





Jerzy Szaflarski, MD, Associate Professor and Associate Director of the Center for Imaging Research at UC

## *Epilepsy, continued from page 1*

Dr. Szaflarski, Associate Professor and Associate Director of the Center for Imaging Research at UC, is one of the few scholars nationally who is using EEG-fMRI, which merges information about where electrical disturbances in the brain are originating with information about how those disturbances impact blood flow. While conducting this ground-breaking research, Dr. Szaflarski simultaneously combines the electrical information, derived from EEG testing, with the information about blood-flow patterns, derived from functional MRI with a 4 Tesla magnet. The data enable him to determine where a seizure begins, how it spreads, and whether and how it impacts parts of the brain that are important for speech, memory and movement.

"Obtaining data in a high-magnet field gives us more information about signals in the brain," explains Dr. Szaflarski (pronounced Sha-FLAHR-ski). "What we're able to do is correlate the EEG signals with the changes in brain signals generated or related to blood flow, which is related to physiological or pathological activity. In my case, my interest is in spikes in electrical discharges, or epileptic discharges. This allows us to identify areas of the brain responsible for generating abnormalities."

## **Old medicine, new delivery**

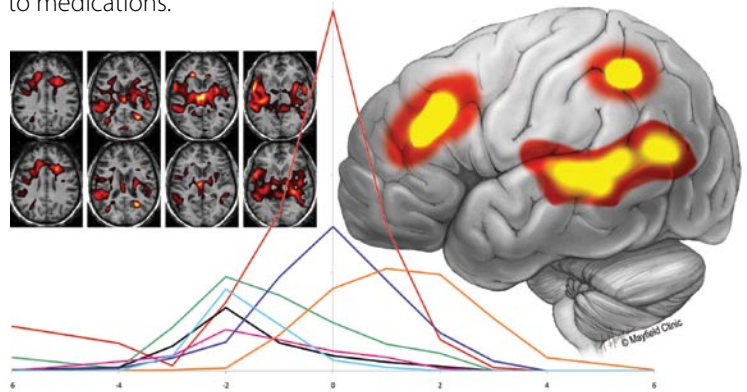
Neurologist Alberto Espay, MD, at right, examines John, who is participating in a Phase 3 clinical trial for people with Parkinson's disease. Following surgery at University Hospital, John now receives levodopa, which boosts dopamine in the brain, through a tube that leads directly into the duodenum, the first part of the small intestine. The medication is suspended as a stable gel from a cassette worn outside the body. Researchers hope that the continuous medication-delivery system will reduce the severe on-again-off-again fluctuations that patients normally experience when taking levodopa orally, and at intervals, throughout the day. The study therapy, Abbott's Levodopa-Carbidopa Intestinal Gel treatment system, is known as Duodopa in Europe, where it is commercially available. For more information, please contact [kristy.sullivan@uc.edu](mailto:kristy.sullivan@uc.edu) or call (513) 558-6517.

*"The next breakthrough in epilepsy research could well belong to Jerzy Szaflarski."*

-- Michael Privitera, MD, Director, UC Epilepsy Center

Earlier this year Dr. Szaflarski and his research team published a retrospective study of 322 patients that showed that EEG data alone can help predict whether patients will respond to one medication versus another. A patient with symmetrical electrical discharges on an EEG reading is likely to respond positively to valproic acid (marketed as Depakote), for example, while a patient with asymmetrical discharges is unlikely to respond as well.

In a new study, believed to be one of only two or three studies of this kind, Dr. Szaflarski and his team are processing that same EEG data with fMRI data from the same population to see whether the EEG-fMRI changes and the site where seizures begin can provide enhanced prediction of seizure outcomes and response to medications.



"I'm hoping that a year from now that I'll be able to tell a patient with a specific pattern of brain changes and responses that he or she is more or less likely to respond to a medication," Dr. Szaflarski says. "If we can identify these early markers of medication response, we will shorten the time from the point of diagnosis to the point where the patient's condition is controlled and he or she has returned to a normal, productive life."





