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Undergraduate Research and Prestigious Scholarships
Division of Undergraduate Academic Affairs

2019-20 Annual Report



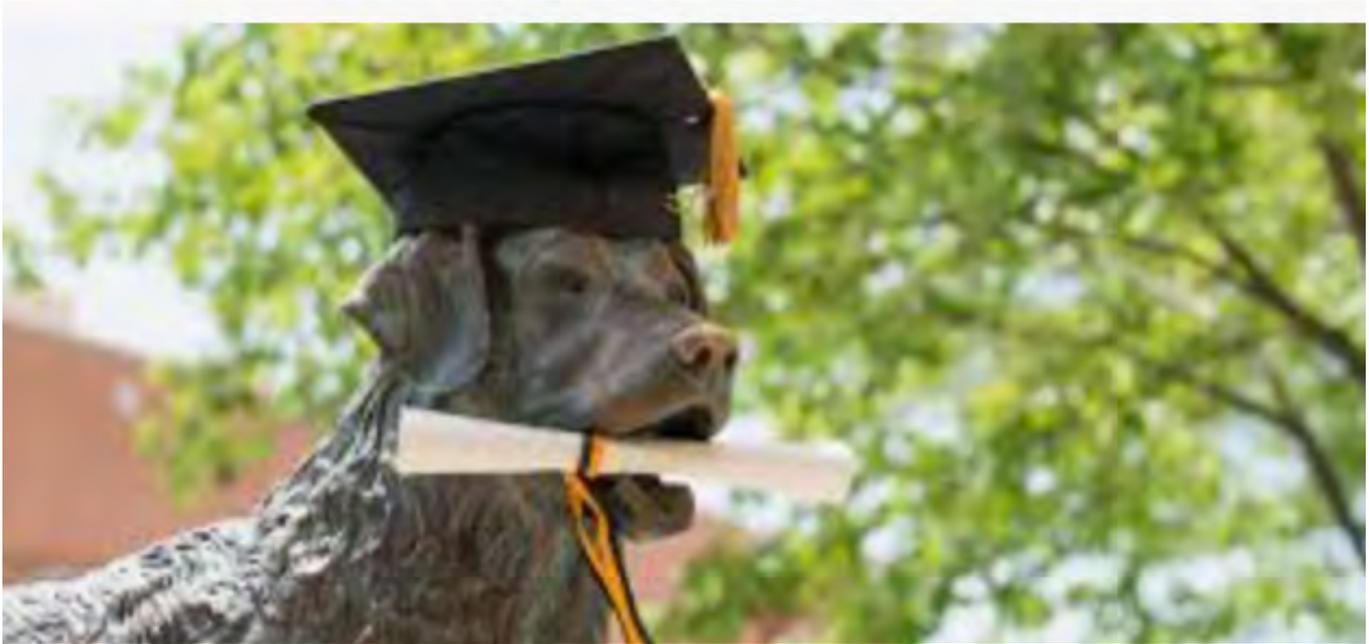


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Our Mission

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. We **reach together** to help students **explore every angle** of their research and academic goals, and **extend beyond** the classroom to empower them to **claim their futures**.

Message from the Director

2020 marks the close of my third year as the Director of Undergraduate Research and Prestigious Scholarships and my fifteenth year serving in the University of Maryland system. The goals for this past year were to maintain continuity of programming and increase the number of students who participate, including applicants for prestigious scholarships. I am happy to report that we had a banner year for these numbers. 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. We engaged more unaffiliated students than ever before. With the recommendation of the URA committee to engage more transfer students, we implemented a change to the URA application process to allow students more time to prepare their applications, and moved the application deadline from February to May. This change resulted in a record number of applications- 108, the most ever in the history of the URA program. As a result, we were able to select 81 students as URA Scholars. Beyond the numbers, the quality of research and creative work that our students are producing is truly inspirational.

When the global COVID-19 pandemic shut down campus in March, we met the challenges of the virtual environment. Within days, we started working with our DoIT partners to move URCAD online, and it was attended by almost 8,000 guests from all over the world (the in-person event usually hosts about 2,500 attendees). We also had a record number of URA applicants this year, despite (or perhaps because of) the lockdown. We renamed our Travel Awards program to reflect and respond to student conferences being held virtually and continued to support students who needed funding for attending online conferences, as registration fees increased in response to the technological needs of the events. We made the *UMBC Review* fully accessible online so students could continue to publish their research, and readers could enjoy it without the physical copy in their hands. Our prestigious scholarships applicants faced new challenges as the interview processes moved online, and we prepared them for this new format. Bringing Dr. Christopher Varlack to the Goldwater Committee to assist STEM students with their writing resulted in three winners, tying our record from 2018.

2020 brought other challenges to UMBC, as the national conversation about systemic racism and minority oppression came to a head with the murder of George Floyd. I am personally involved in several committees addressing systemic racism and LGBTQ+ issues on campus and beyond, including the GRE Discontinuation Working Group, the Decolonizing Higher Ed Working Group (which is working to end UMS's contract with Maryland Correctional Enterprises, a company which supplies the furniture to UMS campus via prison labor), and the LGBTQ+ Faculty and Staff Association. My office published a statement affirming our support for and solidarity with our Black students, faculty, and staff at UMBC and beyond. We will continue to work on these issues with faculty who mentor students, and provide resources to ensure the equal treatment of students of color in our research and scholarship programs. URCAD's Alumni Keynote speaker was Dr. Keisha John ('03, Biochemistry and Molecular Biology), now Associate Dean for Diversity and Inclusion at the University of Virginia. Dr. John provided an inspirational URCAD address that she sent via video for the online event. In it, she gave students encouragement about living, learning, and leading in challenging times.

A few of the accomplishments I am most proud of for this year include successfully nominating and advising a full slate of Truman Scholarship applicants; we had two finalists, Viviana Angelini, and Cameron Walkup. We also sent forward a full slate of five Goldwater applicants and had three winners. Evan Avila, last year's UMBC Truman Scholar, was a finalist for the Marshall Scholarship. Linda Wiratan, last year's Goldwater Scholar, was a finalist for the Rhodes Scholarship, and the 2019 valedictorian, proving that excellence builds upon itself. I am currently working with a number of very talented early-career students who will no doubt, be very competitive future applicants for these scholarships. We have started a conversation about acquiring the Forager One software to help students identify mentors and research projects. 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, including efforts to internationalize our campus. 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 the student successes of this year, and I look forward to what the future holds!



April L. Householder, Ph.D.

Director of Undergraduate Research and Prestigious Scholarships



Dr. Householder receiving USM's 15-year Service Award



Undergraduate Research Programs

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 have learned in the classroom in a research setting. UMBC has several programs that affirm UMBC's commitment to the twin goals of research and a distinctive undergraduate 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.

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.

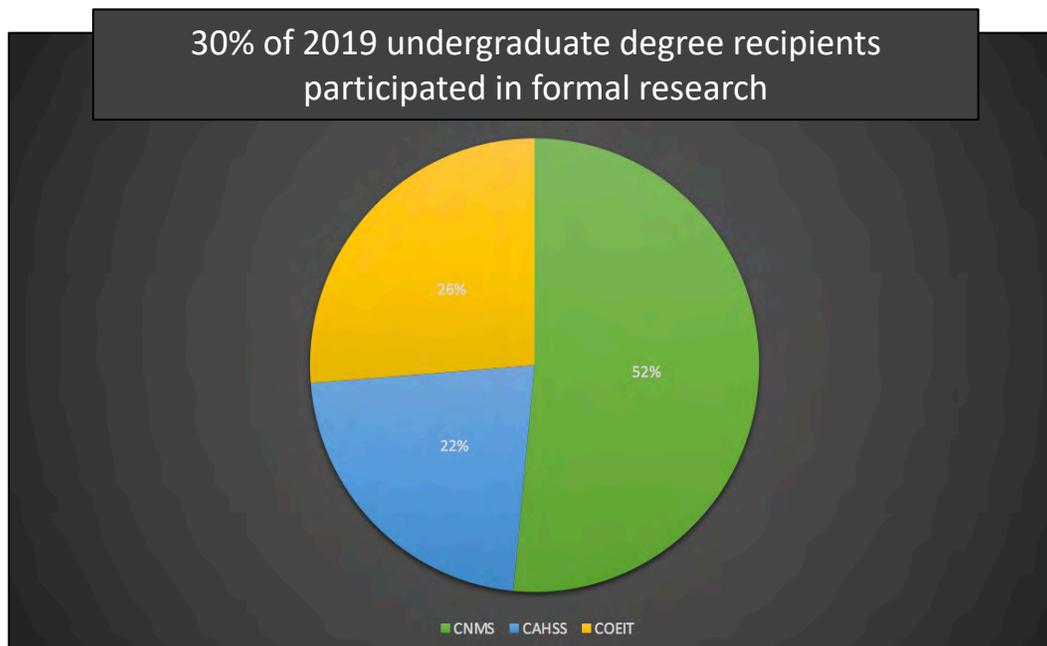
Travel Stipends Students who are invited to present their work at a conference or festival may apply for funds to support their travel.

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.

National Data on Undergraduate Research

UMBC is a national leader in undergraduate research, with 30% of undergraduate degree recipients participating in formalized research.



Undergraduate research is recognized as a high-impact learning practice (Kuh, 2008) by the Association of American Colleges and Universities' LEAP (Liberal Education and America's Promise) initiative. Students who participate in undergraduate research experience many benefits including **increased persistence** (Nagda et al., 1998); increased interest in, and pursuit of **entrance into, graduate school** (Hathaway et al., 2002; Kremer and Bringle, 1990); higher gains in **research skills** including gathering and analyzing data and speaking effectively (Bauer and Bennett, 2003); and gains in professional advancement, **professional and personal development** (Seymour et al., 2004; Lopatto, 2006). Additionally, undergraduate research has shown to be particularly effective at **increasing retention amongst, and opening career pathways for, minority and underrepresented populations**. In general, this effect is strongest for **African American students** and for **sophomores** rather than first-year students. More specifically, the programs appears to benefit African American students whose academic performance was below the median for their race/ethnic group. There are also positive trends for **Hispanic and White** students who participate in undergraduate research during their sophomore year. ¹

“There’s a strong correlation between participation in **undergraduate research** and **student success** as measured by higher rates of **retention** and **graduation**.”

-- **Beth Ambos**

Executive Officer of the Council on Undergraduate Research (CUR), which has 700 member institutions. *University Business*, May, 2018.

¹ “Undergraduate Student-Faculty Research Partnerships Affect Student Retention” Biren A. Nagda, Sandra R. Gregerman, John Jonides, William von Hippel, and Jennifer S. Lerner *The Review of Higher Education* 22.1 (1998) 55-72 .

2019 UMBC Graduates

Undergraduate Research @ UMBC
May 5 · 🌐

Lydia was a 2019 URCAD presenter:
"A Model Negro Village": How Environmental Racism Affects The Health Of African-Americans In Cherry Hill
Mentor: Nicole King



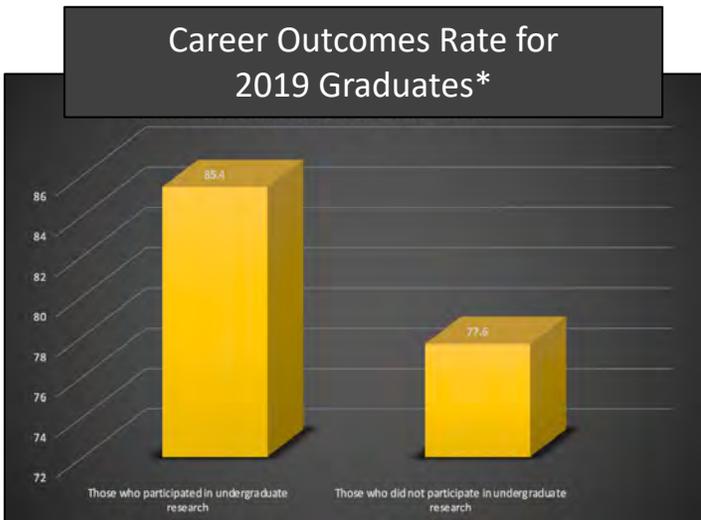
UMBC Department of American Studies
May 4 · Instagram · 🌐

🔥 THIS JUST IN 🔥 UMBC AMST major Lydia Coley has been named the 2020 Valedictorian representing graduates in the College of Arts, Humanities and Social Sciences,... [See More](#)

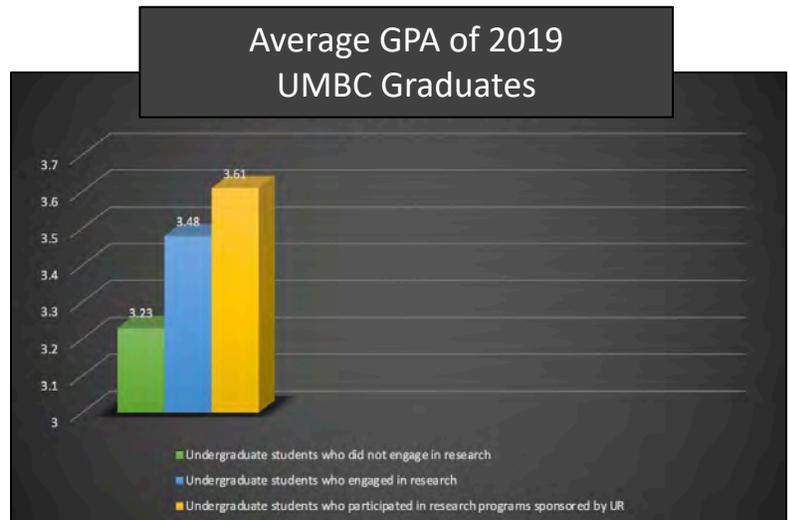
162 People Reached 11 Engagements Boost Unavailable

Academic success, as represented by student grade point average, is one of the factors that positively affects retention.

(Pascarella & Terenzini, 1991; Wilder, 1983)

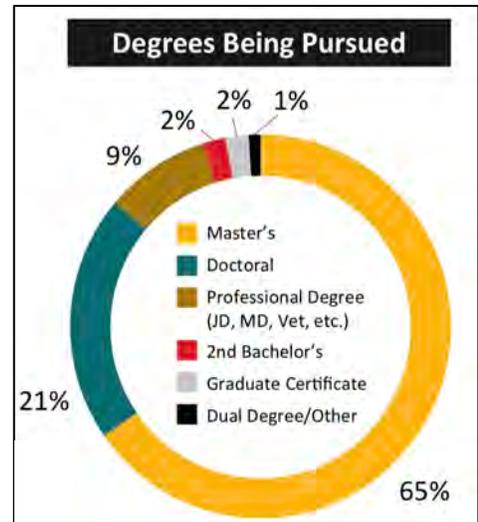
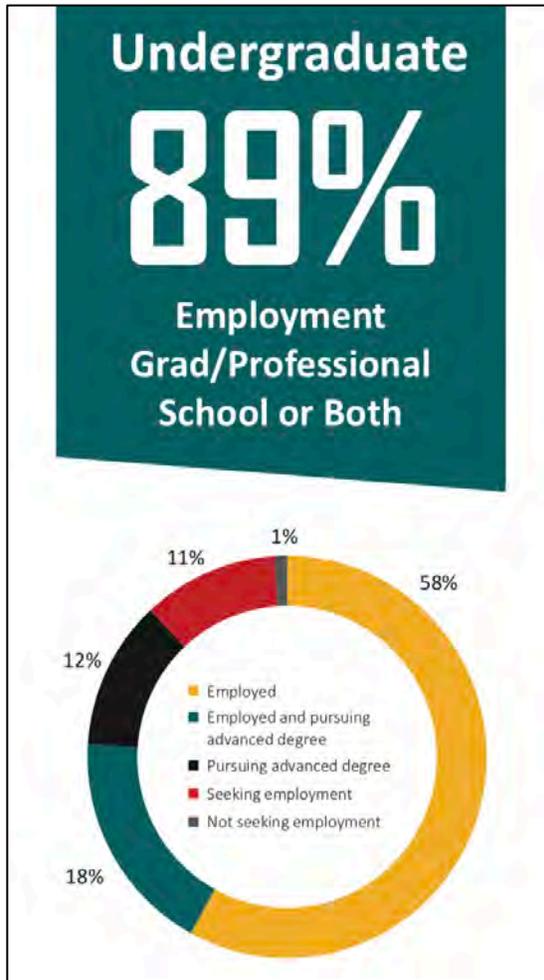


