

Contact: Diana Gonzalez

PROFESSIONAL DEVELOPMENT ASSIGNMENT REPORTS FOR FY 2016

Action Requested: Receive the professional development assignment reports submitted by the Regent universities for FY 2016.

Executive Summary: Each year, the Board of Regents is asked to approve faculty professional development assignments as specified in the Board Policy Manual §4.09. In December 2014 (Agenda Item ESAC 3), the Board approved 110 professional development assignments for FY 2016. Board Policy §2.1(R-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.”

A brief description of each professional development assignment completed in 2015-2016 is available in Attachments A-C (pages 4-34); this report provides information about the value added to the students, university, and state from the assignments, including more than \$10.9 million of funds obtained during or after the faculty member’s professional development assignment; there are a number of grant proposals that have the potential for funding but they are still pending. The objectives of the professional development assignments were met. 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.** A rigorous review process was conducted for each proposed professional development assignment. Faculty recipients were selected on the basis of peer review and recommendation at the department and college levels at each university and final approval by the provost. One of the criteria considered is the impact of the proposed professional development assignment to the university, students, and the state.
- ◇ **Professional development assignment activities.** Faculty members engaged in a variety of productive activities during their professional development assignments in FY 2016. 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 professional development assignments 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 professional development assignment or to repay the costs associated with the professional development assignment if the faculty member does not return to the institution. Following their professional development assignments, faculty members are responsible for reporting the results of their assignments as specified by Board Policy §2.1 (R-E) and their institutional guidelines.
- ◇ Number of professional development assignments. There were 110 professional development assignments approved by the Board of Regents for FY 2016; 99 reports are included in the Attachments.
 - ☑ University of Iowa. There were 56 professional development assignments approved for FY 2016. Two faculty members deferred the PDAs to a later time; two faculty members deferred their PDA from FY 15 to FY 16; one faculty member declined his PDA; and two faculty members left the university and did not take the PDA. One faculty member spread her award over two academic years and her report will be included with the 2016-2017 reports. The total number of reports included for SUI is 52.
 - ☑ Iowa State University. There were 37 professional development assignments approved for FY 2016. There were three professional development assignments cancelled; and one was completed by a faculty member who began her PDA in FY 2015. The total number of reports included for ISU is 35.
 - ☑ University of Northern Iowa. There were 17 professional development assignments approved for FY 2016. One faculty member passed away; one resigned; and one deferred his PDA until Fall 2016. The total number of reports included for UNI is 14.
- ◇ Faculty replacement costs. Costs are minimized to the greatest extent possible by using a variety of strategies, including having colleagues cover courses, deferring non-required courses to a later time, and adjusting schedules of existing faculty members. Faculty members who are on professional development assignment for a full year receive only half their salary; the balance is used to offset replacement costs.
- ◇ Goals met. The recipients of the professional development assignments for 2015-2016 identified their proposed goals. All the goals were met or exceeded; in some instances, the goals were modified to reflect available resources.
- ◇ Average length of service. The average length of service for the proposed professional development assignment recipients in FY 2016 was 18.7 years at SUI; 14.7 years at ISU; and 13.9 years at UNI.
- ◇ External funding obtained while on professional development assignment. A number of faculty members received external grant funding while on professional development assignment or subsequent to the PDA. In addition, many PDA recipients submitted grant proposals which are still pending.

- ☑ At the University of Iowa, seven faculty members received external funding either during their assignment or following the assignment. The total amount received was approximately \$509,000 million. An additional \$16.5 million in funding proposals was submitted and is still pending; and approximately \$13.8 million will be applied for as a result of the PDAs.
 - ☑ At Iowa State University, nine faculty members received external funding either during their assignment or following the assignment. The total amount received was approximately \$10.3 million. An additional \$33.8 million in funding proposals was submitted and is still pending.
 - ☑ At the University of Northern Iowa, one faculty member received a National Science Foundation grant for \$150,000.
- ◇ Return on investment. While the replacement cost of the faculty on professional development assignments was projected to be \$487,400, faculty members received external grant funding as a result of their assignments for more than \$10.9 million. This means that for every dollar spent on a professional development assignment, \$22.36 was received from external funding. If additional proposals submitted are funded, the universities could receive additional new external funds of approximately \$50 million.

UNIVERSITY OF IOWA

AGRELL, JEFFREY, ASSOCIATE PROFESSOR, MUSIC, 14 YEARS OF SERVICE, SPRING SEMESTER

Title: Research, Experimentation, and Synthesis in Approaches to Rhythmic Training and Pedagogy

The PDA of Professor Agrell on the subject of rhythm and rhythm pedagogy offered the opportunity to take previous interests and inquiries beyond superficial and speculative levels by providing time and space for: 1) hands-on instrumental study, 2) conducting research, 3) conferring with experts (conversations and lessons), and 4) planning articles, books, and compositions. The original intent was to discover ways to improve the rhythm pedagogy of the traditionally melody-based pedagogy of horn players. It became clear early on that what was missing from traditional studies was any pedagogy of a sense of time or pulse. Classical training is largely melody-based without systematic rhythmic training, and what is there is based on interpreting notation and uses external pulse sources (e.g. metronome). The semester's PDA is a beginning, not an end, of learning to develop an internal sense of pulse and rhythm paired with aural pedagogical methods. The results of this continued study will be manifested in articles, books, compositions, and recordings, which should be of interest not only to horn players in an instructional setting, but to all musicians.

BARBOSA, MARIA JOSE, PROFESSOR, SPANISH AND PORTUGUESE, 18 YEARS OF SERVICE, SPRING SEMESTER

Title: Brazilian Women in/at Play: Gender, Race, and Popular Culture

During her PDA, Professor Maria José Barbosa expanded her research and advanced the writing of the interdisciplinary book project, *Women in/at Play in Brazilian Popular Culture*, which addresses street festivals, a religion of African origin, a local martial art, and soccer. To extend her research domain and expand the theoretical range of the project, she completed field and library research, and updated bibliographical sources. She also read and annotated current publication on the topics, transcribed interviews, and penned and edited parts of the project. She wrote a grant proposal and submitted it to the National Endowment for the Humanities to finish the manuscript. The process of authoring the proposal and applying for the external grant helped her fine-tune ideas and expand the theoretical components of the project. To connect her research and teaching, she outlined a new upper-level course, "Mapping Brazilian Popular Culture," to be offered by her department and division, or taught in the Latin-American Studies Program. .

BETTIS, ELMER A. III, PROFESSOR, EARTH AND ENVIRONMENTAL SCIENCES, 16 YEARS OF SERVICE, SPRING SEMESTER

Title: Exploring the Application of Fly Ash as a Marker of Anthropocene Legacy Sediment

The impact of human activities on Earth's physical, biological, and climate systems has become so widespread that geologists have proposed that we have entered a new period in earth history – the Anthropocene. One phenomenon characteristic of this period and the Industrial Revolution in particular is high temperature coal combustion which releases fly ash-small distinctive particles easily transported by the wind that can be easily identified using low-cost laboratory methods. This project explored using the first occurrence of fly ash in soil and sediment columns to accurately identify a timeline corresponding to the advent of coal burning in the Midwest and Eastern US. Results indicate that the technique provides a rapid, inexpensive and accurate method for identifying the horizon in soils and sediments that corresponds to the onset human activities during the Industrial Revolution. Results of the project provide new insights into the

record of atmospheric pollution preserved in floodplain sediments that will provide students and society with local examples of linkages among land use and environmental impacts.

BLEHER, FRAUKE, PROFESSOR, MATHEMATICS, 16 YEARS OF SERVICE, HALF TIME FOR ONE YEAR

Title: A new approach to growth rates in number theory

Professor Bleher used her PDA to conduct research in Iwasawa theory related to her National Science Foundation Grant DMS-1360621. Iwasawa theory is an active area of research in algebraic number theory. It studies questions about the rates of growth of arithmetic invariants. Prof. Bleher's work focused on a new approach to Iwasawa theory to better explain these growth rates. This work was done with six other collaborators at six other universities in the U.S. and England. It resulted in the completion and submission of a 45-page research article, authored by all members of the research team, and the beginning of several new projects. One particularly inspiring new approach was found in connection with mathematical physics, which will result in a new grant application by Professor Bleher together with the above research team and several new members in Fall 2016. Moreover, Professor Bleher was able to finish two other research papers, which were submitted for publication. Additionally, this research helped her find new material for an advanced graduate course, which she will give in Spring 2017.

BLOOM, STEPHEN G, PROFESSOR, JOURNALISM & MASS COMMUNICATION, 23 YEARS OF SERVICE, SPRING SEMESTER

Title: Stop the Presses! My Year Inside the Dot.Com Blast

During his PDA, Professor Bloom researched his forthcoming book about Inez Burns and Edmund G. (Pat) Brown. From Burns' hardscrabble childhood in San Francisco to her starring role as a national fixer for women "in trouble," Burns was a larger-than-life character, a combination Margaret Sanger, Frida Kahlo and Emma Goldman. Burns performed fifty thousand safe and hygienic abortions - until Brown, a cagey district attorney, used her to catapult his political career to national prominence. As "Devil in the White City" did for Chicago and "Midnight in the Garden of Good and Evil" did for Savannah, no book has descended into the elegant and bohemian world of prewar San Francisco with two unforgettable antagonists facing off, foreshadowing a morality play that forever changed America. Regan Arts will publish the book in Fall 2018. Professor Bloom teaches courses in narrative journalism, the genre from which "Pat & Inez" is taken. Students will benefit from his execution of research and writing in the area of expertise he teaches. "Pat & Inez" showcases important, never-before revealed history, including caches of government documents Bloom petitioned to access.

BLUMBERG, MARK S., PROFESSOR, PSYCHOLOGY, 24 YEARS OF SERVICE, FALL SEMESTER

Title: Research and preparation for a new book on the development and functions of brain maps
Professor Blumberg's primary aim for this PDA was to develop and begin writing a book. Although he was successful in collecting resource material for the book, other important projects unexpectedly arose and so progress did not proceed as quickly as originally planned. First, by the time the PDA began, Professor Blumberg was in the midst of preparing a new NIH grant proposal to investigate the effects of stroke in the perinatal period, an important health issue as human perinates are at an increased risk for stroke; that proposal was submitted in early November. Second, just two months before the PDA started, Professor Blumberg began a new project funded by a Bill & Melinda Gates Research Explorations grant, requiring him to spend substantial time during the PDA on issues pertaining to data collection and analysis. Third, Professor Blumberg wrote two invited scholarly papers during the PDA, one of which is now in press. Fourth, Professor Blumberg had to increase the time devoted to editing a large collection

of essays aimed at educating scientists and laypeople about basic processes of early development. Professor Blumberg is now teaching an undergraduate course on this topic.

BROWN, CAROLYN (CB) J., PROFESSOR, COMMUNICATION SCIENCES AND DISORDERS, 19 YEARS OF SERVICE, FALL SEMESTER

Title: Neural Responses Recorded from an Electrode inside the Cochlea of Hybrid Cochlear Implant Users: Understanding Post-Operative Changes in Hearing Sensitivity

Professor Brown received a PDA for the Fall semester of 2015: she is a PI on the Electrophysiology section of the Iowa Cochlear Implant Project. She used her assignment to work with her colleagues and doctoral students to complete a series of studies focusing on how hearing-impaired individuals who use Hybrid cochlear implants (CI) are able to perceive and integrate acoustic and electrical information presented simultaneously to the same ear. The completed work will serve as pilot data needed to support the competitive renewal of the program project grant planned for June 2016. It will also directly impact her classroom teaching. The time she was able to spend in the lab with her Ph.D. students was also valuable and allowed for the completion of a number of other ongoing projects.

