

Contact: Rachel Boon

PROFESSIONAL DEVELOPMENT ASSIGNMENT REPORTS FOR FY 2019

Action Requested: Receive the professional development assignment reports submitted by the Regent universities for FY 2019.

Executive Summary: Each year, the Board of Regents is asked to approve faculty professional development assignments as specified in the Board Policy Manual 2.1.4.R. In December 2017, the Board approved 111 professional development assignments for FY 2019. Board Policy 2.1.R (a-e) directs the institutions to submit a yearly report of the completed professional development assignments. Pursuant to the 2011 Iowa Act, Chapter 122 (HF 45), “the board shall annually prepare a report comparing each assignment proposal to the results received.”

Regent faculty on professional development assignment obtained nearly \$21 million in grants, with more than \$70 million in grant applications pending announcement of award status. These assignments produced a return that is more than 37 times greater than the estimated initial investment of \$557,069 and could result in a return up to 125 times greater than the initial investment.

A brief description of each professional development assignment completed in FY2019 is available in this report, including information about the value added to the students, university, and state from the assignments. This report addresses the Board of Regents Strategic Plan priority for “promoting and supporting innovation in teaching, research, and economic development” as well as “promoting effective use of resources to meet institutional missions.”

Background:

Review process. Each proposed PDA was rigorously reviewed prior through peer review and recommendation at the department and college levels at each university and final approval by the provost. Criteria considered include the impact of the proposed PDA to the university, students and the state.

Professional development assignment activities. Faculty members engaged in a variety of productive activities during their PDA in FY 2019. For example, faculty members had the opportunity to engage in intensive research, write scholarly books and articles, create new works of art and composition, present papers, work in industry, develop modeling systems, and develop grant proposals, software, course materials and multimedia resources for their disciplines.

Professional Development Assignments enrich the educational environment of the universities and are considered essential to the academic vitality of the universities. Educational excellence results from a vital faculty which actively pursues new developments in knowledge and teaching. Additional significant benefits obtained by the faculty members are the collaborations that occur during the professional development assignment; they frequently lead to continued mutual efforts and in some cases open doors for external grant funding

Length of assignments. Professional development assignments were either one or two semesters in length. For PDA that were two semesters in length, compensation was limited to the amount of compensation a faculty member would receive during a semester-long assignment.

Obligation to institution. Iowa Code §262.9(14) requires that a faculty member return to the institution for twice the length of time of their PDA or to repay the costs associated with the PDA if the faculty member does not return to the institution. Following their PDA, faculty members are responsible for reporting the results of their assignments as specified by Board Policy 2.1.4.R. (a-e) and their institutional guidelines.

Number of professional development assignments. There were 111 PDA approved by the Board of Regents for FY 2019; each institution included all completed PDA as part of this report.

- University of Iowa. Reports are presented from 58 faculty members on developmental awards during 2018-19. Each faculty member was on leave with pay for one semester unless otherwise indicated. The actual (estimated) cost for the program was \$186,024. The original projected cost for 65 faculty members was \$211,256.
- Iowa State University. Faculty Professional Development Assignment reports for 36 faculty for the academic year 2018-19. One additional PDA report is not included due to resignation prior to the start of the PDA. Three additional reports were not submitted because the faculty member deferred the PDA to a later term. The original estimated cost for the program was \$116,045.
- University of Northern Iowa. There were 12 professional development assignments approved for FY 2019. Ten reports are included below, one is deferred while the faculty member is on medical leave, and one person withdrew the request. The original estimated cost for the program was \$255,000.

External funding obtained while on professional development assignment. A number of faculty members received external grant funding while on PDA or subsequent to the PDA. In addition, many PDA recipients submitted grant proposals that are still pending.

- At the University of Iowa, 13 faculty members received external funding either during their assignment or following the assignment. The total amount received was approximately \$17.4 million. An additional \$45.9 million in funding proposals is still pending; and approximately \$4 million will be applied for because of work done during PDA.
- At Iowa State University, six faculty members received external funding either during their assignment or following the assignment. The total amount received was approximately \$3.5 million. More than \$24 million in funding proposals was submitted and is still pending with many more grant applications in process.
- At the University of Northern Iowa, grant proposals developed during or based on work done during the PDA are in development or in review that could result in a future award.

Return on Investment. The estimated cost of the PDA program was \$557,069 for FY2019; during the award period faculty earned nearly \$21 million in grants, with more than \$70 million in grant applications pending announcement of award status. These assignments produced a return that is more than 37 times greater than the initial investment and could result in a return up to 125 times greater than the initial investment.

UNIVERSITY OF IOWA

AYATI, BRUCE, Professor, Mathematics, 12 years of service, Spring 2019

Title: Multiscale modeling and simulation of bone tissue engineering and drug delivery systems

Professor Ayati effectively retrained himself for developing mathematical models of bone tissue scaffolds that involve factors at three scales: the biomechanics of the scaffold, the cells involved in creating bone, and the drug delivery and other molecular biology involved in promoting bone mineral growth. In addition, with applications beyond problems in orthopedics, Ayati became well versed in current statistical techniques for sensitivity analysis of mathematical models. This retraining laid the foundation for two manuscripts currently being written, and a potential NSF grant proposal with the Salem Lab. Ayati's retraining has an immediate impact on the education of graduate students in the interdisciplinary Applied Mathematical and Computational Sciences Ph.D. program and will diffuse into the teaching of undergraduate courses, such as all levels of numerical analysis, optimization techniques, and various calculus course. More broadly, these models will aid Professor Ayati's collaborators in pharmacology to develop better protocols for drug delivery into engineered bone.

BERG, MARK T, Associate Professor, Sociology, 6 years of service, Fall 2018

Title: Acute Environmental Stressors and Biological Dysregulation in Adulthood: A Life Course Appraisal

During his PDA period, Professor Berg completed research on aspects of the social determinants of physical health across spatial locations and the individual life-course. Berg was a Fellow-in-Residence at the Obermann Center for Advanced studies while on his PDA. For one strand of this research, Berg utilized longitudinal data to trace the linkages between traumatic experiences and metabolic health, with attention to the methodological biases of self-report methods; and for another strand, he focused on the ecological determinants of opioid-related deaths across the U.S. He also completed research on related topics, such as the correlates of interpersonal violence. The products of Berg's PDA research will benefit students at the University of Iowa because they will be incorporated into the curriculum of undergraduate and graduate courses on health and social behavior. His research will also benefit society in that the findings are directly relevant to programs to prevent the early life experiences that contribute to illnesses and disease, and for knowledge about the social context of the opioid crisis and violence.

BERN-KLUG, MERCEDES E, Professor, Social Work, 15 years of service, Fall 2018

Title: Post-Baccalaureate Certificate in Long-term Care Social Work

Professor Bern-Klug planned a national study of nursing home social service staff members, including developing a questionnaire, securing feedback from national experts, and pilot testing the questionnaire with local social workers. Students were invited to participate in each step and will be included in the upcoming journal articles; results will be shared in classes. Other accomplishments include serving as the national program co-chair to the 2018 meeting of the Gerontological Society of America (the largest and most trusted organization dedicated to research on aging and older adults in the USA) and serving as guest editor for the journal *Generations* for a special issue on older adults as family caregivers (*Journal of the American Society on Aging*, the leading national organization for people who work in human services and policy development related to aging). Also, the undergraduate class, Global Aging, was revised to replace a book with government reports in the public domain, thus saving students from the expense of having to purchase a book.

CANIN, ETHAN A, Professor, Creative Writing, 21 years of service, half time for calendar year 2018

Title: Untitled Novel

Professor Canin used his PDA to continue work on a novel that upon completion has been accepted for publication by Penguin Random House Publishers. Professor Canin's work consisted of writing and research. The research primarily involving the historical context for the story--some of which takes place on the Korean Peninsula during the Korean Conflict and in southern Europe during later decades--as well as the theories of childhood development that were prevalent in the United States during the 1950s, '60s and '70s. Canin made substantial progress on the novel and for this opportunity is deeply grateful to the University of Iowa and its Regents, as well as to the citizens of the State of Iowa.

CASTELLANOS, HORACIO, Associate Professor, Spanish & Portuguese, 8 years of service, Fall 2018

Title: Research for a novel on Central American Immigrants in the US

Professor Castellanos has used his PDA during the fall 2018 semester to complete his research and start writing his next novel, focused on Central American immigrants in the US. He completed his archival research and field research. He traveled to El Salvador to interview Salvadorans who have been deported from the US. He gathered information on the process of detention, on the living conditions in the detention camps and of the deportation. He also learned of the extremely difficult situation the returnees face in El Salvador. The first outline of the novel is ready, main characters and plots have been defined and the draft of the first chapter has been written. The novel will benefit readers to have a better understanding of Central American migration, focusing on the human drama. In his teaching, Castellanos is able to offer students a broader view of a current and complicated issue that affects American and Iowa state policies.

CHAN, KUNG-SIK, Professor, Statistics & Actuarial Science, 28 years of service, Spring 2019

Title: Big Time-Series Analysis

Professor Chan investigated novel classification approaches with big time-series data, for instance, using multiple time series collected from on-body sensors to detect what physical activity (jogging, walking, cycling, etc.) a subject is performing. He has introduced the so-called spiked spectrum for effectively summarizing the low-dimensional dynamical information in a big time series. The concept of spiked spectrum is then utilized to develop several effective classifiers with big time-series data. He has also innovated a new stochastic approach for creating multiple classifiers leveraging on random features from a big time-series, which are assimilated to form an overall classification. These new classification methods open up the potential of performing automatic classification with big time-series data, which may be useful in diverse scientific and quantitative fields. They also add to the toolkits of statistical learning essential in data science.

CURTO, ROXANNA N, Associate Professor, French and Italian, 8 years of service, Fall 2018

Title: Sporting Identities: Global Sports and National Cultures in French and Francophone Literature

Professor Curto researched the history and literature of sport in the French-speaking world, in order to make progress on her second book project, "Writing Sport: The Stylistics and Politics of Athletic Movement in French and Francophone Literature," and further develop the courses that she teaches, including the popular large lecture, "Global Sports and National Cultures." In late

September, she took a two-week research trip to England where she presented a paper at Oxford University, and visited six sites and museums of great significance in the history of sport. She presented selected chapters from her book to students and colleagues throughout the semester, as a Fellow-in-Residence at the Obermann Center and guest lecturer in American Studies and at Cornell College. As a result of her research, she completed a draft of the introduction for *Writing Sport*, wrote Chapter Eight, "Communism, Bio-fiction and the Olympics in Jean Echenoz's *Courir*," and portions of Chapters Two, "Serving like a Girl: Suzanne Lenglen and the Politics of Gender," and Five, "Hockey in Canada: Roch Carrier's *Le Chandail de Hockey* and Marc Robitaille's *Des histoires d'hiver*."

DAILEY, MICHAEL E, Associate Professor, Biology, 23 years of service, Fall 2018

Title: Developing new imaging skills to study the behaviors of glial cells during brain development in living mice

The Department of Biology's Carver Center for Imaging (CCI) recently acquired a state-of-the-art scanning laser confocal microscope. Dr. Dailey, who serves as Director of the CCI, used the PDA period to receive extensive professional training, develop a theoretical understanding of the technology, and gain practical experience in the advanced features of the new imaging system for a variety of biomedical research applications. This opportunity led directly to new collaborative pilot studies that will advance Dr. Dailey's research on brain glial cells and neuroinflammation. Moreover, the PDA has equipped Dr. Dailey with the expertise to train other research personnel, including undergraduate and graduate students from the Department of Biology and across campus. Finally, these skills will promote new research on the mechanisms of normal and abnormal brain development, especially relating to stroke, alcohol abuse during pregnancy and environmental factors such as pesticides, which are risk factors for autism spectrum disorders. These topics are relevant to the health and wellbeing of many citizens of the State of Iowa.

