

# Colombia village's 'curse' could hold Alzheimer's cure

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When John Jairo, a meticulous night watchman, lost his job for leaving all of his employer's doors open, his family knew they were hit by the "Yarumal curse."

Yarumal, a Colombian village perched in the Andes Mountains, has a high incidence of a genetic mutation that predisposes its population to Alzheimer's—a bleak heritage that scientists now hope could help lead to a treatment to prevent the disease.

Jairo is just 49 but his brain has already been gnawed away by Alzheimer's, a disease caused by toxic proteins that destroy brain cells, leading to memory loss and death.

Emaciated, he gazes vacantly at his daughter Jennifer, who at 18 years old already fears his fate.

"I'm constantly afraid it will happen to me. Whenever I lose something, I tell myself it's because I've already got it," she said.

Her father, "who used to be so happy," has been reduced to a restless, sometimes aggressive ghost of himself, who tries to escape the house day and night, she said.

Last year, a neighbor with the same condition slipped out without anyone noticing. His family found him frozen to death in the hills nearby.

Inherited from the village's European ancestors, the "paisa" genetic mutation—named for the residents of the Colombian province of Antioquia—causes a devastating form of early-onset Alzheimer's.

A single parent can hand down the mutation, located on the 14th chromosome.

Those who have it have a 50 percent chance of developing Alzheimer's, sometimes by age 40.

In some families, parents and children have progressed through the illness together, from memory loss to dementia.

But a talented neurologist named Francisco Lopera, who grew up in Yarumal, hopes there is a blessing in the village's curse.

## **'Brain bank'**

Thirty years ago, Lopera, the head of the neuroscience program at the University of Antioquia, set himself an ambitious mission: to find a treatment to prevent Alzheimer's, the most common form of dementia in the world.

"Most treatments have failed because they're administered too late. Our strategy is to intervene before the disease destroys the brain," said Lopera.

For several months, he has been testing an experimental drug on a group of 300 healthy patients aged 30 to 60 years old who have the paisa mutation.

The results are expected around 2020.

The trials are part of a \$100 million project financed by the National Institutes of Health and Banner Research Institute in the United States, as well as Swiss pharmaceutical group Roche.

The active molecule in Lopera's drug targets the beta-amyloid proteins that attack the brain.

The stakes are high worldwide: more than 36 million people suffer from Alzheimer's and, without a cure, the number could rise to 66 million in 2030 and 115 million in 2050, according to the World Health Organization.

That's nearly one new case every four seconds—three times the rate of HIV infections.

"We don't know what causes Alzheimer's, but for one percent of the cases worldwide, it's genetic in origin. And that opens a very important window toward finding a preventive treatment," said Lopera, who estimates 5,000 people are at risk in and around Yarumal.

At his university, a small room filled with refrigerators and formaldehyde jars holds a "brain bank" created with organ donations from local residents—an invaluable research source.

"It was very hard for them to accept, in addition to their suffering, donating their loved ones' brains," said Lucia Madrigal, a nurse in the neuroscience department who organizes cognitive stimulation workshops for patients.

"But without that social link, the scientific project could never have seen the light of day," she said.

Herself a fit 60-something with no plans to retire, she has lived

Yarumal's nightmare along with residents.

"Some say they'd rather kill themselves. Then they get sick and they forget," she said.

Marta—an energetic, 72-year-old grandmother from Yarumal who has settled in the regional capital Medellin—said she is praying for Lopera's treatment to work.

Two of her daughters, aged 43 and 47, are suffering [memory loss](#) and "becoming small children again," she said.

Another daughter, 53-year-old Alitee, is "just a body" who drinks from a baby bottle.

"I've trusted my children to God. It's his decision," she said.

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