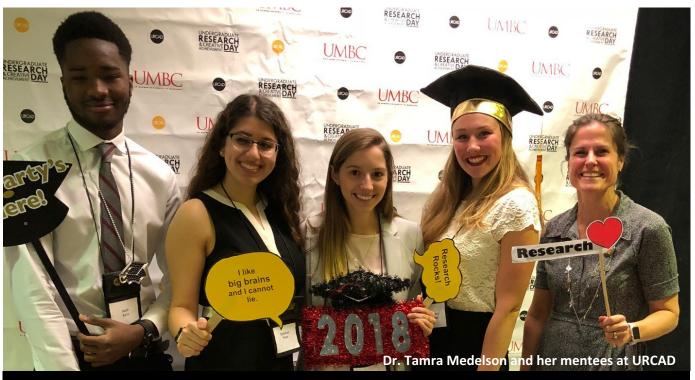


# **Annual Report**

### **Undergraduate Research and Prestigious Scholarships**

Division of Undergraduate Academic Affairs ur.umbc.edu





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## Mission

#### Mission

Undergraduate Research and Prestigious Scholarships provides academic support and advising, mentoring, and funding, to students involved in research and creative work, or who are preparing to apply for prestigious scholarships. Our mission is to promote engagement and experiential learning that enriches the educational experience of UMBC undergraduates in all disciplines, and promotes a culture of scholarship throughout the university.

#### Vision

Our students are exposed to opportunities that prepare them to achieve their academic goals and make them competitive candidates for graduate and professional school, employment, and prestigious awards. We contribute to UMBC's strategic commitment to the twin goals of research and a distinctive undergraduate experience by fostering academic excellence both inside and outside of the classroom.

#### **Shared Values**

As a unit of the Division of Undergraduate Academic Affairs, we are committed to UMBC's core values of diversity, integrity, social responsibility, and lifelong learning. We define excellence in higher education through an inclusive culture that connects innovative teaching and learning, research across disciplines, and civic engagement.



## Message from the Director

I've been a staff member and part-time faculty at UMBC for about 14 years, but 2018 marks the close of my first full year as the Director of Undergraduate Research and Prestigious Scholarships. This unit has a strong foundation that was built by Founding Dean Diane Lee, Interim Dean Simon Stacey, and former Director Janet McGlynn. The goals for this past year were to maintain continuity of programming and to ensure a smooth transition to new leadership. This year, I have also been assessing our practices and building upon them with the goal of improving student outcomes. In the case of prestigious scholarships, I am working to establish protocols and forming committees, giving structure to the institutional nomination process. This year was also about forming and energizing connections on campus and beyond, building trust with students and faculty, and improving the visibility of the unit and the division, as major contributors to student success at UMBC.

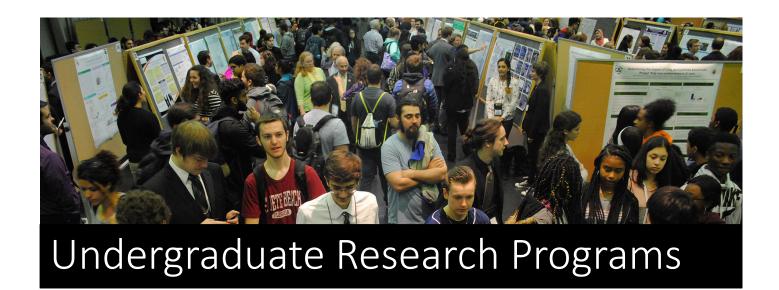
This academic year saw a continued increase in the number of UMBC's undergraduate students who are engaged in research and creative work. Through our various programs and initiatives, students have obtained funding for their projects, presented their results to faculty and peers both on campus and at national conferences, published their academic writing in peer-reviewed journals, participated in off-campus REUs, and competed for prestigious scholarships. A few of the accomplishments I am most proud of for this year include successfully nominating and advising Naomi Mburu, UMBC's first Rhodes scholar in school history, through the rigorous application and interview process. Other highlights include taking over as the faculty representative for seven prestigious scholarships and streamlining processes for applicants, developing faculty committees to improve the quality of applications, and creating an archive of UMBC's past winners. I've attended the annual National Association of Fellowships Advisors (NAFA) conference and learned about best practices in the field, met with Goldwater president, John Mateja, and Tara Yglesias, Deputy Executive Secretary of the Harry S. Truman Scholarship Foundation, to identify strategies for putting forward successful candidates for these scholarships. As an alumna of UMBC's visual arts program, it has been a personal goal to increase participation from the arts and to showcase creative scholarship at URCAD side-by-side with traditional research fields. We've improved assessment, and rebranded our programs with an energy that is supportive, professional, and student-focused.

I am pleased to report significant growth in all of the programs I oversee, in term of the numbers of students and faculty who participate, as well as the quality of research and creative work these students are producing. For these successes, the programs are indebted to the support of UAA leadership, especially Dean Katharine Cole, and the funding that comes from a variety of contributors, including the Deans of all five colleges, the Office of Vice President for Research, and Provost Philip Rous. The success of students involved in our programs is an integral part of upholding UMBC's reputation as a national leader in academic excellence. I hope to build on this year's student successes next year and beyond!

April Householder, Ph.D.

april L. Hauseholder

Director of Undergraduate Research and Prestigious Scholarships



Getting involved in research as an undergraduate helps students network with faculty both on and off campus, strengthen their resumes for graduate school, professional school, and employment, support their artistic vision, and helps them apply what they've learned in the classroom in a research setting. UMBC has several programs that affirm

experience:

**Undergraduate Research and Creative Achievement Day (URCAD)** features research, scholarship, and creative work carried out by UMBC undergraduates. Student work is shared through oral presentations, posters, artistic exhibits, performances, and film.

UMBC's commitment to the twin goals of research and a distinctive undergraduate

**Undergraduate Research Awards (URA)** provide up to \$1,500 to undergraduate students to support their research or creative work with a UMBC faculty mentor on an original project. UMBC students of all years and disciplines are invited to apply.

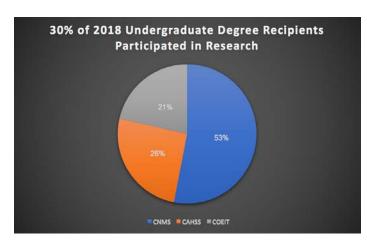
**UMBC Review** (Journal of Undergraduate Research) Published annually, this peer-reviewed journal features academic papers written by UMBC undergraduates.

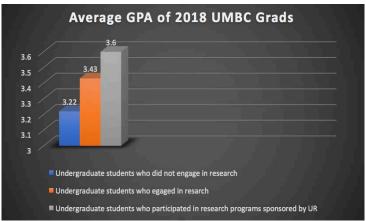
**Travel Awards** Students who are invited to present their work at a conference or festival may apply for funds to support their travel.

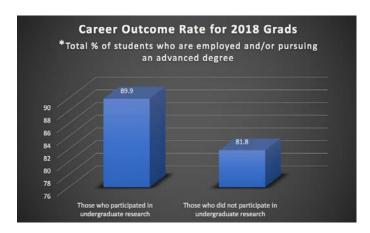
**Research Opportunities** Assistance with finding and applying to summer REUs and other research opportunities.

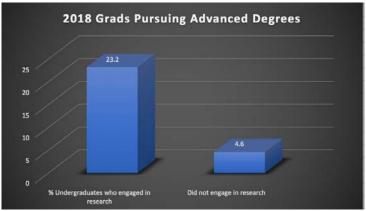
**Prestigious Scholarships** Support for students applying for prestigious scholarships such as Rhodes, Gates-Cambridge, Marshall, Truman Goldwater, and others.

## Campus- wide Data on 2018 Undergraduate Degree Recipients Who Engaged in Research









#### Sample of Graduate & Professional Schools

In addition to University System of Maryland institutions, UMBC graduates will be attending:

Boston University
Brown University
Carnegie Mellon University
Columbia University
Cornell University
Duke University
Emory University
Georgetown University
George Washington University
Georgia Institute of Technology
Harvard University

Johns Hopkins University
Massachusetts Institute of Technology
New York University
Northeastern University
Ohio State University
Pennsylvania State University
University of California, Berkeley
University of Michigan
University of North Carolina
University of Notre Dame
University of Pennsylvania
University of Virginia
Vanderbilt University
Yale University

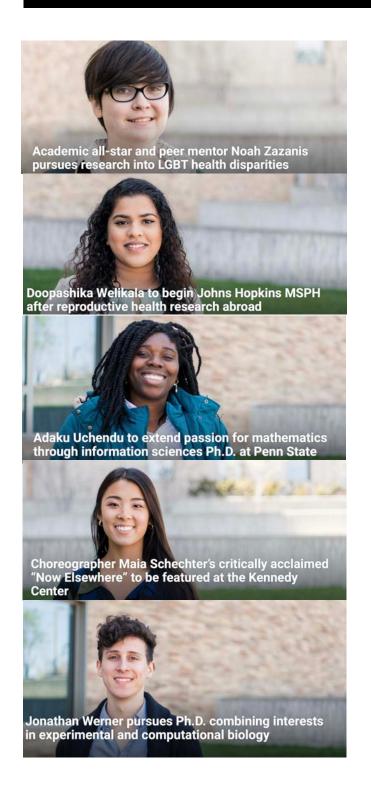
Degree	s Being Pursued After UMBC
2% <b>2</b> nd	d Bachelor's
3% Joir	nt MD & PhD
3% Cer	tificate Program
17% P	Professional Degree
(30% Medic	cine, 25% Pharmacy, 23% Law, 14% Dental, 5% PT)
25%	Doctoral
50%	Master's

Data was collected on 1,266 undergraduate degree recipients (2018) for the UMBC Career Center's First Destination Report.