CHEN, YONG, ASSOCIATE PROFESSOR, MECHANICAL AND INDUSTRIAL ENGINEERING, 13 YEARS OF SERVICE, SPRING SEMESTER

Title: Enhancing Curricular and Research Opportunities in Industrial Engineering

During the award period, Professor Chen completed research on developing novel remote monitoring and prognosis methods. Two journal articles were in-press and two more were submitted during the award period. Professor Chen has substantially revised the course IE:6720 Nonlinear Optimization by including new teach materials on the state-of-the-art techniques for analyzing large scale data sets. Professor Chen has studied the changes proposed by ABET, the organization in charge of accreditation of undergraduate engineering programs. He has made a plan for the faculty to prepare for the changes. During the award period, Professor Chen supervised three Ph.D. students and one M.S. student. The M.S. student successfully defended his dissertation in April 2016. One Ph.D. student passed his comprehensive exam in May 2016. The research works can improve competitiveness of U.S. industries and the quality of life of patients. The education activities will lead to significant improvement of IE:6720. The activities in preparation for changes in ABET accreditation are important because it is crucial to maintain the ABET accreditation status for all the engineering programs at UI.

CONNERLY, CHARLES, PROFESSOR, URBAN AND REGIONAL PLANNING, 8 YEARS OF SERVICE, SPRING SEMESTER

Title: Book Project: Building Sustainable Cities and Towns in the Heartland through University-Community Partnerships

This project, now titled Prairie State Sustainability: Iowa's Environmental and Social Justice Challenges, is a book-length project that is being written for a general audience. Overall, the book focuses on sustainability with an emphasis on the two "E's" of environment and equity against a backdrop of the third "E", Iowa's economy. The book's premise is that Iowa is at a crossroads. Its wholesale conversion from a state nearly completely covered with prairie to a state that is largely row cropped has resulted, along with the many changes in the technology of agriculture, in a system that pollutes not only Iowa's water bodies, but also the Gulf of Mexico. At the same time, the state continues to be defined around issues regarding social justice and equity, particularly in regard to its embrace, or the lack thereof, of diversity. The book includes five chapters, three of which were largely completed during the PDA. The book describes the history of how Iowa has arrived at this crossroads and how it can move to a more sustainable

future. The author seeks to publish the book with UI Press where it will be of value to students at UI, to residents of the state, and beyond

CONSTANTINESCU, SERBAN G., PROFESSOR, CIVIL-ENVIRONMENTAL ENGINEER, 13 YEARS OF SERVICE, FALL SEMESTER

Title: Numerical study of transport and mixing in rivers and stratified lakes and their ecological implications

Professor Constantinescu carried out research to develop, validate and apply state-of-the-art numerical models to study convection in stratified lakes (bacterial induced microconvection, wind driven convection, formation of gravity currents in the near-shore region driven by diurnal heating and cooling of the atmosphere) and its implication for ecosystem development, as well as mixing and transport processes at river confluences which are critical elements of drainage networks. During this time, Professor Constantinescu published several journal papers and submitted several others. A journal paper reporting on bacterial-induced microconvection in lakes is under preparation. Research results will be used to update the curriculum of a graduate course on environmental dispersion processes and of a course (Coherence structures and turbulence modeling in hydraulics) that is being developed by Professor Constantinescu, and to educate undergraduate students about the importance of lakes and rivers to society.

ESTIN, ANN L., PROFESSOR, LAW, 18 YEARS OF SERVICE, SPRING SEMESTER

Title: Global Childhood

Professor Estin studied the effects of globalization on families and the laws that shape children's lives in transnational situations, including human rights, immigration and citizenship, and family law. She compiled new teaching resources to use with Iowa students on subjects including child labor, trafficking, and sexual exploitation; child marriage; children in armed conflicts; child neglect and abandonment issues including street children, child-headed households, and foster care; juvenile crime and punishment; questions regarding health, disability, and harmful traditional practices; the situation of children in migrant families; displaced, refugee and stateless children; cross-border family regulation; international adoption; and protections for children born from surrogacy and assisted reproduction. Professor Estin wrote and published papers on "The New Global Family Law" and "Protecting Child Welfare in Abduction and Asylum Proceedings," participated in meetings in London and Melbourne, and produced a substantial draft working paper on "Global Childhoods" during her PDA. Her research will help courts resolve difficult legal issues facing today's families.

FLATTE, MICHAEL E., PROFESSOR, PHYSICS AND ASTRONOMY, 21 YEARS OF SERVICE, FALL SEMESTER

Title: Voltage control of magnetic properties of ferrites for optical and microwave devices

Professor Flatté developed new theories of voltage-dependent magnetic properties in magnetic ferrites, and predicted sensitive control of the propagation of magnetic waves in these materials. The magnetic properties of materials are sensitive to electric fields induced by voltages, through a physical effect called "spin-orbit interaction". Through this effect it is possible to generate variations in the magnetism of materials that depend on the local electric field. Professor Flatté and his students found that varying the voltage across a magnetic slab of ferrite in an oscillating fashion should change that slab's ability to conduct magnetic waves, changing from conducting to blocking or vice versa. This should provide new ways to process information and formed the basis of a five-year grant proposal submitted to the Army Research Office. This progress in understanding the properties of magnetic waves in solids will also provide new components for his courses on solid state physics and semiconductor physics.

FUMERTON, RICHARD, PROFESSOR, PHILOSOPHY, 42 YEARS OF SERVICE, FALL SEMESTER

Title: A Consequentialist Defense of Libertarianism

In the period covered by this Professional Development Award, Professor Fumerton wrote the first draft of a book in which he explores a defense of what he takes to be the most plausible version of libertarian political theory. He rejects the most well-known "rights-based" defenses of libertarianism (found in both the history of philosophy, contemporary philosophy, and current public political debate) and offers in its place a more pragmatic argument for many (though not all) of the libertarian's conclusions. The research will find its way into both undergraduate and graduate courses on political philosophy. Because the book is written in a manner that is both philosophically sophisticated but also accessible, Professor Fumerton hopes it will help shape in important ways on-going political debate, not only in Iowa but across the country. In addition to the book manuscript, Fumerton completed three papers for publication. One attempts to relate Descartes's epistemology to contemporary controversies concerning the nature of "foundational" knowledge. Another discusses the nature of arguments to the best explanation. A third discusses issues in the philosophy of mind.

GLOER, JAMES B., PROFESSOR, CHEMISTRY, 32 YEARS OF SERVICE, FALL SEMESTER

Title: New Directions in Natural Products Research

During the PDA, Professor Gloer engaged in multiple activities primarily related to efforts to restore NIH funding for his research program. Highlights included publication of two papers, efforts on two others soon to be submitted, substantial work on a new NIH R01 proposal (submitted for the Feb. 2016 deadline), and supervision of four graduate students, one of whom completed his Ph.D. during the period. A one-month visit to the main collaborating lab on the above NIH application (at the U. of Texas Health Sciences Center in Houston) enabled new techniques and insights to be brought back to the laboratory and also provided opportunities for extensive discussions and interactions relevant to development of the application. Unexpectedly, significant effort was also required for the process of being selected to assume the role of DEO upon completion of the PDA. Altered logistics for the visit to the lab in Houston were also developed during the PDA, as they had to be revised to accommodate the DEO selection process. Finally, new content for an international symposium presentation (made in Jan.) was developed, and minor contributions were made to a collaborative NSF grant application.

GOMPPER, DAVID K., PROFESSOR, MUSIC, 25 YEARS OF SERVICE, FALL SEMESTER

Title: Clarinet Concerto

Professor Gompper composed three new music compositions for a series of performances that are planned over the next two years. These compositions are the basis of a series of recording sessions scheduled with the Royal Philharmonic Orchestra, London, in January 2017. He also wrote a film score to a documentary that was based on a U.S. State Department funded tour organized by the International Writing Program (IWP) to China in 2014. His music was performed in ten concerts in 2015. He also performed six recitals with two different instrumentalists, edited and produced one CD, organized six Center for New Music concerts and hosted three guest composers and performers. By maintaining an active writing schedule, his teaching methods for both composers and musicians are enhanced by keeping current and relevant. As a result, the University of Iowa benefits by attracting the best students into the program, demonstrating that music composition is an integral component of the School of Music.

HILL, MATTHEW E. JR., ASSOCIATE PROFESSOR, ANTHROPOLOGY, 9 YEARS OF SERVICE, SPRING SEMESTER

Title: Colonization and Culture Change in the Great Plains of North America

The European colonization of North America had dramatic effects for indigenous peoples across the continent, even those living hundreds of miles from centers of colonial settlement. During his Professional Development Assignment in Spring 2016, Professor Hill researched changes in the subsistence patterns, movements, and lives of Native Americans in Kansas and Nebraska after the arrival of Pueblo migrants from New Mexico fleeing Spanish control in the mid-1600s. Key outcomes of this PDA include publication of four articles and book chapters and production and submission of nine additional articles and book chapters. A new undergraduate course was also developed, to be taught at UI in Fall 2016. Information collected during the PDA will be used to create new lectures and assignments in at least four other classes taught by Hill. Archaeological artifacts from this work will be basis for independent research project for undergraduates. In sum, the time for research, writing, and engagement offered by this PDA has helped Hill become a stronger scholar, teacher, mentor, and UI community member.

HOLLINGWORTH, LIZ, ASSOCIATE PROFESSOR, EDUCATION POLICY AND LEADERSHIP STUDIES, 10 YEARS OF SERVICE, SPRING SEMESTER

Title: Leadership for Social Justice: Educating Iowa's African-American Boys

Due to a change in research focus, Professor Hollingworth's PDA entitled "Leadership for Social Justice: Educating Iowa's African-American Boys" was redirected to the spring semester of 2016 and was used to conduct program evaluation research in Mexico, to complete a pilot project for a state-wide assessment of candidates for school principal positions in California, and to prepare a grant proposal for the Wallace Foundation to redesign the principal licensure program in the UI College of Education. This project built on Professor Hollingworth's research and teaching in the area of Program Evaluation. Specifically, the PDA activities yielded additional experiences in program evaluation for students in the College of Education and the UI Center for Evaluation and Assessment. In addition, the redesign efforts of the licensure program will improve the training of Iowa's preservice principals.

HUANG, JIAN, PROFESSOR, STATISTICS AND ACTUARIAL SCIENCE, 22 YEARS OF SERVICE, FALL SEMESTER

Title: High Dimensional Statistical Inference

Professor Huang worked on developing statistical methods and computational algorithms for analyzing high-dimensional data arising from biomedical research. He finished five papers which are accepted for publication by high-quality statistical and bioinformatics journals. He also worked on writing a book and finished the first six chapters. The subject of the book is penalized regression modeling for high-dimensional data. Some of the research results obtained during the assignment will be organized into materials that are suitable for a topics course on statistical analysis of high-dimensional data for graduate students. The book will also be a useful reference text for a graduate course. In biomedical research, more and more big data sets are being generated. The development of statistical methods for analyzing such data will contribute to a better understanding of the genetic basis of diseases, better diagnoses and better treatments.

JOHNSON, DOROTHY, PROFESSOR, ART AND ART HISTORY, 29 YEARS OF SERVICE, SPRING SEMESTER

Title: "Elective Affinities: Intersections of the Visual Arts and Natural Sciences in France, 1750-1840"

Professor Johnson completed drafts of three chapters of her book, "Elective Affinities: Intersections of the Visual Arts and the Natural Sciences in France, 1750-1840". She wrote "The Body Speaks: Anatomical Narratives in French Enlightenment Sculpture" for *Body Narratives. Motion and Emotion in the French Enlightenment*, ed. S. Caviglia, Brepols Press, 2017. "Visceral Visions: Intersections of Art, Pedagogy, and Politics in Revolutionary France", is scheduled to appear in *Entrails and Digestion in the Eighteenth Century*, ed. S. Kleinman, for Manchester Univ. Press. She lectured on "Fabulations of the Flesh: Intersections of Art and Anatomy in late 18th-century France," for an international symposium on "Art, Anatomy, and Medicine since 1700", Columbia Museum of Art, March 31, 2016. She has been asked to transform this lecture into an essay for a collected volume on the topic. She has been invited to lecture at the University of Rome next year. She is using this research for a new course and incorporating it into three existing courses. Her research contributes to an interdisciplinary national and international conversation on inter-relationship of the arts and sciences.

