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The University RESEARCH NEWSLETTER

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MILLERSVILLE UNIVERSITY OF PENNSYLVANIA



A Message from the Provost

At Millersville University, many faculty and students engage

in ongoing and substantive research in their chosen area of expertise. The fruits of these labors shape classroom instruction, knowledge in the discipline, and this research benefits the citizens we serve. For students, conducting original research proves invaluable for personal and professional development. Made in Millersville, which is a focus of the author of this edition's Commentary, is one way we celebrate the diversity of research and creative endeavors across all corners of our institution. The University Research Newsletter was first published eight years ago, and its purpose is two-fold: to also celebrate a University research culture and to share the results of faculty and student scholarship with a general audience.

Readers will find in this issue a summary of research activities primarily from the academic year now coming to a close. One of the features that stands out is the diversity of student and faculty-student research outcomes. Readers will also be struck with how MU alumni have used their experiences at Millersville University as a foundation for success in graduate

and professional school, in securing employment, or in advancing along their career paths. On behalf of the University Honors College, I am pleased to present to you the current issue of The University Research Newsletter.

In conclusion, I would like to acknowledge the contributions of Dr. Dennis Downey, retired Professor of History and Director of the University Honors College for the past 12 years, as a scholar, teacher and mentor to our Honors students. Dr. Downey served as founding editor of this newsletter since its inception in fall 2010 through spring 2017, guiding Honors College students in its preparation, editing and publication each semester. His unflinching advocacy of the Honors College and his deep commitment to the success of his students has been the hallmark of his tenure at Millersville University. I wish him the very best in his retirement.

Sincerely,

Vilas A. Prabhu, Ph.D.
Provost and Vice President
for Academic Affairs

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Millersville University
TOGETHER STRONG

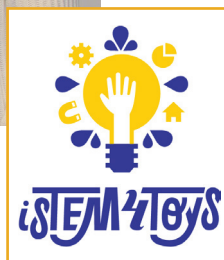
FACULTY RESEARCH

From the left: Marcum-Dietrich, Shettel, White, Brusic



Dr. Sharon Brusic, Professor in Applied Engineering, Safety & Technology, **Dr. Nanette Marcum-Dietrich**, Professor in Educational Foundations, **Dr. Jennifer Shettel**, Associate Professor in Early, Middle & Exceptional Education, and **Dr. Janet White**, Professor in Mathematics, are collaborating on research, as part of a grant from the National Science Foundation, titled *Integrative STEM for Teachers of Young Students (iSTEM4ToYS)*. They are exploring how to best prepare pre-kindergarten (PK) to grade 4 teachers for Integrative Science Technology Engineering and Math (iSTEM) teaching and learning.

The overarching goal of this project is to determine which components of the iSTEM minor at MU have the greatest impact on future teachers. Specifically, they are investigating which research-based features of MU's iSTEM program are the most significant transformational elements that may increase the likelihood that undergraduates who complete the minor will effectively integrate iSTEM techniques in their future classrooms. The features investigated include: development of an iSTEM Laboratory and Resource Center; coursework that engages learners in



problem-based, inquiry-based, and design-based learning experiences that build deeper understandings of STEM concepts; STEM focused practicums in elementary schools; and access to STEM-related community resources. By evaluating which features have the maximum impact, they hope to be able to make recommendations on how to replicate these outcomes at other teacher preparation institutions, thereby contributing to an understanding of how to better prepare PK-4 teachers as competent and passionate iSTEM educators. Brusic, Marcum-Dietrich, Shettel, and White are in the 2nd year of their research project and are involved in collecting and analyzing initial data from surveys and interviews; preliminary results are expected in Fall 2018.



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DUE-1611652. Any opinions, findings, and conclusions or recommendations expressed in this material are those of the author(s) and do not necessarily reflect the views of the National Science Foundation.



Dr. Aaron Haines, Associate Professor in Conservation Biology, is currently working on three main research projects. The first, "Analysis of Threats Impacting Threatened and Endangered Species in the United States," is being conducted with undergraduate students Grace Smoot, Carli Parenti, and Olivia Rosensteel.

This research has tentatively found that species federally listed as threatened or endangered in the last decade suffered from more threats than species that have been listed in previous decades, and species currently listed as threatened or endangered are facing more threats from invasive species, alien species, and climate

change when compared to species that have been listed in previous decades.

Another study, "Remote Acoustic Surveys for Rare Bats in Lancaster County," conducted with undergraduate student Carter Farmer involves recording calls of rare, threatened, and endangered bat species within the Lancaster County Conservancy Preserves.