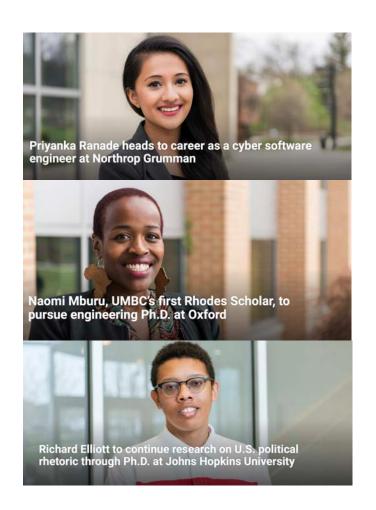


## 2018 Exceptional Grads

who participated in undergraduate research and prestigious scholarships





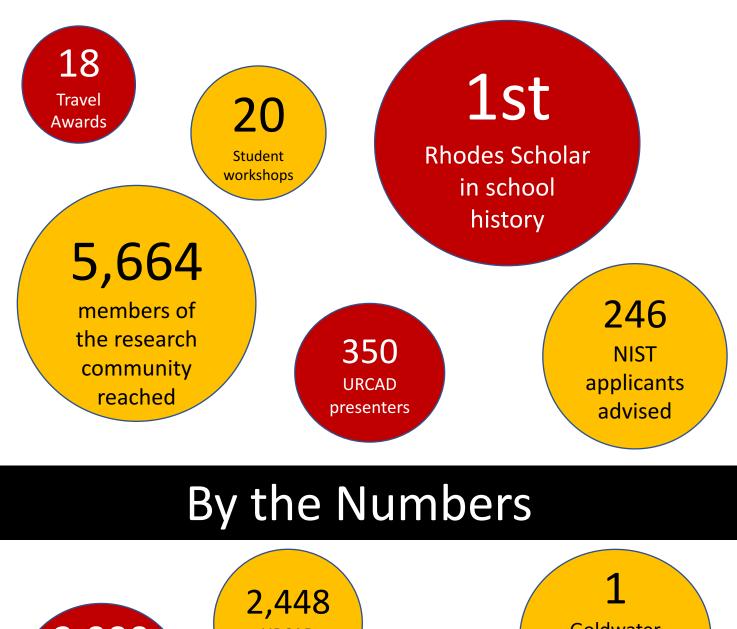


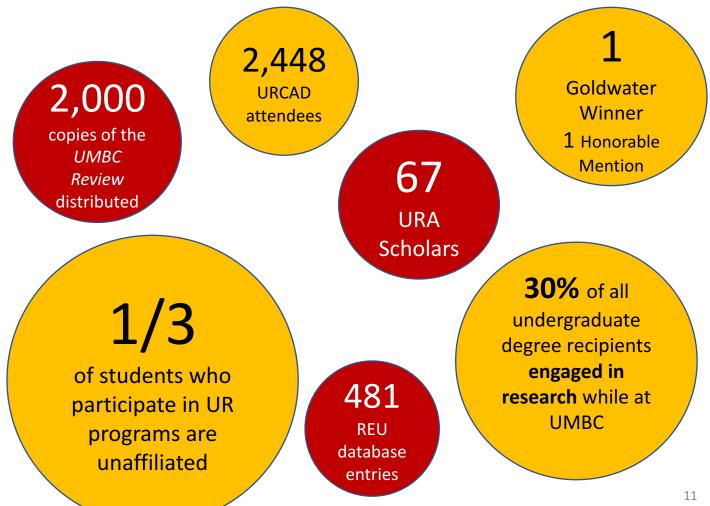


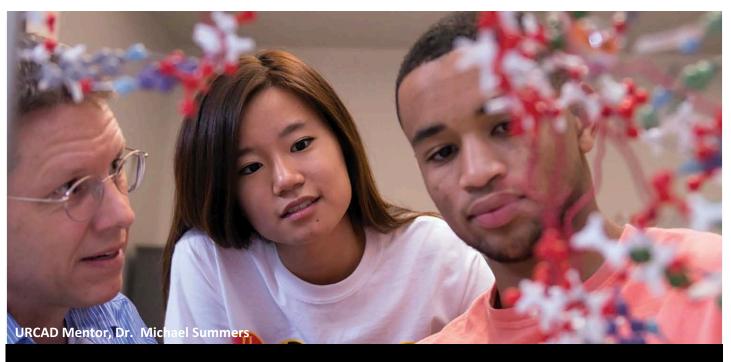
"This September I will be travelling to Romania as a Fulbright scholar, conducting research on Roman coin imagery in the ancient Roman province of Dacia. As I begin the next chapter of my academic career, I cannot help but reflect on the opportunities I have had at UMBC, without which my Fulbright application would have been severely lacking. By allowing me to pursue my research interests and apply to prestigious scholarships, UMBC has prepared me not only for this upcoming project, but for years to come. My URCAD presentation was attended by students and faculty alike. I was able to use feedback from my presentation to further refine my project and submit it as my honors thesis. I also applied to the Marshall Scholarship under the mentorship of Dr. April Householder. Though the application was arduous, requiring five separate essays, I found the experience rewarding. As well as enhancing my writing skills, the application process made me truly reflect on the reasons I had chosen this field of study, why I wanted to pursue archaeology, and how I wanted to proceed. Thanks to this introspective nature of the process I was able to narrow down my plans for after Fulbright, choosing to marry my research with a future in museums curation."

### --Flora Kirk

2018 Graduate, Ancient Studies URA Scholar, URCAD Participant, Fulbright Scholar







## Faculty Support

#### **URCAD Committee**

Stephen Miller, Chair Biological Sciences

**Diane Alonso** Psychology

**Song An**Chemistry and Biochemistry

**Ian Anson** Political Science

Bradley Arnold

Chemistry

Richard Chang Computer Science and Electrical Engineering

Lindsay DiCuirci English

Amy Everhart Information Systems

**April Householder**Undergraduate Research and Prestigious Scholarships

Molly Jones-Lewis
Ancient Studies

**Hye-Won Kang**Mathematics and Statistics

**Jodi Kelber-Kaye** Honors College

Jason Kestner Physics Jackie King MARC U\*STAR Program

**Charles Laberge**Computer Science and Electrical
Engineering

**Hua Lu** Biological Sciences

Galina Madjaroff
Management of Aging Services

Nagaraj Neerchal Mathematics and Statistics

**Timothy Nohe** Visual Arts

Cheryl North Education

Corrie Parks Visual Arts

Sara Poggio Modern Languages, Linguistics, and Intercultural Communication

**Neil Rothman** Mechanical Engineering

**Felipe Filomeno**Political Science and Global Studies

**Kathy Sutphin**College of Natural and
Mathematical Sciences

### Critical Ped . a . go . gy:

Faculty review committees are an integral part of not only evaluating and selecting URCAD presenters, URA recipients, and prestigious scholarships applicants, but also provide feedback to students to improve their research and writing.

#### **URA Committee**

**Gregory Szeto** 

Chemical, Biochemical, and Environmental Engineering

**Eric Brown** Interdisciplinary Studies

Mariajose Castellanos Chemical Engineering

Daniel Ritschel History

Viviana Cordova Visual Arts

Thomas Cronin
Biological Sciences

Carolyn Forestiere Political Science

Jeffrey Gardner Biological Sciences

Vin Grabill. Chair

Visual Arts

Doug Hamby

Dance

April Householder

Undergraduate Research and Prestigious Scholarships Renee Lambert-Bretiere

Modern Languages, Linguistics, and Intercultural
Communication

Andrea Kleinsmith Information Systems

Alan Kreizenbeck Theatre

Bernard Lohr Biology J. Vanderlei Martins

Physics

Tim Oates

Computer Science and Electrical Engineering

Michele Osherow English, Judaic Studies

Bryce Peake Media Communication Studies

Marcus Zupan
Mechanical Engineering

**Brad Peercy**Mathematics and Statistics

E. Michael Richards Music

David Rosenbloom Ancient Studies

Anne Sarah Rubin History

**Dena Smith** Sociology and Anthropology

Paul Smith Chemistry

**Colin Studds**Geography and Environmental
Systems

Laura Ting Social Work

Shari Waldstein Psychology

Chunming Yuan
Economics

12

#### **Goldwater Committee**

#### **April Householder**

Committee Chair Undergraduate Research and Prestigious Scholarships

#### Lee Blaney

Chemical, Biochemical and Environmental Engineering

#### **David Eisenmann**

**Biological Sciences** 

#### Stephen Freeland

**Interdisciplinary Studies** 

#### Jason Kestner

**Physics** 

#### **Brad Peercy**

**Mathematics and Statistics** 

#### **Marcin Ptaszek**

Chemistry and Biochemistry

#### **Cynthia Wagner**

**Biological Sciences** 

#### **Mitsue Wiggs**

Meyerhoff Scholars Program

#### **Travel Awards Committee**

#### **Devon Fick**

**Undergraduate Academic Affairs** 

#### **Timothy Phin**

**Ancient Studies** 

#### **Bedrich Sousedik**

Mathematics and Statistics

#### **Laura Ting**

Social Work

"I've enjoyed the 15 years I've served as URA committee chair. It was my goal to work with faculty members on the committee to encourage proposals from as many students as possible across the campus. I also enjoyed working with Dean Diane Lee, Provost Rous, and other administrators in an effort to secure more funds, when possible. I'm glad to say that URA funding and project completion continues on an upward trend, and I look forward to returning to URCAD in the years to come to witness the research produced by our talented and motivated students at UMBC. As I step down from my role, the URA initiative and URCAD are in very good hands with April Householder now directing."

### -- Vin Grabill

Outgoing URA Committee Chair





## Mentoring

Students reported feeling more connected to the faculty

- advice, encouragement
- Students better understand the culture of the discipline
- Students develop skills such as
  - self-confidence, communication, technical abilities, change management, leadership, team work, ability to work independently
- Students made connections to classroom learning
- Professionalization: networked to faculty/institutions outside the university
- Faculty provided opportunities to present and publish

"When I was an undergraduate student, I lacked context for my studies. I got good grades, but I wasn't passionate about what I was studying. After getting involved in undergraduate research, I began to see how I could impact and improve the world. My undergraduate research experience allowed me to work on grand challenges related to clean water and public health. That work changed my life. So, for me, it is important to mentor undergraduate researchers to help ignite that flame of curiosity and help our students become leaders on global issues. But, I also get a lot from my undergraduate researchers. It is immensely gratifying to watch a student present their work for the first time, to publish their first paper, or to receive a major award. Their excitement is contagious and helps to push myself, and the rest of our research group, forward."

