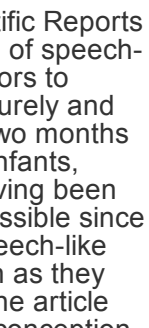




November 1, 2019

RESEARCH



Ground-Breaking Research on the Origin of Language
Infants produce language-like sounds as soon as they can breathe independently

A paper just published in Scientific Reports shows the abundant production of speech-like vocalizations in newborn infants, even before they can breathe independently. The article forms the basis for a very new conception about the origin of language. It shows that humans innately engage, as soon as they can breathe on their own, in active vocal exploration that starts down the path toward language. Necessary foundation in early infancy is flexible vocalization and subsequent developments required by language.

The result is remarkable, given it is widely believed in pediatrics, developmental psychology, anthropology and primatology that human infants develop speech-like vocalizations from cry," stated Dr. Kim Oller, lead PI, professor and Plough Chair of Excellence in the School of Communication Sciences and Disorders. "However, the study shows that even in preemies recorded at 32 weeks gestational age, the rate of speech-like vocalizations is hundreds per day, while crying was found to occur at less than one-tenth that rate. And, the study reports longitudinal data from full-term infants from the first month through the end of the first year, demonstrating that speech-like vocalizations outnumbered cries throughout that time by a factor of about five."

The work is a collaboration of the University of Memphis and the Women and Infants Hospital of Rhode Island (WHRI) of Brown University and is based on random sampling of human vocal coding of all-day recordings of infants in the hospital and at home. Other members of the UoM team include Dr. Dale Bowman, associate professor in Mathematical Sciences, and Dr. Eugene Buder, associate professor in the School of Communications Sciences and Disorders. Brown University team is led by Dr. Betty Vohr, professor of Pediatrics with the Alpert Medical School of Brown University and medical director of the Follow-up Clinic Program in the Department of Pediatrics.

For more information on this study, "Preterm and full-term infant vocalization and the origin of language," contact Oller at koller@whri.hri.org, or Dr. Betty Vohr bvohr@whri.hri.org. Read full release [here](#).

Elegant Solution

Inkjet printing used to create cutting-edge cyber-physical systems from \$499,841 NSF funded grant



Dr. Bashir Morshed and his team are paving the way for low-cost, high-density sensor integration for the design of the future. With the increasing integration of smart and IoT-enabled devices impacting our daily lives at every turn, the importance of creating scalable production techniques is essential to a future defined by accessible technologies with increased capabilities. Morshed is using inkjet printing to apply sensors to customized, flexible, biocompatible thin films that can be incorporated into wearables and other connected devices. Coupled with real-time algorithms deployed at the edge of computing smart devices, Morshed will explore automated and semi-automated feedback for the systems. The cost-efficient integration of sensors is a valuable resource for additive manufacturing, flexible electronics and sensors, smart cities and communities, mobile health and numerous other areas of application.

For more information, contact Morshed at bmorshed@memphis.edu.

U.S. Department of the Treasury Awards IPA Grant to the University

Finance professor will lead project

The Office of Financial Research (OFR) in the U.S. Department of the Treasury awarded an Interdepartmental Personnel Act (IPA) grant to the University of Memphis for \$168,382. Dr. P.K. Jain, professor and director of the Center for College of Business-Economics (FCBE), will serve as the principal investigator for this grant project and as an OFR fellow.

Jain will work with several financial regulatory agencies in Washington, D.C., New York, New Jersey, Chicago and other leading global financial hubs, and with microstructure academic experts throughout the nation to improve an understanding of national financial markets' interconnectedness and stability.

The project, which will last approximately two years, will bring national visibility to the University of Memphis. It will benefit faculty and students in building leadership in the emerging area of FinTech (which deals with frontier technologies in financial markets). Additional areas such as the Financial Infrastructure Stability and Cybersecurity (FISC) Center will benefit and serve this supporting cross-disciplinary faculty.

Other government agencies such as the U.S. Securities and Exchange Commission also recognized the core strengths of FCBE in financial big data analytics by awarding IPA grants to two UoM faculty members recently.

Zanskas, Lustig Awarded U.S. Department of Education Grant

Receives second five-year, \$1 million grant

Dr. Stephen Zanskas, associate professor and Dean's Faculty Fellow in the College of Education (COE), and Dr. Daniel Lustig, professor in COE, have been awarded a five-year continuation of a grant from the U.S. Department of Education for the project Rehabilitation Counselor Training Program. The \$1 million award, which will largely support tuition and fees, stipends, travel allowances, certification exams and instructional materials for students pursuing a master's degree, marks the second five-year grant received for this project.

