**Cell transplant study points to a potential new way to repair the retina**

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Researchers discover a new type of communication between donor photoreceptors developed from stem cells and host photoreceptors in mice with retinal dystrophy

UK eye researchers with funding from Fight for Sight have discovered a new type of communication between cells in the light-sensitive layer of [the eye](http://www.fightforsight.org.uk/about-the-eye/anatomy-of-the-eye/)(the retina). They have named it ‘material transfer’. Although it is very early days, the results in mice may lead to a new approach to restoring vision.

In conditions such as [retinitis pigmentosa](http://www.fightforsight.org.uk/about-the-eye/a-z-eye-conditions/retinitis-pigmentosa/) and macular dystrophy, the light-sensitive photoreceptor cells stop working over time and eventually die. As the photoreceptors lose their ability to respond to light, vision gets worse.

Previous research in adult mice has shown that cell transplant is a promising potential treatment that can restore some vision. Until now, researchers thought this happened because donor cells travel to the retina and become part of it after transplant, replacing the cells that have died off.

**Packets of protein**

But in the current study Dr Rachael Pearson at the UCL Institute of Ophthalmology and team discovered that the donor photoreceptors release ‘packets’ containing proteins and genetic instructions. The packets are taken up by the dying cells and seem to be able to get the cells to recover, at least for a period of time.

Dr Dolores M Conroy is Director of Research at Fight for Sight. She said:

“Material transfer between donor and host photoreceptors is certainly an exciting discovery. Some degenerative retinal conditions are currently untreatable as the underlying cause is not yet known. For these conditions in particular, and if we can determine the mechanism, material transfer may offer a way to offer the degenerating retina a means of repair that can rescue vision to some degree.

“In the meantime, transplanting donor cells that can connect to the host retina remains a promising approach to treating advanced and end-stage retinal dystrophy, in which too few photoreceptors remain for material transfer to occur.”

**Next steps**

Material transfer has not been reported before, so the next steps are to try to understand more about how it works. For example, we don’t yet know whether this is something that could happen in humans. The results were published in [*Nature Communications*](http://dx.doi.org/10.1038/NCOMMS13029).

Read the full press release ([PDF](http://www.fightforsight.org.uk/media/1804/retinal-dystrophy-2016-10-material-transfer-between-donor-and-host-photoreceptors-in-vivo.pdf)) ([text](http://www.fightforsight.org.uk/media/1805/retinal-dystrophy-2016-10-material-transfer-between-donor-and-host-photoreceptors-in-vivo.txt)).