

Office of Research Development and Administration Award Report, April 2018

\$975,486 Olivia Ford, School of Health Sciences U S Department of Agriculture – USDA; Grant to University of Tennessee, (\$3,000) Get Fruved: A peer-led, train-the-trainer social marketing intervention to increase fruit and vegetable intake and prevent childhood obesity: EMU is taking part in a University of Tennessee study on fruit and vegetable intake at colleges and universities across the country.

Wade Tornquist, Graduate School State of Michigan, (\$9,773) King-Chavez-Parks (KCP): Visiting Professors Program FY2018: The Martin Luther King, Jr.- Caesar Chavez-Rosa Parks (KCP) Visiting Professors Program was created by the Michigan State Legislature to stem the downward spiral of college graduation rates for students underrepresented in postsecondary education. The KCP Visiting Professors Program is intended to increase the diversity of instructors in Michigan higher education institutions to provide role models for underrepresented students. Wade Tornquist, Graduate School State of Michigan 2, (\$103,362) King-Chavez-Parks (KCP) Future Faculty Fellows FY2018: The purpose of the King-Chavez-Parks Future Faculty Fellowship Program is to increase the pool of traditionally underrepresented candidates pursuing careers in postsecondary education and subsequently promote inclusivity and diversity in US colleges and universities. The KCP Future Faculty Fellowship Award provides a maximum of up to \$20,000 for master's level Fellows and up to \$35,000 for doctoral Fellows. Future Faculty Nelson Maylone, Teacher Education The Woodrow Wilson National Fellowship Foundation, (\$12,000) Woodrow Wilson Mentoring Project (Year 6): The purpose of the project is to provide mentoring to EMU's working Woodrow Wilson Teaching Fellows. The objective is to assist in their professional development during their induction years. The mentoring (by a faculty member in Teacher Education) includes field observations and feedback, virtual support, and funding of their various professional development opportunities.

Ethan Lowenstein, Institute for the Study of Children, Families, and Communities UPS Foundation, (\$5,000) Place-Based Stewardship Education in Action: This program has three primary goals: 1) to help the SEMIS Coalition to develop a systematic approach to supporting educators as they integrate arts, history, and civic action in place-based stewardship education projects, 2) to strengthen two, high impact partnerships with arts organizations in our region, 3) to share the impacts of student projects with the larger community.

Cory Emal, Chemistry U S Department of Agriculture - USDA, (\$149,996) Strengthening student readiness for internships and the workforce via Fermentation Science curriculum development and implementation: The current rapid growth in interest in fermented foods and beverages, such as beer, wine, yogurt, and fermented vegetables, has created an increased demand for employees with technical training related to their production. In response to this demand, Eastern Michigan University has created new major and minor degrees in Fermentation Science, intended to provide students practical, hands-on training in the science as it relates to the process of fermentation. Given the infancy of the field of Fermentation Science, there is not a standard curriculum to be used as a template, nor are there numerous standard experiments or textbooks available. The goal of the proposed project is to create and integrate additional practical experiments and experiences into the first-year introductory and third-year analytical Fermentation Science courses, with the goal of better preparation of students for their senior-year internships/collaborative research projects. The beneficiaries of this project will be the students within the program as they receive a greater amount of contextually relevant training, and our external partners in the fermentation community who host our internships and hire our graduates will benefit from a student/employee with a larger base of practical training. Curricular materials and procedures will be disseminated and made available to the education community for use or adaptation.

Christine Deacons, Academic Programming State of Michigan 1, (\$136,905) EMU Edge: Pathways to Completion: Edge supports first-generation low-income students who are academically at-risk with a 4-year program of structured support that begins with adoption of the EMU Engage app that helps students start to make connections before arriving on campus. This is followed by a 4-day early orientation prepping students for college life - including workshops related to finances, motivation and goal setting, and introduction to native electronic systems to help students more easily navigate the challenges they face as

they transition to college and beyond. Over the course of the 4-year program, students participate in service and leadership activities, Edge Advance student organization events, and have the opportunity to join an Edge-specific study abroad trip.

Christine Finch, Child Care Center Washtenaw Intermediate School District, (\$13,485) Great Start Readiness Program Amendment: This program makes preschool programs available to EMU students and the surrounding community. It can make it possible for the EMU students to complete their education and community members to attend EMU and/or become employed. The program's funding is for four-year-olds who would otherwise be at risk of becoming educationally disadvantaged and this amendment is for two additional students.

