Contact: Rachel Boon

PROFESSIONAL DEVELOPMENT ASSIGNMENT REPORTS FOR FY 2025

Committee Action Requested: Receive the professional development assignment reports submitted by the Regent universities for FY 2025.

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 Code, Chapter 122 (HF 45).

In November 2023, the Board approved 106 professional development assignments for 2024-25. At ISU there were five approved PDAs for 2024-25 that are not included (four deferrals, one withdrawn request). Five faculty at SUI who previously deferred an approved PDA completed their assignments in 2024-25 instead, while four approved for prior years deferred to a future year and four faculty members declined their PDA award.

The estimated cost of the professional development assignment program was $266,468 for 2024-25. Work done in by the faculty on these PDAs has already resulted in $8.9M in grants and external funding. Total grant proposals submitted and still under consideration because of this work have a cumulative value over $66M of potential future funding. 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, for every dollar invested in a PDA in 2024-25, the one-year return on investment for the state of Iowa is already $33.50 with a future potential impact of nearly $250 on the dollar.

Other outstanding results include patent applications, 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 FY 2025 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

BARTHOLOMAE, SUZANNE, Associate Professor, Human Development and Family Studies, 11 years of service, spring semester
Title: Creating Innovative Strategies to Advance the Financial Health and Well-Being of All Iowans by Building Competencies and Alliances in a Policy, System, and Environmental Approach
Bartholomae used her assignment to address Iowans' financial health and well-being through enhancements to her Volunteer Income Tax Assistance (VITA) program. Outcomes of this work include the preparation of three publications, a pilot financial literacy program at Ames High School, and collaborations with ISU Extension and Outreach to aid disaster recovery efforts across 21 Iowa Counties. Bartholomae also earned more than $39,000 in contracts from IPERS and the Iowa Department of Health and Human Services.

BASSHAM, DIANE, Distinguished Professor, Genetics, Development, and Cell Biology, 24 years of service, full academic year
Title: Genome-scale analysis of autophagy in response to environmental stress in plants
Bassham's assignment explored how plants balance the trade-off between growth and responding to adverse conditions, work that will benefit Iowa's crop producers. Additional outcomes include $155,000 in new research funding, $650,000 in additional funding proposals, publications, and conference presentations, and content for undergraduate and graduate courses in cell biology.

BASTAWROS, ASHRAF, Professor, Aerospace Engineering, 26 years of service, fall semester
Title: Application of Machine Learning in Experimental Solid Mechanics
Bastawros used the assignment to integrate machine learning into advanced materials systems and nano-architected materials. This work led to four papers and conference presentations, content for courses on composite flight structure and failure analysis of materials, and submission of a $735,000 funding proposal.

BIX, AMY, Professor, History, 32 years of service, full academic year
Title: Women and Gender in Science, Technology, and Medicine from Classical History to the Twenty-first Century
Bix wrote a book on this subject during her assignment which will be submitted to Cambridge University Press in 2026. Additional outcomes include the preparation and submission of two journal articles, as well as content for Bix's course in this area.

DRINKWATER, JENNIFER, Associate Professor, Art and Visual Culture, 18 years of service, spring semester
Title: The What's Good Project: Sites of Connection and Renewal
Drinkwater, who also serves as a community arts specialist for ISU Extension and Outreach and faculty associate in the Shrink Smart Project, used her assignment to better assist rural communities in Iowa and Mississippi leverage their places of connection (where people gather outside their homes and workplaces). Outcomes included paintings, essays, workshops, community toolkits, and a $40,000 external funding proposal.

DUBISAR, ABBY, Associate Professor, English, 14 years of service, spring semester
Title: Cookbooks as Civic Action: Food Rhetorics for Peace and Justice
Dubisar began a book project analyzing cookbooks published between 1968 and 2017 to see how authors take positions on civic and political issues. Additional outcomes include two

conference presentations and content for Iowa State courses related to analysis of popular culture, rhetorical theory, and proposal and report writing.

EULENSTEIN, OLIVER, Professor, Computer Science, 25 years of service, spring semester
Title: Algorithm Development for Genome-Scale Phylogenetic Network Problems
Eulenstein's assignment addressed challenges in computational biology to better decipher the genetic adaptations that contribute to viruses, including influenza A and porcine reproductive and respiratory syndrome (PRRS), in partnership with the USDA and ISU Veterinary Diagnostic Laboratory. Outcomes include $430,000 in research funding, $4.5 million in funding proposals, and three journal articles.

FEI, ZHE, Associate Professor, Physics and Astronomy, 10 years of service, fall semester
Title: Plasmon-enhanced nano-optical characterizations of biomolecules
Fei worked with undergraduate and graduate students to better understand the structural and electronic properties of biomolecules, with application in areas such as solar harvesting, biosensing, and nanoscale energy/information transfer. Results include two research papers, a $600,000 U.S. Air Force funding proposal, and content for Iowa State physics courses.

HAN, GANG, Professor, Greenlee School of Journalism and Communication, 16 years of service, spring semester
Title: From "Dr. G" to "Dr. AI": A comparative study on AI-powered health risk information seeking and using among Generation Z in a global context
Han used the assignment to analyze the influence of artificial intelligence, including platforms such as ChatGPT, on health information seeking behavior in the U.S. and east Asia. Outcomes of this work will include at least two research papers, conference presentations, and content for courses in health communication, research fundamentals, and research methods.

HANSEN, STEPHANIE, Professor, Animal Science, 16 years of service, fall semester
Title: Crafting the Foundation: Authoring a Comprehensive Book on Graduate Student Mentoring
Hansen used her assignment to complete a book, *The Graduate Mentor's Trail Map*, that offers practical guidance to enhance the mentoring experience for graduate students and faculty. The book was published widely on platforms such as Apple, Amazon and Barnes and Noble, as well as through Adventure Press.

HILL, MATTHEW, Associate Professor, World Languages and Cultures, 22 years of service, spring semester
Title: An Early American Indian Ceremonial Complex (ca. 9500 years ago) in the Great Lakes Drainage Basin
Hill explored American Indian rituals during the assignment, leading to a better understanding of their belief systems in society and how they change over time. Outcomes include a major journal article and new content for Iowa State courses in world prehistory and North American archaeology.

HU, HUI, Professor, Aerospace Engineering, 21 years of service, spring semester
Title: Development of a World-class Research Center for Wind Turbine Icing Protection at Iowa State University
Hu used his assignment to develop a new class of anti- and de-icing systems for unmanned aerial vehicles and wind turbines. Outcomes included five published journal articles, eight conference papers, the recruitment of two graduate students, $80,000 in research funding, and $5.8M in funding proposals.

HU, SHAN, Associate Professor, Mechanical Engineering, 11 years of service, fall semester
Title: Acoustic Manufacturing of High-Performance, Long-Life Batteries: Scalability Study
Current batteries display significant loss of capacity and life during fast charging. Hu spent her assignment at Oak Ridge National Laboratory, where she tested a new acoustic method to manufacture more efficient and higher-performing battery electrodes, in response to the challenge of increased battery life loss during fast charging. Outcomes included $105,000 in new funding, more than $1.1 million in funding proposals, five journal papers and presentations, and a research collaboration with Medtronic.

JIA, YONGHONG, Associate Professor, Accounting, 9 years of service, spring semester
Title: Textual Analysis and Machine Learning in Accounting
Jia initiated two new research projects on machine learning and AI in accounting during the assignment, resulting in the development of a manuscript, faculty exchange with scholars in Florida, and new AI related content for Jia's course on intermediate accounting.

KADELKA, CLAUS, Associate Professor, Mathematics, 7 years of service, fall semester
Title: Towards an in-depth understanding of the interplay between structure and function of gene regulatory networks
Kadelka combined data science with theoretical and computational analysis to describe how collections of genes govern the molecular processes within a cell. Outcomes of this work include six conference presentations and workshops, six journal articles, more than $730,000 in external research funding, and course content in the area of math modeling in biology.

KIM, JEWOO, Associate Professor, Apparel, Events, and Hospitality Management, 9 years of service, spring semester
Title: Application of Text Analytics for Dynamic Performance Forecast in the Tourism Industry
Kim's assignment focused on forecasting tourism demand to enable effective investment planning. Outcomes included the development of four research initiatives, a conference presentation, journal article, and webinar and new content for four ISU hospitality courses.

KOHUT, MARIAN, Professor, Kinesiology, 27 years of service, fall semester
Title: Application of omics approaches, bioinformatics, and artificial intelligence methods to identify pathways and biomolecules related to human health
Kohut used her assignment to gain additional expertise in data analysis with human datasets, and using AI to inform health outcomes. Results from this work included the preparation and submission of five manuscripts, a new course in exercise immunology, and three NIH funding proposals totaling more than $7.6 million.

KRIZAN, ZLATAN, Professor, Psychology, 18 years of service, spring semester
Title: Fatigue during Investigations: Optimizing High-Stakes Interviewing
Krizan used the assignment to study how sleep and fatigue impact the effectiveness of interrogations and intelligence interviewing. Outcomes include the preparation of two journal articles, three invited talks, $10,000 in funding, and $635,000 in external funding proposals.

LEANDRO, LEONOR, Professor, Plant Pathology and Entomology, 19 years of service, full academic year
Title: Strategies to Improve Sustainability and Resilience of Iowa Agriculture in a Changing Climate
Leandro's assignment at the intersection of climate change and soybean disease management supported Iowa's agricultural economy. Outcomes of this work, which included visits to 17

research labs across five universities, include seven presentations and workshops, new content for Iowa State graduate courses, and a $650,000 funding proposal.

LEE, DAEYONG, Associate Professor, Human Development and Family Studies, 8 years of service, spring semester
Title: Scholarly Research and Achievements
Lee studied the impact of governmental healthcare policies on infertility treatments during his assignment. Outcomes include a manuscript and conference proposal, and content for Iowa State courses on income tax planning and advanced quantitative methods.