Dr. Haines' third major study, "Determination of Seasonal Changes in Shrew Feeding Activity," is being conducted on MU's campus with undergraduate students Natalie Auman and Courtland Hess.

COMMENTARY

DR. RENÉ MUÑOZ

ADVOCATE FOR STUDENT RESEARCH



I spend time every fall semester visiting freshmen UNIV 103 seminars to speak with students about the importance of student-faculty research, or engaging in

other kinds of high-impact practices that get students involved with the academic life of the University. I stress that being at MU carries some very significant benefits that are not readily available at larger institutions, namely a faculty committed to creating opportunities for undergraduates to succeed in their time here, and to teaching the professional, social, and other skills necessary for undergraduates to build upon their success after graduation.

This commitment to undergraduate education manifests in a variety of ways, but I see it most clearly in the faculty's dedication to engaging students in research projects. Compared to large institutions, whether joint student-faculty projects or independent work accomplished with faculty supervision. These opportunities are relatively easy to find at Millersville. To illustrate this point when speaking to freshmen seminars, I like to tell the following story.

As an undergraduate, I attended the University of Texas at Austin UT. It was, and is, an enormous university. When I began, there were around 45,000 undergraduates, four times the size of my hometown. I was lost; I struggled through my first two years in enormous classes. The general education classes I took had well over 400 students, and any interaction with faculty was mediated by graduate students. The graduate students, of course, were there to lecture, grade, and complete dissertations. They weren't there to teach or mentor undergrads.

In my junior and senior years, my classes began to shrink, even though a "small" upper division class within my major could still have 100 students or more. I began sorting out what I wanted to do and how to do it. I remember clearly the experience of talking to a professor about joining his research project, an ethnographic survey of households in Oaxaca, Mexico. I was fluent in Spanish, had traveled in Mexico, and was doing well in his class. The answer was "no": graduate students would be doing the work, and there was no place for me.

This was my experience at the UT; I tried a few times to join faculty ethnographic or archaeological projects and was always turned down. But I don't think this would be a typical experience for an undergraduate at Millersville, and that's what I tell students. They are attending a university where the faculty are focused on them and on making sure that they receive the direction and support necessary for classroom success, as well as the practical training that will make them successful graduates. All they need to do is ask.

I am fortunate to find myself in a position to help students have the experiences that I didn't have as an undergraduate. I found academic success after leaving the University of Texas, and made an effort, as a graduate student and as a faculty member, to consistently engage undergraduates in my research. In my many roles here at MU – my duties as an administrator, my work with faculty submitting proposals to external agencies, my collaboration with students and faculty submitting and evaluating student grants, and my position as an organizer of Made in Millersville – it is gratifying to see the daily impact of research and other student-faculty engagement on student success.



Dr. Victoria Khiterer, Associate Professor in History, has recently published four books and several articles. Her new book, *Jewish City or Inferno of Russian Israel? A History of the Jews in Kiev before February 1917*, received the Choice Outstanding Academic Titles Award in 2017. She also published her book, *Jewish Pogroms in Kiev during the Russian Civil War, 1918-1920*.

Dr. Khiterer has involved several of her students in research and together with them prepared and published two volumes of the MU Conference on the Holocaust and Genocide proceedings: *Holocaust Resistance in Europe and America: New Aspects and Dilemmas* and *The Holocaust: Memories and History*.

Currently, Dr. Khiterer is working on her new monograph, *Echo of Babi Yar: Commemoration and Memorialization of the Holocaust in Kyiv*. She is organizing the 35th MU Conference on the Holocaust and Genocide, which will be held April 11-13, 2018, and its theme is "Holocaust and Genocide Trials."

Dr. Khiterer is also a founding member of the Scientific Council of the Babi Yar Holocaust Memorial Center (BYHMC) in Kyiv, Ukraine. She recently prepared four articles for the historical narrative for the future Babi Yar Holocaust Memorial Museum in Kyiv.

AIRBORNE RESEARCH

BY DR. RICHARD CLARK

In mid-November 2017, over 100 undergraduate and graduate students, and eight scientists-educators from four partnering mid-Atlantic universities including Millersville University, Pennsylvania State University, Rutgers University and University of Maryland, Baltimore County participated in a two-week deployment of the University of Wyoming King Air airborne platform funded by the National Science Foundation. Led by MU's meteorology program, this Student Experience in Airborne Research: Mid-Atlantic Region (SEAR-MAR) provided the opportunity for research, research training, and outreach activities to local schools (including an experience with 58 6th-graders at a local elementary school who saw the King Air fly over). The program also provided opportunities for more than 40 freshmen meteorology majors to tour the hangar and get an overview of the aircraft from the crew, and hosted a half-dozen STEM Sisters (a program sponsored by the North Museum of Nature and Science that engages middle and high school girls in the STEM fields).