KAY, ALAN R., PROFESSOR, BIOLOGY, 26 YEARS OF SERVICE, SPRING SEMESTER

Title: Identifying Genes Involved in Cell Volume Regulation

During his PDA, Professor Kay completed studies focused on the development of a new method for opening small cuticular compartments in arthropods and experiments showing how the flow of ions and water in cells determines cell size. In addition, he commenced studies on the ionic composition of the hemolymph, the 'blood' of fruit flies and characterized a pump in the head of flies that circulates hemolymph through the antennae. Professor Kay published one paper and submitted another. During his PDA, he was also able to develop teaching material for a new course he will offer in the fall of 2017. The new method that Professor Kay developed for studying insects could be of value in developing insecticides to combat agricultural pests that are a burden to the economy of Iowa. In addition, his work on the factors that play a role in determining cell size could be of fundamental importance in understanding how normal cells transform into cancerous ones.

KOHEN, AMNON, PROFESSOR, CHEMISTRY, 17 YEARS OF SERVICE, SPRING SEMESTER

Title: From Bench to Bedside: Extending Basic Research via Translational Medical Applications
Professor Kohen used this PDA to build on his research group's strengths in basic science to discover and develop new chemotherapeutic and antibacterial drug targets. He used procedures developed in his group's mechanistic studies of the enzyme thymidylate synthase (TSase) and flavin-dependent TSase (FDTs), which are essential to cell replication. The projects focused on studies of human vs. bacterial and cancerous TSases, and related enzymes. Human TSase is the target for common, non-selective chemotherapeutic drugs like 5-fluorouracil and Tomudex, which are highly toxic to both people and bacteria. Methods developed in Professor Kohen's lab can expose hidden details of those enzymes' catalytic cycles and identify differences between them. These differences can be exploited in the development of selective inhibitors as leads for non-toxic chemotherapy and antibacterial drugs. Additionally Professor Kohen has been working to maintain the UI T32 NIH grant in Biotechnology and related scientific and service activities.

LANDINI, GREGORY, PROFESSOR, PHILOSOPHY, 26 YEARS OF SERVICE, SPRING SEMESTER

Title: The Impredicative Foundations of Mind and Logic

Professor Landini composed a book, *Repairing Russell's 1913 Theory of Knowledge*, to be sent to a publisher this fall. It addresses elements of the original PDA proposal for the book, *What is Logic?* All systems of logic (intuitionistic, relevant, classical, modal, temporal, etc.) were to be put under one roof as studies of relations. Landini broke the project into two books, the first focusing on solving the problem that caused Bertrand Russell to abandon his book *Theory of Knowledge*, namely, the problem of how a mind understands 'all,' 'some,' 'and,' 'not,' and 'or.' The book *What is Logic?* continues separately as does a book, *An Introduction to Logic as a Science of Relations*. The PDA enhanced the teaching of logic, Frege & Russell, and *Introduction to Philosophy* at undergraduate and graduate levels. Landini published "*Whitehead's (Badly) Emended Principia*," and wrote the papers: "*Tractarian Logicism: Numbers, Quantification and Induction*," "*Mathematical Logic as Based on Russell's Substitutional Theory of (Simple) Types*," "*Well-ordering in the Russell-Newman Controversy*," "*Frege's Cardinals do Not Obey Hume's Principle*," and "*Logic as the Essence of Philosophy*."

LANDON, BROOKS, PROFESSOR, ENGLISH, 38 YEARS OF SERVICE, FALL SEMESTER

Title: "More Than A Box: The Hevelin Collection"

During his PDA, as part of the Special Collections Hevelin Fanzine Digitization Project, Professor Landon worked in Special Collections three to five times a week, directly examining science fiction fanzines and pulp magazines in the Hevelin Collection. That direct contact with archival materials was supplemented by extensive research in fanzine/pulp criticism. He examined fanzines and pulps from the early 1900s through 1950, going through them page-by-page to record stories, authors, editorial apparatus, reader letters, and advertisements, recording his findings in over 9,000 photos of pages and exhaustive notes with descriptions of the contents of each issue and/or fanzine. Drawing from these materials he wrote, illustrated with photos, and published sixteen TUMBLR blogs, each focusing on material he discovered in his research, also sharing his valuation of materials with the Hevelin Collection curator. PDA research has informed a unit on science fiction in Professor Landon's undergraduate *Technologies and Literatures of the Future* class in Spring 2016 and will be the focus of his graduate *Readings Class* in science fiction history scheduled for Fall 2016.

LAVEZZO, KATHRYN M., ASSOCIATE PROFESSOR, ENGLISH, 17 YEARS OF SERVICE, FALL SEMESTER

Title: *A Cultural Geography of Antisemitism: Jews and the Making of English Space, 731-1671*

Professor Lavezzo used her PDA to finish writing and revising her book, whose new title is *The Accommodated Jew: English Antisemitism from Bede to Milton*. Following the advice of her second reader for Cornell UP, she rewrote her first chapter, which originally focused on Bede, so that it was divided evenly between analyzing Bede and the Old English poet Cynewulf. She also substantially rewrote her introduction, drawing on the input of her two readers for the Press. She also added a new Coda, on Charles Dickens' *Oliver Twist*. She reformatted the manuscript according to Cornell UP guidelines, obtained images for the book and permission to reproduce the images. She worked with a geographer at the University College London (Cath D'Alton) to create original maps for the book. Professor Lavezzo submitted the book manuscript to Cornell in mid-December 2015. In addition, Professor Lavezzo completed a book chapter on ethnicity for a Cambridge UP volume on Chaucer. She also began work with the staff at the UI Digital Studio on a new digital humanities project that draws in part on her book. The website will be called *Remappings: Christians and Jews in Early England*.

LEE, HOSIN, PROFESSOR, CIVIL-ENVIRONMENTAL ENGINEER, 17 YEARS OF SERVICE, SPRING SEMESTER

Title: Frontier Research in Developing New Energy Efficient Construction Materials with Innovative Designs

The Professional Development Assignment (PDA) enabled Professor Lee to extend his main research domain involving eco-friendly asphalt pavement technology. Specifically, this PDA gave him an opportunity to begin a new area of research on the warm in-place recycling (WIR) technology. Professor Lee wrote a research proposal on this topic to win a phase II research contract from the Korea Institute of Civil and Building Technology (KICT). In recognition of the continuing success of the Laboratory for Advanced Construction Technology (LACT), the President of KICT visited the University of Iowa to sign the MOU to support collaborative research through the LACT. Professor Lee gave many seminars at the workshops organized by Korea Expressway Corporation (KEC), Korea Society of Road Engineers (KSRE), Korea Block Association (KBA) and Resources circulation Industry Promotion Association (RIPA). Professor Lee completed four papers and submitted them for publication and presented a paper at the international conference in Singapore. Professor Lee was also invited to give a presentation at the National Society of County Engineers (NACE) in Tacoma, Washington.

LI, TONG, PROFESSOR, CLAS-MATHEMATICS, 23 YEARS OF SERVICE, FALL SEMESTER

Title: Mathematical Theory of Traffic Flow, Blood Flow and Chemotaxis

Professor Tong Li's research is focused on the application of nonlinear partial differential equations (PDEs) to model combustion, traffic flows, water waves, blood flow, and chemotaxis. Research in these directions involves many challenging problems in nonlinear analysis and applied sciences. Through mathematical modeling and analysis, Professor Li and her collaborators solved physiologically relevant problems and important traffic problems. The PDA project also benefited her current and future teaching of courses, including MATH:5700 Introduction to PDEs, and the development of a new interdisciplinary course (MATH:7250 Topics in Analysis).

LIM, TAE-HONG, PROFESSOR, BIOMEDICAL ENGINEERING, 13 YEARS OF SERVICE, SPRING SEMESTER

Title: Collaborative Training and Research on Nanotechnology for Local Drug Delivery

During his PDA for Spring 2016 semester, Professor Lim conducted a pilot research project on sol-gel transition of nanoparticles in collaboration with Professor Yuk in the College of Pharmacy at Korea University at Sejong, Korea. He had in-depth discussions about current and future biomedical and industrial research industry with bioengineers, researchers and clinicians in many Korean institutes as well as the officials of Ministry of Food and Drug Safety. He also had an opportunity to visit pharmaceutical manufacturing facilities in Korea and learn the process of mass production of pharmaceutical products. Knowledge on biopolymers and hands-on experience obtained from the PDA activities will make significant impact on his research and teaching. The pilot study with Professor Yuk provides him with ideas to resolve the major limitations of his hydrogel-based drug delivery technology (i.e., longer term delivery of non-water-soluble drugs). Knowledge learned from face-to-face discussions with academic, clinical, industrial, and regulatory experts will be incorporated into classes where such topics are discussed, including Biomaterials and Biomechanics (BME:2500).

MALLIK, USHA, PROFESSOR, PHYSICS AND ASTRONOMY, 29 YEARS OF SERVICE, HALF TIME FOR ONE YEAR

Title: Solving the Mystery of Higgs and Beyond

Professor Mallik re-established a leadership role for the University of Iowa group in the ATLAS experiment during her stay at CERN. She was given complete responsibility for the Detector Control System for a planned state-of-the-art "High Granularity Timing Detector", to be constructed as an upgrade for Phase 2 for ATLAS (currently Phase 1 is being implemented). She and her group were major contributors to four ATLAS publications and were among the primary authors. She delivered a colloquium in the Department of Physics and Astronomy describing the progress in Particle Physics, focusing on the CERN experiments. During fall (2015) semester she took advantage of teaching her class of seniors in "Introduction to Particle Physics" over the specially constructed video room (for Master classes) from CERN with the experimental background behind. She is currently advising two new Ph.D. students (in Experimental Particle physics) and an undergraduate female student who wants to continue a Ph.D. degree in ATLAS after graduation. They work with Professor Mallik (and her group at CERN) on a regular basis learning how Particle Physics and related analysis are carried out.

MCLEOD, KEMBREW, PROFESSOR, COMMUNICATION STUDIES, 16 YEARS OF SERVICE, SPRING SEMESTER

Title: The Pop Underground

During Professor McLeod's Spring 2016 PDA, he completed a book that was published in a competitive series distributed by Bloomsbury Press (his book was one of 14 that were selected out of 435 submitted book proposals). The book, *Blondie's Parallel Lines*, focused on the creative arts scenes that thrived in downtown New York City during the 1960s and 1970s, and it has received positive reviews since its release. This PDA also enabled Professor McLeod to successfully apply for a National Endowment for the Humanities Public Scholar Fellowship that extends this research project into a much more ambitious book project. He was the only Iowan to receive this prestigious NEH award, which was granted to 36 scholars nationally. This led to a book contract through Abrams, a major publisher of art books, which will publish Professor McLeod's forthcoming "The Pop Underground: Downtown New York's Converging Arts Scenes in the 1960s and 1970s." This research will be translated into Prof. McLeod's large lecture Media Music & Culture class, which will be reenergized by this injection of his new research on popular music; he also plans to develop this course into a much larger GE course for UI.

MERINO, ANA, PROFESSOR, SPANISH AND PORTUGUESE, 7 YEARS OF SERVICE, SPRING SEMESTER

Title: The Redemption: A Play

During her PDA, Professor Merino completed her play "La redencion" (The Redemption); the book is coming in September 2016 with Reino de Cordelia Publishers. Professor Merino will put together the play in Iowa with a group of Latino Iowans during Spring 2017. They plan to travel through the state doing several performances. The play includes a critical reflection on the decay of the planet, and environment concerns. Between January and May 2016, Professor Merino expended countless hours at The National Library of Madrid and the Biblioteca Hispánica in Madrid finishing the investigation and compiling the materials for a co-edited volume with Raquel Lanseros that included a selection of 82 20th Century Ibero-American women poets. The volume of more than 900 pages with a critical introduction is been use as reference book by students at different universities, including The University of Iowa. The book came out in June 2016 with Visor Publishers. The PDA allowed Professor Merino to develop also several new undergraduate course materials for "Script Writing" and "Cultures of the Hispanic World in the Digital Era", and a Graduate Theatre Workshop.