LEE, JU-YEON, Associate Professor, Marketing, 8 years of service, spring semester
Title: Leveraging Research Productivity and Professional Network
Lee collaborated with peers from multiple institutions to address the business impact of digital customer misconduct – including scamming, review bombing, trolling, identify theft and cyberattacks. This work resulted in the development of two research papers, three conference presentations, and seven projects with Iowa State graduate students.

LEVIS, JOHN, Professor, English, 25 years of service, full academic year
Title: Suprasegmentals: Research and pedagogy for English pronunciation teaching
The primary product of Levis' assignment is a monograph on English suprasegmentals, an aspect of pronunciation that both improves speech intelligibility and is misunderstood by applied researchers and language teachers. Additional outcomes include numerous book chapters, journal articles, and invited presentations. Levis received a $16,000 Fulbright teaching/research award to support his work.

MOSS, KIMBERLY, Associate Professor, Art and Visual Culture, 11 years of service, fall semester
Title: Visual Storytelling at the Intersection of Science and Art
Moss used the assignment to expand her research in scientific illustration and education, including an internally funded collaboration with Iowa State's College of Veterinary Medicine to develop cutting-edge 3D printed teaching models, and also develop artwork on Iowa's diverse soils. Outcomes include exhibitions and publications, and a $5,000 external funding proposal.

NGUYEN, XUAN, Associate Professor, Mathematics, 14 years of service, fall semester
Title: Isometric problems in curved spaces and geometric flows
Nguyen gained a deeper understanding of the geometry of curved spaces during the assignment. Results will be incorporated into graduate mathematics courses. Additional outcomes include a journal paper and conference presentation; Nguyen received $18,000 to support his travel and research.

PANTHANI, MATTHEW, Associate Professor, Chemical and Biological Engineering, 11 years of service, fall semester
Title: Interfacing Materials and Biological Systems
Panthani's assignment focused on gaining new experience in biological research techniques to better understand the human brain, communication between cells, and develop novel therapeutics. This work led to two presentations, content for a course on computational methods in chemical engineering, and development of a $2M funding proposal.

PETEFISH-SCHRAG, AMANDA, Associate Professor, Music and Theatre, 11 years of service, spring semester
Title: Cultivating Dramaturgical Practices in Applied Puppetry: Connecting Art and Impact

Petefish-Schrag used the assignment to explore innovative approaches to applied puppetry, including collaborative work with the Iowa Department of Natural Resources to educate the public about chronic wasting disease. Additional outcomes include a book chapter, performances, web articles and enhancements to Iowa State theatre courses.

RANALLI, JAMES, Associate Professor, English, 9 years of service, full academic year
Title: European Portuguese in the Digital Age: A Project Encompassing Research, Teaching, and ChatBot Development
Ranalli completed his assignment based in Portugal, where he focused on the intersection of technology and language learning. Outcomes of this work include a prototype listening app, development of a journal article, a conference presentation, and content for Iowa State English courses.

SOMERVILLE, ANDREW, Assistant Professor, World Languages and Cultures, 7 years of service, full academic year
Title: Human Ecology and Archaeology in Central Mexico
Somerville conducted archaeological field research in central Mexico, supported by the National Science Foundation, which will lead to a book proposal. Additional outcomes include several journal articles, a book chapter, international conference presentations, and material for Iowa State courses on human origins.

STERNBERG, HENRIK, Associate Professor, Supply Chain Management, 7 years of service, fall semester
Title: Tackling the Supply Chain Management Grand Challenge
Sternberg conducted a large-scale research project in Switzerland to address the challenges of efficiency, sustainability, and safety in supply chain management. Outcomes include two conference presentations and the submission of four journal articles. Sternberg received a $10,000 Lindley grant to support his travel.

STEWART, SUSAN, Professor, Sociology and Criminal Justice, 22 years of service, fall semester
Title: Population and Society: Concepts, Issues, and Skills. Creating the Next Generation of Demographers
Stewart used the assignment to make substantial progress on a book manuscript focused on skills-based learning and data analysis in population studies, scheduled to be published in 2027. The book will be a useful tool for undergraduate courses in sociology, demography, geography, environmental studies, political science, and other disciplines, including Iowa State courses on population and society, and families and intimate relationships.

TANK, KRISTINA, Associate Professor, School of Education, 11 years of service, fall semester
Title: Furthering Research in Early Elementary CS/CT and STEM
Tank's assignment addressed the growing need for computer science education opportunities for K-12 students, specifically computational thinking (CS/CT), which applies fundamental computer science concepts to other areas. Outcomes included materials for Iowa State's teacher education courses, the development of three manuscripts, a conference presentation, $558,000 in support funding, and an additional $750,000 in external funding proposals.

TURNER, TRACY, Associate Professor, Finance, 10 years of service, spring semester
Title: Bank deposits and climate change
Turner launched three new research projects during her assignment focused on the impact of severe weather events on family and community finances. Outcomes of this work included the

development of three manuscripts, two conference presentations, and new content for Iowa State finance courses.

VAN DUSEN, BEN, Associate Professor, School of Education, 5 years of service, spring semester
Title: Bridging AI and Education: A Roadmap for NLP Integration in LASSO
Van Dusen integrated advanced natural language processing technology (NLP) in the Learning About STEM Student Outcomes (LASSO) platform, a widely adopted assessment tool used by instructors and students nationwide. Outcomes included a conference paper and presentation, development of a software prototype, and $2.7 million in funding proposals. Van Dusen also received $119,000 in internal grants related to AI in teaching and learning. This work will serve as the foundation for external funding proposals, as well as contribute to an Iowa State academic minor in applied AI, currently in development.

WINHAM, DONNA, Associate Professor, Food Science and Human Nutrition, 11 years of service, fall semester
Title: Augmenting research methods skills for data analysis and linkages of the social determinants of health
Winham's assignment focused on analyzing behavior-predicting data related to nutrient-rich foods and training students in statistical analysis. Results include five published papers, two more papers in process, and a professional presentation.

YAN, JUE, Associate Professor, Mathematics, 19 years of service, spring semester
Title: Cell-average-based Neural Network Method: Development, Analysis, and Application in Aero Dynamics
Yan used the assignment to advance her research on machine learning neural network methods. Outcomes of this work include more than $350,000 in external funding proposals, pre-proposals to the U.S. Air Force and Department of Defense, four journal articles, seven invited talks and conference presentations, and content for an Iowa State course on the mathematical principles of data science.

ZHANG, LING, Associate Professor, Apparel, Events, and Hospitality Management, 7 years of service, spring semester
Title: Exploring the boundless potential of virtual fitting technology for sustainable kid's wear design
Zhang's assignment focused on integrating 3D virtual fitting technology to improve designs for children's clothing. Outcomes included the delivery or preparation of 11 conference presentations, three papers, support for graduate students, and updates to Zhang's apparel merchandising courses. Zhang also received an internal Miller Faculty Fellowship award of $50,000 to further incorporate AI into fashion design.

University of Iowa

Amad, Paula T, associate professor, Liberal Arts and Sciences-Cinematic Arts, 21 years of service, Spring 2025
Title: Aerial Sublime: Photography, Cinema, and Visual Culture
Amad completed her second book manuscript, *Aerial Sublime: Photography, Cinema, and Visual Culture*, and submitted for review to the *University of Chicago Press* late May 2025. In her book, Amad excavates the origins of our current obsessions with viewing and recording the earth from above, focusing upon the intertwined evolution of the airplane and motion picture camera from the late 19th to early 20th centuries. Retracing the now vanished flight trails that connected early aviation and cinema, *Aerial Sublime* illuminates the continuing fascination and fear that mobile aerial vision arouses today in a mediascape of GIS applications and drone footage. Amad devoted her PDA time to revising the manuscript in preparation for a publication review. The book's topic directly impacts Amad's undergraduate and graduate teaching on the cultural history of media. In addition, as the first publication to study F. W. Brinton, one of Iowa's first exhibitors of moving images who also happened to be an airship inventor, the book will expand Iowans' appreciation of their under-recognized role in film and aviation history.

Bern-Klug, Mercedes E, professor, Liberal Arts and Sciences-Social Work, 21 years of service, Spring 2025
Title: Connecting Individuals and Families with Good Nursing Home Care: Information is Power
After reviewing the literature and not finding any studies on the topic, Bern-Klug, used the PDA to open a new line of research for herself and for the field. The findings of her study can be used to help the federal government improve the way they report data about the consistently poorest performing nursing homes in the country. She also served as one of five co-editors for a special issue of the journal *Frontiers in Public Health*. The special issue—with 54 articles by authors from around the world—is entitled *International perspectives on older adult social isolation and loneliness*. The special issue was turned into an eBook which was published this month. Bern-Klug also participated in the submission of three grant proposals, all related to caring for older adults with dementia. The PDA will enhance her teaching of social work research and the Global Aging course she teaches for the Aging and Longevity Studies Program.

Boehmke, Frederick J, professor, Liberal Arts and Sciences-Political Science, 24 years of service, Spring 2025
Title: The Spread of COVID-19 Policies Across the American States
Boehmke studied the adoption and diffusion of U.S. states' policy responses to the COVID-19 pandemic. He expanded an ongoing, publicly available data set—prepared with support from the National Science Foundation—that describes the timing of more than forty thousand state policy actions covering over two hundred distinct policies adopted by the U.S. states to address the health, economic and social consequences of the pandemic. Boehmke constructed and examined measures of state policy innovativeness, policy leadership, and policy choices and changes made in the states during the first fifteen months of the pandemic. He wrote, revised or published six articles. The research will inform scholars, practitioners and policymakers about the policy response to the COVID-19 pandemic and help guide future responses to major crises affecting the U.S. states, including Iowa. Boehmke involved six undergraduate and four graduate students in the research. The data and methods employed will be used in undergraduate and graduate courses to illustrate data analysis and data visualization.