*Brendan Kelley, MD, at the Medical Arts Building at UC.  
Photo by Academic Health Center Communications Services.*

## **Migraine coming on? Act ASAP!**

With migraines, sinister headaches that can cause nausea, vomiting and extreme sensitivity to light and sound, the sooner we act the better.

"The first step in treating migraines is to interrupt the headache's progression," says Brendan Kelley, MD, a neurologist and memory disorders specialist with the UC Neuroscience Institute. "Migraines usually begin gradually, and you want to intervene with medication as quickly as possible rather than allowing the headache to develop into a full-fledged, knock-down, drag-out headache. Medications are more effective if you take them early in the headache."

## **Carotid Artery Disease Program targets a prime risk of stroke**

The Cerebrovascular Disease and Stroke Center at UCNI has introduced a new Carotid Artery Disease Program to reduce the incidence of stroke in the Greater Cincinnati/Northern Kentucky region.

An estimated 38,000 strokes are attributed to carotid artery disease annually in the United States. Carotid artery disease, also called carotid stenosis, is a narrowing of the carotid arteries, the two major arteries that carry oxygen-rich blood from the heart to the brain. This narrowing is caused by a buildup of plaque inside the artery wall.

Recent studies have confirmed that rapid diagnosis and treatment of carotid artery disease can greatly reduce the risk of stroke.

UCNI's program, co-directed by neurologist Dawn Kleindorfer, MD, and neurosurgeon Andrew Ringer, MD, provides rapid assessment and treatment for patients with carotid disease. Features of the program include:

- Coordinated evaluation by a Stroke Team neurologist and the surgery/interventional team, with rapid feedback to the referring physician.

Individuals who experience an "aura," a physical symptom preceding headache -- perhaps through a change in vision or tingling in the hands or arms -- can reach for the Advil or Excedrin or other over-the-counter medication at that time, before the pain even begins.

The second rule in migraine treatment is to reduce their frequency. "Repeated headache episodes appear to predispose you to more," Dr. Kelley says. "There may be a kindling effect, and a bad problem can evolve into an even worse problem. In some cases, headache specialists see people who have become hypersensitive to a degree that light touch on the scalp is perceived as discomfort or pain. This condition known as allodynia."

Migraine headaches occur on a continuum, from the merely painful to the utterly debilitating headache that keeps the sufferer out of work for a week. Known triggers include stress, insufficient sleep, missed meals, allergies, excessive alcohol consumption, chocolate and red wine. Cured meats, such as salami or pepperoni, which contain high levels of nitrates, are another commonly overlooked trigger.

Because there is currently no cure for migraines, lifestyle changes are at the front line of defense. "Any changes that reduce the likelihood of a migraine are highly recommended," Dr. Kelley says. "They represent an ideal first-line form of therapy, as they have no cost and no negative side-effects."

"If headaches persist, and if they're so severe that they are impairing one's quality of life, the patient and doctor should develop a regimen to both combat episodes of headache and to reduce the frequency of headaches," Dr. Kelley continues. "We currently have eight medications at our disposal for this type of therapy, which is known as headache prophylaxis. If an individual typically has one migraine a month and we can reduce that frequency by half, we have improved the person's quality of life."



*Dr. Ringer*



*Dr. Kleindorfer*

- Multidisciplinary team includes specialists in neurology, neuroradiology, neurosurgery and vascular surgery.
- Treatment plans include the full complement of medical, surgical, interventional and preventative treatment options.
- Access to a broad range of clinical trials.

UCNI's primary stroke center is supported by a nationally recognized neurocritical care program and state-of-the-art facilities. If you have questions about the Carotid Artery Disease Program, or would like to make a referral, please call **513-584-2214** or visit us online at **[www.UCNeuroscience.com](http://www.UCNeuroscience.com)**.

