

SOM NEWS

A Publication for the
Faculty & Staff of the

University of Maryland
School of Medicine

The Medical and Technological Challenges of Long-Term Space Flight

President Bush has proposed establishing a base on the Moon to provide a platform for future research and space travel, including a mission to Mars. *SOMNews* discussed the proposal with Robert A. Barish, MD, associate dean for Clinical Affairs, and Bruce E. Jarrell, MD, senior associate dean for Academic Affairs. Dr. Barish, a Maryland Air National Guard flight surgeon, was selected for NASA's astronaut training program in 1992, but was grounded because of a minor heart arrhythmia. Dr. Jarrell is a member of NASA's University Space Research Association.

SOMNews: How does long-term space habitation affect the human body and mind?

Dr. Barish: Living in space for a long period of time can be like having a chronic debilitating disease. Because of the lack of gravitational force, there is loss of bone density and muscle mass. In fact, some Russian astronauts had to be carried out of their capsules because they couldn't walk. That's why you see exercise machines on the space shuttle.

Dr. Jarrell: There could be significant psychiatric problems associated with a long-term space travel. Astronauts may experience feelings of loneliness, knowing that they are on their own with no way out. These feelings can create problems and lead to disagreements among the crew or with mission control. In fact, there have been times when astronauts have cut off radio contact with Earth and refused to talk for a while. Leadership issues will also have to be addressed. Imagine a situation where an astronaut becomes seriously ill and begins to exhaust the crew's medical supplies. Should the captain or the crew physician make the final decision about how to best conserve those supplies?

SOMNews: Could astronauts survive a lengthy mission to Mars?

Dr. Barish: With present technology, it would take at least seven months to get to Mars. The obstacle is not time itself, but long-term

exposure to potentially deadly cosmic radiation. In order to protect the astronauts from the radiation, you would have to use very heavy shielding. But that would make the spacecraft impossibly heavy. NASA is trying to develop new technology and new propulsion systems to dramatically reduce the time it would take to get to Mars. The less time you have in space, the less exposure to radiation. But quite frankly, I don't believe we will have a solution for the radiation problem anytime soon.

Dr. Jarrell: Weightlessness can cause neurovestibular problems in the inner ear, leading to poor balance, dizziness and motion sickness. The environment inside the spacecraft is also a health issue. For example, the noise level of the spacecraft could affect hearing. Microorganisms will build up in the spacecraft, and that could lead to antibiotic resistance. In addition, there are going to be general medical problems that have to be dealt with. What if an astronaut breaks a finger, cuts a tendon, develops a tooth infection or appendicitis? We need to be prepared for these "what if" situations.

SOMNews: What other obstacles would have to be overcome?

Dr. Barish: A lot of technological issues have to be resolved. Could we get somebody there? Yes. Could we get them back right now? No. Blasting off from Mars is a lot harder than blasting off from the Moon. The Mars gravitational force is one-third that of Earth, but the Moon's gravitational force is only one-sixth that of Earth. We would need a lot more fuel to get off of Mars and get back to Earth. Even if it's a one-way ticket, I believe thousands of people would volunteer for the opportunity to go to Mars. But I don't believe the American public would accept that. Realistically, I don't think it will be possible to send a human being to Mars and assure a safe return before 2030.

University of Maryland School of Medicine Helps Bring Care to AIDS Stricken Children in Africa

When and how do you tell a child she has AIDS? Sadly, this gut-wrenching question pertains to millions of children around the world. Nowhere is the pediatric AIDS problem more acute than in Africa. Of the 40 million people believed to be living with HIV/AIDS worldwide, more than 28 million live in sub-Saharan Africa, including 3.5 million children under the age of 15. For that reason, the University of Maryland School of Medicine has made Africa a focus for AIDS research and outreach.

"In some towns, a child will die every week," says Vicki Tepper, PhD, assistant professor of pediatrics and director of the University of Maryland Pediatric AIDS Program. Dr. Tepper traveled to Johannesburg, South Africa, in February to help train physicians, nurses, and social workers who care for children with HIV. The trip was sponsored by the Pediatric Aids Clinical Trials Group of the National Institutes of Health. Dr. Tepper traveled with a group of AIDS treatment experts from around the US.

Dr. Tepper conducted workshops to help caregivers cope with the burnout and stress associated with caring for families fighting HIV. "We recognize that providing this kind of care takes a toll, especially in the developing world, where medical resources are lacking," says Dr. Tepper. "Anti-retro viral medications that are readily available in

the US are just now becoming available in South Africa."

Dr. Tepper counseled caregivers on how to help parents and families cope with the illness and inform infected children when the time is right. In the vast majority of cases, children contract the disease from their mother. The United Nations estimates that by 2010, 25 million children will be orphaned by AIDS. "The need is overwhelming," says Dr. Tepper, who visited an AIDS orphanage during her trip. "But it is personally satisfying to know that I have the ability to help."

Achieving the Dream



The University of Maryland Baltimore commemorated Dr. Martin Luther King, Jr. and Black History Month on February 3rd with a ceremony entitled *Achieving the Dream*, honoring the life and work of Dr. King. The keynote speaker, Lt. Governor Michael Steele (pictured), gave an uplifting speech before the annual Diversity Recognition Awards were bestowed upon Henry N. Williams, PhD, a 37-year faculty member of the Dental School, and the 11 graduate interns of the School of Social Work's Family Connections program.

