The last decade has seen major advances in treatments for age-related macular degeneration (AMD). Lucentis, Avastin, and Eylea—anti-vascular endothelial growth factor (anti-VEGF) drugs—now help preserve the sight of countless people who might once have become irreversibly blind from wet AMD. Many other promising therapies for both wet and dry AMD are in the research pipeline.

The two drugs that are farthest along in testing are Lampalizumab and Fovista. Lampalizumab has been successfully used to slow the progress of geographic atrophy, an advanced form of dry AMD. It recently entered Phase III trials, the advanced stage of human clinical testing, and hopefully may be available within a few years to slow the progression of this currently untreatable form of AMD.

Fovista is being tested as a treatment for wet AMD in combination with existing anti-VEGF drugs, and it may be more effective than the latter alone. If studies are successful, doctors might be able to offer Fovista to patients within a year or two.

Several other potential therapies—still currently in the early stages of human testing—could also one day offer hope for people with AMD.

Scientists are testing extended-release anti-VEGF drugs that could last three months or longer. This would make treatment easier for patients

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who must receive monthly injections of these drugs into the eye.

Gene therapy also holds promise for treating AMD, especially since it has already been shown to restore sight in studies of children born blind from retinal disease. In a Phase I study, Retinostat made anti-blood vessel proteins for at least a year after being injected under the retina during an operating room procedure. Another company is testing a compound called AAV-sFLT. This is injected into the clear, jelly-like substance in the eye, much like existing treatments for wet AMD, which could make it safer and more convenient for patients.

Scientists are also looking at nutraceuticals—food-derived products with potential health benefits—to treat advanced dry AMD. The antioxidant lipoic acid is already available over the counter and has a 50-year track record of safety. This could allow a new treatment to come to market faster than a brand new substance whose safety is unknown.

Lastly, technological advances like the artificial retina could one day help people with AMD. The so-called “bionic eye” is already restoring some sight in people who are totally blind from a rare retinal disease called retinitis pigmentosa.

Doctors also recently began testing the bionic eye in patients with profound vision loss from AMD (see story on page 4), but it only enables them to see about 60 pixels of light, whereas a healthy human eye can see about 1 million pixels. Patients who receive the implant must work with low-vision specialists in order to adapt to and use the device. As the technology improves, retinal implants may become an effective treatment for people with debilitating vision loss from AMD.

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**President’s Corner**

**The Future Is Bright**

I can’t imagine anything more wonderful than fully preserving vision and preventing future vision loss from AMD.

That’s why I’m so delighted to send you this issue of *Macular Degeneration Research News*. You’ll learn about exciting new AMD treatments that are reaching the final stages of human testing, as well as other earlier-stage studies that show equal promise.

Plus, you’ll find out about some of the latest grants we’ve awarded for AMD research. When you learn about the pioneering studies now under way thanks to your support, I think you’ll be confident—as I am—that we will one day defeat this terrible disease.

Together, I know there will come a day when our friends and loved ones no longer have to fear losing any of their vision from AMD.

Thank you for making all our sight-saving work possible.

Stacy Pagos Haller
SPOTLIGHT: Latest Grants Awarded for Pioneering AMD Research

Treating the underlying cause of wet AMD

In wet AMD, abnormal blood vessels grow and leak into the retina, damaging vision. Current anti-VEGF therapies only address the symptoms, not the cause, so patients require lifelong treatment. In this study, Eric Yin Shan Ng, PhD, of the Schepens Eye Research Institute in Boston, will test whether toll-like receptors, a part of the immune system that regulates inflammatory response, contribute to the development of wet AMD, and if blocking them inhibits its development. This could open the door to new therapeutic targets to address the cause of wet AMD.

Gene therapy to treat advanced dry AMD

Toxic oxygen compounds are known to damage the retina as people age and contribute to the development of AMD. Alfred Lewin, PhD, of the University of Florida, is investigating whether gene therapy can help reverse this oxidative stress once signs of advanced dry AMD have been detected. He will test a newly discovered compound to prevent the damage in animal models and determine the most effective delivery method and dose. If effective, this could lead to a new way to prevent the progression of dry AMD, which is currently untreatable.

These are just 2 of the 11 new grants Macular Degeneration Research recently awarded to fight AMD. You can read about all the studies we funded at www.brightfocus.org/MDRawards.
Helen Keller Prize for Vision Research

In May, the prestigious 2015 Helen Keller Prize for Vision Research was awarded to two researchers who have made outstanding contributions to help people with impaired vision. They were chosen by a panel of biomedical scientists and research physicians out of a research community of 20,000 scientists and clinicians worldwide.

The award was presented by BrightFocus Foundation, of which Macular Degeneration Research is a program, in combination with the Helen Keller Foundation for Research and Education.

Robert W. Massof, PhD, Professor of Ophthalmology and Neuroscience at Johns Hopkins University, was honored for a long career in low-vision rehabilitation, including developing the first head-mounted system to aid the visually impaired.

Gordon Legge, PhD, Professor of Psychology and Neuroscience at the University of Minnesota, was recognized for his groundbreaking work improving problems in mobility and reading for people with low vision. Legge, who has low vision himself, said he hopes to be “a role model for what is possible in science and daily life.” He plans to use the award to support his low-vision research projects, including development of an iPhone app that aids visually impaired people in navigating indoor environments.

“BrightFocus Foundation is committed to saving sight, and we believe that research, education, and greater awareness will improve people’s lives,” said Stacy Pagos Haller, President of BrightFocus Foundation. “We applaud these two Keller Laureates who have made low-vision research and rehabilitation a life’s work, and we support scientists whose efforts lead to transformative results for people with severe vision loss.”

First-Ever Bionic Eye for Patient with AMD

In a world-first, surgeons in England implanted a bionic eye in a patient with AMD.

Ray Flynn, age 80, received the retinal implant as part of a clinical trial. He had completely lost his central vision from dry AMD and could no longer work in his garden or enter the security code for his debit card when shopping, according to the report in BBC News.

With a bionic eye, the patient wears special glasses outfitted with a miniature camera that transmits data wirelessly to a microchip implanted behind the retina. The chip stimulates the remaining retinal cells and triggers the brain to process the information.

The bionic eye doesn’t provide patients with highly detailed vision, but it can help them

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detect patterns and shapes. After the surgery, Flynn could see the direction of white lines on a computer screen. As his brain learns to interpret the data more clearly, he hopes his vision will improve enough to allow him to resume normal daily activities like grocery shopping.

“This is an exciting result,” Cathy Yelf, of the Macular Society, told BBC News. “These are early trials but in time this research may lead to a really useful device for people who lose their central vision.”

Caring for Someone with AMD

Family members and friends can share responsibilities so no one gets overwhelmed.

Experts suggest offering specific help, such as:

- Adapting the home to ensure it’s safe
- Running errands
- Making and keeping medical and other appointments
- Making meals
- Housecleaning
- Social activities
- Outings

For more information about caring for a loved one with vision loss, visit [www.brightfocus.org/AMDcaregiving](http://www.brightfocus.org/AMDcaregiving) or call 855-345-6637.
Many of our donors find that the easiest and most efficient way to give to Macular Degeneration Research is to make monthly contributions of $10, $20, $100, or more. Automatic payments are particularly effective because they save on the cost of stamps and envelopes. This makes us more efficient and allows us to allocate more of every dollar to the fight against AMD.

Becoming a monthly donor is easy to do, and you can change or cancel your monthly gift at any time. For more information on this unique way of giving, please contact Cristel Macaraeg at 855-345-6637.

Thank you for advancing the work of Macular Degeneration Research!