*Total % of students who are employed and/or pursuing an advanced degree

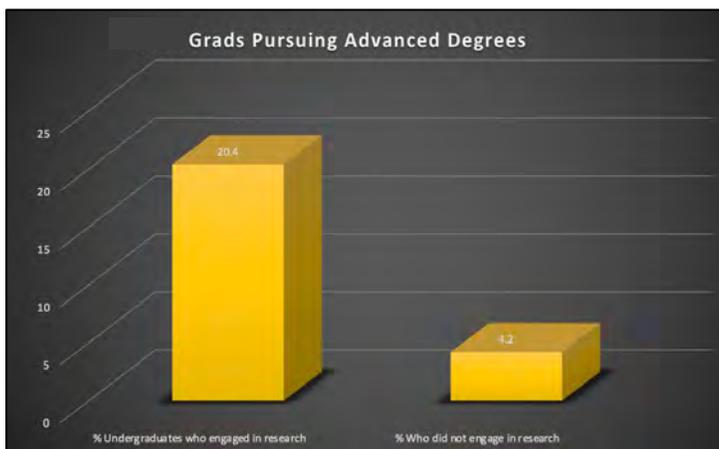


(Does not include prestigious scholarships applicants)

Campus- wide Data on 2019 Undergraduate Degree Recipients who Engaged in Research



- Sample of Graduate & Professional Schools**
- In addition to University System of Maryland institutions, graduates will be attending:
- American University
 - Carnegie Mellon University
 - Columbia University
 - Cornell University
 - Drexel University
 - Duke University
 - Georgetown University
 - Georgia Institute of Technology
 - Harvard University
 - Johns Hopkins University
 - Massachusetts Institute of Technology
 - New York University
 - North Carolina State University
 - Ohio State University
 - Pennsylvania State University
 - Stanford University
 - University of California, Irvine
 - University of Michigan
 - University of Pennsylvania
 - Virginia Tech



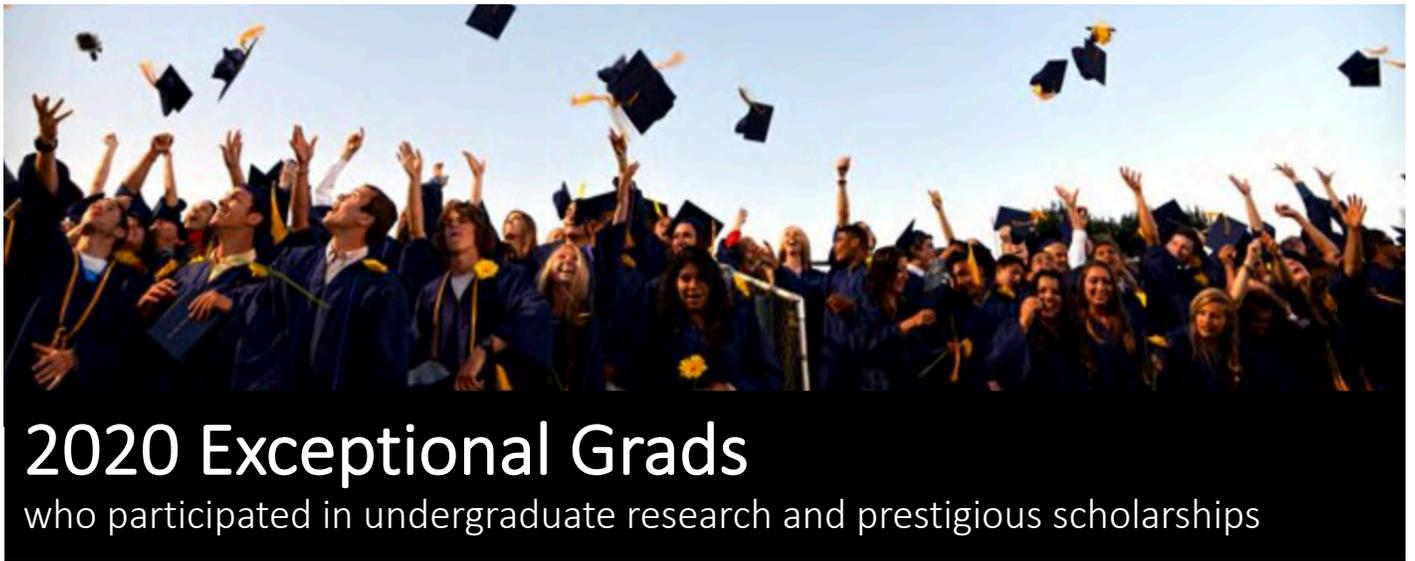
UMBC prepared me for my future by:

"Instilling within me, skills to take on the real-world and also an intercultural perspective, which is imperative for the modern world we live in now."

"Giving me many opportunities to grow through research, service, and student organizations. The professors in my department were very supportive, helping me to develop as a student and a researcher as early as Freshman year."

"Creating learning opportunities that required project-based work and connecting me with insightful professors, mentors, and professionals."

"Encouraging me to innovate, collaborate, and practice integrity and respect for diverse perspectives and cultures through its undergraduate as well as graduate school teachings, student organizations, work-study jobs, internships and service-learning opportunities."



2020 Exceptional Grads

who participated in undergraduate research and prestigious scholarships



Nadia BenAissa (c) and Haley Owens '21 (l) speak with Pres. Hrabowski about We Believe You. Photo by Marlayna Diamond '11 for UMBC.



Emily Godfrey balances on the back of Deven Fuller '23, dance, as they perform *In To and Out Of* by Ann Sofie Clemmensen on Baltimore Dance Project's spring 2020 concerts.



Courtney Culp's capstone senior project, *Pieces of Me*, explores the challenges of tracing her roots as an African American. It was planned as a mural-scale illustration for the Center for Art, Design and Visual Culture. Image courtesy of Culp.



Christian Hartman practices cello in solitude near the Library Pond. Photo by Emily Godfrey '20.



Dancers Sarah Brewer (l) and Michelle Ye (r) in Teresa Whitmore's 2019 choreography *When Eve and Eve Bit The Apple*. Photo by Francisco Jarauregui.



Where math and medicine meet: Jeremy Rubin is one of UMBC's nine new NSF Graduate Research Fellows

5

Travel Awards

28

Student workshops

2

Truman Scholarship Finalists

5,664

members of the research community reached

251

URCAD presenters

5 Goldwater applicants (full slate)

3 Winners

By the Numbers

2,000

copies of the *UMBC Review* distributed

18,771

URCAD online visits

1

Marshall finalist

83

URA Scholars

1/3

of students who participate in UR programs are unaffiliated

500+

REU database entries

30%

of all undergraduate degree recipients engaged in research while at UMBC



Faculty Support

Reach Together

Mentors Renee Lambert and Bambi Chapin, with URA Committee Chair, Carolyn Forestiere at the URA Provost Luncheon

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

Erin Durham
Humanities Librarian
Albin O Kuhn Library & Gallery

Amy Everhart
Information Systems

Corrie Parks
Visual Arts

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

Yehenew G. Kifle
Mathematics and Statistics

Timothy Nohe
Visual Arts

Cheryl North
Education

Sara Poggio
Modern Languages, Linguistics,
and Intercultural Communication

Felipe Filomeno
Political Science and Global Studies

Kathy Sutphin
College of Natural and Mathematical Sciences

Erin Durham
Humanities Librarian
Albin O Kuhn Library & Gallery

URA Committee

Carolyn Forestiere, Chair
Political Science

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

Lee Blaney
Department of Chemical, Biochemical and Environmental Engineering

Jeffrey Gardner
Biological Sciences

Vin Grabill
Visual Arts

Tim Oates
Computer Science and Electrical Engineering

J. Vanderlei Martins
Physics

Renee Lambert-Bretiere
Modern Languages, Linguistics, and Intercultural Communication

Andrea Kleinsmith
Information Systems

Alan Kreizenbeck
Theatre

Bernard Lohr
Biology

Daniel Ritschel
Assistant Professor
History

Chunming Yuan
Economics

Michele Osherow
English, Judaic Studies

Jinglai Shen
Dept. of Math and Statistics

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

Jim Fishbein
Chemistry

Colin Studds
Geography and Environmental Systems

Laura Ting
Social Work

Shari Waldstein
Psychology

Paul Smith
Chemistry

Jinglai Shen
Math and Statistics

Ann Sofie Clemmensen
Dance

Critical Pedagogy:
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.

Goldwater Committee

Gregory Szeto

Chemical, Biochemical and
Environmental Engineering

David Eisenmann

Biological Sciences

Christopher Varlack

INDS/Honors College

Jason Kestner

Physics

Brad Peercy

Mathematics and Statistics

Marcin Ptaszek

Chemistry and Biochemistry

Cynthia Wagner

Biological Sciences

Mitsue Wiggs

Meyerhoff Scholars Program

Truman Committee

Stephen Freeland

Interdisciplinary Studies

Lori Hardesty

Shriver Center

David Hoffman

Student Life

Laura Hussey

Political Science

Arthur Johnson

Emeritus Provost

Jodi Kelber-Kaye

Honors College

Christine Mallinson

Language, Literacy and Culture Program

Jess Myers

Women's Center

Hannah Schmitz

Public Service Scholars Program

Rehana Shafi

Sherman STEM Teacher Scholars Program

Brian Souders

Fulbright Program Advisor

Simon Stacey

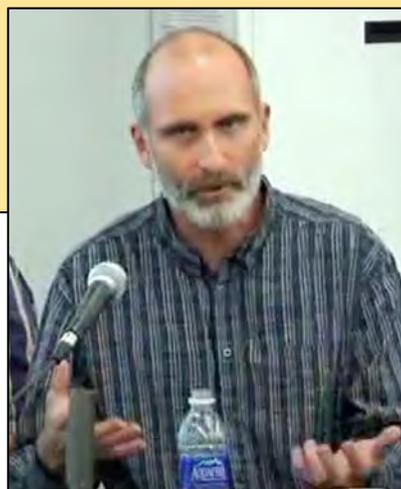
Honors College

Joby Taylor

Shriver Peaceworker Program

"It has been my pleasure and privilege to serve on the URCAD Committee for 20 years, and for the last 5 years as its chair. 2019-2020 was certainly the most unusual of those 20 years, and probably the most special for me, because of the poise and resilience with which our students met the COVID-19 challenge and adapted to the online presentation format. In the process, they communicated their work to the largest audience in the history of URCAD. This is what I love most about URCAD: it teaches students how to reach an audience, and it teaches that audience about the amazing work our students are doing. I look forward to working with April Householder and the other members of the URCAD committee in the years to come, whatever curveballs may come our way."

- Dr. Stephen Miller
URCAD Committee Chair



Travel Awards Committee

Timothy Phin

Ancient Studies

Bedrich Sousedik

Mathematics and Statistics

Laura Ting

Social Work



Dr. Kevin Omland with his team of researchers studying the Bahama Oriole

Students reported feeling more connected to the faculty

- for 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 for students to travel, present, and publish

“Thank you, endlessly, for the ENORMOUS effort you’ve put in to URCAD on behalf of us all! What an extraordinary accomplishment. I can’t even begin to imagine the hours and angst this move to an online format required. Being able to present meant the world to my student (Topia Oni, “Poems About Homes”) who is a senior and worked so hard to organize the core of his creative life here at UMBC ... and it meant a lot to me, too, to be able to help him bring the project forth.”

-Dr. Lia Purpura, Dept. of English
URCAD Mentor

Faculty reported that students made major contributions to research, learned high levels of research skills, and recommended a professional development plan (additional courses, skills, experiences) that strengthened their career potential. They observed high levels for their mentees for the following:

- Professionalism/work ethic/dependability
- Initiative/self-motivation
- Judgement- reaching logical decisions
- Teamwork/collaboration- liked and respected by others and can work within a team structure
- Communication- express ideas clearly and concisely
- Feedback- accepts and uses constructive criticism
- Technology- can use relevant digital technologies to complete tasks and solve problems
- Leadership- can leverage strengths to achieve a common goal
- Intercultural Fluency- demonstrates openness, inclusiveness, and sensitivity
- Career Management- can identify and articulate career skills, knowledge, abilities, and areas for professional growth

20.4% of grads who engaged in undergraduate research are **pursuing advanced degrees** vs. 4.2% 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 **GPA**s (3.6 vs. 3.0 campus-wide)

Better positioned for **prestigious scholarships** (9/10, or 90% of prestigious scholarships applicants were engaged in undergraduate research)

Higher **career outcome rate*** (85.4% vs. 77.6%)

Unaffiliated students get engaged with their intellectual **community** (about 1/3 of UR participants are unaffiliated with other scholars or honors programs)

Greater acceptance rates to **graduate and professional school** (84.2% vs. 16% campus-wide)

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

FUND YOUR RESEARCH, SCHOLARSHIP, OR CREATIVE WORK

UNDERGRADUATE RESEARCH AWARD

ALL DISCIPLINES WELCOME!

GET UP TO \$1500

Undergraduate Research Awards (URA)

For 2019-20, **110** applications were received (in the requested amount of \$130,874) and **95** URA projects were funded, for a total of \$79,140 (an additional \$9,000 of support was provided by CS3 and the Alex. Brown Center for Entrepreneurship) . ▲ 17 from last year's total.

New partnership with the Center for Social Science Scholarship (Dr. Christine Mallinson), to offered 4 new CSSS URAs, which provided up to \$1,500 to undergraduate researchers whose work, in collaboration with a faculty mentor, uses social science to explore the world or address socially relevant concerns. Unaffiliated students (students not participating in an honors/scholars program) continued to rise, indicating that we are reaching students who are not 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 22, 2020. The URA Scholars and their mentors for 2019-20 are:



Laylo Abdurahmonova
"Landmark Discrimination in Neogonodactylus oerstedii (Stomatopoda)"
Computer Science and Electrical Engineering
 Dr. Thomas Cronin



Naseem Ahmadi
"The Effect of Bilingualism on Cognitive Development Through Various Stages of Life"
Modern Languages, Linguistics and Intercultural Communication
 Dr. Renee Lambert-Breliere



Barna Baierna
"Characterization of essential fungal biomass degradation functions employed by soil bacteria"
Biological Sciences
 Dr. Jeffrey Gardner



Ghina Ammar *
"Trait Anger as a Moderator in the Relationship between Discrimination and Heart Rate Variability in Emerging Adults"
Psychology
 Dr. Danielle Beatty Moody
"The Role of Arnold White in the Shift from Religious/Cultural Antisemitism to Racial Antisemitism in Late 19th century Britain"
History
 Dr. Dan Ritschel



Octavia Ashton
"Two Passions in One"
Visual Arts
 Ms. Corrie Parks



Elshaday Behalio
"The Effect of the CREB gene on the immune response of Drosophila after suppression of the NF-KB protein complex"
Biological Sciences
 Dr. Fernando Vonhoff



Shehar Yar Awan
"Domain-based analysis of human protein methyltransferase, SMYD3"
Biological Sciences
 Dr. Erin Green



Mickayla Bacorn *
"Comparing English as a Second Language (ESL) Education and the Importance of Location in the United States and Colombia"
Modern Languages, Linguistics and Intercultural Communication
 Dr. Tania Lizarazo

* Center for Social Science Scholarship Undergraduate Research Awardee



Tony Cano
"Informal Resettlement of Internally Displaced People in Cartagena, Colombia: A Visual Exploration and Oral History"
Political Science
 Dr. Felipe Filomeno



Dylan Chao
"ASMRtist: Art in Relaxation"
Visual Arts
 Mr. Tim Nohe



Catherine Chonai
"Mathematical Model of Muscle Atrophy"
Mathematics and Statistics
 Dr. Bradford Peercy



Connor Cataldo
"Roman Trade in the Dodecanese"
Ancient Studies
 Dr. Melissa Kutner



Emilia Cieslak
"3D Printing Workflow and Production for Stopmotion"
Visual Arts
 Ms. Corrie Parks



Caroline Cocca
"Computer Vision for the Advanced Energetic Pair Telescope (AdEPT)"
Computer Science and Electrical Engineering
 Dr. Don Engel



Ronnita Freeman
"Blackface/Brava"
Theatre
 Dr. Susan McCully



Jimmy Coleman
"An Algorithm for Inter-Calibration and Super-Resolution of Satellite Imagery"
Computer Science and Electrical Engineering
 Dr. David Chapman



Faith Davis
"The Incidence of Pursuing Healthcare After Receiving Health Screening in Baltimore City"
Sociology, Anthropology, and Health Administration and Policy
 Ms. Katie Birger



Omar French
"A Deep Look at Jets from Black Holes with the Very Large Array"
Physics
 Dr. Eileen Meyer



Sarah Driver
"History of the Parlor Piano"
History
 Dr. Melissa Blair



Mikhail Dorfman
"Refining the Technical Design of a Do-it-Yourself Assistive Technology System for Audio Therapy"
Information Systems
 Dr. Foad Hamidi



Josh Galita
"An Algorithm for Inter-Calibration and Super-Resolution of Satellite Imagery"
Computer Science and Electrical Engineering
 Dr. David Chapman



Riki Egoshi
"Investigating the Roles of Circadian Genes LNK1 and LNK2 in Plant Defense"
Biological Sciences
 Dr. Hua Lu



Anna Feerick
"Novel passive sampling method for per- and polyfluoroalkyl substances"
Chemistry and Biochemistry
 Dr. Lee Blaney



Ellen Gulian
"Creating a THz-TDS Imaging System to Detect Defects in Metal Armor"
Physics
 Dr. Michael Hayden



