

THE DELTA 32 EFFECT

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In 2016, a HIV patient from London, who also suffered from cancer, underwent a bone marrow stem-cell transplant to treat his malignant cells. Eighteen months later, he has not only been cured of the cancer but has also shown no signs of HIV. Doctors are hopeful that he has been cured of the dreaded virus, though they point out it's a little too early to say so conclusively. Their optimism has something to do with a genetic mutation that hampers HIV's entry into certain blood cells. A study published this week in Nature points out that the London Patient received the bone marrow donation from a person who was born with such a rare mutation, Delta 32. The transplant wiped out the immune cells vulnerable to HIV and replaced them with cells that are resistant to the virus.

The London Patient is the second HIV-infected to experience a long-term remission from the virus. About 12 years ago, an American living in Germany — the Berlin Patient — also received a Delta 32 transplant and has remained free of the virus, ever since. However, attempts to replicate the procedures undergone by the Berlin Patient in other HIV-infected people proved unsuccessful. The virus returned as soon as they stopped the standard medications. Moreover, there are other reasons that the hopes of a total victory against HIV that have arisen after this week's Nature study be tempered with realism. Bone-marrow stem transplants are risky — they make a patient vulnerable to life-threatening diseases like acute anaemia — and are expensive procedures. They are not likely to be the treatment option for a vast majority of the 37 million HIV-infected; it's hard enough to find tissue-matched donors for so many people, let alone locate one that also has the Delta 32 mutation.

There is good reason, however, to believe that the London Patient's recovery offers a viable pathway to combat HIV. The Nature study demonstrates the potency of gene-editing as therapy for those infected with the virus, similar to the treatment for sickle-cell disease, haemophilia and certain types of cancer. Researchers in different parts of the world are working on procedures to edit people's immune cells to make them HIV resistant — they would mimic Delta 32. They are also trying to develop reverse vaccination — much like for small pox — where an immune response is engineered to target the virus. Currently, those affected by HIV can have near normal lifespans. However, the cocktail of drugs needed to keep the virus at bay are expensive, and have serious side effects. The London Patient's recovery portends that cure from HIV is not far away.

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