Bond, Sarah E, associate professor, Liberal Arts and Sciences-History, 10 years of service, Spring 2025
Title: A Cultural History of the Night in Antiquity

Bond gave numerous talks at universities across the country in order to encourage public engagement, humanities writing, and outreach in the fields of Classics and History. Her Holtsmark chair largely funded the tour and was a way to also promote the release of Bond's book, *Strike: Labor, Unions, and Resistance in the Roman Empire* (Yale 2025). The sales of the book were high enough that *Yale Press* has now decided to release an updated paperback in January 2026 and optioned a second book, *A Cultural History of the Night in Antiquity*, which is hesitantly called *Nox: Night in the Roman World*. Bond wrote the first two chapters of the book, which will be submitted with the book proposal to *Yale University Press* for review and to secure an advanced contract. In addition, Bond wrote a chapter on GIS mapping of the Roman Mediterranean for the *Oxford Handbook of Digital Classical Studies* and penned an afterword on labor in dream manuals for a new volume on *Religion and Work in the Ancient and Medieval World*. She completed four book reviews, two manuscript reviews, and her book proposal.

Brochu, Christopher A, professor, Liberal Arts and Sciences-Earth & Environmental Sciences, 24 years of service, Spring 2025
Title: Crocodylian Response to Environmental Change in the Cradle of Humanity
During Brochu's PDA, five manuscripts were submitted for publication in peer-reviewed journals, one of which is in press. One describes a crocodile from the same site that preserved the early human ancestor known as Lucy. Substantial progress was also made on a proposal for the NSF to continue a revision of East African crocodiles. Brochu conducted research at the National Museums of Kenya in Nairobi in July and August, following from accomplishments made during the leave and doing much to advance subsequent projects. This work identified material suitable for undergraduate or graduate research projects and images needed for development of a new upper-level course on reptiles and birds. It advanced efforts to use crocodile evolutionary history as a model system for improving methods to determine divergence time between lineages from molecular data (which in turn can be applied to epidemiology) and to apply the crocodile fossil record to understanding past and present environmental change.

Buch, Elana D, associate professor, Liberal Arts and Sciences-Anthropology, 13 years of service, Spring 2025
Title: Remaking Home in Later Life
During the PDA, Buch pursued multiple avenues of her research agenda, which investigates how practices of interdependence (such as care and co-residence) are connected to large scale social changes. Buch resubmitted a revised manuscript on the anthropology of care and drafted a new article on older adults' housing decisions for major journals. Buch's pilot research project, focused on older adults' housing in Los Angeles and Eastern Iowa, proved unfeasible due to the housing crisis wrought by the Los Angeles fires, as well as changes to federal funding mechanisms. Buch began revising the planned methodology for this long-term project, and also began developing the *Good Life Project* which will train undergraduates in community-based ethnographic research methods to investigate what a "good life" means to people across Iowa and the U.S. This project will develop experiential learning opportunities for students at Iowa and generate novel approaches to understanding Americans' changing values and aspirations.

Curto, Raul E, professor, Liberal Arts and Sciences-Mathematics, 43 years of service, Fall 2024
Title: Research Projects in Multivariable Operator Theory
Curto worked on three research projects exploring the interplay between multivariable operator theory (MOT) and the related fields of algebraic geometry, optimization, numerical analysis, semidefinite programming, and sensor network localization. In collaboration with researchers from Bucknell University, the University of Texas Rio Grande Valley, Université de Lille (France), Seoul National University (Korea), and the University of Calicut (India), Prof. Curto

developed concrete solutions to problems involving single and bivariate weighted shifts, multiplication operators, and Bernstein functions. His work made substantial contributions to MOT – an active area of research within functional analysis – across three key topics: solution of moment problems, construction of examples of applied research interest, and building a framework to study multivariate settings in math, science, and engineering. Curto continued to supervise three doctoral dissertations, and his research findings directly informed the content of his second-year graduate analysis course. Each project resulted in journal publications, presentations at mathematics conferences, and opportunities to enhance the curriculum of advanced graduate-level analysis courses.

Curto, Roxanna N, associate professor, Liberal Arts and Sciences-French & Italian, 13 years of service, Spring 2025
Title: Writing Sport: The Stylistics and Politics of Athletic Movement in French and Francophone Literature
Curto used the time provided by her PDA to make significant progress on her book project, *Writing Sport: The Stylistics and Politics of Athletic Movement in French and Francophone Literature*. *Writing Sport* examines aspects of physical culture—such as exercise, leisure and sports—in 20th and 21st-Century literature written in French from Europe and the Francophone world, including texts about the Olympic games, tennis, the Tour de France, hockey in Canada, Senegalese wrestling, and soccer in France and Africa. It is the first comprehensive critical study of the representation of sport and physical culture in literature from the French-speaking world. Curto wrote a book proposal, completed three chapters, and prepared or published four essays on related topics. In addition, she presented at two conferences and gave an invited lecture. Her research in this area informs two courses she regularly teaches. Moreover, Curto continued work on an open-access textbook, *Trip to Belgium, France, and Switzerland*.

Cwiertny, David M, professor, Engineering-Civil & Environmental Engineering, 13 years of service, Spring 2025
Title: Advancing Research and Technology Translation around Water and Health Initiatives in Iowa
Cwiertny advanced strategic research and outreach initiatives at the Center for Health Effects of Environmental Contamination (CHEEC) and promoted new research directions in his laboratory in technology development toward a future start-up. At CHEEC, he conducted field work to identify Iowan's exposure risk to carcinogenic PFAS "forever chemicals" and expanded the Get the Lead Out (GTLO) program, which provides free drinking water testing for Iowans. Research activities developed new technologies for recovery of critical materials and conversion of nitrogen waste into valuable products. Outcomes include one funded research proposal from the Carver Charitable Trust, new insights on PFAS exposure risks in private wells, recipes for materials for future invention disclosures, and dissemination efforts including several manuscripts (either published or submitted) and research presentations. Outcomes benefit the public health of Iowans through work on drinking water risks, and research efforts have integrated student education and training on topics of regional and national significance (e.g., critical materials).

Dailey, Michael E, associate professor, Liberal Arts and Sciences-Biology, 28 years of service, Spring 2025
Title: Proposal for Learning New Spatial Biology Techniques to Study Mechanisms of Brain Injury in Mice and Humans
Dailey used a PDA to expand his laboratory's technical capabilities and conduct experiments testing new hypotheses on how alcohol triggers and modifies cell death in the developing mouse brain. These studies advance the long-term goal of preventing and treating fetal alcohol

spectrum disorders (FASD), a major public health concern. According to the CDC, FASD affects up to 1 in 20 individuals in the U.S.--making it 2.5 times more common than autism. Rates of binge drinking among women of childbearing age remain especially high in the upper Midwest, including Iowa. Research completed during the PDA laid the foundation for a new publication and refined the focus of a forthcoming NIH grant application. The award also initiated a new collaboration with colleagues specializing in spatial gene expression analysis. Dailey is incorporating the knowledge and methods gained into his upper-level Neurobiology and Cell Biology Laboratory courses for neuroscience majors at UI.

Dorale, Jeffrey A, associate professor, Liberal Arts and Sciences-Earth & Environmental Sciences, 21 years of service, Fall 2024
Title: Reconstructing the Long-term Natural Variability of Midwestern Flood Events
In the midwestern U.S., the predicted trajectory of climate change is warmer temperatures and more extreme droughts and floods. Dorale studied cave deposits to extend our understanding of climate shifts in the Midwest beyond the short period of the instrumental record (~150 years). The study developed new techniques for reconstructing past temperatures and flooding and focused on past warm periods as an analog for future warming. Results of the research indicate that cycles in flood behavior are much more dynamic than can be explained by temperature shifts alone. One hypothesis is that El Niño - La Niña dynamics are the driving force behind midwestern flooding, and that climate transition periods, such as that between the Medieval Warm Period and Little Ice Age, are also times of more frequent, large floods. Flooding is one of the most devastating natural disasters that faces society, including people in Iowa, so a better understanding of flooding's natural variability will help societies better anticipate and mitigate large floods. Two conference abstracts were produced, along with graduate student training and new material for courses at UI.

Duck, Steve, professor, Liberal Arts and Sciences-Communication Studies, 39 years of service, full-time for academic year 2024-25
Title: Rethinking Personal Relationships and Society
Duck completed a significant review of the past decades of scholarship in the multidisciplinary science of Social and Personal Relationships and compiled the results into a systematic record and critique. This project was conducted in Iowa City, online or through personal resources for access to a range of published research. Duck reviewed this material and applied a theoretical approach based on rhetorical principles, specifically the pentadic analysis of K. Burke. This proposed a reconciliation of different disciplines' research by aligning them into a novel conjunction of findings that will be valuable to the several classes across the College of Liberal Arts and Sciences that teach relationship science or interpersonal communication. After this review, compilation and reconciliation of research, Duck then wrote a book manuscript to describe the results and to offer a fresh perspective on research to guide future scholarship and confirm UI as a leader in this field. The manuscript was submitted under contract to Elgar publishing, UK. It is presently in production with an expected publication date in January 2026.

Ehrstine, Glenn, associate professor, Liberal Arts and Sciences-German, 29 years of service, halftime for academic year 2024-25
Title: “Mother Mary (A Silent Part)”: The Protestant Reform of Catholic Religious Theater
Ehrstine conducted research that resulted in two conference presentations, one book review, and two journal essays. The first essay, '*Schuldrama' in Sixteenth-Century Switzerland?*, expands his previous research on the role of theater in advancing the Protestant Reformation in German-speaking Bern, Switzerland. He now possesses expertise concerning theater in Francophone Switzerland as well. His second essay, *Processional Play Pardons in York and the Holy Roman Empire*, applied the conclusions of his book manuscript on *Devotional*

Spectatorship and the Indulgence in Late Medieval Germany to the best-known pre-Shakespearean theater tradition in England, the York Corpus Christi Mystery Plays. Ehrstine's PDA has resulted in a much greater familiarity with long-standing theatrical and religious traditions in England and France. This will allow him to engage more effectively with students of all faiths at UI. His research as a theater historian overlaps closely with the field of Religious Studies, which will benefit his new course on Castles, Cathedrals, and Composers.

