

Contact: Rachel Boon

**PROFESSIONAL DEVELOPMENT ASSIGNMENT REPORTS FOR FY2023**

**Action Requested:** Receive the professional development assignment reports submitted by the Regent universities for FY2023.

**Executive Summary:** Board Policy 2.1.R (a-e) directs the institutions to submit a yearly report of the completed professional development assignments, pursuant to the 2011 Iowa Act, Chapter 122 (HF 45).

In November 2021, the Board approved 98 professional development assignments for 2022-23. At ISU there were six approved PDAs for 2022-23 that are not included (1 deferral, 5 left the university). In addition, one previously deferred took his PDA in spring 2023. Four faculty at SUI who previously deferred an approved PDA completed their assignments in 2022-23 instead, while five approved for 2022-23 deferred to a future year and three faculty members ultimately declined their PDA award.

The estimated cost of the professional development assignment program was \$132,888 for 2022-23. Work done in by the faculty on these PDAs has already resulted in \$36.3M in grants and external funding. Other grant proposals submitted because of this work have a cumulative value near \$60M. Much of this grant money supports graduate students who engage with faculty on this work, funds associated travel, provides salary replacement for the researchers, support costs for research subjects, and is used to purchase equipment or other materials, often from Iowa businesses. Viewed strictly in terms of financial impact, this work represents a massive return on investment for the state of Iowa.

Other results include articles published or in review, many academic and public presentations, dozens of book chapters or entire books in development or submitted, creative works completed or performed, students mentored, and many courses updated or new courses developed.

A brief description of each professional development assignment completed in FY23 is available in this report, including information about the value added to the students, university, and state from the assignments. This report aligns the Board of Regents Strategic Plan emphasis on excellence in teaching and research, economic development, and positive impact on the state of Iowa.

**Iowa State University**

**ADAMS, DEAN**, Distinguished Professor, Ecology, Evolution and Organismal Biology, 22 years of service, full academic year

*Title:* Deciphering the Repeatability of Evolution in Vertebrates

Professor Adams explored whether changes among vertebrates are consistent across diverse environments during his assignment. Results included the preparation and submission of four manuscripts, as well as an invited talk at the University of Barcelona. The work will also be incorporated into Adams' courses on vertebrate biology, macroevolution, and biostatistics.

**ADELEKE, R TUNDE**, University Professor, History/African and African-American Studies, 17 years of service, spring 2023

*Title:* Integrating African American/Diaspora Studies into American Studies in Europe: Case Study of Hungary

Professor Adeleke spent his assignment in Hungary as the Fulbright Laszlo Orszagh Distinguished Chair, employing African American history to explore the growing diversification and complexity of European societies. Adeleke, who received \$22,000 in support for his scholarship, delivered lectures across Hungary as the Orszagh Chair, and also was invited to participate in a presentation on these issues in Germany.

**ANDREWS, JAMES THOMAS**, University Professor, History, 26 years of service, full academic year

*Title:* Iconic Metropolitan: Mass Mobility, Architectural Visions, and the Politics of Public Space in Modern Russia

Professor Andrews worked on a book project that examines the history of the Moscow Metro. The project was awarded a prestigious Woodrow Wilson Center for International Scholars grant, as well as a Research Scholar Grant at the Hoover Institution for War, Peace, and Revolution at Stanford University. Additional outcomes included publication of a book chapter, organized an online roundtable on the history of Russian science and technology, and content for numerous Iowa State courses.

**ARNDT, GRANT**, Associate Professor, World Languages and Cultures, 15 years of service, full academic year

*Title:* Against Termination: Cosmopolitan Indians, Action Anthropologists, and the Emergence of Indigeneity

Professor Arndt used the assignment to work on a book manuscript focused on Sol Tax and Nancy Lurie, two anthropologists who undertook collaborative projects with American Indian communities in Chicago and Wisconsin in the mid-20th century. The work will also be incorporated into Arndt's Iowa State courses on American Indian Culture and politics, and also resulted in a \$60,000 National Endowment for the Humanities funding proposal.

**BHATTACHARYA, JOYDEEP**, Professor, Economics, 24 years of service, October 2022-August 2023

*Title:* Discrimination in Labor Markets

Professor Bhattacharya's assignment focused on discrimination by the Hindu majority workforce against minority Muslim employers within the context of rural labor markets in India. Outcomes include published and four submitted journal articles, serving as guest editor for a special issue of *Indian Economic Review*, and work on several other projects with Iowa State and international collaborators.

**DOYLE, SHELBY**, Associate Professor, Architecture, 8 years of service, fall 2022

*Title:* Symposiis (Making With): Architecture & Robotic Construction

Professor Doyle's assignment, supported by the Canadian Centre for Architecture and the Mellon Foundation, examined how digital tools are recorded, described, and produced in architecture. Outcomes included several conference presentations, new content for Iowa State design courses, \$84,000 in external funding, and a pending proposal for \$160,000.

**EISMAN, APRIL**, Associate Professor, Art and Visual Culture, 16 years of service, full academic year

*Title:* Painting Women in East Germany: Five Artists in a Socialist State

Professor Eisman completed a draft of her book manuscript examining the life and work of five of East Germany's most successful female artists, which was supported by a \$38,000 Fulbright Scholar Award. Other outcomes included a journal article, book chapter, conference presentations, and the development of material for Iowa State art history courses.

**FOX, RODNEY**, Distinguished Professor, Chemical and Biological Engineering, 25 years of service, full academic year

*Title:* Fulbright-Tocqueville Distinguished Scholar Award – Innovative Moment-Based Multiphase Flow Models for Renewable and Clean-Energy Production

Professor Fox received a Fulbright-Tocqueville Distinguished Scholar Award to address the global challenge of developing renewable and clean energy sources. Outcomes of this work included 12 journal articles, 26 invited lectures, \$170,000 in external funding, and submission of an NSF funding proposal.

**GILBERT, STEPHEN**, Associate Professor, Industrial and Manufacturing Systems Engineering, 11 years of service, January – December 2022

*Title:* Culturally-Oriented Human Agent Teams

Professor Gilbert visited the Namibia during his assignment, where he worked with colleagues in the area of human-computer interaction and led innovation workshops to promote entrepreneurship among students and faculty. Outcomes of this work included the development of student and faculty exchanges, a journal paper, \$200,000 in funding from the U.S. State Department, and content for Gilbert's course in agri-tech innovation.

**GREVSTAD-NORDBROCK, THEODORE ERNST**, Assistant Professor, Community and Regional Planning, 8 years of service, fall 2022

*Title:* The Social Impacts of Heritage Policy: Gentrification and Displacement in Oslo

Grevstad-Nordbrock earned a \$12,500 Fulbright scholar award to support his assignment, examining how governmental heritage preservation policies impact cities. Outcomes of this work included the preparation and submission of three papers, and new content for Iowa State courses in community and regional planning.

**HADDAD, MONICA**, Professor, Community and Regional Planning, 20 years of service, spring 2023

*Title:* Networking for Climate Justice: Collaborations between Iowa State University and the United Kingdom

Professor Haddad examined climate change and community engagement in the global south during her assignment, including how cities in Brazil, India, and South Africa are addressing climate adaptation, and collaborated with colleagues in the United Kingdom. Outcomes included authorship of a \$2.2 million multi-institution, multi-nation funding proposal, and a new affiliation with the School of the Built Environment at Oxford Brookes University.

**HERZOG, DAVID**, Associate Professor, Mathematics, 8 years of service, full academic year  
*Title:* Smoothing and Stabilizing Structures in the Stochastic Navier-Stokes Equations and Related Systems

Professor Herzog worked to understand the large-time behavior of solutions of stochastic ordinary differential equations, with collaborators from Duke University, Tulane University, and the University of Virginia. Results include the preparation of three manuscripts, three invited lectures, content for Herzog's graduate courses, and \$287,000 in external funding from the NSF and Simons Foundation.

**KIM, STEPHEN**, Professor, Marketing, 17 years of service, fall 2022

*Title:* Unpacking the Black Box of Franchising Success

Professor Kim conducted a multi-level, multi-method study of fast food franchising during his assignment, which will provide valuable information for both franchisors and customers. Outcomes included two publications on franchising, the preparation and submission of six additional papers, a conference presentation, and content for Iowa State courses on omnichannel marketing and sales and distribution strategy.

**LEE, SAM**, Associate Professor, Accounting, 9 years of service, spring 2023

*Title:* Managerial Ability, Corporate Social Responsibility, and Accounting Informativeness

Professor Lee's assignment explored the relationship between corporate social performance and overall firm performance. This work is expected to lead to high-quality publications in premier accounting journals and enhance Iowa State accounting courses.

**MARQUART, DEBRA**, Distinguished Professor, English, 29 years of service, spring 2023

*Title:* "Things Go Boom in the Bakken: Dispatches from an Oil Patch" – A Work of Docu-Poetics and Research Nonfiction

Professor Marquart, former Iowa Poet Laureate and Fellow of the Academy of American Poetry, used her assignment to conduct research in North Dakota for a book-length work of the same title. Other outcomes included participation in numerous poetry festivals, completion of a new book, *Gratitude with Dogs Under Stars: New & Collected Poems*, submission of poems for publication, and lectures at four Iowa libraries as part of the Humanities Scholar Program.

**MARSHALL, JOANNE**, Professor, School of Education, 20 years of service, January-December 2022

*Title:* Definitions and Models of Culturally Responsive Teaching Practices in Namibian Teacher Preparation

Professor Marshall was awarded a Fulbright U.S. Scholar grant to the University of Namibia to examine culturally responsiveness practices of teachers and faculty. Outcomes included a \$200,000 funding award from the U.S. State Department, one journal article, two conference presentations, coordination of a research workshop, and a book editing project with Namibian colleagues.