DALRYMPLE, KAJSA E, Associate Professor, Journalism & Mass Communication, 8 years of service, Fall 2018

Title: Identifying Influential Iowans: Exploring the role of opinion leadership on decision-making among Iowa farmers

The purpose of Professor Dalrymple's PDA was threefold: 1) to complete the last study in a series of projects exploring the flow of communication regarding Iowa's water resources through various social and institutional networks, 2) to explore new avenues for funding of research that studies water sustainability in Iowa, and 3) develop a curriculum and class structure for a new Science and Environmental Communication undergraduate course. The work completed during her PDA resulted in two manuscripts that are currently under review for publication, two conference papers, two funded projects exploring new avenues of water sustainability research, submission of a Graduate College Challenge grant, and the development of a new SJMC course focused on science and environmental communication. Additionally, Professor Dalrymple was awarded a Scholar-in-Residence position in the University of Iowa Public Policy Center (PPC), allowing her to pursue new interests in the area of media literacy and public policy.

DOWLING, DAVID O, Associate Professor, Journalism & Mass Communication, 7 years of service, Fall 2018

Title: Immersed: Narrative Journalism in the Digital Age

Professor Dowling completed research for his book on immersive media and the world of online and multimedia longform storytelling. The book charts the renaissance in deep reading, viewing

and listening associated with the literary mind, and the resulting implications of its rise in popularity. Dowling argues that although developments in media technology have enabled the ascendance of nonfictional storytelling to new heights through new forms, it has done so at the peril of these intensely persuasive designs becoming deployed for commercial and political purposes. This research will benefit his students and the state of Iowa by showing how traditional boundaries separating genres and dividing editorial from advertising content have fallen with the rise of media hybridity, drawing attention to how the principle of an independent press can be reformulated for the digital ecosystem. Immersive Longform Storytelling examines storytelling in multimedia features, on-demand documentary television, branded digital documentaries, interactive online documentaries and podcasting. This book's focus on both form and effect targets specialists in multimedia narrative journalism.

ESPINOSA, MARIOLA, Associate Professor, History, 6 years of service, Fall 2018
Title: Fighting Fever in the Caribbean: Medicine and Empire, 1650-1902

During the Fall 2018 semester, Professor Espinosa made significant progress on her project Fighting Fever in the Caribbean: Medicine and Empire, 1650-1902. This book explores the ways in which people understood medical knowledge about yellow fever in the French, British, Spanish, and U.S. empires in the region. Espinosa spent the semester translating historical medical texts from French into English and reorganizing her research method to more efficiently direct the writing of chapters in the book. This work has yielded new material for integrating multidisciplinary into undergraduate courses in History and Global Health Studies, and new approaches to research design that she is incorporating into her undergraduate and graduate methods teaching and advising. By introducing the development and application of key medical ideas of yellow fever into the study of how that disease shaped the struggle for empire at the intersection of the Atlantic world, the project provides a more complete understanding of the ways in which the confluence of microbes and men yielded the modern Caribbean.

FORBES, ANDREW A, Associate Professor, Biology, 9 years of service, Fall 2018
Title: Discovering new diversity in our own backyards

Professor Forbes used his PDA to collect critically important new data and develop new courses for UI Biology and Environmental Sciences majors. Specifically: 1) he traveled around the United States, collecting hundreds of parasitic insect species that comprise the staggeringly diverse communities associated with North American oak galls, 2) from some of the same places, he collected flies associated with native sunflowers for the purpose of studying the domestication history of their host plants, and 3) he used this insect-focused research as inspiration to propose a new Entomology lab course, which he will teach in Spring 2020. The research is anticipated to lead to new funding opportunities for Forbes' research lab, and he submitted two (pending) proposals to the National Science Foundation, with a third readying for submission in Spring 2019. One of these NSF proposals will fund science outreach in rural and urban areas in Iowa. This PDA has newly engaged several undergraduate Biology and Environmental Sciences students with Forbes' research, and promises continuing impacts on students via the new course.

FORBES, TORI M, Associate Professor, Chemistry, 9 years of service, Spring 2019
Title: Exploring the basic chemistry of neptunium in aqueous solutions.

Professor Forbes conducted research on neptunium chemistry, which is a problematic radioactive element in nuclear waste. The PDA enabled her to train personnel in her laboratory to safely handle radioactive elements, conduct research on neptunium in water, and publish peer-

reviewed journal articles. In addition, she traveled to Department of Energy funded national laboratories to develop new teaching materials on nuclear forensics and establish connections for research collaborations and student internships. Her work supported current efforts to develop radiochemistry as a strength at the UI and benefits the state by providing training and expertise in radiochemistry as it relates to the energy, medicine, and environmental monitoring sectors.

GHOSH, JOYEE, Associate Professor, Statistics & Actuarial Science, 9 years of service, Fall 2018

Title: Robust Bayesian Variable Selection

Professor Ghosh carried out research on methods and algorithms for prediction and variable selection. Specifically, she: 1) studied the effect of priors on Bayesian variable selection, 2) developed methods for variable selection and prediction, in the presence of unusual observations in the data, and 3) supervised her PhD student on developing methods for variable selection and prediction in the presence of missing data. The third project is motivated by an applied problem where the goal is to predict environmental phenomena. Such improvement in predictions will directly benefit society. One paper is under revision and two other papers will be submitted. Ghosh has been invited to present the work at multiple department colloquia. The PDA has allowed her to complete the goals of an ongoing grant from the National Science Foundation in a timely manner. She has also attended a workshop organized by SAMSI at Duke University on model uncertainty that generated ideas to improve the existing work and opened new directions for research. The information gained from these projects will be included in some courses.

GIDAL, ERIC, Professor, English, 23 years of service, Fall 2018

Title: Biblio-stratigraphy: Experiments in Ecocritical Book Studies

During the period of his PDA, Professor Gidal composed and submitted an article on Scottish poetry and ecology in the eighteenth century, finished and submitted a co-authored article on nineteenth-century Scottish postal routes and the language of geographical description, and composed a third article on representations of mineralogy in eighteenth-century French literature. These three articles contribute to Gidal's program of scholarship in "biblio-stratigraphy," which combines book studies and digital humanities in the service of environmental literary history. Additionally, he designed a new required course, "Introduction to Environmental Literature," which he is now teaching and developing for the UI Sustainability Certificate. Both his scholarship and his teaching combine literary studies and environmental history to underscore relationships between language, media, and ecological change in the industrial age, essential connections to understand at a moment of environmental crisis.

GILLAN, EDWARD G, Associate Professor, Chemistry, 22 years of service, Spring 2019

Title: Thermochemical growth of multi-component materials supported on templated porous carbons for heterogeneous catalysis and environmentally important radiochemical applications

During this PDA, Professor Gillan worked closely with graduate and undergraduate students in his materials chemistry research group to design new syntheses for non-oxide materials consisting of primarily earth-abundant metals in metal phosphides, nitrides and borides that are potentially useful in energy and environmentally relevant catalysis. New and upgraded characterization equipment was also added to the research laboratory. Several catalysts were examined as photocatalysts or electrocatalysts, particularly ones that evolve hydrogen gas by chemically splitting water. The research projects advanced during this PDA period resulted in three research publications, one book chapter and two external national chemistry meeting

presentations. Three other research publications were also significantly developed during this period. These publications will strengthen several federal research grant applications for fall 2019. Gillan also designed new instructional materials for a First Year Seminar Course entitled *Making Stuff: Stronger, Smaller, Cleaner, Smarter* that introduces new students to modern materials advances.

GRAHAM, LAURA R, Professor, Anthropology, 29 years of service, Fall 2018

Title: Media Revolution: Transformations of Indigenous Media among the central Brazilian A'uwẽ-Xavante

Professor Graham made significant progress toward completion of a book that explores ways the central Brazilian Indigenous A'uw-Xavante deploy new media and cultural performance to influence ways their image circulates publicly and how non-indigenous others think of them. The book directs attention to Indigenous agency and ways that, through their media productions and cultural performances, A'uw-Xavante challenge dominant primitivist stereotypes that often circulate in popular media. Chapters show that innovative acts of projecting culture outward create spaces for A'uw-Xavante to pass culture to future generations and thus establish cultural continuity. The book addresses multiple issues of contemporary concern and will be of interest to a broad scholarly audience. It advances scholars' ability to develop better responses to, critiques of, and engagement with popularly circulating stereotypes that students and the general public often understand to be realistic representations of Indigenous Peoples and even as anthropology itself. Chapters are theoretically sophisticated yet are accessibly written and will be used in undergraduate teaching at Iowa and elsewhere.

HAND, BRIAN, Professor, Teaching and Learning, 14 years of service, Spring 2019

Title: Building a theoretical framework for science literacy

Professor Hand completed a review article covering 20 years of research on a learning approach to science called the Science Writing Heuristic approach. This review has been submitted to Educational Psychology Review. As part of the preparation of the article, Professor Hand travelled to Australasia and Europe to consult with colleagues on the theoretical framework that arose from the research. These visits included meeting with language educators and science educators in these various locations. Hand also attended and gave a presentation at a science education conference in Florence. The outcomes of the project will help future research into the learning of science and provide the basis of research grant applications.

HAND, GREGORY S, Associate Professor, Music, 11 years of service, Fall 2018

Title: Southern German historic organs and their impact on modern Organ Pedagogy

Professor Hand traveled to Germany to implement a three-pronged research plan designed to elevate the University of Iowa organ program's international stature. He inspected, documented and gave concerts and demonstrations on nine historic organs in Germany that demonstrate a surprising synthesis of Baroque and Romantic elements. These elements, long thought incompatible by modern scholars, prove a historic relationship between these two eras, and represent a paradigm shift in our understanding of the vast organ repertoire composed by German organists. An article detailing his findings is currently under review. Hand also undertook intense private study of historic improvisation with Michael Kapsner, a well-known pedagogue, and created a workbook for undergraduate and graduate improvisation courses. This plan greatly increased the dissemination of his scholarly work, expanded the teaching options in the organ program, and grew the awareness of musical performance at the UI and in the State of Iowa.

HASAN, ALI M, Associate Professor, Philosophy, 11 years of service, Spring 2019
Title: Rationality, Intellectual Virtue, and the Examined Life

Professor Hasan used the PDA for two main projects. In the first, Hasan continued research on fundamental questions about the nature and sources of rational belief. Thus far, the work produced includes one published article and two in press, one nearly ready for submission, a substantive draft, and a conference presentation. Two of these papers will serve as a core parts of Hasan's next book, *Rationality and the Subject's Perspective*. Professor Hasan's research and literature review have also helped him update courses he regularly teaches (epistemology and philosophy of religion), and better advise students. The second project was interdisciplinary research with Professor Jennifer Kayle (Dance) on applying the philosophical theory of collective action to ensemble improvisation. Professors Hasan and Kayle secured an Obermann Center Grant as well as a residency at Bennington College's Center for the Advancement of Public Action to support the work and have completed a draft to be submitted for publication this fall. It promises to fill a significant gap in the literature and contribute to dance improvisation pedagogy.