Rebecca Ferguson *
"Baltimore's Adopt-a-Lot Program, Community Land Precarity & Gentrification"
Geography and Environmental Systems
 Dr. Dillon Mahmoudi and Dr. Dawn Biehler



Gabrielle Franks
"Producing an Extended Play Compact Disc (EP) Release: A Multinational Collaboration"
Music
 Mr. Alan Wonneberger



Brianna Harper
"An Astrological Analysis of Hilma af Klint"
Visual Arts
 Dr. Preminda Jacob

* Center for Social Science Scholarship Undergraduate Research Awardee



Emily Godfrey
"Contemporary Dance Summer Research"
Dance
 Ms. Carol Hess



Asmaa Hasan
"Phenotypic Characterization of the prkA Gene Product in Aspergillus nidulans"
Chemical, Biochemical, and Environmental Engineering
 Dr. Mark Marten



Robert Maxwell
"Examining the Mediating Role of Children's Behavioral Self-regulation between Maternal Positive Affect and Children's Socio-emotional Outcomes among Asian American Preschoolers"
Psychology
 Dr. Charissa Cheah



Jaylan Hall
"Creating a Quadruped Robot with Walking and Wheeled Capabilities"
IEEE UMBC Student Branch
 Dr. Fow-Sen Choa



Erick Kengni
"An Algorithm for Inter-Calibration and Super-Resolution of Satellite Imagery"
Computer Science and Electrical Engineering
 Dr. David Chapman



Peter Kostriken
"Paying to Play, Playing to Live: A Digital Ethnography of Transnational Gold Farming Between the United States and Venezuela"
American Studies
 Dr. Sarah Fouts



Lauren Harris
"Innovative light-emitting diode reactor for rapid assessment of antibiotic photolysis kinetics"
Chemical, Biochemical, and Environmental Engineering
 Dr. Lee Blaney



Avantika Krishna
"Nicotine and Common E-cigarette Flavoring Agents alter Taste bud morphology and Taste Preference: Anatomical and Behavior studies"
Biological Sciences
 Dr. Weihong Lin and Dr. Tatsuya Ogura



Priya Krishna
"Inhibiting Gal3 using a Novel Therapeutic Molecule to Prevent Prostate Cancer Progression and Metastasis"
Biological Sciences
 Dr. Charles Bieberich



Christian Hartman
"Performing in Endless Mountain Music Festival Orchestra"
Music
 Ms. Gita Ladd



Gerson Kroiz
"Analysis of the Introduction of a Calsequestrin Species in a System of Partial Differential Equations that Model the Calcium Dynamics of a Cardiomyocyte"
Mathematics and Statistics
 Dr. Matthias Gobbert and Dr. Bradford Peercy



Michael LaScola
"Generation and Analysis of dp1 Mutants in the Green Alga, Volvox carteri"
Biological Sciences
 Dr. Stephen Miller



Kayla Hinderlie *
"Trait Anger as a Moderator in the Relationship between Discrimination and Heart Rate Variability in Emerging Adults"
Psychology
 Dr. Danielle Beatty Moody



Ayodele La Veau
"Art Therapy"
Theatre and Psychology
 Ms. Eve Muson



Karan Luthria
"Utilizing A Machine Learning Phenotype Clustering Algorithm to Generate a Concrete Understanding of Disease-Variant Associations"
Biological Sciences
 Dr. Maricel Kann



Anna Hartman
"Rhetoric of Uprising: Press Discourse of Maryland Race Uprisings from 1845-2015"
English
 Dr. Lindsay DiCuirci



Genevieve Madden *
"Mixed Methods Analysis of Frame Propagation in Current Feminist Social Movements"
Political Science
 Dr. Ian Anson



Olufolake Ashley Majekodunmi
"Behavioral and Physiological Effects of E-cigarette Flavorings in TRPM5 and TRPM5-KO Mice: Altered Taste Preference and Immune Response"
Biological Sciences
 Dr. Weihong Lin and Dr. Tatsuya Ogura

* Center for Social Science Scholarship Undergraduate Research Awardee



Robert Maxwell
"Examining the Mediating Role of Children's Behavioral Self-regulation between Maternal Positive Affect and Children's Socio-emotional Outcomes among Asian American Preschoolers"
Psychology
 Dr. Charissa Cheah



Rosie McNeely
"Information Has Come to the Attention of the Civil Service Commission that You are a Homosexual. What Comment do You Care to Make?: The LGBT Community During the Cold War"
Visual Arts
 Dr. Meredith Oyen



Hye Jin Park
"Contributions of Parental Control and Self-Regulation Skills to Korean American Children's Behavioral Outcomes"
Psychology
 Dr. Charissa Cheah



Olivia Mills
"Authorship in Animation and Sequential Art"
Visual Arts
 Mr. Evan Tedlock



Tyler Moore
"The Relationship between Parents' Acculturation and Children's Literacy-Related Activities in Three Immigrant Groups"
Psychology
 Dr. Susan Sonnenschein



Steve Park
"Testing the Effect of Bacteria on the Brain Level by using Fruit Flies"
Biological Sciences
 Dr. Fernando Vonhoff



Rachel Morin
"Real Time Observations of Single Particle Chemical Reactions"
Physics
 Dr. Matthew Pelton



Maya Mueller
"Comparing Predictive Data Assimilation Methods on S-I-R Epidemic Forecasts"
Mathematics and Statistics
 Dr. Bedrich Sousedik



Jade Phan
"Toward Better Inhibitors of Influenza Virus"
Chemistry and Biochemistry
 Dr. Paul Smith



Sarah Natterman
"Literary Re-memorialisations of Political Movements of the 1980s in South Korea"
Modern Languages, Linguistics and Intercultural Communication
 Dr. Kyung-Eun Yoon



Zak Newberry
"Effect of Lambda Red Recombinogenic Proteins on Cas9-Mediated Homology Directed Repair"
Biological Sciences
 Dr. Charles Bieberich



Jennifer Park
"Toward Better Inhibitors of Influenza Virus"
Chemistry and Biochemistry
 Dr. Paul Smith



Zachary Nicholas
"Deciphering Cultural Roles and Social Pressure on Parents of Children with Special Needs"
Sociology, Anthropology, and Health Administration and Policy
 Dr. Bambi Chapin



Ayla Novruz *
"Trait Anger as a Moderator in the Relationship between Discrimination and Heart Rate Variability in Emerging Adults"
Psychology
 Dr. Danielle Beatty Moody



Shirin Parsa
" β -Amyloid Aggregation Kinetics in the Presence of Microglial Cells in 3D Culture Conditions"
Chemical, Biochemical and Environmental Engineering
 Dr. Gregory Szeto



Cheyenne Oliver
*"The Effect of Neural Network Plasticity and Synaptic Refinement on *Drosophila melanogaster*"*
Biological Sciences
 Dr. Fernando Vonhoff



Ryan Oliver
*"Sexual Status and Naive Ethanol Odor Preference in *Drosophila*"*
Biological Sciences
 Dr. Fernando Vonhoff



Ozair Qazi
"East Asian mothers' psychological distress, parenting, and their children's behavioral adjustment: The moderating role of marital relationship"
Psychology
 Dr. Charissa Cheah



Jonathan Rodman
"Exploring the Soundscape Ecology of the Charles Village Neighborhood in Baltimore"
Individualized Study
 Dr. Bernard Lohr



Jay Ruiz
"A Comprehensive Analysis of Academic and Industrial Theatrical Casting Policies: Developing a Model for National Study"
Theatre
 Ms. Chelsea Pace



Mei-Lian Vader
"2019 Toyota Mobility Challenge"
Information Systems
 Dr. Ravi Kuber



Alexandra Seas
"Cyclosporine A Nanoparticles for Treatment of Systemic Lupus Erythematosus"
Chemical, Biochemical and Environmental Engineering
 Dr. Gregory Szeto



Fatimah Shaalan
"Will the American Dream Survive Beyond the First-Generation?"
Economics
 Dr. Lisa Dickson



Brian Woronowicz
"Development of Conceptual Design for Displacement Amplification Mechanism (DAM) Using Design Optimization Technique"
Mechanical Engineering
 Dr. Soobum Lee



Jonathan Sikora
"Repertoire Size in Male and Female Eastern Bluebirds"
Biological Sciences
 Dr. Kevin Omland



Joshua Slaughter
"The Incidence of Pursuing Healthcare After Receiving Health Screening in Baltimore City"
Sociology, Anthropology, and Health Administration and Policy
 Ms. Katie Birger



Inaya Wahid *
"Trait Anger as a Moderator in the Relationship between Discrimination and Heart Rate Variability in Emerging Adults"
Psychology
 Dr. Danielle Beatty Moody
 * Center for Social Science Scholarship Undergraduate Research Awardee



Taylor Steen
"Her Father is Waiting: An Animated Graphic Novel of the Human Condition"
Visual Arts
 Ms. Corrie Parks



Katherine Sublett
"Integrative Platform for Predictive Health Outcomes and Survival Rates Concordance with Individual Health Diagnostics"
Information Systems
 Dr. Sanjay Purushotham



Omer Yildirim
"Behaviour of Religious Nones in Western European Countries"
Political Science
 Dr. Carolyn Forestiere



Danilo Symonette
"Exploring the use of Machine Learning for Teamwork Analysis"
Computer Science and Electrical Engineering
 Dr. Don Engel

Selected for a NSF Fellowship



Kent Taguba
"Atlas of Gene Regulatory Networks for Planarian Body Patterning"
Biological Sciences
 Dr. Daniel Lobo



Raychel Thress
"The Movement of Otherworldly Creatures"
Visual Arts
 Ms. Corrie Parks



Jordan Troutman
"A Fair Evaluation of the Effectiveness of the Violence Risk Appraisal Guide"
Information Systems
 Dr. James Foulds

URA Spotlight: Anna Feerick

Anna Feerick earned a B.S. in Chemistry, with an Environmental Science Minor. She is a two-time Undergraduate Research Award Scholar, 2018-2019 and 2019-2020. The title of her research project is, "Novel passive sampling method for per- and polyfluoroalkyl substances." Per- and polyfluoroalkyl substances (PFAS) are extremely stable molecules present in a variety of consumer products (e.g. Teflon, nonstick coating, flameproof materials) and are predicted carcinogens. The goal of this project is to investigate a passive sampling method to determine concentrations of prioritized PFAS in environmental samples. Anna is currently a Ph.D. student working under Dr. Tom Young at UC Davis in the Agricultural and Environmental Chemistry Department.

Who is your mentor(s) for your project?

My mentors are Dr. Lee Blaney and Dr. Ke He in the Chemical, Biochemical, and Environmental engineering department. I was introduced to Dr. Blaney through Dr. Tara Carpenter in the chemistry department. Dr. He is a postdoctoral research who is has continued working in the lab after obtaining his PhD. I chose these individuals because they are working towards positive change within the environment, something I also aspire to do.

How did you become interested in this project?

My interest in this project stems from my previous work on contaminants within the Chesapeake Bay. I began learning about other contaminants and their health effects. PFAS are one of the more troubling groups of compounds due to their pervasiveness and health effects. This impassioned me to work with this group of chemicals.

What was the most unexpected thing about being a researcher?

The hardest part is developing a new idea. Problems are easy to find. Effective solutions are not.

What has been the most rewarding part?

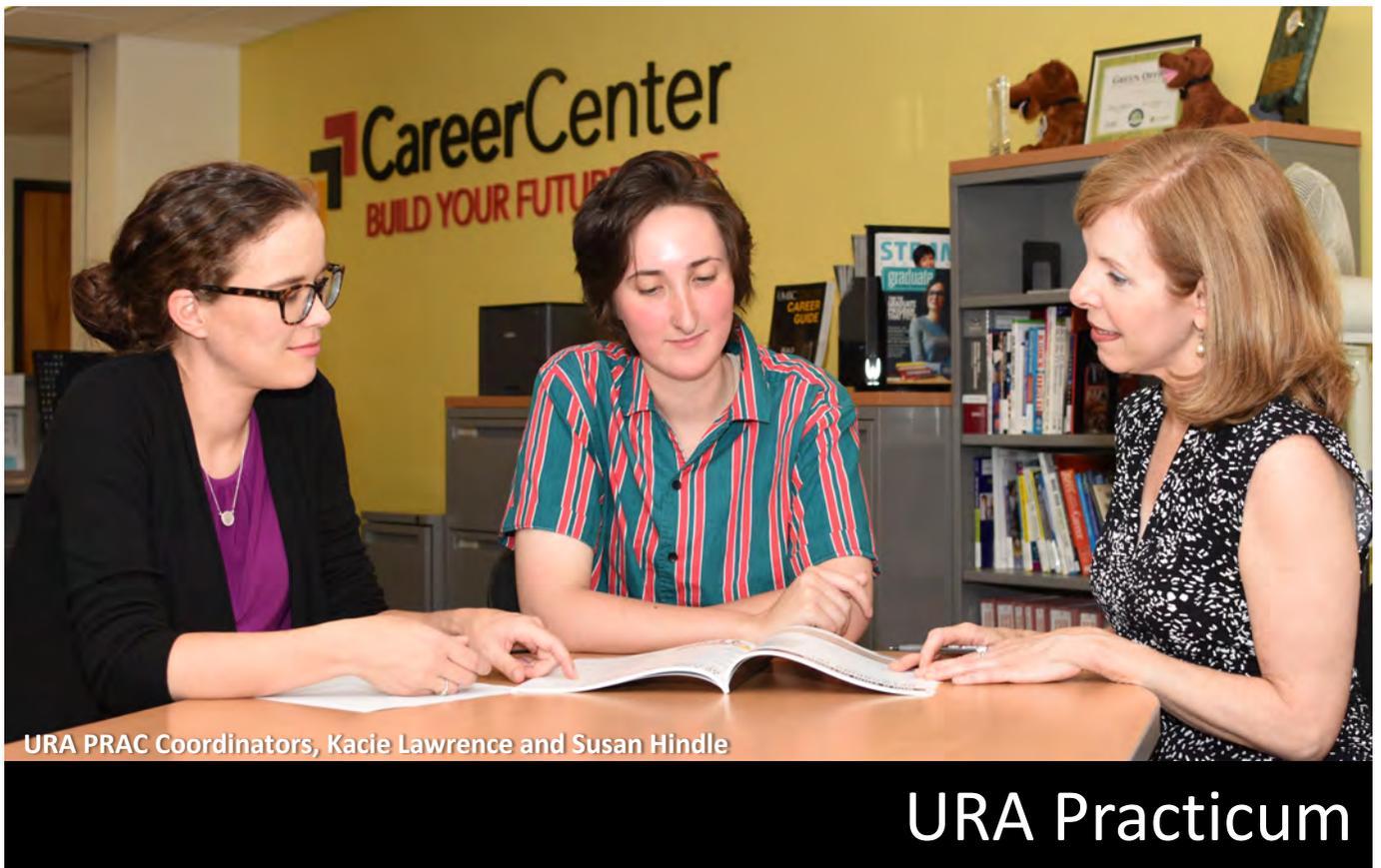
Seeing my progress both personal and project wise. I have developed new research skills and have the opportunity to solve a larger problem.



"Being part of the URA cohort (both in 2018-19 and 2019-20) was a huge boost to my self-confidence. I've struggled with my self-image throughout my life. Being accepted and working alongside these brilliant researchers really bolstered my personal growth. Dr. Lee Blaney and my lab mates were incredibly supportive throughout both my URA projects and the research I completed was a deciding factor in filing an application for graduate school. I will always look back on my time in the URA program with fondness and appreciation. It has brought me friends, mentors, and experiences that have shaped me into the doctoral student I am today."

- Anna Feerick

Two-time URA Scholar,
URCAD Presenter



URA PRAC Coordinators, Kacie Lawrence and Susan Hindle

URA Practicum

The 2019-20 URA Scholars were the second cohort to participate in the mandatory URA PRAC. Employers and graduate admissions offices like to see practica recorded on student transcripts because it indicates that the internship, co-op or research position was a significant learning experience, approved and vetted by the University. The Practicum supplements the URA Scholars program by tracking progress and providing support, structure, and professional development. Upon successful completion, students receive a “Research Experience” notation on their transcript. Benefits:

- Give and receive formal feedback from mentor
- Streamline the URA process, with clear learning goals, deadlines, and evaluations
- Formal notation of research experience on transcript
- Students can earn a Professional Edge Badge to display on public profiles such as LinkedIn, plus opportunities to meet employers and be featured as a Researcher of the Week

“For the second year in a row, the office of Undergraduate Research and the Career Center continue to partner together to provide support to undergraduate students in a variety of disciplines engaged in scholarly research as they seek to develop and deepen their research skills. Through this collaboration, students and research mentors work in tandem with career professionals to create structure to their experience while also encouraging students to evaluate and reflect on how they have grown as a researcher and how their work connects to both their short- and long-term career goals. ”

-Susan Hindle
URA PRAC Coordinator

Intern/Co-op/Research Report

Undergraduate Research Award Scholars, Fall 2019



The Career Center collects data on URA Scholars' research experiences through the zero-credit Intern Success Practicum. The information below was garnered from our end-of-semester evaluations, submitted by students and their faculty mentors.