**NORDMAN, DANIEL**, Professor, Statistics, 18 years of service, full academic year

*Title:* Resampling and Empirical Processes for Complex Data

Professor Nordman conducted research on resampling methods for data "re-use," empirical process theory, and matching records from different databases. Outcomes of this work included publication of three manuscripts in top statistics journals, preparation and submission of 12 additional papers, and content for a new course in empirical processes.

**OBERHAUSER, ANN**, Professor, Sociology and Criminal Justice, 8 years of service, fall 2022  
*Title:* Advancing Scholarship in Gender and Development

Professor Oberhauser's assignment involved work on several projects, including collaborations with Iowa State colleagues in the community and regional planning, architecture and psychology. These efforts resulted in the publication of a co-edited book and co-edited journal special issue, two submitted papers, a keynote conference presentation, contributions to numerous Iowa State courses, \$10,000 in external funding, and a \$452,000 funding proposal.

**OCKEY, GARY**, Professor, English, 9 years of service, full academic year  
*Title:* Second Language Assessment

Professor Ockey completed substantial portions of a book during focused on current theory and best practice in the field of second language assessment, expected to be published in 2024. The book is expected to impact the quality of second language learning throughout the world by providing guidance for those who develop and use assessments. Other outcomes included a special issue for a journal, a book chapter, five conference talks, a workshop, and additional content for Ockey's Iowa State graduate course.

**PARSHAD, RANA**, Associate Professor, Mathematics, 5 years of service, fall 2022  
*Title:* Manipulating Competition for Invasion

Professor Parshad worked with colleagues to employ differential equation theory and niche theory to devise new control tactics for invasive species such as soybean aphids, which can damage up to 20% of crop yield. This work resulted in three publications, three conference presentations, additional content for Iowa State mathematics courses, and \$553,000 in USDA funding.

**PASSE, ULRIKE**, Professor, Architecture, 17 years of service, fall 2022  
*Title:* Sustainable Regional Systems Research Network Proposal to the U.S. NSF

Professor Passe led work on a multi-institution NSF grant, funded just before the beginning of the assignment, to examine the interconnected social, ecological, and technological challenges at the urban-rural interface within the Mississippi River Basin. Outcomes included numerous collaborations with research partners, material for an upcoming book proposal, conference presentations, and new material for Iowa State graduate courses in architecture.

**PREMKUMAR, SHOBA**, Teaching Professor, Finance, 20 years of service, fall 2022  
*Title:* Textbook on "Fintech and Crypto Currency"

Professor Premkumar completed his textbook during the assignment, with publication in spring 2023. The book addresses topics needed for new Iowa State courses on fintech and cryptocurrencies, as well as a graduate degree in the discipline, currently in development.

**REBER, JACQUELINE**, Associate Professor, Geological and Atmospheric Science, 8 years of service, fall 2022

*Title:* Extending Scholarship and Grant Funding on Semi-Brittle Deformation Dynamics  
Professor Reber worked to better understand the generation of earthquakes during the assignment. Outcomes of this work included two publications, two invited presentations, participation in an NSF proposal review panel, and a \$525,000 NSF funding proposal.

**ROZIER, KRISTIN YVONNE**, Associate Professor, Aerospace Engineering, 7 years of service, fall 2022

*Title:* Robot Resilience Sparked by Creative Constraint Satisfaction  
Professor Rozier conducted research at Carnegie Mellon University during her assignment, focused on making robots more resilient in dynamic, dangerous environments. Outcomes of this

work included four invited talks, a peer-reviewed publication, new material for Iowa State engineering courses, \$91,000 in new funding, and \$200,000 in pending proposals.

**RUTENBERG, AMY**, Associate Professor, History, 8 years of service, fall 2022

*Title:* In the Service of Peace: Peace Activism and Military Service in Post-Vietnam War America  
Professor Rutenberg made substantial progress on her book by the same title, which will also form the basis for scholarly articles and grant proposals. This work will also support several existing Iowa State history courses related to U.S. and military history.

**SCHALINSKE, KEVIN**, Morrill Professor, Food Science and Human Nutrition, 24 years of service, spring 2023

*Title:* Role of B-vitamins in the Prevention and Treatment of Chronic Disease

Professor Schalinske engaged with colleagues from the Nutrition Innovation Centre for Food and Health in Northern Ireland to examine how B-vitamins can best be deployed to treat and prevent disease. Outcomes included the development new collaborative research projects and content for Iowa State courses in food science and human nutrition.

**SHANKAR, SUBRAMANIAM**, Professor, Mechanical Engineering, 21 years of service, spring 2023

*Title:* Advanced Multiphase Models for Simulation of Biofuel Production

Professor Shankar developed advanced models for biofuel production during his assignment, based upon research from his laboratory. This work included the submission of six external funding proposals worth approximately \$3 million, supercomputer time from the U.S. Department of Energy, a journal paper, and improvements to Shankar's graduate courses.

**SUN, HUA**, Associate Professor, Finance, 9 years of service, spring 2023

*Title:* A Machine-Learning Approach to Examining Coopetition among Corporate Scientists and Firm Innovation Outcomes

Professor Sun examined how simultaneous competition and collaboration – “coopetition” – among research and development employees impacts innovation at each firm. Outcomes include a model to form the basis for additional research, and the development of content for Sun's undergraduate and graduate courses.

**TYE-WILLIAMS, STACY**, Associate Professor, English/Communication Studies, 13 years of service, spring 2023

*Title:* Workplace Bullying: An Investigation of Intervention Strategies and Conflict Communication Book Proposal

Professor Tye-Williams finalized a book proposal during her assignment. This work also resulted in the development of a research proposal on workplace bullying interventions, a chapter for a separate book on stay-at-home fathers, a symposium presentation, and will be incorporated into her Iowa State courses on organizational communication and small group communication.

**VALENZUELA, NICOLE**, Professor, Ecology, Evolution and Organismal Biology, 19 years of service, full academic year

*Title:* Co-evolution of Recombination Rates and Repetitive DNA in Turtles

Professor Valenzuela analyzed turtle genome sequencing with colleagues in Spain during her assignment. This work resulted in two papers, five presentations, and support for Iowa State courses in evolutionary biology and herpetology. Valenzuela received \$15,000 in National Science Foundation funding to support her travel; she also submitted more than \$1.9 million in external funding proposals.

**WANAMAKER, ALAN**, Professor, Geological and Atmospheric Sciences, 14 years of service, fall 2022

*Title:* Developing Isotope Baselines in the Gulf of Maine in the Context of Environmental Change  
Professor Wanamaker collected and measured the composition of phytoplankton, zooplankton, and mollusk shells across the Gulf of Maine coastal system, which is undergoing rapid environmental change. This work resulted in five conference presentations, support for Wannamaker's Iowa State environmental science courses, and \$145,000 in NSF funding.

**WEINSTEIN, AMANDA**, Associate Professor, Physics and Astronomy, 13 years of service, fall 2022

*Title:* Augmenting Studies of Cosmic-Ray Acceleration and Diffusion with Novel Optical Polarimetry

Professor Weinstein worked with colleagues at the California Institute of Technology and University of Crete to better understand the cosmic phenomena that bombard our atmosphere with charged particle radiation. This work resulted in a new research project to catalog and analyze stars, which includes an Iowa State undergraduate student. Weinstein also participated on a temporary National Science Foundation/Department of Energy advisory panel to prioritize investment in particle physics research over the next 10 years.

**WELK, GREGORY**, Professor, Kinesiology, 23 years of service, spring 2023

*Title:* Fostering Clinical/Community Partnerships for Health

Professor Welk developed collaborations between the ISU Translational Research Network (U-TuRN) and CHPcommunity, a non-profit that coordinates clinical-community partnerships across Iowa through the Iowa Community Hub. This work, which was awarded \$1.5 million from the NIH to promote public health strategies to address arthritis, was disseminated through the Hub and also ISU Extension and Outreach county extension offices.

**WU, ZHIJUN**, Professor, Mathematics, 23 years of service, fall 2022

*Title:* Modeling Evolution of Social Cooperation in Biological Populations

Professor Wu's assignment focused on evolutionary game theory, to better understand social cooperation in multilingual human societies. This work resulted in two published/submitted papers, nine presentations, and support for two Iowa State mathematics courses. Support for Wu's travel was provided by the Simons Foundation.

**ZHU, ZHENGYUAN**, Professor, Statistics, 14 years of service, fall 2022

*Title:* All Data Approach for Official Statistics and Environmental Statistics

Professor Zhu developed new collaborations with the USDA, Census Bureau, and University of Virginia during the assignment, focused on reducing data collection costs and enhancing usage of data through machine learning. The results of this work including the publication of 13 papers, 10 invited presentations, support for three Iowa State statistics courses, \$1.25 million in new external funding, and an additional \$1.94 million in submitted/pending proposals.

**University of Iowa**

**AMIR, RABAH**, professor, Economics, 11 years of service, Spring 2023

*Title:* Game Theory: Teaching and Research

Prof. Amir completed a first draft of an introductory textbook on game theory with coauthor Igor Evstigneev, University of Manchester, U.K., aimed at advanced undergraduate and first year graduate students. Prof. Amir revised five research papers that were accepted for publication or published in good to high-quality journals; completed a research paper on a new topic (evolutionary game theory) that was accepted for publication in a high-quality journal; completed four new research papers, three of which are joint work with his PhD student Jingwen Tian, which are now under (or nearing) submission. The research papers contribute to the relevant economics literature and, for most of them, also to the associated policy debates.