David Pawlowski, Physics and Astronomy U S Small Business Administration, (\$29,075) Understanding the effects of solar flares on the upper atmospheres of Mars and Venus – (Year 3): This work will primarily focus on the development and use of the Mars Global Ionosphere Thermosphere Model (M-GITM) as well as the Venus Global Ionosphere-Thermosphere Model (V-GITM). Tasks include: 1) Assisting in the development of V-GITM; 2) Simulating the response to both realistic and idealized solar flare cases within M-GITM and V-GITM; 3) Work closely with other team members to compare results and observations that illustrate how traveling atmospheric disturbances facilitate the transport of energy and momentum throughout the Mars and Venus upper atmosphere; 4) Model results and observational analysis.

Kristin Judd, Biology Mill Creek Research Council, (\$850) Two student projects with Mill Creek Research Council: Funding is for two student research projects on human impacts on stream ecosystems in the Huron River Watershed. The first project addresses the impacts of low doses of pharmaceuticals that enter natural systems directly from wastewater treatment facilities and indirectly through leaky wastewater treatment infrastructure. This study is the Masters Thesis research of Elizabeth Stover. She will cultivate stream biofilms on tiles to discover which various common pharmaceuticals found in waste water effluent are added to biofilms. The second project examines the impact of road salt inputs on stream ecosystem function, and will be carried out by Caleb Willette, an undergraduate student. Both studies include Mill Creek as the focal stream, but will also study other streams located in the upper Huron River Watershed to better understand how land use interacts with low doses of pharmaceuticals and road salt inputs. Both projects will be carried out during the spring and summer of 2018.

Tricia Finger, School of Health Sciences Early On Center for Higher Education, (\$6,918) In-Home Observations of Early Intervention Services: Interactions Between Providers and Families: The field of early intervention has shifted from a child-centered approach to a more family-centered approach in recent years. While early intervention providers have strong values and beliefs about delivering family-centered care, their day-to-day practices don't always reflect these values. This study takes an in-depth look at early intervention services as they unfold in the natural context of a child's home within the family system. Direct observation through wearable video cameras will enable the collection of detailed data on the complex interactions that take place during early intervention visits. Through this approach, we will be able to answer the following primary research questions: 1) What role does the parent/caregiver play during the intervention visits? What is the level of family engagement in the process? 2) What activities/contexts do the early intervention services take place in? Which family routines are utilized? Secondary research questions include: 3) What are parent/caregiver perspectives on their role in the early intervention process? Are they satisfied with the level of engagement they experience? 4) Is there a relationship between perceived parent/caregiver engagement and their reported levels of family stressors and other potential barriers to family engagement?

Hitomi Oketani, World Languages Japanese School of Detroit, (\$20,622) 2018-19 Japanese School of Detroit Teaching Contract: Through an educational affiliation between JSD and EMU, EMU will provide JSD with qualified student(s) who will teach Japanese language at the off-campus location of Detroit Ringo Kai, Japanese School of Detroit.

Wendy Thomas, Small Business Development Center U S Small Business Administration, (\$484,500) Small Business Development Center (SBDC) Host, 2018: The Michigan Small Business Development Center (MI-SBDC) at Eastern Michigan University is part of a statewide program that is primarily funded

by the U.S. Small Business Administration to provide assistance to entrepreneurs at start up stage and existing businesses seeking to grow and improve their operations. The MI-SBDC offers one-on-one counsel, training seminars and secondary research support to its clients. We also make presentations and outreach in the communities we serve to provide information about business support resources that are available to small business.

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\$935,219 Nancy Bryk, Geography and Geology Cranbrook Educational Community (\$6,750) 2018 Historic Preservation Field School at Cranbrook (A17-0038-002): The EMU Historic Preservation Program will undertake hands-on preservation of Tower Cottage, an Albert Kahn building on the campus of Cranbrook Educational Community (CEC) for six days in May 2018. Twenty students and three professors will work with graduate students to restore exterior elements including windows and stucco; document the landscape as well as the interior changes to this much-altered building. Additionally, students will assist with registration of artifacts in another CEC site, the Frank Lloyd Wright Smith House. This funding supports a construction manager/field school manager with extensive knowledge of historic preservation building systems and techniques.

Elise Buggs, Academic Partnerships Michigan Workforce Development Agency (\$107,111) Michigan King*Chavez*Parks (KCP) State-wide GEAR UP (A16-0069-004): The Gear Up (Gaining Early Awareness and Readiness for Undergraduate Programs) is a federal program to increase the number of low-income students who are prepared to enter and succeed in postsecondary education. The program serves at least one grade level of students beginning no later than 7th grade and follows the cohort through their first year of college. GEAR-UP services include tutoring mentoring, academic preparation, financial education and college scholarships to improve access to higher education. GEAR UP EMU serves 1,200 students from 3 school districts in Wayne County.