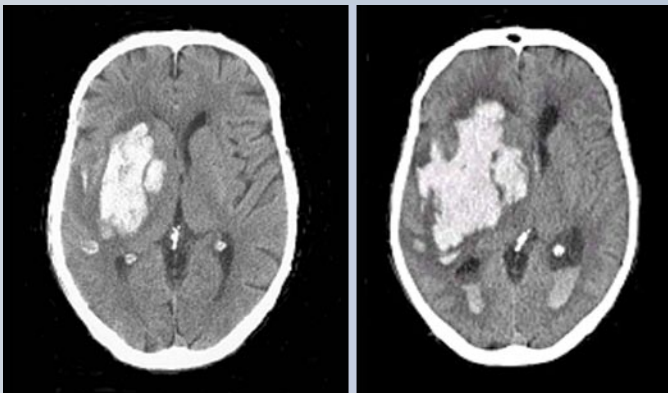
## You're the Doctor

By Joseph P. Broderick, MD  
Research Director, UCNI

The two CT images show the head of the same patient, 4½ hours apart. The patient came to the emergency department following a sudden onset of weakness on the left side and become much more poorly responsive during the 4½ hours between scans. What is the diagnosis?

Clue: The bone of the skull is the most dense and appears very white on a CT scan; brain tissue is less dense and appears gray; cerebrospinal fluid is the least dense and is dark. One other substance in the body is denser than brain tissue but not as dense as bone.

- 1) Large malignant brain tumor
- 2) Large ischemic stroke  
(dead brain from not enough blood)
- 3) Large area of encephalitis
- 4) Large brain hemorrhage



2.0 hours after onset

6.5 hours after onset

For correct answer, please visit  
[www.ucneuroscience.com/our\\_community](http://www.ucneuroscience.com/our_community)

## Amber, continued from page 1

Amber, a 20-year-old forward and former all-American at Lakota West High School, was undergoing rotator cuff surgery in Knoxville, Tenn., in July 2009 when an undiagnosed brain aneurysm began to rupture. Amber was flown to University Hospital, where Dr. Zuccarello, Chairman of the UC Department of Neurosurgery and a Mayfield Clinic neurosurgeon, opened her skull and clipped the aneurysm during a complex, 12 ½-hour operation.

During the surgery, Dr. Zuccarello first restored optimal blood flow to Amber's brain by performing an arterial high-flow bypass between the external carotid artery (at the neck) and the large branch of a middle cerebral artery inside her skull. The procedure, also known as an extracranial-intracranial bypass, accomplishes for the brain what a coronary bypass accomplishes for the heart.

Dr. Zuccarello used the radial artery from Amber's arm to bypass the damaged cerebral artery. After a vascular surgeon "harvested" the radial artery, Dr. Zuccarello attached it to her carotid artery at the neck, threaded it under her skin and into her skull, and attached it to a healthy artery. That mission accomplished, he then attached a clip to the aneurysm, effectively stopping the bleeding.

Amber recovered fully but decided to leave the University of Tennessee for Xavier University, where she will play for the Muskies and tackle XU's famed core curriculum while living a jump shot away from her family and doctors.

Amber, who received a waiver from the NCAA's normal transfer rules so that she will not have to sit out this season, has resumed training. The mask covers the area where Dr. Zuccarello opened her skull and where a scar, barely visible, curves around her hairline on one side of her head. The shatterproof mask, formed to Amber's head and face, will protect Amber from any impact she incurs on the court.

## Soar into Fourscore

Want to Soar into Fourscore? Want to stride, ride, swim and dance your way into your 80s? We can't change our genes - at least not yet - but we can maximize our chances of living a long, healthy life. Start by assessing your current lifestyle and how parameters like stress, friendships and exercise impact your longevity. Improving your ability to manage stress, for example, could add a year to your life. Cutting back on sweets to one to two times per week could add another year. Learn more by visiting the Life Expectancy Calculator, created by Thomas Perls, MD, MPH, at [www.livingto100.com](http://www.livingto100.com).

John M. Tew, MD  
Clinical Director, UCNI

Dr. Tew, an avid cyclist, with two of his grandchildren.  
Photo by Mark Bowen.