**ANDERSON, BJORN P**, associate professor, Art & Art History, 11 years of service, Spring 2023

*Title:* The Hoover Fakes: How Defrauding a Presidential Library Exposed the Brazen Sale of Forged Antiquities

This project allowed Prof. Anderson to make significant progress on a book about the defrauding of the Herbert Hoover Presidential Library and Museum in April 2019, when it cancelled a planned exhibition because the loaned objects were demonstrated to be forgeries. It documents how the investigation of these forgeries contributed to the indictment of the owner of an antiquities gallery in New York City, who was arrested following a dramatic raid in August 2021. The project resulted in a book, titled *The Hoover Fakes: How Defrauding a Presidential Library Exposed the Brazen Sale of Forged Antiquities*. Prof. Anderson, worked with a graduate student to lead the initial investigation, and the book's account of their work will benefit the school, the university, and the state of Iowa as it shows how careful art-historical research helped the Hoover avoid a major embarrassment and also provided important evidence that helped law enforcement shut down a large-scale forgery operation. The subject matter will be included in the curriculum of at least two Art History courses.

**ANKRUM, JAMES A**, associate professor, Biomedical Engineering, 8 years of service, Spring 2023

*Title:* Scaffold Design for Translational Regenerative Medicine Applications

Regenerative medicine is a rapidly developing field that lies at the intersection of biology and engineering by often combining biomaterials with progenitor cells to grow functional tissues. During his PDA, Prof. Ankrum completed a Fulbright Scholar Award at the Royal College of Surgeons of Ireland and Trinity College Dublin. Through this experience, he was able to broadly present his work, learn new techniques to drive future research applications and write papers and proposals that set the stage for the next 5 years of his research program. In addition, Prof. Ankrum gained exposure to cutting-edge techniques within regenerative medicine that will allow him to update his course curriculum, specifically his course on Research Methods in Cellular Engineering. Finally, Prof. Ankrum's long list of talks and seminars in Ireland, Great Britain, and France introduced UI to new audiences and will likely attract new visiting scholars and collaborative research initiatives for years to come.

**ARNOLD, MARK A**, professor, Chemistry, 41 years of service, Spring 2023

*Title:* Advanced Spectroscopic Sensors for the Next Generation Artificial Pancreas

Prof. Arnold's objective of this research program was to develop chemical sensors for monitoring glucose and other biomarkers in people with diabetes. Novel photonic-based optics were assessed for such sensing applications. Results demonstrated accurate measurements in a series of sample designed to mimic human skin. An unforeseen collaboration with staff at FIND



(Foundation for Innovative New Diagnostics) led to an evaluation of glucose-sensing technologies for low- and middle-income countries as well as an opportunity to deliver a presentation to the World Health Organization. Prof. Arnold's accomplishments include a) co-authoring guidelines and recommendations for laboratory analysis for diabetes, b) co-authoring a review of noninvasive glucose sensing products under development in companies, c) writing an editorial in the Journal of Diabetes Science and Technology, and d) contributing on three large center-like grant applications.

**BARNHARDT, CASSIE L**, associate professor, Educational Policy and Leadership, 11 years of service, Fall 2022

*Title:* The Educational Climate for Civic Empowerment: Projects to Advance a Theory and Support Organizational Reform

The USAID co-creation that Prof. Barnhardt completed during her PDA process was a success. UI signed a 5-year grant to be the implementing partner for a Cooperative Agreement with USAID -Kosovo. Prof. Barnhardt is the PI and the Project Director for the Private Sector Partnerships to Strengthen Higher Education Activity. While UI is the prime implementing partner for USAID, it is also closely collaborating with Iowa State University to bring the unique assets of each university to the Kosovo partnership, and engaging local expertise with the involvement of the Kosova Education Center. Both Iowa State and the Kosova Education Center are sub-awardees on the grant. The activity's objectives and interventions will ensure that Kosovo university students have curricular and applied experiences that translate to professional success for themselves and their employers. A centerpiece of this activity involves deepening connections between industry experts and partner universities, with a focus on Information and Communications Technology (ICT) and agricultural study programs to meet the needs of the labor market.

**BORRECA, ARTHUR R**, associate professor, Theatre Arts, 34 years of service, Fall 2022

*Title:* Working the Action: Dramaturgy in Theatre, Politics, and Life

The essay collection, Working the Action: Dramaturgy in Theatre, Film, Politics, and Life, builds on Prof. Borreca's work as a dramaturg (critical advisor to theatre artists) and scholar of dramaturgy, exploring new play dramaturgy, screenwriting poetics, political dramaturgy, and the personal "drama" of adoption. Completed work included research for three essays, the draft of an Introduction, and outlines of two essays and a book proposal; as well as a separate essay to accompany publication of a play, Celestial Bodies by Prof. Lisa Schlesinger; and an invited online keynote address, "The Drama of Violence and Redemption," for a conference in Pakistan. Aspects of Prof. Borreca's research are being incorporated into his syllabi for MFA courses in Playwriting and Dramaturgy, as well as in courses for undergraduate majors and first year students.

**CANAHUATE, GUADALUPE M**, associate professor, Electrical and Computer Engineering, 12 years of service, Fall 2022

*Title:* Interpreting Patient Reported Outcomes through Machine Learning and Data Visualization  
Prof. Canahuate was a visiting scholar at the University of Illinois-Chicago Computer Science Department for her PDA. Following closely the outline of her proposal, she focused on the interpretation of longitudinal patient reported outcomes (PRO) repositories to predict treatment-induced toxicities on and after treatment for head and neck cancer (HNC) patients. The objective of this project was to develop a machine learning methodology and relevant visualizations to interpret HNC PROs to inform individual treatment and care decisions related to survival outcomes and quality of life. This report summarizes the activities and accomplishments achieved during this award and their implications in future research and teaching endeavors.

**CARMICHAEL, GREGORY R**, professor, Chemical & Biochemical Engineering, 45 years of service, Spring 2023

*Title:* Using Digital Twins to Make Cities More Sustainable and Resilient

Prof. Carmichael used his PDA to develop approaches to help better understand air pollution and climate change impacts on human and ecosystem health. Climate change is one of the most important threats to human health today, with impacts felt disproportionately by children, the elderly, and those with underlying health conditions. He developed machine learning models that fuse information on air pollution from observations with model-based air pollution predictions. Several papers related to his PDA have already been published. The work conducted during his PDA has led to a new research direction focused on better understanding linkages between air pollution, climate change and health. A new pilot study on health impacts of biomass burning smoke on respiratory infections in the West and Midwest US has started and a NIH proposal is under development. He plans to integrate his PDA experiences into his engineering courses, and to develop new courses and seminars as contributions to the newly proposed campus-wide undergraduate certificate called Applied Climate Science and Energy Technologies.

**CATES, DIANA F**, professor, Religious Studies, 33 years of service, Fall 2022

*Title:* The Concept and the Morality of Hatred

Prof. Cates wrote an introduction and completed extensive revisions on four of five total chapters for a book on the concept and the morality of hatred, which will be a contribution to the field of religious ethics. In addition, she published two unplanned articles on related topics (hatred in US politics; hatred and human dignity), which will extend her scholarly influence to new and larger audiences in anticipation of the publication of her book. Regarding teaching, the award has led to significant revisions of her online lectures related especially to hatred, love, respect and compassion as forms of moral judgment, volition and emotion. Regarding contributions to the state of Iowa or society generally, her book will help readers to identify resources in the Thomistic ethical tradition for understanding the nature and moral significance of hatred and the responsibility that moral agents have to moderate their hatred in accordance with a set of closely related virtues.

**CHENG, CHI-LIEN**, professor, Biology, 33 years of service, Fall 2022

*Title:* Evolution of Reproductive Development in Land Plants

Prof. Cheng's lab discovered that the transition from somatic to reproductive cell identity in ferns (which have no flowers) and flowering plants are both regulated by the EMS1 gene. Most interestingly, in the model fern *Ceratopteris*, vegetative leaves become reproductive (bearing spores) when expression of the EMS1 gene is knocked down. The flowering plant mutants defective in EMS1 do not have a comparable phenotype. She developed a collaborative proposal about reproductive transition in vascular plants with Dr. Ambrose at the NYC Botanical Garden and submitted a grant proposal to NSF. With her graduate and undergraduate students, Prof. Cheng wrote and published a manuscript. She was invited to present this discovery at the ASPB annual conference. The PDA enabled the reorganization of an undergraduate course she teaches and facilitated her teaching graduate and undergraduate students in her research lab.

**CHOI, INYONG**, associate professor, Communication Sciences & Disorders, 8 years of service, Spring 2023

*Title:* Treating Hearing-in-noise Difficulties

Understanding speech in everyday noisy situations is difficult for most hearing-impaired listeners. Simply amplifying sounds does not ease such speech-in-noise understanding. Only target speech needs to be amplified while all other unwanted sounds are attenuated, as typically-hearing listeners' brains do every day. However, such a selective amplification technique does not exist

yet. Prof. Choi's aims during his PDA were to develop treatment options for hearing-in-noise difficulties. The major outcome of his project during PDA was a clinically applicable, immersive, and evidence-based rehabilitation paradigm that improves auditory cognitive processes for selectively enhancing brain encoding of target speech and suppressing unwanted noises. His project resulted in two journal articles, a funded grant application, and multiple invited presentations. The project outcomes created new chapters for his undergraduate and graduate-level courses. The outcome of this project will benefit a large population of society as it addresses a highly prevalent health issue.