The scientific objectives and experimental plans were designed to optimize education and engagement for students. The group intended to fly on every available day and take advantage of the airborne platform



for outreach activities when not flying. Students were able to study the fine structure of frontal systems, post-frontal mountain waves, cold pools in Appalachian valleys, methane emissions from mines, planetary boundary layer evolution in the mid-Atlantic coastal zone, and instrument comparison and calibration. Each day consisted of a 5-day forecast released by 9 a.m., with emphasis on the next day's flight operations, a pre-flight update three hours before take-off, and a noon-time update.

Overall, 48 students flew on 16 missions, and many of the participating students have already begun to analyze the aircraft and ground-based data

as they anticipate presenting their results at conferences. Managing a comprehensive multi-institutional collaborative project while classes are in session, participating in three video conferences each day, maintaining a ground-based facility, mentoring students, and arranging outreach activities and public relations with the regional news media demanded a marathon effort on the part of students and professors, but one that everyone would agree was nothing short of an exceptional authentic experience in research and research training for many students.

Timothy Keebler '19, Meteorology, University Honors College, explains that, during SEAR-MAR, students had the unique opportunity to design and conduct their own meteorological experiments complemented by ground instruments and soundings. Flights focused on instrumentation and analysis of regional weather features. Each flight carried three students. Keebler had the opportunity to direct a flight to ensure that his science objectives were accomplished, and to make decisions and modifications in-air. Keebler, along with 35 other MU students were able to fly, while many other students were involved in the planning, ground instruments and

soundings. A preliminary summary of the efforts was presented at the 2018 American Meteorological Society Annual Meeting in Austin, Texas; additional work with the project data will pave the way for Keebler's honors thesis, future conference presentations, and professional journal articles.

Robert Capella '18, Meteorology, prepared for the SEAR-MAR project by developing a climatology of frontal passage types that would likely affect the region during the project. To better understand how the local terrain influences large scale weather systems, he recreated the events with high resolution Weather Research and Forecasting (WRF) model runs. Overall, Capella believes his greatest takeaway from SEAR-MAR was the

immense amount of hands-on training he received, being able to create and visualize WRF model data, design experiments that were eventually flown, and participate in the routine functions

of a field project are experiences that drive his desire to pursue continued studies in observational meteorology. He adds that flying in the aircraft was pretty exhilarating.



From the left: Timothy Keebler, Shelby Fuller, Amanda Fritz (students), Thomas Drew (pilot)

WHERE ARE THEY NOW?



Tracy Barnett '14, History earned her M.A. in US History from the University of Southern Mississippi in 2017 and is currently a Ph.D. student at

the University of Georgia, studying the American Civil War under the direction of Dr. Stephen Berry. Her dissertation, tentatively titled "Armed, Drunk, and Dangerous: Southern Militiamen in the Civil War Era," examines the perceptions of militiamen in the confederacy and argues that mid-19th century militiamen based their wartime actions on their perceived role as white men, citizens, fathers, husbands, and loyal Confederates. Tracy has presented her research at the PA Historical Association and the Society for Military History's Annual Meeting. In 2018, she received the Society for Military History's Mark Grimsley Fellowship in Social Media.



Michael Zdilla '00, Biochemistry, University Honors College is an associate professor of Chemistry at Temple University in Philadelphia,

PA. Dr. Zdilla received his Ph.D. from Princeton University in 2005 and served as a Postdoctoral Researcher at Purdue University from 2005 to 2009. Since joining Temple in 2009, he has published 57 papers on the topics of synthetic and mechanistic inorganic chemistry and materials. He has received the National Science Foundation CAREER award, the Office of Naval Research Young Investigator award, the Camille Dreyfus Teacher Scholar award, was named the inaugural Robert L. Smith Early Career Chair in Chemistry at Temple University, and, in 2017, received the MU Young Alumni Achievement Award.



Nate Wardle '10, Meteorology, University Honors College is serving as the Press Secretary for the PA Department of Health. In addition to receiving his

Bachelor's degree in Meteorology from Millersville in 2010, he also returned to Millersville to earn a Master's degree in Emergency Management in 2013. He has previously worked as an emergency preparedness public information officer with the PA Department of Health, an assignment manager at CBS 21 in Harrisburg, and a fill-in meteorologist at CBS 21, Harrisburg and WJAC-TV, Johnstown. Nate returned to MU on March 1, 2018 to participate in the alumni panel, "Making the Transition to Professional Success: Practical Tips for Career Development", which was part of Career Week and the University Honors College's Beideman Mentoring Initiative.