Overview of Internships, Co-ops & Research

Experiences Reported: 80

Sample Majors Represented:

Biological Sciences	Environmental Science & Geography	Physics
Chemical Engineering	Gender & Women's Studies	Political Science
Chemistry & Biochemistry	History	Psychology
Computer Engineering	Interdisciplinary Studies	Statistics
Computer Science	Mathematics	Theatre
Dance	Mechanical Engineering	Visual Arts
Economics	Modern Languages & Linguistics	

Students' Self-Reported Career Growth

NACE Career Readiness Competency	Sig. Increased	Increased/Slightly Increased	No Change
Critical Thinking/Problem Solving	33%	58%	9%
Oral/Written Communications	21%	57%	21%
Teamwork/Collaboration	23%	54%	23%
Digital Technology	24%	54%	20%
Leadership	23%	51%	23%
Professionalism/Work Ethic	30%	53%	15%
Career Management	23%	61%	15%
Global/Intercultural Fluency	20%	42%	37%

Student Insights

"I expected that I would quickly find the data I needed with ease. However, I now see that this was far from the truth; nearly every step in my research thus far has required that I troubleshoot, develop creative approaches, and persist in the face of hardship. As such, I feel that I have developed persistence and creativity as a result of this experience."

"I learned that linearity in research is almost impossible to achieve. For instance, you come up with a research question. Then you dig deeper, read more resources every day, and run some data. All of these things affect your views on your research, and sometimes these effects cause you to change things around in your research. This happened to me. Now I know that it is okay to change course."

"My eyes were opened to the business side of research. Being able to promote your work in order to not only give it attention but to also get grants and other forms of financial income is something I did not think about at all."

Student Comments on the Practicum

"I like the focus that the Practicum course encourages. It elevates the real-life experience into a marketable, educational experience. I think it is important to strength my skills and resume for graduate school and the Practicum course is a great way to receive transcript recognition for something I was going to do anyway."

"[The Practicum] really made me see all the events and workshops we have for students on campus and how well the Career Center does their job in terms of giving us opportunities to learn about our careers."

"Everyone at the Career Center cares about everyone in this course and is always ready to help whenever need be."

"I really enjoyed working with the Career Center because of the emphasis on reflection. I think it is a big component of learning and growing as a researcher."

"The Practicum course reminded me to consistently work on my URA project."

Faculty Mentor Ratings of Student Career Competencies

NACE Career Readiness Competency	Outstanding	Very Good	Good	Adequate/Below
Critical Thinking/Problem Solving	56%	35%	6%	2%
Oral/Written Communications	54%	33%	13%	0%
Teamwork/Collaboration	60%	19%	17%	4%
Digital Technology	65%	33%	2%	0%
Leadership	54%	33%	10%	2%
Professionalism/Work Ethic	68%	22%	9%	2%
Career Management	60%	25%	13%	2%
Global/Intercultural Fluency	73%	23%	4%	0%

Faculty Mentor Evaluation Comments

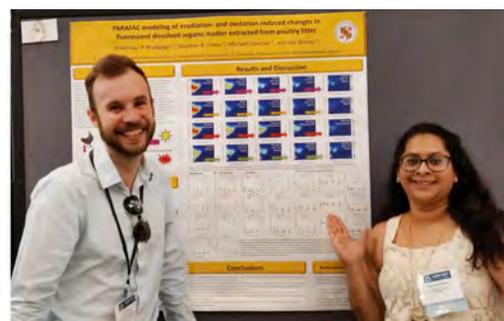
"[The student] is very hardworking and organized, and self-motivated. He was a little overloaded as far as credit hours this semester, and this probably led to slightly less progress than we both wanted, but we have discussed this and he plans to make up time on the project over the winter break."

"[The student] takes feedback very well and incorporates it into the production of her work. The main struggle for her so far has been the translation of written narrative ideas to the animated format. This simplification is no easy task but she has made great strides this semester towards these ends."

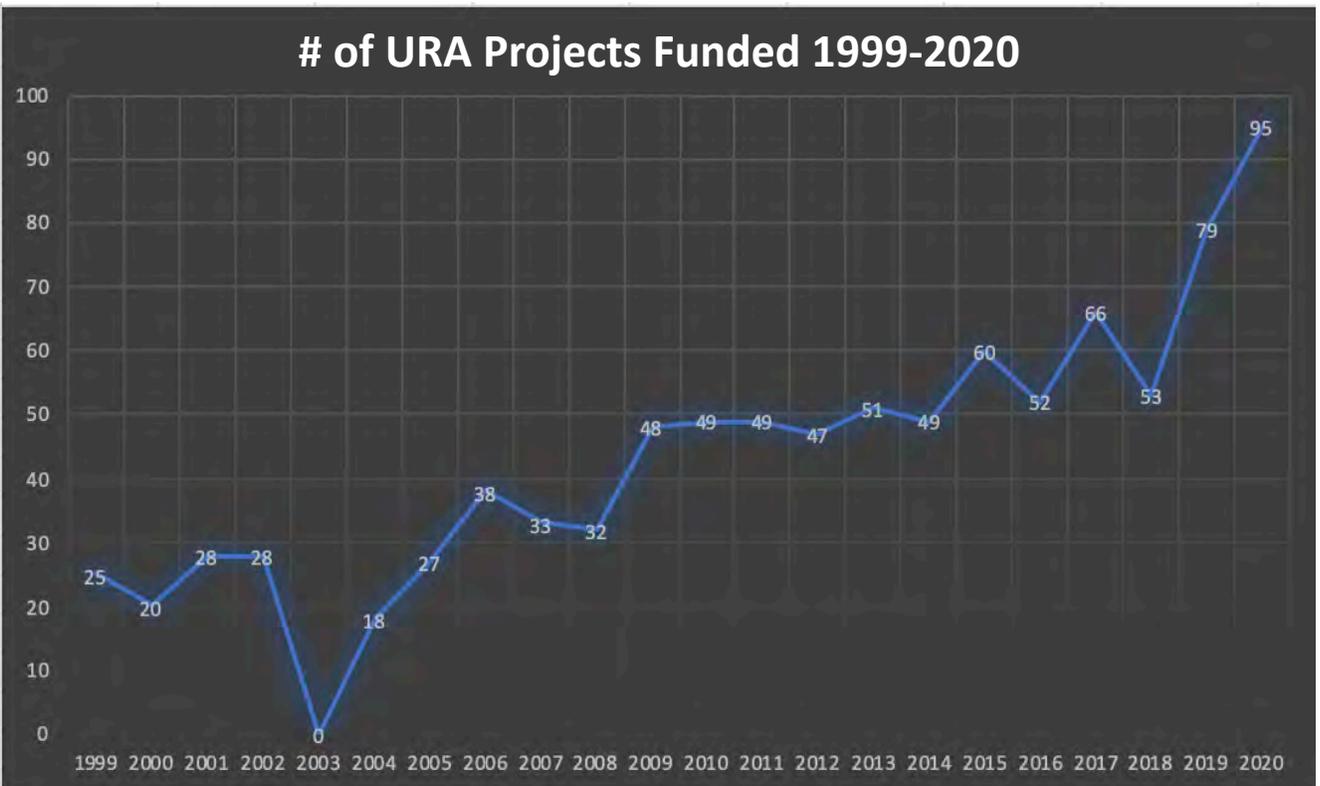
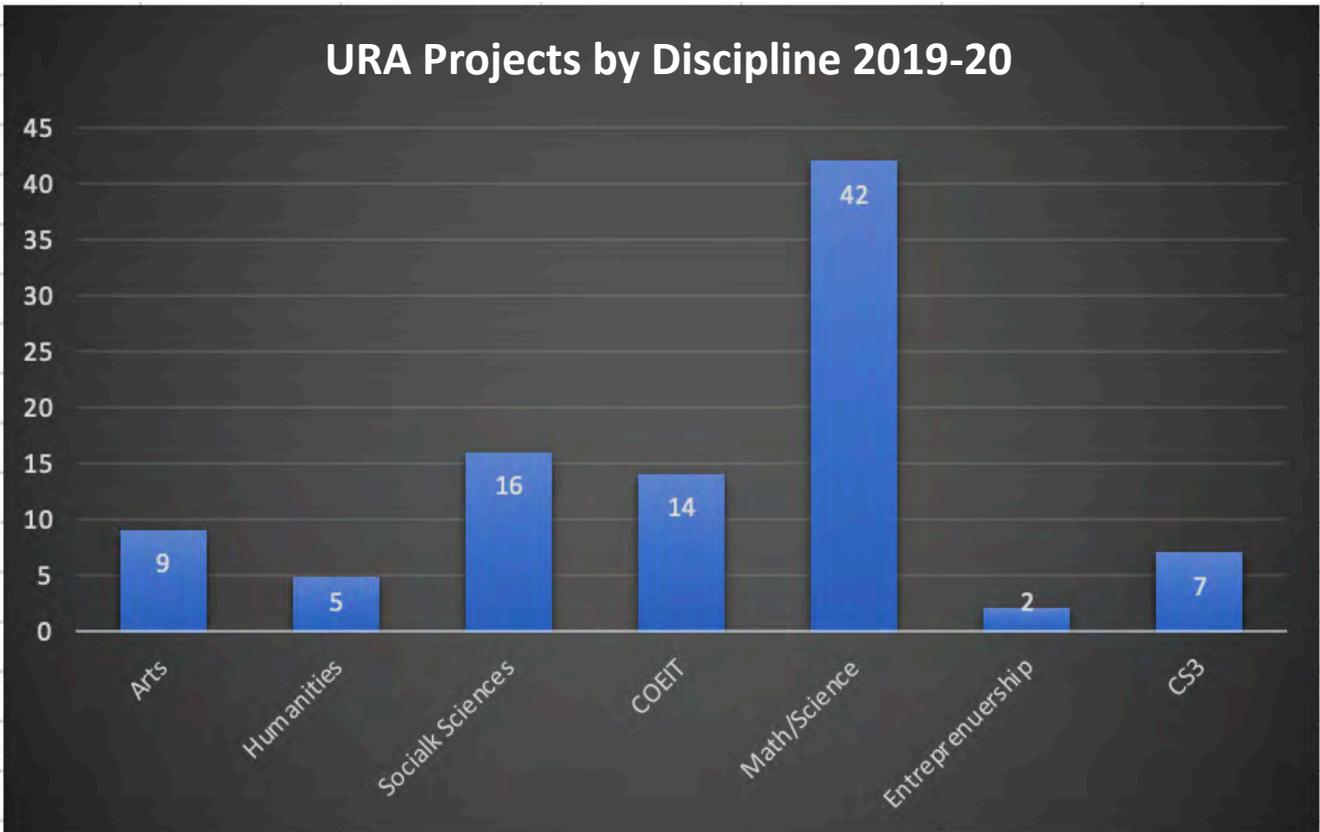
"[The student] displays strong independence working in the lab. She is unafraid of problems, and excited to be doing physics experiments. Her enthusiasm is infectious, and she has improved in her ability to formulate ideas and solve problems by herself."

"As a mentor, one of my great joys is working with undergraduate research assistants on their first URCAD presentation. We put a lot of effort in behind the scenes to plan the poster/talk, revise the figures/slides, emphasize the main talking points, and practice the presentation with our full group. These efforts not only help to ensure that the undergraduate student is prepared and confident in their presentation, but also build community and shared mentorship in the group. These outcomes have clear benefits to both undergraduate and graduate students for their future careers."

-- Dr. Lee Blaney
Environmental Engineering



URA Data



URA Awards by Discipline, Year, and Total Funding

Year Awarded																									
Discipline:	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019		2020		
																						REC	FND	REC	FND
Arts	NA	NA	6	11	5	13	18	14	11	24	17	13	10	8	6	12	8	9	8	4	16	13	9	9	
Humanities	NA	NA	6	12	2	4	10	4	9	3	7	7	7	4	2	4	7	10	5	7	5	3	5	5	
Math & Science	NA	NA	8	18	11	25	23	16	10	14	25	21	25	27	24	28	40	30	27	23	32	27	50	42	
Engineering, CS, IS	NA	NA	4	3	3	3	6	7	7	4	6	7	13	17	16	13	21	9	13	18	22	17	17	14	
Social Sciences	NA	NA	6	5	5	4	11	14	9	13	27	12	18	7	18	7	11	11	13	7	19	14	16	16	
ENTR (begun in 2018)																					2	2	0	2	2
CS3 URA (begun in 2019)																						7	4	11	7
Total Applications	57	34	30	49	26	51	76	56	50	58	82	60	73	63	66	64	87	69	89	59	103	78	105	94	
Total # Projects Funded	25	20	27	27	NA	17	26	36	33	33	47	49	49	47	51	49	60	54	66	53	78		95		
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	\$89,743	\$5,460 (SS3)	\$79,140	\$3,000 (ENTR) \$6,000 (CS3)	
Funding by College																									
CAHSS																\$17,700	\$28,845	\$23,383	\$29,581	\$22,611	\$20,520	\$34,605	\$27,490	\$3,000 (ENTR) \$6,000 (CS3)	
COEIT																\$20,400	\$16,300	\$16,500	\$9,250	\$19,000	\$20,800	\$21,465	\$13,750		
CNMS																\$31,500	\$24,850	\$37,150	\$31,600	\$36,885	\$28,623	\$32,173	\$37,700		

Feedback from the 2019-20 URA Scholar Self Evaluation (n= 80)

“Throughout this experience, I was able to improve my knowledge and skill set in many ways including increasing familiarity with the research process, gaining confidence in my skills as a researcher, organizing tasks, reaching out for help, and improving time-management.”

“My public speaking skill has grown in the development of the project, as well as, expressing my concerns with others through the project. I have also noticed a change in the way I approach different problems - specifically, how I approach an art piece through a performer's mindset.”

“This semester, I have learned that being more educated on our surroundings, such as what other students are studying in their research, actually helps us understand our purpose more. Also, it helps us understand our research better because we learn information that connects with our research in some ways.”

“Another area of knowledge I have developed is that there is a lot to being a leader. The most important thing is that I have to stay persistent, because there will be issues that will need my immediate assistance when I am busy with something else, as well as as some things that will need my attention few days later which may lower my current motivation to get it over with. I have to balance my level of motivation the whole time.”

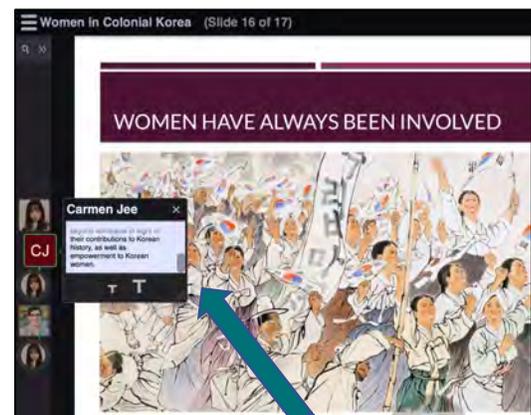
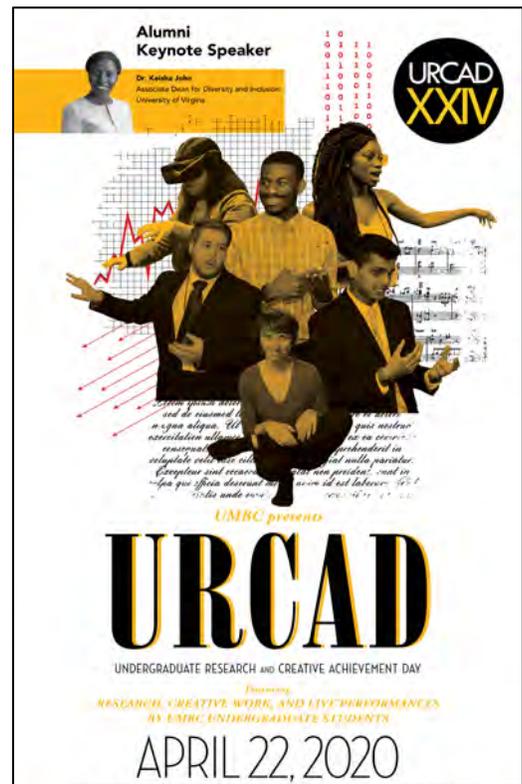
“Some skills or areas of knowledge that I have improved through this experience is being able to communicate with others in higher positions. Voicing my opinions was something I had trouble doing before entering this research experience. I also quickly learned how to work in a team with other graduate and undergraduate students in the lab. Being a team player allowed me to grow along with the group so that we could all reach our end goals.”

Undergraduate Research & Creative Achievement Day (URCAD)...ONLINE!

