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Recent Publications 1

Brain Connections Strengthen During Waking Hours, Weaken During Sleep

Reporting in the Jan. 20, 2008, online version of Nature Neuroscience, the UW scientists showed by several measures that synapses—nerve cell connections central to brain plasticity—were very strong when rodents had been awake and weak when they had been asleep. The new findings reinforce the UW researchers’ highly-debated hypothesis about the role of sleep. They believe that people sleep so that their synapses can downsize and prepare for a new day and the next round of learning and synaptic strengthening.

Most people know it from experience: After so many hours of being awake, your brain feels unable to absorb any more—and several hours of sleep will refresh it.

New research from the University of Wisconsin School of Medicine and Public Health (SMPH) clarifies this phenomenon, supporting the idea that sleep plays a critical role in the brain’s ability to change in response to its environment. This ability, called plasticity, is at the heart of learning.

Research Sheds Light on a Key Component of the Visual System

Researchers at the SMPH and the College of Agriculture and Life Sciences (CALS) have zeroed in on a component of an important player in phototransduction—the primary molecular event underlying vision.

Understanding how this component works may lead in the future to the development of therapeutic strategies to treat a recently-categorized eye disease called bradypia, or slow vision, as well as other retinal disorders.

The work is an offshoot of years of research on G-proteins—switches at the heart of cell signaling systems—conducted in the lab of Arnold Ruoho, PhD, chair of the SMPH Department of Pharmacology.

Genetic Pathway Critical to Disease, Aging Found

The same chemical reaction that causes iron to rust plays a similarly corrosive role in our bodies. Oxidative stress chips away at healthy cells and is a process, scientists know, that contributes to a host of diseases and conditions in humans ranging from Alzheimer’s, heart disease and stroke to cancer and the inexorable process of aging.

Writing in the Feb. 21, 2008, issue of Nature, a team of SMPH scientists led by Richard A. Anderson, PhD, reports the discovery of a gene expression pathway that exerts a sweeping influence over the process of oxidative stress.

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Wicab Launches Clinical Trial to Test Device on Stroke and Brain Injury Patients

New Development 2

Center of Excellence Expands Research Opportunities in Geriatric Medicine

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**Wicab Tests Device on Stroke, Brain Injury Patients**

Partnering with researchers at the SMPH and other medical centers, Wicab, Inc. has launched a clinical trial that will assess the safety and efficacy of sensory-motor training with its BrainPort® balance device.

The scientists hope that the device, which uses nerve fibers on the tongue to transmit information about head and body position to the brain, can make a serious difference for patients who have suffered a stroke or a brain injury—both in speed of rehabilitation and quality of life.

Wicab is an SMPH start-up that was founded by the late Paul Bach-y-Rita, MD, professor of rehabilitation medicine.

For more information on Wicab:
http://www.wicab.com/

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**Center of Excellence Expands Research Opportunities in Geriatric Medicine**

The John A. Hartford Foundation, one of the nation’s leading funders in aging and health, has designated the SMPH a “Center of Excellence in Geriatric Medicine and Training.” The school will receive a three-year, $450,000 grant and join 26 other leading schools including Harvard, UCLA, Yale, Johns Hopkins and Duke that have received this prestigious award. The school will match the grant to provide a total of $900,000 in support.

Sanjay Asthana, MD, associate professor of medicine, head of the school’s geriatric and gerontology section and director of the new center of excellence, says the money will be used to provide research opportunities for junior physician faculty members and senior fellows with the goal of recruiting medical students and younger physicians-in-training to the field.

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**METRICS**

**UW School of Medicine and Public Health Research Funding ($ millions)**

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In addition to support from the NIH and other federal and state agencies for projects like those described in this newsletter, private philanthropy plays a pivotal role in funding research at the SMPH. If you are interested in how you could partner with us in advancing research at the SMPH, please contact Jill Watson at the UW Foundation at (608) 263-3173.