Jamie Cornelius, Biology National Science Foundation - NSF (\$266,585) Collaborative Research, RUI: Social modulation of migratory timing and endocrine mechanisms of migration in two flexible migrants (A18-0045-001): The objective of this project is to address large gaps in knowledge of the regulatory mechanisms underlying the expression of a migratory phenotype in birds. To do this, a series of captive experiments will be carried out focusing on two songbird species with flexible migration patterns: the pine siskin (*Spinus pinus*) and the red crossbill (*Loxia curvirostra*). The project will capitalize on extensive previous work by PI Watts (Washington State University) with the siskin system and by PI Cornelius (Eastern Michigan University) with the crossbill system. Aim 1 of the project is to evaluate the influence of social cues on the timing of the initiation and termination of the migratory life history stage. Aim 2 of the project is to advance our understanding of the role of changes in circulating steroid hormones and the availability of their receptors in the brain and periphery in the transition into and out of a migratory state and to investigate the role of these mechanisms in mediating the effect of social cues on migratory transitions. Dr. Cornelius will also oversee the design and implementation of an elementary school outreach program for Ypsilanti area schools.

Nathan Kearns, Health Promotion and Human Performance American Academy of Orthotists and Prosthetists (\$3,400) Outcome Measure "How To" Video Project (A18-0046-001): To increase understanding and facilitate the use of outcome measures in the orthotic and prosthetic profession clear and concise instructional videos will be created. Annually, more than 795,000 people experience a stroke, making it one of the primary causes of serious long-term disability. Similarly, Cerebral Palsy is the leading cause of physical disability in children. Orthotic interventions are commonly prescribed to treat motor deficiencies for these patients. Traditionally, the effectiveness of these orthotic devices has been judged by clinical observation and patient feedback. While clinical skills, judgment and experience are irreplaceable aspects of patient care, modern healthcare is trending toward objective, repeatable functional tests called outcome measures. Outcome measures are a direct and quantifiable way of measuring treatment effectiveness and providing evidence of change in the patient's functional status. This project will produce two videos with the aim of providing clear and concise instructions to O&P clinicians on how to perform the Edinburgh Visual Gait Score and the Modified Emery Functional Ambulation Profile. The videos will

also provide information on how to interpret the results of the test, when to administer them, what pathologies they are validated for and how long they should take to administer.

Ethan Lowenstein, Teacher Education NoVo Foundation (\$50,000) Fostering Social-Emotional Learning Through Place-Based Education (A18-0044-001): The project further supports the integration of Social Emotional Learning into the work of the South East Michigan Stewardship (SEMIS) Coalition. The SEMIS Coalition's Placed-Based Education (PBE) curriculum methodology is an ideal model for developing social-emotional learning. The funding will be used for teacher professional development, fostering partnerships with transformational community organizations that focus on Detroit, and conceptualizing socialemotional learning's relationship to PBE.

Rebecca Sipe, English Language and Literature National Writing Project (\$12,000) National Writing Project i3 - Upper Elementary Advanced Institute (A18-0042-001): The Eastern Michigan Writing Project will conduct an Advanced Institute for Upper Elementary Teacher-Leaders in the summer of 2018-2019 school year. Teachers will implement the C3WP/College, Career, and Community Writers Program in their classrooms in preparation for working as professional development presenters and thinking partners in a rural school the following year.

Rebecca Sipe, English Language and Literature National Writing Project (\$65,000) National Writing Project - i3 - Rural Schools Professional Development (A18-0043-001): The Eastern Michigan Writing Project will collaborate with the Madison School District in Adrian, Michigan to launch an intensive professional development initiative around source-based argument writing in 2018-2019. Teachers in grades 7-10 will implement the C3WP/College, Career, and Community Writers Program during the first year, with the help of EMWP teachers as thinking partners and workshop facilitators.

Roderick Wallace, Upward Bound U S Department of Education - USDE (\$420,498, Year 2 of 5 Years) Upward Bound 2017-2022 (A17-0041-002): Eastern Michigan University (EMU) has successfully sponsored the Upward Bound (UB) program since 1967 and will continue providing needed services to target area students with the support of the Federal TRIO program. The EMU UB program is designed to identify, select, enroll, and maintain 89 eligible participants and focuses on preparing students to successfully graduate college within six-years of their highschool graduation. EMU UB programming meets the specific needs of target students in the form of an integrated academic year, a pre-collegiate summer residential program including an algebra Jumpstart program for rising 9th graders, and a collegiate bridge and work-study/internship for seniors transitioning to college.

