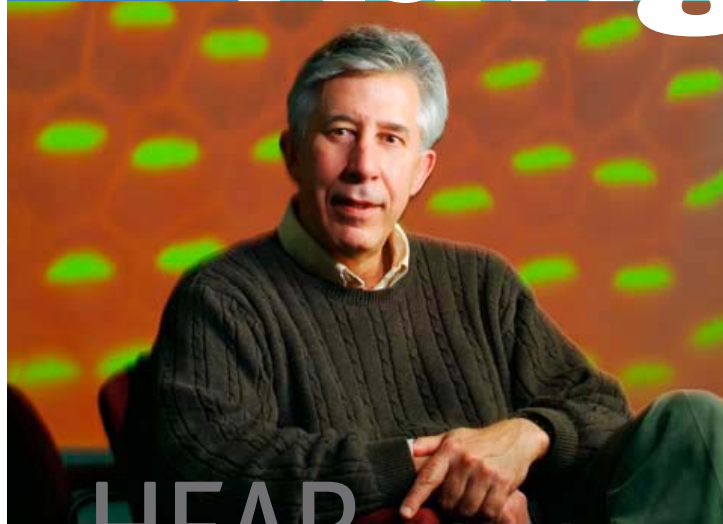




# Navigator

FALL 2006



## HEAR, HEAR

PHOTO: DOUGLAS LEVERE

### Richard Salvi works well with others

BY LAUREN NEWKIRK MAYNARD

**F**or Richard Salvi, professor of communicative disorders and sciences and director of UB's Center for Hearing and Deafness, good science comes from sharing expertise and resources.

It's a recipe that has produced exciting discoveries at UB in his fields of audiology and auditory neuroscience.

Salvi is one of UB's top collaborators. An expert in tinnitus (ringing in the ears), noise-induced hearing loss, ototoxicity (damage to the ear by drugs or chemicals), cochlear hair cell regeneration and other inner-ear science, he is a key figure at the center, whose projects on treating and preventing hearing loss are a core component of the UB2020 Aging and Chronic Diseases strategic strength. Its multidisciplinary team of more than 30 scientists,

skilled technicians and graduate students has revolutionized understanding of several major auditory disorders.

Salvi believes that building partnerships should be the mission of a successful university center or institute, which might not have capabilities in every discipline: "You mix who you have together and make a stew that's tastier than eating raw potatoes or just beans."

To do this, he supplements the center's core strengths in audiology, anatomy and physiology with other researchers' expertise in biochemistry, neurology, microbiology, toxicology

and psychology. His work has involved nearly every physical, medical or social science at UB.

Salvi and Ed Lobarinas, a Ph.D. student in audiology, use cutting-edge microPET (positron emission tomography) technology to study drug-induced hearing loss and tinnitus in small animals in the UB lab animal facility run by Asit Paul, a research assistant professor of nuclear medicine. At Roswell Park Cancer Institute, Salvi collects animals' anatomical and functional brain images with the help of Richard Mazurchuk, director of RPCI's preclinical MRI imaging facility.

Salvi is collaborating with psychologist Micheal Dent and Matthew Xu-Friedman, an auditory neurobiologist, on a UB IRDF grant to study age-related hearing in mice. They also are developing behavioral methods to

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## Undergrads in the lab: not just kid's stuff

BY JUDSON MEAD

When Scott Wersinger was an undergraduate at Cornell University, he had a mentor who employed him in her lab and inspired him to pursue doctoral work in her field. Now, as an assistant professor of psychology whose research area is the molecular aspects of reproductive behavior, he has undergraduates working in his lab at UB. "You pattern your behavior after your mentor's," he says. In fact, there have been undergraduates in every lab he's ever worked in.

"My lab has techniques like stereotactic surgery that are difficult to learn and our studies are long, so I need a long-term commitment—a year at least," he says. He meets with students who express interest in the lab, invites them to lab meetings and has them shadow other undergraduates in the lab to see how hard the work is. "Students know that if they want to slack off, I'm not the right person."