Quick Studies

Edson X. Albuquerque, MD, PhD, professor and chair, Department of Pharmacology & Experimental Therapeutics, has accepted an invitation from the National Institutes of Health to serve as a member of the Clinical Neuroplasticity and Neurotransmitters Study Section, Center for Scientific Review, effective immediately and ending in June 2007.

Robert J. Bloch, PhD, professor, Departments of Physiology and Obstetrics, Gynecology & Reproductive Sciences, received a five-year \$1.85 million grant entitled "Cytoskeletal Architecture of T-Tubules in the Heart" from the National Institutes of Health National Heart, Lung and Blood Institute.

John W. Cole, MD, assistant professor, Department of Neurology, presented a lecture entitled "HIV and the Risk of Stroke" at the annual United States Army Medical Department conference held in Portsmouth, VA, last November. Additionally, Dr. Cole and three of his colleagues in the Department of Neurology, **Richard F. Macko, MD**, associate professor, **Steven J. Kittner, MD**, professor, and **Marcella A. Wozniak, MD, PhD**, associate professor, published a manuscript in the January 2004 issue of *Stroke*. The title of the manuscript is "Acquired immunodeficiency syndrome and the risk of stroke."

Donald L. Gill, PhD, professor, Department of Biochemistry & Molecular Biology, was awarded a five-year \$1.86 million grant from the National Institute of Allergy and Infectious Diseases to study the control of calcium entry signals in B cells. Dr. Gill's research represents a new area of study for his laboratory, exploring how calcium signals are generated in B lymphocytes through the opening of specific calcium channels in the plasma membrane.

Eve J. Higginbotham, MD, professor and chair, **Ehsan Sadri, MD**, third-year resident, and **Marva Smith**, administrative assistant, all of the Department of Ophthalmology; **Esther M. Berrent, Julia Clark, Mohammed Huq, Tamar Pair, Mary J. Sparks, RN, Mark Waring, and Nancy Zappala, RN**, Department of Neurology Stroke in Young Adults research staff; and **Scott M. Thompson, PhD**, associate professor, Department of Physiology, were nominated by their respective departments for UMB's Dr. Martin Luther King, Jr. 2004 Diversity Recognition Award. Each year, this award is presented to an individual or group at the University who has been a leader in the areas of diversity and inclusiveness. The recipient is recognized as a model of the personal and professional commitment to the ideals epitomized by the life and work of Dr. King.

Steven J. Kittner, MD, professor, and **Carol Lee Koski, MD**, professor, both of the Department of Neurology, have been selected to be included in *Best Doctors in America 2003-2004*. The Best Doctors in America database holds the names and professional profiles of 31,000 doctors in the US, all selected through an intricate peer-review survey, making the selection a distinguished honor. Since 1992, *Best Doctor's* listings have served as a resource for thousands of patients nationally and internationally, representing the top five percent of doctors in over 400 subspecialties of medicine.

Jordan E. Warnick, PhD, assistant dean for Student Research & Education and professor, Department of Pharmacology & Experimental Therapeutics, has been elected Secretary-Treasurer elect of the Pharmacology Education Division of the American Society for Pharmacology & Experimental Therapeutics and will become Secretary-Treasurer in July 2004 for a two-year term.

Withrow Gil Wier, PhD, professor, Department of Physiology, received a four-year \$1.18 million grant entitled "Neurogenic Calcium Signals in Small Arteries" from the National Institutes of Health National Heart, Lung and Blood Institute.

Women's History Month Events

The University of Maryland will observe Women's History Month with a series of four brown bag lunches in March. Building on the popularity of last year, the theme is once again "Strengthen Your Mind, Body, Soul, and Wallet."

The programs are free and open to the campus community, but seating is limited and registration is required. All events are held at the Student Union Building in the Terrace Lounge. Beverages and desserts will be provided. For more information and to register, e-mail events@umaryland.edu.

March 1st

Mind: Planning Your Financial Future for Peace of Mind. Back by popular demand is Beth C. Rosenwald, vice president of investments, Legg Mason Wood Walker, Inc. 12:00 – 1:00 p.m.

March 8th

Body: Women's Self Defense, a mini course in RAD (Rape Aggression Defense) with Corporal William C. Griffin of the UMB Police. 12:00 – 1:00 p.m.

March 15th

Soul: Seated massage with certified massage therapists. Massages are given in 15-minute sessions from 11:30 a.m. – 1:30 p.m. To schedule a massage, contact Lisa Kim at 6.8669.

March 29th

Wallet: Car Repair 101. Learn the difference between a bottle cap and distributor cap with Vickie Davis, manager of R and B Auto Repairs. 12:00 – 1:00 p.m.

Addendum In the article about medical Spanish (Medical Spanish Offered for First Time as Elective) in the December issue of *SOMNews*, we neglected to include the names of instructors Hugo Gonzalez-Serratos, MD, PhD, professor, Department of Physiology, and Dan Lender, MD, associate professor, Department of Medicine. We apologize for the oversight.

SOMNews is produced by the University of Maryland School of Medicine Office of Public Affairs.

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Submitting Information to SOMNews: Do you have news or information you would like to see in SOMNews? If so, please email your submission to Jennifer Litchman, Assistant Dean for Public Affairs, at jlitchman@som.umaryland.edu.

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UNIVERSITY OF MARYLAND

SCHOOL OF MEDICINE

MARCH 2004

Campus Mail

Mark your calendars! Match Day is Thursday, March 18th from noon - 2:00 p.m. at Davidge Hall. All are welcome!