Scientists and scholars at the University of Maryland have the power to crunch vast amounts of data at blazing speeds, thanks to this campus’s broad and growing suite of high-performance computing (HPC) opportunities. In addition to a pair of powerful on-campus supercomputing clusters—arrays of central processing units (CPUs) linked to create a single ultra-capable machine—the university in late July announced an HPC partnership with the U.S. Army Research Lab (ARL).”

“Collaborative partnerships are key to maximizing our technological potential and ensuring our nation’s strength and competitiveness in the critical fields of science and research,” Sinha says. “UMD and MAX are very excited to work with ARL on this endeavor.”

Unmatched speed is the primary benefit to researchers of high-performance computing, says Kevin Hildebrand, HPC architect for the Division of Information Technology. “They can go to a computing job and it takes 24 hours or more, but they’re OK with it because it’s how they’ve always done it,” Hildebrand says. “Then somebody tells them, ‘Hey, we can do that in 10 minutes.’ Imagine how that completely changes how they work.”

UMD researchers currently have access to four high-performance computing clusters:

- **Deepthought2**: The university’s flagship cluster, used for the largest and most complex jobs, harnesses the power of thousands of CPUs and has been ranked among the 20 most powerful academic supercomputers. Finished in 2014, it can complete up to 300 trillion operations per second—the equivalent of 10,000 laptops working as one.

- **Bluecrab**: Jointly managed by UMD and Johns Hopkins University, the Bluecrab cluster is suitable for large, complex jobs. UMD is allocated 15 percent of the cluster, located at the Maryland Advanced Research Computing Center in Baltimore.

- **HPC**: ARL’s supercomputer, which went live in 2009, is now being scrubbed of classified data as the U.S. Department of Defense prepares to open it to outside researchers through the collaboration with UMD and MAX, officials say.

Surely which HPC resource is right for your research? Division of IT staff are ready to advise, Hildebrand says. To learn more, visit umd.edu/hpc.

**New Tier 1 Grants Open Doors to Research**

The Division of Research has announced a new round of $50,000 to help UMD faculty and research scientists generate proof of concept to pursue sponsored research, or to support scholarship leading to a major publication:

- **Dina Borzekowski**, a research professor of behavioral and community health, will examine an educational TV program’s influence in a study entitled, “Examining Akili and Mi’s Impact on the Education and Health of Rwandan Children.”

- **Craig Fryer**, an assistant professor of behavioral and community health, will examine why young people smoke with the study, “Smoke What?: Examining the Smoking Identity of Black Youth and Young Adults.”

- **Lea Johnson**, an assistant professor of plant science and landscape architecture, will examine small patches of urban habitat in the study, “Network and Synthesis for Urban Forest Sustainability.”

- **Amy Karlsson**, an assistant professor of chemical and biomolecular engineering, will study a protein common in many cancers in the project, “Isolation and Affinity Maturation of Antibody Fragments that Bind Survivin.”

- **Carlos Machado**, an associate professor of biology, will conduct a study entitled, “Uncovering the Genetic Basis of Parthenocarpy: How Can Plants Produce Fruits Without Pollination?”

- **Mayron Tsong**, an associate professor of piano and director of undergraduate studies in the School of Music, will produce a recording of the solo piano music of composers Franz Joseph Haydn, Gyorgy Ligeti and Larry Mass.

**New High-Performance Computing Resources Accelerate Research**

Researchers from the University of Maryland, College Park and the University of Maryland, Baltimore are joining forces to improve the lives of Marylanders. The Joint Research and Innovation Seed Grant Program is part of the MPowering the State initiative to encourage collaboration between the universities in cutting-edge health care areas.

