



Your Health

Restoring Eyesight©

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Vocabulary & pronunciation study by Catherine Balter Kendall©

Words are explained alongside the text

Stressed syllables are underlined and in bold*

Welcome to Your Health – provided by *themedicalfrontier.com, Medical News, Simplified*. Coming to you this week rather **fittingly**, live from London at the Royal College of Physicians.

Scientists have **managed to** partially **restore** vision in **blind** mice, according to a recent paper published in the **journal** *Nature, Neuroscience*. The researchers at Stanford University managed to restore connections **between** the eye and **brain** of **mice** **allowing** them to see again. This is a significant **leap forward** in discovering ways **to improve** and restore eyesight in people with **partial** blindness, entire **blindness**, glaucoma or other eye **injuries** that can affect the optic nerve.

The Stanford researchers **began** their experiment by cutting the key nerve needed for vision in mice. Once the optic nerve is **severed**, this causes **complete** blindness. This blinding **technique** in mice creates a very similar situation to that seen in glaucoma **patients**. Glaucoma is a condition where the **pressure** in the eye **impairs** the function of the optic nerve and is one of the leading causes of blindness **worldwide**.

Ophthalmology (the study of the eye) has **come a very long way**. We can now **fix** cataracts (a condition where your lens becomes **cloudy**) very easily by replacing it with an artificial one. Nowadays you don't even have to have a **general** anaesthetic when having this procedure done. **Having said this**, there are no vision-restoring treatments available for people with sight loss through glaucoma.

fittingly (adv.) appropriately

to manage to do sth. (expr) to succeed in doing sth.

blind (adj.) the state of not being able to see due to one's eyesight

brain (n.) the organ of the body in the head responsible for thinking

mice (n.sing. mouse) a small rodent animal often used in scientific experiments in laboratories

to allow (vb.) to permit, to enable

a leap forward (exp.) a lot of progress in a short space of time

to improve (vb.) to make better

injury (n.) damage to a part of the body, sometimes due to an accident

worldwide (adj.) everywhere in the world, internationally

to come a long way (exp.) to make a lot of progress

to fix (vb.) to repair

cloudy (adj.) opaque, unclear

having said this (exp.) however, despite this

Worldwide, there are over 70 million people that **suffer from** glaucoma – so a treatment for glaucoma-induced blindness would be **a huge achievement**.

So how does sight actually **work**? When we look at something, light **bounces off** what you're looking at and into your eye. It is then **focused** by your lens onto the retina, where photoreceptor cells are located. These photoreceptor cells located at the back of the eye can **detect** light and **convert** it into signals for the brain to interpret. The **signal** then gets passed into a new **set of** cells in the brain called retinal ganglion cells. These cells **stretch out** with long fibres to form the optic nerve. There are **over 30 different** types of retinal ganglion cells and each one has a **slightly** different way of 'seeing' things. Some may detect general motion, some may see the up or down motions, others may see certain **colours**, etc. These different ganglions also transmit the signal into different areas of the brain so that when you see **something** it can cause a change in **mood** or activity.

Although a third of the whole brain is used to **process** vision, retinal ganglion cells are the only cells that connect the eye to the brain. Therefore cutting these cells will make you blind.

The team **found out** that they could regenerate these cells after they'd been cut by daily regimens of exposure to high **contrast** images and chemicals that excite retinal ganglion cells. The scientists then tested the mice's vision after 3 weeks of this treatment and looked at their brains to see if any of the cells had regenerated.

As it turned out, many of the cells had **regrown**. An interesting observation was that the cells had retraced their original locations and regrown into the **correct** parts of the brain.

Whilst this **treatment** was a big step in discovering a potential new treatment for glaucoma, the team has still some work to **improve** the mice's eyesight, as fine discrimination between objects still isn't working.

This week's **advice**: if you think you are at risk of glaucoma as it runs in your family or you are having

to suffer from (exp.) to have a medical condition or illness

achievement (n.) success

huge (adj.) enormous, very big

to work (vb.) to function

to bounce off (phrasal vb.) to reflect

a set of (exp.) a group of

to stretch out (phrasal vb.) to extend

over (prep.) more than

slightly (adv.) a little

mood (n.) feeling

to find out (phrasal vb.) to discover

as it turned out (exp.) the surprising result of this was...

to regrow (vb.) to grow again

whilst (conj.) although

trouble seeing, don't wait. The earlier you **get your eyes tested** and a diagnosis, the easier it is to save your sight.

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to get your eyes tested

(construction) to have your eyes tested, to ask a professional to test your eyes

Tip!

The stress on 2-syllable words can fall on the first or the second syllable:

First syllable: **Journal, partial, blindness, se(er)ed, patients, pressure, gen(e)ral, focused, signal, diff(e)rent, colours, something, process, contrast, treatment,**

Second syllable: restore between, began, complete, impairs, detect, convert, although, correct, improve, advice