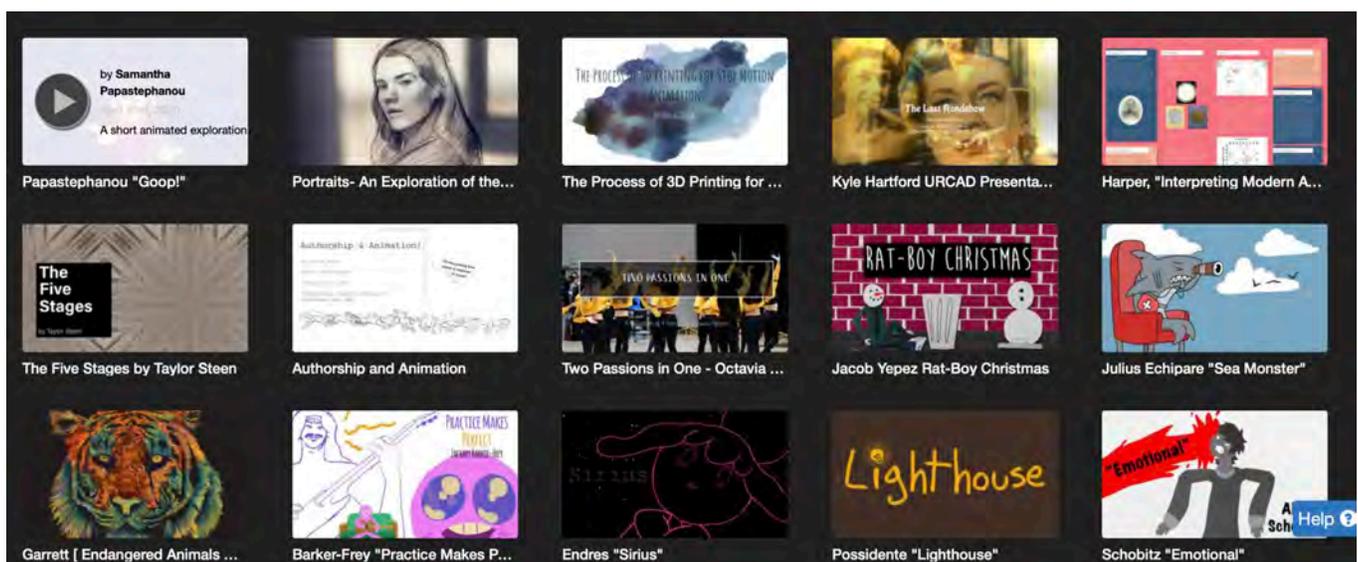
Three days after the campus closure in March, a decision was made to move URCAD completely online. We partnered with Jack Suess and his DoIT staff to convert URCAD from a one-day, on-campus event to an a-synchronous, online, week-long event, using a technology platform called VoiceThread.

The 24th Annual URCAD online event featured presentations by **251** students who presented posters, narrated their slides, and documented dance performances, films, music, and computer engineered video games. Alumnus Dr. Keisha John (Biochemistry and Molecular Biology, '03) provided the keynote address via video. **98** unaffiliated students and **43** transfer students participated. URCAD had **18,771** page views (the in-person event usually has about 2,500 attendees), and the online format also expanded URCAD to a global event- visitors logged on from as far away as **Korea** and the **U.K.**

Obviously, we are looking forward to getting back to campus next year for the live event. Nothing can compare to being able to see the live dance performances, being able to talk face to face with students about their research, or being able to take a ride on a kinetic sculpture. Those things are meant to be experienced in person, and the energy of hosting URCAD on campus is irreplaceable. But this year's event provided a unique experience for visitors to really take their time to explore the presentations and to interact with the presenters in really meaningful ways over the course of the entire week. Many guests felt like they saw more presentations because of the asynchronous format, and were able to return to them when they were notified that comments were posted, for a deeper dialog.



Visitors were able to leave voice, text, or video comments for presenters, who could in turn, respond



Sample of links to interactive URCAD VoiceThread presentations

Hosting URCAD online also gave students a new skill set, which involved producing a virtual presentation- an ability that they will absolutely need going forward in their future academic and professional lives, given the huge cultural shift that has happened due to the coronavirus pandemic.

The students really jumped in with both feet to the new technology and made some really dynamic presentations. They created voiceovers for their posters, made videos, and converted their live performances to the web. And they did that in a very condensed amount of time with a very short learning curve.

At a time when so many students had their senior exhibitions cancelled, professional conferences postponed, and even their graduation celebrations interrupted, it was nice to provide a forum for them to showcase their hard work. Some students had been working on their research for a year or more, and this was a great way to give them a platform to celebrate their scholarship, and return some normalcy to the end of their time at UMBC.

- **18,771 URCAD page views**
- **2,971 unique users logged in**
- **34% of visitors returned to the URCAD site to interact**
- **+ 1,200 comments posted to student presentations**
- **8,200 page views on day 1 (URCAD launch)**

"The URCAD experience has prepared me to apply for the Fulbright program and consider the opportunity to conduct a research project abroad."

"Because Voice Thread was not time based, I had time to evaluate the question and create a timely response with all of my attention towards the answer, not worrying about getting to another questioner."

"URCAD definitely strengthened my relationship with my mentor. It also deepened my relationship with the graduate student I was able to work with, and that relationship gave me a much deeper understanding of the goals and general knowledge I needed to conduct my research."

"I can definitely put URCAD on my resume! I also value the experience of managing changes to plans, and presenting in an alternate manner which I did not expect. I learned a lot from this experience and am very glad that we were able to have a virtual URCAD instead of postponing or cancelling."

"Giving online presentations is a skill that may become more widely prevalent in the academic community, so having an opportunity to try it out was great."

"Much of my research dealt with concepts I was learning simultaneously in upper-level courses. In some sense, my research drove my motivation in-class, and vice-versa."

"I plan on working in some form of artistic/creative storytelling, and being able to 'pitch' or publicly explain processes and ideas is very important in that field. I think this experience helped grow my confidence in what I want to do in life."

"Putting my URCAD presentation together was useful because I had to back away from my research and ask the bigger question of why this matters."

URCAD Alumni Keynote Speaker



Dr. Keisha John

Associate Dean for Diversity and Inclusion, UVA
'03 B.S. Biochemistry and Molecular Biology, UMBC
'09 Ph.D. Biology, Cold Spring Harbor Laboratory

Dr. Keisha John has spent most of her life engaged in research - first at the FDA as a high school intern, at the University of Maryland, Baltimore County as a Meyerhoff Scholar, and finally as a Post-doctoral Fellow at Rockefeller University. Although the scientific process and its potential to solve problems initially motivated her to pursue training in the sciences, her time spent as a scientist sensitized her to larger issues in the scientific community, especially those relating to STEM education, and the need for diversity in the scientific workforce. This knowledge and the desire to have an impact that reached beyond the research bench motivated her to pursue a career in academic administration. She has served as an Assistant Dean in the Graduate School at Florida State University, and is currently the inaugural Associate Dean for Diversity and Inclusion in Arts and Sciences at University of Virginia where she collaboratively establishes programs and processes to embed diversity, equity and inclusion in the life and work of the School. While at UMBC, Dr. John was a Meyerhoff Scholar, and worked with her mentor, Dr. Rachel Brewster as one of the first undergraduate researchers in her lab. She was excited to return to UMBC and interact with current undergraduates as we celebrated their research accomplishments at URCAD.

Words of Wisdom for Researchers from Dr. John for Challenging Times

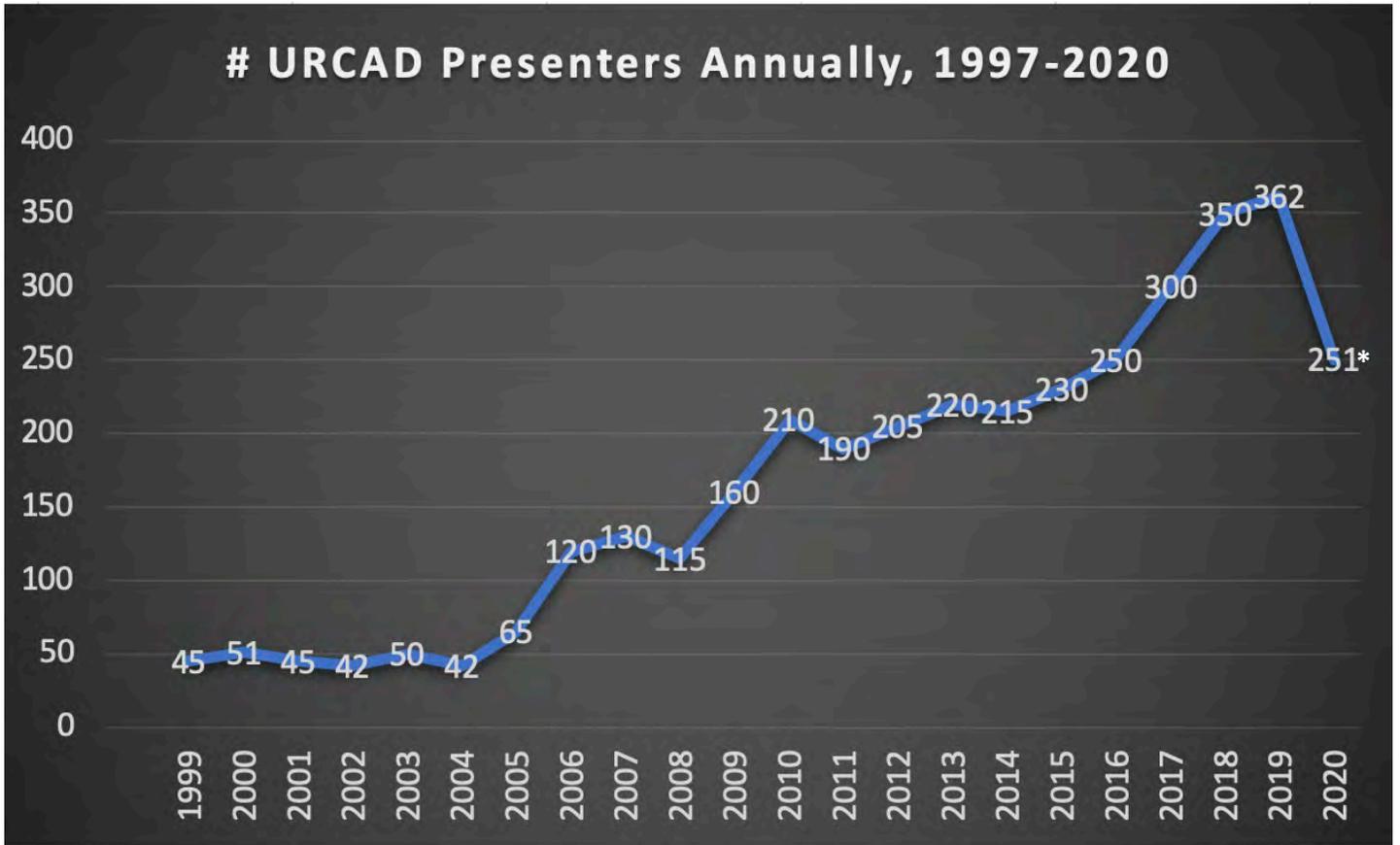


Dr. John was introduced via video by her former mentor, Dr. Rachel Brewster

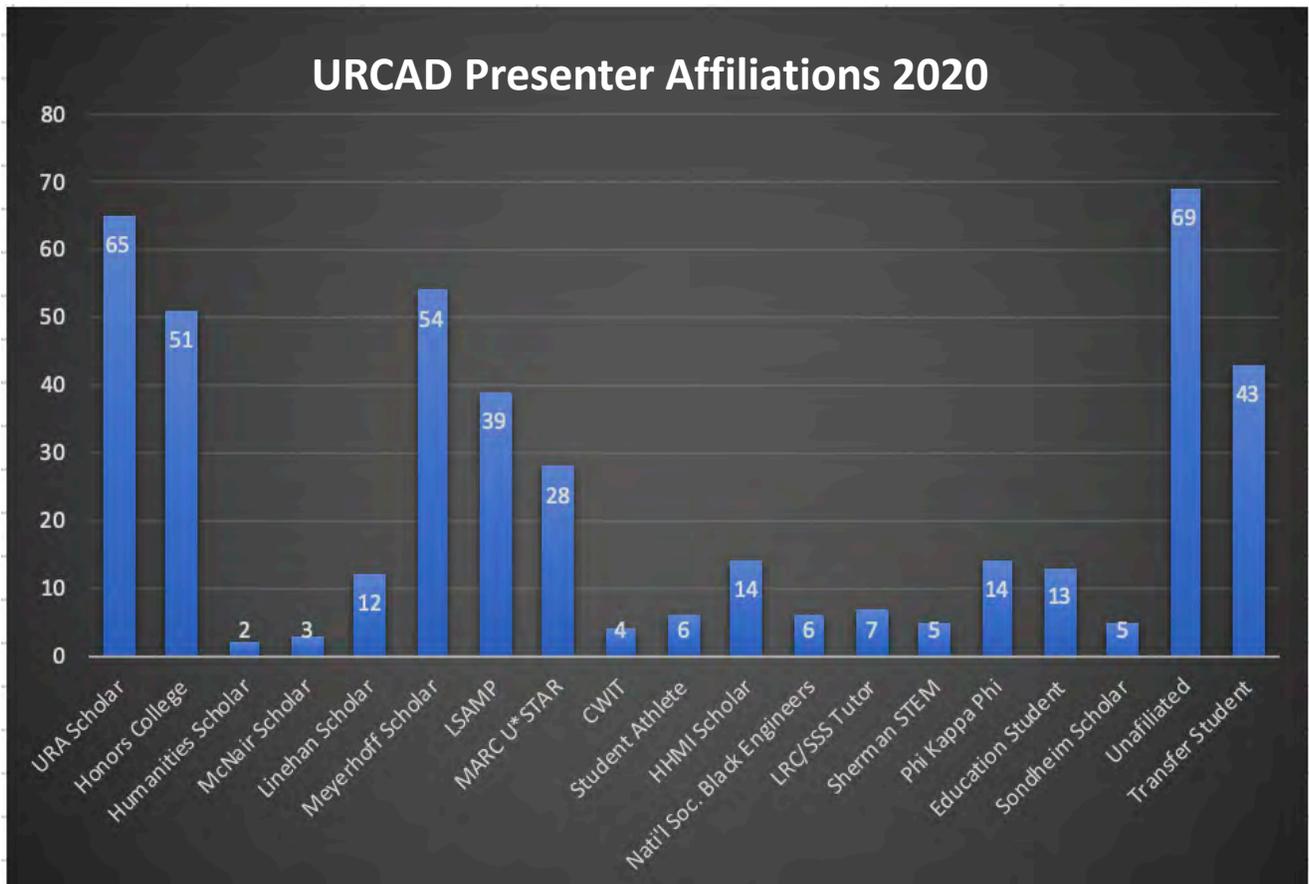
Dr. John's keynote insights on how to have an impact during these uncertain times:

1. **Continue to learn.** Lifelong active learners are an asset to research and country.
2. **Never stop living.** Lean in to your values and commitments, renew your love and compassion for others.
3. **Never stop leading.** Seek the truth and lead with integrity.

URCAD Data



*2020- URCAD moved online due to Covid-19 campus closure. 80 of the accepted students did not participate.



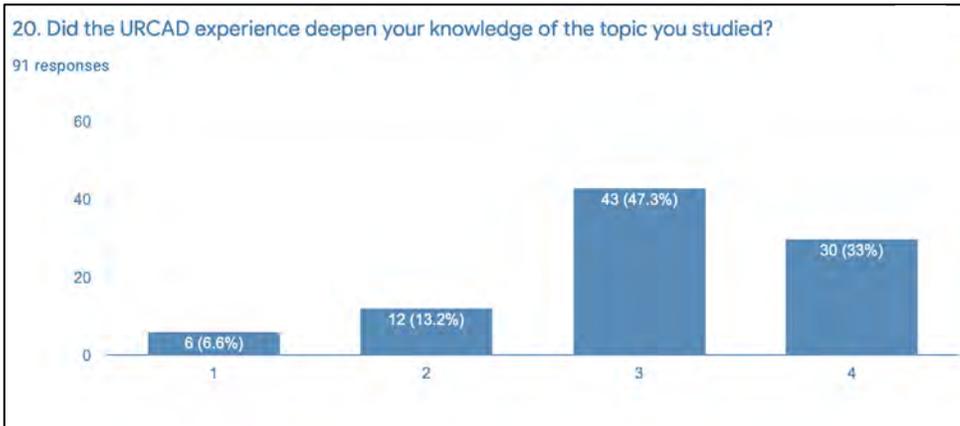
Note: Students could identify more than one affiliation.