Goetz, Christopher J, associate professor, Liberal Arts and Sciences-Cinematic Arts, 8 years of service, Fall 2024
Title: Another Castle: Gaming Culture Beyond the Screen
Goetz began writing his second book, which explores games through the rubric of evolutionary theory. The project hopes to foster better dialog between evolutionary biologists and humanities scholars, who would both benefit from the exchange. Goetz argues that because digital games render reward systems especially visible, they could play a key role in evolutionary psychology's effort to "reverse-engineer" the complex machine of the mind. In turn, humanities scholars cannot avoid engaging with recent findings in evolutionary psychology that have serious implications for how we think about gender, identity, media, and the arts. Goetz will incorporate his findings into both undergraduate and graduate courses, which regularly engage with game culture and the challenges of writing media history.

Goree, John A, professor, Liberal Arts and Sciences-Physics & Astronomy, 39 years of service, Fall 2024
Title: Research Collaboration in Physics and Engineering
Goree undertook two research projects involving scientific collaboration: one with Appalachian State University's Physics Department, the other with UCLA. The Physics collaboration led to the completion of a jointly authored paper on a plasma physics experiment, involving shock waves passing through a layer of electrically charged small solid particles. For that effort, experimental data recorded by high-speed imaging was analyzed using a newly developed method. The collaboration with UCLA was an analysis of another plasma physics experiment, with a measurement of the electrical force acting on small solid particles after the power is turned off that sustains the plasma. The latter project was related to an invention by Goree that led to a recent U.S. Patent application. Educational materials were also for existing undergraduate and graduate physics courses.

Greyser, Naomi, associate professor, Liberal Arts and Sciences-Gender, Women's, and Sexuality Studies and American Studies, 16 years of service, halftime for calendar year 2024
Title: Blocked and Unblocked: Writing, Research, and the Creative Process
Greyser's PDA supported completing her second book, *Unblocked: Writing, Research & the Creative Process*. The book is now under contract with the University of Chicago Press (UCP). In addition, Greyser submitted an article about inquiry as a practice that expands on that book and looks ahead to her third, as well as a third article on inquiry's form and performance. These projects will continue to benefit teaching and learning, research, and discovery at Iowa and beyond. Developed through Greyser's extensive work supporting faculty across North America with their projects-in-progress, this book's approaches both complement and augment researchers' expertise in their own fields. UCP will be marketing this book for the graduate and advanced undergraduate classroom, supporting students across levels. Greyser will continue to teach two courses with this book and offer workshops nationally and internationally.

Hall, Louisa, associate professor, Liberal Arts and Sciences-English, 6 years of service, halftime for academic year 2024-25
Title: Settlement: A Novel

Hall set out to complete a full-length novel about a video game called *Settlement* and the effects of fictional violence on real-life participants. She was able to finish a full-length draft of the project. As she wrote, she began to understand the novel as part of a trilogy of short novels about gender performance and technology, all of them narrated by women who are not entirely real: an avatar (Settlement), a humanoid, and a cyborg. She began and completed a draft of a second short novel narrated by an artificially intelligent humanoid, entitled *One of Us*. The award year allowed her to study the craft of the novel, a study she will employ in all her undergraduate teaching, especially her advanced workshop entitled *The Craft of the Novel*. Her novels will contribute to the fiction of Iowa, of the American Midwest, and American literary science fiction.

Hand, Brian, professor, Education-Teaching & Learning, 20 years of service, Spring 2025
Title: Building Frameworks to Explore Complexity in the Classroom
The purpose of the PDA was to enable Hand to continue to build richer frameworks to help improve the complexity of what occurs within science classrooms. Hand interacted with Emeritus Prof. Billy McClune from Queens University Belfast. Hand has previously visited Prof. McClune and this visit was useful in helping to build this complexity framework. The building of a framework involves the establishment of a series of publications that highlight the various elements. Hand was able to complete a number of articles to publication and focused on the development of an article for the prestigious journal, *Educational Psychology Review*. Hand will continue the initial work to have the manuscript completed by the end of the year. Through this emerging framework, Hand will be able to help improve the preparation of teachers in the preservice program here at UI, and will work with the AEA science consultants to help improve the teaching and learning of science within Iowa schools.

Hitlin, Steven, professor, Liberal Arts and Sciences-Sociology, 19 years of service, halftime for academic year 2024-25
Title: The Moral Matrix
Hitlin turned his 2023 course on the Social Psychology of Good & Evil into a book proposal. He developed an outline and proposal that he submitted to academic book publishers, which culminated in a series of meetings at an annual sociology conference. One publisher has requested to send the proposal out for external review (a major step in a potential contract); another publisher is bringing the proposal to their board. The book has changed titles; it is now called *Moral Marionettes*, and it serves as an accessible overview of the invisible strings that pull at people's deepest convictions and moral values. Additionally, the research done to pull the proposal together will serve to improve the teaching of the relevant course in spring 2026, incorporating issues like Artificial Intelligence and Globalization. The PDA also helped Hitlin further his other scholarship with a series of presentations and academic articles.

Jay, Laurent O, professor, Liberal Arts and Sciences-Mathematics, 26 years of service, Spring 2025
Title: Advanced Numerical Methods in Scientific Computing
Jay worked on two books which will benefit students at UI: one on numerical methods in computational science and one on ordinary differential equations. He worked on the revision of two research articles, with one being published and one awaiting acceptance. He has worked on three other research articles, two of them being in collaboration with three graduate students he has been supervising. Advances have been made for the numerical solution of certain types of differential-algebraic equations (DAEs) which are basically differential equations coupled with nonlinear equations. In particular, a novel application of implicit Runge-Kutta methods to index 2 DAEs, a new projection technique for index 3 DAEs, and the analysis of starting algorithms and of modified Newton iterations for such DAEs. He has worked on a Matlab code implementing an innovative predictor algorithm for the solution of differential equations by implicit methods. He

offered a seminar presentation and gave a talk at an international conference. He also worked on a report needed for the seven-year review of the UI AMCS Program.

Jung, Anita, professor, Liberal Arts and Sciences-Art & Art History, 18 years of service, Spring 2025
Title: Researching the Waswo Collection of Indian Prints and Natural Dyes in India
During her PDA, Jung advanced the video project for the Waswo Collection of Modern and Contemporary Indian Printmaking at the UI Stanley Museum of Art. Building on her 2022 Fulbright Fellowship, she collaborated with Indian curator Amit Kumar Jain and filmmaker Pooja Usha to conduct new artist interviews, revisit studios, and structure a forthcoming documentary. She also worked with UI graduate student Obatola Layiwola to edit interviews and create short educational videos that will be hosted online through the UI Digital Scholarship & Publishing Studio. The PDA strengthened international partnerships, produced significant new documentation of Indian printmaking, and enriched teaching resources for Iowa students. This work benefits society by fostering cross-cultural understanding, advancing scholarship in global art history, and highlighting artistic traditions that connect Iowa to an international community of artists and ideas.

Kang, Jiyeon, associate professor, Liberal Arts and Sciences-Communication Studies, 14 years of service, Fall 2024
Title: Distant Belonging: Chinese Students in the Global University Marketplace
Kang conducted substantial research for her book *Distant Belonging*, which examines how the influx of Chinese undergraduates has reshaped campus life in the U.S. and South Korea over the past two decades. She completed ethnographic interviews with Chinese students in South Korean universities, transcribed these interviews, and drafted analytical chapters of the book. In addition, she advanced new research projects and delivered invited talks at universities and international conferences. Her co-edited special issue was also invited for publication as an anthology by Routledge. Kang's activities directly informed her teaching and benefited both the State of Iowa and society at large. She revised upper-level graduate courses, adding new readings and assignments to reflect evolving national, transnational and mediated contexts. Her research and teaching on youth, study abroad and global culture help prepare Iowa students for shifting global environments and their local, national and international implications.

Kayle, Jennifer, professor, Liberal Arts and Sciences-Dance, 20 years of service, Spring 2025
Title: Ageing Virtuosity
In *Ageing Virtuosity,* Kayle critiqued the marginalization of ageing dancers with two solo works that featured her own ageing body; three performances were secured for 2025 and 2026: Northampton, MA (draft screendance), Southern Illinois University Edwardsville, and St. Louis, MO (stage solo, curated by the dance company, *MADCO*). Both solos intervened to resist expectations and stereotypes of the young dancer. Innovations in creativity answered the question: how does the ageing dancer make efficient use of their physical resources? Outcomes included new methods that reduced or digitally outsourced the physical stress of dance-making while preserving authorship and impact; accomplished through directorial prompts, improvisation, video capture, digital editing and distributed learning, the tested methods reduced wear and tear on the body while expanding the modes, locations and duration of compositional research. Kayle will incorporate these methods into her coursework in a way that will benefit dance-makers of all ages across degrees, including UI MFA students who are retired dancers shifting into academic jobs. With its alternative view on the beauty, meaning or possibility in physical maturity, Kayle’s performance methods will prompt audiences of any age to revise limiting beliefs about ageing.

Koylu, Caglar, associate professor, Liberal Arts and Sciences-Geographical & Sustainability Sciences, 9 years of service, Fall 2024
Title: Population-Scale Kinship Networks and Migration & Multi-Hazard Vulnerability
Koylu advanced research on kinship networks and migration, cancer mapping, and environmental health. He worked on preparing, revising and publishing journal articles across these projects. He extended his NSF-funded project on population-scale family trees by designing the Roots & Migrants web application and a high school teacher workshop to support Iowa classrooms in teaching migration and U.S. history. Another focus was his contribution to the Cancer Analytics and Maps for Small Areas (CAMSA) platform, now the official cancer mapping tool for the Iowa Cancer Registry, and submitting an NIH grant proposal under review. He also began a collaboration with the Center for Health Effects of Environmental Contamination to study groundwater quality and social vulnerability, with preliminary results identifying communities most at risk. These activities enriched teaching and mentoring at UI, strengthened student research training, and produced tools and findings that benefit Iowa and society by improving education, public health, and understanding of environmental challenges.