**COOPER, BENJAMIN J**, associate professor, Mathematics, 8 years of service, Fall 2022

*Title:* A Project on the Structure of Skein Algebras

Prof. Cooper's PDA facilitated project completion, new research and networking. Three talks were given, aiding the publication of "Formal Contact Categories", an article with J. Sussan and Y. Qi and an article with students. New projects were initiated and student meetings held, leading to subsequent graduations. Prof. Cooper also gathered teaching references for undergraduate geometry instruction.

**CUNNING, DAVID**, professor, Philosophy, 20 years of service, Spring 2023

*Title:* Spinoza on the Obstacle that is Language

Prof. Cunning wrote three scholarly articles on Spinoza, and submitted them to prestigious academic journals. He completed and published his Descartes book. Prof. Cunning completed the draft manuscript, index and final copy-editing and corrected page proofs. He presented papers at three conferences. Prof. Cunning's work is extremely accessible to a non-academic reader, and he writes on topics that are highly applicable to everyday life -- for example questions about freedom and about what we do and do not owe each other. The Descartes book treats those questions, and Prof. Cunning plans to teach a course on topics in the book at the Johnson County Senior Center. The three Spinoza articles will inform his teaching on Leibniz and Spinoza.

**DE LA PEÑA, GEORGE R**, professor, Dance, 18 years of service, Spring 2023

*Title:* Tradition and Transgression: Learning from Visionary Artists (Again)

Prof. DelaPeña completed additional research during his PDA on current and former trends of avant-garde art-making. This included work presented at Ellen Stewart's LaMama Experimental Theatre Club in both New York City and Spoleto, Italy, as well as viewing work at the Baryshnikov Arts Center. In addition to writing about this new work, he is also writing a detailed account of his depiction of artist Vaslav Nijinsky for the 1980 film: Nijinsky. Set in early 1900s Paris, the film explores a time of extraordinary departure from tradition in art-making. The impresario Diaghilev established an atmosphere that encouraged daring creativity, launching one of the richest movements in performing arts history. Those practices were life-changing then, they were for Prof. DelaPeña in 1980, and continue to be in 2023. His book will illustrate how establishing a "community of innovators" is key to bold art-making.

**DING, HONGTAO**, associate professor, Mechanical Engineering, 11 years of service, Spring 2023

*Title:* Laser-based Fabrication of Tunable Terahertz Metamaterials

Prof. Ding used his PDA to advance his laser-based surface engineering research. Notably, three proposals materialized: (1) novel dynamically tunable metamaterials for terahertz spectroscopy, (2) laser-induced surface wettability patterning for air bubble control in water flows--targeting ONR funding with NSWC-Carderock, and (3) enhanced corrosion resistance in lightweight metal alloys through laser surface processing with PNNL and NSWC-Carderock. These results were disseminated in journals and conferences, bolstering upcoming grant applications.

**DUTTA, ANIRUDDHA**, associate professor, Gender Women and Sexuality Studies, 10 years of service, Fall 2022

*Title:* Travails in the Hinterland: Lagan, Gender and Caste in North India

Prof. Dutta used the PDA to both conduct research on their PDA project on lagan and to complete their previous book project "Globalizing through the Vernacular: Kothis, Hijras and the Making of Queer and Trans Identities in India." Prof. Dutta found that the practice of lagan - trans people employed to dance at weddings in North India - had not fully recovered from the pandemic's economic impact, reducing fieldwork opportunities. Thus, Prof. Dutta conducted ethnographic research on lagan as much as possible, while utilizing part of the time to complete their book, also delayed by the pandemic. The PDA yielded one published book chapter on lagan, one journal article in progress, and one book manuscript under contract. This research will feed into Prof. Dutta's courses on Transnational Sexualities and Transgender People, Politics and Cultures. More broadly, the PDA research contributes to a culturally diversified understanding of transgender performance, gender-based labor and exploitation in marginalized world regions, bringing an enhanced transnational understanding of gender and social.

**EBERL, DANIEL F**, professor, Biology, 25 years of service, Halftime for academic year

*Title:* Genetics of Mosquito Hearing

By their transmission of diseases, mosquitoes are responsible for more human deaths than any other animal. Prof. Eberl conducted research in Japan on hearing in the yellow fever mosquito, aimed at understanding potential gene targets by which to disrupt courtship and mating. This research allows him to establish a new research direction in his lab and provides preliminary results for new grant applications, including one outline proposal already submitted. Based on his experience with fruit flies, he established methods for generating new mutations in mosquito genes associated with hearing, and he set up equipment and computer scripts for measuring mechanical, physiological, and anatomical properties of the mosquito's antenna which serves as its hearing organ. Prof. Eberl published one paper and submitted three additional manuscripts, with some of his students as co-authors. He will incorporate the research findings into his courses, including the new Animal Behavior laboratory course that he developed during this time.

**FILIOS, DENISE K**, associate professor, Spanish & Portuguese, 24 years of service, Halftime for academic year

*Title:* Stories of the Conquest: Landscapes of Identity in Medieval Iberia

During her PDA, Prof. Filios conducted research for a book about medieval cultural itineraries in Spain. Spanish heritage tourism is a booming industry, with medieval-based walking routes, such as the Way of St. James pilgrimage route, attracting a significant niche market of national and international tourists. Drawing on critical tourism studies, phenomenology, history and religious studies, this project explores how Christian, Islamic and Jewish heritage walking routes represent medieval Spanish history and facilitate or impede a sense of belonging to the modern Spanish nation, especially for religious and ethnic minorities. Through this work Prof. Filios will make a significant contribution to the fields of critical heritage tourism studies and medieval Spanish studies, and bring to Iowa expertise that she will share in her scholarship and teaching.

**FREEMAN, JOHN H**, professor, Psychological and Brain Sciences, 25 years of service, Fall 2022

*Title:* Cognitive Functions of the Posterior Cerebellum

Prof. Freeman's project examined cognitive functions of the posterior cerebellum. People with cerebellar pathology have deficits in various cognitive functions. Prof. Freeman and his students used an animal model to discover the specific cognitive functions of different parts of the posterior cerebellum to gain a more mechanistic understanding of how cerebellar pathology leads to cognitive deficits in humans. A goal of this research is to provide foundational information for

developing treatments for cognitive deficits in people with cerebellar damage. Research during the PDA resulted in a grant application to the National Institutes of Health and a journal article. Prof. Freeman's graduate and undergraduate students participated in this project and thereby receive valuable research training. The results of this project have also added to the content of Prof. Freeman's Neuroscience of Learning course.

**GLANVILLE, JENNIFER**, professor, Sociology, 22 years of service, Halftime for academic year  
*Title: Uncovering the True Relationship between Diversity and Generalized Trust*  
During the PDA, Prof. Glanville learned new techniques for analyzing data, collected original and administrative data, analyzed data, drafted manuscripts, and contributed to a successful external grant proposal submission. These activities advanced two major research streams: (1) understanding the relationship between diversity and trust and (2) evaluating the impact of public libraries on community well-being, including trust. Trust is critical to well-functioning communities. Thus, understanding the factors that influence the development of trust has important implications for public policy in the state of Iowa and beyond. The PDA also contributed to Prof. Glanville's teaching. She prepared a new undergraduate course, which included developing new techniques to increase student engagement, and revised a graduate-level course.

**GOLLNICK, BRIAN**, associate professor, Spanish & Portuguese, 24 years of service, Fall 2022  
*Title: Mexico in the Imagination of Dr. Atl*  
This PDA facilitated Prof. Gollnick's progress on a book about the Mexican landscape painter Gerardo Murillo (1875-1964), known as Dr. Atl. Dr. Atl was a prolific writer and a fascist sympathizer. Prof. Gollnick reads Dr. Atl's output through his politics, triangulating European and US political influences. Prof. Gollnick concludes that antisemitism was a primary factor in Dr. Atl's politics rather than an aftereffect of his interest in fascism. This research will help students Prof. Gollnick's class on Modern Mexico understand post-revolutionary Mexican nationalism. It will provide a concrete example of how the Mexican government promoted artists with contrary politics, including figures on the far-left and far-right, under the aegis of a new national aesthetics. Dr. Atl remains a popular figure in Mexico. Prof. Gollnick's research suggests a long overdue revision of his public image. His research also highlights antisemitism and fascism as phenomena with deep inter-American histories too often elided under the pressures of national politics.

**GRETEMAN, BLAINE**, associate professor, English, 13 years of service, Spring 2023  
*Title: "Earth's vast bulk within one sheet": Colonialism, Cosmography, and the English Book Trade*  
Prof. Greteman began researching and writing a book on cartography, colonialism and the English Book trade, drafting an article on the bookseller Michael Sparke that will be submitted to Renaissance Quarterly, and a second article on Andrew Marvell's poetry, part of which was presented at the South Central Renaissance Conference. Additionally, the work on humanism and literary studies that was part of this project resulted in a publication in "Newsweek," on the confluence of artificial intelligence writing tools and the study of literature. The project has already benefitted students at UI through the development and teaching of a study abroad course, "Shakespeare's England," which specifically emphasized the material conditions of production of Shakespeare's plays in a global context. There will also be a series of public events as part of the "Shakespeare 400" project in Fall 2023, during which Prof. Greteman is organizing and participating in multiple events on Shakespeare's First Folio as part of the global book trade.