His undergraduates get the benefit of an inside path in the field. Wersinger will work with an undergraduate assistant, like Luis Martinez (see picture, right, and box, Page 4), to set up original experiments for an honors thesis. If undergraduates in his lab are primarily interested in the lab experience, he has them work with his graduate students to get the experience they're looking for.

In addition to doing the handwork, undergraduates like Martinez can make substantial contributions to brain work as well. "I've been surprised at how sophisticated some of their questions are," Wersinger

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LUIS MARTINEZ IN SCOTT WERSINGER'S LAB. HE STARTED GRADUATE STUDIES AT GEORGIA STATE UNIVERSITY THIS FALL.

PHOTO: ERIC FRICK

**NAVIGATOR TIP:** You can post research help-wanted announcements at [www.curca.buffalo.edu](http://www.curca.buffalo.edu).

UB's Center for Undergraduate Research and Creative Activities (CURCA) offers various kinds of support for undergraduates interested in research.

Contact CURCA coordinator Timothy A. Tryjankowski, 14A Capen Hall, 645-7778, [UB-CURCA@buffalo.edu](mailto:UB-CURCA@buffalo.edu).

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A PUBLICATION OF THE VICE PRESIDENT FOR RESEARCH AT UB

CONTINUED FROM PAGE 1 **▶** test for genetic mutations that affect how mice hear and learn, and plan to use the data to apply for federal funding next summer. Xu-Friedman, whom Salvi helped recruit from Harvard Medical School, says the center drew him to UB.

## Salvi

Salvi and Kenneth Blumenthal, chair of the biochemistry department, study changes in protein expression following inner-ear damage with high-throughput mapping techniques. (Donald Coling, a UB associate research professor in the Department of Communicative Disorders and Sciences, is one of the first scientists to use proteomics to study the inner ear.)

Some of Salvi's biggest discoveries were more serendipitous than strategic. About 10 years ago, he and UB neurologist Alan Lockwood worked on separate floors of Parker Hall on the South Campus (the center is now located in Cary Hall). As Salvi was establishing the center with his longtime research colleague, Donald Henderson, construction began on a pneumatic tube that would deliver radioactive materials from the Department of Nuclear Medicine cyclotron in Parker to the VA Medical Center across Bailey Avenue. Amid the construction upheaval, Lockwood and Salvi met and started one of the first research projects in the United States to use PET imaging to identify neural activity in the brain associated with tinnitus.

"If they hadn't built the cyclotron, we may never have heard of Nuclear Medicine," Salvi says. And, he adds, the fundamental discovery that tinnitus originates in the brain, not in the ear, would not have been made at UB.

A 30-year relationship with Henderson, professor of communicative disorders and sciences, has been another productive synergism. "Don was my advisor when I was a graduate student, but I taught him everything he needs to know," Salvi jokes. By pooling resources, personnel and workspace, they gradually created a unique, collegial environment for conducting comprehensive auditory research.

Strong ties to Roswell Park Cancer Institute, the University of Rochester and other academic and auditory centers help make UB a hub for local and international auditory researchers, and for the U.S. Army's research in noise-related hearing loss on the battlefield. Salvi is negotiating contracts with local and international pharmaceutical companies to develop tinnitus and hearing-loss treatments, and the center has evaluated new technology with national hearing aid companies.

Salvi also helped establish the 12-year-old Tinnitus Support Group of Western New York at the center. With Susan Roberts and Christina Stocking, clinical faculty in communicative disorders and sciences, he helped promote tinnitus therapies in the UB Speech and Hearing Clinic, and with other researchers from the center's Clinical Hearing Research Lab has helped transform UB into a leader in tinnitus research. Salvi plans to host a major tinnitus symposium at UB next summer.

"You must find the confidence to go outside your discipline," he says. "It's hard to say you're not knowledgeable in areas in which you have little or no training, such as proteomics or molecular biology."

