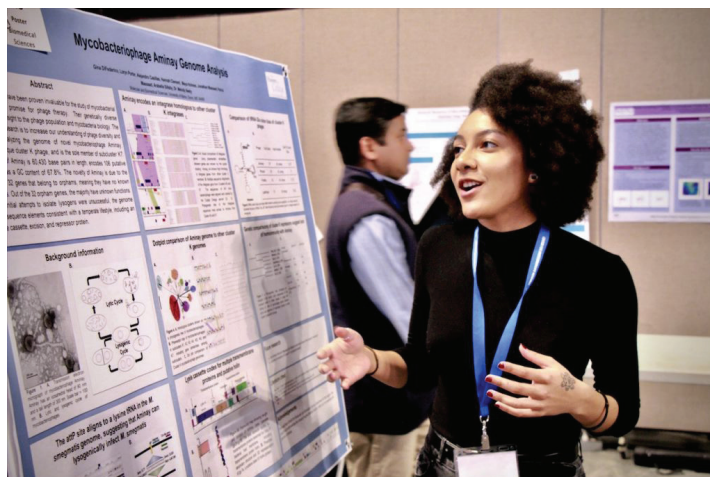
Research is part of the learning process, no matter what the discipline. It's not a scary, unreachable, ivory tower process. Students just have to be willing to ask. Students should talk to academic department chairs or contact the CUGR team to learn about different opportunities available to them.

## How does CUGR help grow undergraduate research and creative achievement at UMaine?

CUGR works to build on UMaine's strength as the state's leading research university, taking advantage of the hundreds of faculty and graduate students involved in research and creative projects who can support and mentor undergraduate researchers. CUGR also works on curriculum reform, exploring how to include research-based activities in coursework, and promotes campus-wide events to highlight undergraduate research, scholarship and creative achievement.

## What's in it for faculty researchers?

Undergraduates often have a broader perspective, enthusiasm, and energy that are ripe for explorations and learning. One of the most rewarding processes for faculty mentors is witnessing the evolution of student learning when involved in research or the creative experience. For faculty, mentoring student explorations is an investment in tomorrow's scholars.





# UMaine Research Faculty Mentor (Left) & Undergraduate Student Researcher (right)

## Dr. Caitlin Howell

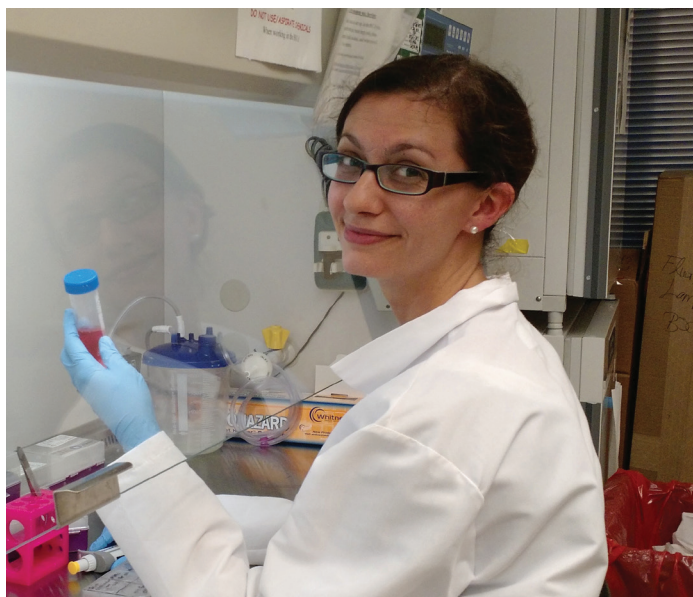
Chemical and Biomedical Engineering & Graduate School Biomedical Sciences and Engineering

Here are some highlights of Dr. Howell's background working with undergraduate student researchers here at UMaine!

