

Ample Monkeys and Money Nurture Robust Research

SAN JUAN AND CAYO SANTIAGO, PUERTO RICO—This country's close ties to the United States, combined with its large colony of rhesus macaques of Indian origin, have spawned several collaborations with leading AIDS researchers from the mainland—a rarity in much of the Caribbean.

Rhesus macaques are the main model used to test AIDS vaccines, but they're in short supply. Cayo Santiago, a 15-hectare island off Puerto Rico that has been home to Indian macaques since 1938, has a surplus and must cull about 120 animals each year. Over the past 4 years, Edmundo Kraiselburd of the University of Puerto Rico estimates that UPR has shipped some 600 monkeys to various U.S. researchers, most of them studying AIDS. Some of these



Monkey business. UPR's Edmundo Kraiselburd runs a primate center and is helping to build an internationally recognized HIV/AIDS research community.

monkeys have also now been moved to the UPR campus, where Puerto Rican investigators, in collaboration with a group led by Thomas Folks of the U.S. Centers for Disease Control and Prevention in Atlanta, Georgia, are conducting AIDS vaccine studies.

Kraiselburd also heads the NeuroAIDS Program, which teams Puerto Rican clinicians and basic researchers with neuroAIDS specialists on the mainland. The project, which began in 2001 with a \$6 million grant from the U.S. National Institutes of Health (NIH), has several novel studies

under way. One, led by Carlos Luciano, is comparing HIV-infected children and adults to try to unravel the link between HIV and peripheral neuropathy, the most common nerve complication of AIDS. In a separate study, neurologist Valerie Wojna and immunologist Loyda Meléndez are using proteomics to investigate the causes of HIV dementia.

With NIH support, Puerto Rican researchers have long participated in clinical trials of AIDS drugs. For instance, UPR's Carmen Zorrilla was a co-investigator of the landmark multisite study that in 1994 first proved that antiretroviral drugs could prevent HIV transmission from mother to infant. (UPR's medical center has had only one case of mother-to-child transmission since.) And recently, again with NIH backing, Puerto Rico joined the HIV Vaccine Trials Network and, separately, started an HIV/AIDS research collaboration among the country's three medical schools. Zorrilla, who is helping to lead both projects, is particularly excited about bringing together young researchers from institutions that have long competed with one another. "This is a small island," says Zorrilla. "These young investigators will inherit this AIDS problem, and they need to find the solutions."

—J.C.

injecting drug users (IDUs), who are often discriminated against at clinics or emergency rooms. "The doctors don't want them," says José "Chaco" Vargas Vidot, a clinician who in 1990 started an outreach program for IDUs called *Iniciativa Comunitaria*. Vargas Vidot complains that the country has too few methadone treatment clinics and needle-exchange programs, which elsewhere have proven key to lowering transmission rates. "The government is ignoring our AIDS epidemic," he charges.

So although Puerto Rico is indeed a rich port for patients such as Viviana Valentin and

many HIV/AIDS researchers, IDUs often have a starkly different vantage.

Heroin hub

On an early weekday afternoon in a barrio outside San Juan called *La Colectora*, a dozen men and one woman pay \$1 each to enter a shooting gallery, a small house where users inject and then typically collapse into a chair. Out front, two outreach workers and a doctor from *Iniciativa Comunitaria* set up a needle-exchange program. Julio, a 33-year-old heroin addict, shuffles up and lays eight syringes on the ground, receiving an equal number in

exchange. Julio, who is homeless, does not shuffle because he is high: Injecting has left him with bloody and blackened abscesses on his calves that may be gangrenous, says Angel González, a clinician with the program.

Julio says the stench coming from his legs makes a bad situation even worse. He couldn't make it to his methadone treatment program, he says, because "they started to refuse to let me on the bus. ... The smell was bad, and people would complain." He says an emergency room also sent him away without care.

González says Julio is one of many addicts the system has failed. "Patients have to go through so many obstacles to get treatments," says González. "We need big changes here." UPR's Carmen Albizu-García, who is conducting a small drug-substitution program with addicted prisoners, is also deeply frustrated by the official resistance to proven HIV prevention methods. "In Puerto Rico, we've been very, very hesitant to do what we have to do to control the epidemic," she says.

Heroin's popularity on the island has many roots, but it's clearly tied to its strategic location for South American traffickers. The Puerto Rican Department of Health says that half of the AIDS cases reported to date are heterosexual IDUs, while another 7% are IDU males who have sex with men. UPR obstetrician/gynecologist Carmen Zorrilla says that roughly two-thirds of 2000 HIV-infected women she is following were infected by having sex with men who were IDUs. The HIV/IDU situation in Puerto Rico is "a public health emergency," says Sherry Deren, director of the Center for Drug Use and HIV Research in New York City.

Deren, along with sociologist Rafaela Robles and epidemiologist Héctor Colón of the Central University of the Caribbean in Bayamón, Puerto Rico, led a provocative study comparing 399 IDUs in San Juan to 800 Puerto Rican IDUs living in New York City. Between 1996 and 2004, the researchers found, users in Puerto Rico injected nearly twice as frequently, favored mixtures of heroin and cocaine known as speedballs, and were more than three times as likely to share needles. Between 20% and 25% of the IDUs were infected in both locales, but the new infection rate in Puerto Rico (3.4% per year) was nearly four times higher. The study also found significantly fewer needle-exchange and methadone programs in Puerto Rico, and twice as many HIV-infected participants in New York were receiving antiretroviral drugs. Not surprisingly, the mortality rate in Puerto Rico was almost three times higher. If a city or state on the mainland had these statistics, says Deren, "I think there'd be much more attention given to the problem." Colón points a finger at policymakers who "still believe that treating drug users is a waste of money."

—JON COHEN