LaLumiere, Ryan T, professor, Liberal Arts and Sciences-Psychological & Brain Sciences, 14 years of service, Spring 2025
Title: Analyses of Brain Region Interactions
LaLumiere used his PDA to focus on writing and submitting new grant applications to the National Institutes of Health/National Institute on Drug Abuse. This included a five-year R01 on which he was the Principal Investigator and a five-year R01 on which he was a Co-Investigator with his collaborator Prof. John Wemmie. Both grants were reviewed and received strong scores during the summer. Funding outcomes will depend on the upcoming fiscal year budget. Additionally, LaLumiere submitted two empirical manuscripts for publication. Both received positive reviews and are currently being revised. The external grants will benefit students here by providing funding for the laboratory, allowing the team to incorporate undergraduate assistants in its research and providing them with a top-notch research experience. Moreover, because the grants focus on the neurobiology of drug addiction, the research they will support will benefit both the people of Iowa and society generally, as substance use disorder continues to be a major problem in our country.

Leddy, Johna, associate professor, Liberal Arts and Sciences-Chemistry, 33 years of service, Spring 2025
Title: Magnetoelectrocatalysis: To Vet and Exploit Our Model
Catalysts increase reaction rates and efficiency, but catalysis is not well understood based on the physical and chemical properties of the catalyst. Leddy built a theory for catalysis of reactions that involve electrons. In the fundamental model of magnetoelectrocatalysis, rates are characterized by the magnetic properties of the electrode catalyst and the reactant and product. The model draws on the foundational content of first year chemistry and physics. Experimental and literature data are well fit by the model. The model allows a priori design of better catalysts for specific reactions, based on the magnetic properties of the catalysts, reactant, and product. Design of better catalysts for electrolytic hydrogen increases the generation efficiency of ammonia needed for fertilizer. With better catalysts, energy efficiency increases and environmental taxes decrease. Leddy is currently testing the model and writing the paper. The quantitative, foundational tools used to develop the model will inform students' education and extend to material specific understanding of catalysis in general.

LeFevre, Gregory, associate professor, Engineering-Civil & Environmental Engineering, 9 years of service, Spring 2025

Title: Probing Complex Chemical Contaminant Exposure Mixtures in Water using Non-Target Analysis High Resolution Mass Spectrometry
LeFevre examined how complex chemical mixtures change in the environment using novel analytical techniques. Complex mixtures of chemicals are important environmental and human health concerns because organisms are rarely exposed to contaminants one at a time. Understanding how complex mixtures change in the environment is limited; however, Non-Target Analysis (NTA) is an emerging technology that can illuminate processes. LeFevre worked with researchers at University of California-Davis and the US Geological Survey Pesticide Fate Research Group to learn NTA by collecting and analyzing water samples. The samples analyzed led to new discoveries on fungicide presence in Ecuadorian drinking water, in collaboration with University of California-San Diego researchers. Prof. LeFevre has taken this new knowledge back to UI, where it will benefit advising student research and integrated into multiple courses he teaches (e.g., environmental chemistry). Results will benefit the university through further external funding. The PDA will benefit the state of Iowa and society generally by improving understanding of chemicals in drinking water.

Linley, Jodi, associate professor, Education-Educational Policy & Leadership Studies, 8 years of service, Fall 2024
Title: Thriving in College: A National Study of Lesbian, Gay, Bisexual, Transgender, and Queer (LGBTQ+) Students
The PDA provided Linley with the necessary time to co-launch a multi-institution, mixed-method study designed to provide new insights on what it means to succeed and thrive in college, especially when holding a stigmatized identity. In fall 2024, she collaborated on the development and administration of the initial study survey, and she trained and led a team of doctoral students in preparing for qualitative interviews. This project will result in a national scope of how LGBTQ+ students succeed and thrive in college, what experiences affect their learning and success, and how LGBTQ+ students' experiences vary by material conditions (such as food and housing insecurity), social identities (e.g., race, gender, dis/ability, spirituality), and institutional profiles/resources (e.g., public, private, minority serving, liberal arts, open access). The results of this study will inform graduate teaching in higher education and student affairs programs, support improvements in student services across Iowa colleges and universities, and offer research-based guidance for policies that strengthen conditions for academic success and personal well-being among students with varied backgrounds and experiences.

Martin, David B, associate professor, Liberal Arts and Sciences-Chemistry, 5 years of service, Spring 2025
Title: Mechanistic Investigation of Catalytic Reactions Through Training and Collaboration
During his PDA, Martin advanced his research in organic chemistry through a multi-day visit to the University of Chicago to expand research capabilities, grant and journal article writing and submission, and organization of an international conference. Two new grants were submitted, two papers were published, and others are under review or nearing submission. New techniques and strategies developed during the PDA are being explored by several group members to advance their projects, including work toward treating neurodegenerative diseases. Furthermore, extra time was spent on closer mentorship of graduate students, enhancing their training. Martin teaches graduate and undergraduate courses on organic chemistry which will benefit from his deeper understanding of contemporary topics and emerging techniques. The quality of classroom education is important to continue serving students and attracting top candidates to UI programs. The university’s profile is also enhanced by Prof. Martin's role as co-chair of a prestigious international conference in 2025.

McLaren, Rachel M, associate professor, Liberal Arts and Sciences-Communication Studies, 16 years of service, Fall 2024
Title: Improving Parent-Adolescent Communication and Conflict
During the PDA, McLaren developed and implemented an intervention, in the form of a public workshop, for parents of teenagers about communicating with teens in a digital age. McLaren also designed a research study and collected data to analyze the impact of this workshop on parents. She invited a colleague, Prof. Young, to help her develop the workshop, which focused on guidelines for parents to help them manage their teens' media use. Initial results from the research study showed positive effects of the workshop. McLaren subsequently was invited to give a workshop on *Fostering Hope in Teens During Difficulty* as part of the *TendHer* program in April 2025. Prof. McLaren shared her work through a *Psychology Today* blog, which has almost 10,000 views since December 2024. Profs. McLaren and Young will continue to host workshops during the 2025-2026 academic year. The content of the workshop will be the basis of a book proposal, *How the Science of Communication Can Help You Cultivate Meaningful Connections with Your Teen*. Based on this work, Prof. McLaren will develop new material for her undergraduate and graduate courses focused on conflict, emotion, and families.

Messerle, Louis, associate professor, Liberal Arts and Sciences-Chemistry, 40 years of service, Spring 2025
Title: Synthesis and Small-Molecule Reactivity of the First Molecular Compounds with Uranium-Uranium and Thorium-Thorium Covalent Bonds
During his PDA, Messerle supervised laboratory research of two senior Chemistry undergraduates and one graduate student supported by a Department of Energy grant. Messerle repaired a leaking inert gas purification system that supplies recirculated, oxygen-free inert gas to a glove box central to the research. The PDA allowed Messerle to teach the undergraduate students new lab techniques and data interpretation and to advise the graduate student in critical thinking skills and experimental design and implementation. Two manuscripts written during the PDA will be submitted to the American Chemical Society journal, *Inorganic Chemistry*, after addition of two small pieces of data by J. Earl and final review by a former graduate student. The first manuscript describes new compounds for development as medical diagnostic X-ray contrast agents. The second manuscript details approaches to the first compounds with uranium-uranium and thorium-thorium chemical bonds, a long-sought goal with considerable theoretical interest for understanding chemical bonding and reactivity in heavy element compounds.

Mitchell, Colleen C, associate professor, Liberal Arts and Sciences-Mathematics, 19 years of service, Spring 2025
Title: Models for Mitochondrial Fission/Fusion Balance
Mitchell used mathematical modeling, simulation, and analysis to investigate the biochemical and cellular regulation of mitochondrial fission/fusion balance. Mitochondria are membrane bound organelles found in most cells. They use aerobic respiration to generate ATP, the cell's energy currency. Mitochondria undergo fission (splitting of one into two) and fusion (the merging of two mitochondria) to maintain a healthy population. However, fission/fusion imbalance has been implicated in a host of diseases including cardiomyopathies, neurodegenerative and metabolic disorders. The objective of this ongoing project is to identify control points in the mechanisms coordinating this balance. These control points will facilitate identification of therapeutic targets which modulate mitochondrial dynamics without inducing extreme hyperfission or hyperfusion. This interdisciplinary project combines dynamic models motivated by imaging and biochemical studies and experiments motivated by quantitative model predictions. This PDA resulted in manuscripts submitted to both mathematical and physiological journals as well as new materials for Mitchell's undergraduate and graduate courses.

Neiman, Maurine, professor, Liberal Arts and Sciences-Biology, 17 years of service, Spring 2025
Title: Cytogenetic Characterization of a Dramatic Genomic Expansion of Repeated Genetic Elements in Asexual Snails
Neiman studies why sexual reproduction is so common. Her 2021 study provided new evidence for the prominent mutation-focused class of hypotheses, showing a dramatic expansion of repetitive DNA in asexual members of her snail system. Expert collaborators Prof. Dunja Lamatsch (University of Innsbruck, Mondsee, Austria) and Prof. Stefan Müller (Institute of Human Genetics, Munich, Germany) visually confirmed this finding using sophisticated cytogenetic techniques that allow for the visualization of repetitive elements, demonstrating that asexual snails possess significantly more copies of these duplicated genetic elements in their chromosomes. Building on this discovery, Neiman used her PDA to train (along with her Ph.D. student) with Drs. Lamatsch and Müller in Austria and Germany. They have now brought these challenging procedures and new cell culture skills back to Iowa, empowering them to break new research ground and train students. While in Austria, Neiman also collaborated with Prof. Otto Seppälä to study how climate change-related heat waves affect immune function.