HEINEMAN, ELIZABETH, Professor, History, 20 years of service, Spring 2019
Title: Children, Transported

Between December 1938 and August 1939, some 10,000 Jewish children from Nazi Germany departed for the British Isles with the "Children's Transport." Most never saw their parents again. Two of those who did were Professor Heineman's father and uncle. Her book in progress, "Children, Transported" explores the interrelationship between intimate family relations and world-historical events through a multi-generational history of the family moving from Germany to Britain to the United States. The work combines oral history and archival research on three continents. During the PDA, Heineman completed a lengthy proposal to gain representation by an agent to bring the manuscript to major trade presses. She wrote approximately one-third of the book and employed students to transcribe dozens of interviews, giving them useful professional experience, and she gave several local public presentations. Heineman is integrating insights regarding refugee movement and family separation into her courses on German history and the history of human rights.

HITLIN, STEVEN, Professor, Sociology, 14 years of service, half time for academic year 2018-19
Title: Moral Boundaries Around the World

The PDA helped move forward a series of related projects on the nature of morality across cultures. Professor Hitlin produced one published article, multiple manuscripts, two successful small grants that will further this study, as well as managing the second stage of the federally funded study. The project informs Professor Hitlin's research and teaching, directly into his graduate seminars and his undergraduate course on social psychology.

HORNBUCKLE, KERI C, Professor, Civil-Environmental Engineer, 21 years of service, Fall 2018
Title: Iowa Superfund Research Program - a competitive renewal application to the National Institute for Environmental Health Sciences

Professor Hornbuckle led the submission of the funding renewal application of the Iowa Superfund Research Program (ISRP), an internationally-recognized research center at the

University of Iowa that focuses on the sources, human exposure, toxicity and remediation of polychlorinated biphenyls (PCBs). The ISRP is currently funded by the National Institute for Environmental Health Sciences in the National Institutes of Health (NIEHS/NIH). If successful, this application will extend funding to 2025. The application for \$13M was submitted to NIH in December. The application was one of the largest and most complex proposals submitted by the University of Iowa in the last five years. It consisted of 12 major components: five research projects, six research-support cores, and one overall description. More than 27 University of Iowa employees contributed to the proposal, including 20 faculty members from the Colleges of Engineering, Public Health, Medicine, and the Graduate College. The overall administrative support was provided by IIHR-Hydroscience and Engineering.

HUCKLEBERRY, ALAN, Professor, Music, 15 years of service, Fall 2018

Title: The People United - Using Music to Create Unity in a Fractured Society

Professor Huckleberry created a multi-media presentation of Frederic Rzewski's 60 minute piano work "The People United will never be defeated." This presentation was a socio-political commentary and invited dialogue with audience. He performed it across the country, each time inviting a local artist to join him on stage for an improvisation. Said improvisation was video recorded and will be compiled in a video documentary of the project. That part of the project is ongoing. One aspect of this project was to show students how to use their musical voice to be an active member of society. Huckleberry performed this twice in Iowa City, each time interacting extensively with students. It was important to demonstrate that we, as artists, do not live in bubbles, but have a responsibility to engage and comment on, and to interact with our society.

JACOB, MATHEWS, Associate Professor, Electrical-Computer Engineer, 8 years of service, Fall 2018

Title: Machine Learning, Theory, Algorithms, and Applications to Neuroscience

The main outcomes of Professor Jacob's PDA were: 1) The development of a theoretical framework to understand the capabilities and limitations of deep learning, with application to neuroscience. An NSF proposal and three journal papers were submitted. 2) A new collaboration with Professor Magnotta was started on high-resolution metabolic imaging; the preliminary work will be the basis behind the resubmission of the R-01. 3) He started new collaborations with Dr. Prashant Nagpal, UI and Dr. Michael Salerno, University of Virginia. A novel algorithm for free breathing and ungated cardiac MRI was introduced with two journal papers; these preliminary results will aid his R01 renewal. 4) A joint U01 proposal, focused on understanding the molecular and neural basis of learning in the human brain, was submitted along with INI researchers; Dr. Jacob led the data science core. 5) The improved understanding of machine learning will significantly enhance 55:040 Pattern Recognition and Machine Learning. Its enrollment is steadily growing over the years. 6) A special issue in IEEE Sig. Proc. Magazine focused on MRI reconstruction was proposed and accepted with Dr. Jacob as lead editor.

KANG, JIYEON, Associate Professor, Communication Studies, 9 years of service, Spring 2019

Title: New Global Civilities: The Mobile Undergraduate in the U.S., China, and South Korea

During the PDA, Professor Kang conducted substantial research for her book project *New Global Civilities: The Mobile Undergraduate in the U.S., China, and South Korea*. She conducted ethnographic interviews with Chinese undergraduate students enrolled in South Korean universities, transcribed these interviews, and developed outlines for two article-length studies. Kang completed multiple projects and develop new ones. She published a journal article and

edited a special forum for another journal. She delivered invited talks at universities and conferences based on her completed and ongoing projects. She also applied for a major grant (\$1 million) as a member of a five-person team. Her proposal was a finalist, although it was not selected for the award. Her activities during the PDA period directly affect her teaching and benefit society generally. She developed the new graduate course, Critical Approaches to Digital Culture, to be offered Fall 2019. New Global Civilities and her other works on youth, globalization and popular politics will interest many readers, including university professionals and the public.

KAYLE, JENNIFER, Associate Professor, Dance, 14 years of service, Spring 2019
Title: Doing Things Together: Ensemble Dance Improvisation as Collective Action

In “Doing Things Together,” Professor Kayle examines the intersection of ensemble improvisation and the philosophy of collective action. Collective action theories discuss what makes an act collective, and how these acts are different than individual, or aggregates of individual actions. Kayle’s research compares/applies these theories to Compositional Improvisation, a form that trains dancers to compose together and perform spontaneously through “ensemble thinking,” a skill that bridges the desires of the individual and the group. Research will result in new dance improvisation pedagogy, professional presentations of improvised performance, and a scholarly article in collaboration with philosophy professor Ali Hasan. Research that specifically relates theories of collective action to ensemble improvisation does not exist in either the philosophy or dance theory literature and stands to make a significant contribution to both. New pedagogy, one that identifies and translates practical skills common to both group improvisation and collective action, has the potential to inform and support our capacity to more successfully do things together, both within and beyond artistic contexts.

LALUMIERE, RYAN T, Associate Professor, Psychological & Brain Sciences, 9 years of service, Spring 2019
Title: Neurophysiological correlates for the inhibition of cocaine seeking

Professor LaLumiere was on a PDA during the Spring 2019. During this time, LaLumiere resubmitted two NIH R01 grant proposals, focused on the neural mechanisms of relapse to heroin use and cocaine use. LaLumiere also developed a new NIH R01 proposal during this period focusing on the neurobiological systems involved in the consolidation of different types of memories. LaLumiere also worked with Professor John Wemmie (Psychiatry) in developing an NIH R01 examining a potential drug to treat opioid use disorder. This PDA, therefore, will be beneficial to students because the NIH grants can fund LaLumiere’s laboratory, providing training for graduate students and critical research experiences for undergraduates. Moreover, if these grants are funded, they will benefit the university through enhancing its research strength and capabilities. The research that would be conducted under these grants would have benefits for society as a whole, through deeper understanding of the workings of the brain as they relate to learning and memory and to drug addiction.

LI, NING, Associate Professor, Management & Organizations, 7 years of service, half time for academic year 2018-19
Title: Using Big Data to Explore Team Collaboration Patterns and Team Performance

This award was used to promote the integration of data science (e.g., big data) with traditional management and behavioral research, and to promote international research collaborations between Iowa faculty members and leading Chinese universities and companies. Professor Li traveled to China in August 2018 and returned in July 2019. He has worked as a visiting professor

in Tsinghua University and Tongji University. During the visit, Li accomplished several key goals, including establishing long-term collaboration relationships with Tencent, Alibaba, and Philips (China) to conduct research on the topics of big data and human resource management, and completing several research projects with international scholars on the topics of teamwork, leadership, and social network. Products and Outcomes of this award include two research publications in *Academy of Management Journal* and *Journal of Occupational and Organizational Psychology*. These products will provide cutting edge knowledge for doctoral students and opportunities for international research collaboration for doctoral students and faculty.

LONGFELLOW, BRENDA, Associate Professor, Art and Art History, 14 years of service, Fall 2018

Title: Women in Public in Ancient Pompeii

Professor Longfellow spent part of the PDA doing field research on the tombs and funerary equipment of women in the ancient Roman city of Pompeii, Italy, and museum research at the National Archaeological Museum in Naples, Italy. She then used the research to present at an international symposium in Italy and to write 20 pages of a chapter in her book titled *Women in Public in Ancient Pompeii*. She also used the research to write a twenty-page essay on statues of women at Pompeii for the edited volume titled *Negotiating Silence: Material Culture and Ancient Roman Women on the Bay of Naples*. This research directly benefits the students at Iowa because she is incorporating it into class discussions on Roman funerary practices as well as into discussions of social roles of women in ancient societies. Prof. Longfellow's research also benefits society in general by furthering our understanding of the historical nature of female involvement in their local communities and outside of the domestic sphere.

LU, JIA, Professor, Mechanical and Industrial Engineering, 18 years of service, Fall 2018

Title: Development of an Inflation Test System for Characterizing Soft Tissue Rupture

The overall goal of the PDA was to improve a core capability of Professor Lu's lab, namely inverse analysis. Inverse analysis refers to two subject areas, the determination of the underformed geometry of a material body, and the identification of material properties. The activities of this PDA deployed along four lines: 1) implementing a digital image correlation (DIC) code for setting up an in-house DIC-inflation experimental system for aneurysm testing. 2) Exploring machine-learning techniques for processing the 'big data' garnered from the DIC-inflation tests. Machine learning protocols have been derived to mine the aneurysm stress-strain data. 3) Expanding the inverse analysis method. Existing methods are limited to displacement formulations. During this PDA, mixed formulations have been developed. 4) Revamping lecture notes for Lu's graduate course "Computational Solid Mechanics." The revised material provides a much more comprehensive coverage of the subject matter.

MAIERHOFER, WALTRAUD, Professor, German, 29 years of service, Spring 2019

Title: Adoption, IVF and Surrogacy in Recent German Fiction and Film

Professor Maierhofer conducted research for a book analyzing nontraditional family structures and reproductive choices in recent German fiction and film, tentatively titled "Babies of Choice." As planned, she drafted two chapters during the PDA, namely on adoption, abortion and surrogate pregnancy. Because of the time from writing to publication of a book, it is standard to place select chapters in periodicals. She submitted one article to an American venue, one to a German venue. The monograph (four chapters plus introduction and conclusion) analyzes fictional and autobiographical writing and films from Germany, Austria and Switzerland since the

early 2000s, applying literary/filmic and cultural analysis. She developed a new course for the German department and modules for a new general education course. The literary and filmic representations show how new family structures involving, for example, new reproductive technology or same-sex parenthood do not endanger the traditional family but on the contrary strengthen it. Such awareness helps build tolerant citizens.

MCLAREN, RACHEL M, Associate Professor, Communication Studies, 11 years of service, Fall 2018

Title: How Parents Can Communicate Helpful Feedback to their Children

Professor McLaren completed research for her project on how parents can communicate helpful feedback to their adolescent children. During her PDA, she developed and implemented a new study to collect data from 94 parents and teenagers who came into the communication studies research lab to complete surveys and have conversations about disappointing events in their relationship. The recorded interactions will be coded by research assistants to examine communication interaction patterns and emotion coaching. This project will contribute to McLaren's teaching in undergraduate classes such as Interpersonal Communication, Communication and Conflict, and the Dark Side of Interpersonal Communication, as many of them have topics on conflict, negative emotions, and families. Students will discuss the results of the study, what it means to be a competent communicator, and the issues people should consider when communicating feedback. Furthermore, the study will yield recommendations about how parents and adolescents can communicate more effectively with one another around emotion-provoking events.