According to Zanskas, funding from this award supports students enrolled in the graduate program in Rehabilitation Counseling at the University of Memphis. The goal of the program is to improve the employment outcomes of individuals with disabilities by increasing the supply of persons at the graduate level in rehabilitation counseling. The work relates directly to the mission of the state-federal rehabilitation service program to enlist qualified personnel to provide services to persons with disabilities.

The need for qualified rehabilitation counselors is significant both on a national level and in the State of Tennessee. The University's Rehabilitation Counseling Program, which is part of the Department of Counseling, Educational Psychology & Research in the COE, prepares professional rehabilitation counselors to provide rehabilitation services to facilitate the personal, educational and vocational development of individuals with a range of impairments.

Storm Water Contamination Investigation

COE's project helps protect watersheds waters U.S. Geological Survey's mission

Storm runoff is a major source of water pollution in Tennessee. Often, industrial facilities are key contributors to pollution in this water source, and stopping this pollution is in the interest of everyone in our region. Dr. Maryam Salehi, assistant professor of Civil Engineering, is investigating how the urban stormwater ground-water system, and through that regulatory decision makers in recognizing the impacts of industrial activities on local creeks and streams. The continuing project is made possible by the Community of Research Scholars (CoRS) research cluster she recently received.

The research will also further the U.S. Geological Survey's national mission to increase knowledge of water quality and assist in evaluation of how climate and landscape changes influence the water resources. And, the research contributes to the University's national reputation for water quality research. For more information, contact Salehi at msalehi@memphis.edu.

For more on this project, read the recent article in the Daily Memphian [here](#). Photo credit Jim Weber, Daily Memphian.

The Community of Research Scholars (CoRS) Research Cluster Funds New Projects for 2020

The program cultivates interdisciplinary collaboration

The CoRS Program, and desire to cultivate the growth of research groups across campus and funded by the Department of Research & Innovation, recently awarded 15 projects in its second year of existence. Those projects include:

The funded communities feature faculty from eight schools and colleges: Fogelman College of Business and Economics; Kemmons Wilson School of Hospitality & Resort Management; Arts & Sciences; Communication and Fine Arts; School of Communication Sciences and Disorders; Herff College of Engineering; Loewenberg College of Nursing; and School of Public Health.

The researchers from the cluster recently held Lightning Talks to highlight the new research taking place. [Click here](#) for a complete listing of funded projects and project descriptions. For more information on this initiative, contact Teresa Franklin at tfranklin@memphis.edu.

Research Awards

October 2019

Dr. Stephen Zanskas, associate professor in Counseling, Educational Psychology and Research, was awarded \$1 million from the U.S. Department of Education for his project Rehabilitation Counselor Training Program.

Dr. Santosh Kumar, professor and Lillian & Mortie Moss Chair of Excellence in the Department of Computer Science and director of the MD2K Center of Excellence, was awarded \$499,841 from the National Science Foundation for continuation of his ongoing project "CIF21 DIBBS: E1, mPov, Provenance-based Data Analytics Cyberinfrastructure for High-frequency Mobile Sensor Data." He was also awarded \$84,395 from the National Institutes of Health in collaboration with the regents of the University of California, Los Angeles, for continuation of his ongoing project "COBAS: A Multimodal Network System for Remote Assessment of Oral Health Behaviors." He received a third award in the amount of \$43,446 from the National Institutes of Health in collaboration with the Regents of the University of Michigan, for continuation of his ongoing project "Novel use of Mobile Data to identify states of vulnerability and receptivity to JITALS."

Dr. Bashir Morshed, associate professor in the Department of Electrical and Computer Engineering, and faculty affiliate in the Institute for Intelligent Systems, was awarded \$499,841 from the National Science Foundation for his project "CPS: Small: Inkjet Printed Flexible Electronic CPS with Context-aware Events of Intelligent Detection."

Dr. James Adelman, assistant professor in the Department of Biological Sciences, was awarded \$140,000 from the National Science Foundation for his project "Collaborative Research: Immune mechanisms and epidemiological consequences of host-pathogen naturally occurring host-pathogen system."

Dr. Chrislenn Schiro-Gelst, professor in Counseling, Educational Psychology and Research, and director of the Institute for Disability, was awarded \$323,536 from the U.S. Department of Education for continuation of his ongoing project "Building Resources for Persons with Intellectual Disabilities Towards Gainful Employment: The Bridge Project for Inclusive Transition to Integrated Employment." She also was awarded \$120,750 from the U.S. Department of Education in collaboration with the Tennessee Department of Human Services, for continuation of her ongoing project "Pre-Employment Transition Services."

Melvyn Harding, director of Student Success Programs, was awarded \$253,032 from the U.S. Department of Education for continuation of his ongoing project "FY2016: University of Memphis Student Support Services Project/CLASSIC." He was awarded \$253,032 from the U.S. Department of Education for continuation of his ongoing project "FY2016: University of Memphis Student Support Services Project/STEM."