# Community

## Nearly 4,000 patients, caregivers and friends took part in UCNI's recent educational and fundraising events:

- Sunflower Revolution VII (Sept. 10-12), benefiting the Gardner Center for Parkinson's Disease and Movement Disorders
- The inaugural Walk Ahead for a Brain Tumor Cure (Oct. 10), benefiting the UC Brain Tumor Center
- The fourth annual Research Innovations for an Epilepsy Cure (Oct. 17), benefitting the UC Epilepsy Center

In addition, the Mary Luau (Sept. 25) supported the Greater Cincinnati/Northern Kentucky Stroke Team, and the Jerry Wuest-Pete Hershberger Dinner Gala & Golf Classic (August 8-9) raised \$80,000 for the Gardner Center.



Walk Ahead photos by Mark Bowen



## Walk Ahead

UCNI extends a heartfelt **thank you** to everyone who participated!

1. Mary Wahl with her daughter, Siena Kennedy, at Walk Ahead.
2. Michael Privitera, MD, with Pamela and Charles Shor at Epilepsy Innovations.
3. Sandy and Jerry Wuest with Davis Phinney at the Sunflower Revolution symposium.
4. Doug McDonald with his son, Tim, at the Sunflower bike ride.

Photos by Mark Bowen and Gordon Baer.

## Remembering Ollie Waddell

The UC Neuroscience Institute's clinicians and supporters mourn the passing of Oliver Waddell, a devoted family man, successful business executive, and humanitarian whose generosity and empathy for others made the Waddell Center for Multiple Sclerosis possible.

Mr. Waddell, who retired early as CEO of US Bank to become the primary caregiver for his beloved wife, Virgilee, died at home on Oct. 24, surrounded by his children. Virgilee Waddell preceded him in death in October 2009.

The Waddell Center was founded in 2002 with a \$5 million gift from Mr. Waddell, who wanted to honor the courage and determination of Virgilee, who was diagnosed with MS in 1981 and who gradually lost her ability to walk. Mr. Waddell also wanted to provide for the thousands of other residents of Greater Cincinnati who suffered from this incurable neurological disease. He and Virgilee were both concerned that many patients with MS traveled out of town for optimal care and the opportunity to participate in clinical trials that tested promising new treatments.

They wanted those opportunities to be available here, for people in the Cincinnati region, and especially for those who did not have the means to travel.



Virgilee and Oliver Waddell, at home in 2004.

Photo by Melvin Grier/Cincinnati Post.

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## Newsworthy

### Functional Center name changed to Neurosensory Disorders Center

The Functional Neuroscience Center has changed its name to the Neurosensory Disorders Center. The Center, headed by Myles Pensak, MD, the H.B. Brody Professor and Chair of the Department of Otolaryngology-Head and Neck Surgery, uses advanced technologies and procedures to treat patients challenged by hearing loss, voice and swallowing disorders, disorders related to the ability to taste and smell, and facial pain.



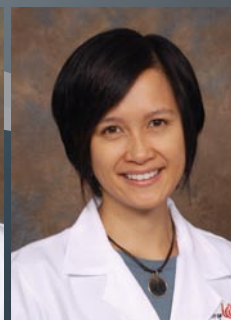
The Neurosensory Disorders Center offers eight sub-specialty programs or centers. Our Adult Cochlear Implant Program is a national leader, and we were recently named an Auditory Brainstem Implant Center by Cochlear Corporation.



Dr. Chaudhary



Dr. Rixe



Dr. Molano

### Welcome new recruits

UCNI is proud to announce the arrival of Rekha Chaudhary, MD, and Olivier Rixe, MD, PhD, both medical neuro-oncologists, to the UC Brain Tumor Center, and Jennifer Molano, MD, to the UC Health Sleep Center. Dr. Chaudhary, Assistant Professor of Medicine in the Department of Hematology/Oncology, performed a fellowship at Wayne State University's Karmanos Cancer Institute. Dr. Rixe, Professor of Medicine and Director of the Experimental Therapeutics Program in Hematology-Oncology, came to UC from the National Cancer Institute. He previously served as Professor of Medical Oncology at the renowned Salpetriere Hospital in Paris. Dr. Molano, Assistant Professor of Neurology, completed a fellowship in behavioral neurology at the Mayo Clinic and a fellowship in sleep medicine at Vanderbilt University.