

## MEDICINE &amp; HEALTH

## Washington People: Beau Ances

The neuroimaging expert is using the latest brain-scanning techniques to better understand how long-term HIV infection impairs memory and other mental functions.

By Michael C. Purdy • November 3, 2014

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*Beau Ances, MD, PhD, prepares for a scanning session in the Center for Clinical and Investigational Research with undergraduate Gina Chang and MD/PhD student Matthew Brier. (Credit: Michael C. Purdy)*

population of U.S. patients infected with human immunodeficiency virus (HIV) will reach a remarkable milestone: More than half of the patients infected with the virus will be 50 years of age or older.

As this population ages, problems for long-term survivors of HIV infection are becoming apparent. One of the most alarming challenges has been a significant increase in difficulties with thinking and memory.

Beau Ances, MD, PhD, associate professor of neurology at [Washington University School of Medicine](http://www.wustl.edu), has been interested in understanding the roots of these

problems and developing potential strategies for reducing them since his days as a resident at the University of Pennsylvania in the 1990s.

“I started to see a number of HIV-positive patients who were having memory problems when I was a neurology resident,” he recalled. “I began treating them, that spread by word of mouth, and by the time I left, I had 75 to 80 HIV-positive patients with neurological problems.”

During this time, a mentor introduced Ances to new brain-scanning techniques and the advanced insight they were providing into chronic brain disorders and stroke.

In the years since, Ances has brought the two interests together. That effort continues today at Washington University’s AIDS Clinical Trials Unit.

“Beau really has been on the cutting edge of moving this field forward so that we can refocus on new problems confronting our patients,” said mentor David Clifford, MD, the Melba and Forest Seay Professor of Clinical Neuropharmacology in Neurology. “He came in with the right kinds of tools in terms of his expertise in neuroimaging, and he’s used them aggressively and well to make huge contributions.”

Ances was born in Baltimore. He is the only child of an obstetrician-gynecologist and a librarian, but neither medicine nor library sciences were high on his list of career interests as he entered Penn. He earned an undergraduate degree in international relations from Penn and received a scholarship to study the economics of health care at the London School of Tropical Hygiene and Medicine and the London School of Economics when a close family member was stricken with a chronic and disabling condition.



Ances

The experience of watching a relative deal with such a difficult diagnosis led Ances to start taking pre-med classes. He earned a medical degree and his doctorate in neurosciences and completed his residency and internship at Penn.

“It seemed for a little while that I couldn’t leave Philadelphia,” Ances said. “I spent 15 of my 16 years of college at Penn, but I finally left for a fellowship studying the

neurological effects of AIDS at the University of California, San Diego.”

## A rare specialty

Ances had his eyes on the work of David Clifford as he completed his training.

“David has just been a real pioneer — he’s one of the leading people in the world in terms of studying how HIV affects the nervous system,” Ances said.

Clifford had been keeping an eye on Ances’ work as well because, he noted, relatively few young neurologists are interested in HIV. So Clifford was pleased when Ances accepted an offer to come to WUSTL in 2008.

“I’ve run the HIV-neurology program here by myself since 1988, and it’s been a real pleasure to have him here,” Clifford said. “He had a reputation as a bright, energetic and engaging clinician, and he’s fully lived up to that reputation.”

Ances’ most important contributions to neuro-AIDs research to date include the first application of an MRI technique known as arterial spin labeling for the precise measurement of blood flow in the brains of HIV patients. Brain blood flow normally decreases with age, but Ances found that blood flow levels in HIV patients were similar to those found in uninfected patients who were 15 to 20 years older.

It’s not clear yet to what extent problems with thinking result from HIV’s entry into the brain, from side effects of the antiviral medications that keep patients alive, or from a combination of these factors. In the worst cases, HIV can lead to dementia.

“We believe the virus crosses into the brain using infected immune cells,” Ances said. “Once in the brain, HIV doesn’t directly infect neurons but instead affects supporting cells that can release immune factors that harm neurons.”



*Beau Ances, MD, PhD, (left) and MD/PhD student Matthew Brier ready a research volunteer for an MRI scan.*

Ances has been very active in Alzheimer’s research. He uses a technique called functional connectivity to assess the effects of Alzheimer’s disease on the ability

of brain regions to work together in networks. He and others at the School of Medicine have shown that Alzheimer's starts to break down these networks even before patients show signs of dementia.

Ances also specializes in treatment of Creutzfeldt-Jakob disease, a rare and fatal neurodegenerative disorder that rapidly destroys the brain, and anti-NMDA receptor encephalitis, a dangerous but much more treatable autoimmune condition that attacks an important brain receptor.

### **In the genes**

A few years ago, Ances accomplished a personal research goal. He published a paper in *Obstetrics & Gynecology*, one of the most respected journals in his father's area of medical expertise.

The paper was on the neurological effects of thalidomide, a drug used as a sedative and to reduce the effects of morning sickness in pregnant women in the late 1950s and early 1960s. The drug caused thousands of severe birth defects and deaths before it was taken off the market in 1962.

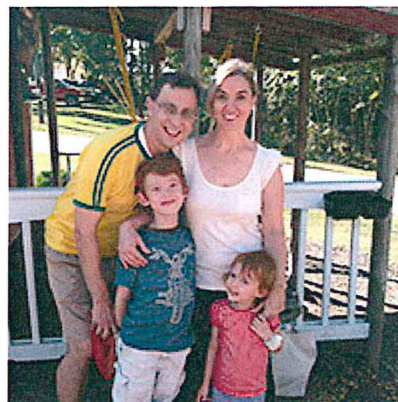
"My father had several colleagues compliment him on what a great article he'd written for the journal, and he said, 'Check the byline again,'" Ances recalled with a laugh. "He was proud to point out that it was by his son."

Ances met his wife, Elizabeth Wheeler, PhD, a cognitive psychologist, while completing his doctoral work at Penn.

"She was working in the laboratory next door to me, and her father taught my medical school class, although I didn't know that at the time we started dating," he said.

They have a son, Leander, 7, and a daughter, Lily, 3. The family lives in University City, allowing Ances to walk or take the MetroLink to work.

"I can't believe it, but we only have one car, and it's a minivan," Ances joked. "I never had that sports car period or any of that stuff — we went straight to a minivan. But that's OK."



*Ances enjoys a day with his family. Pictured with him are his children,*

Ances helps coach Leander's baseball and soccer teams, and he and Wheeler frequently can be found out and about with their children exploring and enjoying area parks.

*Leander and Lily; and his wife,  
Elizabeth Wheeler.*

A sprinter in college, he continues to run with colleagues. He and several other researchers from the University's Charles F. and Joanne Knight Alzheimer's Disease Research Center recently completed the KT82 Relay, an 82-mile run from St. Charles, Mo., to Hermann, Mo., on the Katy Trail.

"The idea is that each team member takes turns completing a leg, and the rest of the runners ride in a car to the start of the next leg, where the baton is handed off to the next runner," he explained. "In that fashion, we were able to finish the entire run in a little more than 12 hours."

Whether in the clinic or the lab, on the athletic field or the running trail, team building is important to Ances, who recognizes it as a key way to make a difference for himself and for others.

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