- Nominated by the Dean of Engineering, she was selected to be a CUGR Research Faculty Fellow (2017-2020).
- In the past 2 years she helped secure funding for 5 CUGR Fellowship Awards, serving as the faculty-mentor on each of the awarded research projects.
- In preparation for the Annual 2018 UMaine Student Symposium, she played an integral role, serving as Chair of the Submission Management Subcommittee.
- Works with researchers of all experience levels to design new materials through bio-inspired engineering

"I'm passionate about furthering science through research, mentoring, and teaching, and enjoy working with both students and collaborators to create new knowledge. My main interests lie at the intersection of biology, engineering, and materials science, although I'm happy to expand those boundaries when it comes to solving a critical problem or creating something new."

- Dr. Caitlin Howell

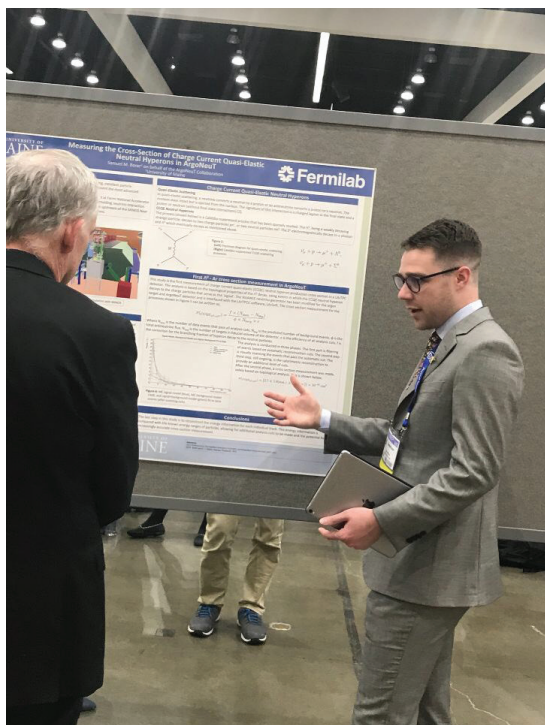


## Engaged Black Bear Badge

### Samuel Borer, 'Research Scholar' Level III Class 2018

Description of Badge: The Undergraduate Research Scholar pathway encouraged students to become actively engaged in faculty-mentored undergraduate research and creativity activity efforts on campus and in the community. Students demonstrated growth and development in becoming a research scholar, leader, and active citizen. Earners of this badge achieved an important, University of Maine verified student engagement milestone by completing the Engaged Black Bear Undergraduate Research Scholar Learning Pathway (Levels 1, 2, and 3). For more information see URL provided on page 10.

For more information on the types of badges Sam earned view his [EBB Profile!](#)



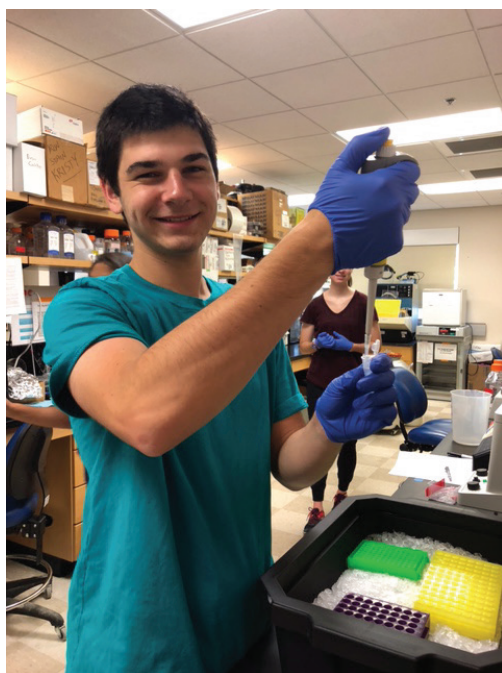
Samuel Borer, Poster Presentation at the 2018 UMaine Student Symposium  
Samuel Borer, Poster Presentation at the 2018 UMaine Student Symposium

## Joshua Passarelli

**Major: Biology, pre-med concentration**

**Class of 2021**

**Faculty Mentor: Dr. Sally Molloy**



### You received a 2018 Summer Fellowship Award - What is your research focus?

“My research project is to track the differentiation of adult neural stem cells in the brain in response to different metabolic treatments such as fasting, enriched environment, and exercise.”

