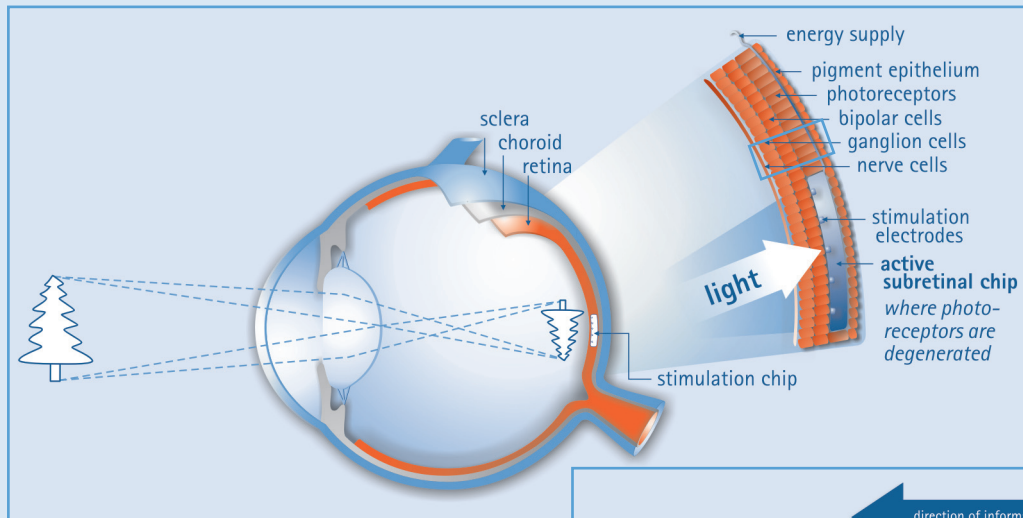




In Germany alone there are 33.000 people who are blind from Retinitis Pigmentosa (RP) and Macula Degeneration (AMD). Each year, around 4.200 people are blinded by these diseases. Until now, treatment and technology has been unable to restore vision to those who are blind due to RP or AMD.

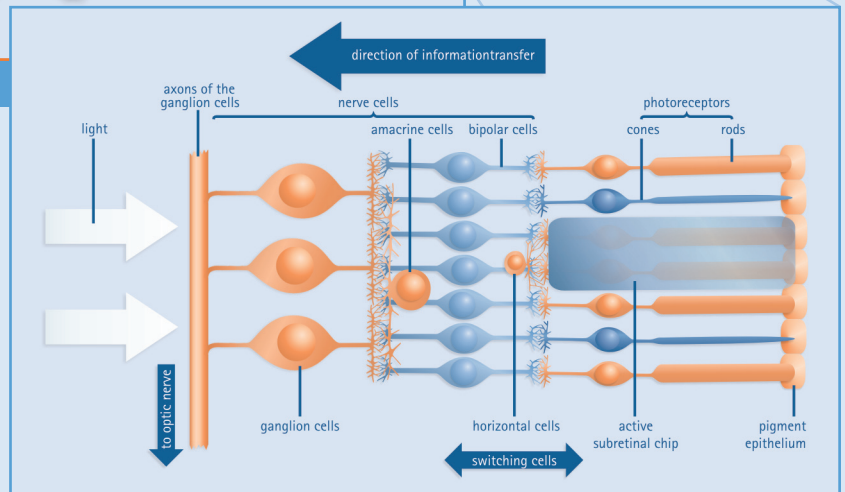
The German company, Retina Implant has developed an active subretinal chip that restores partial vision to these patients.

The chip is 3 x 3 x 0,1 mm and contains 1,500 micropixels (pixels). The electrodes are 50 x 50 µm, and spaced 70 µm apart. The distance between the electrodes was selected to enable patients to recognize faces or large letters.



Functional scheme of subretinal implants

The retina contains around 125 million cells, known as "rods and cones", which absorb light and convert it to electrical excitation of nerves. The active subretinal chip replaces this function: each pixel cell is assigned a photodiode, an amplifying circuit and a stimulation electrode. Each photodiode absorbs the light entering the eye and converts it into electrical energy. This energy is electrically amplified and used to stimulate the intact nerve cells in the retina. The nerve pulses from these cells are transmitted via the optic nerve to the brain, where the final result is a visual impression.



Scheme of the retina

Where is the active subretinal chip located?

The chip is positioned under the retina, at the exact point where the light-sensitive rods and cones are located in healthy people. This ensures that the electrical charges emitted by the implant are genuinely transmitted to the same sensory nerve cells. The retina's information processing network is thus used naturally.

normal range of expected visual acuity

Model of the retina implant output during functional electrical stimulation

Aims

After implantation, the patient's vision in an environmental brightness of 10 to 100.000 lux, should meet the following criteria:

- Orientation within a room
- Field of vision from 8-12 degrees
- Ability to see at least finger counting and recognition of faces in the best case.

look and you will see