URCAD Presentations by Year and Discipline

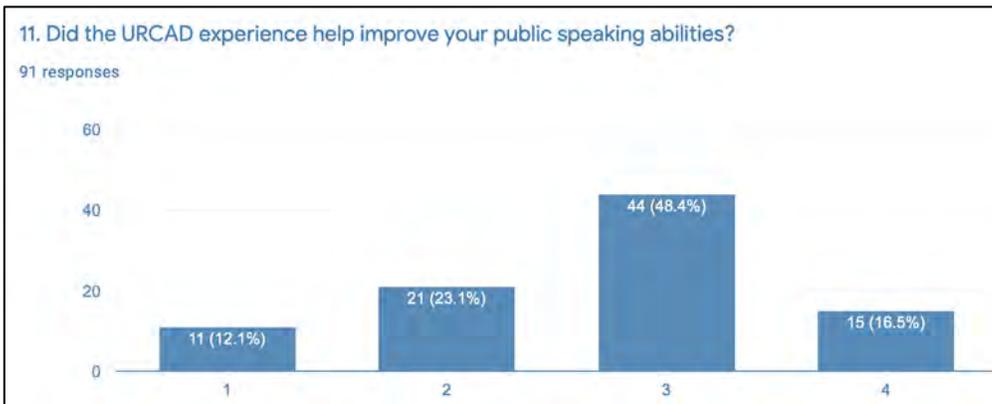
Department	Number of Presentations						
	2020	2019	2018	2017	2016	2015	2014
Aging	0	0	1	1	0	0	1
INDS	4	7	1	7	4	4	2
Social Work	0	1	0	1	2	0	2
ARTS	35	20	28	27	37	24	11
Dance	2	6	6	4	5	9	3
Music	3	3	6	6	10	2	3
Theatre	3	4	2	0	2	1	2
Visual Arts	27	7	13	17	20	12	3
HUMANITIES	25	40	26	36	41	27	31
AMST	3	3	2	4	0	2	4
ANCE	0	2	6	7	9	6	7
Asian Studies	1	1	0	0	0	0	0
English	4	3	7	4	11	5	4
Gender + Women's Studies	2	9	3	1	0	1	0
History	4	16	2	7	19	3	10
MCS	4	2	2	4	0	1	1
MLLI	7	4	4	8	2	5	3
Philosophy	0	0	0	1	0	4	2
SOCIAL SCIENCES	57	41	74	58	59	59	40
AFST	1	0	3	1	2	1	0
Enconomics	1	1	0	1	0	3	1
Education*	15	7	16	13	17	26	
Geography	1	9	3	6	2	0	0
Global Studies	2	1	1	2	2	0	0
HAPP	4	1	2	2	2	3	3
POLI	6	5	16	3	8	2	3
PSYCH	21	16	30	29	25	19	25
SOCY/ANTH	6	1	3	1	1	5	8
CNMS	95	102	84	81	83	81	100
Biochem/Molecular Bio	7	6	10	7	19	8	14
Bioinformatics	0	6	0	4	2	4	2
Biological Sciences	59	47	36	36	35	38	45
Chem and BioChem	15	23	22	22	19	23	18
Math and Stat	5	7	8	6	4	3	12
Physics	9	13	8	6	4	5	9
COEIT	35	56	44	31	36	26	32
Chemical Engineering	15	23	16	13	12	10	12
CSEE	9	22	16	14	13	10	14
Information Systems	5	5	9	1	1	0	3
Mechanical Engineering	6	6	3	3	10	6	3
Total*	247	269	265	233	262	221	219
UNAFFILIATED SCHOLARS	98	91	90	87			
Note: Some students are listed in multiple majors	*331 students accepted. 80 students did not present due to Covid-19 interruptions.						

Data from Post-URCAD Presenters' Survey

4= strongly agree 3= agree 2=disagree 1= strongly disagree
n=91



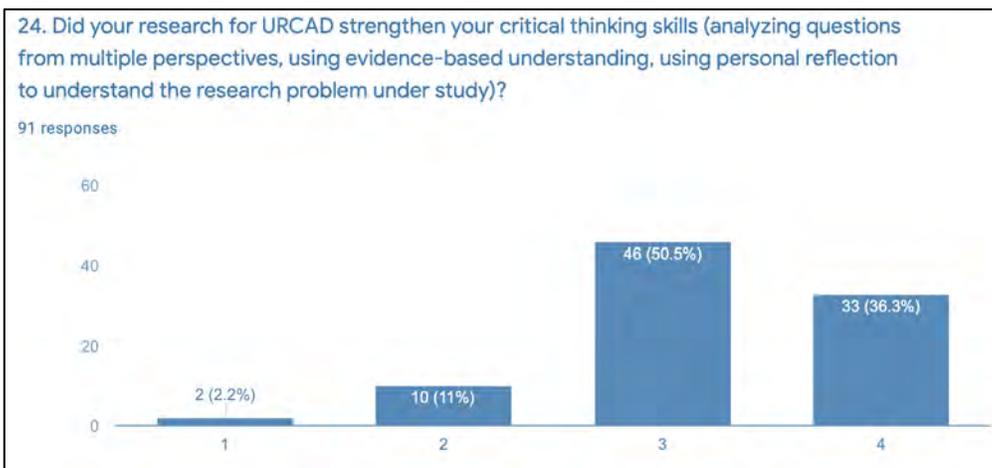
- 58.2% Connected me to a larger academic community beyond the classroom
- 31.9% Clarified my career interests
- 42.9% Provided an introduction to the broader culture and practices of my discipline



What did you learn about delivering an effective presentation?

"I learned how to approach my work from a perspective that would allow a wide and diverse audience to understanding my findings."

"Writing out a script was great, I think I may not have written a script if the presentation was not virtual, but this experience highlighted the value of writing down what I want to say before hand."



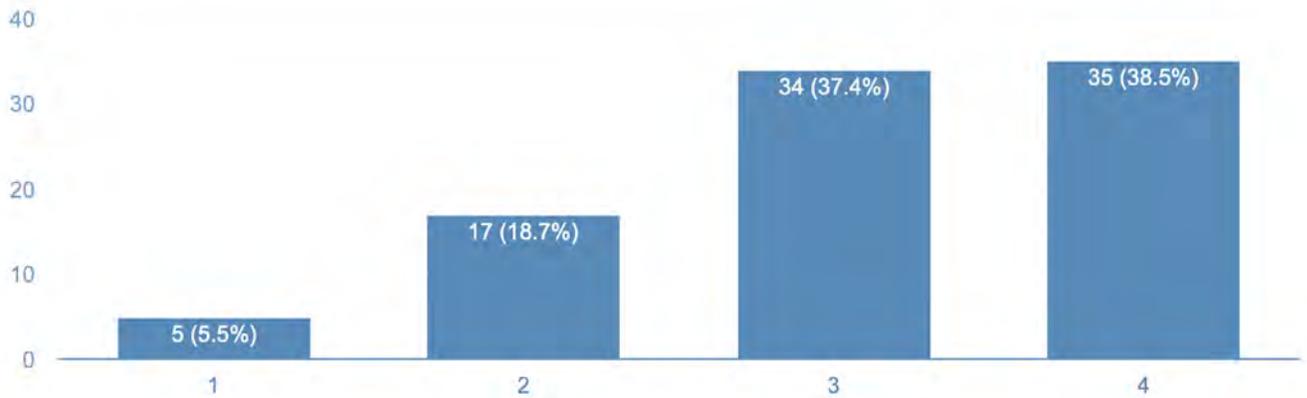
How?

"It forced me to be familiar with how everything in the project worked so I could explain it well to others. For example, I finally began to understand what the formulas I used to process data meant."

"With my research being in mathematics, there is very little opportunity to engage in critical debate with another person about the material (aside from with my mentor). Having the opportunity to have those discussions with interested members of the UMBC community offered me a great wealth of new perspectives!"

23. Did the URCAD experience help build/strengthen relationships with your research collaborators (your mentors, research team members, graduate students, etc.)?

91 responses

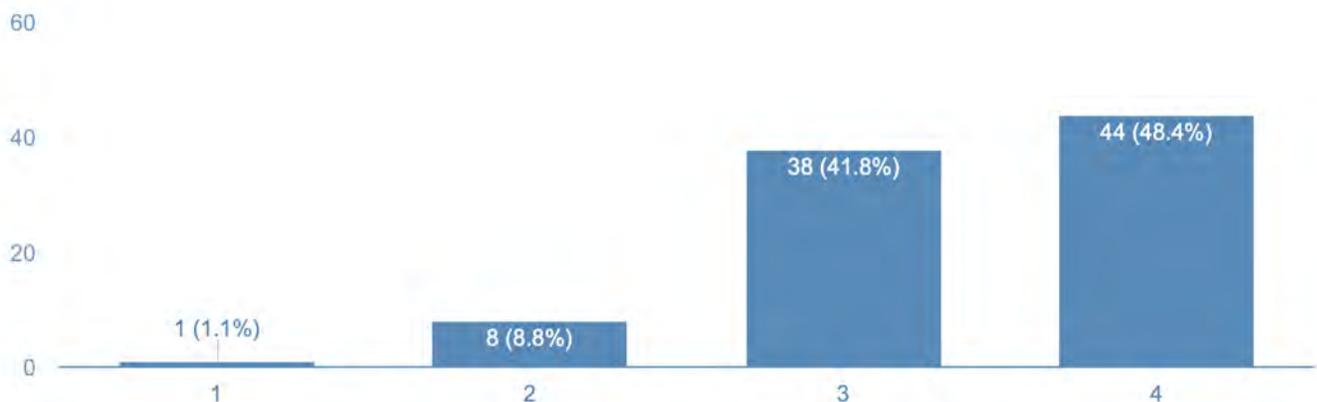


How?

- “I asked my mentor several questions about the theory behind the research we are doing, and our communication improved as a result. Working in the lab, I also got to interact with grad students and peers with similar interests.”
- “While my mentor and I had finished our research towards the end of last fall, having to prepare for URCAD together helped us keep in touch and continue to discuss the research in a meaningful way. This helped me stay sane during the first few weeks of quarantine!”

22. Did the URCAD experience give you skills that you can apply to your future academic or professional pursuits (graduate school, career, future research, applying to prestigious scholarships)?

91 responses

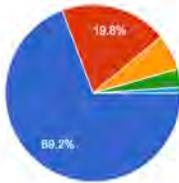


How?

- “As someone who intends to pursue a Ph.D. after graduating from UMBC, I can imagine that I will be required to give a variety of research presentations in the future. Even though some may be in person as opposed to online, the process for preparing for presentations is somewhat similar either way, so in that sense, my URCAD experience is broadly applicable to my future plans.”
- “I now know how to organize research and can use what I did for URCAD as the foundations for future research that is more organized and in-depth on the same subject.”

9. Was it easy for you to attend URCAD?

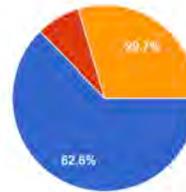
91 responses



- Yes- the week-long format enabled me to participate with no problems.
- Somewhat- I was able to present, as well as attend other presentations/eva...
- Somewhat- I had to make special arrangements but I was able to attend...
- Not really- I had a difficult time making time to attend because of classes and...
- No- I had to miss class or cancel other...
- I was unable to participate due to the...

8. Did your mentor attend your presentation?

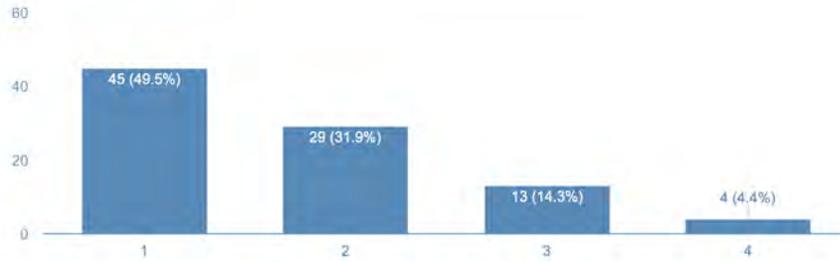
91 responses



- Yes
- No
- I don't know

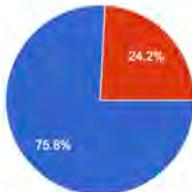
17. Do you feel that using the VT technology gave you an additional skill that you can use in other areas of your academic/professional work?

91 responses



34. Did participating in URCAD help you feel connected to the larger UMBC community outside of your specific classes or discipline?

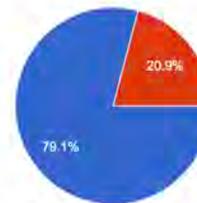
91 responses



- Yes
- No

35. Did conducting research help you to integrate ideas learned inside the classroom with outside-the-classroom experiences (or vice-versa)?

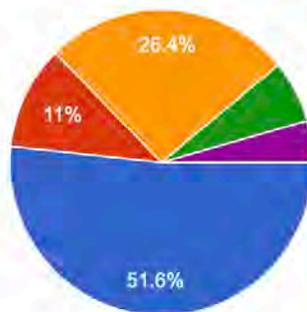
91 responses



- Yes
- No

25. Please indicate what your immediate plans are following graduation from UMBC

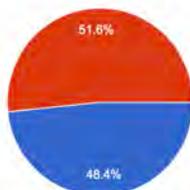
91 responses



- Graduate school
- Professional school
- Work in a career related to my URCAD research discipline
- Work in some other career area
- Continue to conduct related research

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

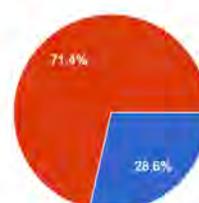
91 responses



- Yes
- No

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

91 responses



- Yes
- No

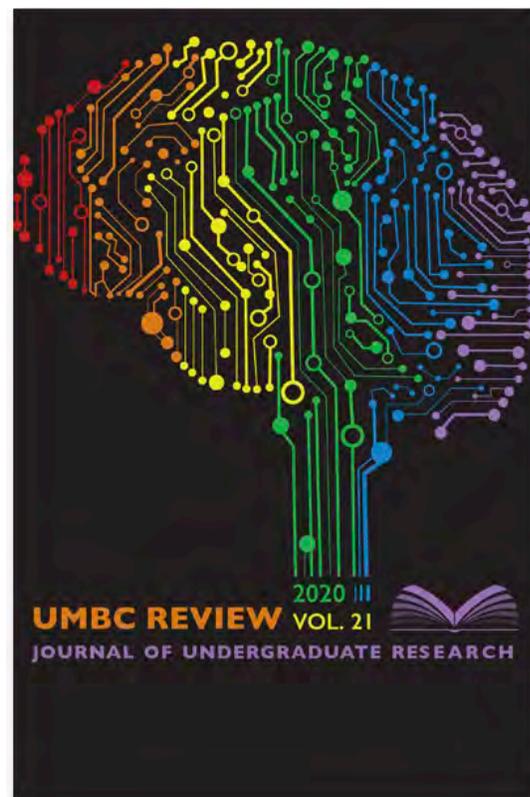
UMBC Review

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. Two faculty Advisors oversee the process. Guenet Abraham (Visual Arts) is the advisor for the student graphic designer, and this year we welcome Molly Jones-Lewis (Ancient Studies), who takes over for Susan McDonough as the advisor of the student editors.

From the 2020 introduction:

Welcome to the 21st volume of the UMBC Review! This publication has now marked the culmination of undergraduate students' intensive and interesting research for over two decades. Across many disciplines and fields, our authors have one thing in common: they ask new and exciting questions, pursuing a greater truth and understanding of the world around them in the process. We are incredibly proud to present their work and showcase the achievements of the creative thinkers, problem solvers, and investigators who call



UMBC home by bringing you nine exemplary articles produced by our undergraduate researchers. This year each paper selected for publication contributes to a collective theme of building global communities. The topics our authors investigate reflect a broader interest in the betterment of communities.