### How did you get started and interested in undergraduate research (UGR)?

“I became interested in undergraduate research after taking the laboratory courses Genome Discovery I: From Dirt to DNA and Genome Discovery II: From DNA to Genes. This course sequence, taught by Dr. Sally Molloy, engaged me in an authentic bacteriophage

genomics research project. Through Dr. Molloy, I was introduced to Dr. Kristy Townsend and from that point on I have been fascinated with neurobiology and biomedical research.”

### What advice do you have for those pursuing UGR?

“For those pursuing UGR, I would advise getting involved with it sooner rather than later. Also, you can expect your research to take you down a new path, so it is important to be flexible.”

### Where are you going from here?

“This research project has launched me into the world of biomedical and neuroscience research. I returned from a medical mission trip in Senegal in June and have hit the ground running with my project. Going forward, I would be excited to continue my project in the coming academic year.”

### How has CUGR effected your UG experience here at UMaine?

“CUGR has given me the opportunity to engage in my own research project and use my knowledge in a new way. Learning through investigation and inquiry is the best way to learn and without this opportunity, I feel I would not have developed the passion for research that I now have.”



For other student experiences as well as information on the benefits of engaging in research as an undergraduate, go to the following url:

[Student Experiences](#)



# Kayla Marquis

**Major: Bioengineering**

**Class of 2019**

**Faculty Mentor: Dr. Caitlin Howell**

## You received a 2018 Summer Fellowship Award - What is your research focus?

“The goal of my research is to create surfaces that resist the attachment of bacteria in space. This new technology will incorporate self-replenishing vascular systems into commonly bio-fouled surfaces. These self-replenishing systems possess unique surface properties which have been shown to reduce adhesion of fouling organisms to surfaces without the need for antibiotics or toxic chemicals, therefore creating an environmentally friendly solution for biofouling.”

## How did you get started and interested in undergraduate research (UGR)?

“I was looking for a way to get hands on experience and be able to apply skills and techniques that I learned in my undergraduate classes so I applied for a research assistant position.”

