Crispr: Chinese scientists to pioneer gene-editing trial on humans

- Team will start testing cells on patients with lung cancer in August
- Technique can find and replace parts of DNA using an enzyme named Cas9

The Cas9 protein uses a molecular structure - a system for editing, regulating and targeting genomes.

Photograph: Alamy

Nicky Woolf in San Francisco

@nickywoolf

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A team of Chinese scientists will be the first in the world to apply the revolutionary gene-editing technique known as Crispr on human subjects.

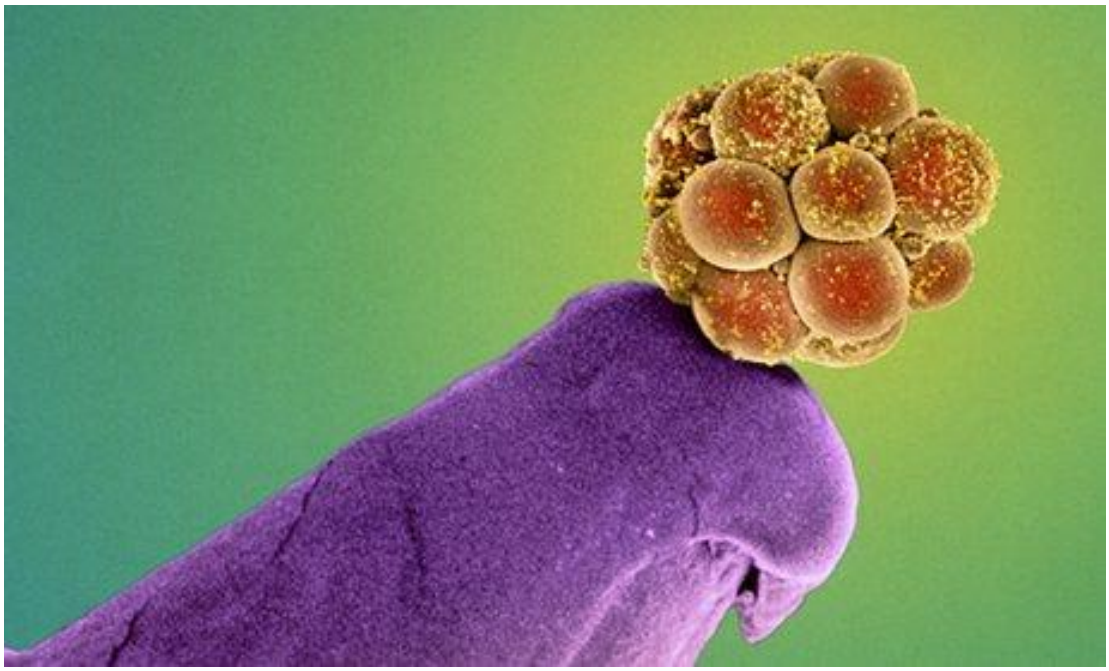
Led by Lu You, an oncologist at Sichuan University's West China hospital in Chengdu, China, the team plan to start testing cells modified with Crispr on patients with lung cancer in August, according to the journal Nature.

Crispr is a game-changer in bioscience; a groundbreaking technique which can find, cut out and replace specific parts of DNA using a specially programmed enzyme named Cas9. Its ramifications are next to endless, from changing the color of mouse fur to designing malaria-free mosquitoes and pest-resistant crops to correcting a wide swath of genetic diseases like sickle-cell anaemia in humans.

The concept of editing human DNA has often been controversial. In the UK, genetic modification in humans remains off-limits. Peter Mills, assistant director of the UK Nuffield Council on Bioethics, has told the Guardian of the worries it raises about playing god and "designer babies".

A study on non-viable human embryos, also conducted in China, was called off after researchers found what they described as "serious obstacles" to using the method in a clinical setting.

And in March 2015 a group of researchers published an open letter in Nature saying that there were "grave concerns" about the ethical and safety implications of editing the "germ-line" in human genes – the genetic code which is passed on.



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The Sichuan University trial, it is important to note, does not edit the germ-line; its effects will not be hereditary.

What the researchers plan to do is enroll patients with metastatic non-small cell lung cancer, Nature reported, and for whom other treatment options – including chemotherapy and radiotherapy – have failed.

They will then extract immune cells from the patients’ blood and use Crispr to add a new genetic sequence which will help the patient’s immune system target and destroy the cancer. The cells will then be re-introduced into the patients’ bloodstream.

China has been at the forefront of Crispr research. In 2014, researchers at Nanjing University reported that they had successfully engineered mutations in macaques – the first reported successful use of the technique in non-human primates.

Crispr was approved for human trials in the US by a research group backed by tech billionaire Sean Parker, but if it begins on schedule in August the Sichuan University study will beat them to the punch of being the first of its kind.

https://www.theguardian.com/science/2016/jul/22/crispr-chinese-first-gene-editing-trial-humans