MEMBERS OF THE surgical team at the University of Maryland Medical Center hold up the pig heart that was successfully transplanted into Bennett on Jan. 7.

EVERY 9 MINUTES, ANOTHER PERSON IN THE UNITED STATES IS ADDED TO THE NATIONAL TRANSPLANT WAITING LIST.

his PCMV counts were also rising. To fight off the invaders, the team administered a mix of antibodies known as intravenous immune globulin, or IVIG.

Bennett overcame the lung infection, but his health deteriorated suddenly on the 49th day, and an echocardiogram showed that his heart was failing. Then, biopsies revealed areas of dying tissue in that organ. Eleven days later, the team determined that the damage was irreversible and removed him from life support.

INITIALLY, GRIFFITH identified PCMV as the prime suspect in Bennett's demise. Further analysis, however, muddied the waters. Although the heart was swollen and stiff, no signs of active infection were evident. Nor were any of the classic markers of immune rejection.

The University of Maryland team is investigating a range of potential culprits. Antibodies in the IVIG might have attacked the heart tissue. Some previously unknown form of rejection may have been at work. Or Bennett may simply have been too weak to withstand the stresses of the operation and its aftermath. "This individual was not in good physical shape going into transplant," says Jay Fishman, associate director of the transplantation center at Massachusetts General Hospital. It could take months to resolve the mystery. Meanwhile, researchers are working on improved screening methods for PCMV, and pondering new ways to control infection in xenotransplant patients. Still, experts regard Bennett's case as a major step toward a future in which replacement organs are available on demand. "There's a lot of learning that needs to be done," says Mohiuddin. "But we have come a long way from the point where this looked impossible."

Adds Griffith: "If you're a scientist, you've got to say, 'This is real.'"

—KENNETH MILLER

TAKING MICROPLASTICS TO HEART — AND LUNGS

THE WORRISOME PARTICLES TURN UP DEEP IN THE HUMAN BODY.

In recent years, scientists have found plastic pollution in Earth's most remote places — from the top of Mount Everest to the bottom of the deepest ocean trench. But two studies released in 2022 brought the problem much closer to home.

In May, researchers in the Netherlands revealed the presence of tiny particles known as microplastics in the human bloodstream. Using a technique involving gas chromatography-mass spectrometry, which converts materials to gas and measures the mass and charge of their ions, the team examined the blood of 22 donors. In their study, published in the journal *Environment International*, they found microplastics in samples from roughly three-quarters of the subjects. Concentrations averaged 1.6 micrograms per milliliter, or about a teaspoon of plastic for every 264 gallons of fluid.

"We have now proven that our bloodstream, our river of life as it were, has plastic in it," declared lead author Heather Leslie, an environmental scientist at the Free University of Amsterdam, in the accompanying press release.

Soon after, in the journal *Science of the Total Environment*, researchers at England's University of Hull reported finding microplastics in living human lungs for the first time. Analyzing tissue removed during surgical procedures, the team detected the particles in 11 out of 13 samples.

What surprised the scientists was not only the near-ubiquity of the specks, but also how deeply they had spread: There were significantly more in the lower portion of the lung, where the airways are narrowest. "We thought particles of this size would have been trapped by mucus before making it that deep," says Laura Sadofsky, a senior lecturer in respiratory medicine and the study's senior author.

Microplastics, which result from the breakdown of items ranging from water bottles to machine parts, can be absorbed through ingestion or inhalation. They've been shown to cause health problems in many animals, including aneurysms in fish and cognitive impairment in hermit crabs, and to have toxic effects on cells in vitro. Their impact on human health, however, is not yet known.

"That's really where we need to go next," Sadofsky says. But the particles' omnipresence makes them challenging to study outside of a sealed lab. "They're in the air around us," she explains. "You have to be very careful that what you're finding isn't just coming from there."

—KENNETH MILLER

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