Nishi, Yumiko, associate professor, Liberal Arts and Sciences-Asian & Slavic Languages & Literature, 12 years of service, Spring 2025
Title: Exploring Native-like Attainment of Semantic Representations in a Second Language
During the PDA, Nishi completed a cross-linguistic study on aspect, comparing English, Japanese, Chinese and Korean. The research, combining quantitative and qualitative analyses, offers new insights into cross-linguistic variation, with implications for typological understanding, theoretical accounts of aspect, and second language acquisition. Completing the draft enabled citation in a chapter for the *Handbook of Research Trends in Japanese Linguistics*, under consideration by *Cambridge University Press*, and the article is now planned for submission to Studies in Language. Nishi also advanced the originally proposed acquisition study by conceptualizing its central argumentation. These accomplishments enhance her teaching of Japanese linguistics courses and promote the visibility of Japanese linguistics research, benefiting UI and the broader scholarly community.

Onel, Yasar, professor, Liberal Arts and Sciences-Physics & Astronomy, 37 years of service, Fall 2024
Title: Research on High Energy Physics at CERN, DUNE Experiment Planning at the FERMI National Lab and Detector Development for Cancer Therapy at UI.
Onel conducted advanced research in high energy particle physics at CERN (Geneva, Switzerland) and contributed to the planning of the DUNE (Deep Underground Neutrino Experiment) project at Fermilab (Chicago, USA). At CERN, he played a key role in the upgrade of the HCAL (Hadron Calorimeter) detectors within the LHC (Large Hadron Collider). He designed and fabricated key detector components in the UI Physics Department machine shops and collaborated with his graduate students in physics data analysis. Onel is CMS HF Upgrade Project manager and CMS HCAL Institutional Board Chair. In addition to his work on the current detector systems, Onel contributed to future upgrade plans for the CMS detector. As part of the DUNE experiment, he serves as the group leader for the integration and installation of the Photon Detection System (PDS). Onel has also worked with Midwest FLASH Lab: Advancing Next-Generation Radiotherapy at UI. These research activities not only advance the field of experimental particle physics but also enhance his teaching in related areas.

Peter, Richard, associate professor, Business-Finance, 9 years of service, Spring 2025
Title: Determinants of Prevention Decisions

During his PDA, Peter completed research on how individuals and organizations make prevention decisions, such as reducing the risk of illness, accidents, or financial loss. He published three works, submitted two others for peer review, and launched two new working papers. His research clarifies how income, risk attitudes and behavioral biases affect prevention behavior, and how prevention interacts with saving. These insights are directly relevant to public policy and business strategy. The results have been integrated into undergraduate and MBA teaching at UI and support Iowa's role as a leader in insurance and financial services.

Phillips, Bryan, professor, Liberal Arts and Sciences-Biology, 15 years of service, Fall 2024
Title: Testing the Role of Amyloid Protein Aggregation in Animal Development
Protein condensation is both a fundamental aspect of cell biology and formation of membraneless organelles but also implicated as a major contributor to human neurodegenerative disease due to amyloid protein-based plaque formation in brain tissue. Phillips investigated how amyloid protein aggregation -- typically associated with neurodegenerative diseases -- may play functional roles in normal animal development. Using the model organism C. elegans, he developed genetic tools to dissect the roles of two protein disaggregase systems, ABCF and HSP110/70/40, in regulating embryonic protein aggregation. His findings suggest these systems may work in concert to regulate developmental processes such as RNA metabolism. The tools generated during this PDA will support ongoing NSF-funded projects and benefit teaching by incorporating new insights into cell fate, protein regulation, and cellular signaling.

Pizzi, Elise, associate professor, Liberal Arts and Sciences-Political Science, 8 years of service, Fall 2024
Title: Government Response to Natural Disasters
Natural disasters sometimes spark political violence. At other times, no violence follows disaster events. Pizzi examined the role of government policy response in shaping the relationship between disasters and violent conflict. The project is supported by an NSF grant and involves collecting and coding data on disaster response across the globe. Two peer reviewed articles were accepted and published during the PDA. Pizzi also applied for a new NSF grant building on the project. Pizzi drafted a new manuscript and presented it at a conference in January 2025 and submitted two other working papers for peer review. In addition to publications, lessons and results of the research were incorporated into her undergraduate course, the Politics of Natural Disasters. This project addresses a growing area of concern as natural disasters become increasingly severe. The results inform policy makers and support understanding of the critical role government policy choices play in preventing violence after natural disasters.

Platte, Nathan R, associate professor, Liberal Arts and Sciences-Music, 13 years of service, Spring 2025
Title: The Music of Mary Poppins (1964)
Platte completed archival research for his in-progress book on the music of Mary Poppins (1964). He studied archival materials from the Harry Ransom Center, Walt Disney Archives, and the Margaret Herrick Library. By analyzing unpublished story outlines, drafts, and screenplays, Platte discovered that behind-the-scenes collaborations and tensions are woven into the songs themselves, creating a record of the film's development within its own music. Platte drafted three chapters of his book and delivered three research presentations. Platte's research on the film's unusual development will be incorporated into a general education course on film music, a cross-listed upper-level course on film musicals, and a course on 20th-century music for graduate students. Platte's lessons from the archives will help students learn to deploy archival research in their own creative and scholarly projects. He has begun sharing findings of his

research to community groups and has begun planning a screening of the film and discussion of the book a FilmScene, a local cinema where Platte contributes educational programming.

Prince, Anya E R, professor, Law-Faculty, 7 years of service, Fall 2024
Title: Protecting Health Privacy in a Data-Driven World
Prince conducted research related to health privacy. Her work focused on several themes, including the privacy of genetic information held by commercial companies, the collection of health statistics by state agencies, and personal data collected by vehicles. These themes grapple with how health information is protected outside healthcare and how innocuous data can be leveraged to infer sensitive health information. This widespread data collection occurs within a patchwork of state and federal laws and current data sharing practices between companies and governments. Prince's PDA resulted in two published commentaries, including in the *Journal of the American Medical Association*, two law review articles in press, and three journal articles in draft form. These publications aim to provide insight into how to effectively protect health privacy, benefiting Iowans and society in general. Additionally, Prince submitted a fellowship application in the hopes of securing future funding to continue this important privacy research. The results of this research will be incorporated into future teaching on health privacy.

Radley, Jason J, professor, Liberal Arts and Sciences-Psychological & Brain Sciences, 14 years of service, Fall 2024
Title: Development of Expertise for Implementation and Analysis of In Vivo Neuronal Activity Recordings in the Rat
The goal of the Radley laboratory is to understand the neural bases of the stress response, and to apply this information to better inform the understanding of stress-related diseases. Using rats, Radley's group has identified new brain pathways that coordinate behavioral, physiological and hormonal responses to stressors. One new method of interest to Radley, called fiber photometry, enables measurement of changes in brain cellular activity from optical detectors after expressing genetically encoding calcium reporter molecules in neuronal populations that may be pre-selected by the investigator. This PDA enabled Radley to develop expertise in this method. His laboratory developed basic proficiency by performing fiber photometry recordings in the rat prefrontal cortex. He also recruited several students from Computer Science to assist his laboratory with the analysis of fiber photometry data using Python software. This time has been invaluable in providing training opportunities for graduate and undergraduate students and has served a public good to the university and community by contributing to the advancement of scientific and biomedical research knowledge.

Rahman, Sharif, professor, Engineering-Mechanical Engineering, 29 years of service, Spring 2025
Title: Robust Design Optimization by an Extended Spline Dimensional Decomposition
Rahman conducted fundamental research on creating efficient computational algorithms and practical software tools for analysis and design of complex systems in the presence of uncertainty. The results from this research will contribute to national prosperity through the development of complex systems and products that are more durable, robust and reliable. Potential engineering applications include ground vehicle design for improved durability and crashworthiness, fatigue- and fracture-resistant design for aerospace applications, and design of microelectronic packaging under harsh environments. Beyond engineering, the results from this research will benefit the U.S. economy and society through potential application in areas, such as energy, finance and management, and transportation and logistics, where optimization under uncertainty plays a vital role. The results and outcomes from this project include six peer-reviewed journal articles, five conference presentations, a research grant proposal, and new software tools for upgrading Rahman's undergraduate and graduate courses.

Ratner, Albert, professor, Engineering-Mechanical Engineering, 21 years of service, Fall 2024
Title: Advancing Biomass to Energy Through International Collaboration
Ratner completed his effort to advance the understanding of biomass to energy through international collaboration. Ratner spent two weeks in Beijing, China working on combustion of ammonia and hydrogen. Ammonia and hydrogen or gaseous biofuels and they are popular choices to replace natural gas for many situations. This effort has resulted in one paper under review, a second in preparation, a conference paper that is to be presented in November 2025, and the creation of materials for two undergraduate and one graduate courses. The PDA provided Ratner the opportunity to work with Prof. Electo Silva Lora of UNIFIE in Brazil to publish a paper on enhancing biomass use with machine learning. Prof. Ratner worked with Prof. Ana Ramos of the Institute for Energy Research in Portugal to submit a grant application. Prof. Ratner worked on using Biomass particles to enhance liquid fuels, and this resulted in three published papers. All of these advances will provide new avenues for using biomass as energy, which will have a great positive impact on Iowa agriculture and the economy.

Reinhardt, Joseph M, professor, Engineering-Biomedical Engineering, 27 years of service, Spring 2025
Title: Synthesizing lung functional images using generative adversarial networks
During his PDA, Reinhardt advanced research on synthesizing lung functional images from CT scans using artificial intelligence, specifically generative adversarial networks (GANs). He spent his PDA at the POLARIS research center at the University of Sheffield, United Kingdom, gaining hands-on experience with hyperpolarized gas MRI and collaborating with leading UK researchers. These collaborations have led to new research initiatives, including international grant proposals and conference planning. The PDA directly benefited teaching at UI by enriching core and elective biomedical engineering courses with cutting-edge imaging content. It also enhanced Iowa's research profile through multiple high-impact publications and a submission to renew an NIH grant proposal. Ultimately, this work supports more accessible, cost-effective lung disease diagnostics, benefiting both Iowa and broader society.