-- Dr. Lee Blaney

Department of Chemical, Biochemical and Environmental Engineering URA and URCAD Mentor

23.2% of grads who engaged in undergraduate research are pursuing advanced degrees vs.
4.6% who did not

### **Graduate**

sooner than students with similar admission criteria (75.6% 4-yr and 90% 5-yr)

UR **Mentors**report being more
engaged/satisfied
with their work

Increased **identification** with other members of an intellectual cohort and high levels of **satisfaction** with their college experience (esp. among minority students)

### Benefits of Engaging Students in Research

Enhanced academic performance:
UR students graduate with higher **GPAs**(3.6 vs. 3.0 campus-wide)

Petter positioned for prestigious scholarships

(5/5, or 100% of prestigious scholarships winners were engaged in undergraduate research) Higher career outcome rate\*

(89.9% vs. 81.8%)

**Unaffiliated students** get engaged with their intellectual **community** 

(about 1/3 of UR participants are unaffiliated with other scholars or honors programs)

\* Total % of students who are employed and/or pursuing an advanced degree.

Greater
acceptance rates
to graduate and
professional
school

(84.2% vs. 16% campus-wide)



For 2017-18, **98** applications were received (in the requested amount of \$126,281) and **66** URA projects were funded (67 students, including group projects), for a total of **\$78,496**.

Unaffiliated students (students not participating in an honors/scholars program) continued to rise, indicating that we are reaching students who aren't being served by other programs.

Over the last year, these URA scholars conducted research, engaged in entrepreneurial projects, and prepared creative art, with the guidance of their mentors, and with the support of URA funding (up to \$1500). They presented their findings at URCAD on April 25, 2018. The URA Scholars and their mentors for 2017-18 are:

#### **Shreya Agarwal**

Developing New Therapeutics for Prostate Cancer: Inhibition of RNA Pol I in Mouse Models of Prostate Cancer Dr. Charles Bieberich

#### Tsola Akuya

Hip-Hop Dance: Foundational vs. Commercial styles

Ms. Carol Hess-Vait

#### Yafet Arafeayne

Synthesizing Flexible Purines for Inhibition of the Nucleocapsid Protein NCp7 in HIV-1 Dr. Katherine Seley-Radtke

#### **Hannah Aris**

Isolating Phosphorus from Poultry Litter via Membrane Potentials Dr. Lee Blaney

#### Emma Ayala

Strata Animation: Layers in Time and Space

Ms. Corrie Parks

#### **Haley Bast**

Malaria in Developed Nations Dr. J. Lee Jenkins

#### Siya Bhagat

Dendritic Drug Delivery System for Delivery of Cisplatin Dr. Marie-Christine Onuta

#### Jayati Bhavsar

Design of Nano-engineered Materials for Laser Host and Bone Applications: Novel Hydroxyapatites Drs. Bradley Arnold, N.B. Singh

#### Jessica Black

Sex Differences in Brain Responses to Pain in Migraineurs Dr.Raimi Quiton

#### **Peter Braunschweig**

Studying the St. Louis Urban Heat Island During the 2017 Total Solar Eclipse Dr. Jeffrey Halverson

#### **Thomas Burnett**

Investigating Adaptation of Melanopsin Activation Dr. Phyllis Robinson

#### **Anya Byrd**

Effect of Environmental Coloring on Reflectance of Neogonodactylus oerstedii Dr.Thomas Cronin

#### Jolee Cohen

Summer Shakespearean Study Ms.Eve Muson

#### **Kelly Dunn**

Narrative Constructions of Collective Memory: Representing the Armed Conflict in Colombia Dr. Tania Lizarazo

#### **Arissa Falat**

A Structure-Activity Relationship study of Flex-acyclic 2,4-diaminopyrimidine nucleosides Dr.Katherine Seley-Radtke

#### **Jair Flores**

Role of Phosphatases in intrisically photosensitive Rential Ganglion Cell Dr. Phyllis Robinson

#### Sam Giannakoulis

Development of a Light Adaptation Model for the Melanopsin Phototransduction Cascade Dr.Kathleen Hoffman

#### **Jasmine Gim**

Chinese and Korean Immigrant Mothers' Social Support Networks and Parenting Styles Dr. Charissa Cheah

#### **Jennifer Hewitt**

Characterizing Hotspots of Extragalactic Jets and the Connection Between Jet Speed and Jet Power Dr. Eileen Meyer

#### **Lisa Hong**

Synthesis of Near Infrared Imaging Dendron for use in Theranostic Systems Dr. Marie-Christine Onuta

#### **Anthony Huynh**

Dissecting Dynamic Spatial Localization of mTOR in Living Cells Dr. Minjoung Kyoung

#### **Temitope Ibitoye**

Photolysis of Macrolide Antibiotics at 253.7 NM Dr. Lee Blaney

#### Zakari Jaworski

Meaning in Movement: Understand Dance Through Research Prof. CarolHess-Vait

#### **Marcus Jordan**

Synthesis of Novel Water-soluble Self-assembling Bacteriochlorophyll c Mimics

Dr. Marcin Ptaszek

#### **Matthew Kane**

Nest Predation of the Bahama Oriole: Examining the Effect of Invasive Rodents on a Critically Endangered Songbird

Dr. Kevin Omland

#### Michael LaScola

Generation and analysis of dp1 mutants in the green alga Volvox carteri

Dr. Stephen Miller

#### Andrew Le

Genome-scale Metabolic Reconstruction of the Purinsome Multi-enzyme Complex

Dr.Songon An

#### **Richard Linkous**

Characterization of the Pathogenic Bacterial Iron Uptake Protein FeoA

Dr. Aaron Smith

#### Samiksha Manjani

Analyzing the Sociological and Legal Impacts on the State-wide Occurrence and Reporting of Rape

Dr.Jeffrey Davis

#### Jason Mascelli

Can Local Governments and Nonprofits Affect Immigrant Settlement?

Dr. Felipe Filomeno

#### **Courtney Mattson**

Behavior of Darters in Response to Olfactory Cues

Dr. Tamra Mendelson

#### **Lucas McCullum**

Investigating the Feasibility of PZT Plates Towards Developing a Transducer for Tumor Detection

Dr. Soobum Lee

#### Sarah Miller

Women's Roles in Affordable Housing Communities in Rio de Janeiro

Dr. Sarah Chard

#### Ijaz Mohamed

Heme Regulation of Arginine Transferases

Dr. Aaron Smith

#### **Emmanuel Mones**

Alt-Masc: Defying Toxic Masculinity through Fashion and Photography

Prof. Mark Durant

#### **Rachel Morin**

Documentary of Catholic Missions in Peru

Ms. Sarah Sharp

#### **Heather Mortimer**

The Effect of Immersive, Interactive, and Participatory Exhibit Experiences on Visitor Interactions in the

Library Rotunda

Ms. Sandra Abbott

#### Jamar Nash

End of Life Care among Ex-prisoners in Nursing Home Facilities

Dr. Bronwyn Hunter

#### **Tziona NessAiver**

Communicating Via EEG and Sound

Dr. Charles LaBerge

#### **Angela Ossana**

Laser-induced Plasma Infrared Spectroscopy

Dr. Bradley Arnold

#### **Ezra Pailer**

Animated Documentary Exploring Poetry as a Tool of Activism

Prof. Corrie Parks

#### **Alexis Ramsey**

Functional Characterization of the Aspergillus nidulans, nrc2 gene

Dr. Mark Marten

#### Priyanka Ranade

Using Cognitive Computing to Improve Cybersecurity

Dr. Anupam Joshi

#### Mia Rickenbach

**Cobalt Studios Summer Scene Painting** 

Prof. Nate Sinnott

#### **Nicolette Riggin**

Vlog: A Discourse and Ethnographic Analysis of Vlogging and its Effects on Romantic Relationships

Dr. Bryce Peake

#### **Kwame Robertson**

Using Cognitive Computing to Improve Cybersecurity

Dr. Anupam Joshi

#### **Joel Ronning**

The Success and Failure of Language in the Works of Ben Jonson and Samuel Beckett

Dr. Raphael Falco

#### **Michael Rowley**

Investigating Relative Habitat Densities of the Bahama Oriole

Dr. Kevin Omland

#### **Iman Said**

The Effect of Socioeconomic Status on the Relationship Between Marginalized Identities and Psychological Distress

Dr. Jasmine Abrams

#### **William Shelton**

Analyzing the Effectiveness of Crowd-sourcing Classification Tasks

Dr. Matthew Fagan

#### **Emily Slaby**

Boosting Immune Cells using Plasma Membrane-inserting Drugs to Combat Cancer

Dr. Gregory Szeto

#### **Savannah Steinly**

Direct and Indirect Photolysis of Organometallic Compounds

Dr. Lee Blaney

#### **Georgina Stephanie**

Analyzing the Dynamics of Intracellular Trafficking and Processing of Lipid-tailed Peptides in Immune Cells

Dr. Gregory Szeto

#### **Jacob Street**

Paying Dividends: Examining the Political Viability of Universal Basic Income Dr. Cynthia Hody

#### **Donnel Thomas**

Putative Autophagy Proteins Affect Morphology in Aspergillus Nidulans Dr. Mark Marten

#### **Mekha Thomas**

Characterizing Enzymatic Complexes in Metabolically Stressed Immune and Tumor Cells to Guide Cancer immunotherapy
Dr. Gregory Szeto

#### **Garrett Tignall**

Computational Studies of the Rotational State of Comet Nuclei Dr. Susan Hoban

#### Mai-Han Trinh

A Creative Approach to Measuring Empathy Dr. Simon Stacey

#### Yeerfan Tuerdi

An Efficient Parallelizing Compiler for the Many-core Architecture Dr. Tinoosh Mohsenin

#### Adaku Uchendu

Numerical Simulation of Vibrations of Mechanical Structures Dr. Bedrich Sousedik

#### **Austin Vong**

Mammal Species Richness and Abundance Across Baltimore Forest Patches Dr. Colin Studds

#### **Theodore Weinberg**

Fast Implementation of Mixed Finite Elements and Applications to Flow in Porous Media using MATLAB Dr. Bedrich Sousedik

#### Majuwana Wijesekara

Determining the Impact of the REACH Initiative on High School Students Dr. Mariano Santo Domingo

#### Linda Wiratan

Investigation of Effects of Elicitor-induced Defense Activation on the Circadian Clock in Arabidopsis Dr. Hua Lu

#### Claudia Xie

The Effects of Mothers' Emotion Socialization Practices on Children's Emotional Regulation and Prosocial Behaviors in Chinese American Families

Dr. Charissa Cheah

#### Yuwanyum Zhu

Parenting Control in European American mothers, Chinese and Korean Immigrant Mothers Dr. Charissa Cheah

### URA Spotlight: Mia Rickenbach (Theatre)

### Visual Storytelling Applied to Human Trafficking Awareness

Mia is a Linehan Artist Scholar and Theatre Design & Production major, with an Entrepreneurship & Innovation minor. She used her URA award to study mural painting techniques at Cobalt Studio in New York. She applied these skills to create large-scale mural paintings depicting stories from women involved in human trafficking, as told in the book, *Half the Sky* (also the UMBC New Student Book Experience book). She exhibited her paintings at URCAD. Mia earned a second, ENTR URA for 2018-19. She will be researching her idea to start a business called, "Create Freedom", an organization to raise awareness, empower change-makers, and to fund activists in the fight against human trafficking.