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2019-20 Student Editors



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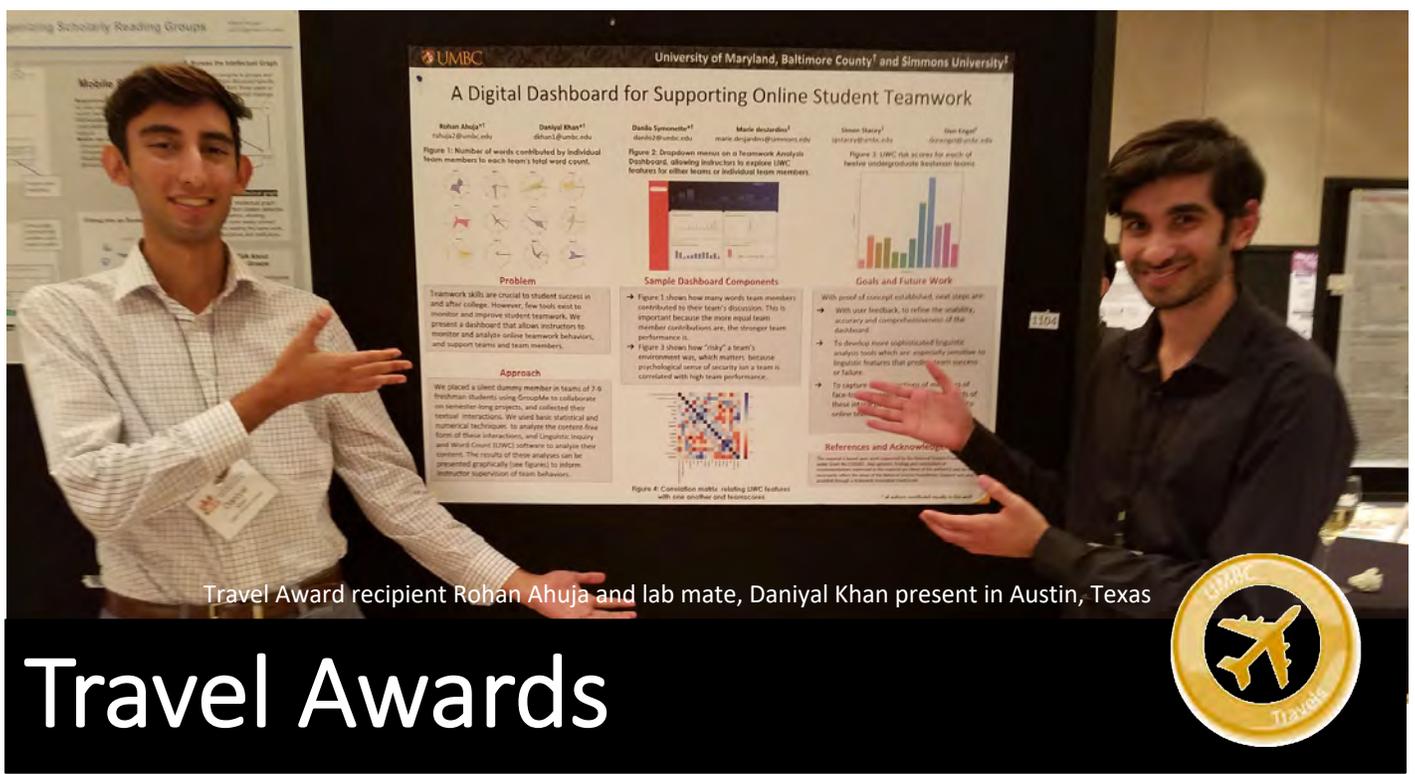
Faculty Advisors



Dr. Molly Jones-Lewis
Ancient Studies



Guenet Abraham
Visual Arts



Travel Award recipient Rohan Ahuja and lab mate, Daniyal Khan present in Austin, Texas

Travel Awards

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 for FY 2018-19: \$10,000
- 10 students funded in the amount of \$5,485 (5 returned due to COVID-19 cancellations)
- Students traveled to California, Sweden, Germany, the U.K. and other exciting venues, to present their work!

* The program was suspended in March, 2020 due to the Coronavirus' limitations on student travel.

"From October 18-22 I presented at the Society for Neuroscience Conference in Chicago, IL, for which I received a travel award. I attended many interesting seminars but gained the valuable experience, and advice on how to move our project forward, during my presentation itself. I took a lot of notes and shared them with my mentor, Dr. Vonhoff, and will also present them during an upcoming lab meeting. I made connections with PIs in other fly labs, particularly some of Dr. Vonhoff's previous lab members from Yale, and someone even offered to send mutant he is studying for us to test. I had so much fun learning and gained valuable experience that would not have been made possible without traveling to the conference. Additionally, I got a lot of practice presenting my presentation over and over again, and by the end, was confident in my ability to speak openly about scientific research. As an aspiring neuroscientist, I'm so excited for all of my future conferences. Thank you again for the opportunity."

-Ryan Oliver
2019 Travel Award Recipient

2019-20 Travel Award Recipients

Rohan Ahuja \$500

Mentor: Simon Stacey
"A Digital Dashboard for Supporting Online Student Teamwork"
ACM Conference on Computer-Supported Cooperative Work and Social Computing
Austin, Texas

Jonathan Basalyga \$500*

Mentor: Matthias Gobbert
"3D Gamma Image Reconstruction using Deep Convolutional Neural Networks for Proton Beam Therapy"
GAMM Annual Meeting 2020
Kassel, Germany

Elshaday Behailu \$500

Mentor: Fernando Vonhoff
"The Effect of the CREB Gene on Immune Response of *Drosophila melanogaster*"
ABRCMS
Anaheim, California

Samar Behdin \$500

Mentor: Michael Summers
"Biochemical and Structural Analysis of Human Immunodeficiency Virus Type-1 Spliced RNA"
ABRCMS
Anaheim, California

Isaac Chaudry \$500

Mentor: Michael Summers
"Biochemical Evidence for a Novel Structural Interaction Characteristic to the Dimeric Conformation of the HIV-1 Genome"
ABRCMS
Anaheim, California

Jada Damond \$500*

Mentor: Upal Ghosh
"The Challenge of Measuring Activated Carbon Dose in Sediments"
Society of Environmental Toxicology and Chemistry Young Environmental Scientists Meeting
Waco, Texas

Anna Feerick \$750*

Mentor: Lee Blaney
Removal of per- and polyfluoroalkyl substances by anion-exchange fibers
ACS National Meeting and Expo
Philadelphia, PA

Anna Hartman \$285

Mentor: Lindsay Dicuirici
"Understanding Uprising: Media Discourse and Maryland Race Uprisings"
Richard Massey Research Symposium, Johns Hopkins
Baltimore, Maryland

Elisabeth Kan \$500

Mentor: Michael Summers
"Elucidation of the HIV-1 5' Leader through Paramagnetic Tags"
ABRCMS
Anaheim, California

Mohammed Khalid \$750*

Mentor: Anupam Joshi
"An Unholy Alliance: Christian Identity Extremists and ICTs"
iConference 2020
Boras, Sweden

Gerson Kroiz \$750*

Mentor: Matthias Gobbert
"Study of Exploiting Coarse-Grained Parallelism in Block-Oriented Numerical Linear Algebra Routines"
GAMM Annual Meeting 2020
Kassel, Germany

Pat Michael \$1,500

Mentor: Caylie Middleton
"Dawg Days Abroad TA"
Dawg Days Abroad
Bristol, United Kingdom

Ryan Oliver \$700

Mentor: Fernando Vonhoff
"Uncovering the Genetic Basis of Courtship and Naive Odor Preference in *Drosophila*"
Society for Neuroscience Conference 2019
Chicago, Illinois

Mitali Sarkar \$500

Mentor: Michael Summers
"Characterization of GAG-RNA Interactions that Nucleate HIV-1 Viral Assembly"
ABRCMS
Anaheim, California

Brett Setera \$500

Mentor: N.B. Singh
"Optical performance of transition metal doped crystalline composites"
44th International Conference and Expo on Advanced Ceramics and Composites (ICACC 2020)
Daytona Beach, Florida

* Indicates conferences that were cancelled or rescheduled because of the COVID-19 pandemic.

Research Opportunities

Explore every angle

Our goal is to broker intellectual relationships between faculty students through research partnerships. 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.¹

- UR provides help with identifying **REUs**, completing applications, preparing resumes, and personal statements, asking for letters of recommendation, etc. Future implementations will include developing a system for tracking served students.
- UR maintains a **database of summer research opportunities** growing to over 500 entries. We have partnered with Career Services, Meyerhoff, and others to maintain the entries.

82%

of undergraduates engaged in:

**INTERNSHIPS | CO-OP | SERVICE-LEARNING
STUDENT TEACHING | FIELD EXPERIENCE | RESEARCH
STUDENT LEADERSHIP POSITIONS | STUDY ABROAD**



¹ Penniston, Thomas. (2014). *The Impacts of Service Learning Participation Upon Post-Secondary Students' Academic and Social Development*. Dissertation, University of Maryland, Baltimore County.



Faculty and Staff "supporting" UMBC's Truman Finalists

Prestigious Scholarships

Claim your future

Prestigious Scholarships 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 (Oxford), Gates (Cambridge), Marshall (U.K), Truman (public service), Goldwater (STEM), but also advise for other scholarships in tandem with the International Education Services office, such as Udall, Schwarzman, Douglass, Knight-Hennessy, etc., when students come forward.



Truman Finalists, Cameron Walkup and Viviana Angelini



Marshall Finalist, Evan Avila

“Although I didn’t win, being guided through the Truman application process enabled me to reflect on my future educational and professional goals, which will be helpful moving forward for graduate school and in my career.”

-Briscoe Turner
Truman Nominee

In 2019-20, the Prestigious Scholarships office developed and sent forward:

Marshall

- **Evan Avila** *FINALIST (Economics/Political Science, Honors College, Sondheim Scholar)

Truman

- **Cameron Walkup** *FINALIST (Geography and Environmental Systems, Honors College, Sondheim Scholar)
- **Viviana Angelini** *FINALIST (Political Science, Honors College, Sondheim Scholar)
- **Jordan Troutman** (Computer Science/Math, Honors College, Meyerhoff Scholar)
- **Briscoe Turner** (Psychology, Honors College, Sondheim Scholar)

Goldwater

- **Dominique Brooks** *WINNER (Biological Sciences, Meyerhoff Scholar)
- **Olumide Fagboyegun** *WINNER (AACC transfer, Biochemistry, Meyerhoff Scholar, MARC U* STAR)
- **Jordan Troutman** *WINNER (Computer Science/Mathematics, Honors College, Meyerhoff Scholar)
- **Alexandra Seas** (Chemical Engineering, Honors College, Meyerhoff Scholar)
- **Hana Flores** (Biochemical Engineering, Honors College, Meyerhoff Scholar, MARC U STAR)

Fulbright Scholars (Finalists- Advised out of the International Education Services Office.)

Brandon Ables, '20, IMDA, Romania ETA

Alida Hartwell, '20, CMSC, Latvia ETA

Hannah Jang, '19, GLBL, South Korea ETA

Kielyn Jones, '20, PUBP, Jordan ETA

Daniel Kashkett, '19, GLBL, Bilateral Internship Program, Mexico

Philipp McKnight, '19, ISD, Laos ETA

Samina Musa, '20, CENG, Malaysia ETA

Uchenna Osia, '20, CMSC, Malaysia ETA

Jocelyn Wilkins, '20, MENG, MSC, University of Porto, Portugal

UMBC Celebrates THREE Goldwater Scholars!

BARRY GOLDWATER
SCHOLARSHIP & EXCELLENCE IN EDUCATION FOUNDATION



Dominique Brooks



Olumide Fagboyegun



Jordan Troutman



Prestigious Scholarships Spotlight: Evan Avila

Evan Avila's goal is to work on Capitol Hill, advocating for immigrant communities' access to financial security and economic equality. He has now been recognized as a finalist for the prestigious Marshall Scholarship, affirming his path to a career of leadership in public service. The Marshall Scholarship is awarded annually to up to 50 students from the United States to pursue graduate study at a university in the United Kingdom, following an intensive application and interview process. Avila, a Sondheim Public Affairs Scholar majoring in economics and political science at UMBC, was selected as a finalist for his long record of public service as well as his experience developing economic policy proposals. At the final stage, Avila was not among the students chosen to receive the scholarship. However, he still plans to pursue graduate study in Washington D.C. next fall as a [Harry S. Truman Scholar](#). How does UMBC identify students to nominate for this prestigious scholarship? "We prioritize a student's ability to demonstrate strong potential as a change agent in their chosen field, based on their leadership and intellectual skills," explains **April Householder**, director of undergraduate research and prestigious scholarships. "Evan emerged because of his exemplary commitment to public service, and his ability to work with diverse groups of individuals. We felt that he has great potential as a policymaker and social change agent." Avila is the fourth UMBC recipient of the Harry S. Truman Scholarship. He was chosen in the spring of 2019 for one of just sixty scholar positions out of 840 candidates nationwide. The award grants Avila \$30,000 toward a competitive graduate school of his choice. In addition, scholars gain access to continuous leadership development programs, such as the Truman Scholars Leadership Week and the Summer Institute. Scholars also benefit from mentorship by top leaders in government agencies, nonprofit organizations, public and private educational institutions, and advocacy organizations. Following a master's degree, Avila plans to pursue a J.D., to specialize in taxation and employee benefits law.

Building a public service career

Avila has dedicated his time at UMBC to developing his knowledge of financial systems and applying his studies to work with people in need of financial services and expertise. This includes years of service with UMBC's Volunteer Income Tax Assistance (VITA) program. Avila recently shared, "My driving ambition is to combine the intersections of financial services, taxation, and employee benefits" to address the significant challenge of wealth inequality faced by workers, families, and students.

Laura Hussey, associate professor of political science and director of the Sondheim Public Affairs Scholar program, has witnessed Avila's longstanding commitment to serving communities. Hussey is quick to point out that it is not just Evan's résumé, but also his character, that exemplifies Sondheim Scholar ideals. His time spent at the Esperanza Center, which provides educational, legal, medical, and other services to immigrants in Baltimore, is a meaningful example of his work. "In choosing the Esperanza Center for his Sondheim Scholar service-learning, Evan sought to leave his comfort zone and address his complicated relationship with his family's immigrant heritage," explains Hussey. "Though intimidated by the one evening per week he would spend there, given his limited Spanish proficiency and tutor training, Evan described his service at Esperanza Center as 'truly joyous' and a 'deeply personal and spiritual experience.'" Avila has also been recognized for his work on retirement planning for today's young adults. In June 2018 he won the iOME challenge with the policy proposal [Rethinking Millennial Retirement: Policy Recommendations for a Gig Economy](#). Cindy Hounsell is president of the [Women's Institute for a Secure Retirement](#) (WISER), which sponsored the competition. She shared, "We are impressed by Mr. Avila's response to the more complicated challenges and deterrents millennials face in preparing for their future retirement."

UMBC has a strong tradition of supporting applicants for the Marshall Scholarship, as well as other prestigious awards. **Loren Siebert '93**, computer science, earned his master's degree in computer science at the University of Manchester as a Marshall Scholar. He then invented LinguaStep, a language learning software, and is now a technical advisor to entrepreneurs in San Francisco. **Naomi Mburu '18**, chemical engineering, was UMBC's second student selected for a Marshall Scholarship, in 2017, but she declined the award to become UMBC's first [Rhodes Scholar](#). Mburu is [currently pursuing a doctorate in nuclear fusion at Oxford](#). She offered Avila advice in preparation for his Marshall interview. Avila looks forward to continuing that tradition after his graduation in the spring, offering support to future UMBC students who are reaching for their dreams.



Prestigious Scholarship Spotlight: Jordan Troutman

MHEC selects UMBC's Jordan Troutman, who bridges technology and policy, as student commissioner

UMBC's **Jordan Troutman '21, M29**, enjoys challenging assumptions. Recently named the student commissioner for the Maryland Higher Education Commission (MHEC), Troutman isn't studying public policy or political science, like many students involved in governance. He's a computer science and mathematics major passionate about applying his work at the intersection of technology and policy to improve society. Troutman's research focuses on eliminating biases in algorithms that can lead to unfair outcomes and even impact life-changing decisions. Now, he's turning his analytical approach and commitment to equity to work representing Maryland college students at the state level.

Representing students across Maryland

Troutman is a thoughtful, organized student whose energy and excitement for tackling new challenges shines through his beaming smile. He will serve as a voting member of MHEC for the 2019-2020 academic year, and sees his role as essential to "provide perspective on what it's like to be a student right now," he shares. MHEC is responsible for establishing policies for public and private colleges and universities across the state of Maryland. Troutman explains that he learned about the opportunity to apply for the student commissioner role from Dan Barnhart, director of campus life at UMBC. The application process included a recommendation from Barnhart and a nomination letter from President Freeman Hrabowski.

Making an impact as a leader

Troutman served as a senator on UMBC's Student Government Association during his freshman and sophomore years. It was through SGA that he learned about how groups like MHEC can impact the experiences of Maryland students at a high level. As a senator, "Jordan has taken on such issues as academic conduct, more representative information technology, and more activity space for undergraduate students," says Barnhart. "He communicates well with his peers, models outstanding leadership skills, and is a consummate team player." Troutman's effective leadership style is what inspired Barnhart to recommend him for the MHEC role. "He understands the political system of a campus and works well in that system to accomplish his goals," Barnhart explains. "All of the work he does in shared governance helps the student leaders, and the campus life department in co-creating amazing experiences for students at UMBC and beyond."

Identifying biases in technology

Troutman is a Meyerhoff Scholar and a member of the Honors College who has been engaged in both research and student groups throughout his UMBC years. He conducts research with James Foulds, assistant professor of information systems, on identifying biases in machine learning technologies. Troutman received an Undergraduate Research Award to pursue a new line of research and will present his work at the annual Undergraduate Research and Creative Achievement Day in the spring. After he graduates, Troutman plans to pursue a Ph.D. in computer science, with his sights set on working in both higher education as a professor and in industry research settings. He hopes to build collaborations among computer scientists, educators, and policymakers to develop technologies that do social good and benefit people around the world. As MHEC's student commissioner, Troutman looks forward to learning more about the challenges and issues that higher education institutions are facing today, particularly affordability and accessibility. "My role and intention is that when I'm speaking, I'm not speaking for me," he says, "I'm speaking for students across Maryland."



Partnerships

Reach Together

This year, we have 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. April Householder also serves as a member of the INDS Committee (ISC), where she reviews and approves INDS degree proposals.
- 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). 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 (10/22), and other prestigious scholarship applicants.
- **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 (11).