**Health in State Bolstered by UMD-UMBC Seed Grants**

**Development of Computational Modeling to Identify Symptom Changes in Schizophrenia and Depression**

**Philip Resnik**, a professor of linguistics with a joint appointment in the Institute for Advanced Computer Studies (UMIACS), is working with **Deanna Kelly** of the University of Maryland School of Medicine to improve mental illness monitoring. This project combines Kelly’s expertise in the treatment and monitoring of severe mental illness with Resnik’s prowess in the use of linguistic analysis and computational modeling of mental status, including work in depression and PTSD.

**Geospatial Mapping and Access to Cancer Screening Services in Nigeria, a Low and Middle Income Country**

**Associate Professor of Geographical Sciences Kathleen Stewart and Clement Adebamowo of the University of Maryland School of Medicine will study spatial accessibility and utilization of cervical cancer prevention services in north-central Nigeria. Stewart, an expert in geographic information science, and Adebamowo, an epidemiologist, will investigate population characteristics, travel networks and spatial barriers to help broaden access.**
The University of Maryland Center for Health Equity (M-CHE) has entered an innovative partnership to provide critical services ranging from medical and dental care to wellness programs and job training for underserved Prince George’s County residents.

It will happen at the Catholic Charities-Susan D. Morsi Center in Temple Hills, a collaboration between the university, the Archdiocese of Washington and Doctors Community Hospital.

The center, opening in phases over the next 18 months, will improve health and wellness while providing abundant teaching and research opportunities, says Stephen Thomas, M-CHE director and professor of health services administration in the School of Public Health.

“We are integrating our land-grant obligation of serving the community, the teaching mission of the university and our research enterprise,” Thomas says.

Initial plans were for a dental and medical clinic, but ideas expanded: Existing restaurant facilities will be renovated as a teaching kitchen, a grassy area will become a “healing garden” for residents to grow healthy food, and an exercise studio will facilitate physical activity and weight management, he says.

The School of Architecture, Planning and Preservation and the College of Agriculture and Natural Resources are seeking ways to contribute, along with the University of Maryland Extension and the Clarice Smith Center for Preforming Arts, he says. County and state agencies are exploring plans to locate social services personnel there, and Cigna Foundation is supporting the center, he says.

“We’ve brought together some unusual partners,” he says. “We need more of these public-private partnerships to address the needs of our most vulnerable citizens in Maryland and Prince George’s County, particularly.”

Thomas, a leading U.S. expert on health equity, will speak as part of a UMD-organized panel Sept. 8 on Capitol Hill (event details below).

Jeffrey Herrmann, a professor of mechanical engineering with a joint appointment in the Institute for Systems Research, received the Institute of Industrial Engineers’ 2016 IIE/Joint Publishers Book of the Year Award for his textbook, “Engineering Decision Making and Risk Management.”

Distinguished University Professor Lawrence W. Sherman, from the Department of Criminology and Criminal Justice, has been appointed to a Swedish knighthood by King Carl XVI Gustaf for helping to establish and lead the internationally renowned Stockholm Prize in Criminology.

Distinguished University Professor Ellen Williams, from the Department of Physics, has been named a foreign member of the prestigious Royal Society, a fellowship of many of the world’s most eminent scientists and the oldest scientific academy in continuous existence.

We introduce you to new faculty and research scientists in the Maryland research community.

Anubhav Datta, an associate professor of aerospace engineering, researches computational aeroacoustics, scalable 3-D structures, high-speed liftdevices and electric aviation.

John P. Dickerson, an assistant professor of computer science, researches the application of optimization and artificial intelligence/machine learning to problems in medicine, marketing and counterterrorism.

Jan Edwards, a professor in the Department of Hearing and Speech Sciences, researches how preschool children learn the sounds and words of language, and how this relates to language skills, literacy and school success.

Ming Hu, an assistant professor of architecture, researches the intersections of building systems and green technologies with an emphasis on integrated design, multiperformance systems and building longevity.

Flexible University Professor Stephen Thomas, Distinguished University Professor Jeffrey Herrmann, Distinguished University Professor Lawrence W. Sherman, and Distinguished University Professor Ellen Williams have joined the Research Community at the University of Maryland.