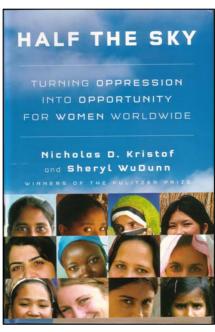
"I had an idea of the direction my academic career was taking prior to participating in undergraduate research at UMBC. When I received the URA, those goals and the new direction became much more tangible. The manifold support was not only financial, but also in mentorship, and the community of fellow researchers. The collective of student researchers was one of my favorite parts of the experience; as we gathered to share about our processes, I felt equally awed at others' work and encouraged in my own. I have felt fueled to continue down a path I would have otherwise been intimidated to pursue on my own, largely thanks to these URAs."

### -- Mia Rickenbach

Two-time URA Scholar and URCAD Presenter



Learning scenic painting techniques at Cobalt Studio



OUE's 2017 NSBE book, Half the Sky

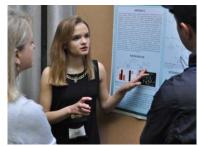


Exhibiting her finished work at URCAD 2018

### **URA Spotlight: Arissa Falat (Chemistry)**

A Structure-Activity Relationship study of Flex-acyclic 2,4-diaminopyrimidine nucleosides Mentor: Dr. Katherine Seley-Radtke

Several deadly pathogens have emerged recently for which there are no cures available. These include the coronaviruses such as Severe Acute Respiratory Syndrome (SARS) and Middle East Respiratory Syndrome (MERS); filoviruses, like the Ebola (EBOV), Sudan (SUDV), and Marburg (MARV) viruses; and flaviviruses, including Dengue virus (DENV) and Zika virus (ZIKV). With high mortality rates, the potential reemergence of SARS, recent outbreaks of MERS, EBOV, DENV, and severe side effects of ZIKV, it is imperative that safe and effective treatments are developed. One potential option involves the use of nucleoside analogues, I



ong known to exhibit potent antiviral activity, to disrupt viral DNA or RNA synthesis. The Seley-Radtke lab has developed several types of flexible nucleoside analogues, termed "fleximers," which have demonstrated the ability to increase interactions in the binding pocket that were previously unattainable. Preliminary results have revealed potent activity for several acyclic fleximers against all of these viruses *in vitro*. Unfortunately, bioavailability is an obstacle to nucleoside delivery; however, this may be overcome by using prodrug moieties such as the McGuigan ProTides. A series of nucleotide prodrugs were synthesized in order to more effectively deliver the monophosphate form of the nucleoside into the cell.

### **URA Spotlight: Sarah Miller (Interdisciplinary Studies)**

Dona de Casa: Women's Roles in Affordable Housing Movements in Rio de Janeiro Mentor: Dr. Sarah Chard

For this project, I was researching the roles that women play in affordable housing movements, specifically those in the Brazilian city of Rio de Janeiro. My research focused on the ways in which women's participation in the public and political sphere appear to subvert traditional Brazilian gender roles while actually crystallizing those roles in many ways. I also explored the use of collaborative photography methods to give more agency to my subject in regards to their representation.



### URA Spotlight: Samiksha Manjani (Political Science)

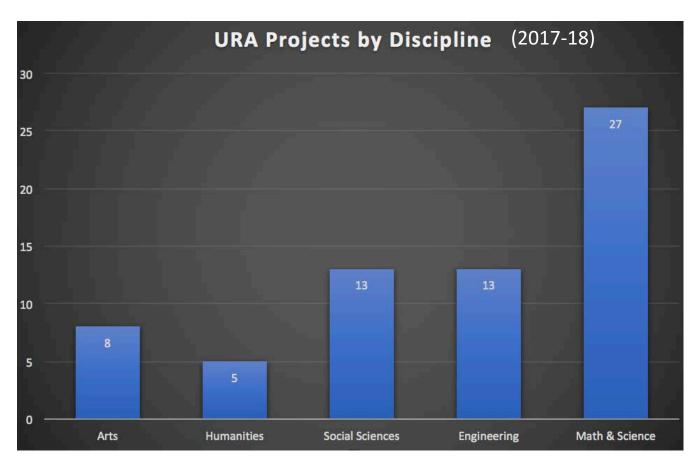
Analyzing the Sociological and Legal Impacts on the State-wide Occurrence and Reporting of Rape

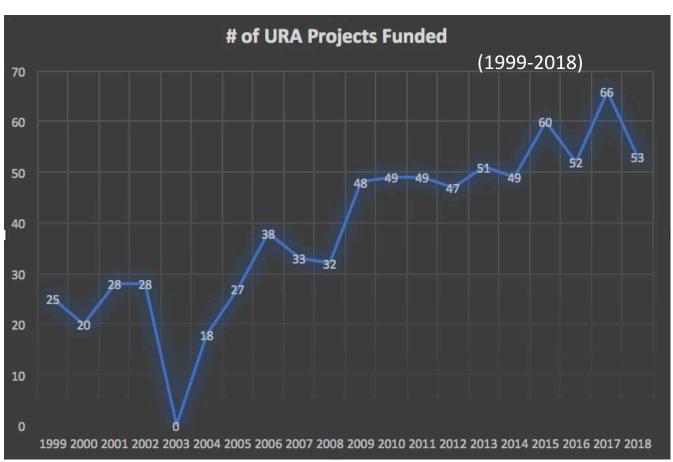
Mentor: Dr. Jeffrey Davis

This research analyzes and reveals the inequities in sentencing sexual assault convictions. It highlights various cases, but most notably analyzes the sentencing in People of the State of California v. Brock Allen Turner (2016). Brock Allen Turner was convicted of three felony sexual assault charges yet was only sentenced to six months confinement in a county jail. He was then released after serving three months, and subsequently on probation for three years. The public outcry in response raised questions regarding sentencing leniency for some sex offenders; especially when factors of race and social class are considered. The Californian legislature responded in 2016 with the passage of mandatory minimum sentences for sexual assault offenses as an attempt at adequate and uniform retribution. This research analyzes the consequences of mandatory minimum sentences on minority populations, and its constitutionality. Furthermore, it analyzes and suggests alternative sentencing approaches including non-binding sentencing guidelines, restorative justice, and rehabilitation.



### **URA Data**





					URA	A Aw	ards	by 1	Disci	plin	e, Ye	ear, a	and '	Tota	l Fui	nding				
Year Awarded :	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Arts	NA	NA	6	11	5	13	18	14	11	24	17	13	10	8	6	12	8	9	8	4
Humanities	NA	NA	6	12	2	4	10	4	9	3	7	7	7	4	2	4	7	10	5	7
Math & Science	NA	NA	8	18	11	25	23	16	10	14	25	21	25	27	24	28	40	30	27	23
Engineering, CS, IS	NA	NA	4	3	3	3	6	7	7	4	6	7	13	17	16	13	21	9	13	18
Social Sciences	NA	NA	6	5	5	4	11	14	9	13	27	12	18	7	18	7	11	11	13	7
ENTR (begun in 2018)																				2
Total Applications	57	34	30	49	26	51	76	56	50	58	82	60	73	63	66	64	87	69	89	59
Total Number of Projects Funded	25	20	27	27	NA	17	26	36	33	33	47	49	49	47	51	49	60	54	66	53
Total Funding	\$30,000	\$28,650	\$29,600	\$32,403	NA	NA	\$34,000	\$49,000	\$44,735	\$51,590	\$69,374	\$74,850	\$76,751	\$74,100	\$74,500	\$74,965	\$72,230	\$75,021	\$81, 935	\$74,443
									Fun	ding by	Colle	ge								
CAHSS															\$17,700	\$28,845	\$23,383	\$29,581	\$22,611	\$20,520
COEIT															\$20,400	\$16,300	\$16,500	\$9,250	\$19,000	\$20,800
CNMS															\$31.500	\$24,850	\$37,150	\$31,600	\$36,885	\$28,623

#### Feedback from the 2018 post-URA Scholar Survey

"The URA gave me an opportunity to explore an interest I would not have been able to otherwise. Through the URA, I felt more prepared to face research in my classes and pursue personal research after graduating. The URA opened up new grad school, Ph.D., and career opportunities for me that I wasn't considering before."

"The URA helped me formalize my research project such that it had a clear end goal, points of self-assessment and reflection, and a manageable size so that it could be completed in one year. This has greatly streamlined what I was able to accomplish as a result."

"I'm pretty sure having completed the URA process guaranteed me a full scholarship to the patent law school I'm going to. It also showed me the tediousness and difficulty of research. I have a much, much greater degree of respect for those in basic biological research now."



# Undergraduate Research and Creative Achievement Day (URCAD)

The 22nd Annual URCAD event featured presentations by a record **350** students (up 50 from last year), and an attendance of almost **2,500** (up 300). Students presented oral and poster presentations, dance performances, films, music, theatre performances, and computer engineered video games. Alumnus Isaac Kinde (Biological Sciences, '05) provided the keynote address. **90** unaffiliated students participated.

"Conducting the research without a graduate mentor and being able to think out the next steps of what I should be doing in my experiment strengthened my critical thinking skills."

"URCAD served as a warm-up for my INDS capstone presentation." "It was exciting and uniting for so many disciplines to be presenting at one event. The environment was encouraging and fun."

"I learned to handle questions better and think on the spot."

"My URCAD presentation forced me to look at why my thesis research mattered to someone outside of my discipline. It also helped me to gain a better understanding of and confidence in the importance of my area of research."

"My mentor and I definitely communicated more than we would have if I was just a student in her class."

"I learned how to compile my research into concise texts and graphics, display it in an organized way, and then how to verbally present my material and guide people through my poster. I now feel prepared and confident that I could present research at a future job than before I presented at URCAD."

