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Research@MARYLAND

CONNECTING *the* UNIVERSITY *of* MARYLAND RESEARCH COMMUNITY

New Language Science Center Launched

The University of Maryland has opened a research center that will create the largest group of language scientists in North America, bringing together more than 200 researchers from 16 departments and six colleges to examine a wide range of pressing questions relating to language. It will have an impact in health care, national security, education and other crucial areas.

The Maryland Language Science Center will include linguists, neuroscientists, education researchers, psychologists and other specialists who will seek to improve early identification of language disorders in babies; shed light on why poor children tend to lag in language skills; understand why adults learn languages less efficiently compared with children; hone computer recognition of language; and more. Many efforts will involve collaborations between researchers from different disciplines.

Colin Phillips

"Our goal is to put together all of the different pieces of language science in a way that no one else has ever done before," says center Director **Colin Phillips** (linguistics). "We're ambitious."

Involved in this major new center are researchers from existing, robust language-related initiatives, including the Center for the Advanced Study of Language (CASL), the Integrative Graduate Education and Research Traineeship Program, the National Foreign Language Center, the Computational Linguistics and Processing Lab, the Laboratory for Computational Cultural Dynamics and others. "With this new center, the whole is greater than the sum of its parts," says **Ken Gertz**, associate vice president of research. "This will have tremendous impact in many critically important areas."

In September, the center held an event to highlight the range of its research. Anna Lukyanchenko, center, a doctoral student in second language acquisition, describes her work to Natalia Lapinskaya, left, a Baggett Fellow in the Department of Linguistics.

Phillips is also talking with researchers at the School of Languages, Literatures, and Cultures (SLLC) and the Graduate Studies in Interpreting and Translation program, which the Department of Communication started this fall.

The center will examine how children acquire language so quickly compared to adults.

The center has funding to hire researchers from around the country, and Phillips says he is already in serious discussions with top language scientists about moving to Maryland.

One key partner will be CASL. Its director, **Amy Weinberg**, notes that the cooperation has already begun. For example, CASL, which mainly conducts research relevant to national security and the federal government, has been working on methods to train adults to quickly learn new languages—crucial for national security personnel who are working with Arabic, Persian, Chinese and other complex, geopolitically important tongues. But now, with the help of the new center, this research will broaden to include how to improve language learning among students from kindergarten through high school.

The center will also expand an existing CASL effort to lower the cost of language learning by creating sophisticated computer programs that can provide students with realistic conversational partners. This multimillion-dollar initiative is a collaboration between CASL, IBM and the Department of Defense. Weinberg says other parts of the university, including the linguistics department, SLLC and University of Maryland Institute for Advanced Computer Studies, may also join in.

Such collaborations will lead to concrete results, Weinberg says—and raise Maryland's profile. "Right now we are the leader in language sciences," she says. "In five years, everyone will know that we are No. 1."

Unravelling the Effects of Tobacco Products

Pamela Clark

The National Institutes of Health (NIH) in September awarded Maryland a five-year, $19 million grant to study the ingredients and health effects of a range of tobacco products, including cigarettes, chewing tobacco and e-cigarettes. It is the largest NIH grant ever awarded to the university, and will allow for the creation of the University of Maryland Tobacco Center of Regulatory Science. The effort will be led by Maryland researcher **Pamela Clark** (public health) and will include scientists from Maryland, the University of Maryland, Baltimore, George Mason University and Battelle, a nonprofit research organization.

Clark and her fellow researchers, who include chemists, toxicologists, neuroscientists and microbiologists, will seek to understand crucial questions about tobacco products. They will investigate key aspects of these products, such as their chemical properties and the attributes that contribute to their addictiveness.

The grant is the product of months of hard work by Clark, who received significant support from Vice President for Research **Pat O'Shea**, Senior Vice President and Provost **Mary Ann Rankin** and **Jane E. Clark**, dean of the School of Public Health.

"This is a perfect example of what the university can do when people work together to reach an important goal," O'Shea says.

Entrepreneurial Success: An Impressive First Year for UM Ventures

A year after the launch of UM Ventures, the program is seeing success. An effort to help Maryland entrepreneurs bring critically important ideas and products to market, and encourage collaboration between researchers and industry, UM Ventures was started by the University of Maryland, College Park and the University of Maryland, Baltimore.