MOBILY, KENNETH E, Professor, Health & Human Physiology, 38 years of service, Fall 2018

Title: The enigma of Joseph Lee

Professor Mobily authored two scholarly papers pertaining to eugenics: a) immigration restriction and the Playground movement and b) the influence of Christianity on the early Playground movement. He also enhanced content in the course "Introduction to disability studies" pertaining to eugenics and developed a new course entitled "Eugenics." Both papers have been submitted to refereed journals; the eugenics course has been approved and will be offered in fall 2019. Because eugenics is covered for one week in the Introduction course, the research added to the quality of the content for that one week. More importantly, because of the abundant content discovered through archival research, a new course dedicated entirely to eugenics will provide students interested in learning more about the topic a means to do so. The history of eugenics informs current issues in the United States. Arguments of the Progressive Era America still surround a fair and just immigration policy today. Although sterilization is not widely practiced any longer, there have been instances where it has been used. Genetic counseling and the human genome are obvious intersections with the eugenic movement.

OATES, THOMAS P, Associate Professor, American Studies, 7 years of service, Fall 2018

Title: Selling Streetball: Playground Culture, Commerce, and Racialized Space

During the award period, Professor Oates completed research and drafted three chapters for a book-length cultural history of the commercialization of playground basketball. This book traces how advertisers, television and cinema producers, journalists and other media workers have positioned playground basketball for mainstream consumers since the 1950s. This book explores the ambivalent meanings of race and space in contemporary U.S. culture, thereby contributing to vital conversations about culture and politics in the contemporary United States. As a fellow-

in-residence at the Obermann Center for Advanced Studies, Prof. Oates met bi-weekly with other fellows to discuss ongoing work. In addition to the progress on his manuscript, Oates also completed work on several book chapters and submitted two articles to scholarly journals, where they are currently under review. Oates' research and writing during the PDA will directly benefit the students of UI by enriching his teaching in sport and media. His research on the book also forms the basis for a new undergraduate course titled "Cultures of Basketball."

ONEL, YASAR, Professor, Physics & Astronomy, 32 years of service, Fall 2018

Title: Research- at the Large Hadron Collider (LHC) with Compact Muon Solenoid (CMS) Detector and Phase I upgrades for the Hadronic and Hadronic Forward Calorimeters.

Professor Onel carried out his research project on high energy physics (particle physics) at CERN, Geneva, Switzerland and DUNE experiment planning at the FERMI National lab near Chicago. He participated in the upgrade of the HCAL detectors at the Large Hadron Collider (LHC) project and tested and commissioned his detector HF-Forward Calorimetry for the CMS (Compact Muon Solenoid) Collaboration. He designed and built components of this detector in UI Physics machine shops and contributed to the physics data analysis with his graduate students. He also worked on planning of the future upgrade projects for the CMS Outer Tracker (OT), Barrel Timing Layer (BTL) and High granularity Calorimeter (HGC). For the DUNE project he is the group leader for integration and installation of the photon Detector system (PDS) and he has worked on the planning and technical design report (TDR). Professor Onel has also delivered five Detector Research papers at the IEEE 2018 conference in Sydney, AUS. His activities will promote his research effort in particle physics and have refreshed his teaching skills in particle physics and modern physics.

PANT, GAUTAM, Associate Professor, Management Sciences, 8 years of service, Fall 2018

Title: Using Web Footprints to Explain and Predict Human Capital Movement

Professor Pant worked on several research projects and advanced his skills in text analytics during the PDA period. It resulted in two completed papers. The first paper is titled "Predicting Labor Market Competition: Leveraging Interfirm Network and Employee Skills." It is currently being revised for resubmission to one of the top information systems journals. In this study, Professor Pant and his collaborators perform an interfirm labor market competitor analysis with a unique longitudinal employer-employee matched dataset derived from online profiles of 89,943 employees, tracking their career over 3,467 public firms from the years 2000 to 2014. The second completed paper is titled "The Effect of Skilled Immigrants and IT Skills on Employee Retention." The paper studies the effect of skilled immigrants on the job turnover of native U.S. workers. The paper will be submitted to a top-tier journal in the next few months.

PHILLIPS, BRYAN, Associate Professor, Biology, 9 years of service, Fall 2018

Title: Using CRISPR to genetically tag *C. elegans* proteins

Molecular analysis of development requires visualization of developmental regulators in living cells during specification. Fluorescent tags are added to developmental gene products to facilitate visualization. However, these transgenes result in an overexpression phenotype and multi-copy arrays of genes are silenced in the early embryo of Professor Phillips' research animal, *C. elegans*. In the PDA period, Phillips researched several transgene generation methods and settled on a single copy genomic insert. He also researched the exact makeup of the genomic insert and decided to tag the gene *SYS-1*/beta-catenin with a photoconvertible fluorescent tag (green to red after UV exposure). *SYS-1* inheritance during cell division is a major focus of

Phillips' lab and this tag enables quantitation of "old" vs "new" SYS-1 protein. The result of this research generated a tagged SYS-1 DNA and the insertion of this transgene as a single locus into transgenic worms is currently under construction. Professor Phillips also spent PDA time writing a NSF grant to fund a new line of research in his lab and writing a research manuscript that is currently under review at PNAS, a prestigious science journal.

PLATTE, NATHAN R, Associate Professor, Music, 8 years of service, Fall 2018

Title: The Sounds of Music in the Films of Robert Wise

Professor Platte completed research for his book on music and sound in director Robert Wise's films. To do this, Platte visited five different archives (one in New York, four in LA), where he studied production records and music manuscripts related to Wise's films. Platte also began analyzing these materials for his book proposal about Wise's collaboration with composers and sound specialists. Since the films deploy music to unsettle audience assumptions on social issues including racism, capital punishment, and political coercion, he will use Wise's films to help students perceive the positive consequences of thoughtful collaboration guided by social conscience. These ideas will carry forward in: 1) Professor Platte's annual "Introduction to Film Music" course, 2) a new, upper-level course cross-listed with Music and Cinematic Arts on film sound, and 3) his advising of graduate students who use archives to study film and music. In addition to writing his book for general audiences, Platte also looks forward to working with community partners, such as the public library, to facilitate a screening series of Wise's films.

PRIEST, RICHARD T, Associate Professor, History, 7 years of service, half time for calendar year 2018

Title: Deepwater Horizons: The Epic Struggle for Offshore Oil in the United States

Professor Priest made substantial progress toward book publication of his study, "Deepwater Horizons: The Epic Struggles Over Offshore Oil in the United States." He produced a detailed proposal and secured an advance contract with the University of Kansas Press. He finished writing four chapters and outlined the remaining six with his co-author. Priest also was awarded an Arts & Humanities Initiative grant of \$7,000 to finish research in 2019 at several U.S. presidential libraries. Deepwater Horizons will be the most deeply researched and comprehensive historical narrative of the governance of offshore drilling and development in the U.S. It is directed at a wide range of scholarly audiences as well as politicians and civil servants in the multitude of federal, state, and local government bodies charged with overseeing or mitigating the effects of offshore oil and gas development. Research for the book will also directly inform Professor Priest's teaching, specifically in his courses "U.S. Energy Policy in Global Context," "Big Ideas: The History and Science of Oil," and "American Environmental History.

RADLEY, JASON J, Associate Professor, Psychological & Brain Sciences, 8 years of service, Spring 2019

Title: Development of a transgenic rat to examine the anatomy and function of stress-related pathways in the brain

While great strides have been made in understanding the basic science of mental disorders over the past 25 years by the utilization of transgenic techniques in laboratory animals, a limiting factor has been the heavy reliance on the mouse as a model species. Mouse genetics offer an expedient means of manipulating the genome and analyzing nervous system disorders; however, the rat has a broader behavioral repertoire that will translate better for modeling human psychiatric illnesses. New transgenic rats are becoming available that will offer greater resolution

in analyzing brain and circuit function underlying complex behaviors. Dr. Radley's laboratory studies brain pathways that are dysregulated by stress using more complex behavioral approaches in rats. This will help to inform the basic processes underlying stress-related mental disorders such as depression and post-traumatic stress disorder. His laboratory successfully characterized and began implementation of a transgenic rat that will enable them to manipulate GABAergic inhibitory neurons using viral genetic approaches. Ongoing studies will help to better understanding the brain circuit perturbations following stress exposure

RAHMAN, SHARIF, Professor, Mechanical & Industrial Engineering, 24 years of service, Spring 2019

Title: Uncertainty Quantification in Isogeometric Analysis

Professor Rahman performed fundamental research on modeling and simulation of complex systems subject to uncertainty; in other words, new computational methods were developed to quantify the effect of uncertainty on system response. By addressing uncertainty head-on, effective measures to manage and mitigate uncertainty were devised. Potential engineering applications include microstructure-property relationship in advanced materials, fatigue and fracture of engineering structures, and design of nanoelectromechanical systems. Beyond engineering, the results from this research will benefit the U.S. and Iowa economy and society through application in areas where uncertainty quantification plays a vital role, such as energy sciences—nuclear energy, carbon sequestration; statistical physics—medicine, quantum mechanics; geosciences—seismology, reservoir modeling; and bioinformatics—drug delivery, agriculture. The results and outcomes from this project include eight peer-reviewed journal articles, four conference presentations, a new research grant from the NSF, and new software tools for upgrading Professor Rahman's undergraduate and graduate courses.

RYNES-WELLER, SARA L, Professor, Management & Organizations, 29 years of service, Fall 2018

Title: Narrowing the Academic-Practice Gap in Management

Professor Rynes-Weller conducted research on three topics. First, she explored why people often do not believe management research findings and how this complicates implementation of evidence-based management and evidence-based teaching. Two published papers resulted from this research. Second, she reviewed extant research related to whether employees trust human resource departments to deal fairly with issues of diversity and inclusion, discrimination, and sexual harassment. Results suggest that many employees do not trust HR with regard to these issues and that this distrust is often warranted, given retaliatory actions by employers and dispute resolution procedures that often severely disadvantage employees. Third, she conducted research to explain the rapid growth of farm to school programs in the U.S., collecting most of her data in Iowa. In addition, she worked with the CEO of an Iowa company to extensively revise her graduate level course on strategic management of organizational change. The revision focused on increasing experiential learning opportunities and practical applications. She has since team-taught the revised course with this executive.

SANDER, EDWARD, Associate Professor, Engineering-Biomedical Engineering, 8 years of service, fall 2018

Title: Gaining Expertise in Synthetic Biology

Synthetic Biology (SB) is a rapidly developing field that lies at the intersection of biology and engineering. The underlying premise of SB is that living systems can be engineered to produce

useful end products, tools, or machines for a range industrial and medical applications. This nascent field has tremendous commercial potential. It also has spawned a number of private and federal funding opportunities, underscoring the perceived importance of SB in being able to deliver solutions to a number of global problems. Dr. Sander completed a PDA in Fall 2018 so that he could acquire new expertise in SB techniques in order to expand his research and teaching portfolio. Dr. Sander: 1) co-created a new 2018 summer course on SB that taught 19 students, 2) submitted a NIH X02 proposal on using SB to direct tissue fabrication, 3) co-led and accompanied the UIOWA iGEM team to present at the 2018 National conference, and 4) helped establish a stronger SB presence on campus. This PDA experience has helped with research funding efforts and developing a new career path for undergraduate/graduate students that will benefit the State of Iowa.