"At UMBC everyone is taught to continuously learn, and URCAD is a great way to learn about the research that other disciplines are doing on campus and to educate yourself on various parts of the world, just through our community here at UMBC."

"It made me understand more of the critical thinking behind techniques but also how to interpret my data."





## Alumni Keynote Speaker Isaac Kinde

'05 Biological Sciences M.D./Ph.D., Johns Hopkins University School of Medicine

Dr. Isaac Kinde is a nationally recognized innovator of molecular cancer diagnostics. He holds an M.D./Ph.D. from the Johns Hopkins University School of Medicine. His doctoral research produced novel cancer diagnostics based on improvements in DNA sequencing technology and was awarded the Hans Joaquim Prochaska Research Award. Notable applications of his work include a prototype screening test for ovarian and endometrial cancers from liquid-based Pap tests, a noninvasive method of monitoring bladder cancers from urine, and a revelation in the development of treatment resistance from analyzing the blood of patients with colon cancer. Descriptions of his inventions and their applications appear in prominent scientific journals – such as Science Translational Medicine, Proceedings of the National Academy of Sciences, and Nature – and are the subject of several patents. His work has attracted considerable attention from industry, spurring partnerships to facilitate its commercialization, including PapGene, Inc., a molecular diagnostic startup where he currently serves as chief scientific officer. He has been recognized as one of Forbes Magazine's '30 under 30' in Science and Healthcare and a 'Game Changer' by Men's Fitness. Isaac received a B.S. in Biological Sciences from the University of Maryland, Baltimore County in 2005, where he worked with research mentor, Dr. Michael Summers. At UMBC, he was an Undergraduate Research Award (URA) Scholar and URCAD presenter (2004-05), a Meyerhoff Scholar, and received the Faculty Award of Excellence in the Biological Sciences.



Guests interacted with student-designed and engineered video games at URCAD



Maia Schecter's dance piece, "Now Elsewhere", was also featured at the Kennedy Center

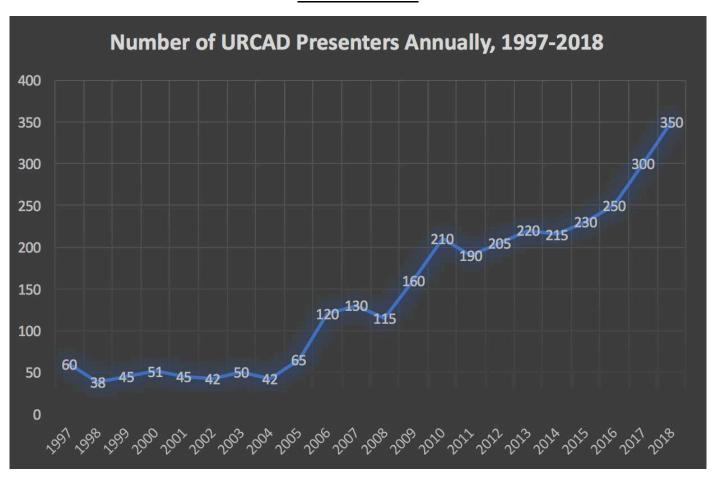


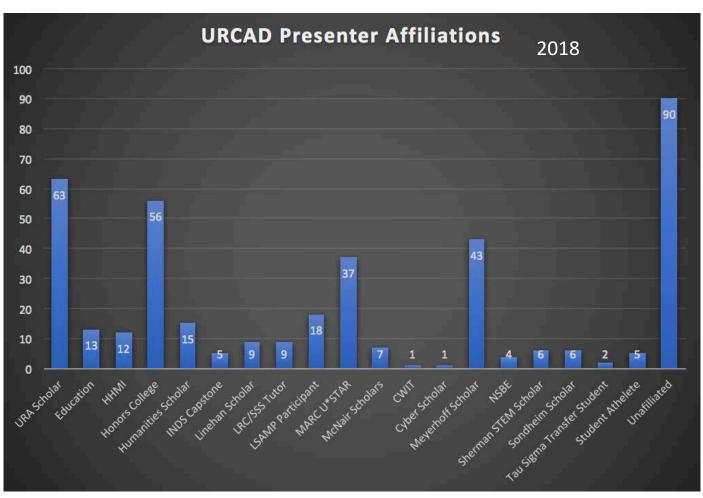
Filmmaker Ezra Pailer collaborated with D.C. poet, Jordann Allen to create an animated documentary film



Musician Ellington Carthan performed, "Black Radio: The Robert Glasper Experiment"

### **URCAD Data**

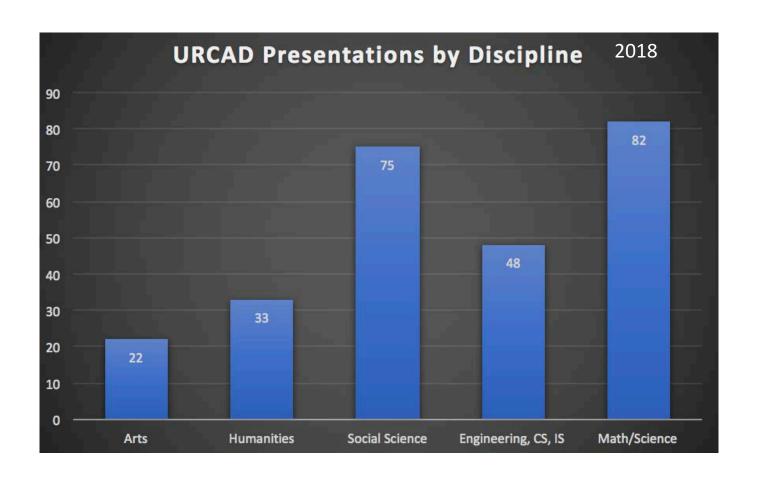




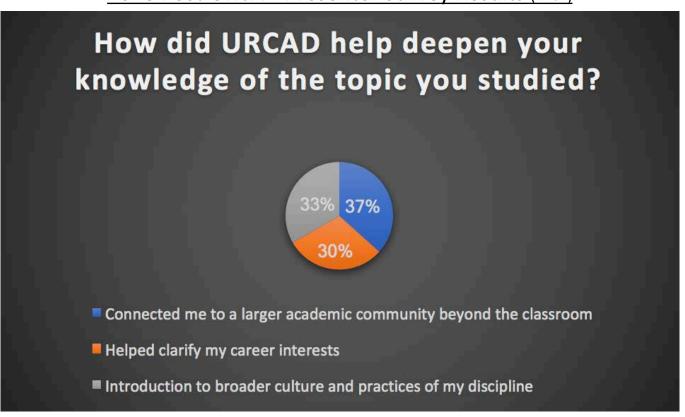
## URCAD Presentations by Year and Discipline

	Number of Presentations								
Department	2018	2017	2016	2015	2014				
Aging	1	1	0	0	1				
INDS	1	7	4	4	2				
Social Work	0	1	2	0	2				
ARTS	28	27	37	24	11				
Dance	6	4	5	9	3				
Music	6	6	10	2	3				
Theatre	2	0	2	1	2				
Visual Arts	13	17	20	12	3				
HUMANITIES	26	36	41	27	31				
AMST	2	4	0	2	4				
ANCE	6	7	9	6	7				
English	7	4	11	5	4				
Gender + Women's Studies	3	1	0	1	0				
History	2	7	19	3	10				
MCS	2	4	0	1	1				
MLLI	4	8	2	5	3				
Philosophy	0	1	0	4	2				
SOCIAL SCIENCES	74	58	59	59	40				
AFST	3	1	2	1	0				
Enconomics	0	1	0	3	1				
Education*	16	13	17	26					
Geography	3	6	2	0	0				
Global Studies	1	2	2	0	0				
НАРР	2	2	2	3	3				
POLI	16	3	8	2	3				
PSYCH	30	29	25	19	25				
SOCY/ANTH	3	1	1	5	8				
<u>CNMS</u>	<u>84</u>	<u>81</u>	<u>83</u>	<u>81</u>	<u>100</u>				
Biochem/Molecular Bio	10	7	19	8	14				
Bioinformatics	0	4	2	4	2				
Biological Sciences	36	36	35	38	45				
Chem and BioChem	22	22	19	23	18				
Math and Stat	8	6	4	3	12				
Physics	8	6	4	5	9				
COEIT	44	<u>31</u>	<u>36</u>	<u>26</u>	<u>32</u>				
Chemical Engineering	16	13	12	10	12				
CSEE	16	14	13	10	14				
Information Systems	9	1	1	0	3				
Mechanical Engineering	3	3	10	6	3				
Total*	265	233	262	221	219				
UNAFFILIATED SCHOLARS	90	87							

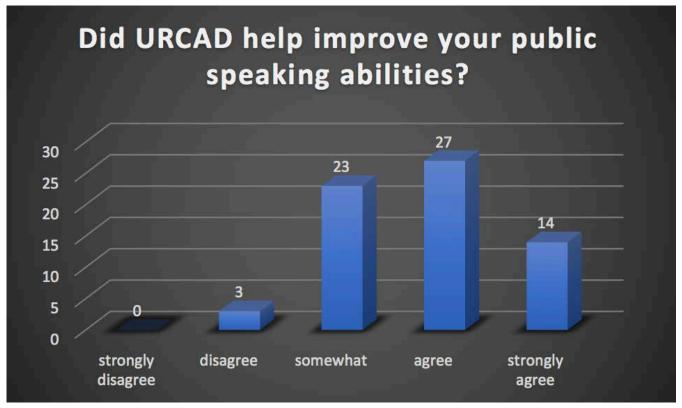
Note: Some students are listed in multiple majors



### 2018 Post-URCAD Presenter Survey Results (n=67)

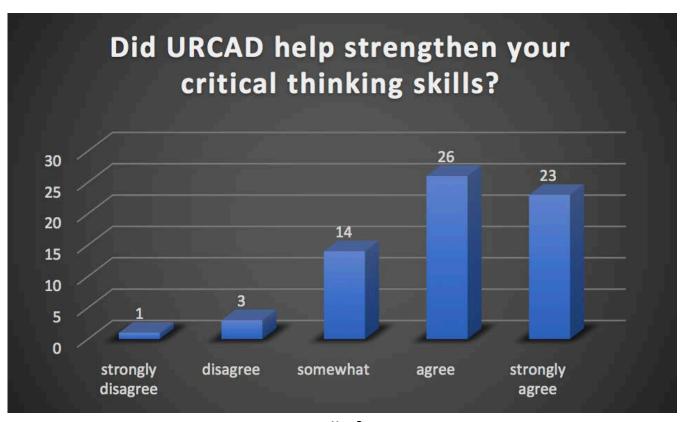


- "I learned disappointment and trouble shooting. I had to ask why did this go wrong? Why did that contribute to error? How can I fix it?"
- "It gave great practice in trying to explain complex topics to someone who is not in your field of expertise."