Dr. Christine Bertz, research assistant professor in the Center for Research in Educational Policy, was awarded \$249,574 from the U.S. Department of Education (U.S. DOE) for continuation of her ongoing project "LASER Focused: A Model for Teaching Inquiry-Based Science to English Learners."

Dr. Kathryn Howell, associate professor in the Department of Psychology, was awarded \$38,490 from the National Institutes of Health (NIH) in collaboration with the University of Notre Dame, for her project "Pregnant Moms' Program."

Dr. Satish Kedia, professor in the Division of Social and Behavioral Sciences, was awarded \$104,800 from Substance Abuse and Mental Health Services Administration (SAMHSA) in collaboration with Buffalo Valley Inc for continuation of his ongoing project "MAT-Opioid Buffalo Valley." He was awarded \$104,800 from SAMHSA in collaboration with Memphis Health, for continuation of his ongoing project "MAT-Opioid Mending Hearts Evaluation Project/SAMHSA." He also received \$80,000 from the U.S. Department of Health and Human Services in collaboration with Buffalo Valley Inc for continuation of his ongoing project "BVI-SAMHSA Evaluation for Homeless."

J. Daniel Strahl, associate director in the Center for Research in Educational Policy, was awarded \$89,950 from the U.S. Department of Education in collaboration with the Virginia Department of Education, for continuation of his project "Virginia 21st Century Learning."

Dr. Abby Parrill-Baker, dean of the College of Arts & Sciences and professor of Chemistry, was awarded \$48,779 from the U.S. Geological Survey (U.S.GS) for continuation of ongoing project "Cooperative Research Agreement between the University of Memphis and U.S.GS Lower Mississippi-Gulf Water Science Center."

Dr. Randolph Dupont, professor in the Department of Criminology and Criminal Justice, was awarded \$30,000 from the State of Tennessee in collaboration with City of Memphis Police Department for continuation of his ongoing project "City of Memphis Police CIS."

Dr. Maryam Salehi, assistant professor in the Department of Civil Engineering, was awarded \$24,945 from the U.S. Geological Survey (U.S.GS) in collaboration with the Tennessee Water Resources Research Center for her project "Investigate Industrial Facilities Storm Water Quality and SWPPP Performance."

Dr. James Murphy, professor in the Department of Psychology, was awarded \$24,941 from the University of Tennessee Health Sciences Center for his project "Pilot Study of Contingency Management and Behavioral Economics to Increase Buprenorphine-Naloxone Treatment Adherence Using a Sequential Multiple Assignment Randomized Trial (SMART) Design." He was awarded \$16,069 from the National Institutes of Health in collaboration with McMaster University for his project "Characterize State-Based Increases and Decreases in Alcohol Value."

Dr. Debra Bartolletti, research associate professor in the Division of Epidemiology, Biostatistics and Environmental Health, was awarded \$23,479 from the Seeding Success Shelby County Schools Pre-K Outcomes-Based Financing Project."

Dr. Kenneth Ward, professor and director in the Division of Social and Behavioral Sciences, was awarded \$22,927 from the National Institutes of Health (NIH) in collaboration with Florida International University, for continuation of his project "Eastern Mediterranean Water Pipe."

Dr. Carolyn Kaldon, research associate professor in the Center for Research in Educational Policy, was awarded \$15,938 from Battelle for continuation of her ongoing project "TSIN Rural STEM Collaborative General Evaluation."

Dr. Kristoffer Berlin, associate professor in the Department of Psychology, was awarded \$11,078 from the National Institutes of Health in collaboration with Kent State University, for his project "The Food Allergy Superheroes Train Program: Increasing Adherence to Food Allergy Safety Guidelines."

Dr. William Shaltis, assistant professor in the School of Music, was awarded \$2,300 from the Tennessee Arts Commission for his project "Jerry Tachoir Group- Masterclass and Performance."

* Data is reported on the 18th of each month. Any awards finalized after the 18th of each month will be reported in the following month's report.

RESEARCH CLUSTERS

ADDITIVE MANUFACTURING

AGRICULTURE & FOOD TECHNOLOGIES

BIOLOGISTICS

CAST

DATA SCIENCE

DRONES

SMART CITIES

QUICK GUIDE

TO RESEARCH AND SPONSORED PROGRAMS

Reviewing, Submitting and Accepting Funded Research

Resource for faculty and staff

Research Development and Sponsored Programs is the central research support teams responsible for the review and submission of proposals (grants, contracts, cooperative agreements, non-monetary) to external sponsors and for the review and acceptance of any sponsored project funds. The team includes Pre-Award Services, Post-Award Services, Electronic Research Administration and Research Development. They are located in 315 Administration Building.

Quick Guide available [here](#).