Tsu-Yin Wu, School of Nursing Asian & Pacific Islander American Health Forum (\$3,875) All of Us Community Outreach, Education, and Communication Campaign (A18-0047-001): In this NIH All of Us Outreach Project, the Health Asian Americans Project (HAAP) will support community outreach and education about the NIH All of Us Research Initiative to include more minority groups in federally sponsored research. This can include a mix of individual outreach, group outreach, and community event outreach to promote All of Us in local Asian American and Native Hawaiian/Pacific Islander communities. HAAP will also participate in a joint digital communications campaign targeting English-speaking Asian American and Native Hawaiian/Pacific Islander communities.

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Yichun Xie, Geography and Geology Esri (\$1,000) Esri 2018 ArcGIS Online Mapping competition (A17-0030-003): Recruit middle and high school students to participate in a state-wide ArcGIS Online mapping competition; recruit GIS professionals and community leaders to judge the competition; provide cash awards to 10 students who win the competition.

Iktimal Hamed, Academic Advising Center, College of Technology DTE Energy Foundation (\$10,000) Digital Divas (A16-0050-004): The Digital Divas program is an innovative approach created to encourage young women in Southeast Michigan to pursue STEM related disciplines and related careers. This one-day conference encourages and engages female middle and high school students in technology careers while

giving them an opportunity to meet and network with professors and students. Beginning with under 100 attendees, the Digital Divas conference has grown to over 550 in the past five years. Over 4,000 girls from Southeast Michigan have attended a Digital Divas program.

Allen Kurta, Biology Consumers Energy Corporation (\$1638) Bat Habitat and the Rochester Replacement Line (A15-0005-010): Consumers Energy needs to replace a portion of a natural gas pipeline between Rochester and Sheldon Roads, Oakland County, Michigan. Dr. Kurta will evaluate the habitat along the 70-foot-wide corridor of the new pipeline, to determine whether the habitat is suitable for the endangered Indiana bat and provide a written report. Claudia Drossel and Alexandros Maragakis, Psychology Ann Arbor Area Community Foundation (\$10,180) Establishing an Undergraduate Respite Program (A18-0051-001): The Center of the Advancement of Neurobehavioral Health (CANH) at EMU provides mental health services to seniors with dementia and their families. CANH addresses behavioral problems in dementia, so they do not become barriers to living at home. Doctoral students and faculty conduct home and clinic-based sessions. To support our clinical services and ensure care partners' focus on session content without disruption, concurrent respite is necessary. An undergraduate respite program will improve access to CANH's clinical services and reduce caregiver burden. Funding will allow us to hire graduate students who will develop a CANH-clinic procedure manual and curriculum for respite, network at EMU, and recruit and organize the first waves of undergraduates (volunteers, or students in field courses).

James Sheerin, Physics and Astronomy National Aeronautics and Space Administration (\$5000) Graduate Michigan Space Grant Consortium Fellowship: Investigating Radio Wave Reflection caused by Plasma Sheaths (A18-0048-001): A student will perform research on radio waves in plasma. James Sheerin, Physics and Astronomy National Aeronautics and Space Administration (\$1500) Michigan Space Grant Operating Support: 2018-2019 (A17-0048-002): Annual operating funds for the EMU Space Grant. James Sheerin, Physics and Astronomy National Aeronautics and Space Administration (\$5000) New Worlds (A17-0040-002): This project develops a new entry-level interdisciplinary course for pre-service teachers designed to meet state K-12 science education and teacher certification requirements using NASA resources integrated into each lesson module. The course lessons will address scientific knowledge of life, physical, and Earth systems and processes, encountered from Earth throughout the solar system. Particular emphasis will be placed on application of new knowledge to the search for exoplanets beyond our solar system. Extensive use will be made of data from NASA's latest missions, including Kepler/K2 and the James Webb Space Telescope (JWST), and TESS due to launch during the project year, as well as ground-based searches. By integrating resources from the latest NASA missions into each lesson module, education students will become familiar with NASA's role in science education. Course modules will be designed to meet the science education needs of pre-service teachers and prepare them "to inspire the next generation of explorers" in partnership with NASA.