STUDENT RESEARCH

Taylor Brandt '18, Psychology, has been collaborating with Dr. Vredenburg-Rudy to conduct research that focuses on understanding mechanisms related to a phenomenon called "compassion collapse", the tendency for less compassion to be shown toward multiple victims than is shown toward a single victim. His recent study, "Choosing Indifference: Avoiding the Cost of Compassion through Motivated Emotion Regulation," was presented in March 2018 at the Eastern Psychological Association annual conference in Philadelphia, PA. He is currently investigating factors that might reduce the effect of compassion collapse.



Taylor Brandt

Alyssa Cannistraci '18, Meteorology, University Honors College, says the highlight of her time at MU was her appointment to the National Oceanic and Atmospheric Administration (NOAA) Ernest F. Hollings Undergraduate Scholarship Program. Through this experience, she spent a summer in Oklahoma, the heart of tornado alley, where she studied society's perception of tornado risk. Such research was the foundation of her honors thesis, which analyzes how age, gender, and forecast type influence beliefs about tornado risk, and how these perceptions change over time as individuals are exposed to tornado events.

Cannistraci recently presented her research at the American Meteorological Society's 13th Symposium on Societal Applications: Policy, Research and Practice, as well as the AMS 17th Annual Student Conference, both in Austin, Texas. She is "incredibly thankful for the opportunities MU has provided and credits her professors, mentors, and friends for her undergraduate success." Upon graduation in May, she aspires to attend graduate school, become a research scientist, and continue to use research to better society on a local, national, and international scale.



Alyssa Cannistraci



Maddie Giardina

Megan Davis '18, Biology, University Honors College, is currently working under the direction of Drs. Horton, Wallace, and Haines on her honors thesis, "An Assessment of the Potential for the Bioaccumulation of Endocrine Disrupting Chemicals from Sediment and Water to Aquatic Insects." She plans to present her research at the Commonwealth of PA University Biologists' conference at Mansfield University in April 2018, and the Society for Freshwater Science's conference in Detroit, Michigan in May 2018. During the summer of 2016, Megan was an intern at Two Oceans Aquarium in Cape Town, South Africa. While working as an aquarist for three months, she assisted in rescuing, rehabilitating, and releasing sea life, as well as educating the public. She adds that, "living in another country allowed me to experience new people, places, and cultures, while gaining an education a classroom setting could never provide."

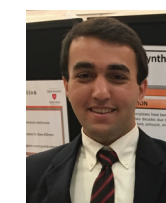


Shelby Fuller '18, Meteorology, University Honors College, completed a paid research internship for the Lancaster County Partnership for Public

Health in fall 2016. She researched the negative effects of surface ozone and particulate matter on human health and was tasked with presenting this research in a way that parents of children and caretakers of the elderly could easily understand so that they can better protect these at-risk age groups. This information is published on the Lancaster County Partnership for Public Health website so that the public has access to information about potentially deadly atmospheric pollutants.

Madeline Giardina '18, Biology and Science Writing, is interning with the River Stewards, a non-profit organization dedicated to educating the public about recreational and environmental issues surrounding the Susquehanna River. Her main goal is to document the river islands along the major branch

of the Susquehanna River. She is also participating in a program, "Storytelling for the River," in which she interviews businesses, recreational facilities, and individuals with significant connections to the river. Her job is to tell the stories of the river. She adds that this work has been "an honor," and she wants people to understand that many of us interact with the river every day, but do not understand the enormous impact we have on it.



Karam Idrees '18, Chemistry, completed his departmental honors thesis, "Green Chemistry, Catalysts for Transfer Hydrogenation Reactions," under the direction of Dr.

Edward Rajaseelan. Idrees synthesized and characterized several new iridium and rhodium catalysts with N-heterocyclic carbene ligands, and tested their catalytic properties in green chemistry reactions. His work has resulted in two publications in an international journal where he is listed as the first author. He presented his results at seven conferences, including some national conferences, and received a Chemical Sciences Award for his presentation at the annual Undergraduate Research Symposium held at the University of Maryland, Baltimore County. Idrees has also participated in two Research Experience for Undergraduates programs: in 2016 at North Carolina State University and in 2017 at University of Tennessee. He has been accepted at several universities to pursue a Ph.D. in chemistry in the fall of 2018.



