

RETINA RESEARCH FOUNDATION NEWSLETTER

Foresight for Sight

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Can Retinal Detachment be Prevented?

The National Institute for Occupational Safety and Health (NIOSH) has recently funded a new, four-year research study at UMass Lowell's Department of Work Environment



Professor David Kriebel

for the purpose of investigating workplace causes of serious eye injuries. Prof. David Kriebel is evaluating whether the muscle strain that comes with lifting heavy objects on the job can cause retinal detachment. The research team will evaluate data from a large group of new cases of patients who have detached retinas.

“The object of our study is to evaluate the risk of retinal detachment from heavy physical activities like lifting, pushing and pulling,”

Dr. Kriebel said. “If the findings of this study confirm the association between this activity and retinal detachment, our research team will be



Heavy physical lifting

able to recommend strategies for preventing this dangerous ophthalmologic emergency. For example, many jobs in manufacturing, shipping and health care that involve heavy lifting can be modified to use mechanical lifting devices.”

Retinal detachment - the retina pulling away from blood vessels - is a serious medical emergency. Until recently, there was no way to prevent retinal detachment. Recent research, however, points to a strong link between retinal detachment and preventable factors such as heavy physical exertion. The first study

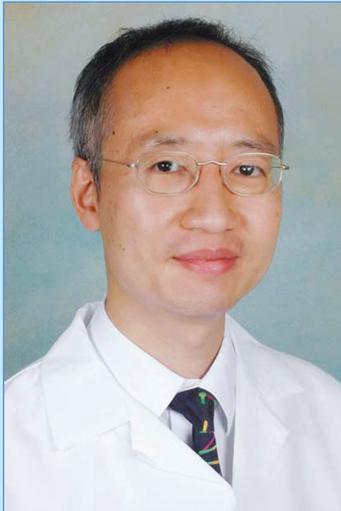
identifying a strong association between heavy lifting in the workplace and risk of retinal detachment was published in 2008 by Prof. Stefano Mattioli of the University of Bologna. This research also reported a strong association between retinal detachment and obesity, which will be further investigated in the UMass Lowell study.



Professor Stefano Mattioli

www.uml.edu

Developing Personalized Gene Therapies to Treat Retinitis Pigmentosa



Stephen H. Tsang, MD, PhD

Researchers led by Stephen H. Tsang, MD, PhD, at Columbia University Medical Center (CUMC), have created a method to develop personalized gene therapies for patients with retinitis pigmentosa (RP). The approach transforms skin cells into retinal cells using induced pluripotent stem (iPS) cell technology. Pluripotent cells can be transformed into specialized cells of differing types, and in this case are transformed into retinal cells. These new cells can then be used as a patient-specific model for disease study and preclinical testing. The paper was published recently in the online edition of *Molecular Therapy*, the official journal of the American Society for Gene & Cell Therapy.

The researchers used adeno-associated viruses (AAVs) to introduce normal copies of the mutated gene (membrane frizzled-related protein, MFRP) into the iPS-derived retinal cells, successfully restoring the cells' function. The researchers also used gene therapy to "rescue" mice with RP due to MFRP mutations. According to Dr. Tsang, the mice showed long-term improvement in visual function and restoration of photoreceptor numbers.

"The use of patient-specific cell lines for testing the efficacy of gene therapy to precisely correct a patient's genetic deficiency provides yet another tool for advancing the field of personalized medicine," said Dr. Tsang, the Laszlo Z. Bitó Associate Professor of Ophthalmology and associate professor of pathology and cell biology.

"This study provides both in vitro and in vivo evidence that vision loss caused by MFRP mutations could potentially be treated through AAV gene therapy," said coauthor Dieter Egli, PhD, an assistant professor of developmental cell biology (in pediatrics) at CUMC, who is also affiliated with the New York Stem Cell Foundation.

RP is a leading cause of vision loss, and is estimated to affect at least 75,000 people in the United States. The first symptoms typically emerge in early adulthood, and as RP progresses the patient loses fine central vision. It has been difficult to develop models to study RP since over 60 different genes have been linked to RP.



Dieter Egli, PhD

www.news-medical.net



My Eyes? Now and in the Future

Answers to some of the most frequent questions doctors receive from their patients

James E. Key, MD, who serves on the Board of Directors of Retina Research Foundation, answers some of your questions about eye health and recent advances in contact lenses.

Patient's question:

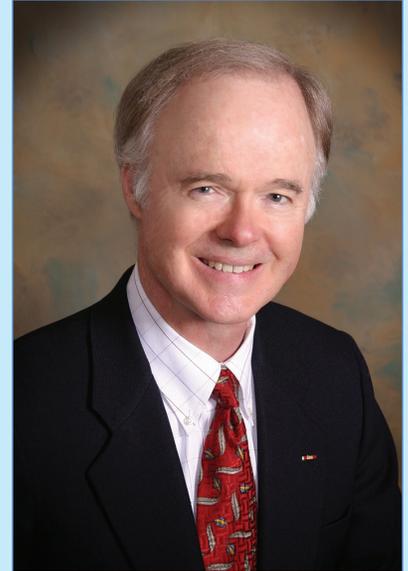
As a general ophthalmologist, I am often asked whether a person, who otherwise has no ocular disease, should take dietary supplements to prevent eye disease, specifically age-related macular degeneration.

