News Stories

Research by Hubert Lim and Colleagues Shows that Ultrasound Activates the Brain through the Auditory Pathway

In research published in the Journal Neuron, IEM Member Dr. Hubert H. Lim (Associate Professor of Biomedical Engineering and Institute for Translational Neuroscience Scholar) together with researchers in his lab led by graduate student Hongsun Guo and with his colleagues at Caltech, have shown that ultrasound, which can’t be heard by animals and humans, can activate the brain in rodents through an auditory or cochlear pathway, instead of only through the specific neurons that are targeted, which had been the common belief among scientists. “What we’re trying to show in this paper,” says Dr. Lim, “is that there are many confounding effects that are actually happening with ultrasound, and we have to remove those effects to really see how it’s activating the brain.” Dr. Lim says that he will continue to use an IEM Early Faculty Career Award to advance this research, particularly for the development of a new type of ultrasound hearing device for hearing-impaired individuals and for different consumer audio products. The original research was funded by MnDRIVE Brain Conditions.

Ultrasound Fires-Up the Auditory Cortex Even Though Animals Can't Hear It >

David Jacobs Co-Authors Study Linking High Levels of a Protein to Low Levels of Lung Function

Dr. David R. Jacobs, Professor of Public Health, Division of Epidemiology and Community Health, and IEM Member, is the co-author of a study showing that people with high levels of the protein ICAM-1 have relatively low levels of lung function. "We found a fairly substantial decline in lung function in people with the highest levels of ICAM, compared with people with lower levels, regardless of their weight," says Dr. Jacobs. "It suggests that lung function and endothelial health are related in some way. I think of endothelial dysfunction, oxidative stress and inflammation as evil triplets, feeding on each other." The data analyzed were from participants in a long-term study by the U.S. National Heart, Lung and Blood Institute called CARDIA (Coronary Artery Risk Development in Young Adults), which began in the mid-1980s with healthy 18 to 30 year-olds. The study’s results were presented at the American Thoracic Society’s International Conference in Toronto, on May 21st.

CARDIA Studies Open Window on Heart and Lung Diseases >
Jian-Ping Wang led Research Team that Discovers the Magnetic Properties of the Element Ruthenium (Ru)

IEM Member Dr. Jian-Ping Wang, Distinguished McKnight Professor and Robert F Hartman Chair of Electrical and Computer Engineering, led a research team that discovered the magnetic properties, at room temperature, of the chemical element Ruthenium (Ru), the 4th element to have been found to have these properties, in addition to iron (Fe), cobalt (Co), and nickel (Ni). “Magnetism is always amazing. It proves itself again. We are excited and grateful to be the first group to experimentally demonstrate and add the fourth ferromagnetic element at room temperature to the periodic table,” says Dr. Wang, who is the corresponding author of the paper and advisor to the study’s lead author, Patrick Quarterman, who graduated recently and joined the National Institute of Standards and Technology (NIST) as a National Research Council (NRC) postdoctoral fellow. The research was published in Nature Communications.

Scientists Discover New Magnetic Element >

Timothy Church & Emil Lou Discuss New Colon Cancer Screening Guidelines with WCCO & Fox 9

IEM Members Dr. Timothy R. Church, Professor in the Division of Environmental Health Sciences, and Dr. Emil Lou, Assistant Professor in the Department of Medicine, discussed with WCCO and Fox 9, respectively, new colorectal cancer screening guidelines from the American Cancer Society, which has lowered the recommended age for initial screenings from 50 to 45. The change was due in part to researchers at the University of Minnesota, including Dr. Church, who evaluated data that show incidence of the disease increasing in younger adults, but decreasing in older adults. “I think it’s at least partly because we’re doing screening for colorectal cancer, colonoscopies, sigmoidoscopies, blood test, all the different ways,” says Dr. Church. “We can save lives and we can prevent sickness and suffering if people get screened for colorectal cancer.” Dr. Lou, who believes that the recommended age for screenings will continue to fall, says that “traditionally physicians on the front lines have not necessarily thought of colon or rectal cancer as the first thing that pops in their mind, so maybe those patients aren’t getting colonoscopy soon enough.”