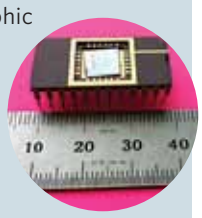
In September, the Mpowering the State initiative signed a five-year, $6 million deal with Medimmune, Maryland's largest biotech company, to work together on translational research. The company, headquartered in Gaithersburg, will work with researchers from the College Park, Baltimore and Baltimore County campuses to identify entrepreneurial opportunities. And in July, UM Ventures received $1.8 million from the state to add staff in a range of areas.

James Hughes

"We've made very strong progress in our first year," says **James Hughes**, director of UM Ventures.

So far, UM Ventures has helped create 11 startups, including:

- **Myotherapeutics**, which is looking for new treatments for diseases that affect muscle, such as muscular dystrophy and amyotrophic lateral sclerosis (ALS);
- **N5 Sensors**, which is developing sensors that can detect very small quantities of harmful chemicals; and
- **Otomagnetics**, which is working to treat inner ear disease by magnetically injecting therapeutic nanoparticles that specifically target the problem area.



The N5 sensor

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IN THIS ISSUE:

Dousing Fire—The High-Tech Solution

Humans have used water to put out fires for thousands of years. **Andre Marshall** wants to perfect the process. In doing so, he hopes to save lives, money and water.

Andre Marshall

Marshall, the co-director of the Fire Testing and Evaluation Center in the Department of Fire Protection Engineering, focuses on the speed, size and spray patterns of sprinkler systems. By learning more about the details of the water's shape and movement, he thinks he can better understand how it interacts with fires. "You've got these millions of droplets," he says. "We want to understand the shape of that spray."

His work is supported largely by two grants from the National Science Foundation, as well as by industry. In 2007, he was given a $400,000 Presidential Early Career Award, and last year he and his collaborators received almost $2 million in funding.

Marshall's research indicates that some sprinkler systems don't work as effectively as they could. He and his team of graduate students have developed a sophisticated computer system to analyze the characteristics of this spray in order to see exactly how it interacts with fire. The system, which uses lasers to examine spray shape and output, compiles a huge trove of information—typically around 100 gigabytes of data—on each particular spray pattern.

"We can finally measure what the spray looks like when it comes out of the nozzle," says Marshall. He is now working with several Fortune 100 companies to bring products related to his research to the market.

The Division of Research publishes RESEARCH@MARYLAND several times per semester. Its goal is to better inform and connect the research community at the University of Maryland. Your comments and suggestions are welcome. Please email them to Anne Geronimo, Division of Research, at geronimo@umd.edu.

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FACULTY AWARDS & HONORS

Xuhua He, a newly arrived assistant professor of math, was awarded the Morningside Gold Medal of Mathematics at the Sixth International Congress of Chinese Mathematicians in Taipei. His research focuses on algebraic groups, representation theory and their connections to algebraic combinatorics, arithmetic and algebraic geometry.

Sandra Gordon Salant, professor and director of the Doctoral Program in Clinical Audiology, received the American Speech-Language-Hearing Association Kawana Award for lifetime achievement in publications.

Eugenia Kalnay, distinguished university professor in the Department of Atmospheric and Oceanic Science, has been appointed to the United Nations' Secretary-General's new Scientific Advisory Board. It will provide advice on science, technology and innovation for sustainable development to the secretary-general and executive heads of UN organizations.

NEW FACULTY

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

Faika Zanjani is an associate professor in the Department of Behavioral and Community Health who studies adult development and health promotion, and the prevention of substance abuse in later life. She has focused on reducing interactions between prescription drugs and alcohol among older rural adults.

Jennifer Barclay is an assistant professor in the School of Theatre, Dance, and Performance Studies and a playwright whose work has been produced and developed by theaters including Steppenwolf and the Kennedy Center. She will teach playwriting.

Quentin Gaudry is an assistant professor of biology whose research focuses on how nervous systems generate complex behaviors and give rise to sensory perceptions. Last year, he completed postdoctoral research at Harvard Medical School.

Marshini Chetty is an assistant professor in the College of Information Studies who researches human-computer interaction, and how to make information more accessible to users. She recently completed a research fellowship in South Africa, examining broadband service in Africa.

UPCOMING EVENTS & CONFERENCES

Division of Research Seminar Series

Tom Kalil, Deputy Director for Technology and Innovation, Office of Science and Technology Policy

Nov. 11, 11 a.m.–noon
Benjamin Banneker, Room (2212), Adele H. Stamp Student Union

Rear Adm. Matthew. L. Klunder, Chief of Naval Research, Office of Naval Research

Nov. 13, 11 a.m.–noon
Pepco Room, (1105) Jeong H. Kim Engineering Building