SHEN, HELEN, Professor, Asian & Slavic Languages and Literatures, 15 years of service, Fall 2018

Title: Two Academic Projects for Chinese as a Second Language Acquisition

Professor Shen completed two projects, as planned. The first is a comprehensive study on reading fluency among Chinese as a second language (Chinese L2) learners. The study will contribute to the construction of a Chinese reading fluency scale, crucially needed in the field to identify students' reading comprehension levels so that appropriate intervention can be provided in the classroom. The study also provides theoretical perspectives for Chinese L2 educators on understanding the oral and silent reading processes and their relation to reading comprehension. The second project is the second edition of the book *Teaching Chinese as a Second Language: Vocabulary Acquisition and Instruction*. The book addresses Chinese L2 vocabulary acquisition and instruction from the perspectives of both theory and practice, with a focus on Chinese L2 adult literacy development in a classroom setting. This book will be used by graduate students in Chinese L2 teacher training programs, Chinese L2 instructors, and scholars of L2 literacy development to improve understanding of the relationship between oral reading and reading comprehension in a non-alphabetic language.

SOLT, FREDERICK, Associate Professor, Political Science, 7 years of service, Fall 2018

Title: Responsiveness and Policy Feedback in Dynamic Comparative Perspective

When do policies generate growing public support, and when do they instead trigger a backlash in public opinion? These questions go to the heart of what it means for government to be responsive and democratic, but getting answers depends on evidence about trends in public opinion and public policy over time, on a variety of issues, across a broad range of circumstances. Because polls ask different questions at different times in different countries, compiling this sort of evidence has been an insurmountable task. Professor Solt developed a new approach to overcoming this hurdle and so to providing new answers to these vital questions. He created a new statistical technique for extracting information on public opinion from surveys that cannot otherwise be compared, and he compiled a collection of survey data that spans decades and dozens of countries on four often-contentious issues, generating new insight on how public opinion and policymaking differ across countries. He drafted versions of this research for publication in articles and as a book, wrote software implementing his method for others to use in their own work, and incorporated it into his undergraduate and graduate teaching.

STEINITZ, MAYA, Professor, Law, 8 years of service, Spring 2019

Title: Law and the Self: An Imaginary Exchange of Letters between H.L.A. Hart and G.H. Mead

Professor Steinitz met her goal to complete the majority of the research towards her next monograph, tentatively titled 'Law and the Self: An Imaginary Exchange of Letters between H.L.A. Hart and G.H. Mead.' In addition, she made considerable progress on other projects; grant applications; teaching development; and presentations at conferences worldwide. The above further UI's and the College of Law's scholarly impact, reputation and ranking; lay the ground work for future collaborations and grant-seeking; contribute to student recruiting, mentoring and placement; contribute to course design; and inform the judiciary, legislatures, regulators and the press at the state and national level on the subjects that fall within her scholarly areas.

STONE, ERIC, Associate Professor, Theatre Arts, 11 years of service, Fall 2018

Title: Where Practice Meets Pedagogy: Prague and T.V. Production

Professor Stone's PDA for fall 2018 had significant design opportunities for theater, opera and television. He created four freelance design jobs: three for Great River Shakespeare Festival and one for Madison Opera. He gained invaluable insight from connections with T.V. production designers during residencies in Los Angeles. In addition to working in the Art Department on the Fox live broadcast of RENT, he also observed the design process of awards shows and holiday specials, as well as visiting the sets of TV shows. These opportunities allowed him to expand his network of collaborators, fostering new relationships in the Midwest and California. This research has pedagogical outcomes in his UI courses, better preparing students professionally for opera and repertory theater companies, as well as in the TV industry. The potential impact on Iowa is tremendous. When films like the 2018 hit movie, A Quiet Place, have put Iowa's MFA in the spotlight, the opportunity for growth in other entertainment industry capacities is feasible. Work such as Stone's creates bridges for mentorship, collaboration and employment.

TOLBERT, CAROLINE J, Professor, Political Science, 13 years of service, Fall 2018

Title: The Problem with How America Votes: Ranked Choice Voting and Election Reform

Professor Tolbert conducted research on information technology use and local economic opportunity for two large external grant proposals during her fall 2018 PDA. She also developed a number of conference paper proposals, submitted one journal article for review, submitted one completed book manuscript to a publisher, published a book chapter, and developed a proposal and the core research for a second coauthored book, which a university press has agreed to review. Tolbert also conducted extensive research for a grant working with a technology firm (GoDaddy). She supervised the work of two graduate research assistants that were funded as part of the grant. She was a teaching mentor for two additional doctoral students and supervised the dissertation research of one doctoral student.

UDAYKUMAR, H S, Professor, Mechanical and Industrial Engineering, 20 years of service, Spring 2019

Title: Request for Professional Development Assignment (Spring 2019)

Professor Udaykumar spent the PDA period working on two books, as planned. Both books are in advanced stages of completion and a publisher has been identified for one of them. The first book "Design of Energy Systems for the 21st Century" is an advanced undergraduate textbook for use by Senior year/beginning graduate mechanical engineering students. The PDA period was used to write and typeset several hundred pages of this book (covering about 70% of the

chapters to finally appear in the book). With a semester of further work the book will be complete and ready for editorial review. In addition, Udaykumar worked on a research monograph intended for use by advanced graduate students/researchers on "Moving Boundary Problems." Cambridge University Press has expressed interest in this book and a proposal for publishing the book is currently being prepared. In addition, Udaykumar published several journal and conference papers in spring 2019 and several more papers are in preparation based on work done in the PDA semester. He also secured research funded projects, and these grants have now arrived; totally nearly \$1 million per year over the next five years.

VASI, ION B, Associate Professor, Sociology, 6 years of service, Spring 2019

Title: Beyond Petroleum? The Emergence of Alternative Fuel Markets in the United States, 1995-2015.

Professor Vasi completed research for the article titled "Beyond Petroleum? Interstitial Issue Fields and the Growth of Alternative Fuel Markets in the United States, 1993-2015." This research explores the conditions under which organizational incumbents, challengers, and activists in interstitial issue fields are capable of influencing field transformation and market development. Empirically, this research examines the development of markets for four different alternative fuels for ground transportation in the United States between 1993 and 2015: compressed natural gas, liquefied petroleum gas, electric, and ethanol. Based on this research, Vasi developed a contingency model of the effects that field actors have on market development and generate specific theoretical contributions to scholarly understanding of organizational field change. Vasi also worked on the article titled "Organizational Responses to Social Problems: The Adoption of Farm to School Activities in the United States." This research will be submitted for publication.

VIGMOSTAD, SARAH C, Associate Professor, Biomedical Engineering, 11 years of service, Spring 2019

Title: Development of Non-invasive Bladder Cancer Diagnostic

During this PDA, Professor Vigmostad performed research to examine the role that fluid shear stress (FSS) plays on non-cancer cells present in urine samples. This was a pilot study to explore whether FSS can be used as a "sample clean-up" step to enhance urine-based cytology and enable less-invasive surveillance of bladder cancer. FSS exposure parameters (flow rate, exposure time, frequency) were varied to achieve optimal "clean-up" such that diagnostically important cells (bladder cancer cells) were retained, while noncancer cells were eliminated. Insights from this process were incorporated into the subsequent design iterations of an instrument and disposable cartridge that may be used for clinical deployment of this protocol. The experiences gained through this PDA will be incorporated into Vigmostad's course Design of Artificial Organs and Circulatory Implants in which students learn various aspects of the design process, including the use of FDA guidance documents, understanding predicate devices, and the important ways that FDA regulation impacts all aspects of the innovation process.

VOGAN, TRAVIS T, Associate Professor, Journalism & Mass Communication, 7 years of service, Spring 2019

Title: The Boxing Film: A Cultural and Transmedia History

Professor Vogan primarily spent his spring 2019 PDA finishing his fourth book: "Screening Boxing: A Cultural and Transmedia History of the Boxing Film." He completed the manuscript and submitted it for review in June of this year. He received word that the manuscript has been

accepted for publication by Rutgers University Press, pending revisions. He plans to complete these revisions in the immediate future and submit the final draft in October. Aside from completing his manuscript for Rutgers University Press, Vogan used the time the PDA afforded to put the finishing touches on an anthology he is co-editing for the University of Nebraska Press. "Sporting Realities: Critical Readings of the Sports Documentary" (co-edited with Samantha N. Sheppard, Cornell University) will be published in 2020. These research projects will enrich Professor Vogan's teaching, solidify his position as a top scholarly expert on sport and media.

WASSERMAN, EDWARD A, Professor, Psychological & Brain Sciences, 47 years of service, Fall 2018

Title: Bye design! Debunking "designer thinking" in the origin of behavioral and technological innovation

Professor Wasserman continued research for his book on creativity and innovation: "Bye design! Debunking 'designer thinking' in the origin of behavioral and technological innovation." During the fall semester, he wrote several chapters including two centered on important innovations in sports and medicine arising at the University of Iowa. With the help of swimming coach Marc Long, Wasserman describes the interesting history of the butterfly stroke and the critical role played by his predecessor, coach David Armbruster. And, with the assistance of Dr. Jose Morcuende, Wasserman chronicles the fascinating origin of Dr. Ignacio Ponseti's treatment of clubfoot. On the strength of these and other stories, Professor Wasserman wrote a prospectus which was enthusiastically received by Cambridge University Press; the book is now under contract. He hopes that these stories will engagingly document the central thesis of his book: namely, that rewards and punishers profoundly shape human behaviors, whether ordinary or extraordinary. Appreciating the power of this behavioral shaping process is vital to our students and our citizenry if we are to comprehend and improve the human condition.

WINN, BRYON S, Professor, Theatre Arts, 22 years of service, Spring 2019

Title: Theatrical Lighting for Live Television

Professor Winn spent the PDA designing two productions for Portland Stage Company, a leading regional theatre in the United States. He also designed productions for the University of Iowa Department of Theatre Arts. In addition, he completed the first phase of design work for a multi-venue event at Butler University, which includes a theatrical lighting approach to the exterior of two buildings. He achieved his objective to develop a new course, Live Event Multi-Camera Lighting Design, which will be offered in the spring semester of 2020. Part of his research on multi-camera lighting will culminate in a session on design at the United States Institute for Theatre Technology conference in 2020. Live Event Multi-Camera Lighting Design will directly benefit students through increased exposure to contemporary design technology and expanded career opportunities. During his previous PDA, the course Entertainment Design was created and has given students the opportunity to build exciting careers, with contributions ranging from work on the Iowa City Summer of the Arts productions to the Super Bowl Half-Time show. Live Event Multi-Camera Lighting Design will complement this course.

WOHLGENANT, MARKUS, Professor, Physics & Astronomy, 17 years of service, Fall 2018

Title: Sabbatical stay at University of Utah to learn new techniques and initiate new collaborations

Professor Wohlgenannt developed new collaborations and research directions during his PDA stay at the University of Utah. His research focused on excited state dynamics in perovskite

materials. Synthetic perovskites have been identified as possible inexpensive base materials for high-efficiency commercial photovoltaic cells (semiconductor devices that convert sunlight into electricity). He also studied magnetic properties and spin-injection into organic light-emitting diodes (OLEDs). OLEDs are light emitting pixels, used in cell phone- and television-displays, made from organic semiconductors. This work built on a recent publication that Wohlgenannt co-authored that provided the first direct experimental probe of the magnetic processes used in the latest generation of the highly efficient OLEDs. In addition to the experimental work, Wohlgenannt collaborated on theoretical projects treating important aspects of quantum mechanics, which is taught to all physics students who proceed beyond the first year. These new experiences will enrich teaching classes such as quantum mechanics and statistical mechanics and expand interactions between Dept. of Physics and the ECE Dept.

