Single-dose CRISPR gene editing technology helps train patients' immune systems to fight cancer

For the first time, researchers have used CRISPR gene-editing technology to substitute a gene in a patient's immune cells to redirect those cells to fight cancer.

Details of a small human clinical trial using this approach are explored in a paper published in *Nature* and they were presented on November 10 at the Society for Immunotherapy of Cancer in Boston, MA.

Dr. Stefanie Mandl, chief scientific officer at PACT Pharma and one of the authors of the paper, told *Medical News Today* that the results of the trial demonstrated early proof of concept.

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Researchers identified 175 unique, cancer-specific immune receptors. They then used an algorithm "to predict and prioritize which of these mutations can actually be recognized by the immune system," Dr. Mandl said. "Then we pick up [the] three best ones to treat this patient's tumor."

The selected TCRs are CRISPR engineered to replace the existing TCR in an immune cell.

"Then we grow those cells to billions of cells in the dish," Dr. Mandl explained. "And then we give them back to the patient, so now we're giving a lot of these T cells that are all specific to recognize the patient's tumor back into the patient, so that they can now find and kill the tumor cells. It's basically a living drug that you give."

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