News for the VA research community

Vol. 1, No. 8/Aug. 2001

VA Research Currents

Update from the Office of Research and Development...

Career Development program offers opportunities for young investigators

By John R. Feussner, MD, MPH, *Chief R&D Officer*

Our research program has a proud history of producing high-impact findings, advancing medical science from basic research to the delivery of patient care. That is a tribute to the talent and intellect of many outstanding investigators. As we recognize those contributions, we must also be committed to maintaining the long-term success of our program. That is why, since I accepted my current position in 1996, the Office of Research and Development has placed a renewed emphasis on Career Development programs. We now dedicate nearly 10 percent of our funds to Career Development awards that provide salary support and the opportunity for young scientists to work closely with experienced mentors.

Our total number of Career Development awards has increased from 125 in 1996 to 182 in 2001. That figure includes increases from 97 to 105 in

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VA, Yale scientists transplant Schwann cells

A team of researchers from the VA Connecticut Health Care System and Yale University last month transplanted myelin-building Schwann cells into the brain of a woman with multiple sclerosis (MS) to see if the cells can help restore nerve function in the brain and spinal cord. The cells were isolated from a nerve in the patient's ankle.

Myelin is the white matter that protects and insulates nerves and allows the conduction of electrical impulses from one part of the body to another. Myelin in the brain and central nervous system is produced by cells called oligodendrocytes, which are destroyed by MS. Myelin in peripheral nerves, such as those found in the limbs, is produced by Schwann cells, which elude the attack of MS.

"The purpose of this experiment was to determine whether the procedure is safe and has enough promise to justify future research," said lead investigator Timothy Vollmer, MD, associate director for clinical studies at VA's Center of Excellence on Restoration of Function in Spinal Cord Injury and Multiple Sclerosis and professor of neurology at Yale School of Medicine. Other VA team members included Stephen G. Waxman, MD, PhD, and Jeffrey D. Kocsis, PhD. ■

Behind the headlines: VA role in artificial retina

In a phase-I Food and Drug Administration (FDA) trial that has received wide media attention, doctors in Illinois implanted silicon-chip artificial retinas on July 25 and 26 into the eyes of three people blinded by retinal disease. The artificial retina, about the size of a pinhead, was developed by Dr. Alan Chow, of Optobionics Corporation, in collaboration with rehabilitation investigators at the Hines VA Medical Center and others.

Similar chips were implanted in three patients last year. The chips are two millimeters in diameter and a thousandth of an inch thick—thinner than a sheet of paper. Each chip contains some 3,500 microscopic solar cells. Like the photoelectric cell in some consumer devices, these cells generate current in response to light. The idea is to stimulate remaining healthy retinal cells from underneath the retina in a pattern resembling the light images focused on the chip. The images then travel to the brain via the optic nerve.

The new chip is designed to treat retinitis pigmentosa and macular degeneration, both caused by a loss of the light-sensing photoreceptor cells of the retina.

Neal S. Peachey, PhD, formerly at Hines and now with the Cleveland VAMC and the Cleveland Clinic Foundation, tested the biocompatibility and functionality of the device in rats and cats. In an interview, he described

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Recent publications and presentations

Below is a sampling of recent publications by VA investigators. Due to space constraints, only VA authors and affiliations are noted. Send notification of upcoming publications and presentations to R&D Communications at researchinfo@vard.org or (fax) (410) 962-0084.

"A Cell-Based Model of Hemostasis." Maureane Hoffman, MD, PhD. **Durham.** *Thrombosis and Haemostasis,* June 2001.

"Depressive Symptoms, Menopausal Status, and Climacteric Symptoms in Women at Midlife." Hayden B. Bosworth, PhD; Lori A. Bastian, MD, MPH. **Durham.** *Psychosomatic Medicine,* July-Aug. 2001.

"Insulin Inhibits Peroxisomal Fatty Acid Oxidation in Isolated Rat Hepatocytes." Frederick G. Hamel, PhD; Robert G. Bennett, PhD; Jennifer L. Upward; William C. Duckworth, MD. **Omaha** (FGH, RGB, JLU) and **Phoenix** (WCD). *Endocrinology,* June 2001.

"Quantitative Trait Loci for Femoral and Lumbar Vertebral Bone Mineral Density in C57BL/6J and C3H/HeJ Inbred Strains of Mice." Jon E. Wergedal, PhD; David J. Baylink, MD. **Loma Linda.** *Journal of Bone and Mineral Research,* July 2001.