WU, XIAODONG, Professor, Electrical-Computer Engineer, 14 years of service, Spring 2019
Title: Developing Next Generation Rotating-Shield Brachytherapy System

During Professor Wu's PDA in spring 2019, he mainly worked on the following projects: 1) To develop a novel rotating-shield brachytherapy (RSBT) system to advance high-dose-rate brachytherapy (HDR-RT) to a new paradigm. RSBT is a transformative technique that entails rotating a radiation-attenuating shield about a brachytherapy source to directionally modulate radiation in an optimized fashion. The proposed research aims to develop enabling concepts and technologies for intra-operative treatment planning and delivery of RSBT, which will pave the way to make RSBT clinically available, empowering the radiation oncology discipline with substantially improved tools for cancer management. 2) To leverage deep learning in medical image analysis. Professor Wu has taken advantage of this PDA: a) to develop quantitative imaging tools using deep learning to predict therapeutic outcomes for an individual cancer patient with anatomical CT and functional PET images, and b) to integrate graphical models into deep learning for medical image segmentation.

YUEN, KEE-HO, Professor, Art and Art History, 19 years of service, Fall 2018
Title: Explore the new and reinvent the old in casting art work.

Professor Yuen's goal for his PDA project was to investigate the applications of chaplets/spacers in Chinese bronzes, and how it may integrate with advanced technology (3-D resin-sand molds printing and MAGMA5 casting process simulation software) in producing his cast, thin-walled sculptural containers. Prof. Yuen collaborated with the UNI Metal Casting Center, and Prof. Christoph Beckermann, Solidification Laboratory, UI College of Engineering to learn the MAGMA5 software which can analyze and improve the designs of the casting systems. He has finished three pieces that have exhibited in Hong Kong, Korea and US. He did presentations and workshops in Hong Kong, China, and US. He standardized the curriculum and created new materials for all the classes in the Metals area, including the new Mixed Media Workshop course. A new BFA sequence was also established. The project has greatly enhanced his creativity and productivity. He will disseminate the result to his students and all those interested through national and international exhibitions, workshops, presentations, web sites and classes.

UNIVERSITY OF NORTHERN IOWA

CHIN, MARTIN, Professor, Chemistry and Biochemistry, 19 Years of Service, Spring 2019
Title: Catalytic Silylation of Pyridine with Diruthenium Complexes

Dr. Chin's project focused on complex molecules and chemical building blocks, resulting in his discovery of a new catalyst, zinc triflate, which can silylate the C-H bonds of pyridine. This reaction facilitates the building of other building blocks, like 3-silylpyridine, which can then be used in subsequent cross-coupling reactions in constructing more complex molecules. This work has allowed Dr. Chin to maintain a dynamic and active research program, which will help strengthen grant applications for external funding. The immediate benefits of this work to the university and the state of Iowa are the enhanced learning of well-trained chemistry and biochemistry majors from UNI who have participated in undergraduate research. UNI undergraduates who participate in research have hands-on experience with a variety of instruments, develop critical thinking skills, improve their communication skills and learn how to persevere when attempting to solve a scientific problem. The project also involved a high school teacher and a high school student in the research project. The work helped develop the teacher professionally by conducting chemical research and allowed him to incorporate research experiences into his teaching methods. The outcome of this research includes one external grant proposal, which is under development.

CONNORS, THOMAS, Associate Professor, History, 21 Years of Service, Spring 2019
Title: The Politics of Pantheons: How Nations harness the Power of their Dead

Dr. Connors spent last spring conducting field research that led to a book manuscript about national pantheons around the world. Using an interdisciplinary approach, his study examines places where a nation's great ones are buried together in a temple or park designed to impress visitors, inculcate patriotism, and provide a hallowed space for ceremonies. Dr. Connors' book focuses on 18 case studies from 14 countries and four continents, using them to illustrate how pantheons are created, decline or evolve. He compares the criteria used for inclusion, controversies that arise from omissions, and alterations made over time. This approach offers a transnational perspective on a largely unexplored global phenomenon found in Buddhist, Christian, Hindu, and Jewish cultures, and in the service of republics, kingdoms, dictatorships, and communist states. Dr. Connors' book contributes to a developing field of scholarship on the intersection of nationalism, landscape, and memory. The PDA supported three research trips to ten counties, in Africa, South Asia, and the Caribbean, that together greatly broadened the study's cultural parameters. Dr. Connors' work contributes to the university, community, and citizens by informing his teaching, publications and Iowans through public outreach. The outcomes of his work include: 1) an annual talk ("Pantheons and Heroes Acres: Gathering the Nation's Greatest Dead"), 2) a new documentary, *A Historic Tour of Fairview Cemetery*, produced in partnership with the City of Cedar Falls' Channel 15, 3) a co-written article accepted for publication, and 4) a book manuscript.

GALLAGHER, DEBORAH, J, Professor, Special Education, 27 Years of Service, Fall 2018
Title: Probing the Interconnections of Disability and Animal Rights: With Implications for Equitable Schooling for Students with Disabilities

Dr. Gallagher's project consisted of an analysis of disability studies scholarship, animal rights literature and relevant theoretical and philosophical literature to investigate the way deeply held conceptions about the human/animal divide may contribute to disability discrimination. The human/animal divide merits examination for at least two reasons. First, conceptual clarity is often lacking in the more abstract discussions of this relationship. Second, because of this lack of clarity,

the relationship is rarely understood with the practical issues and problems concerning the schooling of children who are labeled as having disabilities. Nonhuman animals are denied rights on the Kantian basis that they lack specific cognitive abilities that humans possess, such as the ability to form a *theory of the self* and the capacity to envision one's past and future. Ability is therefore central to our comparatively superior status as humans. But if being human as opposed to animal is predicated on ability, what does this mean for disabled people? This question is not merely philosophical: it has very real consequences. For example, prominent animal rights activist and Princeton bioethicist Peter Singer has long argued for legalizing euthanasia of severely disabled infants and elderly people, a practice that is legal in the Netherlands under the Groningen Protocol. Further, animal rights legal scholars have successfully made the case that the great apes should have rights, given their superior cognitive abilities relative to those of severely intellectually disabled humans. Dr. Gallagher's PDA work holds important insights to resolve the disproportionate, excessive and harmful disciplinary interventions special education students receive, both in Iowa and across the nation. Her work culminated with a conference presentation.

IQBAL, MOHAMMAD, Professor, Earth & Environmental Sciences, 24 Years of Service, Fall 2018
Title: International Research Collaboration: Study of Highly Polluted Bagmati River to Prevent Environmental Hazard of an Urban Population in Nepal

Dr. Iqbal's project involved collaborative research between UNI and Tribhuvan University in Kathmandu, Nepal. His PDA work focused on the Bagmati River, a highly polluted water body in Kathmandu that has been impacted by the dramatic increase in population and urban development in recent decades. The river was sampled at 11 sites over the last four years, including seven times during summer 2018 and three times in October 2018 to assess water quality and conduct health impact mapping. Water was analyzed for temperature, dissolved oxygen (DO), pH, total dissolved solids (TDS), total suspended solids (TSS), turbidity, conductivity, and *E. coli*. Based on 2018 data, the average TDS value increased from 22 mg/L at Sundarijal (site 1, near source) to 805 mg/L at Balkhu (site 8, near mid-town). Water temperature increased from 15.5 oC at Site 1 to 25.8 oC at site 7 (Kalimati, near downtown), indicating severe pollution from industrial effluents. DO in the upper reaches of the river (Sundarijal and Jorpati) were found much higher (av. 5.3 mg/L) than at all sites in the city areas downstream (av. 1.3 mg/L). The extremely low DO at the city center can be explained by the high *E. coli* in water from sewage disposal, exceeding 200,000 MPN/100 mL. Thirteen (13%) percent of the people surveyed said that they do not have any bathing facilities, indicating their dependence on the adjacent river. Over 13% said they dispose of garbage into the river or directly on the street. Close to 15% said that they depend upon the river for bathing, washing, religious and other purposes. Dr. Iqbal's research creates opportunities for UNI students to be part of a global community and learn through hands-on and study abroad type classes. The results of Dr. Iqbal's study will also enrich people's understanding of diverse factors that deteriorate water quality. They will learn how U.S. technology is used to assess water pollution and prevent environmental disasters in an economically deprived region of the world. The outcomes of this project are: new collaborations, a dataset, two conferences, one poster presentation and one oral presentation.

LEE, W. M. ERIC, Associate Professor, Accounting, 7 Years of Service, Spring 2019
Title: Reading Between the Lines: An Empirical Analysis of the Relationship Between Companies' Responsibility Reporting and their Environmental, Social and Governance (ESG) Performance

Dr. Lee conducted several studies examining various issues in the field of corporate social responsibility (CSR). This project examined how the gender of CSR leaders could affect the psychometric properties and readability of the CSR reports, and in turn, how these gender-based differences could impact firms' future financial and social performance. By analyzing a sample of

S&P 500 firms that issued annual CSR reports during the period of 2006 to 2015, findings showed that CSR reports with a female executive signer were more readable, showed more solidarity with readers, but expressed less certainty in the narratives. In examining their performance impact, solidarity and certainty are positively associated with firms' future financial performance, while solidarity and readability are positively associated with firms' future environmental, social and governance (ESG) performance. Dr. Lee's research contributes by positioning UNI at the forefront of academic institutions currently engaged in the important dialogue concerning narrative and diversity implication of corporate sustainability reporting. In time to come, the greater visibility garnered could put UNI on the radar for future scholastic discussions and possible research funding from external agencies in regard to CSR related issues. Currently, Dr. Lee is also actively contributing at both national (by serving as the National Advisory Council Member and Peer Mentor with the Association for the Advancement of Sustainability in Higher Education) and campus-wide (by serving as a Faculty Sustainability Board Member and CBA advisor with UNI's Certificate in Sustainability program) levels, which helps propel UNI into becoming a regional training/educational center for community stakeholders in all things related to corporate governance. Dr. Lee's project concluded with a submitted journal article.

PALCZEWSKI, CATHERINE, H. Professor, Communication Studies, 24 Years of Service, AY 2018-2019

Title: Bodies That Argue: Visual Arguments of Woman Suffrage, 1909-1919

Dr. Palczewski completed a book, entitled, *Bodies That Argue: Visual Arguments of Woman Suffrage, 1909-1919*, and revised a co-authored textbook, *Rhetoric in Civic Life*. The work related to this project offers three benefits to UNI and the citizens of Iowa. First, Dr. Palczewski gave two lectures on the topic, which contributed to UNI's national reputation by exposing faculty and students at other universities to UNI scholarship. Second, this research enhanced and enlivened classes in Visual Rhetoric, Women's and Gender Studies, Gender Issues in Communication, and Rhetorical Criticism. Both projects contribute to understandings of citizenship, engagement, and civic obligation essential to the community, state and nation. Dr. Palczewski's project led to new collaborations, three oral presentations, one completed lecture series, one submitted college textbook, one book under development, one published article and one published book review.

