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Newsletter from the Macular Degeneration Foundation, Inc.
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RETINAL 'PROJECTOR' HELPS THE PARTIALLY BLIND
MAY 24, 2006 - Newscientist.com news service - Celeste Biever

"A machine that lets partially blind patients read and explore virtual buildings by projecting images directly onto their retinal cells has been successfully tested.

Its developers say the machine could let thousands of people who suffer degenerative vision loss – as a result of glaucoma and macular degeneration, for example – read books and familiarise themselves with the layout of a new building before visiting it for the first time.

Work began on the Retinal Imaging Machine Vision System (RIMVS) over 10 years ago. But the latest version costs less than one-twentieth of the original price and has now been successfully tested on 10 partially blind subjects in the first pilot study.

'Until we tried it out on other people, I was the creator and the guinea pig,' says Elizabeth Goldring, a poetry professor at MIT in Cambridge, Massachusetts, US, who has led development of the machine and is herself partially blind. 'Now we know it is valuable and valid.'

The RIMVS is based on a diagnostic tool that dates back to the 1980s called a Scanning Laser Ophthalmoscope. This instrument projects a laser onto the back of the eyeball to test whether any light-sensitive retinal cells may still work.

When Goldring's optometrist used one to probe her eyes, she realized the potential of the device for people with vision loss. The RIMVS is similar but is less complicated and uses an LED instead of a laser. This has brought the cost down from \$100,000 to \$4000.

The RIMVS machine consists of a box about the size of a thick laptop, which is connected to a PC. A user looks into the box via a viewfinder and images are then projected onto the back of their eye. LED light is directed, via a series of lenses, through a partially transparent LCD, controlled by the PC. The LCD can generate images at a resolution of 640 by 480 pixels in 8 different shades of grey. Goldring carried out the pilot study with Jerry Cavallerano, an optometrist from the Joslin Diabetes Center in Boston, Massachusetts.

Subjects were shown 10 'word images' as they peered into a box. These consisted of words with certain letters replaced by graphics. For example, the image word 'book' had an image of a book in place of both of the two middle letters and the word 'fur' was written with the texture of furry skin. The idea was devised by Goldring to make it easier for people with visual impairments to read quickly. But the device can also be used to display ordinary words. In the pilot study, six out of the

10 patients interpreted all 10 'word images' correctly. Two patients interpreted nine out of 10 correctly and two correctly identified eight of 10. Without the machine all the patients were too blind to have any hope of reading.

Another feature of the machine tested during the trials is the 'pre-visit' function. This introduces the user to an interactive virtual world which they can explore using a joystick. This gives them the experience of exploring a building before visiting it for real. 'A really terrifying experience for people who are blind is to go to new places,' Goldring says.

A similar type of retinal projection technology could one day also be used to create more innovative display systems for those with good eyesight. One such device, called the Virtual Retinal Display, has been developed by researchers at the University of Washington, Seattle, US. This also uses an LED to project images on the back of the retina. It was developed as a compact video display system as well as a tool for people with vision problems."

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PANEL LIKES SOME OF WHAT IT SEES BUT REJECTS IMPLANT

FDA advisers seek longer-term data on vision treatment

By Diedtra Henderson, Globe Staff July 18, 2006

WASHINGTON —

"In the realm of cutting-edge health technologies, "innovative and tested" doesn't necessarily mean ready for market. Allen Hill , chief executive of the 30-employee company, said he is 'very disappointed' by the vote and would discuss what steps to take next with regulators and his 'very supportive and patient' investors.

VisionCare's implanted 'telescope,' acting in concert with the cornea , the eye's crystal clear portion that lets light enter, improved patients' vision sufficiently in clinical trials for them to report improved quality of life and less reliance on others.

The advisory panel on Friday voted 10-3 to recommend that the FDA reject VisionCare's device for now due to safety concerns. According to the panel's chairman , William D. Mathers , an Oregon ophthalmology professor, members were troubled by patients' loss of specialized cells that pump water out of the cornea to keep it thin. If the specialized cells become too sparse, the cornea can swell and vision can cloud. People normally lose about 0.5 percent of those endothelial cells per year, or 5 percent loss in a decade. After the VisionCare procedure, patients' eyes had lost 25 percent at one year and another 5 percent the following year."

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PROTECT YOUR EYESIGHT FROM THE SUN SUMMER AND WINTER!

During the winter months, it's tempting to put the sunglasses away. DON'T DO IT! Protect your eyes from the sun's destructive rays at all times. We get a number of phone calls and emails asking what type of eye protection we recommend. Most experts agree that it is important to buy sun glasses with amber lens that have UV protection and are polarized. If you are having trouble finding inexpensive eye protection that meets this criteria call 1-800-924-4393.

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To speak to a support representative directly, you may call 1-888-633-3937. If you reach our voice mail, please speak slowly and distinctly.

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MAKING CONTRIBUTIONS:

Please make checks payable to Macular Degeneration Foundation, Inc., P.O. Box 531313, Henderson, Nevada 89053, or you may use your credit card on our web site <http://www.eyesight.org/Donations/donations.html> . Your contributions make our services available as a support system for macular degeneration patients in the following ways:

1. We provide toll-free lines for personal contact assistance.
 2. We mail brochures and other printed materials upon request.
 3. We support an award-winning web site that provides the latest up-to-date information.
 4. We fund research proposal grants to provide therapies for both the wet and dry form of AMD.
- Contributions marked "research" are used 100% for research.

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MDF was founded in 1992 by Edmund J. Aleksandrovich Ph.D (a victim of macular degeneration). It provides MD patients and their families with the information necessary to understand the disease, the latest news concerning ways to cope with the disease, and supports the efforts of researchers to find a cure.

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