## What advice do you have for those pursuing UGR?

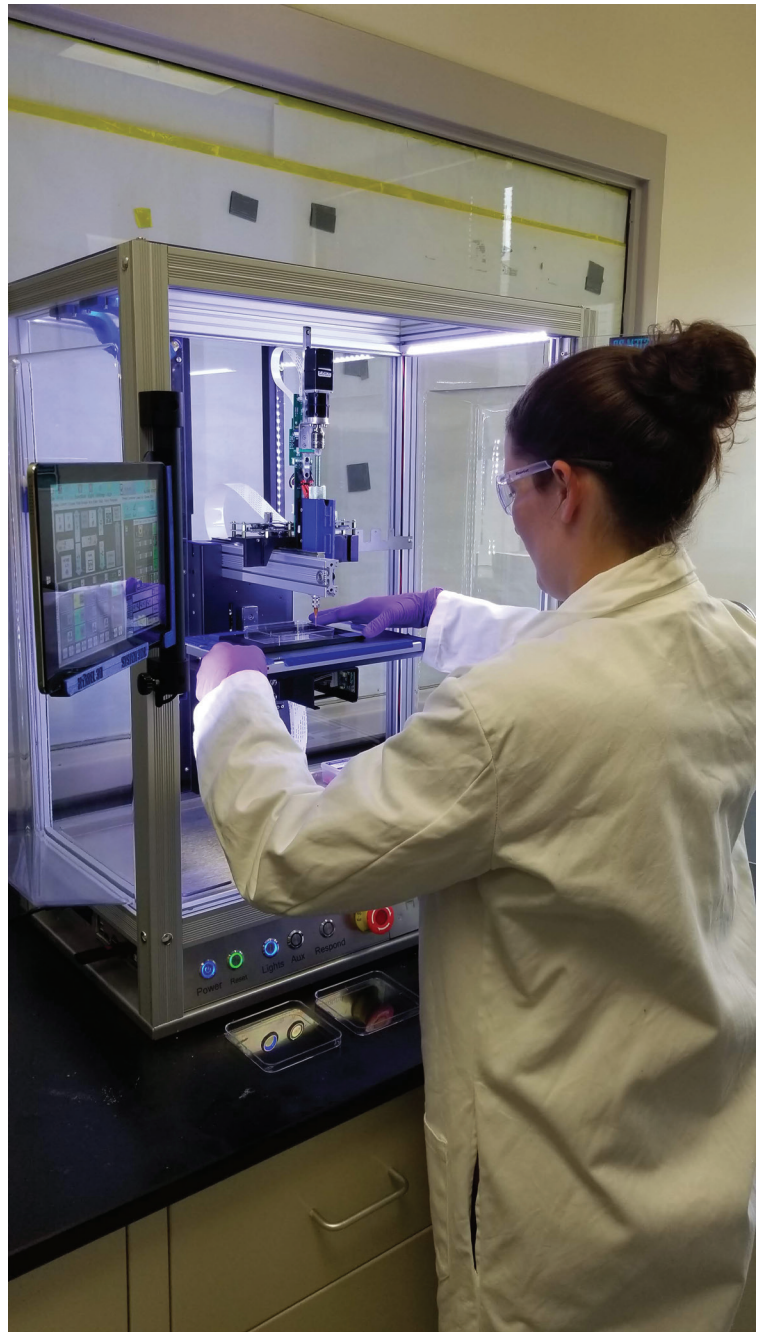
“Start getting involved in research as soon as possible. Participation in research will allow for the application of knowledge and techniques learned in the classroom, ultimately resulting in a greater understanding of the topic/subject area.”

## Where are you going from here?

“Following graduation from my master’s program I plan on working in industry. I also currently work part-time in the Air National Guard as a bioenvironmental engineer and will continue after graduation.”

## How has CUGR effected your UG experience here at UMaine?

“My faculty mentor served as a great inspiration and motivator throughout all of my research. The ability to work one-on-one with a mentor has allowed for a more personalized experience. When a mentor fully understands your full potential, they are able to push you to the best you can be.”





# Joshua Hamilton

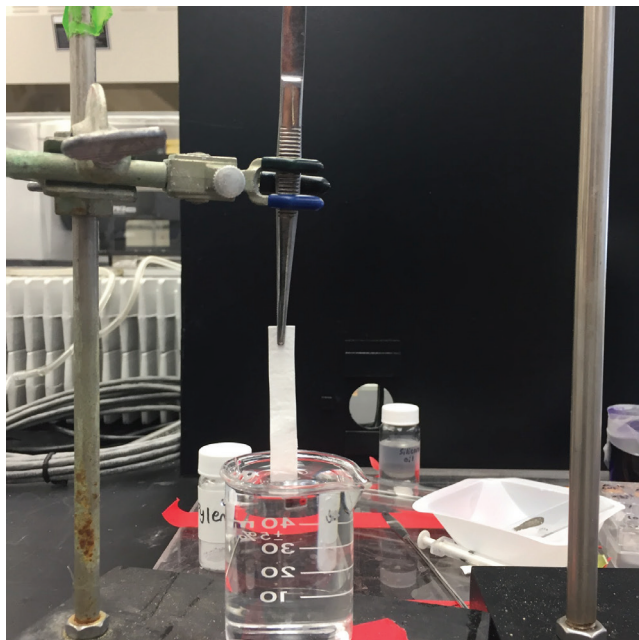
Major: Biomedical Engineering

Class of 2021

Faculty Mentor: Dr. Michael Mason

## You received a 2018 Summer Fellowship Award - What is your research focus?

“My research is on developing a biodegradable alternative for the absorbent pad in IDEXX SNAP tests out of Cellulose Nanofibers. This involves creating/optimizing a drying process for CNF into a pad and determining the best porosity for the pad. The addition of hydrophilic chemicals such as calcium carbonate is also being looked into.”