Eduardo Mercado, an assistant professor of psychology and another Salvi collaborator, agrees. "Younger faculty are encouraged to prove themselves by working solo. But eventually you have to learn how to talk to people who know what you're looking for."

Collaboration is about using the right mix of academic know-how and entrepreneurial daring. "Over the years I've thrown caution to the wind. If you don't try something new, you'll be stuck in your little box," says Salvi. "You have to figure out how to make different kinds of stews—it's a real art form."

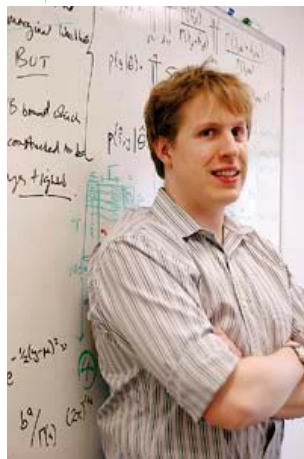


PHOTO: NANCY J. PARISS

## Smart machines learn about disease

**▶** **Matthew Beal**, UB assistant professor of computer science and engineering, is a computational specialist whose research involves artificial intelligence (AI), pattern recognition, information retrieval and bioinformatics. Beal studies a subfield of AI called "machine learning," where computers are trained to use inductive or deductive logic to solve complex data problems. By combining Bayesian inference theory with physics, Beal is developing computer models that can automatically detect interaction between genes and environmental factors relevant to diseases and birth defects. A native of the United Kingdom, Beal is a member of the biostatistics and analytical bioinformatics group at UB's New York State Center of Excellence in Bioinformatics and Life Sciences.

## IN THE national news

### The New York Times

...in an article about UB's New York State Center of Excellence in Bioinformatics and Life Sciences features its executive director, **Bruce A. Holm**, also UB senior vice provost.



HOLM

...quoted **Andre Filiatrault**, civil, structural and environmental engineering, in an article on the earthquake simulations being conducted at UB on wood-frame buildings. (This story was also covered in the Washington Post, Boston Globe, ABC News, the Wall Street Journal, USA Today, Reuters and others)

...reported research on the increase in Niagara Falls' mist plume by UB geologist **Marcus Bursik**, who said the phenomenon is due to air and water temperatures, not nearby high-rise hotels in Niagara Falls, Canada.



BURSIK

### The Economist, Nature, Science and others

...reported research by **Steven Gill**, recently appointed associate professor of oral biology, whose former research team completed the first genetic analysis of microbes in the human gut. Gill also found that bacterial colonies formed early in life have a profound effect on long-term gastrointestinal health.



GILL

### The Washington Post and others

...reported that **Alfred Guiffida** and **Rakesh Nagi**, Department of Industrial and Systems Engineering, have created a method to quantify "managerial neglect."

### The New Yorker

...quoted **Robert J. Bertholf**, Charles D. Abbott Scholar-in-Residence, about the Joyce family's ongoing intellectual property controversy and about UB Libraries' James Joyce Collection.



BERTHOLF

### LA Times

...quoted **Jeffrey Lackner**, Department of Medicine, in a report on irritable bowel syndrome. He says no effective drugs exist for "the full range of symptoms," which patients must learn to control with alternative treatments.

### San Francisco Chronicle

...quoted **Colin Drury**, Department of Industrial and Systems Engineering and director of UB's Research Institute for Safety and Security in Transportation, on the vulnerability of current airport security.



DRURY

### The Chronicle of Higher Education

...quoted **Douglas H. Clements** and mentioned **Julie Sarama**, both from the Department of Learning and Instruction, on their \$6-million scale-up study of a pre-kindergarten mathematics curriculum in Buffalo and Boston.

### CBS Evening News

...featured **Mark Frank**, professor of communication, in a report about his work on the development of facial profiling technology for airport security screening.



FRANK

### NPR's Science Friday

...featured guest scientist **Paul DesJardin**, an expert on explosives and combustion from the Department of Mechanical and Aerospace Engineering, who discussed the recent terrorist plot to blow up several U.S.-bound aircraft over the Atlantic Ocean.

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