MOONEY, BARBARA B., ASSOCIATE PROFESSOR, ART AND ART HISTORY, 14 YEARS OF SERVICE, SPRING SEMESTER

Title: Ordinary Holiness: George P. Stauduhar and Prairie Church Architecture
Professor Mooney used her Spring 2016 PDA to conduct research and to write portions of the text of her book, which is now titled Ordinary Holiness: The Transformation of the Prairie Church. The majority of her PDA was devoted to the first half of her book wherein she analyzes 70 early nineteenth-century churches or other sites of worship, most of which are located in Iowa and Illinois. She collected and analyzed data concerning the size, materials, and funding of these places of worship, as well as the ethnic and regional origins of each congregation. Professor Mooney also used her PDA to obtain legal permissions to publish images for a book chapter on St. Benedict's Monastery in St. Joseph, MN. Additionally, she finished editing the first page proofs for another book chapter on early nineteenth-century impressions of the Midwestern prairie. Professor Mooney also wrote the encyclopedia entry for the Neal Smith National Wildlife Refuge for the Society of Architectural Historians online encyclopedia, Archipedia. Her book and book chapters will draw attention to the important role of the Midwest, and Iowa and Illinois in particular, in creating a distinct cultural and built environment.

MUHLY, PAUL S., PROFESSOR, MATHEMATICS, 47 YEARS OF SERVICE, SPRING SEMESTER

Title: Matrix-Valued Functions of Matrix Variables
Professor Muhly expanded his research program devoted to the analysis of matrix-valued function of matrix variables during the period of his professional development award. He also made progress on a project devoted to wavelets. He published one paper and he exposed his results in three invited colloquia. His work forms the basis for a U.S.-Israel Binational Science Foundation grant application, which will be submitted this Fall. The research conducted under the PDA generated thesis problems for his graduate students and research problems for undergraduate and high school students from his Honors Linear Algebra class, MATH2700.

MUNOZ, KRISTINE L., PROFESSOR, COMMUNICATION STUDIES, 21 YEARS OF SERVICE, HALF TIME FOR ONE YEAR

Title: From Relational Codes to National Identity: Cultural Communication in Global Perspective
Professor Muñoz revised an existing book manuscript about personal relationships in England, Spain, Colombia and the U.S. to develop her theory of how culture both enables and limits what individuals do in their friendships, marriages, and families. She developed a new course for Spanish majors that will teach them about the culture, history, political system and geography of Medellin, Colombia, through online correspondence with student partners in the city and development of a digital map that has photos, written reports and audio recorded narratives. The map will become a public resource for other Spanish classes and interested laypeople in the future, an idea that grew out of her participation as a Research Fellow at the Obermann Center for Advanced Studies. She also revised an existing lecture/discussion course into a flipped classroom format, consistent with the University of Iowa Large Lecture Transformation initiative, and presented papers at two conferences.

MURRY, JOHN P. JR., ASSOCIATE PROFESSOR, MARKETING, 16 YEARS OF SERVICE, SPRING SEMESTER

Title: The Influence of Market Characteristics on Observed Effects of Pharmaceutical Marketing in Public Policy Research

Professor Murry's primary objective during his PDA was to develop expertise in the multidisciplinary academic literature that examines pharmaceutical marketing effects and regulation. During Professor Murry's PDA, he reviewed Food and Drug Administration policies, collected and analyzed academic research articles, reviewed confidential marketing plans from multiple pharmaceutical manufacturers and interviewed multiple industry experts. In order to identify areas for future research, he categorized published studies with respect to their pharmaceutical marketing tactics (e.g., patient advertising, sampling, personal selling, etc.), moderating market factors (e.g., drug quality, product lifecycle stage, patient characteristics, etc.) and dependent variables examined (e.g., trial, retention, adherence, etc.). The consensus from this review is that pharmaceutical marketing influences physician prescribing decisions through complex processes and whether and when these effects are deleterious for public health is not clear. Professor Murry is writing a critical review of this literature and his future empirical research will investigate questions identified during the PDA.

NEIMAN, MAURINE, ASSOCIATE PROFESSOR, BIOLOGY, 8 YEARS OF SERVICE, FALL SEMESTER

Title: Genetic and Genomic Mechanisms Underlying Transitions to Asexuality

Dr. Neiman's PDA enabled 10 collaborations that will generate exciting new data and grant funds and involved multiple students. Nine collaborations were directed at basic research, ranging from the evolution of human eye disease (with Dr. John Fingert, U. Iowa, and experts at Chicago's Field Museum) and characterizing the genomic and cytogenetic mechanisms allowing asexual reproduction (with Dr. Tim Sharbel, U. Saskatchewan, and Drs. Karine Van Doninck & Emilie Etoundi, U. Namur, Belgium, respectively) to identifying consequences of mutation accumulation (with Dr. Kristi Montooth, University of Nebraska-Lincoln), the evolutionary basis of invasiveness (separate projects: Dr. Ed Levri, Penn State-Altoona, Dr. Mary Morgan-Richards, Massey U., New Zealand), consequences of polyploidy (with Dr. Amy Krist, U. Wyoming), and the spread of genomic parasites (with Integrated DNA Technologies) in Dr. Neiman's snail system, to evaluating a role for nutrient ecology in cancer (Dr. Chris Stipp, U. Iowa). Dr. Neiman also teamed up with the National Center for Science Education to develop a national program aimed at improving community support for science education.

OGREN, CHRISTINE A., ASSOCIATE PROFESSOR, EDUCATION POLICY AND LEADERSHIP STUDIES, 17 YEARS OF SERVICE, FALL SEMESTER

Title: Summers Off: A History of American Teachers' Other Three Months

A Professional Development Assignment in Fall 2015 enabled Professor Ogren to make significant progress on her project on the history of American schoolteachers' summertime activities. Through research in Iowa City and travel to three archival collections, she assembled notes and copies of documents essential to the project. She analyzed how teachers' summer activities influenced their social-class status, and delivered these findings in her presidential address for the History of Education Society in November and in an article entitled "Out-of-Class Project: American Teachers' Summertime Activities, 1880s-1930s," published in *History of Education Quarterly* in February 2016. She also wrote a conference proposal, and began writing a book manuscript and prospectus to share with publishers. This project enhances four of the seminars that Ogren teaches regularly by re-familiarizing her with the literature on the history of teachers in the U.S. and encouraging her to view this history through a new lens. "Summers Off"

brings an overlooked aspect of teachers' lives into scholarship on the history of teaching and discussions of teacher professionalism in Iowa and nationally.

PRINEAS, JOHN P., PROFESSOR, PHYSICS AND ASTRONOMY, 15 YEARS OF SERVICE, FALL SEMESTER

Title: Innovation and Experimentation on Epitaxially Grown Infrared Emitter Materials Making Use of the Newly Expanded Microfabrication Facility .

Professor Prineas' research concerns the absorption and emission of light in semiconductors. These processes determine, for example, the power output of light emitting diodes. In recent years, Professor Prineas has been part of a very successful materials research effort to develop arrays of high-power light emitting diodes for thermal scene generation, a technology on the DoD roadmap for replacing thermal resistor arrays. During the PDA, he worked with students and collaborators to: texture emitter surfaces that have the potential to greatly increase the extraction of light from mid-infrared light emitting diodes; and fabricate nanohole arrays using the e-beam lithography system and use them to grow semiconductor nanowires. The work on mid-infrared superlattice light emitting diodes (SLEDs) will generate significant research funding in the future for fundamental research, and is spawning a startup business for infrared photonics. Two three-year grants on growth and measurement of nanowire properties using data collected during this PDA were submitted to external funding agencies. The research conducted during the PDA will also enhance Professor Prineas' future course content.

RABINOVITZ, LAUREN, PROFESSOR, AMERICAN STUDIES, 30 YEARS OF SERVICE, FALL SEMESTER

Title: Thrill Ride Cinema

Professor Rabinovitz completed research for two chapters of a book manuscript, Thrill Ride Cinema, that argues the amusement park novelty of motion simulation rides, wrap-around movies, and other movie "rides" are an important multi-faceted mode of American cinema. In particular, Professor Rabinovitz read new literature (30 books and articles) relevant to this topic and studied a dozen travelogue films in detail. Many of the books she read on digital cinema are part of a new, emergent literature. She also undertook a research trip to Orlando, Florida, where she examined several movies in situ at amusement parks. This work allowed her to thoroughly update and write new lectures for three American Studies courses: AMST: 1010 Understanding American Cultures, AMST: 1065 Disney in America, and AMST: 2052 Fairs and Parks. These new lectures deepen Professor Rabinovitz's teaching on film history and on amusement parks and world's fairs as object lessons for American citizenship and national identity.

RIGAL, LAURA, ASSOCIATE PROFESSOR, ENGLISH, 19 YEARS OF SERVICE, SPRING SEMESTER

Title: Streaming Ralston Creek: Hydraulic Media and the Politics of Scale in the Landscape of Capital, 1832-1983

In Spring 2016, Professor Rigal produced a book chapter; an unpublished journal article; a published journal article; a new undergraduate lecture course "Understanding American Cultures," (F 2016) and a Ph.D. seminar "Cultures of Commemoration" (Sp 2017). The chapter is the second in Streaming Ralston Creek: Hydraulic Cultures of an Urban Watershed, 1839-1983, her cultural history of an Iowa creek during an era of rapid U.S. industrial expansion. Through the figure of William Ralston, a Johnson County, IA settler who went west to found the Bank of California, it traces the hydraulic and economic systems linking Ralston Creek to the explosive growth of California after the Gold Rush. The new article "Wacochachi's Wound" discovers evidence to interpret an unexplained pictograph drawn by a Meskwaki warrior living on the Iowa River in the 1830s. The published article "The Grand Federal Procession" contrasts the

role of urban artisans in “forging” U.S. national identity with their role in violence against Native peoples of the Ohio River Valley. Each PDA product investigates problems of watershed development in the U.S. Midwest that are common to developing societies around the world.

RODGERS, VINCENT G., PROFESSOR, PHYSICS AND ASTRONOMY, 27 YEARS OF SERVICE, SPRING SEMESTER

Title: Gauge/Gravity Duals, Black Hole Sources and R4

Theoretical studies in gravitation, cosmology, and particle physics were conducted. These studies investigated methods in which mathematical symmetries found in string theory can motivate novel field theoretic extension to gravitation in four dimensions. These studies are expected to give hints to the nature of the expanding universe, dark energy and dark matter. The studies avoid ad-hoc modeling of this early period by developing the field theory through fundamental mathematical considerations. Understanding fundamental interactions at a rigorous mathematical level is important for further understanding of the nature of fundamental forces of nature. The project has a wide variety of problems that can be solved by advanced undergraduate and graduate students at the University of Iowa. This also affords opportunities for undergraduates to gain an early exposure to the mathematical issues in nuclear physics, string theory, gravitation and other problems on the vanguard of mathematical physics. Outcomes include one published article and development of computer code that can be used for undergraduate/graduate courses and to continue to carry out the research.

RODRIGUEZ, ANA M., ASSOCIATE PROFESSOR, SPANISH AND PORTUGUESE, 8 YEARS OF SERVICE, SPRING SEMESTER

Title: The Philippines in the Early Modern Spanish Empire

Professor Rodríguez completed research for a book that deals with the Spanish presence in the Philippines during the first centuries of colonial rule in the archipelago. This book will be published by a major University Press. She has been invited in 2016 to present on this research by Coe College and the University of Illinois at Urbana-Champaign. She prepared an undergraduate course on the Spanish Empire, and organized an undergraduate research project consisting of transcribing and translating materials from Spain’s archives that will be implemented in 2017-2018. She conducted archival research at the University of Chicago Library. She also travelled to Spain, and worked with materials from the National Spanish Library (Madrid) and the Archive of Simancas (Valladolid). Given the historical relationships between the US and the Philippines (including the presence of numerous lowans in the islands in the 19th and 20th centuries), Professor Rodríguez's book, the undergraduate course and project she designed, and the talks connected to her research will contribute to a better understanding of the origins of the American presence in the archipelago.