"Racial Differences in Outcomes of Veterans Undergoing Percutaneous Coronary Interventions." Charles Maynard, PhD; Steven M. Wright, PhD; James L. Ritchie, MD. **Seattle** (CM, JLR) and **Brockton** (SMW). *American Heart Journal,* Aug. 2001.

"Regional Variations in Health Status." David H. Au, MD, MS; Mary B. McDonell, MS; Donald Martin, PhD; Stephan D. Fihn, MD, MPH. **Seattle.** Medical Care, Aug. 2001.

"The Relationship Between Low-Density Lipoprotein Cholesterol Goal Attainment and Prevention of Coronary Heart Disease-Related Events." Matthew K. Ito, PharmD; Gina M. Delucca, PharmD; Martha A. Aldridge, PharmD. **San Diego.** *Journal of Cardiovascular Pharmacology and Therapeutics,* April 2001.

"Synchronous Gastric Adenocarcinomas in a Patient With Meckel's Diverticulum." Jonathan M. Rieber, MD; Elizabeth H. Weinshel, MD; Tan Nguyen, MD; Gurdip S. Sidhu, MD; Edmund J. Bini, MD. **New York.** *Journal of Clinical Gastroenterology,* July 2001.

"Thromboregulation by CD39/ecto-ADPase: Mechanisms of Action." Joan H.F. Drosopoulos, PhD; M. Johan Broekman, PhD; Aaron J. Marcus, MD. **New York.** 18th Congress of the International Society of Thrombosis and Haemostasis, July 2001.

"Women's Interest in Taking Chemoprevention for Breast Cancer." Lori A. Bastian, MD; Haoling Holly Weng, MHS. **Durham.** *Archives of Internal Medicine,* July 9, 2001. ■

VA Research Currents
is published monthly for the
Office of Research and Development
of the Dept. of Veterans Affairs
by VA R&D Communications
103 S. Gay St., Rm. 517
Baltimore, MD 21202
(410) 962-1800, ext. 223
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Medical Research and 28 to 59 in Health Services Research and Development. It also reflects the creation of new Career Development programs in Rehabilitation Research and Development, which now has 15 awardees; and the Cooperative Studies Program, which has three awardees specializing in clinical research.

Our Career Development program features three types of awards:

• The **Research Career Development Award** provides three years of salary support to fully trained clinicians entering a research career.

• The three-year **Advanced Research Career Development Award** supports clinician scientists who need additional guided experience to establish completely independent research careers.

• The **Career Development Enhancement Award** supports established clinician scientists who wish to enter a new area of specialization.

These awards allow young investigators to conduct studies or receive specific training to enhance their skills. This opportunity attracts highly gifted scientists who are essential to the ongoing vitality of our enterprise.

More details on Career Development awards and application procedures are available from the program offices in each research service: Medical Research, (202) 408-3613; Rehabilitation Research and Development, (202) 408-3670; Health Services Research and Development, (202) 408-3659; Cooperative Studies, (202) 273-8248. ■

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New HSR&D center to explore health disparities

Researchers from the Pittsburgh and Philadelphia VA medical centers are collaborating with colleagues at the University of Pittsburgh and the University of Pennsylvania to explore why patients from different backgrounds may experience variations in health status and treatment outcomes, and to test interventions to reduce these disparities.

The VA Center for the Study of Health Disparities is the newest of 12 Centers of Excellence supported by VA Health Services Research and Development, directed by John G. Demakis, MD. Among the goals of the center will be to analyze health disparities among traditionally vulnerable groups, such as minorities, the elderly, and those with multiple illnesses.

"The first step is detecting and monitoring the disparities among these vulnerable groups," said center director Michael Fine, MD, of the VA Pittsburgh Healthcare System. "We must then understand why the disparities exist, and develop interventions to reduce inappropriate variations in health care.

"If the disparity is attributable to [patients'] attitudes, knowledge or beliefs, maybe the best intervention is an educational program on the community level, rather than trying to affect medical providers or the health care system. In contrast, if it's because of providers' perceptions or the way health systems are organized, interventions would be differently designed to address these issues."

Center co-director David Asch, MD, of the Philadelphia VAMC said disparities in health care are not necessarily evidence of hidden prejudices. Disparities sometimes stem from legitimate cultural differences in attitudes and preferences among patients regarding health care.

"If we're to have a culturally competent health care system, we need to respect those differences and preferences," said Dr. Asch. "We need to be sensitive enough to determine which disparities represent a need for reform and which ones represent legitimate differences in cultural preferences."