Erin Lee '18, Social Work, conducted a study titled, "An Assessment of Racial Disparities in Bail Amounts in Lancaster County, PA," which was funded in part by the

Casselberry Student Research Award and was presented at the Eastern Sociological Society Annual Conference in February 2018. Lee served as the Walker Fellow at the Robert S. and Sue Walker Center for

Civic Responsibility and Leadership and also volunteers as a Making Peace facilitator through AdVoz in Lancaster.



Seth Martin '18, Biology, University Honors College, has been researching turtles in the lab of Dr. Judy Cebra-Thomas since June 2016. He started his own project analyzing the

types of cells that could arise from a stem cell-like, migrating cell population called neural crest cells (NCCs). Dr. Cebra-Thomas' lab focuses on a sub-population of NCCs found only in turtles, and this subset is thought to contribute to the bones of the shell. His most gratifying discovery was demonstrating that these NCCs are predisposed to bone formation, unlike similar chicken and human cells. His findings may have implications for the development of the human skull, which forms much like the turtle shell. Martin has presented this research at the regional meeting of the Society for Developmental Biology and at the PASSHE STEM conference. He also presented at the national Experimental Biology meeting in San Diego in April 2018. Funding for the project comes from Biology Student Investigator and Neimeyer-Hodgson grants.



Quinn Minnich '18, Math and Computer Science, University Honors College, completed a Research Experience for Undergraduates at Grand Valley State University in

Michigan where he contributed to research in equal circle packing on flat Klein bottles. The results were presented at MathFest 2017 in Denver, Colorado. More recently, Minnich finished his work on his honors thesis under the direction of Dr. Ronald Umble "An A-infinity Coalgebra Structure on a Polygon," which involved research on algebraic topology. Minnich and Dr. Umble are currently writing a manuscript of this research for publication. He calls his work on his thesis "a great experience", and he was grateful for the opportunity.

FACULTY INTERVIEW

Dr. Christine Filippone



What is the title and subject of your new book?

Science, Technology, and Utopias: Women Artists and Cold War America (2017) examines women artists' response to the preeminent status of science and technology during the Cold War. Artists like Alice Ayccock, Agnes Denes, Martha Rosler and Carolee Schneemann used science and technology to mount a critique of Cold War American society as they saw it – conservative and constricting – yet they simultaneously redeployed the products of “Technological Society” into works that promoted ideals of progress and alternative concepts of human community.

Can you describe your approach to research?

Art history employs the methods of history, literature, and sometimes philosophy. For me, it was very important

to situate the art, which included sculpture, photomontage, film, prints, performance, installation, ecological art, etc. within its historical and cultural context. To that end, I conducted extensive research on art of the period, using the art itself and contemporaneous documents written by the artists as primary sources. I also conducted lengthy interviews with each artist.

What drew you to write about “the conceptual use of science and technology” by women artists?

I am a feminist and a product of the Cold War, having watched Star Trek reruns and all things sci-fi throughout my childhood with my older brother and sister. I looked up to my brother who wanted to be a scientist. When I was 11 years old, I helped him build a cosmic ray detector in our living room. I think my interest in the ideas of science attracted me to conceptual art. After art, my passion is the history of ideas.

Has this research affected how you teach art history?

Absolutely. I teach Contemporary Art, 20th Century Art, the History of Photography and Women in Art through the lens of the histories of science and technology. I've also taught a graduate level seminar called Post-Humanism in 20th & 21st Century Art, which examines art works and movements, from early 20th century Futurism to 21st century eco-art, that question the theoretical basis of humanism and its historical applications.

How has your book contributed to the academic community?

My research examines the ways in which science and technology are embedded within American social discourse, how they reinforce social constructs, and how they affect women's lives and experience in particular. My book offers the first focused examination of the conceptual use of science and technology by women artists during and just after the women's movement. It will also be the first to place feminist aesthetic approaches to science and technology squarely within the cultural context of the Cold War period. My research is interdisciplinary, encompassing not only the history of art, but also the histories of science, technology, and feminism, as well as women's and gender studies. I also drew on scholarship in literary studies, especially utopias and science fiction.

What is the role of art in a ‘Technological Society,’ to use your phrase?

The term “technological society,” from the title of a 1964 book by philosopher Jacques Ellul, became the mantra of the New Left and the counterculture, characterizing the role of mechanism (self-operating causal relationships) as a controlling force in American Cold War society. More than an allegory for bureaucracy, the term encompassed military and communications technologies and commodity production that embodied “the system” (society as a whole) and perpetuated its ideals of control.

*Christine Filippone is Associate Professor of Art History. Last October, **Science, Technology, and Utopias: Women Artists and Cold War America** received the SECAC Award for Excellence in Scholarly Research and Publication.*