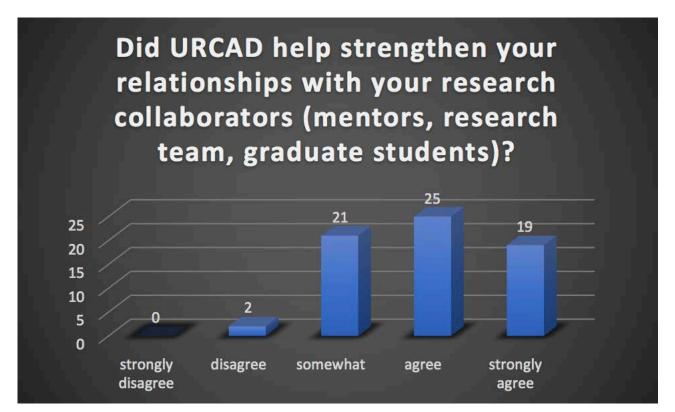
#### What did you learn about delivering an effective presentation?

- "The oral presentation prep session given by Dr. Phin was very helpful in explaining how to to make slides and presentations accessible and easy to understand."
- "It is important to speak in to a broad audience and emphasize what your research means and why it is important when introducing and concluding it."



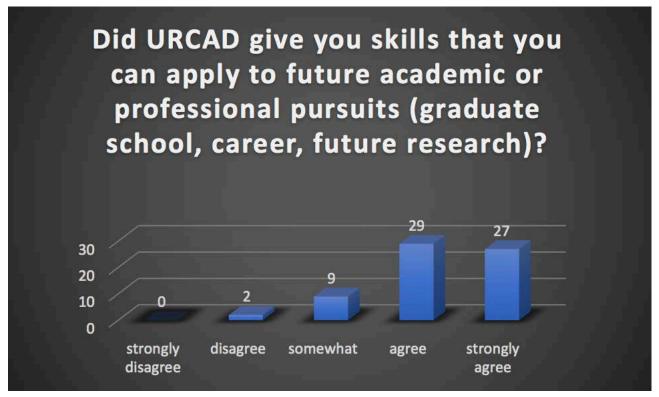
#### How?

- "Participating at URCAD requires you to trace your steps backwards in your research in order to give a good, concise
  presentation. You end up catching things you might not have paid attention to before, or ask yourself more questions
  since you're considering an audience."
- "The questions people asked me at my poster helped open my mind about things to consider in future research."



#### How?

- "This helped my relationship with my mentor as she provided me with good, constructive feedback and encouragement."
- "I was able to meet other professors because of my presentation, which wad nice because I don't attend Main Campus so I'm limited in what professors I get to meet."
- "I was able to talk to my mentor more about research (how it's done, why it's done, etc.) which was nice. I also bumped into a lot of people who were presenting at URCAD that were also in a lot of my classes so it was nice getting to know them and their research better."

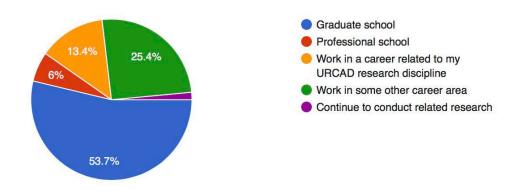


#### How?

"I learned how to compile my research into concise texts and graphics, display it in an organized way, and then how to verbally present my material and guide people through my poster. I now feel prepared and confident that I could present research at a future job than before I presented at URCAD."

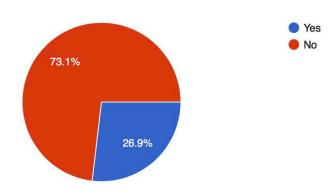
## Please indicate what your immediate plans are following graduation from UMBC

67 responses



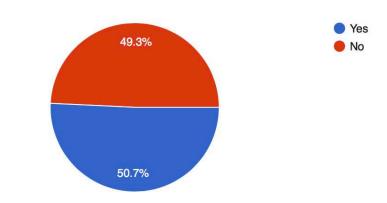
## I will be entering the workforce in a career directly related to my research discipline immediately after graduation

67 responses



## I will be continuing to conduct research related to my research discipline immediately after graduation

67 responses





## **UMBC** Review Journal of Undergraduate Research

The UMBC Review is a peer-reviewed publication, completely directed by UMBC undergraduates. All of the articles published in The Review go through a rigorous peer editing process, and are reviewed by off-campus faculty to assure the high quality of the publication. A student graphic designer is responsible for the creative design. We are proud to produce the publication in print format. It premieres every April, at URCAD.

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Faculty Advisor, Dr. Susan McDonough



Samual Buettner (Graphic Designer), Ioana Petricel (STEM), and Manisha Vepa (A/H/SS)

the 1930s



Students, departments, and the university benefit when undergraduate researchers present their work at discipline-specific conferences or appropriate artistic venues. To support travel by students who are presenting their scholarly or creative work, and who have exhausted all other options for fully funding the anticipated costs of conference participation, we provide new (up to \$500) and matching funds (up to \$750). Students must be degree-seeking undergraduates in good standing and the student's work must have been accepted for presentation at the conference or arts event. Funding is for presentation of results, not for collaboration, training, or professional development, and must be supported by faculty recommendation.

- Funding reduced from \$12,500 to \$2,500 in FY 17
- FY 18: 5 students funded (\$3,000). Additional funds repurposed to support an additional 11 students (16 total), in the amount of \$7,630.

"Thanks to the travel award, I attended the American Ornithology Society's conference at Michigan State University, where I presented my independent research project for the first time. Since there were numerous ornithologists, I was presented with good questions that further developed my ideas on the project and provided me with further knowledge on the subject. Listening to other presentations was also very beneficial, as it inspired potential research projects that I hope to initiate in the future for either my M.S. or PhD. This was a huge opportunity for me to connect with other researchers at various institutions, especially since I was in the process of looking at graduate programs. In addition, I learned about one lab while talking with some of the researchers that I will be joining at Salisbury University this coming Fall semester for a M.S. I'm very grateful for the opportunity to attend this research conference. My job as an Honors College Transfer Team Leader has allowed me to share my experience to other transfer students coming In so that they also may have such an experience. Since presenting my research at AOS, I have also noticed that I am more confident presenting my research at UMBC. Overall, my experience has been very positive, and I look forward to attend more conferences in the future."

-- Derek Cross

2017 Travel Award Recipient

## 2017-18 Travel Award Recipients

#### Summer Akhtar, \$500

"UMBC Mock Trial"
Duke University Tobacco Road Invitational
Durham, NC

#### Hannah Aris, \$280

"Relationship Between Coordination Variability and Tibia Stress Gulf Coast Undergraduate Research Symposium Houston, TX

#### Catherine Barwulor, \$500

iConference 2018 Sheffield, UK

#### Jayati Bhavsar, \$500

"Design and Characteristics of Hydroxyapatites: Effect of Radiation"

SPIE: Commerical and Scientific Sensing and Imaging Orlando, FL

#### Derek Cross, \$500

"Migratory Return Rates and Breeding Fidelity in Eastern Bluebirds" 2017 American Ornithology Joint Meeting East Lansing, MI

#### Amanda Fernandez, \$500

"Pollen Dynamics of Field Bindweed and Competitive Release in Pollen Loads of a Generalist Pollinator in the Mediterranean"

The Society for Integrative and Comparative Biology Annual Meeting San Francisco, CA

#### **Gregory Furletti**, \$500

"Gold Supported on Multi-Walled Carbon Nanotubes for Biochemical Energy Harnessing" IEEE International Conference on Nano/Micro Engineered and Molecular Systems Singapore

#### Alex Holtschneider, \$500

"Fabrication of a Temperature Monitoring System"
IEEE International Conference on Nano/Micro
Engineered and Molecular Systems
Singapore

#### Jaedon Huie, \$500

Yale University Mock Trial Invitational New Haven, CT

#### Manpreet Kaur (canceled trip)

#### Alison Larsen, \$350

"Exposure to Low Doses of Helium Particles Disrupts Neuronal Function and Cognitive Performance" Neuroscience 2017 Washington, DC

#### Lucas McCullum, \$500

"Tracking Air Pollution in the City of Baltimore, Maryland Utilizing Light Detection and Ranging (LiDAR)" 2017 2<sup>nd</sup> Asia Conference on Environment and Sustainable Development

#### David Sachs, \$500

Tokyo, Japan

"Growth of Bio Sensor Materials by Physical Vapor Transport Method" SPIE Defense and Commercial Sensing Orlando, FL

#### Ressa Sarreal, \$500

"Dual Glucose and Lactate Electrochemical Biosensor"
IEEE International Conference on Nano/Micro
Engineered and Molecular Systems
Singapore

#### Arman Setser, \$500

"Local Gradient Optimization of Modular Entangling Sequences" APS March Meeting Los Angeles, CA

#### Amulya Shrestha, \$500

"The Fabrication of a Temperature Monitoring System" IEEE International Conference on Nano/Micro Engineered and Molecular Systems Singapore

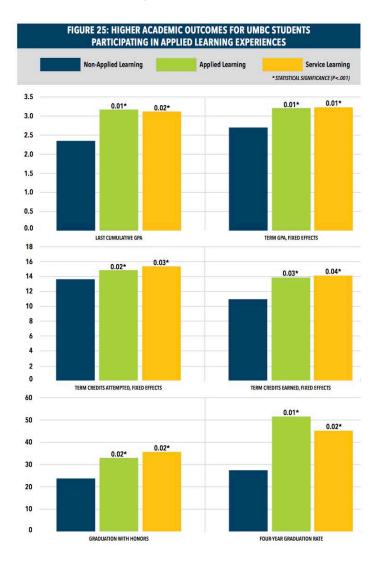
#### Emily Slaby, \$500

"Enhancing Immune Cells Using Plasma Membrane-Inserting Drugs to Combat Cancer" 2017 Biomedical Engineering Society Annual Meetings Phoenix, AZ

## Research Opportunities

Students who participate in applied learning activities such as research, have higher academic outcomes, including earning higher GPAs and more credits, graduating with honors, and achieving higher graduation rates.<sup>1</sup>

- UR provides help with identifying REUs, completing applications, preparing resumes, and personal statements, asking for letters of recommendation, etc.
- UR maintains a **database of summer research opportunities** growing to over 500 entries. We've partnered with Career Services, Meyerhoff, and others to maintain the entries.
- With help from the Office of Sponsored Programs, student applications are submitted to the summer research program at the National Institute of Standards and Technology (NIST) Summer Undergraduate Research Fellowships (SURF): 2018 SURF students advised: 246; Applicants: 23; Accepted: 4; Attending: 3 (Zachary Clifford, Temiloluwa Okusolubo, Vanda Luu).



