News

Gene treatment could help blind people see light

Oliver Moody Science Correspondent

Tens of thousands of patients with inherited blindness stand to benefit from the world's first clinical trial of a genetic treatment for the disease.

Scientists in Texas hope that the pioneering experiment, which involves ferrying DNA taken from algae into the back of the eye, will restore rudimentary vision in up to 15 people who can no longer see light.

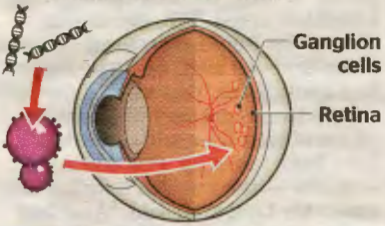
This will also be the first time researchers have used humans to test a branch of medicine that involves genetically engineering cells so that they can be switched on and off with light. Up to now there has been no effective treatment for retinitis pigmentosa (RP), a hereditary disease in which light-receiving cells in the retina break down because of mutations in their DNA, eventually leading to blindness.

About 20,000 people in Britain are thought to suffer from the condition, while many thousands more have lost their sight to other genetic problems with their retinas.

If it succeeds, the ramifications will be felt well beyond the search for a cure for inherited blindness. The scientists believe they could use a similar method to treat age-related macular degeneration (AMD), which is the leading cause of blindness and affects as many as 500,000 Britons.

How it works

1 DNA that makes algae light-sensitive is loaded into a swarm of harmless viruses



2 Viruses are injected into "ganglion" cells in the retina, turning them into light receptors

The ability to turn living people's cells into light-activated beacons could also lead to treatments for problems including pain, paralysis and Parkinson's disease. Some researchers think that the technique, known as optogenetics, could be used to switch off psychological conditions such as depression.

Sean Ainsworth, chief executive of RetroSense, the biotechnology company that is leading the six-month trial, said that if it worked, patients would be able to see large objects such as tables, chairs and other people.

The experiments are based on research by Zhuo-Hua Pan, at Wayne State University in Detroit, who said the trial was promising and that his team was working on improving the range of vision that could be restored.

The ultimate prize could be a cure for AMD. In a recent paper, Professor Pan argued that just as the new DNA might replace light-sensing cells in people with RP, it could do something similar in many people whose vision breaks down as a part of their retina wears out.

Clara Eaglen, eye health campaigns manager at the RNIB, said: "There is no cure for RP, so any treatment that could restore some sight would make a real difference to a person's life."