Kristin Judd, Biology Mill Creek Research Council (\$1450 total, \$600 awarded in June) Two Student Projects with Mill Creek Research Council. (A18-0040-002): Funding is for two student research projects on human impacts on stream ecosystems in the Huron River Watershed. The first project addresses the impacts of low doses of pharmaceuticals that enter natural systems directly from wastewater treatment facilities and indirectly through leaky wastewater treatment infrastructure. This study is the Masters Thesis research of Elizabeth Stover. She will cultivate stream biofilms on tiles to discover which various common pharmaceuticals found in waste water effluent are added to biofilms. The second project examines the impact of road salt inputs on stream ecosystem function, and will be carried out by Caleb Willette, an undergraduate student. Both studies include Mill Creek as the focal stream, but will also study other streams located in the upper Huron River Watershed to better understand how land use interacts with low doses of pharmaceuticals and road salt inputs. Both projects will be carried out during the spring and summer of 2018.

Roxanne Katus, Mathematics National Aeronautics and Space Administration (\$35,719; Year 2 of 2) Magnetospheric Ion Temperature Derived From TWINS ENA - Data Upgrade (A17-0028-002): In the proposed work we will complete and archive a comprehensive database of magnetospheric ion temperatures derived from NASA's Two Wide-angle Imaging Neutral-atom Spectrometers (TWINS) Energetic Neutral Atom (ENA) instrument, provide critical metadata, and archive all of this at the NASA

Space Physics Data Facility in a format compatible with the VxO architecture. We will collaborate with faculty at University of New Hampshire to create the data upgrade for the TWINS ENA flux.

Tsu-Yin Wu, School of Nursing Susan G Komen for the Cure (\$175,000) Evidence-based sustainable strategies for early diagnosis of breast cancer in China (A18-0049- 001): The goal is to reduce incidence of late diagnosis in primary breast cancer cases and improve quality of life (QOL) for women in China affected by this disease by improving the rates for early diagnosis of breast cancer of women with symptomatic lesions, leading to prompt and effective treatment. A randomized controlled trial will compare the efficacy of study intervention with usual care on incidence and mortality of breast cancers among Chinese women aged 35-69. The study findings will provide critical information for planning effective cancer control programs, providing guidance and support in implementation of future screening programs that integrate health systems in an equitable and sustainable way. Christopher Herman, Health Promotion and Human Performance Becker Orthopedic (\$12,272) Effects of sagittal plane ankle alignment, coronal plane support, and varying dorsiflexion/plantarflexion resistance on ramp gait in subjects with impaired neuromotor function (A18-0050-001): EMU's Orthotics and Prosthetics laboratory will conduct testing and analysis to assess the performance of a configurable ankle foot orthosis for Becker Orthopedic.

Jessica Alexander, Office of Academic Services Michigan College Access Network (\$10,000) MCAN College Coaching Corps 2017-2018 (A18-0032-003): The College Coaching Corps help Michigan students pursue postsecondary educational opportunities particularly students located in communities with low socio-economic status and low adult educational attainment rates. Working alongside school professionals and under the supervision of school counselors, Eastern Michigan University College Coaching Corps Graduate Assistants will support students as they make the transition from high school to postsecondary education by providing students and their families with relevant information regarding the benefits of a postsecondary education, preparing for college attendance, and the admission and financial aid processes. Delbert Raymond III, School of Nursing Health Resources and Services Administration (\$72,453) EMU Nurse Faculty Loan Program 2018 (A18-0001-002): The NFLP is a loan forgiveness program that prepares and trains qualified nurse educators to fill faculty vacancies. The EMU program supports graduate nursing student education costs toward matriculation of graduates who will serve as nursing faculty. and builds upon our current Nurse Faculty Loan Program funding for qualified EMU graduate students enrolled in our MSN in Nursing Education program.

Sun Hae Jang, Health Promotion and Human Performance American Orthotic and Prosthetic Association (\$18,439) Normative Values, Reliability, and Validity of the Global Visual Gait Assessment for Measuring Orthotic Biomechanical Outcomes for Use in Post-Stroke Patients (A18-0052-001): Various AFOs and shoe modifications are prescribed for gait rehabilitation of post-stroke patients. The ankle foot orthosis and footwear combination (AFO-FC) concept and its tuning process were recently introduced for cerebral palsy. As of now, there are no validated gait assessment methods available that are capable of visually assessing gait for orthotic biomechanical outcomes of the tuning AFO-FC concept, especially in individuals who have had a stroke. The purpose of this study is to investigate and establish the normative values, the reference score, the reliability, the concurrent validity, and the sensitivity of the Global Visual Gait Assessment (GVGA) for use in patients after a stroke.