

U P S T A T E

update

A publication for the SUNY Upstate Medical University community

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Dr. Calvert involved in research breakthrough

A team of investigators, led by Peter D. Calvert, PhD, of Upstate Medical University, has made a major breakthrough in research regarding degenerative and neoplastic diseases, such as cancer, using an experimental strategy and mathematical analyses they had developed in the laboratory.

The result of their work has allowed one of the most prevalent hypotheses in cell biology and medicine—that the bases of cilia restrict proteins from entering or exiting the ciliary compartments—to be rejected for soluble proteins. The transport of proteins to and from cilia is crucial for normal cell function and survival.

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Peter Calvert

James Walsh to receive honorary degree

Former U.S. Rep. James Walsh, who last year retired from a 20-year career in Congress, will receive a Doctor of Humane Letters Honorary Degree from the State University of New York at the 2010 Upstate Medical University Commencement May 22.

Walsh, who represented New York's 25th Congressional District in the U.S. House of Representatives from 1989 to 2009, currently is a government affairs counselor for K & L Gates LLP law firm in Washington D.C.

"We are proud to award this degree to Mr. Walsh," said David R. Smith, MD, president of Upstate Medical University. "Jim Walsh became one of the greatest supporters of academic science. While the majority of research

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Pediatric journal publishes Dr. Anbar paper on benefits of hypnosis

Hypnosis, used by clinicians in the care of children with respiratory disorders such as asthma, cystic fibrosis, habit cough, or vocal cord dysfunction, helps children to achieve symptomatic relief, according to a paper written by pediatric pulmonologist Ran Anbar, MD, of Upstate Medical University and the Upstate Golisano Children's Hospital. The paper also states that the use of hypnosis improves the clinicians' ability to diagnose and treat patients with complicated clinical presentations and saves some patients from undergoing costly medical tests or receiving nonessential treatments.

The paper, titled "Adding Hypnosis to the Therapeutic Toolbox of Pediatric Respiratory Care," was published recently in the journal *Pediatric Asthma, Allergy & Immunology*.

"Clinical hypnosis has been demonstrated to be an efficient and effective tool for addressing the mind/body connection for children with respiratory disorders," said Dr. Anbar, professor of pediatrics and medicine in the Department of Pediatrics.

In his paper, Dr. Anbar says that hypnosis helps patients control their anxiety or other response to discomfort, which may reduce the amount of

medications used during medical procedures such as phlebotomy or bronchoscopy.

"Patients can be taught hypnosis techniques by a trained clinician in less than 30 minutes during a regular medical office appointment," said Dr. Anbar. "Children's symptoms sometimes can resolve after one or two sessions. Use of hypnosis by the patient can eliminate the need for a time-consuming, expensive workup that often fails to identify a physical cause of their discomfort, such as hyperventilation, chest pain or a feeling that some-

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funding at Upstate comes by way of peer-reviewed grants from such agencies as the National Institutes of Health, private foundations and the pharmaceutical industry, Mr. Walsh has quietly, systematically and effectively helped the Upstate campus and its scientists through the Congressional appropriations process. In the past seven year, Mr. Walsh has provided cutting-edge equipment and capital construction funds that have helped Upstate scientists to take their work to a new level.”

Among Mr. Walsh’s most significant contributions to the scientific community at Upstate and to Central New York are:

- The appropriation of more than \$68 million in federal research funding for the creation of New York State’s Center of Excellence initiative in Syracuse, Rochester, Buffalo, Albany, Binghamton, and Stony Brook.

- A \$1 million allocation for the purchase and outfitting of an X-ray diffraction laboratory in Biochemistry and Molecular Biology, giving the Upstate New York region one of the finest facilities in the country and propelling the Upstate/SUNY ESF and

Syracuse University Structural Biology degree program from idea to reality.

- More than \$1 million has been directed to the Department of Emergency Medicine to establish a Center for Emergency Preparedness. Much of the center’s attention has been focused on the innovative alternate Emergency Department being created at the State Fairgrounds, but this allocation also gave the Upstate team the opportunity to expand on their traditional EMS and first-responder training activities in a new facility on campus.

- A grant that allowed the Department of Neuroscience and Physiology to define the structure and expertise for a Developmental Exposure to Alcohol Research Program. This year that department has seen new and renewed grants totaling nearly \$3 million come into the department.

Other projects that have gained from the appropriations process are the Institute for Cardiovascular Research, the Gait Laboratory at the Institute for Human Performance and the Central New York Biotechnology Research Center.



James Walsh

Research— from page 1

This discovery allows researchers to focus their efforts on finding other mechanisms for the confinement of soluble proteins to the cilia. The study appears in the March issue of the *Journal of General Physiology*.

Cilia are thin, hair-like projections emanating from most mammalian cells. Their function is well understood in only a few cell types, which include the photoreceptor cells in the retina, but it is clear that they are vital to normal cell function and to human health.

“Over the last decade hundreds of genetic mutations that lead to devastating, multiple organ diseases, including those causing blindness and deafness, cancer, kidney disease, obesity, mental retardation and many others, have been attributed to genes that encode proteins that are involved in the construction, maintenance, signaling or transport of molecules

within cilia,” said Dr. Calvert, assistant professor of ophthalmology and adjunct assistant professor of biochemistry and molecular biology at Upstate. “Understanding how cilia manage these tasks is of paramount importance for finding therapies and cures for these debilitating and life-threatening diseases.”

Dr. Calvert adds that one of the major questions faced by scientists studying cilia is how proteins are transported to this tiny structure and how, once they arrive there, they are retained.

“One of the favorite mechanisms proposed is that specialized transport molecules deliver proteins into the cilium where they are then trapped by some sort of barrier that prevents them from diffusing back into the cell body,” said Dr. Calvert. “The same barrier was thought to prevent non-cilium proteins from entering this exclusive organelle. This idea was difficult to test because

cilia are smaller than can be resolved by even the most powerful optical microscopes.

Dr. Calvert and his colleagues developed an experimental strategy and mathematical analyses that allowed them to break the resolution limit and address the question of whether or not there is a barrier to diffusion of soluble proteins within the cilia of rod photoreceptors.

They measured the diffusive movement of a genetically engineered photoactivatable green fluorescent protein into the cilia of rod photoreceptors in the eyes of African clawed frogs. They found that the rod cilium did not slow the diffusion of this soluble protein more than other parts of the rod cell and it did not stop it from moving between areas of the cell bridged by the cilium, leading to the rejection of the hypothesis that the cilium acts as a barrier to the movement of soluble proteins.