SAUNDERS, JEANNE A., ASSOCIATE PROFESSOR, SOCIAL WORK, 14 YEARS OF SERVICE, FALL SEMESTER

Title: Development of Social Work in China

Professor Saunders participated in a faculty exchange as a Visiting Scholar at Sun Yat-sen University (SYSU) Department of Sociology and Social Work in Guangzhou, China. While in residence she presented a number of lectures and conducted a qualitative research study on the development of the social work profession in China to better understand how Chinese scholars and students view its progress. A manuscript detailing the results is in preparation. Knowledge gained from the study and networking with SYSU faculty will: facilitate future collaborative cross-cultural research studies; promote faculty and student exchanges between SYSU and UI School of Social Work; enhance her course content and teaching related to international social work and policy; and facilitate positive relationships with Chinese students and visiting scholars on campus

and with community members. In addition, Professor Saunders completed a major revision of a manuscript now under review, completed phase one of data collection for an evaluation study of the NCBI workshop (manuscript detailing the results is in development), and revised/updated the course content for her graduate policy course.

SMALL, GARY W., PROFESSOR, CHEMISTRY, 12 YEARS OF SERVICE, FALL SEMESTER

Title: Adaptive Calibration Algorithm for Noninvasive Glucose Sensing

Diabetes is a chronic disease that may affect 300 million people by the year 2025. While there is no cure, patients manage the disease by self-monitoring their glucose levels and working to keep these levels under tight control. Currently, this self-testing is invasive, requiring a drop of capillary blood each time a reading is made. Making this testing less invasive is thus a compelling way to facilitate both the ease and frequency of glucose monitoring. During the award period, Professor Small worked with his collaborators at the University of Iowa to develop a truly noninvasive glucose sensor based on the use of near-infrared light to probe the dermis tissue on the back of the hand. A novel tissue interface for use in the measurement was constructed and used in human trials with four Type I diabetic patients. In addition, Professor Small worked to develop a new calibration protocol for use with this glucose sensor. Initial testing was performed with an adaptive algorithm by which the near-infrared sensor updates its calibration as measurements are made.

SRINIVASAN, PADMINI, PROFESSOR, COMPUTER SCIENCE, 27 YEARS OF SERVICE, SPRING SEMESTER

Title: Biomedical Text Mining from Publications and Social Media.

Professor Srinivasan made strong progress in two research directions during the PDA award semester (Spring 2016). (1) Social media data mining: A paper was completed and then accepted for publication by PLoS One. This paper resulted in press coverage and in an interview with Iowa Public Radio in the 'River to River' program. The paper led to an NSF proposal to be submitted by Oct. 2016, its aim is to close the gap between survey research and social media data mining research. (2) Biomedical information retrieval research: Here she expanded her sentence-based literature scanning system called Ferret and gave presentations. Two experiments to extend and test Ferret were designed. The PDA research will add new modules of instruction in Professor Srinivasan's courses on Web Mining and on Health Data Analytics and strengthen opportunities for her students. Both directions of research have broader benefits to Iowa. Assessments of well-being are important for individual and community well-being. Explorations of sentence retrieval algorithms are important for research in biomedicine, which also impacts the health of Iowans.

STAUSS, HARALD M., ASSOCIATE PROFESSOR, HEALTH AND HUMAN PHYSIOLOGY, 14 YEARS OF SERVICE, FALL SEMESTER

Title: Vagal Nerve Stimulation as a Novel Treatment Strategy for Weight Loss

In January 2015, Professor Stauss was awarded a Pilot Grant from The University of Iowa Center for Hypertension Research to study protective effects of vagal nerve stimulation (VNS) in hypertension. Professor Stauss used this funding during the PDA to conduct experiments related to this grant but also studied the effects of VNS in the context of obesity and diabetes. Professor Stauss completed both of these studies and manuscripts are already published or in revision. One graduate and one undergraduate student directly benefited from the PDA by obtaining hands-on experiences in laboratory techniques through direct one-on-one interactions with Professor Stauss. The graduate student is the first author of one of the two papers that resulted from PDA. The results obtained during the PDA suggest that VNS reduces vascular complications in hypertension and may lower blood glucose levels in diabetes, especially when

combined with obesity. Because obesity, diabetes, and hypertension are highly prevalent in the state of Iowa, these results may potentially have a significant impact on patients in Iowa if they are translated into clinical applications.

STECOPOULOS, HARILAOS, ASSOCIATE PROFESSOR, ENGLISH, 14 YEARS OF SERVICE, FALL SEMESTER

Title: Telling America's Story to the World: U.S. Writers and Cultural Diplomacy, 1940-1990
During his PDA, Professor Stecopoulos completed two chapters of his book project, "Telling America's Story to the World: U.S. Writers and Cultural Diplomacy, 1940-1990." The first study of its kind, "Telling America's Story" has two linked goals: to demonstrate how the U.S. State Department's neglected work as literary gatekeeper in the international arena shaped American literature; and to show how writers engaged with cultural diplomacy in both their work and their politics. In the fall, Professor Stecopoulos presented part of his book in a lecture at Northwestern University, and published two other portions of the project as articles. He also conducted research on U.S. writers and Soviet literature that will provide the basis for an undergraduate class on literature and censorship in the twentieth century. Professor Stecopoulos's current research will benefit all Americans interested in the largely understudied relationship between the federal government and American literature and culture.

TOMOVA, MAGGY, ASSOCIATE PROFESSOR, MATHEMATICS, 8 YEARS OF SERVICE, SPRING SEMESTER

Title: Topological Methods and Large Data Set Analysis
During the Spring semester of 2016, Professor Tomova completed her work on developing additive invariants for knots and links in 3-manifolds. These invariants are based on thin position and generalize classical knot invariants that are not additive, thus giving a new way to study 3-manifolds with embedded graphs. Professor Tomova also combined community service with her research on best methods to teach remedial mathematics – she volunteered at an after school tutoring program, at the Iowa City Homeschool Association and at the domestic violence shelter in Iowa City. She brings many new ideas to her Math for Business class this semester. During her PDA, Professor Tomova continued to serve on several college and university committees, most notably participating in the evaluation of the math, science and engineering graduate programs as a member of the Graduate Program Review subcommittee on Mathematical, Physical and Engineering Sciences. She also helped organize a large conference that was hosted by the UI Math department.

TRACHSEL, MARY C., ASSOCIATE PROFESSOR, RHETORIC, 27 YEARS OF SERVICE, SPRING SEMESTER

Title: The Role of Animal Studies in Environmental Education
Professor Trachsel conducted research and completed two chapters of her book in progress, *Other Animals in the Groves of Academe*. The book positions Animal Studies in the context of environmental education, connecting its hands-on methodologies and inclusion of non-academic expertise (rustic authority) with the "No Child Left Inside" philosophy of environmental education. As environmental education is inherently place-specific, the book examines the history of nonhuman animal presence on the University of Iowa campus before exploring the input of rustic authority and experiential learning more broadly in zoological studies. The introduction, completed during the PDA, is a personal account of social, environmental, and academic changes in Trachsel's home state of Iowa throughout her lifetime. Portions of an article researched and completed during the PDA, "The Presence of Pork and the Absence of Pigs in Iowa," will provide historical and cultural context in the chapter on animals on the Iowa campus. Work on this book informs Trachsel's spring 2017 course, *Rhetorics of Animal Advocacy*, and her ongoing Rhetoric classes. The book illuminates human-animal relations in Iowa.

TREAT, TERESA A., PROFESSOR, PSYCHOLOGY, 6 YEARS OF SERVICE, SPRING SEMESTER

Title: Men's Perceptions of Women's Sexual Interest: Implications for Acquaintance-Initiated Sexual Aggression

Receipt of the PDA significantly accelerated Professor Treat's progress on her research on the role of men's misperception of women's sexual-interest cues in sexual aggression. She (a) made significant progress on data collection and preliminary analyses for two NIH-funded studies examining the effect of intoxication on men's perceptions of women's sexual interest; (b) made substantial headway on six empirical papers that now are published (1), in press (1), under review (3), or in progress (1); (c) presented at a national conference; and (d) began work on a grant application focused on the implementation and evaluation of a novel prevention approach to acquaintance-initiated sexual aggression. These activities lend themselves to incorporation into her teaching activities – in particular, into a proposed senior seminar in the Fall of 2017, a graduate-level statistics class in the Spring of 2017, and a large undergraduate lecture course in the Spring of 2018. Ultimately, the conducted research may benefit society, given that sexual aggression is a major public-health problem on college campuses, and the effectiveness of existing prevention programs is inadequate.

WANG, LIHE, PROFESSOR, MATHEMATICS, 23 YEARS OF SERVICE, FALL SEMESTER

Title: Homogenizations of Partial Differential Equations and their Application to Biology

With the support of the PDA, Professor Wang has published five research papers related to the dynamics and field equations that model complicated mathematical and physical situations. Detailed and delicate estimates were established for multi-cell and aligned cell configurations. These results are leading to the development of models of calcium dynamics and to fast numerical computational programming. A graduate student was also working on this project and this research will be part of his thesis.

WOOD, SUSANNAH M., ASSOCIATE PROFESSOR, REHABILITATION AND COUNSELOR ED, 10 YEARS OF SERVICE, SPRING SEMESTER

Title: Preparing School Counselors to Work with Gifted and Talented Students

During the spring of 2016, Professor Wood developed a book prospectus that included 13 chapters based on research pertaining to counseling high-ability students. Chapters were designed to provide the knowledge necessary for school counselors to work with gifted students according the American School Counselor National Model. In March 2016, Dr. Wood and her co-editor, Dr. Jean Peterson, finalized contracts with Springer Publishing Company to publish *Counseling Gifted and Talented Students in the Schools* by March 1, 2017. Dr. Wood contacted authors who work in the fields of school counseling and gifted education. Their deadline for first drafts is September 1. Author feedback will be returned in November with final drafts coming due in January 2017. Anticipated outcomes include this textbook, which can be used in counselor preparation programs across the country and for professional development of practicing school counselors. Specific to the state of Iowa, this book will be used by Dr. Wood for two specific classes in the school counseling preparation program at the University of Iowa, and as the basis of training webinars for practicing school counselors.

YE, YANGBO, PROFESSOR, MATHEMATICS, 26 YEARS OF SERVICE, FALL SEMESTER

Title: Analytic Number Theory and Medical Imaging

A PDA was awarded to Professor Yangbo Ye for Fall 2015. During this semester, Professor Ye traveled to China and Taiwan and collaborated with mathematicians, engineering professors and medical doctors in the areas of number theory and medical imaging. As a result of this PDA, Professor Ye completed five research papers on number theory and two research papers on medical imaging, filed a US provisional patent for medical imaging, and applied for a National Science Foundation grant. His research collaboration with mathematicians in China and Taiwan enhanced the quality of Ph.D. dissertations of three of his doctoral students so that they can graduate in Spring 2016. His research on medical imaging found an algorithm which can be used to produce color images on a standard black and white computed tomography (CT) machine. This breakthrough on color CT offers a huge advantage on medical diagnostic radiology which will directly benefit the people in Iowa and the world.

IOWA STATE UNIVERSITY

ADAMS, DEAN, PROFESSOR, ECOLOGY, EVOLUTION, AND ORGANISMAL BIOLOGY, 14 YEARS OF SERVICE, FULL ACADEMIC YEAR

Professor Adams spent his assignment in France, conducting research to address whether morphological evolution rates between species are associated with diversification rates among species. Adams used the assignment to complete five publications, two of which have already been published; develop two software packages; deliver three invited presentations; and conduct intensive workshops in Sweden, Spain, and Portugal. The results will be incorporated into Adams' courses, and used in future grant applications.