**GUERNSEY, ALISON K**, clinical associate professor, Faculty, 5 years of service, Fall 2022  
*Title: Compassionate Release and the Need for Federal Bureau of Prisons Transparency*  
Prof. Guernsey made progress on her project related to the memorialization of people who died in federal Bureau of Prisons (BOP) custody from COVID-19. Prof. Guernsey analyzed the criminal

cases and publicly filed pleadings of more than 250 people who died from COVID in the BOP between March 2020 and March 2023. Approximately 70 cases involved people who filed motions for compassionate release ("C/R"). Prof. Guernsey focused on the proffered grounds for release, the government's responses and the reasoning of the courts, if any. Prof. Guernsey was able to identify potential statutory reforms. She also analyzed the motivations for working on this project, concluding memorialization of those who die in custody is an important --- if not legally required -- task. Prof. Guernsey began drafting 3 law review articles detailing her findings and the theoretical motivation for her project. The title of this collection is Memorial Obligation: What We Owe People Who Die in Prison. Her findings will be used in C/R litigation in the Federal Criminal Defense Clinic, as well as assisting nationwide in the decarceration movement.

**HAYES, JOY**, associate professor, Communication Studies, 29 years of service, Fall 2022

*Title:* Rethinking the Politics and Aesthetics of Contemporary Media from the Perspective of Radio History

Prof. Hayes investigated the origins of today's conservative media ecosystem in the activities of anti-New Deal broadcasters of the late 1930s. She published research on Representative Martin Dies' use of radio and other media to attack New Deal progressives as communists and promote populist conservatism. Her work argues that Dies developed an enduring model of how to use a government committee to drive and shape media coverage of national events. She planned and initiated additional research on how Dies mobilized the House Special Committee on Un-American Activities against the 1937 Sit-Down Strikes. Prof. Hayes also submitted a paper for publication and drafted a second paper on the history of documentary drama (docudrama) as a media format that originated in radio and film in the 1930s. This research lays the foundation for a book project on the transformation of docudramas from radio to television, cable, and streaming media. She will incorporate this research into two undergraduate courses to show the relevance of broadcasting history for understanding our contemporary media environment.

**HILL, MATTHEW E JR**, associate professor, Anthropology, 16 years of service, Spring 2023

*Title:* Becoming Plains Apache (Ndee): Athapaskan Exploration, Ethnogenesis, and Settlement on the Great Plains of North America

Prof. Hill conducted analysis and writing for two research projects: (1) Ndee migration and (2) dogs in colonial North America. Ndee (ancestral Plains Apache) people arrived in the Great Plains of North America after a series of migrations south from the northern Yukon and Eastern Alaska. Prof. Hill used archaeological data from the Great Plains to describe social, economic and technological changes during movement. He also made substantial progress on a new research program on dogs in colonial European sites. The collected archaeological data shed light on the size and shape of colonial dog breeds, their use by early American settlers, and their near-replacement of Native North American dog lineages. Key outcomes of this PDA include publication of four peer-reviewed journal articles, an accepted peer-reviewed book chapter, and two submitted and accepted technical reports. Prof. Hill was also a co-author on three journal manuscripts that were submitted and are currently under review. This research will be used to create new lectures and assignments in at least five courses, and the artifacts and data will be the basis for independent research projects for undergraduates.

**JOHNSON, DOROTHY**, professor, Art & Art History, 36 years of service, Fall 2022

*Title:* The Imaginary of the Boudoir in Eighteenth-Century French Art

Prof. Johnson expanded the research and writing of an article which was published in an edited volume: "Mythologies of the Boudoir: Jacques-Louis David's The Loves of Paris and Helen" in *Intimate Interiors*, ed. Tara Zanardi and Christopher Johns, Bloomsbury Press, 2023. She conducted extensive research and completed a draft of a chapter for her book on the "Imaginary

of the Boudoir in Eighteenth-Century French Art". She also drafted a book proposal to submit to a scholarly press. Prof. Johnson integrated her new research into the following courses: "Embodiment: Corporality and Communication in French Art"; "Rococo to Realism"; "Women in the Visual Arts". She will present the results of her research in national and international venues and is preparing a proposal for an exhibition at the Stanley Museum of Art on the visual culture of the boudoir to make her research accessible to a broad range of students, faculty and lowans.

**KALINA, PAUL R**, associate professor, Theatre Arts, 14 years of service, Fall 2022

*Title:* Media Clown / Motion Capture / Alexander Technique

During his PDA, Prof. Kalina installed the new motion capture lab, moved towards completing his Alexander certification and developed the online production of Media Clown (MC), which debuted one of the acts at the Live Design International conference in Las Vegas. The piece is a modern Frankenstein story centered on a tech genius who creates an AI program that in the end becomes uncontrollable. The piece utilizes motion capture, face recognition software, real time animation of skeletal data, and zoom. Since the debut, Prof. Kalina has been in discussions with Oregon Shakespeare Festival and the Goodman Theatre about the piece. Media Clown relied heavily upon the motion capture technology provided by the new motion capture / virtual reality lab. Prof. Kalina spent a great deal of time installing the lab, learning the software for both the MC production and the creation of a new motion capture class. Additionally, Prof. Kalina completed his advanced sessions for his 1200 hour Alexander Technique (AT) teacher training which fulfilled the requirements for graduation. He has incorporated AT into his classes and is inspired to create the Iowa AT summer institute.

**KAWAMURO, KEIKO**, professor, Mathematics, 14 years of service, Spring 2023

*Title:* Knots and Contact Structures

Prof. Kawamuro studied the Birman-Ko-Lee left canonical form of braids and found application to knot theory and mapping class group theory with her graduate students Michele Capovilla-Searle and Rebecca Sorsen. They wrote a paper and submitted it to a journal. Prof. Kawamuro also has been working with Eiko Kin at Osaka University, Japan since January 2023. They have obtained a complete description of Agol cycles for pseudo-Anosov 3-braids. They have also found some application of it to other conjugacy invariants. Prof. Kawamuro visited Okinawa, Japan in March 2023 and presented her work at a conference. The theme of the conference was Women at the intersection of Mathematics and Theoretical Physics. Prof. Kawamuro organized an undergraduate event "Panorama of Geometry and Topology" with her colleague Mohammad Farajzadeh-Tehrani. She also developed an undergraduate course "Point Set Topology".

**KAY, ALAN R**, professor, Biology, 33 years of service, Spring 2023

*Title:* Measuring the Mechanical Properties of Cells using Brillouin Microscopy

Prof. Kay explored the role of ion and water transport in stabilizing cells during his PDA. His theoretical work demonstrated how the pumping of sodium and potassium ions prevents cells from being inundated by the osmotic influx of water. In addition, he completed a project which rectifies misunderstandings about the fundamental process of osmosis, overturning simplistic notions of how water transport occurs. Both of these lines of work were spurred by his teaching assignments, serving to demonstrate to his students the vital linkage between teaching and research. One paper was submitted as a preprint, while a second was accepted for publication in the Journal of General Physiology. During his PDA, Prof. Kay presented two seminars (Paris & Cambridge, UK) and a poster at a symposium (Heidelberg, Germany). The stabilization of cells is an important aspect of cell physiology, which goes awry in pathologies like cancer, a disease of considerable importance to lowans. His work on osmosis will also have some impact on the understanding of water flow within cells.

**KHANDELWAL, MEENA R**, associate professor, Anthropology, 20 years of service, Fall 2022

*Title:* Demons of the Hearth: Feminist Fieldnotes on India's Cookstove Campaigns

Prof. Khandelwal prepared and submitted a proposal for her monograph *Cookstove Chronicles* to several publishers, while also revising chapters. She entered into negotiation with Duke UP and U Arizona Press (UAP). Because UAP offered a provisional contract based on peer review of two chapters and because the book would appear in the innovative series *Critical Green Engagements* with support from all six series' editors, Prof. Khandelwal signed a contract with UAP. She delivered a full manuscript (~90,000 words) for peer review. The UAP editorial board unanimously confirmed the contract for this 'standout project' in their series. She will deliver the final manuscript, with expected release in Fall 2024. Her project emerged from collaborative teaching at UI. Open-fire cooking is a global problem. This book offers a model of STEM-social science collaboration needed to address complex global issues.

**KIVLIGHAN, MARTIN**, associate professor, Psychological and Quantitative Foundations, 8 years of service, Fall 2022

*Title:* Developing a Web-based Machine Learning System to Augment and Enhance Group Therapy Preparation

Research has demonstrated that preparing clients for group therapy reduces dropout rates and increases treatment outcomes. However, high-quality group preparation is difficult in a climate of increasing service demand and limited resources. Kivlighan used his PDA to conduct preliminary work on the development of a Machine Learning-based platform that will allow for timely, efficient, and high-quality preparation of group therapy members. His work has already resulted in an innovation grant to support the development of this platform. Kivlighan collaborated with a team to develop models to automate group processes to provide timely feedback to members and leaders. This work resulted in an invitation to submit a peer-reviewed article to a special issue in *Psychotherapy* and several related national presentations and peer-reviewed publications. This work will directly inform Kivlighan's teaching of the Advanced Group Leadership course as well as his clinical supervision of group trainees. Additionally, this work will further inform care for Iowans seeking services from the Telepsychology Training Clinic, which Kivlighan co-directs.

**LIM, TAE-HONG**, professor, Biomedical Engineering, 20 years of service, Fall 2022

*Title:* Collaborative Research Machine Learning based Computational Analysis of the Spine Biomechanics

Prof. Lim conducted pilot research projects on machine learning based studies to predict the spinal muscle contraction patterns required for the physiological stabilization of the lumbar spine in collaboration with Prof. Baek at University of Virginia and Prof. Junghwa Hong at Korea University who have in-depth knowledge and expertise in AI (machine learning) and the control of multibody systems. He had an opportunity to have intensive discussions with those professors for developing an international research program that can provide better nonsurgical treatment of low back pain by enhancing the knowledge on the spinal stabilization with optimum forces in the spine. Successful extension of the pilot studies done during his PDA period is expected to produce crucial preliminary data to produce various computational and experimental studies which should be essential parts of the international research program.

