

BIONIC SIGHT is a technology company that develops neuro-prosthetics - prosthetic devices that interact with the nervous system in order to restore functioning to damaged or degenerated tissue.

The company's first device is built to restore sight to patients with retinal degenerative diseases. There are currently 2 million people in the US with advanced stage blindness caused by these diseases, and the National Eye Institute estimates 200,000 more cross into this stage each year.

The device works by acting as a replacement for the retina. Briefly, a healthy retina performs three basic functions: a) it takes visual images in, b) it compresses them, and c), it converts the compressed images into a code – the code the eye uses to communicate with the brain. When a person suffers from a retinal degenerative disease, he/she loses the ability to perform these functions, and the result is blindness.

Bionic Sight's technology provides a solution. The device, worn in a pair of eyeglasses, performs all these functions for the patient – that is, it takes images in through a camera, and then compresses and encodes them - just as the healthy retina does. It then sends the coded signals to the retina's output cells (using an optogenetic interface), so that the signals can be sent to the brain.



What makes the technology fundamentally different from other prosthetic technologies is the understanding and use of the retina's neural code. **Because the device uses this code, it sends information to the brain that the brain can understand.** This includes information about faces, landscapes, people walking, etc.,. No other technology has been able to do this. Bionic Sight's technology is protected by an array of issued patents (US, China, Europe, Israel, Japan), as well as additional pending patents.

A second key factor is that the technology doesn't require surgery – just an injection to deliver an optogenetic vector to the retina's output cells. The vector, developed in collaboration with co-founder, Bill Hauswirth - one of the leading pioneers of retinal gene therapy - uses the same structure as vectors his team has previously used safely in humans.

Over time, advancements in gene therapy may give us the power to cure or prevent the onset of retina degenerative diseases. Until then, Bionic Sight's prosthetic retina provides a near-term treatment with powerful vision restorative capabilities.

For more detail, see Dr. Nirenberg's lab website: <http://physiology.med.cornell.edu/faculty/nirenberg/lab/>

FOUNDER: SHEILA NIRENBERG, PHD.

Dr. Nirenberg is a professor at Cornell and the founder of two startup companies – one that develops new kinds of prosthetic devices and one that develops new kinds of smart robots. Her lab at Cornell focuses on basic science, and her companies take what's learned in the lab and use it to develop solutions to real world problems.

The prosthetics company, Bionic Sight LLC, is focused on the development of a new kind of prosthetic device for restoring sight to patients with retinal degenerative diseases. In 2017 the company entered into a Collaboration Agreement with Applied Genetic Technologies Corporation (NASDAQ:AGTC) and is currently preparing for FDA approval.

The robotics company, Nirenberg Neuroscience LLC, focuses on machine vision applications, including autonomous mobility, navigation, face and object recognition. In 2016 the company licensed its technology to Ford Motor Company (NYSE:F) for use in its autonomous driving program, and NN is currently expanding its application platform into other markets.

Dr. Nirenberg has won numerous awards for her innovations, including a MacArthur "genius" Award, a Frontiers of Science award, a Beckman Young Investigator Award, a Stein Oppenheimer award, and a NYC BioAccelerate Prize.

Her work on cracking the neural code has been featured in a TED talk, a BBC documentary, "The Genius Behind...", the Discovery Channel, Scientific American, National Geographic, HBO, as well as several peer-reviewed scientific publications.

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