

# 'Cut-and-paste' DNA-editing a step closer after first human trial

By Sarah Knapton SCIENCE EDITOR

A WORLD where DNA can be rewritten to fix deadly diseases has moved a step closer after scientists announced they had genetically edited the cells of a human for the first time.

A man in China was injected with immune cells which had been modified to fight his lung cancer. Larger trials due to take place next year in the US and Beijing could open up a new era of genetic medicine, scientists say.

The technique used, called Crispr, snips away genetic code and replaces it with instructions to build better cells.

Prof Andrew Sharrocks, of the faculty of biology, medicine and health at the University of Manchester, said the new technique could help in treating cancer "but also potentially combating auto-immune type diseases including things like arthritis". He added: "I would expect similar types of ap-

*'The potential for using this technology in the medical sphere is high and potentially transformative'*

proaches to be pioneered in the next few years as the potential for using this technology in the medical sphere is high and potentially transformative."

In the case of the Chinese man, scientists led by Dr Lu You at Sichuan University in Chengdu focused on a gene which holds the instructions to build a protein called PD-1. The protein works like an antenna, looking out for healthy cells, so that the immune system knows not to attack them. However, cancer masquerades as a healthy cell which is why it is often so deadly.

The scientists took immune cells from the man's blood and altered their DNA to remove the antennae, before increasing them in a lab and injecting them back into the man's bloodstream. Experts say it is effectively like cutting the brakes on the immune system.

Doctors will monitor the man's progress over the next six months. They are also planning to inject 10 more people with genetically edited immune cells in the coming months.

Dr Carl June, of the University of Pennsylvania in Philadelphia, is planning a cancer trial in the US next year, while Peking University is planning Crispr trials for bladder, prostate and renal-cell cancer in China next March.

Dr June told the journal *Nature* the race between the US and China to get gene-edited cells into the clinic would be like "Sputnik 2.0".

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