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By Chris Tachibana

PET Guerrilla

Former guerrilla leader Henry Engler (left) talks to Uruguayan President José Mujica at the launch of CUDIM in Montevideo last year.

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In August 1972, Uruguayan medical student Henry Engler's education was interrupted. He was shot in the shoulder, arrested for being a Tupamaro antigovernment urban guerrilla, and imprisoned for 13 years—11 in solitary confinement.

Engler says he joined the Tupamaros because government corruption was affecting health conditions in the country. "As medical students, we were not able to help patients," he says. "When we tried to get more resources, the police shot and killed students." In 1985, a new democratic government gave amnesty to political prisoners, including Engler, then close to 40. "I was in bad condition after 13 years in prison," he says. "My brother was living in Sweden, and I was invited by the Swedish government to move there to improve my health."

Engler found a scientific home at Uppsala University, which was setting up a positron emission tomography (PET) center. PET is a noninvasive imaging method that monitors a radiolabeled tracer molecule as it makes its way through a living organism. The tracer can be specific, like a neurotransmitter that binds a receptor, or a more general molecule, like a sugar that shows areas of active metabolism. Engler and colleagues used a PET tracer—dubbed Pittsburgh Compound B (PIB) by the University of Pittsburgh group that developed it—to specifically detect amyloid deposits in the brains of living patients. These protein accretions are a key characteristic of Alzheimer's pathology, so the method could potentially lead to an early-warning diagnostic tool for the disease.

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The work is "an amazing story of scientific discovery and development," says Gil Rabinovici, neurologist at the University of California, San Francisco, Memory and Aging Center. "Before, the only way to confirm the molecular characteristics of Alzheimer's was brain autopsy. We can now confirm the presence of amyloid plaques during life. This gives us a tremendous opportunity to try to intervene at

early disease stages, before irreversible brain injury." At present, the method is used only for research, but Rabinovici says that new tracers based on PIB may soon bring the technique into clinical practice. Through his work studying brain diseases with PET, Engler earned his PhD three decades after starting his studies.

Even with this success and meeting his wife Inger in Sweden, Engler longed to see his home country. He first returned to Montevideo in 1993, and now commutes over the nearly 100 degrees of latitude that separate Sweden and Uruguay. He is a consultant at Uppsala University Hospital and also directs the Centro Uruguayo de Imagenología Molecular (CUDIM), a nonprofit, government-funded PET center in Montevideo that opened in March 2010. Engler plans to create a Latin American PET network that includes researchers in Argentina and Brazil, while fostering collaborations with researchers in Sweden, Denmark, Japan, and China. Eventually, CUDIM wants to partner with pharmaceutical companies to use PET to develop new drugs and diagnostic methods. Engler even hopes that CUDIM will drive general health research in Uruguay. Right now though, he is focusing on getting CUDIM fully staffed and functioning. "Working in Uruguay requires a lot of patience and the art of avoiding being paralyzed by bureaucracy," he says, "but I have the right team for these things."

In Uruguay, Engler's past, present, professional, and personal lives are interwoven. "I am reminded almost each day about the past," he says, "often in a positive way, and sometimes less positive. I have good contact with my fellow Tupamaros, many working in the government." This includes current Uruguayan president José Mujica.

Uruguayans still debate whether the Tupamaros were freedom fighters or terrorists. Engler's name is connected to the 1970 killing of Dan Mitrione, an American working in Uruguay for the United States Agency for International Development (USAID) as a consultant to the government on interrogation methods. Engler prefers to concentrate on science, but says of the accusations, "This information comes from [members of] the military dictatorship in Uruguay, who are in prison today condemned for the disappearing of 200 persons, kidnapping of children, raping and violation of human rights. Which information can you trust?"

(Marissa Vignali, PhD, contributed background material for this article.)