<sup>&</sup>lt;sup>1</sup> Penniston, Thomas. (2014). The Impacts of Service Learning Participation Upon Post-Secondary Students' Academic and Social Development. Dissertation, University of Maryland, Baltimore County.



# Prestigious Scholarships

PS provides support for students to study within the U.S and abroad, by providing funding for graduate school and research opportunities. These scholarships are recognized as some of the most prestigious in the world, and their purpose is to develop outstanding students into leaders whose research and careers will have far-reaching impacts on the world. We focus on the following awards: Rhodes, Gates, Marshall, Truman (public service), Goldwater (STEM), but also advise for other scholarships such as Udall, Schwarzman, Douglass, Fulbright, etc., when students come forward.

### In 2017-18, PS developed and sent forward:

- Naomi Mburu for Rhodes, Gates-Cambridge, and Marshall (won all three)
- Linda Wiratan (Winner) Yasmin Graham (Honorable Mention), Eliana Crentsil, and Puja Trivedi for Goldwater
- Flora Kirk for Marshall. Won Fulbright (Romania)
- Manisha Vepa for Schwarzman (interviewed, waitlisted) and Carnegie Endowment for International Peace Junior Fellowship. Won Fulbright (South Korea)
- Rebecca Mann for Truman
- Katie Poteet for Rangle
- **Eyal Handelsman Katz** (*graduate* exchange student) for *Gates-Cambridge* and *Ertegun* (Cambridge)



Linda Wiratan



Goldwater Honorable Mention 37 Yasmin Graham



### New Implementations for Prestigious Scholarships

- Established a protocol for recruiting candidates for prestigious scholarships
- Institutional nomination and selection processes established
- Met with Goldwater President and implemented rubrics for internal review of candidates
- Met with Truman Regional Representative to gather information that will strengthen our candidates
- Held first information sessions for students
- Coordinated mock interviews, dining and interview etiquette seminar for nominees, support for students traveling to interviews
- Developed website with archive of UMBC's past recipients
- Partnered with Honors College to create list of runner up/honorable mention and bios of post-graduate achievements
- Director attended Interweek Program at Universidade do Porto, Portugal and represented UMBC in the continuing development of this international partnership
- Director attended NAFA's annual conference
- Established a project code and budget (\$1500) for prestigious scholarships
- Co-nominated valedictorian (Naomi Mburu, finalist)
- Restructured Goldwater committee and added Cynthia Wagner (Biology), Jason Kestner (Physics), Brad Peercy (Math and Statistics). Developed internal evaluation rubrics and ranking/feedback process.



# Partnerships

This year, we've forged partnerships with many UAA programs, and beyond.

#### UAA

- Students completing capstones for **INDS** are strongly encouraged to apply for URAs in order to fund their work, and submit their final projects for publication in the UMBC Review. 3/10 articles published in the 2018 edition are written by INDS students. 5/10 of the articles are by URA Scholars. April Householder also serves as a member of the INDS Committee (ISC), where she reviews and approves INDS degree proposals.
- Mia Rickenbach, is a two-time URA recipient and her URCAD presentation, a large-format scenic painting, was based on stories from the women in the OUE new student book experience book, Half the Sky, who inspired her to advocate for awareness about human trafficking.
- Support from the Honors College continues to help our students and staff to succeed- HC helped facilitate
  mock interviews and funded nominees for prestigious scholarships to attend regional interviews and
  professionalization workshops. They also funded the professional development of the UR/PS Director, with
  membership in NAFA (National Association of Fellowship Advisors) and attendance at their annual conference.
  HC students are a mainstay in UR and PS. April Householder makes multiple presentations each year for Honors
  College students.
- The **Sherman STEM Teacher Scholars Program** was integral in bringing high school students to URCAD. Future efforts will assess URCAD attendance by high school students as a recruitment tool.
- The director works closely with staff from the **Meyerhoff Scholars Program** to recruit and advise candidates for the Goldwater scholarship. Meyerhoff students continue to be the largest group to present at URCAD, and make up a large number of Goldwater (20/30), and other prestigious scholarships applicants.
- We are currently developing workshops for the **Women's Center 's** returning women scholars. Jess Meyers continues to be an advocate for overlapping students (helped develop Becca Mann for Truman).
- LRC had several students who conducted research for certification for college reading and learning level 3. Supplemental Instruction (SI PASS) leaders and tutors are a growing presence at URCAD (9).

#### Campus-wide Partnerships

- There is great synergy between the International Education Services Office and UR/PS. April Householder serves on the Fulbright interview selection committee. Manisha Vepa (UMBC Review editor) and Flora Kirk applied for prestigious scholarships but won Fulbrights this year, as did Morgan Zepp (URCAD presenter). David DiMaria and Brian Souders also participated in mock interviews for international prestigious scholarships awards (U.K. and Schwarzman). Householder and Souders teamed up for presentations to the Honors College, and for students interested in international scholarships.
- A new partnership with Career Services was forged this year to enroll the 2018-19 URAs in the Research Internship Practicum (PRAC). Expectations are: increased student and faculty accountability; tracking of workshop attendance; an orientation to conducting research; setting of learning goals; mid-semester check in with mentor; end of semester final reports; and formal evaluations. The PRAC will be marked on students' transcripts, as a means of formalizing the URA experience.
- We have recently partnered with Vivian Armor, Director, Alex. Brown Center for Entrepreneurship, to offer ENTR URAs (funded separately by the Alex Brown Center) which support students in the development of a solution to either a technical or social problem in collaboration with a UMBC faculty mentor. Two students successfully proposed and were awarded ENTR URAs for 2018-19 (Drue Nixon and Mia Rickenbach).
- We have a new partnership with OIA for promotion of our programs to alumni, prospective students, and UMBC-wide advertising. This is very helpful for wider visibility and promoting our brand.
- The MARC U\*STAR and McNair Scholars Program both contributed funding to support URCAD.

"URCAD, URA, and the UMBC Review represent three faces of an important connection for INDS to the broader activities of UAA and UMBC. These initiatives offer perfect avenues for bringing our students into deeper contact with other students, other faculty, and the expert help offered by the office of undergraduate research. Together we are not only stronger, but we exemplify that as the point of UAA - to integrate better for the benefit of all."

--- Dr. Stephen Freeland
INDS Director



# One-on-one Support

After a presentation about research opportunities was given to Elaine MacDougal's (ENGL/LRC) Technical Writing class, an unaffiliated student wrote the following email. She then came in to the office for help with writing her research abstract, which she submitted, and was accepted at URCAD 2018.

"I really enjoyed all the presentations so far this semester, but the presentation I enjoyed the most was the one given by Dr. April Householder. I felt very engaged during the entire presentation, her use of the PowerPoint behind her and visuals made her speaking very effective. I think visuals are very important and they help your audience understand what you are saying; I know when I present I love using visuals because it gives me something to relate to. Listening to her presentation really got me thinking about URCAD, and that it is something I am thinking about doing. It is a great opportunity, and doing this project will definitely further my academic career. I truly believe that if Dr. Householder's presentation skills were not effective, that I would not be thinking about URCAD like I am now. Her presentations skills were very effective and got me thinking outside of the classroom. That should be the goal of every speaker, to make their audience think about what was talked about even when its over. I just wanted to thank you for all of your help this past semester with getting me interested in URCAD. Though I am graduating this semester from the Media and Communication (MCS), I will be back through the Applied Sociology M.A. Program."

- In 2017-18, there were over 120 walk-ins or appointments made for one-one-one advising with students to help them identify and pursue their academic goals.
- UR hosted numerous student workshops on topics such as: Effective Oral and Poster Presentations, How to Get Started in Research, How to Write a Research Proposal, Applying to Prestigious Scholarships, and more.
- 90 students presented at URCAD who were unaffiliated with scholars or honors programs, like the one quoted above.

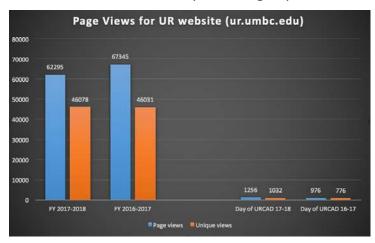


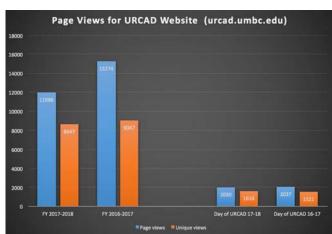
# Publicity and Marketing

#### UR website (ur.umbc.edu)

The UR website serves as a centralized, comprehensive site for students, faculty, and staff to learn about undergraduate research in general, and more specifically, about research opportunities through UMBC programs, and externally. Our website received 62,295 visits in 2017-18, and 46,078 unique views. Our REU database contains almost 500 entries for students to search in a variety of ways to find summer research opportunities. We host a separate website (urcad.umbc.edu) for URCAD-specific information, such as sneak peeks of student presentations, search parameters for finding students by discipline or presentation format, student abstracts, schedules, guest speaker bios, and archiving photos. It was viewed 11,986 times last year, and 2,030 times on the day of URCAD.

Our UR website is updated frequently to provide students at all stages of research involvement with news, resources, and information. We utilize many photos, videos, and links to external resources, to be used by current and prospective students. The website also houses the online forms for registering and applying to our programs, along with detailed information on topics such as how to write strong research proposals and abstracts, effective presentations, and how to get started in research. Pages for Prestigious Scholarships were newly added this year. Updates and Improvements to the website are an ongoing effort, and are managed by Michael Mower, IT, Web, and Graphic Design Specialist.