BABCOCK, BRUCE A., PROFESSOR, ECONOMICS, 25 YEARS OF SERVICE, AUGUST – FEBRUARY (6 MONTHS)

Professor Babcock used his proposed assignment to study the economic and environmental impacts of renewable transportation fuels at the Institute of the Environment and Sustainability at UCLA. This work has resulted in several submitted scientific papers in the area of biofuel mandates, a conference presentation at Argonne National Laboratory, and is being used in the mentoring of ISU Ph.D. students studying alternative energy impacts.

BAIN, CARMEN, ASSOCIATE PROFESSOR, SOCIOLOGY, 8 YEARS OF SERVICE, FALL SEMESTER

Professor Bain examined societal acceptance issues related to genetically modified crops and foods during the assignment. This work produced two journal manuscripts, one book chapter and two conference presentations. Bain also worked with an undergraduate research assistant to present a poster on societal attitudes toward GMO crops, and mentored two ISU Ph.D. students studying the issue.

BEAVIS, WILLIAM, PROFESSOR, AGRONOMY, 8 YEARS OF SERVICE, SPRING SEMESTER (*change from full academic year to one semester*)

Professor Beavis used his assignment to explore how operations research, game theory, and evolutionary dynamics can be used to help identify optimal plant breeding strategies. Beavis' work resulted in a short course on operations research in plant breeding for Ph.D. students, research opportunities with industry, and a \$3 million grant from the North Central Soybean Research Program.

BIX, AMY SUE, ASSOCIATE PROFESSOR, HISTORY, 22 YEARS OF SERVICE, FULL ACADEMIC YEAR

Professor Bix spent her assignment conducting research for a book project, *Recruiting Engineer Jane and Astrophysicist Amy: American STEM Advocacy for Girls, 1965-2015*. The book explores issues surrounding gender, socialization, and assumptions of technical mastery. Bix also completed three book chapters, each invited for publication in edited volumes; two articles on separate topics for refereed journals; five conference papers and invited talks; and a grant proposal worth \$180,000.

BLAKELY, BARBARA, ASSOCIATE PROFESSOR, ENGLISH, 32 YEARS OF SERVICE, FALL SEMESTER

Professor Blakely visited two universities that use electronic portfolios for programmatic assessment during her assignment, learning about the process, developing similar assessments for Iowa State ISU Comm Foundation Courses, and evaluating their effectiveness. This work led to the completion of two manuscripts, a conference presentation, and three on-campus

workshops, as well as revisions to the syllabi and teaching materials to bolster the reflective work ISU students do in two English courses.

BUTLER, ANNEMARIE, ASSOCIATE PROFESSOR, PHILOSOPHY AND RELIGIOUS STUDIES, 10 YEARS OF SERVICE, SPRING SEMESTER

Professor Butler's assignment focused on an analysis of David Hume's *A Treatise of Human Nature*. The analysis resulted in two papers, *The 'Weakness' of the Inference from Coherence*, and *Hume's Continued Satisfaction with the Psychology of Identity Ascription*, as well as an invited article for an anthology on Hume, and three conference presentations. Knowledge gained during the assignment will also be used in Butler's undergraduate philosophy courses.

CARPENTER, SUSAN LONG, PROFESSOR, ANIMAL SCIENCE, 6 YEARS OF SERVICE, AUGUST – NOVEMBER (3 MONTHS)

Professor Carpenter will spend her proposed assignment at the Pasteur Institute in Paris, studying the mechanisms of arboviruses, such as West Nile and Dengue Fever. The results of Carpenter's research have been shared both nationally, through a conference presentation and submitted manuscript, and in numerous presentations for the Iowa State community. She also served on two National Institutes of Health Peer Review Panels during her assignment.

DAVIS, RADFORD, ASSOCIATE PROFESSOR, VETERINARY MICROBIOLOGY AND PREVENTIVE MEDICINE, 17 YEARS OF SERVICE, SEPTEMBER – FEBRUARY (6 MONTHS)

Professor Davis worked to enhance global veterinary public health education in the United Kingdom during his assignment. The results of this work include the development of Study Abroad program for veterinary students on food safety, as well as the framework for an international training program in global health, and two invited presentations in Macedonia. Davis also became a Certified Animal Welfare Officer in the U.K.

EKKEKAKIS, PANTELEIMON, ASSOCIATE PROFESSOR, KINESIOLOGY, 15 YEARS OF SERVICE, FALL SEMESTER

Professor Ekkekakis extended his research on exertional fatigue and its neural basis during the assignment, including the development of a theory of fatigue and how it is generated and regulated in the brain. The results of this work include four book chapters, eight international invited lectures, the development of new teaching materials for Iowa State students, and \$12,000 in research funding.

FERNANDEZ-BACA, DAVID, PROFESSOR, COMPUTER SCIENCE, 29 YEARS OF SERVICE, SPRING SEMESTER (*change from fall to spring semester*)

Professor Baca spent time during his assignment at the University of California at Berkeley/Simons Institute for the Theory of Computing, exploring computational cancer biology, regulatory genomics and epigenomics, and network biology. This work led to a research breakthrough that allows for faster algorithms, as well as two manuscripts, and will be used in future external funding proposals. The assignment also allowed Fernandez-Baca to complete sustained work on two NSF-funded research projects.

GEORGE, JOEY, PROFESSOR, SUPPLY CHAIN AND INFORMATION SYSTEMS, 4 YEARS OF SERVICE, SPRING SEMESTER

Professor George traveled to Australia during his assignment, where he expanded upon earlier research studying how well people can detect deception when communicating electronically (videoconferencing and email) with others from different cultures. This work resulted in new data sets and experiments which will be conducted at Iowa State, a conference presentation at the

50th Hawaii International Conference on Information Systems, and three invited lectures in Australia.

GODBEY, EMILY, ASSOCIATE PROFESSOR, INTEGRATED STUDIO ARTS, 10 YEARS OF SERVICE, SPRING SEMESTER

Professor Godbey used her assignment to make substantial progress on a book detailing the history of the postcard in American culture, while also serving as a visiting professor at the University of Pennsylvania. Godbey discovered 10,000 new postcards during her research, which will include as new evidence in her book. This work also helps educate Iowa State students on the impact of early technology, how Iowans conducted their social and business lives through postcards, and their connection to current technologies.

HAYWOOD FERREIRA, RACHEL, ASSOCIATE PROFESSOR, WORLD LANGUAGES AND CULTURES, 12 YEARS OF SERVICE, FALL SEMESTER

Professor Haywood Ferreira spent the assignment working on her book project, *Latin American Science Fiction in the Space Age*. She also used the opportunity to deliver two international conference presentations, prepare additional articles and conference papers, and incorporate research into numerous undergraduate Spanish courses. Haywood Ferreira received a \$2,000 Latin American Science Fiction Grant to support her work, and also applied for a National Endowment for the Humanities Fellowship.

HOFMANN, HEIKE, PROFESSOR, STATISTICS, 13 YEARS OF SERVICE, FULL ACADEMIC YEAR

Professor Hofmann worked with collaborators at Monash University in Melbourne, Australia during her assignment. Hofmann made substantial progress on her monograph, *Case Studies in Visualization using Modern Data Technologies*; submitted and/or prepared nine manuscripts, delivered four invited talks, and submitted an NSF funding proposal.

HU, HUI, PROFESSOR, AEROSPACE ENGINEERING, 11 YEARS OF SERVICE, FALL SEMESTER

Professor Hu developed an integrated research and education program on aircraft icing and de-/anti-icing technology during his assignment. This work resulted in three published journal manuscripts, four conference papers, an aircraft icing module for Hu's undergraduate and graduate courses, and four external funding proposals. Three of these proposals have been funded for a total of \$517,000.

KOHUT, MARIAN, PROFESSOR, KINESIOLOGY, 17 YEARS OF SERVICE, SPRING SEMESTER

Professor Kohut's assignment developed and expanded collaborations with investigators in the area of respiratory host defense and vaccination, with an overall goal to submit collaborative grant proposals. This work resulted in six National Institutes of Health grant proposals: two have been funded to date, for a total of \$4.6 million; an additional proposal for \$2.7 million is pending.

KOSTELNICK, CHARLES, PROFESSOR, ENGLISH, 33 YEARS OF SERVICE, FALL SEMESTER

Professor Kostelnick used his assignment to launch a book project, *Humanizing Information Visually: The Rhetoric of Human Forms in Practical Communication*, which analyzes the role that human forms play in visualizing practical information, and making that information understandable, accessible, inviting, and meaningful to readers. In addition, Kostelnick edited

and contributed a chapter for a book on statistical graphics, and completed and submitted a manuscript on emotional appeals in data visualization.

KUMAR, RATNESH, PROFESSOR, ELECTRICAL AND COMPUTER ENGINEERING, 13 YEARS OF SERVICE, FULL ACADEMIC YEAR (*change from fall semester to full academic year*)

Professor Kumar developed model-based testing of cyber physical systems (such as avionics, power systems, nuclear reactors, and medical devices) during his assignment, and continued his work related to soil sensors and their technology transfer. His work resulted in six published and 7 additional submitted journal articles; one book chapter; eight conference articles; a licensing agreement for a soil moisture sensor; and seven external funding proposals. Four of these proposals were funded for a total of \$455,000.

LEE, YOUNG-A, ASSOCIATE PROFESSOR, APPAREL, EVENTS, AND HOSPITALITY MANAGEMENT, 7 YEARS OF SERVICE, FALL SEMESTER

Professor Lee traveled to Seoul National University in South Korea during the assignment, receiving advanced training in design technology to enhance her research on 3-D body scanning technology and its impact on individuals' health and fitness decisions. Results of these efforts include a conference presentation, five invited lectures, and numerous conferences and workshops. The experience will also be shared with Iowa State students and faculty, and used in funding proposals.

LOHMAN, BRENDA, ASSOCIATE PROFESSOR, HUMAN DEVELOPMENT AND FAMILY STUDIES, 12 YEARS OF SERVICE, SPRING SEMESTER

Professor Lohman used the assignment to expand her scholarship in the area of adolescent stress and obesity, and obtain specialized training on the biology of stress measurement. This work resulted in the preparation and submission of 22 manuscripts and 11 conference presentations, and participation on two U.S. Department of Health and Human Services grant review panels. The experience is also being incorporated into her undergraduate and graduate teaching.

MOLONEY, KIRK, ECOLOGY, EVOLUTION, AND ORGANISMAL BIOLOGY, 23 YEARS OF SERVICE, JANUARY–DECEMBER (12 MONTHS) (*was approved in fall 2013; assignment crossed over FY2014-2015 and FY2015-2016*)

Professor Moloney completed an assignment in New Zealand, where he worked with colleagues to study spatial modeling of invasive species, and invasive species in desert ecosystems. The assignment resulted in two papers published with a former Ph.D. student, two invited lectures, and completion on a federally funded research project. Results will also be used to benefit the teaching of Iowa State's students, and be incorporated into future grant proposals.

O'CONNOR, ANNETTE, PROFESSOR, VETERINARY DIAGNOSTIC AND PRODUCTION ANIMAL MEDICINE, 15 YEARS OF SERVICE, JANUARY – JUNE (6 MONTHS)

Professor O'Connor spent her assignment in Iowa State's Department of Statistics, where she learned emerging statistical theories to aid in data analysis. This knowledge was subsequently applied in four published articles, four additional articles submitted to journals, five conference presentations, and two federal grant applications worth \$1.3 million.

PASCHKE, TERESA, PROFESSOR, INTEGRATED STUDIO ARTS, 15 YEARS OF SERVICE, FALL SEMESTER

Professor Paschke participated in an international residency to study early American needlework and embroidery in the upper Mississippi Valley. In addition to her studies, Paschke began developing six new artworks, prepared a paper that was presented at the Textile Society of America's 15th Biennial Symposium, submitted an additional conference abstract, and applied for a John Simon Guggenheim Fellowship. These efforts also benefit ISU students in fields related to textiles, women's studies, and entrepreneurial studies.

RAJAGOPAL, LAKSHMAN, ASSOCIATE PROFESSOR, APPAREL, EVENTS, AND HOSPITALITY MANAGEMENT, 7 YEARS OF SERVICE, SPRING SEMESTER

Professor Rajagopal investigated teaching and research needs with regard to food safety and safe food handling practices during his assignment. This work resulted in three published papers, five papers submitted or in press, and two conference submissions. Rajagopal was also part a contributor on two successful grant applications worth \$1.1 million.

