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Stanford researchers link lupus to common virus in ‘breakthrough’ study

A group of Stanford Medicine scientists detected a connection between autoimmune disease and Epstein-Barr virus

Kathy Ford, 77, a lupus patient who has lived with the condition for more than 30 years, pauses from her home in Dixon, Calif., on Friday, Nov. 14, 2025. (Ray Chavez/Bay Area News Group)

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Kathleen Ford of Solano County was a nurse for more than 20 years, until one day she squatted down to help a patient and, hobbled by terrible joint pain, couldn't stand up.

Then in her 60s, Ford had been diagnosed with lupus years earlier. It's a mysterious autoimmune disease that drives inflammation as the body's own immune system fights tissue and organs instead of foreign intruders like viruses and bacteria. Symptoms are a rollercoaster, from hair loss to joint pain that afflicted Ford so badly that she had to quit the job she loved. Strange rashes also broke out on her legs — then quickly disappeared.

About 1.5 million Americans have lupus and almost all — 90% — are women There is no cure. Treatments may relieve symptoms, but the troubling side effects can include osteoporosis and eye damage. More rarely, lupus can be fatal.

"It's not a fun disease**,** at all," said Ford, now 77, who lives in the northern Solano County city of Dixon. "You never know when it's going to exacerbate. And for no reason."

The cause of lupus has eluded medical researchers for decades. But this week a team of Stanford Medicine researchers claim they've cracked the code, a development some independent lupus experts described as a "major breakthrough" that could lay the groundwork for a potential cure.

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In a paper published Wednesday in the peer-reviewed journal Science Translational Medicine, the Stanford researchers said they have connected the dots between lupus and the Epstein-Barr virus, a virus 95% of Americans carry.

According to the study, that common virus infects certain white blood cells that are part of the immune system until, ultimately, more and more cells are recruited into a battle against the command centers of cells in one's own body.

Betty Tsao, a prolific autoimmune disease researcher and professor of medicine at the Medical University of South Carolina, said other biological factors may complicate the race to cure lupus. But she described the Stanford research team's paper as "a major breakthrough" and said the study is "convincing" in illustrating the biology behind lupus.

"This is an exciting time," Tsao said. "And we hope we will have much better therapy options for patients in a very short horizon."

Bill Robinson, professor of immunology and rheumatology at the Stanford medical school, who is the study's senior author, said the "breakthrough" reveals "the key missing link for how EBV causes lupus," using the acronym for the virus.

The discovery may reveal new possibilities for effective prevention and treatment. Currently, doctors offer lupus patients a wide range of medications with limited results and a slew of possible side effects.

By identifying the biological process that leads to lupus, Robinson said he and his colleagues can pursue treatment to interrupt the immune system's misguided — and dangerous — attack against the body it is designed to protect. In particular, the co-authors plan to use a targeted sequencing technology to identify and remove the white blood cells infected with the Epstein-Barr virus.

That would "effectively cure lupus," he said.

That's now the mission of EBVio Inc., a privately-held biotech company co-founded by Robinson and two of his Stanford colleagues. On Wednesday, Robinson said they did not have immediate plans to take the company public.

"Our goal is to make a good drug," Robinson said. "We're still pretty early-stage."

The study landed as other scientists advance early research into the application of a cancer treatment to lupus patients. In that approach, CAR T-cell therapy, white blood cells called B cells are removed en masse from the body. That could put lupus into remission, but at the cost of a weakened immune system, according to the Lupus Foundation of America.

In the Bay Area and Northern California, the new research was greeted with gratitude and praise in the community of people living with lupus, or those supporting a family member.

By tying lupus to the Epstein-Barr virus, the Stanford paper "represents a transformative moment for millions of people living with this devastating disease," said Thomas Bakewell, executive director of the Lupus Foundation of Northern California. "This finding brings us closer than ever to understanding the 'why' behind lupus and, importantly, opens the door to new pathways for prevention and cure."

The possibility of a cure for lupus would "truly be amazing," said Shauntay Davis-Patterson, 48. The Sacramento parent of two adopted boys knows all too well the journey of living with lupus, over the course of 30 years.

Davis-Patterson has contended with joint paint so severe that she couldn't walk, hair loss, hospitalizations and bouts with chemotherapy. Lupus has attacked her kidneys so viciously that she's waiting for a transplant. On top of that, she's endured the "toxic" side effects of medication intended to help her. Prednisone, a steroid, improved her symptoms, but at the cost of osteoporosis, she said.

"We all kind of suffer in silence a lot because people don't understand what we go through," said Davis-Patterson, who runs a support group for lupus patients as part of the lupus foundation.

Ford also developed osteoporosis, a brittleness and weakness in bones, because of Prednisone. And Plaquenil, which eases pain and swelling, can cause eye damage in patients who are older or have taken the drug for many years. Every six months, Ford has a doctor examine the health of her retinas.

But, big picture, both women consider themselves blessed. Davis-Patterson said she is grateful she can run after her boys, and that she was diagnosed quickly all those years ago. Some have to navigate the health system for years to nail down a diagnosis, she said.

And Ford is grateful that she's as healthy as she is — even after two hip replacements. On Thursday, she laughed and brushed off talk of her symptoms and the pile of pills she has to take every week.

"I'm really not that bad," she said. "I think I'm one of the lucky ones, actually."

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