Rodgers, Vincent G, professor, Liberal Arts and Sciences-Physics & Astronomy, 35 years of service, Spring 2025
Title: Thomas-Whitehead Gravitation
Rodgers performed theoretical studies in gravitational physics associated with the Thomas-Whitehead theory of gravitation, which was created and is being advanced at UI (and has led to several undergraduate and PhD dissertation topics). Gravitation is presently mathematically represented through Einstein's Theory of General Relativity, which though remarkably successful has left unresolved issues related to dark energy, dark matter and quantum aspects of gravity. Rodgers’s Diffeomorphism and Geometry Group has been able to identify salient features of string theory relevant for contemporary observational physics. Borrowing from areas of mathematics such as Lie groups and algebras, differential geometry, and gauge theories developed by T. Thomas and J.H.C. Whitehead about 100 years ago, the Thomas-Whitehead theory has already led to promising explanations for dark energy, the origins of inflationary cosmologies, and strong relationships with string theory. Rodgers deepened his understanding of various aspects of Thomas-Whitehead Gravity, including gravitational radiation in the early universe and the essence of dark matter.

Sander, Edward, professor, Biomedical Engineering, 13 years of service, Spring 2025
Title: Gaining Expertise in Mechanobiology, Regenerative Medicine, and Engineered In Vitro Systems
Impaired wound healing impacts millions of people with treatment costs exceeding $20 billion dollars annually. Regenerative medicine offers the promise of restoring the injured tissue.

Recently, the National Institutes of Health has made the development of engineered in vitro systems a priority for investigating the origins of human disease and the development and screening of new therapies. The objective of this PDA was for Sander to learn from colleagues in Ireland on emerging techniques and practices in mechanobiology, regenerative medicine, and the use of in vitro engineered systems so that he can incorporate this knowledge into his work on improving wound healing and joint contracture. These experiences will support new research opportunities, collaborative partnerships, approaches to translation, commercialization, and forming industry partnerships, and impact undergraduate and graduate curriculum, all of which will benefit the State of Iowa.

Shyamalkumar, Nariankadu D, associate professor, Liberal Arts and Sciences-Statistics & Actuarial Science, 20 years of service, Spring 2025
Title: Discrimination-free Actuarial Decision-making via Debiased Data Representations
Shyamalkumar used his PDA to broaden his research domain to include areas of the interface of actuarial science with machine learning, theory of optimal transport, and distributionally robust optimization. He worked on projects applying techniques from these domains to insurance problems, including developing a methodology for interpretable insurance pricing. His work will modernize the content of actuarial science courses and lead to the development of a graduate seminar. Outcomes from this work include the development of three scholarly papers.

Stewart, David E, professor, Liberal Arts and Sciences-Mathematics, 27 years of service, Spring 2025
Title: Development of Ridge Function Methods for Machine Learning
The mathematical analysis of machine learning involves issues of approximation, dimension reduction, and optimization. Stewart utilized his PDA to analyze the use of ridge functions with respect to each of these issues, seeking methods to create ridge function approximations that are not only accurate and computationally efficient with respect to time and memory resources, but also efficient with respect to the amount of data. Stewart's ridge function approach is advantageous in that it naturally uses low dimensional subspaces. Stewart successfully analyzed this approach with respect to the issues mentioned above. With these methods, a new and efficient machine learning architecture can be created which should have some substantial improvements over current architectures. Importantly, this work involved fruitful collaborations with researchers at Texas A&M University. The research carried out will also inform changes to an upper-level undergraduate course developed by Stewart: *Mathematics of Machine Learning*. During the PDA, Stewart also started developing an approach he is testing to make classes AI-resilient, and is currently using this for Calculus I. He is also working on an adaptive ridge function approach to fundamental machine learning techniques that may result in more reliable machine learning systems, and to systems that are potentially easier to understand and debug.

Supp-Montgomerie, Jenna, associate professor, Liberal Arts and Sciences-Religious Studies, 10 years of service, halftime for academic year 2024-25
Title: Deep Religion: Water, Wilderness, and Infrastructure
Supp-Montgomerie conducted research on the historical relationships among people, water and infrastructure in Iowa and Estonia. The primary outcome of her PDA was a year-long interdisciplinary collaboration with artists, dancers and engineers to create a multi-media performance along the Iowa River, *Meandering River*. Her interdisciplinary team received three outside grants to fund this work and performed it in May. A new iteration was included in Hancher's Infinite Dream Festival in September. As part of this work, Supp-Montgomerie conducted archival research at the Iowa State Historical Library and developed new modes of public engagement specific to Iowa by writing and performing a walking tour of the Iowa River. In addition, she wrote a significant part of her book, *How to Talk with Water*, published a book

chapter on water infrastructure and communication in *The Routledge Handbook of Religion and American Culture*, wrote an article on *Fluid*, which was accepted for publication with minor revisions in the journal *Material Religion*, and developed two new classes on humanities approaches to water at the undergraduate and graduate levels.

Swanson, Carrie E, associate professor, Liberal Arts and Sciences-Philosophy, 11 years of service, Fall 2024
Title: Plato's Euthydemus and Timaeus
Swanson completed a translation – from Attic Greek into English – and commentary of Plato's neglected but fascinating dialogue, *Euthydemus*. The finished project is 139 pages, with 474 detailed notes on all aspects of the dialogue (Greek grammar, textual cruxes, philosophical argumentation and literary features). It will be published next year as part of their Plato: Complete Works project by Hackett, the most prestigious press that publishes translations of Ancient authors (Greek and Roman) into English. Swanson's translation and commentary of Plato's Euthydemus will form the foundation of her second project for Hackett, a monograph on the dialogue (250-300 pgs.). The latter project will conjoin her just completed translation and commentary with a substantial essay on the philosophical themes of the dialogue. She plans to complete the monograph next year. During the PDA, Swanson did research (reading monographs and journal articles and translating) on a second dialogue of Plato, the *Timaeus*. The completion of these projects taken together will raise the profile of the UI Department of Philosophy and increase both its national and international reputation.

Swanston, Jeremy, associate professor, Liberal Arts and Sciences-Art & Art History, 9 years of service, Spring 2025
Title: At This Table
Swanston focused on advancing participatory design practices through a community-based initiative. The project aims to facilitate an immersive engagement with Perry, Iowa–a rural, socio-economically diverse community–to co-develop design solutions with local stakeholders. By combining human-centered and systems-based design methodologies, the project aims to empower community voices while offering UI students practical experience in co-design and social impact strategies. Outcomes include a national conference presentation and the development of new curricular content for advanced design courses. This work directly supports UI's commitment to public engagement, interdisciplinary research, and societal impact, enriching both Iowa communities and the broader design education landscape.

Turner, Richard, professor, Liberal Arts and Sciences-Religious Studies, 23 years of service, Fall 2024
Title: African American Religion, Human Rights, and Liberation Sounds
Turner completed research for his book on African American religion, human rights, and music, culminating in a book chapter on *Malcolm X, the United Nations, and the Organization of Afro-American Unity: Human Rights and Music in the United States and Ghana*. This work contributes to deeper understanding of how music and civic leadership have shaped American perspectives on liberty and human dignity. Turner's research directly enhances four UI courses, including a newly developed class centered on music, literature and freedom. The award enhances our understanding of human rights and democracy in the U.S. and therefore strengthens UI’s academic offerings, enriches student perspectives, and contributes to Iowa’s and society’s broader understanding of democracy and human rights.

Varadarajan, Kasturi, professor, Liberal Arts and Sciences-Computer Science, 25 years of service, Fall 2024
Title: Clustering and Some Generalizations: An Algorithmic Perspective

Varadarajan used this PDA to expand the scope of his work on algorithmic problems arising from data analysis. Databases often store data in an implicit format, and there is a need to analyze data in this format efficiently. Varadarajan surveyed the literature in this area and identified new problems for further exploration. In collaboration with his PhD student, he developed new tools to solve one of these problems and described these in a research publication. The student will develop his PhD dissertation with this work as its starting point. Varadarajan will incorporate the results into his graduate teaching at the UI. Varadarajan also plans to submit a grant proposal to make progress on the identified problems. This effort will ultimately add to the body of knowledge used by practitioners to analyze implicit data.

Verzemnieks, Inara M, associate professor, Liberal Arts and Sciences-English, 9 years of service, Fall 2024
Title: Foul Ball: A Human History of Soccer, Error, and the Triumph of Calamity
Verzemnieks finished final archival and field research for a manuscript on the sport of soccer as both vehicle and metaphor for self-destruction, and also a possible path to redemption. Entitled *Dirt Church*, the draft of the manuscript Verzemnieks completed during her PDA, weaves the game's history with re-claimed biographies of the sport's notable icons, reframing infamous personal collapses as windows into the sport's impossible standards of perfection -- though not to be read simply as failures. Rather, they serve as parables of how the sport's necessary embrace of failure can also reveal opportunities for individual transcendence. Verzemnieks' PDA facilitated travel to Northern Ireland to conduct archival work and interviews, while staying in the home of George Best, one of the sport's seminal players, who ultimately died of alcoholism. In spring 2026, Verzemnieks will teach a seminar on research methods for graduate and undergraduate UI creative writing majors, who have requested classes on how to transform popular subjects into literature.

Vogan, Travis T, professor, Liberal Arts and Sciences-Journalism & Mass Communications, 12 years of service, Spring 2025
Title: Sports, Power and Resistance and Development of the Sports Media and Culture Major
Vogan primarily used his PDA to finish a co-edited anthology, *Sports, Power, and Resistance: An Introduction to Critical Sports Studies*. The anthology has been accepted for publication by the *University of Illinois Press* and will be out in 2026. Vogan also devoted time to the Sport, Media, and Culture undergraduate program. He got the undergraduate course, Sport and the Media, designated as a General Education course in the Values and Society category. This will help grow the major and build on the momentum it has already established. He collaborated with colleagues to begin a partnership with the University of Salford in Manchester, England that will create cross-cultural professional development opportunities for UI students. Vogan published one article and submitted two others for publication. Finally, he began work on a new book on sports and documentary.