## How did you get started and interested in undergraduate research (UGR)?

“ I have always had an interest in science since I was kid started by figures such as Neil Degrasse Tyson and Richard Dawkins. Back in my Sophomore year of high school I applied for the EPSCoR highschool summer internship and got into the Umaine Chemical Engineering department as an intern. I worked with a graduate student who was looking into improving the rheological properties of CNF, so that it would flow better in industrial applications. I enjoyed the internship greatly and applied for the same one the following year. I was then put in as an intern in the Chemistry Department and worked with a graduate student quantifying the amount of fucoxanthin (Has medically beneficial properties) found in Maine grown seaweed. I simply wanted to continue this research experience in college.”

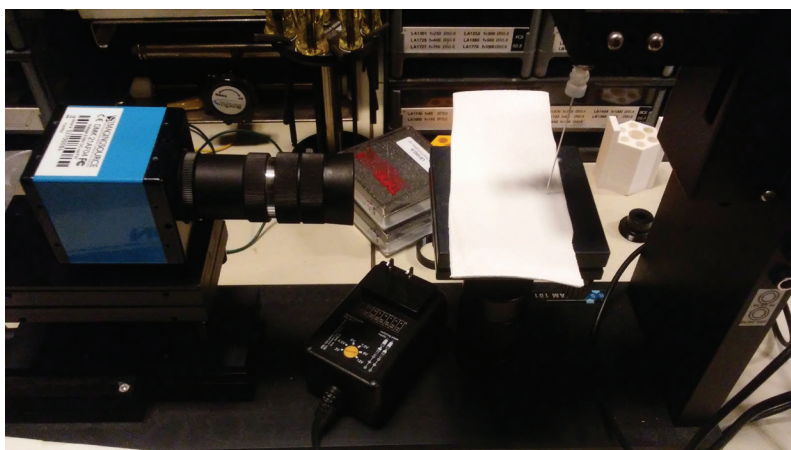


## What advice do you have for those pursuing UGR?

“Make sure to show them you are reliable by turning in assignments on time and keep applying/asking professors for opportunities to get into a lab or to work on research with them. Just showing actual pure interest in science goes a long way with professors.”

## Where are you going from here?

“ I hope to continue academic research for the next 3 years of college and move on to graduate school. My ultimate goal would be to study cancer as I have lost a close friend who battled cancer from when he was a kid to senior year of high school and my step father is currently battling pancreatic cancer.”



## What benefit did working with a faculty-mentor on your research have on your overall experience?

“Experience and knowledge. All of the intricacies of research as well as being able to ask almost any question and receive all the information you could want. Just having someone who knows what to do makes the process that much easier.”

# Become a UMAINE RESEARCH Scholar!

## CUGR STAFF

ALI ABEDI, ASSISTANT VPR & CUGR DIRECTOR

ALEXANDRIA JESIOLOWSKI, PROGRAM SPECIALIST  
[CUGR@MAINE.EDU](mailto:CUGR@MAINE.EDU)

## CUGR STUDENT INTERNS

COLBY ROSS, COMMUNICATION SPECIALIST  
[COLBY.ROSS@MAINE.EDU](mailto:COLBY.ROSS@MAINE.EDU)

JAYMIE PRATL, STUDENT ADMINISTRATIVE AID  
[JAYMIE.PRATL@MAINE.EDU](mailto:JAYMIE.PRATL@MAINE.EDU)



5719 CROSSLAND HALL, SUITE 207  
UNIVERSITY OF MAINE  
ORONO, ME, 04469

[CUGR@MAINE.EDU](mailto:CUGR@MAINE.EDU)  
207.581.3583  
[CUGR.UMAINE.EDU](http://CUGR.UMAINE.EDU)

**CENTER FOR UNDERGRADUATE RESEARCH (CUGR)  
UNIVERSITY OF MAINE**