Dr. Key's answer:

The short answer is that for people with or at risk for some eye conditions, high dose dietary supplements may help slow or prevent these conditions. When the National Eye Institute released the results of its carefully controlled Age-Related Eye Disease Study (AREDS), the results showed that high doses of antioxidants vitamin C (500 mg), vitamin E (400 IU), and beta-carotene along with zinc (8 mg), reduced the risk of vision loss from advanced age-related macular degeneration (AMD). However, the only groups that showed significant benefit were those with intermediate AMD or advanced AMD in just one eye. As some of these supplements in high doses have unwanted side effects, it is best to ask your ophthalmologist if you are in one of the groups that could expect to benefit.

A second large study (AREDS 2) has now been done to see if adding other vitamins and minerals would improve the results. The first addition was Omega-3 fatty acids (fish oil) and the second

(continued on page 4)



James E. Key, MD



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Retina Research Foundation is dedicated to the eradication of retina disease through programs in research and education.



(continued from page 3)



1.



2.

was a combination of two carotenoids, lutein and zeaxanthin, which are found in leafy green vegetables and highly colored fruits and vegetables. The new study showed the original AREDS formula was still effective with less zinc, and that, in general, people who took lutein and zeaxanthin instead of the beta-carotene had more of a benefit. The Omega-3 addition did not lower the risk of progression of AMD, but did help restore and maintain tear formation and eye lubrication.

So what do I tell patients, especially those with a family history of AMD about these supplements? I explain that even the new AREDS 2 formula has not been shown to prevent the onset of AMD or even slow its progression in the early stages. However, I see no harm in taking a daily multivitamin and non-mercuric fish oil (Omega-3) as many of these vitamins contain the same ingredients in the AREDS 2 formulation but just not in such high concentrations. If combined with a well-rounded diet, moderate exercise, and avoidance of known risk factors such as smoking, they are probably lessening their risk of eye and vascular disease.

Patient's question:

Have there been advances in contact lenses that enable persons to continue or even start contact lens wear after age 40?

Dr. Key's answer:

More people wear contact lenses for vision correction in the United States than in any country. Fully 30% of those who need full-time vision correction in the U.S. wear contact lenses, and this amounts to about 35 million people.

In the past, many contact lens wearers gave up their lenses about age 45 for two main reasons. The first of these was an inability to maintain near vision without supplemental reading glasses. The second reason was the decreased tear production with age, which made the lenses feel dry and caused red and irritated eyes.

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1. Omega 3

2. Exercise for Eye Health

(continued from page 4)

The contact lens industry has approached the first problem with an array of new multifocal contact lens designs over the past decade. Lenses are available now that can be custom fit to preferentially correct computer and/or reading vision while still maintaining distance vision. The designs in soft lenses do not require the patient to shift head or eye position as in a traditional bifocal or multifocal pair of glasses.

For the patient just beginning to have near vision problems (usually in their early 40s), we mainly utilize monovision, where the non-dominant eye is undercorrected slightly for distance vision in order to preserve near vision. This technique is especially useful for those patients who have never needed glasses for distance and only need help for near. The patients rarely notice the difference between the two eyes.

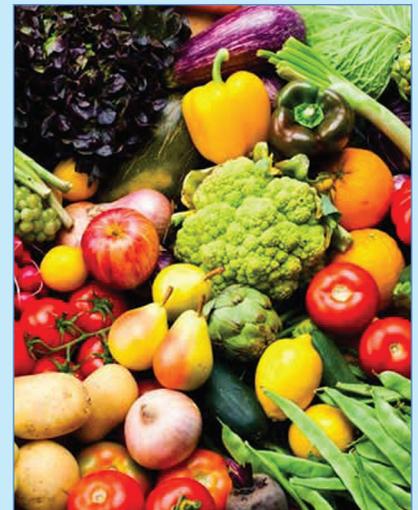
Advances in the wetting properties of the lens structure itself have made lenses much more comfortable even with dry eyes. The newer polymers are more deposit resistant and have wetting agents directly bonded to the lens surface to actually lubricate the ocular surface while the lenses are being worn. Thinner designs that soak up less of the tear film are utilized more often as are one-day, throw-away lenses that give the comfort of a new lens each day. Mass production due to computer controlled molding machines has reduced the cost of these daily lenses to less than one dollar daily.

In short, there now are many patients still wearing contact lenses well into their later years.