POSINASETTI, NAGESWARA, RAO, Professor, Technology, 17 Years of Service, Spring 2019

Title: Application of LCA for Sustainable Machining of Titanium Using MQL with Vegetable Oils and Solid Lubricant Particles

Dr. Posinasetti's project consisted of research on titanium. Titanium has become a very important engineering material because of its excellent properties such as hardness, elastic resistance, corrosion resistance, biocompatibility, etc. During machining, 80% of heat may get into the cutting tool, increasing the temperature in the machining zone to as high as 1100°C which can be controlled by cutting fluids (coolants). Since cutting fluids pose problems during usage and disposal, it is advocated to reduce their application by adopting Minimum Quantity Lubrication (MQL) of biodegradable vegetable cutting fluids for sustainable machining. Dr. Posinasetti's PDA work looked at the application of Minimum Quantity Lubrication (MQL) of cutting fluids during titanium machining. A life cycle assessment (LCA) is the tool of choice to establish the sustainability of any physical process; this research used LCA to develop a mathematical model that can consider the physical principles and thereby provide an easier evaluation method. The model is validated using the experimental data available from our laboratory. Results of the analysis showed that the model can be further extended to combine the economic aspects as well the various cost components. This will provide a tool for complete life cycle impact assessment so that the environmental impact of titanium machining could be reduced. With this

research, it is possible for UNI graduate and undergraduate students to formulate more extensions for the model and then develop renewable cutting fluids using soybean. Iowa is a large producer of soybeans, so research that can provide alternative uses helps soybean growers. Current use of soybean based cutting fluids is not extensive, but with this research the manufacturing industries can understand why to use soybean based cutting fluids for specific applications. Dr. Posinasetti's research produced one published article in conference proceedings, and four completed oral presentations abroad.

RAWWAS, MOHAMMED, Professor, Marketing, 22 Years of Service, Spring 2019

Title: Organizational Justice Theory: A Comparison of the Ethical Values of Iowan and Chinese Individuals

Dr. Rawwas's work involved a comparison of Iowan and Chinese organizational ethical values. Organizational justice theory is the process in which a worker judges the practices of management as right or wrong based on standards related to ethics, fairness or equity. A paradigm of justice theory classified it as a three-component model consisting of distributive (i.e., resource allocation), procedural (i.e., lack of bias), and interactional (i.e., respect and propriety) justices. While the three justices are important to workers' judgements of fairness, workers of diverse cultures may view one stage as more significant than the others. Dr. Rawwas collected data from two groups of workers, one from Iowa and the other from China. The purpose of Dr. Rawwas' PDA study was twofold: 1) to identify differences between the two groups in preferences for components of the organizational justice theory, and 2) to compare their ethical values. The results of this study have the potential to produce powerful benefits for UNI, Iowa organizations and employees alike. These include greater trust and commitment, improved worker satisfaction, enhanced citizenship behaviors and diminished conflict. The outcomes of this research are a planned conference, and a publication in development.

TRACEY, GRANT, Professor, Languages and Literatures, 22 Years of Service, Spring 2019

Title: Shot, Reverse-Shot

Dr. Tracey's project involved writing crime stories for publication in various outlets. One of them, a standalone Hayden Fuller story, "A Shoeshine Kill" was reworked into the novel, *Shot, Reverse-Shot*. Dr. Tracy also worked on a third story, *Day of the Dragons*, about Nazi's and mechanical death machines in Ontario, which he turned into a novella (38,000 words). This manuscript has been submitted for consideration to Zombie Pirate Publishing in Australia. Alternatively, *Day of the Dragons* may become an electronic publication from Twelve Winters Publishers, that people who purchase *Shot, Reverse-Shot* can access. The plot evolved into two storylines, one set in Toronto, September 1966 and the other in Montreal, May 1966. The two plot lines of *Shot, Reverse-Shot*, involving child pornography, youth gangs, drugs, hockey, and exploitation cinema, eventually converge, resulting in a book that will be published in 2022-2023 as the fourth novel in the Hayden Fuller series. Currently, novel three, *Neon Kiss*, is at the press undergoing copyedits. In July, Dr. Tracey traveled to Montreal for a week, scouting locales for the book, taking photographs, interviewing people, and making new discoveries. Upon visiting the Jewish neighborhood of St. Urbain's Street, Dr. Tracey decided to expand scenes in that area, incorporating a local diner. As a result, Dr. Tracey will revise *Shot, Reverse-Shot* in summer 2020. This work is of value to UNI because it builds upon a tradition of literary crime novels going back to the legendary Raymond Chandler. Dr. Tracey showed his students how it is important to go on location in order to flesh out the fictional world one is building.

ZIGAROVICH, JOLENE, Associate Professor, Languages & Literatures, 6 Years of Service,
Spring 2019

Title: Preserving Clarissa, and Other Morbid Curiosities in the Eighteenth-Century Novel

Dr. Zigarovich's project involved research on death in 18th-century Britain, culminating in a book on the subject. The historical facts concerning funerary practices and the culture's overall relationship with mortality are only beginning to be understood. Dr. Zigarovich remedies this critical neglect in part by foregrounding the political work and materiality of dead bodies and uncovering ways in which fiction embeds cultural attitudes towards death and dying. By incorporating a variety of historical discourses—wills, undertaking histories, medical studies, philosophical treatises and religious tracts—this project illuminates a shift in control over death and the body from religious institutions to the individual, which resulted in secular, aesthetic approaches to death and mourning rituals. *Preserving Clarissa, and other Morbid Curiosities in the Eighteenth-Century Novel* reveals that the body itself—its parts, and its preserved, visual representation—functioned as erotic memento, and it suggests that preserved remains became symbols of individuality and subjectivity. Dr. Zigarovich's project uniquely intersects fictional examples with the growing popularity of the undertaking trade and funerary rituals, preservation methods, anatomical models, and *memento mori* and relic culture. *Preserving Clarissa* builds on Dr. Zigarovich's earlier work and explores aspects of the eighteenth-century novel that she has been considering throughout her career. This research will benefit UNI and the citizens of Iowa through conference talks and presentations, essay and book publications, the enhancement of teaching and courses, and by nationally and internationally representing the high quality of work UNI faculty produce. The research for this project has already enhanced courses such as undergraduate seminars on "The Gothic," "British Romantic Writers" and "The British Novel to 1900," as well as undergraduate and graduate seminars on "British Victorian Writers." It will also enliven future UNI courses, such as the Spring 2020 graduate seminar "Gothic Literature, Gender and Sexuality." The outcomes of Dr. Zigarovich's project include an accepted oral presentation and a submitted book.

IOWA STATE UNIVERSITY

ANDERSON, CRAIG A, Distinguished Professor, Psychology, 20 years of service, Spring 2019
Title: Advancing and Communicating a Scientific Understanding of Violence

Professor Anderson, the world's leading expert on violent video game effects on adolescents and young adults, completed a book for general audiences, "The One Hour Expert: FAQs about Media Violence." The book is a teaching resource for Anderson's graduate and advanced undergraduate courses on aggression, and is also being marketed to parents/caregivers, child advocacy groups and policy makers.

BASTAWROS, ASHRAF F, Professor, Aerospace Engineering, 20 years of service, Spring 2019
Title: Biomechanics Modeling of Blunt Force Trauma

Professor Bastawros spent his assignment conducting research on the biomechanics of blunt force trauma, which can be used to improve safety equipment, aid in forensic investigations, and address grand challenges related to energy transportation and water resources. Results of Bastawros' work include the hosting of a symposium on the subject, and the awarding of \$360,000 in external research funding.

BIGGS, STEPHEN, Associate Professor, Philosophy and Religious Studies, 8 years of service, Spring 2019
Title: The Senses

Professor Biggs worked on a book and companion website, for general audiences, which together explain the philosophy and science of perception, and encourage readers to think more broadly about how many senses they have. Biggs' assignment also included the development of a single explanatory framework to organize materials related to the subject, the refinement of two Iowa State courses on the subject, and employment of a graduate student.

BREMER, JEFF, Associate Professor, History, 8 years of service, Spring 2019
Title: Capitalism, The Frontier, and the Early American Republic: The Origins of the United States

Professor Bremer's assignment allowed him to spend a semester in China as a Fulbright Scholar, teaching classes in American history, and giving lectures at ten different Chinese universities. Bremer also gave lectures on the U.S. constitution at the U.S. Embassy, and the Shanghai Consulate, explored exchange programs with Chinese universities, and provided mentoring to Chinese graduate students.

BROWN, ERIC, Associate Professor, Apparel, Events, and Hospitality Management, 8 years of service, Fall 2018
Title: Defining the Role Public Speaking and Communication Have on Self-Confidence and Career Success within Hospitality Management Industries

Professor Brown used his assignment to look at the role of "soft skill" development in the hospitality industry. Results include international presentations in Ireland and China, a journal article, and a module on public speaking for an ISU course on leadership experiences and development. Brown has also applied for a \$44,000 research grant in the area of his PDA.

CALL, ANSON, Associate Professor, Graphic Design, 16 years of service, Fall 2018
Title: Writing, Visualizing, and Augmented Reality Development for a Science Fiction Novel

Professor Call completed the draft of a science fiction novel, *Blackworld and the Historians*, to be published in 2020. The novel includes 30 pieces of artwork derived from simulation/visualization, a two-minute animation for e-book purchasers, an augmented reality version and an audiobook. Call has also incorporated learnings from the work in his courses.

CASTELLANO, MICHAEL J, Associate Professor, Agronomy, 9 years of service, Spring 2019
Title: Systems Modeling to Increase Nitrogen Use Efficiency in Iowa Cropping Systems

Professor Castellano used his assignment to extend his research on increasing nitrogen use efficiency and preventing nitrogen loss in the crop production process. Results from this work included a published paper, as well as a \$499,000 USDA research grant to examine the consequences of updating aging agricultural infrastructure.

CERVATO, CINZIA, Morrill Professor, Geological and Atmospheric Sciences, 18 years of service, Spring 2019
Title: E-gaming and Sustainability Education at University of Keele (UK): A Learning, Teaching, and Research Opportunity

Professor Cervato delivered three invited presentations, prepared a manuscript and journal article, and earned two grants worth nearly \$450,000 – a grant from the University of Keele to develop a game that enhances awareness of lifestyle choices on the planet; and a National Science Foundation ADVANCE grant to create a Midwestern partnership of research-intensive institutions for women STEM faculty success.

CROSS, SAMANTHA N, Associate Professor, Marketing, 10 years of service, Spring 2019
Title: Understanding Social Capital and Brand Equity in a Unique Market

Professor Cross completed brand case studies of a fish market and a luxury hotel, both in Barbados, and also collected data in Ames for a research project on consumers with disabilities. Results included two journal articles, four conference presentations and graduate research seminars at the University of the West Indies and Florida International University.

DONG, LIANG, Associate Professor, Electrical and Computer Engineering, 12 years of service, Fall 2018
Title: Establish Collaborations Towards a Multi-Institutional, International Program, Prepare for a SBIR Grant Application, and Write a Full Review Article

Professor Dong established collaborations with leading researchers to develop new research programs related to the Internet of Agricultural Things, including the use of portable spectrometers, photodetectors, sensors, data analytics and wireless communication technologies in field applications. Dong also used the assignment to write a review article on agricultural soil sensors and, with colleagues, submitted a \$20 million National Science Foundation grant proposal.

DUBISAR, ABBY M, Associate Professor, English, 8 years of service, Spring 2019
Title: Banana Rhetorics: Feminism, Food, and the Land Grant Ethic

Professor Dubisar used the assignment to conduct 34 interviews for a book chapter on women farmers' rhetorical strategies, as well as to complete a chapter regarding research on genetically

modified bananas. Dubisar also wrote a book chapter, journal article and three conference presentation proposals, and presented her work at Muscatine Community College and the Nodaway Valley Historical Museum in Clarinda. The work will also benefit students in Dubisar's class on Gender and Communication.