Wang, Alice, professor, Business-Marketing, 19 years of service, Spring 2025
Title: Navigating New Market Horizons: Implications of Emerging Technologies for Businesses, Consumers, and Policy Makers
Wang co-chaired the second-largest professional conference in her field, drawing over 500 attendees from universities worldwide. She also mentored a doctoral student who graduated in May 2025 with two top-tier marketing journal publications and accepted a faculty position at the University of Minnesota. In addition, she mentored another PhD student on research examining how loneliness increases susceptibility to problematic gaming. This research is especially relevant to Iowans in rural areas where social isolation is common, and to broader societal concerns about the rising "pandemic of loneliness." The PDA significantly advanced Wang's research and supported the career development of her doctoral students. In addition, findings

from this work are being incorporated into her undergraduate and MBA teaching at UI and will be shared with the academic and broader communities. The PDA strengthened the university's reputation and contributed to student success and public well-being in Iowa and beyond.

Wasserman, Edward A, professor, Liberal Arts and Sciences-Psychological & Brain Sciences, 52 years of service, Fall 2024
Title: Mapping the Development of Relational Learning in the Brain
Wasserman made measurable progress in answering the longstanding and challenging question: How does the brain decide whether two stimuli are the same as or different from one another? To conduct this new direction in his research, Wasserman traveled to Bochum, Germany to begin collaborating with expert neuroscientists at the Ruhr University, where concrete plans were established to map the development of a discrimination between same and different pairs of visual stimuli in awake and behaving pigeons using functional magnetic resonance imaging (fMRI). Experimentation will begin this October when sufficient numbers of specially bred pigeons (Vienna Highflyers) will be available for study. Clarifying the biological basis of this key instance of relational cognition may shed fresh light on the mechanisms of neurological disorders as well as the evolutionary origins of human thought. Wasserman will report the results of this research in scientific journals and will incorporate those findings into his teaching and supervision of undergraduate and graduate students at UI.

Whitaker, Kara, associate professor, Liberal Arts and Sciences-Health & Human Physiology, 7 years of service, Fall 2024
Title: Postpartum 24/7 Study
Whitaker developed two significant grant applications (renewal R01 and R35). These grant applications were submitted to the National Heart, Lung, and Blood Institute in February and March 2025. Prof. Whitaker also participated in R data analysis lectures to gain additional experience with this statistical software program. Finally, Whitaker took three research related trips to conduct and present her research and establish new collaborations. Having this additional time dedicated to grant writing, statistics, and research enhanced Whitaker's teaching, as these experiences were applied beginning in the spring 2025 semester to improve student engagement and learning. If funded, the proposed grant applications generated during this PDA will create meaningful opportunities for undergraduate and graduate student research. This research is relevant to the state of Iowa and society generally as it will provide essential data to link 24-hour activity (physical activity, sedentary behavior, and sleep) with cardiovascular disease risk across the perinatal period and can inform future 24-hour activity interventions to improve the health of women.

White, Stephanie H, associate professor, Nursing-Faculty, 11 years of service, Spring 2025
Title: Advancing Cancer Symptom Management in Rural Areas
Gilbertson-White advanced her research in the area of cancer symptom management. The primary focus of her research is on accessibility and individualized care, addressing the gap in cancer symptom management for people living rural areas or a far distance from their cancer care providers. Leveraging the success of her prior research with a mobile application OASIS (Oncology Associated Symptoms & Individualized Strategies), developed at UI, Gilbertson-White conducted further data analyses and developed two publications from her pilot study of OASIS. This work provided critical evidence for two planned NIH R01 grant applications to utilize personal health data and informatics to optimize health insights and facilitate position health behavior in the context of cancer symptom management. In addition, Gilbertson-White authored two manuscripts for a special issue of Nursing Outlook focusing on Nursing Leadership and Innovation. Finally, Gilbertson-White secured pilot funding to launch randomized-control trial pilot of OASIS through the Holden Comprehensive Cancer Center.

Wilcox, Jonathan, professor, Liberal Arts and Sciences-English, 36 years of service, Spring 2025
Title: Cocky Scribes: Writerly Posturing in Early Medieval English Manuscripts
Wilcox researched the relationship between scribes and authors in pre-print culture by looking closely at medieval manuscripts containing Old English in libraries at London, Oxford, Cambridge, UK. By examining the physical nature of the books and the marginalia and other interventions of scribes, he discovered new clues that allow for a better understanding of the community effort involved in the creation and circulation of a tenth-century author's work. The insights discovered were shared at three international conferences and will see publication in three distinct scholarly articles. They will also be shared with UI students in undergraduate and graduate courses devoted to medieval literature and the circulation of ideas. This research provides for scholars and interested citizens a historically-specific understanding of the fluidity of texts and the complexities of authorship that are newly relevant in the post-print culture of the current digital age.

Wo, James C, associate professor, Liberal Arts and Sciences-Sociology, 7 years of service, Fall 2024
Title: Examining the Effects of Alleyways on Crime in Denver (CO) Neighborhoods
Wo conducted research on the built environment and neighborhood crime, resulting in three projects on alleyways, greenspace and demographic diversity. These studies led to publications in *Cities*, the *Journal of Criminal Justice*, and *Race and Justice*. He presented his greenspace research at the University of Hawai‘i at Mānoa, where he was a scholar-in-residence, and participated in two public speaking engagements. He also updated his Environmental Criminology course and developed a new graduate seminar emphasizing the application of national crime patterns to Iowa-specific issues and policy contexts.

Wu, Xiaodong, professor, Engineering-Electrical & Computer Engineering, 20 years of service, Spring 2025
Title: Developing Next Generation Rotating-Shield Brachytherapy System
Wu mainly worked on the following projects: 1) Implications of spatiotemporal deep learning neural networks in echocardiographic diagnosis and prognostication of Takotsubo syndrome. This project seeks to develop diagnostic and prognostic decision-support tools for patients with Takotsubo Syndrome (TTS). The goal is to provide clinicians with more objective, accurate and timely assessments using advanced spatiotemporal deep learning models. 2) Latent diffusion for medical image segmentation with end-to-end learning for fast sampling and accuracy. The developed latent diffusion makes powerful diffusion algorithms practical for 3D and higher-dimensional medical image segmentation. 3) Foundation model for predicting spatial omics from histology. The developed foundation model addresses the central challenge of extracting deep molecular insights from standard H&E stained tissue sections. This PDA will directly benefit many collaborative activities that are underway or planned between the Colleges of Engineering and Medicine at UI. The results will be integrated into classroom teaching.

Yablon, Nicholas, professor, Liberal Arts and Sciences-History, 21 years of service, Fall 2024
Title: "From the Sky Scraper to the Wild Flower": Charles G. Hine’s Photographic Survey of New York’s Broadway
This PDA enabled Yablon to complete his book manuscript, *From the Skyscraper to the Wildflower: C. G. Hine's 1905 Photographic Survey of Broadway*, and to submit it to *Columbia University Press* in January 2025. It is currently in production and due out in February 2026. The book will further Yablon's reputation as a scholar of U.S. urban and cultural history. It will also feed into his teaching of those fields to both undergraduate and graduate students at UI.

University of Northern Iowa

CALDERÓN HERRERA, FERNANDO, History, 11 Years of Service, Spring Semester, Faculty
Title: Mexican Radicals, the Third World, and the Eastern Bloc, 1950-1991
The completed project, Mexican Radicals, the Third World, and the Eastern Bloc, 1950–1991, interrogated the hitherto underappreciated role of Mexican non-state actors in shaping the ideological and political cartography of the Cold War. Whereas prior scholarship disproportionately exalted the Institutional Revolutionary Party (PRI) as the sole architect of tercermundismo, the research recalibrated the narrative by foregrounding musicians, feminists, journalists, students and political exiles who traversed borders to forge solidarities with anti-colonial struggles in Africa, Asia, Latin America and Eastern Europe. Through exhaustive engagement with declassified state dossiers, transnational archives and oral testimonies, the project demonstrated that the performative diplomacy of the PRI was eclipsed in efficacy by the embodied internationalism of grassroots activists. This scholarship was of profound value to UNI, as it directly enriched the intellectual repertoire of Global Studies and History. It provided the scaffolding for innovative courses on propaganda, surveillance, human rights, and the Cold War, thereby enabling students at UNI to apprehend the entanglements of local histories with world-historical processes. The project benefits the citizens of Iowa by extending its insights beyond the academy, fostering public dialogue on justice, solidarity and human rights. By situating the experiences of Mexican activists within global currents, the research offered Iowans a reflective lens through which to understand both the pluralism of their communities and their own position within an interconnected world.

MEACHAM, SOHYUN, Curriculum & Instruction, 10 Years of Service, AY 2024-2025, Faculty
Title: Book Project: Intersectionality in Asian American Early Childhood
The completed project culminated in the publication of the scholarly book *Early Childhood and the Asian American Experience: Exploring Intersectionality and Addressing Misrepresentations*, co-authored by five early childhood education scholars, including Dr. Sohyun “Soh” Meacham. This book is the first of its kind to provide a comprehensive and research-based examination of the early educational experiences of Asian American children through an intersectional lens. Drawing cultural frameworks from the Global South and Asian-centered methodologies such as suda, the book critically analyzes how race, culture, language, socioeconomic status, ability, and representation influence early childhood experiences for Asian American children. The project benefits Iowa by promoting greater awareness and understanding of the diverse experiences of Asian American children in the Midwest, a region where such experiences are often underexamined. Through teacher preparation and community outreach, the book contributes to more culturally responsive and equitable educational practices across Iowa’s early learning environments, supporting educators and families in building inclusive spaces for all children.

PROPHET, MICHAEL, Professor, Mathematics, 24 Years of Service, Spring Semester, Faculty
Title: Simultaneous Minimal Extensions
The work involved in this PDA takes place within the realm of shape-preserving approximation. The primary objective of this professional development assignment was to develop shape-preserving approximations with the smallest possible error. Shape-preserving approximation is the attempt to model data, possessing a known ‘shape,’ with common mathematical functions that also possess the ‘shape.’ The procedure used to construct such approximations is called a (shape-preserving) projection. Projections giving minimal error are called minimal projections. This project created minimal projections in particular settings where common mathematical functions can be used.