RIZO, ELISA, ASSOCIATE PROFESSOR, WORLD LANGUAGES AND CULTURES, 8 YEARS OF SERVICE, SPRING SEMESTER

Professor Rizo used the assignment to complete the research for her book project, *From Africa to Latin America and Spain: Models of Global Citizenship in Contemporary Afro-Hispanic Theatre*. The wealth of research led to the book being separated into two volumes. Rizo also delivered several presentations, prepared a 2017 National Endowment for the Humanities Fellowship proposal, and has incorporated the work into her teaching.

RUAN, LU, ASSOCIATE PROFESSOR, COMPUTER SCIENCE, 14 YEARS OF SERVICE, SPRING SEMESTER

Professor Ruan used her assignment to study the Internet peering ecosystem and build predictive models for autonomous systems in provider-to-customer and peer-to-peer relationships. Findings from this project resulted in three workshops and conference presentations, and additional educational and mentoring opportunities for Iowa State graduate students studying networking.

SIVASANKAR, SANJEEVI, ASSOCIATE PROFESSOR, PHYSICS AND ASTRONOMY, 7 YEARS OF SERVICE, FALL SEMESTER

Professor Sivasankar visited Georgia Tech and Emory universities during his assignment to develop new technologies and techniques to study cell adhesion, with application to tissue engineering. Results from this work included three manuscripts (two published, one submitted), a \$480,000 grant from the National Science Foundation, and three proposals for \$3.6 million in additional funding.

SOUKOULIS, COSTAS, DISTINGUISHED PROFESSOR, PHYSICS AND ASTRONOMY, 31 YEARS OF SERVICE, FALL SEMESTER

Professor Soukoulis will visit Greece, Germany, and the Netherlands during his assignment, conducting theoretical research on materials, and working with colleagues who are performing experiments based on his calculations and applications. This work resulted in 11 manuscripts, two U.S. patent applications, and additional research opportunities for Iowa State graduate students.

SUBRAMANIAM, SHANKAR, PROFESSOR, MECHANICAL ENGINEERING, 13 YEARS OF SERVICE, SPRING SEMESTER

Professor Subramaniam used the assignment to develop a new thrust for his research team, visiting collaborators at universities in Florida, California, France, and Switzerland, and working with colleagues in Iowa State's *CoMFRE: Multiphase Flow Research and Education* program. This work resulted in four published manuscripts, three invited talks, and \$26 million in external funding proposals, and will be incorporated into Subramaniam's undergraduate and graduate courses in fluid flow and heat transfer.

THOMPSON, JANETTE, PROFESSOR, NATURAL RESOURCE ECOLOGY AND MANAGEMENT, 19 YEARS OF SERVICE, FALL SEMESTER

Professor Thompson conducted research on the conservation of biodiversity in urban areas during her assignment, based on the example of the Chicago Wilderness. Thompson used the experience to develop a case study for a graduate-level course, two manuscripts, and two refereed conference presentations, while continuing to work with Iowa State graduate students. Her work will also be transferred to Iowa-based conservation efforts such as the Eastern Tallgrass Prairie and Big Rivers Large Landscape Conservation.

VALENZUELA, NICOLE, ASSOCIATE PROFESSOR, ECOLOGY, EVOLUTION, AND ORGANISMAL BIOLOGY, 12 YEARS OF SERVICE, FULL ACADEMIC YEAR

Professor Valenzuela traveled to France during her assignment, working to develop turtles as a model for human health by combining her genomic work and chromosome evolution with colleagues' expertise on human development disorders. Results from this work include nine manuscripts (eight have already been published), five invited talks in Europe, and the insights will be incorporated into Valenzuela's teaching and future funding proposals.

WANG, ZHENGDAO, ASSOCIATE PROFESSOR, ELECTRICAL AND COMPUTER ENGINEERING, 13 YEARS OF SERVICE, SPRING SEMESTER

Professor Wang used the assignment to establish and strengthen research collaborations with colleagues at Stanford University and the University of Science and Technology of China in the fields of Big Data analytics and wireless communications. Results from the assignment include two submitted journal and conference papers, a new research connection in the area of genomic sequencing.

YAN, JUE, ASSOCIATE PROFESSOR, MATHEMATICS, 9 YEARS OF SERVICE, FULL ACADEMIC YEAR

Professor Yan visited the Institute Mathematics and Applications at the University of Minnesota to participate in workshops on control problems and establish new collaborations. Yan's research focuses on modeling issues and computational aspects in the study of biological phenomena, including the development of disease. The assignment resulted in two published articles, three additional articles submitted or in preparation, and \$150,000 in research funding from the National Science Foundation.

YU, CINDY, ASSOCIATE PROFESSOR, STATISTICS, 10 YEARS OF SERVICE, FALL SEMESTER

Professor Yu spent her assignment in China and Singapore, visiting leading researchers to develop dynamic stochastic general equilibrium (DSGE) models that allow statisticians to better identify causal relationships among government policies, macroeconomic variables and asset prices, leading to more careful policy analysis. This work resulted in the development of two DSGE models, as well as two conference presentations, and two manuscripts of previous work.

UNIVERSITY OF NORTHERN IOWA

BERGHAMMER, GRETTA, PROFESSOR, THEATRE, 25 YEARS OF SERVICE, FALL SEMESTER

A Spectrum of Collaboration: A Visionary Approach to University and Professional Youth Theatres Working Together to Create, Implement and Sustain Theatre for Youth with Autism

Professor Berghammer's project was to create and implement a sustainable process for establishing comprehensive educational drama programming and theatre productions specifically for youth on the autism spectrum. She created an original theatre production (*Palette of Possibility*) specifically intended for audiences of youth on the autism spectrum. Collaborating with the Rose Children's Theatre of Omaha Nebraska, she led a team of 6 actors, 2 designers, 6 teaching artists, as well as the Artistic and Education directors through a process for creating a play that met the needs of spectrum youth. The resulting production was performed 15 times to both public and school audiences at the Rose Theatre. In addition Dr. Berghammer developed a comprehensive after school and weekend drama curriculum specifically for youth on the autism spectrum. The curriculum was developed and piloted in collaboration with Rose Theatre staff. She gave a training workshop and an oral presentation on the project at the Rose Theatre, and created a handbook, entitled *The Creation of Palette of Possibility* which has been accepted for electronic publication by the Children's Theatre Foundation. She will also be presenting her work at two academic conferences in the near future. UNI Theatre will remount the play with UNI student actors during January 2017. In addition to four public performances scheduled on campus in February, the play will tour to seven different venues across Iowa in February, 2017: Waterloo, Hastings, Red Oak, Carroll, Creston, Fort Dodge and Des Moines.

CURRAN, CHRISTINA, ASSOCIATE PROFESSOR, SPECIAL EDUCATION, 6 YEARS OF SERVICE, FALL SEMESTER

Integrating UDL and Accessible, Assistive Mobile Technologies in Teacher Education

Professor Curran's research project addressed the Integration of Universal Design for Learning (UDL) and accessible, assistive mobile technologies in teacher education and professional development. She investigated, applied, and evaluated evidence-based recommended pedagogical practices for integrating knowledge, competency and self-efficacy in using UDL and assistive/accessible technologies for students with disabilities in a classroom setting and in providing professional development. She conducted classroom research and addressed classroom-based teacher and student needs accessible technologies through in-school support, collaboration and planning with practicing education professionals. She also collaborated with the Assistive Technology Leadership Team (identified by the Iowa Department of Education) in ongoing work and in facilitating a work team completing an online course on Accessible Instructional Materials. She completed a book chapter based on her work that is being revised for resubmission with IGI Global Press. She is also near completion of a co-edited book: *Handbook of Research on Classroom Diversity and Inclusive Practices*, as well as in the process of writing an additional book chapter. The project benefits the citizens of Iowa and UNI by supporting the preparation of school professionals and providing outreach to the community.

DOWNS, WILLIAM R, PROFESSOR, SOCIAL WORK, 22 YEARS OF SERVICE, FALL SEMESTER

Partnering with the National Center on Domestic Violence, Trauma and Mental Health to Develop Two Grant Submissions and Co-Author a Book

Professor Downs' research project was to develop a collaboration between the University of Northern Iowa's Integrative Services Project (ISP) and the National Center on Domestic Violence, Trauma and Mental Health (the Center) which is based in Chicago. Specifically the collaboration

included three activities: 1) write and submit a research grant to conduct an outcome evaluation of ISP; 2) collaborate on a book co-authored with the Director of Substance Abuse Training and Technical Assistance at the Center, and 3) explore additional grant opportunities for the University of Northern Iowa to partner with the Center in the intersection of domestic violence, substance abuse, and mental health. The research grant to conduct an outcome evaluation of UNI's ISP was submitted to the National Institute on Alcohol Abuse and Alcoholism (NIAAA). It is currently being revised and resubmitted to that organization. Professor Downs has completed his portion of the book project: he wrote the introduction and four chapters of the planned seven chapter book project. He also explored and identified another grant to collaborate on with the Center. This grant, an NIH Academic Research Enhancement Award (AREA grant), is currently being written. This work will benefit UNI students by involving them directly in the research process, and benefit the citizens of Iowa by improving both victim services and substance abuse treatment in Iowa.

FREEDMAN, SUZANNE, PROFESSOR, EDUCATIONAL PSYCHOLOGY AND FOUNDATIONS, 20 YEARS OF SERVICE, FALL SEMESTER

Introduction of Forgiveness Education: Evaluation of Forgiveness Education with 5th Grade Students

The purpose of Professor Freedman's project was to investigate the impact of a forgiveness education curriculum with 4th and 5th grade students in two low-income elementary schools in Waterloo, IA. The goal of this research was to determine the impact forgiveness education had on the amount of anger students have, students' ability to forgive someone who has hurt them deeply, and students' understanding and knowledge of what forgiveness is and is not and how to forgive. Professor Freedman developed a forgiveness education curriculum using children's literature for upper level elementary school students and piloted the specific curriculum with three classes of 4th grade students attending Kingsley Elementary School in Waterloo, Iowa and two classes of 5th grade students attending Lowell Elementary School in Waterloo, Iowa. She will be presenting the results of this research at the *Association of Moral Education 2016 Conference* in Cambridge, MA at the Harvard Graduate School of Education and at the *National Association of School Psychologists 2017 Annual Convention* in San Antonio, Texas. She is currently writing an article based on this research for the *Journal of Moral Education*. In addition, she will be contacting both elementary school principals to explore partnering with them to teach their current students about forgiveness as a form of community engagement for the Veridian Faculty Fellowship. Benefits of this research for the local community include students who are emotionally healthier as a result of learning about forgiveness and more advanced in moral and social development. In addition, this research allowed the teachers and school counselors at both schools to learn more about forgiveness education and possible ways to incorporate it into their curriculum.

HOSTETLER, SOO C., ASSOCIATE PROFESSOR, ART, 9 YEARS OF SERVICE, SPRING SEMESTER

East Meets West: Exploring and Sharing Culture, Spirit and Tradition

Professor Hostetler's creative project was rooted in the popular themes of Minhwa art forms that were developed during the late Joseon era in South Korea and are generated from folk mythology, legend, symbols and scenes of everyday life. She created modern expressions of Minhwa-style by interpreting the traditional symbolism of the characters through her own imagination in a narrative form of storytelling using digital technology. She completed five artistic designs during the PDA period that exhibit the uniqueness of Korea's traditional folk art using digital technology. She exhibited a portion of these designs at two international exhibitions in London, England (6/30 - 7/07/2016) and in Katowice, Poland (8/12 - 9/10/2016). She is also planning to exhibit the

complete series of designs at in Korea and China in near future. In addition, she will exhibit her designs in the UNI library so students and the community have the opportunity to understand other cultures and broaden the lives of both international and Iowa students.