James E. Key, MD, is an ophthalmologist at Houston Methodist, specializing in ocular manifestations of systemic medical disorders, geriatric ophthalmology, contact lens fitting and research; Professor of Clinical Ophthalmology, Weill Cornell Medical College; and Clinical Professor of Ophthalmology, Baylor College of Medicine.



3.



4.

3. Contact Lens

4. Foods for Eye Health

Handwriting Pointers for Low Vision

Retaining your handwriting ability is very important if you have low vision. Making notes for yourself, signing your name, personal and business correspondence – all require legible handwriting. Below are a few pointers to help you.

General Tips and Techniques

1. Maintain sharp contrast

Writing with black or navy ink on ivory paper is best and gives a sharp contrast between the paper and the words you're writing. Bright white paper may cause glare. Also, try placing your paper on a dark-colored surface so that the edges of the paper show up more clearly.

There are many bold pens available at office supply stores, and some that do not bleed through paper.

2. Maintain a straight writing line

When signing your signature, you can either use a commercial signature guide, make one yourself, or fold the paper to make a sharp crease and give you a tactile raised writing line for your signature.

You can also create a guide using the index and middle fingers of your non-writing hand to form a "V." Place your hand forming the "V" palm down and sideways on the paper so that your index finger is directly below the entire writing line and your middle finger is angled above the line. Sign your name above your index finger and stay inside the "V" to help guide your signature placement.

3. Mark your place

The forefinger of your free hand can be used to mark your place and serve as a guide when moving from word to word or from one line to the next. Move your guide finger up to the pen before lifting it at the end of a word. This helps to ensure that there is a sufficient space between words and sentences.

You can use a paperclip to mark a spot on your page or the center of an envelope.

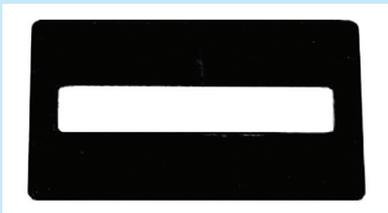
www.visionaware.org/info



5.



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7.

5. *Low Vision Handwriting*

6. *Handwriting Paper*

7. *Signature Guide*



Meet the Advisory Trustees

Sally Thomas

Sally Rahe Thomas was born in Tulsa, Oklahoma, and graduated from Tulsa Central. At The University of Oklahoma, she joined Pi Beta Phi, and graduated Phi Beta Kappa with a BS in Geology.

While a geologist with Humble Oil Company, she married Robert C. Thomas. Following the birth of Mary, Laura, Suzanne, and Kristen, life centered around family and volunteer activities. Sally organized and taught Red Cross and Girl Scout swimming programs for over 32 years. Her Synchronized Swimming Team competed in the Junior Olympics in Nebraska.

Sally shared her love for geology as a docent at the HMNS Gem and Mineral Hall. She was President of Memorial Women's Club, and Houston Hospice honored her with the Betty Evans Award for service as both a patient volunteer and Board President. Sally serves as a Lector and Eucharistic Minister at Saint Cecilia Catholic Church. In 2012, The University of Oklahoma recognized her as a Distinguished Alumna of the Mewbourne College of Earth and Energy.

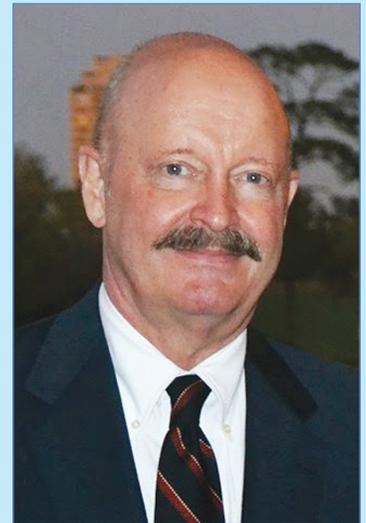


Sally Rahe Thomas

Deral T. Humble

Deral Humble was born in Austin, Texas, and raised on the Gulf Coast of Texas and Louisiana. He graduated from the University of Texas with a Bachelors in Business Administration and minor in Marketing, and attended the United States Navy's Class A School for Electronic Technicians in Great Lakes, Illinois. As a Third Class Petty Officer, Deral participated in "The Gulf of Tonkin Yacht Club Cruise" as part of the Carrier Airborne Early Warning Squadron One Hundred Fourteen aboard the USS Kitty Hawk.

Following completion of The Southern Methodist University School of Engineering and Applied Sciences Networking Technologies Program, he worked in the computer field in sales and marketing, and transitioned to Information Technologies Services. Deral is an avid outdoors man, especially in light tackle and fly fishing in Alaska and Wyoming. Other interests include travel to the ancestors' home lands to trace back lineage and to see the amazing art work of the Renaissance period. Listening and playing music from the classical period is the calming pursuit of late.



Deral Humble



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NEWSLETTER

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