"I truly value the partnership between the Center for Global Engagement and the Office of Undergraduate Research and Prestigious Scholarships. April and I work together to promote the fellowship opportunities we manage to UMBC's academically talented students, jointly targeting research, study and teaching opportunities to students, given those students' strengths and interests. This close collaboration allows us to contribute our individual expertise in fellowships advising to the whole of the UMBC student body. Over the past few years, this collaboration has been particularly strong among April's work in undergraduate research. Several URA and URCAD students have applied for, and several have received, Fulbright research or study awards."

- Dr. Brian Souders

Global Engagement Opportunities
Center for Global Engagement



Campus-wide Partnerships

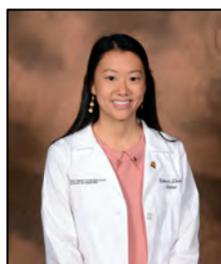
- **Dr. Christopher Varlack (INDS/Honors College)** was added to the Goldwater committee as a non-scientist reviewer. He gave valuable feedback on writing personal statements, resulting in 3 Goldwater winners.
- April Householder provided workshops for **LSAMP and McNair** student researchers, **the Honors College, Meyerhoff Program, Women's Center, CWIT, Career Services, and Transfer Student Network**.
- Continued the **Phi Kappa Phi Honor Society** Undergraduate Research Awards. Each student received a check for either \$1,000 or \$500.



Melissa Metry
(Winner)



Neha Agarwala
(Special Recognition)



Rebecca Zhang
(Special Recognition)



Fariha Khalid
(Special Recognition)

2020 Phi Kappa Phi Chapter 22 UM-UMBC Marilyn Demorest Love of Learning Award



Briscoe Turner
(Special Recognition)



Christine Vaaler
(Special Recognition)

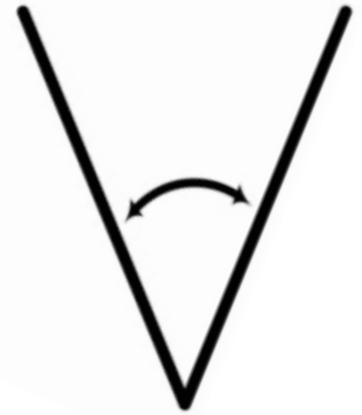


Karan Luthria (Winner)



Ana Pieszala
(Special Recognition)

- The synergy continues between the **International Education Services Office** and UR/PS. April Householder serves on the **Fulbright** interview selection committee. Rebekah Kempske applied for prestigious scholarships but won a Fulbright this year, as did Morgan Zepp (URCAD presenter). David DiMaria and Brian Souders also participated in mock interviews for international prestigious scholarships awards. Householder and Souders teamed up for presentations to the Honors College, and for students interested in international scholarships. UAA web designer, Michael Mower, created a new website for Fulbright and Fulbright Bootcamps were held in the UAA conference room.
- 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. OIA's **Oca Mocha** hosted a study day for URA Scholars and offered discounted coffee.
- The **MARC U*STAR** program contributed to the printing of the UMBC Review.



Outreach

Explore every angle

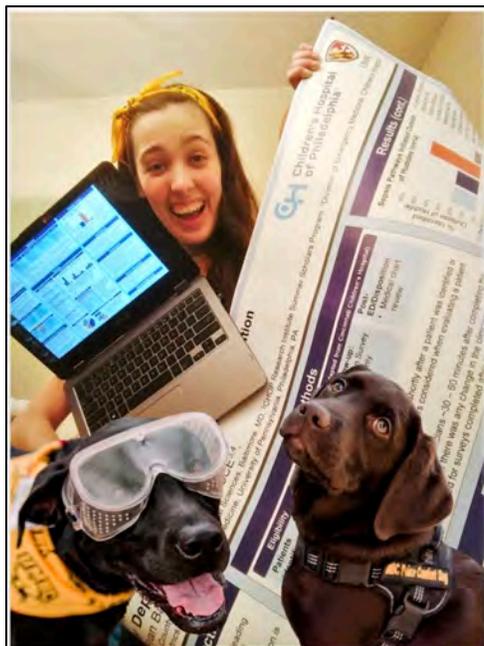
We offer group workshops as well as one-on-one support to students who are just getting started in research, or who are interested in pursuing prestigious scholarship opportunities. This includes helping students find mentors, summer research opportunities, preparing for graduate school, improving their writing skills, and connecting them with other resources for student success, both on and off-campus.

"I wanted to reach out and say thank you for all of the work you (and countless other staff) put in to make this year's URCAD happen. This was the first time I was able to see my research (on Korean Shamanism) in a way that seemed more relevant and important than just for a grade in a class. I also wanted to thank you, as a few weeks ago I received an email notifying me that I had been recommended to the Fulbright scholarship and your name was listed as one of the faculty members to mention my name, so this year's URCAD has really been something very special for me. (I have been meeting with Dr. Souders and am applying to an ETA award in South Korea by the way!)"

All in all, I am very happy and grateful to everyone that has put in the effort to keep URCAD running so students like myself get a chance show off something they are passionate about! I wish I had done this sooner but hopefully I will find more equally exciting opportunities in my post-graduate career!"

- Carley Mackenzie, URCAD Participant (Asian Studies)

- In 2018-19, there were over **162 (▲ 42)** 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
- **91** students presented at URCAD who were unaffiliated with scholars or honors programs, like the one quoted above



Winners of the URCAD Selfie Contest

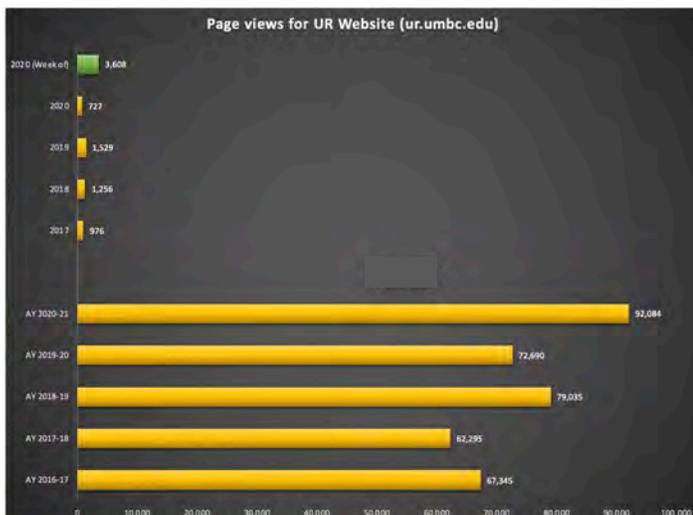


Publicity and Marketing

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 has **38,220 users** (▲ 11,959) and received **92,084 visits** (▲ 13,282) in 2019-20. 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 **34,155** (▲ 19,014) **times this year**, and **8,200 times on the day of URCAD** (▲ 6,411).

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.



Web page analytics for UR and URCAD websites

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** (@UR_at_UMBC, 325 followers, ▲ 58) and **Instagram** (#urumbc, 125 followers) accounts this year. 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.

Undergraduate Research
Institutional Group • 3820 people

Home Posts Events Files People Settings

URCAD Sneak Peek: Samantha Papastephanou
Goop! An animated exploration of beats, shapes, and colors

Samantha is a Linehan Artist Scholar. See her animated film, "Goop!" at URCAD Online starting this Wednesday! URCAD.umbc.edu

Samantha Papastephanou
Mentor: Corrie Parks, Visual Arts

Abstract:
Goop! is a fun thirty-second looping exploration of beats, shapes, and colors. The objective of this piece was to capture everything I thought made animation fun to watch: bright and deliberate color palettes, fluid movement, and visual rhythm. I've always found pieces of animation paired with music to be incredibly satisfying to watch when done right, and I wanted to try making one myself in the limited amount of time that I had. By creating a looping piece, I've made it easier for me to enjoy those key moments where the animation and the music match up perfectly. Not having a theme gave me the freedom to work intuitively and spontaneously with the music, which was chosen before starting the animation so I could carefully plan the visuals. I chose and edited a song titled "Cute Monsters" by Hani Koi because I thought it best complimented my vision of what I wanted my piece to look and sound like. Each frame was drawn by hand in Photoshop, and the limited color palettes were chosen with creating a specific visual effect in mind. Each palette had two "transition" colors that allowed it to connect with the palettes before and after.

Visit Website

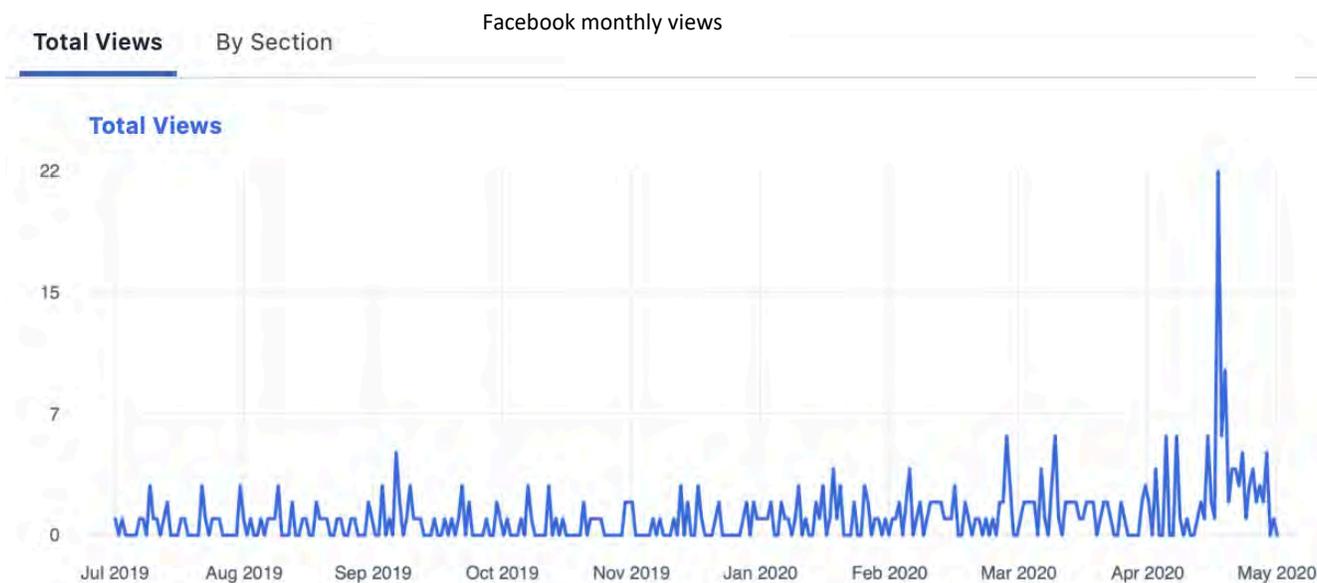
Video- Dr. Vonhoff & Steve Park show how to apply for a URA
Get up to \$1500 for research- it's easy, even in quarantine!

Dr. Vonhoff (Biological Sciences), and his mentee, Steve Park, show how easy it is to apply for an Undergraduate Research Award (URA), even in quarantine.

URAs provide up to \$1,500 to undergraduate students to support their research, scholarship, or creative work with a UMBC faculty mentor on an original project. UMBC students of all years and disciplines are invited to apply, as long as they remain enrolled at UMBC long enough to complete the proposed work.

Deadline: May 15, 2020
Applications require a research proposal and mentor statement of support.

Our Facebook page has **827 followers** (▲ 54), and in the last year, has generated **787 “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 **2,488 members** and **1,165 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 sign-up 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

- **UMBC Retriever**- advertising for programs and events, in both printed and on-line formats
- **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 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

AV

- **Radio**- we advertise URCAD and other programs on WMBC radio
- **Video**- we create videos for promoting programs, giving advice, and celebrating student successes. This year, OIA created several videos for URCAD to promote and summarize the event.

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.)
- Table at **Major Event**
- Presence at **new student orientations**

Undergraduate Researcher of the Week: Crystal Najib
The Resilience and Empowerment of Afghan Immigrant Women

Crystal Najib is a rising senior with majors in Biology (B.S) & Psychology (B.A). She is an LSAMP SU2020 Scholar and a current URA Scholar.

Title of your research project:
Learning from StoryCorps: The Resilience and Empowerment of Afghan Immigrant Women

Describe your project:
The aim of my research is to explore the stories of Afghan immigrant women to the US, in order to better understand their challenges, struggles, risks, fears, and how they have overcome them. I will be mainly focusing on the resilience and empowerment of Afghan immigrant women who have fled a war-torn country in the search for a better life, through the use of recorded interviews provided by the StoryCorps archive.

Who is your mentor for your project?
Dr. Anne E. Brodsky, Department: Psychology
I found my mentor by searching the research faculty on the UMBC website. I chose my mentor because I am interested in their research.

How did you become interested in this project?
I became interested in this project because I am an Afghan immigrant and being able to learn about the resilience and empowerment of Afghan women who have fled a war-torn country facing many struggles and challenges looking for a better life.

What has been the hardest part of your research/what was the most unexpected thing about being a researcher?
Since my research has just begun, I have not yet had many challenges but an unexpected thing about research for me was the importance of literature review prior to beginning any type of research.

What has been the most rewarding part?
Being able to be a part of the great team my mentor has working together and learning from both my mentor and the graduate and other undergraduate members of her team.

How will you disseminate your research?
I intend to present my research at URCAD in April, and I am also doing my undergraduate honors thesis on this topic.

Sample myUMBC post promoting the Undergraduate Researcher of the Week

Undergraduate Research @ UMBC
November 24, 2019

Crunk Feminist Collective
November 24, 2019

that's what's up.


The Guardian

THEGUARDIAN.COM
First transgender Rhodes scholar named in diverse 2020 class

285 People Reached 24 Engagements Boost Unavailable

11

Like Comment Share

Comment as Undergraduate Research ...

Sample Facebook post highlighting national news story related to Rhodes scholarship

2020: A Time of Challenges and Opportunities



Campus closed in March, 2020, just weeks before the launch of URCAD

COVID-19 Pandemic and Life During Quarantine

Undergraduate Research adjusted to the “new norm” of life during the pandemic, and continued to provide support for students. Preparations for both URCAD 2020 and the Undergraduate Research Award program were well underway when COVID shut down in-person operations in March, 2020. However, the adaptation of online programming was relatively seamless. Within a week of the closure, UR began working with DoIT to provide (for the first time) virtual URCAD programming. Despite having only a month to learn new technologies and to provide instruction to our student presenters, the event was a rousing success. Nearly 250 students participated across all majors and disciplines and their presentations were viewed by over 8,000 people all over the world. Shortly after the conclusion of the week-long event, UR began the process of collecting applications for URA awards. Despite this being a completely virtual process, UR received more proposals than ever before and, again, across all majors and disciplines. Students, as well as faculty, reported that UR programs provided a sense of normalcy in an otherwise atypical year. Seniors who had their graduation celebrations cancelled appreciated the sense of community that URCAD provided at the end of their time at UMBC.

The Death of George Floyd and National Conversation on Systemic Racism

On May 25, 2020 George Floyd was murdered in Minneapolis at the hands of the police, and the event reignited both a national conversation and one at UMBC, about police brutality, the over-incarceration of African-Americans, and the denial of equality and opportunity in the workplace, housing, politics, healthcare, and in particular, education.

The staff of Undergraduate Research and Prestigious Scholarships wants to affirm our support for and solidarity with our Black students, faculty, and staff at UMBC and beyond. We condemn the murders of George Floyd, Breonna Taylor, Ahmad Arbery, and Freddie Gray, along with the countless other Black lives that have been taken. We stand in opposition to systemic racism and consciously work to be inclusive of black, brown, queer, women, first-generation, immigrants, disabled, and other underrepresented communities in our programs and opportunities. Those of us who benefit from white privilege commit to doing the work to practice anti-racism and foster inclusivity and diversity in our researchers, speakers, recruitment and outreach, and our language. We will continue to work on these issues with faculty who mentor students, and provide resources to ensure the equal treatment of students of color in our research and scholarship programs.

To our Black students, faculty, and staff

**We see you.
Your life matters.
We're taking action.**

We will work to promote a culture of inclusivity in our department. We will be critically engaged with the campus community as we move forward to create real change in this moment and beyond. We are grateful for Dr. Hrabowski and his leadership during these transformative times. We stand by the statement issued by USM leadership and Dr. Hrabowski and take these values as our own. Black Lives Matter. *YOU ARE* (UR) Undergraduate Research!



History of our Programs

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 McGlynn, 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 2019, under the leadership of Dean Katharine Cole, OUE re-organized into nine units, under the Division of Undergraduate Academic Affairs (UAA): Academic Engagement and Transition Programs; Academic Success Center; Honors College, Individualized Study Program; Meyerhoff Scholars Program; Office of Academic Opportunity Programs; Sherman STEM Teacher Scholars Program; Undergraduate Research and Prestigious Scholarships; Women’s Center. In 2019, a 30% increase was made to the UR budget.



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 2019-20 was \$144,200.

Full-time

Dr. April Householder (90% UR, 10% PS)

Director of Undergraduate Research and Prestigious Scholarships

Support Staff

Mr. Devon Fick

Administrative Assistant II

Undergraduate Research and Prestigious Scholarships

Division of Undergraduate Academic Affairs

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