MATVIENKO, OKSANA, ASSOCIATE PROFESSOR, HPELS, 10 YEARS OF SERVICE, FALL SEMESTER

Nutrition Related Messages in Children's Books

The overall goal of Professor Matvienko's study was to characterize types of food messages and dietary behaviors promoted in children's picture books. Through a search process, she identified 270 picture books about food and nutrition that met the inclusion criteria. The study found that problem behaviors portrayed in books overlapped with those discussed in research literature. However, problem-solving strategies did not align with those endorsed by nutrition professionals, suggesting a need for picture books that align with healthy eating strategies endorsed by nutrition professionals. Professor Matvienko presented some of the results of this study at two major national academic conferences in her field. She wrote a scholarly article that has been accepted for publication at the *Journal of Nutrition Education and Behavior*. The findings of this study have the potential to enhance nutrition education efforts among Iowa parents, educators and librarians. At the state level, the *Healthiest State Initiative* endorsed by Governor Branstad intends to inspire Iowans and their communities to improve their health and happiness. The proposed study was in line with the goals of this initiative and contributes to the process of improving health of Iowans, and specifically to the development of healthy eating habits among preschool and lower elementary children.

MITRA, ATUL, PROFESSOR, MANAGEMENT, 14 YEARS OF SERVICE, SPRING SEMESTER

The Investigating Merit Pay Across Cultures and Territories (IMPACT) Project

Professor Mitra's research project was to play a pivotal collaborative role as a part of the IMPACT (Investigating Merit Pay Across Cultures and Territories) project during the initial data analyses and write-up phase. Professor Jason D. Shaw from the Hong Kong Polytechnic University (HKPU), the principal investigator, received a large research grant from the Hong Kong Research Grants Council to conduct a cross-cultural comparative investigation of merit pay plans in about forty (40) countries. Professor Mitra is the country coordinator for the US and India. During the PDA period he travelled to India, visited four cities, contacted about fifteen firms and gathered first phase of IMPACT project data from five firms. He also helped with the literature review and data analysis, visited the Hong Kong Polytechnic University, and developed working scholarly relationships with HKPU faculty and doctoral students. As indicated in the PDA proposal, given the scope of the IMPACT project, it may take another 3-5 years to publish results after the data collection phase has ended. In August 2016, he presented some preliminary results of this project at an international conference in Nagoya, Japan. He is currently working on a manuscript with Professor Bond and expects to submit this manuscript to the *Journal of Cross Cultural Psychology*. This project will provide high impact publications and associated visibility to UNI. It will help Iowa and build Professor Mitra's reputation as an international expert on merit pay systems.

OGBONDAH, CHRIS W., PROFESSOR, COMMUNICATION STUDIES, 25 YEARS OF SERVICE, FALL SEMESTER

A Critical Analysis of Media Coverage of Terrorism Around the World: The African Case

Professor Ogbondah's research project was to make a critical examination of how the global mass media covers terrorism in Africa. Specifically, he examined how the global media -- as represented by selected elite press of the world -- covered the [most] notorious terror groups in

Africa: Boko Haram, Herdsmen and Ansaru (in Nigeria), Al-Shabaab (in Somalia, Kenya, Uganda and Ethiopia), Ansar al-Dine (in Mali), and Ansar al-Sharia and Ansar al-Sharia in (in Libya). The project found that the way the global media covers terrorism in Africa tends to shape the foreign policy lines of the U.S. government. In addition, the way the global press covers terrorism in Africa reveals to us information about previously unknown terrorist groups, their leaders and members as well as how they recruit and radicalize their followers. Professor Ogbondah will be presenting some of his results at the *African Council for Communication in Education Conference* in Nigeria, and is in the process of drafting an article for a scholarly journal based on his results. The project is of benefit to the citizens of the state of Iowa and those members of the University of Northern Iowa community interested in teaching and or understanding global affairs in general and terrorism in particular.

PETROV, ANDREY N., ASSOCIATE PROFESSOR, GEOGRAPHY, 6 YEARS OF SERVICE, SPRING SEMESTER

Remote Sustainabilities: Improving Understandings and Applications of Sustainable Development in the Arctic and Other Remote Regions

Professor Petrov's project was to develop a synthesis of knowledge on sustainability and sustainable development in remote peripheral regions, most specifically in the Arctic. The PDA time was devoted to a major research and writing effort that will advance an improved understanding(s) of meanings and means of sustainable development in the Arctic and other peripheral, remote regions of the planet. This research is pioneering in the emerging field of Arctic sustainability science and deliver valuable insights into practical implementation of sustainable development strategies in the Circumpolar North. This work resulted in three scholarly conference presentations, one international scholarly conference organized, two co-authored book chapters in press, one book chapter under review, one peer reviewed article accepted for publication in *Polar Geography*, and will ultimately result in a multi-authored monograph, *Arctic Sustainability: A Synthesis of Knowledge*, with the applicant as the chief editor and author. The volume is intended for publication under the Taylor & Francis Polar Regions Book Series in 2017-2018. The study will also be an important contribution to our general understanding of sustainable development in remote, rural and resource-dependent regions, and thus will have value beyond its regional focus. In particular, the project will enable Iowa to have better benchmarks in conducting its own efforts in building sustainable future for rural communities, will provide access to success stories and lessons from northern regions, and will assist in developing statewide strategies to improve socioeconomic well-being and environmental quality in the state.

POLEKSIC, ALEKSANDAR, ASSOCIATE PROFESSOR, COMPUTER SCIENCE, 9 YEARS OF SERVICE, FALL SEMESTER

Applications of Digital Signal Processing in Drug Discovery

Complex biochemical processes in an organism are, for the most part, determined by interactions of proteins with other molecules. These interactions occur at the protein binding interfaces, also known as protein "binding sites." It is well known that proteins with similar binding sites perform the same functions. Hence, methods for identifying and comparing proteins' binding sites are of critical importance in biomedical research and drug discovery. Many approaches have been proposed and developed for this task. As part of Professor Poleksic's PDA project, he, in collaboration with another researcher at the University of Montenegro, designed and developed a set of computational methods capable of identifying and comparing proteins' binding sites on a large scale. The results of the project have been published as two articles in the *Proceedings of the IEEE and Algorithms for Molecular Biology*. A third manuscript is in preparation. This project enhances interdisciplinary research at UNI because it brings a new technique to assist in

biomedical research and drug discovery to campus. It will provide opportunities for additional funding, faculty-faculty interactions and student driven research.

SCHOLL, KATHLEEN G., ASSOCIATE PROFESSOR, HPELS, 13 YEARS OF SERVICE, SPRING SEMESTER

College Campus Landscapes as a Mechanism for Student Learning and Creativity

Professor Scholl's research project looked at the impact of physical space (college landscape) on learning-related cognitive function of university students. Using Attention Restoration Theory (ART) Professor Scholl created a framework for understanding how campus landscapes might strengthen students' creative thinking and learning abilities. The purpose of this qualitative study was to identify the perceived effects of student-nature campus interactions that enable cognitive thinking abilities. The result found that technology, other individuals, and internal stress and anxiety were competing and inhibiting factors that detracted from students' directed attention. Dimensions of the campus landscapes were found to restore a student's attentional capacities by reducing frustrations, tension, and irritability obtained through perceived societal pressures such as grades, money, and other life effects. She presented two papers at national and international academic conferences on the results of this project. She wrote a manuscript, which has been accepted and is to be published as a chapter in the *Handbook of Theory and Practice of Sustainable Development in Higher Education*. She has drafted a second manuscript to be submitted to the *Planning for Higher Education Journal* in fall of 2016. This work is of benefit to the citizens of Iowa because campus planners and university educators can use the results to make campus landscapes better suited to encourage higher order cognitive function in students. In addition, this project provides stronger evidence for the role of and mechanisms by which parks and other green environments support human and community benefits.

SCHRAFFENBERGER, JEREMY, ASSOCIATE PROFESSOR, LANGUAGES AND LITERATURES, 6 YEARS OF SERVICE, SPRING SEMESTER

What Passes: Poems and Lyric Essays of Memory and the Body

Professor Schraffenberger worked on a collection of creative writing, *What Passes: Poems and Lyric Essay of Memory and the Body* that dwells on various shades of meaning of the word "pass," evoking and exploring what dies, what suffices, what we forget, specifically as it exists in our memories and bodies. While initially the lyric essays were intended to be smaller individual pieces, he ended up writing two longer essays, "Syncope" and "Pruritus," as well as a number of accompanying lyric poems. Additionally, he wrote two lyrical fictional prose pieces, "Here's a Story" and "Bellman." The two essays, "Syncope" and "Pruritus," are currently under consideration at five journals (*Profane, Black Warrior Review, Story Quarterly, Blue Mesa Review, and Cutbank Literary Journal*). Two of the poems have been published in the journals *Lips and About Place*. An additional poem will appear in a chapter in the forthcoming book *The Necessary Poetics of Atheism*. The fictional pieces, "Here's a Story" and "Bellman," are currently under consideration at *Cutbank Literary Journal* and *Fiction Southeast*. He also presented some of these works at an academic conference. This work is of benefit to Iowa and UNI because his new work in multiple genres has prepared him more deeply to teach this kind of writing to students in his Elements of Creative Writing Class at UNI. He has also taken this experience in hybrid and cross-genre writing to his work as editor at the *North American Review*.

SPRADLING, THERESA A., PROFESSOR, BIOLOGY, 14 YEARS OF SERVICE, SPRING SEMESTER

Testing Geographic Range-Expansion Models: Population Genetics of a Colonizing Parasite

In 2014, Professor Spradling and colleagues received National Science Foundation funding (\$150,000) for a study of the population genetics of a chewing louse that has been, for several decades now, in the process of expanding its geographic range into new territory as it colonizes new host individuals in areas previously colonized by another species of louse. Her PDA work was devoted to the field and laboratory phases of the project, with data collection occurring throughout the PDA period. This study will cap a 25-year-long project by addressing the foundational topic of genetic diversity across 270 generations of an insect (chewing louse) with a very short (33 day) generation time. This insect serves as a model for better understanding the genetics of organisms with much longer generation times. Using this insect as a model organism promises to produce new insights that have the potential to change the way scientists think about changes in species distributions and the effect of this change on the genetic diversity of at-risk species. In addition to conducting field work away from UNI and lab work (supervising 5 UNI undergraduates), she wrote a manuscript with an undergraduate student that has been accepted for publication in *PloS One*. This PDA provided excellent research opportunities for UNI students and professional growth for her as an educator charged with teaching UNI students about population genetics and evolution (BIOL 3140). PDA support allowed her to interact with UNI students more intensively than she could have otherwise.

WILDNER, SIEGRUN, PROFESSOR, LANGUAGES AND LITERATURES, 16 YEARS OF SERVICE, SPRING SEMESTER

Holocaust Survivor Testimony and Narrative Representation: The Mauthausen Experience

Professor Wildner's PDA project examined survivor memoirs as testimonial texts about the Nazi concentration camp in Mauthausen, Austria in a comprehensive interdisciplinary study. The PDA allowed her to collect and analyze early eyewitness narratives, written between 1945 and 1955, to provide a more nuanced understanding of Holocaust survivors' perspectives during their camp experiences and immediately after their liberation by the 11th Armored Division of the U.S. Third Army in May 1945. During the PDA she conducted on-site archival research at the National Archives at College Park, Maryland. She also translated excerpts of these primary texts from German into English. She has presented the first results of this project at an international academic conference. She has also completed an article "Language of Witness" and is in the process of finding a suitable academic journal for its publication. She collected enough material to write three more scholarly articles based on this research. In addition, she started to write and compile detailed summaries of survivor memoirs to be published as an electronic "Mauthausen Memoir Digest." This digest will facilitate access to these narratives by Holocaust scholars and the public around the world. Her research findings will also inform her classroom teaching and benefit UNI students. Furthermore, the research conducted during the PDA period will also benefit the larger community off-campus through her continued support of outreach efforts (lectures, exhibitions, and workshops) by UNI's Center for Holocaust and Genocide Education.