**MIKUCKI-ENYART, SYLVIA**, associate professor, Communication Studies, 6 years of service, Spring 2023

*Title:* "Monsters-in-Law?": Shattering Gendered Ideologies to Understand and Improve the Mother-in-Law and Daughter-in-Law Relationship

Prof. Mikucki-Enyart completed work on her book "Monsters-in-law" during her PDA. Specifically, she completed an outline of the book, the book's introduction, and first two chapters of the book.



The first chapter outlined the feminist ideology underpinning the book and the second chapter begins to outline central issues of in-law discord (i.e., uncertainty). The PDA introduced Prof. Mikucki-Enyart to new literature on family relationships, including in-law bonds and parent-adult child relationships that she will be able to incorporate into her undergraduate and graduate level classes on in-law relationships. Additionally, beginning to write the book allowed Prof. Mikucki-Enyart to begin translating research findings into accessible tips that are shareable via social media channels. This public facing work helps Iowans and individuals across the country (and globe) learn evidence-based practices for improving their in-law relationships.

**MITCHELL, SARA B**, professor, Political Science, 19 years of service, Spring 2023

*Title:* How Government Policies Reduce Security Threats from Environmental Shocks

Natural disasters like earthquakes, floods, and droughts are more frequent and may displace more than one billion people by 2050. Prof. Mitchell examines government policy responses to disasters to better understand which types of policies increase political violence risks. Her research team identifies several disaster policy responses, including relocation of affected individuals, restrictions on movement, reconstruction of damaged areas, and regulations of third-party disaster relief. She expects political violence to occur more often when governments restrict movements of disaster affected populations, restrict third party actor aid efforts, or distribute aid unevenly. Her project collects government disaster responses for all countries from 1900-2020. During the PDA, Prof. Mitchell developed the project coding instrument and applied it to 179 disasters in Peru. Her research team wrote two research papers that describe disaster response patterns in Peru and how those policy choices influenced armed conflicts in provinces (1989-2020). In 2023, her lab compiled news stories/reports on disasters for over 30 countries to better compare disaster response across countries.

**NOONAN, MARY C**, associate professor, Sociology, 22 years of service, Halftime for academic year

*Title:* The Impact of Infertility on Women's Careers

Prof. Noonan completed research on the topic of infertility and women's work. Noonan's research explores how "fertility work" - the mental, physical, and practical labor required of infertile women to become mothers - conflicts with women's paid work. Her study finds that few infertile women quit their jobs because of the conflict between fertility work and paid work, because they need the income and health insurance attached to work in order to undergo expensive fertility treatments. Most infertile women, however, put their careers on "pause" and do not actively search out promotions or challenging tasks to move their careers forward during the period they are trying to become pregnant. In this way, infertility stalls their careers. Noonan's work during the PDA period resulted in (1) the creation of a new survey instrument to be used in her ongoing work on fertility and women's work and (2) a completed research paper based on 45 in-depth interviews with infertile women. Noonan has incorporated her research into her courses, and the PDA has provided numerous opportunities to work with students outside the classroom.

**PACHECO, JULIANNA**, associate professor, Political Science, 10 years of service, Spring 2023

*Title:* The Effect of Restrictive Electoral Laws on Minority Youth Voting

Prof. Pacheco continued to work on a grant from the Robert Wood Johnson Foundation (RWJF) Interdisciplinary Research Leaders (IRL) program. The three-year project titled "Building Political Voice for Latino Health" is a community engaged collaboration with Nicole Novak (College of Public Health) and Nicholas Salazar (League of United Latin American Citizens (LULAC)). This project also received supplemental funding from the Office of the Vice President for Research Seeding Excellence Initiative. This funding will be used to assemble a team of undergraduate research assistants during AY23-24 to help conduct the research. Prof. Pacheco attended two

leadership conferences associated with the RWJF IRL program. During these events, she gained valuable knowledge about community engaged scholarship and community organizing. Prof. Pacheco will incorporate this knowledge into her teaching. Results from the award will be used to publish on the link between voting and health as well as inform LULAC's mobilization efforts to promote inclusive, healthy communities with equitable political power and voice across Iowa.

**RAMADAN, YASMINE A**, associate professor, French & Italian, 9 years of service, Fall 2022

*Title:* Desert Divides

Prof. Ramadan used her PDA to conduct new research concerning literary production in the aftermath of the Arab Spring. This work argues against the dominant narrative that heralds this new fiction as a bold innovation, a creative articulation of the failures of the uprisings, and a reckoning with the following violence. Instead, Prof. Ramadan's work insists that we look at contemporary Arab literary production in terms of continuities and not just definitive ruptures. This research resulted in an article draft entitled "Rethinking Arab Spring Literature: Humor, the Absurd and the Abject in Contemporary Egyptian Fiction." Prof. Ramadan workshopped this article during the Obermann Center Writing & Research Workshop. She will present her work at the annual Middle East Studies Association Meeting. This research is part of a book project that will expand understandings of Arab cultural production in the aftermath of the Arab Spring. This work will provide new and innovative material for an existing course, Culture and Resistance: Modern Middle East, as well as being the basis for a new course offering, Rethinking the Arab Spring.

**SANDERS, KATRINA M**, associate professor, Educational Policy and Leadership, 24 years of service, Fall 2022

*Title:* College of Education and Obermann Center Race Relations Institute

In mid-July 2021 Prof. Sanders' Departmental Executive Officer (DEO) of Educational Policy and Leadership Studies passed away unexpectedly. After recovering from the shock of his death, Prof. Sanders realized the DEO had not yet officially allocated funds for the project, and she was not able to proceed securing matching funds and developing her proposed PDA project. Thus, Prof. Sanders turned her attention to an ongoing book project on a history of U.S. Black Catholic education. The book is under contract with New York University Press. Prof. Sanders read, coded, and organized data collected at Catholic Universities and private Catholic archives. The PDA helped Prof. Sanders move closer to her manuscript submission goal of September 2024.

**SECCHI, SILVIA**, professor, Geographical and Sustainability Sciences, 6 years of service, Spring 2023

*Title:* The Role of Federal and State Policies in Racializing Iowa Agriculture in the 20th and 21st Century

Prof. Secchi completed research on assessing the capacity of agricultural conservation policy to address climate change. This work was spurred by passage of the Inflation Reduction Act in 2022 funding agricultural climate change mitigation policy using existing conservation programs administered by the United States Department of Agriculture. This has resulted in a published paper, a paper under review, two conference panels (one a plenary), an invited forum article and a book chapter and a manuscript in preparation. In addition, Prof. Secchi is lead author on two manuscripts in preparation from the Diverse Corn Belt project where she is a co-PI, and which is highly synergistic with the topic of this PDA. The products of this PDA will be used to enhance teaching of two upper level classes. The issue of climate change in the agricultural sector is a very important one for the state of Iowa, as recent droughts and floods illustrate. If effective, the policies used to mitigate climate change could help Iowa farmers thrive in altered environmental conditions.

**SMALL, GARY W**, professor, Chemistry, 19 years of service, Fall 2022

*Title:* Deep Learning Methods for Passive Infrared Chemical Imaging

The research performed by Prof. Small focused on advancing the ability to detect airborne chemical plumes emitted from ground sources during emergency response scenarios such as chemical plant accidents. In these scenarios, chemicals may be released into the atmosphere and first responders are tasked with minimizing harm to the public. This requires the use of chemical sensors for identifying and tracking the presence of chemicals in the atmosphere. Machine learning and artificial intelligence methods were explored for use in automating the interpretation of infrared images obtained with an airborne sensor operated by the US Environmental Protection Agency (USEPA). In this work, artificial neural networks were developed to detect the signature of methanol vapor in chemical releases performed during field experiments. Methanol is a widely used industrial chemical that is stored and transported in large quantities. Two types of neural networks were developed and demonstrated to be highly successful in recognizing ground releases of methanol while not producing false alarms. The developed software is currently being implemented by the USEPA onboard the aircraft.

**SPAK, SCOTT N**, associate professor, Urban & Regional Planning, 12 years of service, Spring 2023

*Title:* Estimating and accelerating global capacity for integrated urban environmental systems and services

Prof. Spak expanded the scope and methods of his research program in urban and environmental modeling for policy analysis and forecasting and began leadership in applying AI across teaching, training, research and service. Generative AI accelerates transfer of best practices from research and operations, and the PDA supported Prof. Spak in learning and using strategies for AI in research and teaching in the first months of their public debut. After 20 years of developing and applying models with policymakers and communities, he began research toward building state of the science capabilities across the world's cities as essential tools for resilience. This work has led to an article in progress, a survey project, contributed to an external grant proposal, and generated preliminary data for two applications in preparation. Results will contribute directly to improved decision support in Iowa and worldwide. Prof. Spak led guidance on these topics to a US EPA Science Advisory Board panel. He has incorporated results to enhance active learning in undergraduate and graduate courses, the Sustainable Communities Lab, and research training.

**STONE, ELIZABETH A**, professor, Chemistry, 13 years of service, Spring 2023

*Title:* Sources and Transformations of Atmospheric Particulate Matter

Prof. Stone conducted research on atmospheric particulate matter. One project centered on establishing the time-varying concentrations and vertical fluxes of pollen, fungal spores and bacteria in the atmosphere. The second focused on how sea spray aerosol transforms when aged in the atmosphere. And the third focused on volatile compounds that react in the atmosphere to form particles. This research generates new information that improves our understanding of the natural and anthropogenic processes that affect air quality and health. This research was funded through three U.S. National Science Foundation grants and a U.S. Fulbright Future Scholar Award. These collaborative research projects involved researchers across UI, U.S., and Australia and included undergraduate and graduate students that were mentored by Prof. Stone. This work is directly applicable to improving air quality and the health of Iowans.