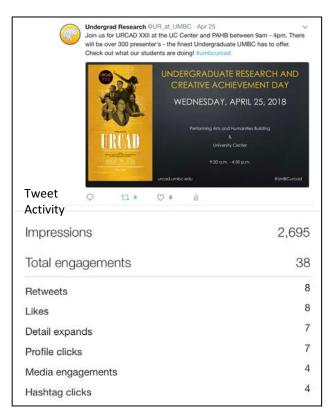


#### **Facebook and Social Media**

Social media complement and reinforce email and web communications and provide a preferred method of information dissemination to many students. Social media outreach is an expected feature of any academic office in today's digitally connected university environment. Social media usage increases UR visibility at UMBC and elsewhere. In addition to Facebook, we have also added Twitter (325 followers) and Instagram accounts this year. Given the focus on social media around the men's basketball win, we have begun collaborating with OIA to use #UMBC hashtags for posts about our programs. Facebook, Instagram, and Twitter have also provided venues for us to interface with other campus organizations and offices. We announce events, deadlines, highlight student research, and "share" and "retweet" with other offices across campus. The **URCAD Selfie Contest** generates heavy traffic to our social media pages.

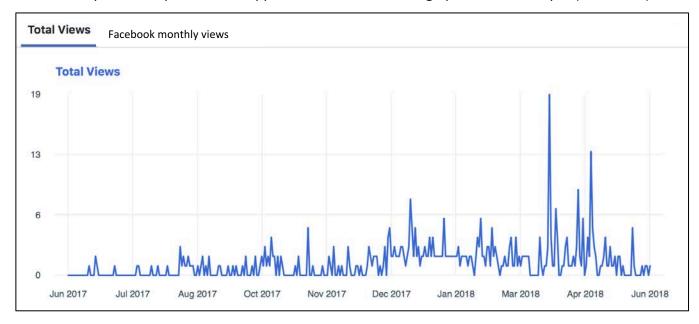


Sample Facebook post with 118 people reached



Sample Tweet with 2,695 impressions and 8 retweets

Our Facebook page has **773 followers** (up 60 from last year), and in the last year, has generated **792** "likes" on posts. Our peak views happen in the months leading up to URCAD in April (see below).



#### myUMBC Group

The Undergraduate Research myUMBC group has more than **2,400 members** and **1,000 followers** comprised of faculty, staff, students, and alumni from every discipline. Once part of the myUMBC group, these members receive emails announcing upcoming Undergraduate Research events; posts range from workshops and information about URA and URCAD, to student researcher spotlights and information about research-related internships/programs. Students can follow the group or signup to be a member at any of the Undergraduate Research hosted events. Those who are URA students or URCAD participants are automatically added as members so that they can receive the latest updates about upcoming events and deadlines related to URA and URCAD. One distinctive feature is the "Researcher of the Week", which highlights student accomplishments and research in a profile that includes a Q&A with the student. Direct emails to groups and the myUMBC group are the primary methods used to notify students about events and deadlines, as well as to post sign-up information.

#### **Printed Materials**

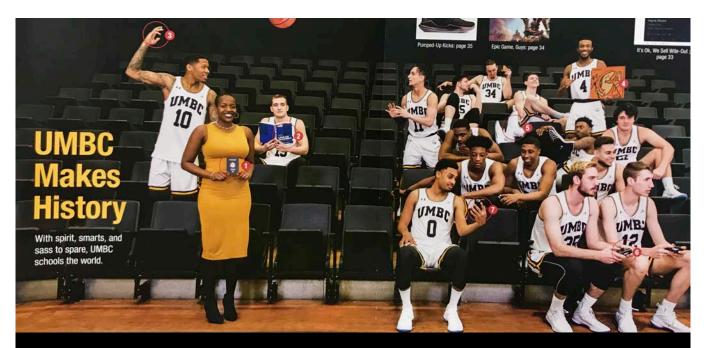
- Flyers- We frequently post flyers around campus and send them to departments and programs to post in their areas to advertise workshops and events hosted by our office
- New Student Orientation and Advising Guide- we advertise our programs in the booklet given out at freshman and transfer orientations, and in the slide presentation given to parents at orientation
- **Posters and Banners** we work closely with Commonvision and Pure Impressions to design advertisements for the Commons breezeway, iNet, the Commons, RAC jumbo screen, library, UC, and other high-traffic student areas
- News- we advertise in The Retriever student newspaper and are frequently featured in stories in UMBC News and alumni publications
- **Promotional Items-** We print neck wallet name tags for students presenters at URCAD, pens, programs, buttons, and staff tee shirts

#### ΑV

- Radio- we advertise URCAD and other programs on WMBC radio
- Video- we create videos for promoting programs, giving advice, and celebrating student successes

### **Workshops and Tabling**

- Transfer Student Network (TSN) workshop and breakfast
- Over 20 student workshops throughout the year to general student body, or directed to specific groups (Honors College, Meyerhoff, arts majors, etc.)
- Presence at new student orientations



# 2018... it was a very good year

In addition to Naomi Mburu being selected as the first Rhodes Scholar in UMBC's history, the historic Men's Basketball upset of #1 seeded UVA in the NCAA tournament has shined a light on UMBC for not only its success on the court, but also academically. They swim! They run! They score! But did you know that UMBC's Student Athletes also conduct research and create art? Check out these **Student Athletes** who presented their research and creative work at URCAD or who are URA Scholars:

#### 2018 URCAD Presenters

**Hannah Aris**, Engineering (Cross Country/Track and Field) URA Scholar Characterization of CMI-7000 Membrane for Implementation in Resource Recovery Systems

Courtney Culp, Visual Arts (Soccer) Color of Me (Animated film)

Matthew Kane, Biological Sciences (Cross Country/Track and Field) URA Scholar

Scratching the Surface of Bahama Oriole Pine Forest Nesting

Courtney Mattson, Biological Sciences (Cross Country/Track and Field)

The Role of Olfactory Cues in Male Mate Choice in Etheostoma zonale

Jethro Ssengonzi, Engineering (Swimming)

Surface Phenomena Driving Natural Surfaces



Student Athlete, Matthew Kane at URCAD

#### 2018-19 URA Scholars

Miles Smith, Mechanical Engineering (Cross Country/Track and Field)

Multidisciplinary Piezoelectric Energy Harvesting Research for Wind Turbine Monitoring Systems

Matthew Kane, Biological Sciences (Cross Country/Track and Field)

Cats and Rats vs. the Bahama Oriole: Assessing the Threat of Invasive Species to a Critically Endangered Species

"When I think about who we are as an institution and what happened last night, it represents what we tell our students: If you work hard, there can be these special moments where you're moving toward greatness," said the university's president. More than the win last night, Dr. Hrabowski said he was proud of what else was on display: a diverse group in the stands, in the band, on the dance team. "You saw in the UMBC community what America wants to be."

-- Dr. Freeman A. Hrabowski, III, UMBC President

on inclusive excellence, quoted in the New York Times



The idea for The Office of Undergraduate Education (OUE) came from the Honors University Task Force Report, "Educating Undergraduates in a Public Honors Research University in the Twenty-First Century", in May, 2000. The Honors University Task Force was charged to use UMBC's vision: We aspire to continue our development as an honors university which seeks to combine the traditions of the liberal arts academy, the creative intensity of the research university, and the social responsibility of the public university to guide it in defining elements of an Honors University experience and in recommending the means to transform the aspirations into a program of action. The Task Force was to consider what opportunities and experiences UMBC should offer each of its undergraduate students. OUE was formally established in 2005, but many of its current programs pre-date 2005. During that pre-OUE period, (1996-2005), Dr. Diane Lee and Beth Pennington were working with some activities that became comprehensive OUE programs. Forerunners of OUE programs that pre-date OUE include: Introduction to an Honors University (1994) and First Year Seminars (1996); activities fostering undergraduate research including Undergraduate Research Awards (1996), Undergraduate Research and Creative Achievement Day (1997), The UMBC Review (2000); the Women's Center (1999); and The New Student Book Experience (2004). Many of these initiatives, such as UMBC's annual Undergraduate Research and Creative Achievement Day (URCAD) were rare and innovative activities on university campuses when they began in 1997. URCAD is now an integral and successful part of the UMBC culture.

While many university units, including deans' offices, academic departments, specialty programs such as McNair and Meyerhoff, and the Office of the Vice President for Research, play essential roles in supporting undergraduate research, UAA's involvement serves students from all colleges and departments. UR/PS programming takes four forms: providing venues for students to demonstrate their research, scholarship, and creative work; allocating financial support to individual students for their research; facilitating student engagement in research; and supporting students who are applying for prestigious scholarships.

In January, 2017, OUE Dean Diane Lee and Janet McGylnn, Director of Communications for OUE both retired, and Interim Dean Simon Stacey took leadership for one year before Dean Katharine Cole was permanently hired in August of 2017. McGlynn's position was filled by Dr. April Householder, with the title of Director of Undergraduate Research and Prestigious Scholarships. This is the first time that there has been a dedicated staff member who's role (10%) is focused on prestigious scholarships activities. In June, 2018, under the leadership of Dean Katharine Cole, OUE dissolved into ten units, under the Division of Undergraduate Academic Affairs (UAA): Academic Engagement and Transition Programs; Academic Standards and Policy Administration; Honors College, Interdisciplinary Studies; Learning Resources Center; Meyerhoff Scholars Program; Office of Academic Opportunity Programs; Sherman STEM Teacher Scholars Program; Undergraduate Research and Prestigious Scholarships; Women's Center.



# Staff

The Office of Undergraduate Research and Prestigious Scholarships offers year-round programming to facilitate and promote undergraduate research and nationally competitive scholarships. We are a small office with a large mission that contributes to recruiting and educating highly motivated students in all fields of study. Support for on-going professionalization and training of personnel comes from within the division. The programming budget for FY 2017-18 was \$101,000.

### Full-time

April Householder (90% UR, 10% PS)

Director of Undergraduate Research and Prestigious Scholarships

### **Support Staff**

**Devon Fick** (Shared with UAA)

Administrative Assistant II

Michael Mower (Shared with UAA)

IT, Web, and Graphic Design Specialist

Denise Kedzierski (Shared with UAA)

Administrative Assistant I

**Kelsey Hood** (Shared with UAA)

Student Office Assistant

### **Undergraduate Research and Prestigious Scholarships**

Division of Undergraduate Academic Affairs 114 Sherman Hall, A-wing Contact: aprilh@umbc.edu ur.umbc.edu