HAN, GANG, Associate Professor, Greenlee School of Journalism and Communication, 10 years of service, 2018-2019 academic year

Title: From Iowa to Beijing – Product-Country Image in a Global Context: A Comparative Study between the U.S. and China

Professor Han used the assignment to analyze how mainstream media outlets in China portray products made in the U.S. to those made in China. This work led to two conference papers, two submitted manuscripts, further data analysis and incorporation of the work into Han's courses on communications research.

HILLIARD, KATHLEEN, Associate Professor, History, 11 years of service, 2018-2019 academic year

Title: Bonds Burst Asunder: The Revolutionary Politics of Getting By in Civil War and Emancipation, 1860-1867

Professor Hilliard conducted research for her book manuscript at 19 archival repositories; gaining more than 75,000 pages of reports, correspondence, and diaries from the era; and delivered presentations in Louisiana, Mississippi and Connecticut. Hilliard also used her research to redevelop an Iowa State course on the history of the Civil War and reconstruction.

HUANG, XIAOQIU, Professor, Computer Science, 18 years of service, 2018-2019 academic year

Title: Finding Lineage-Specific Genes in Thousands of Fungal Genomes

Professor Huang's research directly resulted in two journal articles and revisions to an Iowa State course on bioinformatics. Huang also plans to launch a startup company to develop bioinformatics tools to detect plant and human fungal pathogens, and write new funding applications.

KIM, SANG W, Associate Professor, Electrical and Computer Engineering, 16 years of service, Spring 2019

Title: Spectrum Sensing from Harvested Energy

Professor Kim visited Yonsei University in South Korea during his assignment, where he developed new Iowa State course modules on physical-layer security, physical-layer integrity, and cognitive radio; published and or prepared three academic papers; and submitted a funding proposal to the U.S. Army Research Office.

KRIER, DAN, Professor, Sociology, 15 years of service, Spring 2019

Title: Economic Theology: The Religious Foundations of Capitalism

Professor Krier completed theoretical and empirical research for his project during the assignment period, and began drafting chapters of a manuscript. He recently presented results from his research in Croatia and the United Kingdom, is completing a journal article, and has signed a contract for his book, which will be published in 2020.

LENCE, SERGIO HORACIO, Professor, Economics, 26 years of service, Spring 2019

Title: A Comprehensive Investigation of the Drivers of Agricultural Productivity

Professor Lence spent his assignment developing a new model to better understand the drivers of agricultural productivity, and how to improve productivity in an efficient manner. The results of his work included the completion of three papers, and the development of materials for an Iowa State Ph.D. course in agricultural economics.

LIU, HAILIANG, Professor, Mathematics, 17 years of service, 2018-2019 academic year

Title: Frontiers in High Order Structure Preserving Algorithms

Professor Hailiang completed 10 manuscripts during the assignment, and initiated research collaborations with colleagues in Germany and Saudi Arabia. The work in Germany was supported by the Alexander von Humboldt Foundation. These efforts will support Hailiang's teaching and supervision of graduate students.

MADON, STEPHANIE, Professor, Psychology, 20 years of service, Fall 2018

Title: The Validity of Cartridge Case Comparison Conclusions Under Field-Based Conditions

Professor Madon recruited 270 U.S. forensic examiners to participate in a study on cartridge case comparisons, a commonly used forensic technique, to identify how biases in the forensic sciences can lead to forensic errors, a key cause in wrongful convictions. The work also enriched the value of Madon's courses on Psychology and Law, and Research Methods, which are attractive to students pursuing careers in law enforcement, psychology and forensics.

MEISSNER, CHRISTIAN, Professor, Psychology, 6 years of service, 2018-2019 academic year

Title: Ending Torture and Coercive Interrogation Practices: Using Science to Develop a Humane, Legal, and Effective Model

Professor Meissner published 10 manuscripts related to research on interviewing, interrogation, credibility assessment, and eyewitness memory; and also delivered 12 invited presentations, including university visits, practitioner conferences, and seminars or trainings for national and international law enforcement agencies. Meissner has received \$900,000 in competitive research grants as a result of the assignment.

MIGUEZ, FERNANDO EZEQUIEL, Associate Professor, Agronomy, 9 years of service, 2018-2019 academic year

Title: Improved scientific understanding of agricultural systems performance on a global scale

Professor Miguez visited the Research Institute for Natural Resources and Agroecology in Argentina during his assignment, where he evaluated current crop and soil modeling techniques under different environmental conditions. Results of this work include the preparation of several journal articles and external funding proposals.

PARDO-BALLESTER, CRISTINA, Associate Professor, World Languages and Cultures, 12 years of service, 2018-2019 academic year

Title: The Assessment use Argument for a New Spanish Placement Test

Professor Pardo-Ballester visited 10 Spanish teachers, recording their classes, and developing listening and reading tasks for a future adaptive placement test. Pardo-Ballester also published a conference paper and presented a research poster, and attend three international conferences where she presented research papers.

RAJAN, HRIDESH, Professor, Computer Science, 14 years of service, Fall 2018
Title: Accelerating International Collaboration on Software Code Analysis for Cybersecurity

Professor Rajan used the assignment to facilitate exchange between Iowa State and the University of Bristol in the United Kingdom, studying how flaws in software code lead to vulnerabilities in cybersecurity. This work resulted in a joint workshop at the National Cyber Security Centre (UK), as well as a workshop report and research article.

ROWLING, MATTHEW JAMES, Associate Professor, Food Science and Human Nutrition, 12 years of service, Fall 2018
Title: Nutritional Strategies to Prevent and Ameliorate Diabetic Kidney Disease Complications

Professor Rowling used the assignment to study how to prevent and ease complications of kidney disease among people with diabetes. His results included three manuscripts published with colleagues, the design of a new course on diabetes for ISU undergraduate and graduate students, and the submission of three grant applications totaling \$1.03 million.

SALAS FERNANDEZ, MARIA G, Associate Professor, Agronomy, 11 years of service, Spring 2019
Title: Establishing Multidisciplinary Collaborations with Research and Education Programs in Argentina

Professor Salas Fernandez met with 11 colleges at various universities in Argentina during her assignment, discussing academic and research opportunities at Iowa State, and giving invited presentations. Salas Fernandez also published one paper, submitted another, and submitted a \$3 million grant proposal to the U.S. Department of Energy.

SHARMA, ANUPAM, Associate Professor, Aerospace Engineering, 7 years of service, Spring 2019
Title: Developing Bioinspired Ideas for Robust and Silent Unmanned Aerial Vehicles (UAVs)

Professor Sharma visited the U.S. Air Force Research Laboratory and University of Cambridge (UK) during his assignment, conducting research and creating an international collaborative team in the area of UAV technology. This work also resulted in a new module on bioinspired aeroacoustics for an Iowa State aerospace engineering course, and a National Science Foundation funding award.

SPRY, PAUL, Professor, Geological and Atmospheric Sciences, 36 years of service, Spring 2019
Title: The Genetic Relationship of Gold-Telluride Deposits to Alkaline and Calc-Alkaline Igneous Rocks

Professor Spry used the assignment to prepare and submit 13 journal articles, deliver three invited presentations in the United Kingdom, and review numerous manuscripts and journal articles on the subject of cadmium telluride, a key component in converting solar energy into electricity in solar panels. The work will also be incorporated into Spry's ISU courses.

TAN, XIAOLI, Professor, Materials Science and Engineering, 17 years of service, Spring 2019
Title: Collaborative Research on Functional Ceramic Films and Coatings

Professor Tan spent the assignment furthering research on lead-free materials that are used in medical and agriculture applications. Results of this work included two published articles, new

research collaborations in Singapore and South Korea, and external funding applications to the National Science Foundation and U.S. Department of Energy.

TOTH, AMY, Associate Professor, Ecology, Evolution, and Organismal Biology, 9 years of service, 2018-2019 academic year

Title: A Trans-American Partnership to Address Causes and Solutions to Bee Declines

Professor Toth used her assignment to embark on a new area of research, conservation genomics. The results of this work included nine peer-reviewed articles, six additional publications in review, and seven invited presentations. Toth's work was supported by a Fulbright Science and Technology Scholar grant, which provided \$12,000 in salary support. With colleagues in Argentina, she also received a \$50,000 National Geographic Explorer grant.

TSOU, JONATHAN, Associate Professor, Philosophy and Religious Studies, 10 years of service, Fall 2018

Title: Natural Kinds, Psychiatric Classification, and the DSM

Professor Tsou earned a publishing contract and completed the majority of a book project on the philosophy of psychiatry during his assignment. The book will contribute to Iowa State's strong reputation in the philosophy of science, and also be incorporated into his courses on the subject.

VAZOU, SPYRIDOULA, Associate Professor, Kinesiology, 8 years of service, Fall 2018

Title: Building Collaborations and Training Materials to Scale-Up Physical Activity Interventions

Professor Spyridoula used the assignment to work with collaborators, and to further her research on K-12 classroom-based physical activity. Results of this work included a journal article, invited presentations in Illinois and South Carolina, and guest editorship of a journal issue devoted to this topic.

WANG, JIGANG, Professor, Physics and Astronomy, 11 years of service, Fall 2018

Title: A new discipline of non-equilibrium quantum microscopy research: speed-limit and integration density in logic and memory devices

Professor Wang used the assignment to build an ultrafast nanoscope, establishing a unique capability at Iowa State. Wang's work also led to \$1.2 million in research funding, including a \$200,000 internal grant from the U.S. Department of Energy (DOE) Ames Laboratory, and \$1 million from the DOE and National Science Foundation; and 11 peer-reviewed publications.

WANG, KEJIN, Professor, Civil, Construction, and Environmental Engineering, 19 years of service, Fall 2018

Title: Exploration on National and International Collaborative Research in Development of a Novel Ultra-High Strength, Ultra-Ductile a High Resilience Concrete for Structures Under Extreme Conditions

Professor Wang traveled to Australia during his assignment, where he worked with colleagues and graduate students on projects related to the use of natural fibers for self-curing and self-healing of concrete. Wang's outcomes included five published papers, numerous presentations to faculty and students in Australia, and a funding application to the Iowa Highway Research Board.

WANG, QIAN, Associate Professor, Accounting, 10 years of service, Fall 2018
Title: Audit Partner Independence and Executive Directors' Accounting Expertise

Professor Wang used the assignment to prepare and/or submit four papers for publication in high-impact accounting journals, two of which have been accepted or conditionally accepted. Wang also attended several seminars at the University of Pittsburgh, where he interacted with colleagues to establish future research collaborations.

WEBER-FEVE, STACEY, Associate Professor, World Languages and Cultures, 13 years of service, 2018-2019 academic year
Title: Restaging Comedy: Comic Play and Performance in Women's Contemporary Cinema in France

Professor Weber-Feve used the PDA to complete and publish a second edition of an intermediate-level French language textbook program, currently in use across the U.S. and Canada; as well as the third edition of a beginning-level program. Weber-Feve also prepared two manuscripts, and incorporated her work in an Iowa State course on studies of French/Francophone cinemas.

WOLTERS, TIMOTHY S, Associate Professor, History, 9 years of service, 2018-2019 academic year
Title: Tragedy at Sea: Technology, Leadership, and the Honda Point Disaster

Professor Wolters used the assignment to collect data – including nearly 3,000 photographs from three National Archives facilities – and write substantial portions of his monograph studying the worst peacetime naval disaster in U.S. history. The research has also been incorporated into Wolter's classes on innovation and military history.