WCCO: Experts Say Colon Cancer Screening Should Start at 45 >

Patient Experts Push for Earlier Colon Cancer Screenings >

Juergen Konczak Awarded NIH R01 Grant to Develop a Treatment for a Dystonic Voice Disorder

IEM Member Juergen Konczak, Professor in the School of Kinesiology and Director of the Human Sensorimotor Control Laboratory (HSCL), has been awarded a $776,000 NIH R01 grant to develop a new treatment for spasmodic dysphonia (SD), a voice disorder, for which there are few treatment options and no cure. Dr. Konczak’s laboratory has demonstrated that vibro-tactile stimulation of the larynx, a non-invasive and novel form of neuromodulation, can be effective in reducing the voice symptoms in SD patients. Funding from the R01 grant will be used to understand the long-term benefits to patients of this treatment. Other members of Dr. Konczak’s research team include Drs. Peter J. Watson and Yang Zhang of the University of Minnesota’s Department of Speech, Language and Hearing Sciences; Dr. George Goding, Jr. of the Department of Otolaryngology; and Dr. Naveen Elangovan and Arash Mahnan from the HSCL.

Juergen Konczak Receives NIH Award to Develop New Treatment for a Voice Disorder >
Kathryn Cullen Discusses with MPR How the Stigma and Preconceptions of Depression Influence Treatment

IEM Member Dr. Kathryn R. Cullen, Associate Professor and Division Chief, Child & Adolescent Psychiatry, discussed with MPR News how the stigma and preconceptions of depression present barriers to patients seeking treatment for it. Dr. Cullen says that people in our society still “feel that they can’t share these kind of experiences,” because they “sense that they'll be judged to have some sort of weakness or some sort of flaw.” In addition, Dr. Cullen says that people suffering from depression are reluctant to get treatment due to inaccurate preconceptions about what the treatment is like. However, Dr. Cullen says that younger generations are developing less negative perceptions on mental health and depression through education and outreach, and thus are much more informed about it, what symptoms to look for, and how to support friends and loved ones that may be struggling with depression. “That’s a very, very good step forward,” says Dr. Cullen.

Reducing Stigma Around Depression >

Technologies Developed at Medical Devices Center Move Forward on the Path to Clinical Translation

Technologies developed at the IEM-affiliated Earl E. Bakken Medical Devices Center (MDC), have taken significant steps forward on their paths to clinical translation. A U.S. patent has been issued for Vascular Elastance, a device to treat Pulmonary Hypertension (PH), a condition that can lead to heart failure and death. The device was invented by Drs. John Scandurra, Karl Vollmers, Christopher Scorzelli and Eric Little, of the MDC Innovation Fellows Class of 2010. A jaw fracture recovery device, Minne Ties, which was initially created by MDC Innovation Fellows, received a Silver Medal in the Surgery and ER devices category of the Medical Design Excellence Awards (MDEA). Inventor and MDC Innovation Fellow of the Class of 2013, Dr. Alan W. Johnson, now a head and neck surgeon in Grand Forks, North Dakota, says “the product continues to gain momentum, slowly but surely.”

U.S. Patent 9,987,153, Vascular Elastance >

MDE Awards 2018 Winners >

Announcements

Limited Spots Open, so Register Now for Cardiac Short Course (PHSL 5510), January 7-11, 2019

The Cardiac Course for 2019 (PHSL 5510), also known as Advanced Cardiac Physiology and Anatomy, is a week-long intensive course to be offered January 7-11, 2019. It enrolls students from the University of Minnesota and from biomedical engineering companies in the metro and surrounding areas. Students are already registering through updated portals for both Non-degree and Degree seeking students. Interested students can be directed to:

PHSL 5510 >