In addition to $3 million in funding over five years from HSR&D, VA will provide more than $14 million in support through its medical centers in Pittsburgh and Philadelphia. The University of Pittsburgh and the University of Pennsylvania will contribute more than $3 million.

According to Dr. Fine, the new center is an opportunity for VA and its affiliates to be leaders in understanding and eliminating disparities in health and health care. "This has important implications with regard to the quality of health care," he said, "as well as the social mission of VA and its physicians and researchers." ■

Study confirms link between exercise and cognitive health

In a VA study published in the July 23 *Archives of Internal Medicine,* older women who walked the most were the least likely to show evidence of cognitive decline over the eight-year study period.

A team led by Kristin Yaffe, MD, chief of geriatric psychiatry at the San Francisco VA Medical Center, studied nearly 6,000 women aged 65 and older. The researchers measured participants' cognitive performance at baseline and asked them how many blocks they walked each week. They also asked the women how many calories they expended walking, climbing stairs and doing other physical activities. The women were grouped in quartiles, based on their activity levels.

Of women in the most active quartile, 17 percent experienced mental declines over a six- to eight-year follow-up. Among women in the least active quartile, 24 percent showed evidence of cognitive decline. "Exercise seems to be good for the brain/mind as well as for the body," said Dr. Yaffe. "This does not have to be strenuous activity. Even moderate activity is beneficial."

The study authors estimate that for every mile a woman walked per day, her risk of cognitive decline dropped 13 percent. The most active quartile of women walked an average of 17 miles per week.

The differences among the four groups remained consistent even after Dr. Yaffe's team adjusted for factors that might have affected the results, such as age, educational level, smoking, use of hormone replacement therapy and physical health.

VA researcher Kenneth Covinsky, MD, San Francisco, contributed to the study.

Newsmakers

Edwin Mejias, MD, assistant chief of staff for R&D at the San Juan VA Medical Center, was honored by the Puerto Rico Association of Rheumatologists recently for his work in research and clinical care.

Kristin L. Nichol, MD, MPH, MBA, of the Center for Chronic Disease Outcomes Research at the VA Medical Center in Minneapolis, testified July 26 at an FDA hearing on the safety and efficacy of a nasal mist vaccine for influenza. In research published in the *Journal of the American Medical Association* in 1999, Dr. Nichol found that the vaccine significantly reduced lost days of work, visits to the doctor, and medication use among healthy working adults.

H. Gilbert Welch, MD, MPH, will spend the coming academic year as a visiting scientist at the headquarters of the International Agency for Research on Cancer in Lyons, France. Dr. Welch is co-director of the VA Outcomes Group in White River Junction, Vt.

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the device as "elegant but simple." He said other research teams—including one at VA's new Center for Innovative Visual Rehabilitation at the Jamaica Plains (Mass.) VA Medical Center—are developing artificial retinas that work similarly but that "tap into the visual system" from a different point. These chips are placed in the top layer of the retina, amid the ganglion cells, rather than in the subretinal space.

"One of the key differences between these two approaches is that they are trying to artificially activate the retina from opposite sides," said Dr. Peachey. "In the subretinal approach, the device is making contact in an earlier stage of the visual process. Light is absorbed in that area and transmitted *through* the retina to the epiretinal side and out to the optic nerve."

There are other technical differences between the two retinal-prosthesis models. For instance, the VA project in Jamaica Plains, headed by Joseph F. Rizzo III, MD, in collaboration with the Massachusetts Eye and Ear Infirmary, Harvard Medical School and the Massachusetts Institute of Technology, uses a camera and a signal processor mounted in a pair of eyeglasses to capture and send an image to the implanted chip. The device tested by Dr. Peachey relies only on the photons of light that enter the eye and reach the photocells in the implant. The end result of both approaches, in terms of information sent to the brain, is the same: "It's like FM and AM—it's still a radio," said Dr. Peachey.

Dr. Chow is expected to report to the FDA by the end of the year on whether his device is actually connecting with the visual system, and thus improving vision, in the six patients with the implants.

Other VA investigators involved in development and testing of the Illinois chip include Machelle Pardue, PhD, formerly in Dr. Peachey's lab at Hines and now at the Atlanta VA Medical Center; and Ronald A. Schuchard, PhD, Atlanta, who has expertise in testing human patients with low vision. Also conducting animal studies at Hines were Jay Perlman, MD, PhD, and Evan Stubbs, PhD. ■

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