The Blind Can See!

By

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SEO: Retinitis Pigmentosa, blindness, University of California Irvine,

Category: News/Health and Fitness

Retinitis Pigmentosa is a common, genetic disease of the light-sensitive retina, which eventually results in blindness as the retina slowly and progressively deteriorates.  It is estimated to affect 1 in 3,500 to 1 in 4,000 people in the United States and Europe. While there are no therapies today to cure RP, there options for helping individuals with the disease. Still, helping to treat the disease is not curing.

Researchers from the University of California, Irvine School of Medicine, are changing this and think they may have found a way to actually cure Retinitis Pigmentosa and make the blind see. Their findings were published this month in *JNeurosci*, the Journal of Neuroscience.

The study

This new study, titled, "Detailed visual cortical responses generated by retinal sheet transplants in rats with severe retinal degeneration," led by David Lyon, PhD, associate professor of Anatomy & Neurobiology and director of graduate studies at the UCI School of Medicine,

demonstrates that sheets of fetal cells integrated into the retina can generate nearly normal visual activity in the brains of blind lab rats.

"It's been known that retinal sheet transplants can integrate into the degenerated eyes and allow the animals to detect light. But, beyond rudimentary light detection it was not known how well the visual system in the brain functioned with the newly integrated retinal transplant. In this study, we found that neurons in the primary visual processing center perform as well as neurons in animals with normal healthy retinas. These results show the great potential of retinal transplants to treat retinal degeneration in people," said Lyon.

According to Lyon, the transplants also preserved the connectivity within the brain that supports the potential of this approach in curing vision loss associated with retinal degeneration. It’s no small feat to connect the visual system in the brain - the part of the brain that “sees”- with transplanted tissue. It represents a huge step forward in combating age-related blindness in human subjects. Additional behavioral research is necessary to further determine long-term effectiveness.

The study authors concluded, “Our data show that fetal retinal sheet transplants can result in remarkably normal visual function in visual cortex of rats with a degenerated host retina and represents a critical step towards developing an effective remedy for the visually impaired human population.”

Symptoms of Retinitis Pigmentosa

According to the American Academy of Ophthalmology, the symptoms of Retinitis Pigmentosa include:

* **Loss of night vision.** Night blindness is when you cannot see anything in the dark, although your vision may be normal during the day. As you start [losing night vision](https://www.aao.org/eye-health/symptoms/night-vision-problem), it takes longer to adjust to darkness. You may stumble over objects or have trouble driving at dusk and at night. You might also find it hard to see in dim places like movie theaters.
* **Gradual loss of**[**peripheral (side) vision**](https://www.aao.org/eye-health/symptoms/vision-loss-peripheral-side)**.** This is known as “[tunnel vision](https://www.aao.org/eye-health/symptoms/tunnel-vision).” You may find you bump into things as you move around because you are not able to see objects below and around you.
* **Loss of central vision.** Some people also have problems with [central vision](https://www.aao.org/eye-health/symptoms/vision-loss-central) which can make it hard to do detailed tasks such as threading a needle and reading.
* **Problems with color vision.** Some people may also have trouble seeing different colors or shades within colors.

If you think you may be developing Retinitis Pigmentosa, please see your Ophthalmologist. Regular eye exams should be able to detect the issues before sight is lost.

RESEARCH

1. Andrzej T. Foik, Georgina A. Lean, Leo R. Scholl, Bryce T. McLelland, Anuradha Mathur, Robert B. Aramant, Magdalene J. Seiler, David C. Lyon. **Detailed visual cortical responses generated by retinal sheet transplants in rats with severe retinal degeneration**. *The Journal of Neuroscience*, 2018; 1279-18 DOI: [10.1523/JNEUROSCI.1279-18.2018](http://dx.doi.org/10.1523/JNEUROSCI.1279-18.2018)
2. **Retinitis Pigmentosa Symptoms.** American Academy of Ophthalmologists.  [Kierstan Boyd](https://www.linkedin.com/in/kierstanboyd).

<https://www.aao.org/eye-health/diseases/retinitis-pigmentosa-symptoms>