**STORRS, LANDON R Y**, professor, History, 11 years of service, Fall 2022

*Title:* Feminist Internationalism During the Cold War: Caroline Ware in Latin America

Prof. Storrs continued work on her biography of the American social scientist Caroline Ware (1899-1990). Deciding that appraising Ware's international career (the original focus) requires

treatment of her long, variegated U.S. career, Prof. Storrs completed archival research on Ware's work for causes including worker education, consumer organization, racial justice, and feminism. Ware's career illuminates the trajectory of women's activism across the twentieth century: both how evolving historical circumstances shaped their opportunities and how they used their distinctive positions to effect historical change. Prof. Storrs began incorporating her findings into two major digital projects. She also overhauled two gender history courses not taught during her DEO term to reflect events of the intervening years (the national racial reckoning that intensified in 2020 and increased recognition of transgender people). UI students and the wider public will benefit from the connections between national and international policy developments and on the role of intergenerational, interracial friendships in 20th-century feminist activism.

**SU, RONG**, associate professor, Management & Organization, 6 years of service, Spring 2023

*Title:* Understanding the Long-Term Psychological and Economic Impact of Underemployment: A Multi-Country Study

During her PDA, Prof. Su published two peer-reviewed journal articles and has four additional manuscripts under review or revision and 10 other projects in progress. Many of these projects address issues of critical importance to the state of Iowa or society in general, such as improving diversity in organizations, understanding gender career gaps, and examining the long-term impact of underemployment and other forms of career inequalities. Prof. Su was a visiting scholar at Northwestern University during the award period, where she expanded her research expertise and developed new collaborations that extended her work in meaningful ways. In addition, she has provided research consultation to the U.S. Department of Labor, given three invited talks (Rice University, University of Connecticut, and The Chinese University of Hong Kong), and attended five national or international academic conferences to disseminate research findings and make a broader impact with her research. Knowledge generated from Prof. Su's work during this PDA will be integrated into her future MBA class and PhD seminars.

**TREAT, TERESA A**, professor, Psychological and Brain Sciences, 13 years of service, Spring 2023

*Title:* Understanding and Modifying the Role of Cognitive Processing in Alcohol-Related Sexual Assault

Receipt of a PDA accelerated Prof. Treat's progress on her research program, which focuses on alcohol-related sexual assault on college campuses. She (a) completed extensive work on a grant application focused on a longitudinal evaluation of proximal predictors of alcohol-related sexual assault that she intends to submit in October; (b) made substantial progress on six empirical papers that now are under review or in preparation; (c) gave an invited talk at an NIH meeting on alcohol-related sexual assault; (d) presented her research at a national conference; and (e) developed and/or evaluated five new measures/paradigms within alcohol-related sexual assault. These activities can be incorporated into her teaching activities in graduate-level statistics, as well as into a senior seminar and a large lecture class. Ultimately, the conducted research may benefit society, given that sexual aggression is a major public-health problem on college campuses, and the effectiveness of existing prevention programs is inadequate.

**TSE, KENNETH T**, professor, Music, 20 years of service, Spring 2023

*Title:* Resuming Creativities

The primary goal for Prof. Tse's PDA was to perform and give master classes, by invitation, at key music conservatories around Europe and to further his ties with the European colleagues and students. For musicians and other performing artists, visibility is of utmost importance in promoting one's art, as well as recruiting students. This award vastly benefited his status in the profession, international recruitment effort and promotion of diversity in teaching at UI.

**WILSON KIMBER, MARIAN**, professor, Music, 18 years of service, Fall 2022

*Title:* Women's Work: Clubwomen Activists and American Music

Prof. Wilson Kimber undertook research for and began writing a book, *Women's Work: Clubwomen Activists and American Music*, exploring the roles of leading figures in the women's club movement whose activism transformed American musical life before World War II. She completed three chapters related to the activities of particular clubwomen leaders: Eva Perry Moore and Anne Shaw Faulkner Oberndorfer of the General Federation of Women's Clubs and Mollie Fines of the National Association of Colored Women's Clubs. Prof. Wilson Kimber visited archival collections holding rare materials to undertake her research, including the General Federation's headquarters in Washington, DC; Wichita State University Library Special Collections; Spencer Research Library of the University of Kansas; and the James K. Hosmer Special Collections of the Minneapolis Central Library. Her book will provide a new understanding of women clubs' roles in shaping American music, including in clubs in Iowa, informing her seminars on music historiography, American music, African American women in classical music, and her teaching about race and gender in music more generally.

**WITTENBERG, DAVID H**, associate professor, English, 25 years of service, Spring 2023

*Title:* Against Dialectic: A Theory of Opposition

As anticipated in the proposal, Prof. Wittenberg completed substantial portions of a book project titled, *Against Dialectic: A Theory of Opposition*. In addition, during the period of the PDA, Prof. Wittenberg submitted a final manuscript for his prior book, *Big Culture: Toward an Aesthetics of Magnitude*, to the University of Chicago Press, and received two positive peer-reader's reports. That book is now in the final stages of revision and awaiting a contract and publication date from University of Chicago Press. In Spring 2024, Prof. Wittenberg will teach an updated version of the class "Foundations of Criticism and Theory," partly based on the research from the *Against Dialectic* book project, and he plans a future graduate seminar entitled "Dialectic: Theory and Practice," fully based on that work. He also plans a new undergraduate course, "Reading Popular Politics," for the following year.

**University of Northern Iowa**

**Arsiwalla, Dilbur**, Associate Professor, Psychology, 11 Years of Service, AY 2022-2023, Faculty.  
*Connections of Health-related Perceptions and Behaviors with Sleep Patterns and Mental Health during the Covid-19 Pandemic*

The purpose of this study was to examine whether health-related knowledge, risk perceptions, and health-related behaviors about Covid-19 predicted sleep and mental health. Furthermore, a goal was to examine process and protective factors via mental health and personality characteristics such as conscientiousness and optimism bias. A final goal was to compare a younger age sample (<40) with an older sample (>=40) on all outcomes. The sample consisted of 448 participants recruited from Amazon MTurk. Covid knowledge, higher risk perception, and health behaviors were linked with poor sleep. Less Covid knowledge, higher risk perception, and health behaviors were associated with greater Covid stress and poor mental health. Risk perceptions were linked with greater healthy behaviors when conscientiousness was higher. Covid stress, anxiety, and PTSD were consistently associated with sleep disruptions. The probability of getting Covid mediated links between knowledge and health behavior. Older participants were more knowledgeable and had higher risk perceptions in terms of susceptibility and preventive behaviors. Younger participants reported greater likelihood of sleep disorders and disruptions. One undergraduate and two graduate students participated in various stages of the project including the literature search and data collection on the Amazon MTurk website. Additionally, they collaborated on the development of an online survey tool through Qualtrics. Future UNI undergraduate and graduate students will be able to analyze recent/pertinent data. Students will also present this research in a regional student conference in the near future. This work will benefit Iowa citizens, as it is the basis of a pilot study leading to a larger NIH Grant. The findings of this study have implications for future interventions that seek to promote positive health-seeking behaviors and health outcomes.

**Betrabet Gulwadi, Gowri**, Professor, School of Applied Human Sciences, 20 Years of Service, Spring Semester, Faculty.

*A Biophilic Pattern Recognition Audit for Understanding Health-promoting Potential on College Campuses*

A Biophilic Pattern Recognition Audit Tool was created for observing and documenting biophilic attributes of nature adjacent to and on college campuses. Fourteen patterns listed in previous literature were shortened to the ten most relevant on college campuses and re-organized into 5 categories that could be best observed during campus walkthroughs: 1. Site, Building and Furniture, 2. Natural Features, 3. Sensory Aspects, 4. Spatial Aspects, and 5. Dynamic Aspects. Nearby nature on three campuses – University of Iowa, University of Northern Iowa, and Iowa State University – was observed and documented. At each university, observations were conducted around campus buildings in which art, business, and design were taught. In addition, at each campus, observations were conducted around the student unions. The process involved walking around each sampled building (four per campus), systematically taking photographs of nearby nature and recording the vantage points from which they were taken on the respective positions on a campus map. The paper form was filled out at each location and later transferred electronically for the report. This research offers a closer look at the biophilic potential of tree plantings and vegetation near campus buildings through tangible elements that could be fine-tuned on campuses. It brings value to the *University of Northern Iowa*, which designs and maintains a beautiful campus, by revealing its existing biophilic potential and identifying its future biophilic potential. Their healing potential through identifying biophilic connections will strengthen the “how” – their design and maintenance and provide the “why” - that this will impact the health of students, faculty, staff and visitors.

**Burnidge, Cara, L.**, Associate Professor, Philosophy and World Religions, 9 Years of Service, Spring Semester, Faculty.

*Religious Biography of Elizabeth Cady Stanton*

In Spring 2023, the draft of three chapters was completed for a book-length manuscript, a religious biography of women's rights activist Elizabeth Cady Stanton. With one semester of full-time scholarship activity completed, the project moved closer toward submission to press. A newly finished chapter was selected for review by the Newberry Library's Religion and Culture in the Americas Seminar. This work benefits the citizens of Iowa by providing historical context to an ongoing national conversation about the role of religion in shaping statecraft, a discourse Iowa's public officials seek to lead. The number of women candidates running in local, city, state and federal elections has steadily increased in recent years. Elizabeth Cady Stanton and the religious movements she engaged with are central to understanding this present moment, including both its triumphs and its disappointments. Not least of all, the collaboration and conflict between Cady Stanton and Iowa's own Carrie Chapman Catt elucidates the continued tensions between women's rights work, religious identity, and racism in the United States. Deeply divided on the role of religion in the suffrage movement, their disagreements draw attention to the past and present complexities of religion, race, gender, class, and politics. This work is of value to the UNI directly through courses like *Religion in America*, *Religion and Politics*, and *Religion and Law*. It also provides benefit by situating the University in a timely and significant conversation about the role of religion in American politics and public life.