NAVIGATING GRANT FORWARD

NOV. 7 | 12:45-5:30 PM | AD ROOM 191

A critical tool provided to all faculty on campus. Come learn first-hand to search through the grant list of the

FINDING FUNDING: NSF

NOV. 22 | 12:30-1:30 PM | FIT ROOM 225

Your NSF funding questions answered. We will provide a high-level overview of NSF functions and opportunities followed by a Q&A.

LABS AND RESOURCES LIGHTNING TALKS

DEC. 5 | 3-4 PM | FIT FISHBOWL (203/205)

Join us during study day for an overview of labs and resources. Come learn about the amazing resources open to collaboration on the UoM campus.

FINDING FUNDING: ARTS & HUMANITIES

JAN. 24 | 12:30-1:30 PM | FIT ROOM 225

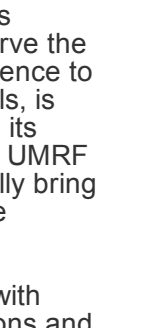
Your NIH funding questions answered. We will provide a high-level overview of NIH functions and opportunities followed by a Q&A.

FINDING FUNDING: ARTS & HUMANITIES

FEB. 7 | 12:30-1:30 PM | UC POPULAR ROOM 100B

Learn how to navigate the NEH and other funding agencies critical to funding research in the arts and humanities

INNOVATION



UMRF Research Park Brings Cybersecurity Company, Jobs to University District
DEVCON DEVCON Will HQ in research park with \$2.4 million investment

DEVCON, a cyber security solutions company that builds tools to preserve the media industry and gathers intelligence to track down and stop cyber criminals, is moving to Memphis and setting up its office in the University of Memphis UMRF Research Park. DEVCON will initially bring 12-20 employees with plans to hire another 100.

Cybersecurity is often associated with large companies, financial institutions and big box retailers. However, in a day and age when most information is stored online, everyone is susceptible to a cyber-attack. According to Cyber Defense, it is estimated that 91% of firms of attacks are aimed at small businesses.

Maggie Louie, founder and CEO of DEVCON, spent much time in 2019 as a digital leader in the publishing industry developing products for The E.W. Scripps Company, the Los Angeles Times, American Public Media Group and Morris Communications, where she also served as the vice president of audience and corporate entrepreneur.

"Over the last few years, there's been some great discussion and focus around the need to create more opportunities for women entrepreneurs, which is a great start," Louie said. "One of the reasons DEVCON has decided to move our headquarters to Memphis is the alignment with our company's commitment to turn those conversations into actions. Memphis has more female-owned businesses, percentage-wise than any other major city."

"For me, as a female entrepreneur and CEO, this is the clearest path to which to grow even more opportunities for women. The State of Tennessee's economic development is already working to create more opportunities for the ability to create educational programs for its free state-funded college which will allow us to customize vocational classes that will provide students with the expertise and certifications needed to fill the many specialized jobs we are creating."

For more information on this development, read the full release [here](#).

New UoM Faculty Member Brings Disease Tolerance Research to Memphis

\$423,406 grant focuses on animal immune systems

Dr. Jim Adelman joined the Department of Biological Sciences in fall of 2019 and brought with him research that explores how animal immune systems tolerate infections. Although everyone gets sick, our immune systems can have very different responses. Biological systems naturally fight off disease in one of two ways: killing invading pathogens (resistance) or minimizing per-pathogen reductions in fitness (tolerance). Because resistance often causes unintended harm, substantial research has focused on this area.

In contrast, Adelman is pioneering research into the causes and consequences of tolerance. By comparing distinct populations of a common, North American longbird to Memphis is the alignment how tolerance arises at a continent-wide scale. This work, which started at State University and Virginia Tech, will continue at the University of Memphis.

For more information on this project, contact Dr. Adelman at jadelman@memphis.edu.

CAESER Research Center Expands

Wildier Tower Grand Opening

The Center for Applied Earth Science and Engineering Research (CAESER) hosted a grand opening for their expansion onto the tenth floor of Wildier Tower. CAESER is a multidisciplinary research center housed on the Herff College of Engineering that focuses on three areas: water research, GIS mapping and education and outreach. Previously, the 60+ staff and students of CAESER were spread across four buildings on campus, making communication and collaboration difficult. The expansion onto the tenth floor will allow all of the water research staff and students to share one space, while GIS, education and administrative staff will remain on the ninth floor. CAESER looks forward to advancing their aquifer research and sharing findings with the community.

For more information, contact Dr. Adelman at jadelman@memphis.edu.

Microgrid Innovations for Civilian, Defense, and Humanitarian Applications

Nov. 11 | 8:30-10:30 AM
FedEx Institute of Technology
Herff College of Engineering

Microgrid Innovations for Civilian, Defense, and Humanitarian Applications

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