Companies race to achieve pig kidney transplants. Who will be first to convince the world their technologies are safest?

Xenotransplantation, the futuristic sounding field of animal-to-human organ transplants, is suddenly a lot closer to reality. The first two gene-edited pig kidneys have been transplanted into humans—and, so far, seem to be working beautifully.

It's an astonishing advance in a field that has languished for years. It's also priming a race between companies in the field. Who will be first to convince the world their technologies are the most viable?

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[In March], eGenesis provided a [pig] kidney to Richard Slayman. After being treated for an early sign of rejection, he was able to leave Massachusetts General Hospital, whose surgeons performed the transplant, just two weeks later.

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Now we've got a second success story, this time with a pig kidney developed by United Therapeutics Corp. Like Slayman, New Jersey resident Lisa Pisano was “very ill and caught in a medical Catch-22,” Robert Montgomery, the director of the NYU Langone Transplant Institute, where the surgery was performed, told reporters. Both her heart and kidney were failing, yet her other health conditions kept her off the organ donation list.

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The next few months will be an important test for whether pig kidneys can dispatch with those long waits. Doctors will be watching to see whether the patients’ immune systems continue to tolerate the organs.

They will also be watching whether one organ does better than the other. Slayman's pig kidney features a whopping 69 edits, most of which are intended to turn off genes that might put him at risk of infection.

By contrast, the organ that Lisa Pisano received had just a single gene edit.

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