**Elgersma, Kenneth, J.**, Associate Professor, Biology, 10 Years of Service, Fall Semester, Faculty.

*Improving soil health of Iowa's agroecosystems through improved vegetation quality in USDA Conservation Reserve Program grasslands*

The focus of this PDA was to conduct research on the ecological services and environmental integrity provided by restored grasslands enrolled in the USDA's Conservation Reserve Program (CRP). CRP grasslands provide high-quality wildlife habitats that improve soil health and sequester carbon as soil organic matter. The P.I. collected soil samples in restored grasslands of varying ages, surveyed vegetation in CRP fields, and analyzed data on vegetation and soil organic matter, in order to understand what factors improve vegetation quality and soil health. The P.I. published one peer-reviewed journal article describing how management of CRP fields influences vegetation structure and quality, with an associated release of the data used in that article. The P.I. submitted a second peer-reviewed journal article describing factors that reduce the probability of noxious weeds invading CRP fields; this article is still in peer review. In collaboration with colleagues, a one grant proposal was submitted to investigate weed invasions and its effects on carbon cycling. Finally, the P.I. completed an online Restoration Ecology course offered by the United Nations Development Program to provide a more global perspective in his research and teaching. Because CRP is national in scope, this research has a national impact on a \$2 billion dollar per year federal program. UNI students (graduate and undergraduate) were involved in this work and gained experience and training from this research. Finally, completion of the UNDP Restoration Ecology course will improve and inform teaching in subsequent semesters. This work provides large benefits to the people of Iowa as well because CRP covers a full 5% of the state's land area and is a vital provider of ecosystem services. CRP brings nearly half a billion dollars in federal funds into Iowa annually. This research helps ensure those dollars are spent wisely to provide maximal benefit to the people of Iowa, including increased wildlife and hunting habitat, flood mitigation and control, improved surface water for drinking and recreation, and reduced greenhouse gas emissions through soil carbon sequestration.

**Goonesekere, Nalin**, Professor, Biochemistry, 18 Years of Service, Fall Semester, Faculty.

*Development of an AI-based application for the early detection of pancreatic cancer*

Cancer remains a major threat to public health, and early detection significantly improves prognosis. For example, a major reason for the dismal prognosis of pancreatic cancer patients (5-year survival rate of 10%) is that there is neither an associated family history nor specific symptoms at the early stages of the disease, when the disease can be effectively treated by surgical resection. In Iowa, pancreatic cancer is the third highest cause of death by cancer, and early detection will help lower the mortality rates. This project initiated an AI-based approach towards detecting pancreatic cancer. This work will be extended towards detecting other types of cancer with UNI student collaborators, who will be exposed to both advanced methods in data science, and the use of the High-Performance Computing Cluster at UNI, recently purchased through a Roy J. Carver Charitable Trust Grant. These datasets have traditionally suffered from high signal-to-noise ratios, making accurate predictions based on these datasets challenging. The Clinical Proteomic Tumor Analysis Consortium (CPTAC) has recently deposited high-quality multi-omics data for pancreatic cancer in the database of Genomes and Proteomes. A proposal outlining the research methodology for use of this data in creating a classifier for Pancreatic Cancer (PC) was submitted and approved by the Data Access Committee of the NIH.

**Haghanikar Matloob, Taraneh**, Associate Professor, Curriculum and Instruction, 7 Years of Service, AY 2022-2023, Faculty.

*How Do African American Characters Feel: A Sentiment Analysis of Characters Emotional Status in Young Adult Novels*

There is a modest rise in the number of multicultural books being published every year. It is critical to scrutinize if diverse books tend to reinforce stereotypes or to build resilience for boys and girls of color. Teachers are less likely to make informed decisions in their book selection. One promising approach to address this issue is using data visualization and artificial intelligence (AI) to analyze fictional diverse characters. With this goal in mind, the P.I. started the study with a focus on African American Young Adult (YA) books and used Natural Language Processing (NLP) and sentiment analysis as alternate tools to identify emotional patterns in diverse YA novels. This work provides a new perspective on reading, reviewing and analyzing diverse YA books and offers methods that can easily be applied to literary texts to reveal their deeper meanings. There are approximately 2800 pre-service teachers enrolled at UNI in teacher education programs. Pre-service teachers are expected to graduate with the cultural knowledge, skills, and awareness to create and sustain a classroom environment and curriculum that facilitate students' overall success, well-being, and academic achievement. However, UNI students often report feeling unprepared to teach to the growing culturally diverse student population in the region. There is a need to develop and evaluate new and innovative learning methods for the building cultural responsiveness in teacher preparation programs. The Principle Investigator (P.I.) proposed a system using data visualization and artificial intelligence (AI) to identify emotional patterns of fictional diverse characters and reveal the sentiment associated with the emotion words in the books. This AI equipped system will inform users on diversity features of books and will provide a lens to identify whether or not a book has accurate and authentic cultural content. The findings of this study as well as the system will be shared with UNI students enrolled in all undergraduate and graduate multicultural children's literature courses. The findings can be used in teacher preparation programs as a model to select and evaluate books appropriately and engage state and local school systems such that they consider implementing a yearly training program using the AI project system created from this PDA.



**Tamplin, Jeffrey**, Professor, Biology, 22 Years of Service, Fall Semester, Faculty.

*Conservation of the Wood Turtle in Northeastern Iowa and Southeastern Minnesota*

This project to detect, monitor, and survey imperiled Wood Turtle (*Glyptemys insculpta*) populations in the upper Midwest was associated with phase 3 of a multi-state State Wildlife Grant awarded by the US Fish & Wildlife Service to Iowa and Minnesota, and other midwestern state partners (Phase 1, 2014-2016: \$493,903; Phase 2, 2017-2019: \$462,407; Phase 3, 2021-2024: \$997,925; total UNI subaward \$360,015). Phase 3 expanded the objectives to include monitoring wood turtle habitat use and evaluating use of previously restored sites, and to survey areas in Iowa and southeastern Minnesota to identify wood turtle sites for future conservation actions. The field team radio-tracked 29 wood turtles at 6 sites in 4 Iowa counties and recorded habitat and ecological data at 603 wood turtle locations. Surveys for wood turtles at new sites were conducted in both Iowa and Minnesota for a total of 652.5 hours over 49 separate days. A total of 11 new wood turtles, including 6 at 3 newly discovered locations, were detected. Data and analysis were provided to Iowa and Minnesota Department of Natural Resource Managers, in the form of 6 quarterly technical reports and 2 annual reports, to better develop species management policy and to implement effective habitat restoration actions. In addition, these data were used by the US Fish & Wildlife Service to assist in a federal species status assessment to determine the appropriate federal listing status. The PI provided 2 field-based presentations for the Iowa DNR and 2 lectures at Iowa and Minnesota nature centers, and established partnerships with 4 county conservation boards (Black Hawk, Butler, Cerro Gordo, and Mitchell) and 3 nature centers (Lime Creek Nature Center, Mason City, IA; Milton Owen Nature Center, Osage, IA; and Jay Hormel Nature Center, Austin, MN). In addition, partnerships with over a dozen private landowners were developed and facilitated site surveys. Data from the current phase of this project provided the basis for a UNI graduate senior honors thesis and a peer-reviewed journal article. By developing strong partnerships with county, state, and federal agencies, this project brought in \$221,607 in extramural funds to UNI. This research has benefited the citizens of Iowa by serving as the basis for developing species management policy on an endangered species, and mitigating the extirpation of an endangered species; these data also represent the source of restrictions and prohibitions on real estate easements and conservation reserve program contracts.

**Walter, Michael, H.**, Associate Professor, Biology, 26 Years of Service, Spring Semester, Faculty.

*Structural & Genome-Linked Proteins of Stability-Selected Anti Anthrax Bacteriophages*

Bacteriophages are viruses that parasitize and often kill specific host bacteria. The field of 'phage therapy' investigates control of bacterial infection by use of natural bacteriophage-anti-bacterial agents. This practice is gaining broader use but may be limited in application due to instability of phages exposed to heat, aerosolization, blood, perspiration, UV, sunlight or other conditions encountered during application against bacterial infections. The analysis awaits completion and will determine if any protein structures or amino-acid compositions are more abundant in 3 'durability selected' phages, relative to 3 wild, 'unselected phages'. A newly acquired mass spectrometer system was critically delayed by complete instrument failure, then complicated by technical problems associated with installation the replacement instrument. The demanding 'learning curve' required for use of the instrument when it was configured for 'nano-sample' analysis presented unexpected delays. The PI was the only user of the required '*Nanospray Ion Source*' (NIS) adapter/configuration. NIS requires a considerable re-configuring. Between March and August 2023, the PI was able to acquire the necessary skills to reconfigure, calibrate and run the instrument. The notes on NIS installation and use are now complete and the PI will edit a 'user-manual' for subsequent users of the instrument. The work is valuable to UNI due to availability of the new 'user manual' in addition to the data gathered, and publication of the protein analysis. This work benefits the state by providing data on protein composition of phages more suitable for bacteriophage therapeutic control of bacterial infections in humans and farm animals.