

AN EYE TO THE FUTURE

The Department of Ophthalmology
The University of Arizona
Health Sciences Center

Fall 2004

New Department Head: Dr. Miller Outlines Plans for Ophthalmology

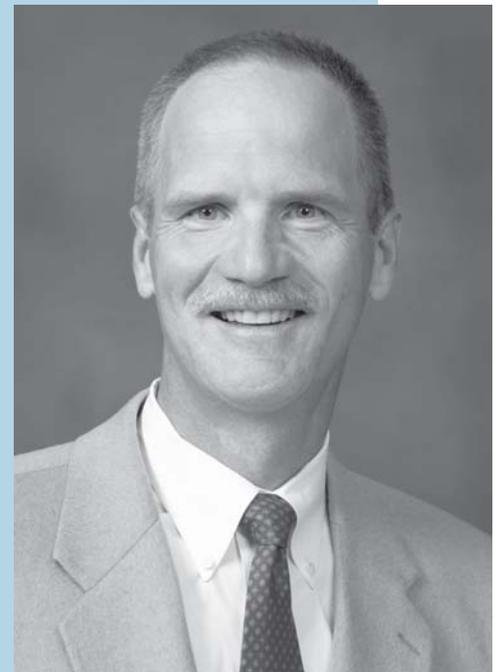
The UA Department of Ophthalmology has grown tremendously since its founding in 1982. In addition to a strong faculty dedicated to teaching, research and patient care, the department has attained excellence in several areas, including macular degeneration, glaucoma, retinal disease and other conditions of the aging eye, children's vision problems, such as amblyopia, eye surgery, and eye diseases among Hispanics.

This summer, Robert Snyder, MD, PhD, decided to step down after 13 years as department chairman to pursue a private practice of medicine in Tucson. He remains affiliated with the UA as professor of biomedical engineering and remains on our department advisory committee.

I accepted the position of department head as of July 1. For those who do not know me, I joined the department in 1991, and have served as vice head of the department for many years.

My plans include continued growth in our clinical program to provide the best care for our patients and continued research in fighting blindness.

I am looking forward to working with so many people who are committed to preserving healthy vision and preventing blindness and to providing the resources necessary to accomplish our goals.



▲ Joseph M. Miller, MD, MPH, professor and head, Department of Ophthalmology, University of Arizona College of Medicine, Tucson

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Dr. Miller Appointed Department Head

Joseph M. Miller, MD, MPH, a nationally known ophthalmologist and professor of ophthalmology, has been appointed head of the UA Department of Ophthalmology. Dr. Miller also is professor of optical sciences at the UA Optical Sciences Center and professor of public health with the Mel and Enid Zuckerman Arizona College of Public Health.

Prior to his appointment, Dr. Miller served as vice head of the department for six years. He joined the UA College of Medicine faculty in 1991 as assistant professor of ophthalmology.

“Dr. Miller has a strong record as an investigator, clinician and educator. He has an ambitious plan to expand the clinical and research programs within the department and to integrate those programs fully into our

expanding opportunities on the various campuses,” says Keith Joiner, MD, MPH, dean, UA College of Medicine.

Dr. Miller trained as a biomedical engineer at Case Western Reserve University in Cleveland, Ohio, before attending medical school. He earned his medical degree from Northeastern Ohio Universities College of Medicine in Rootstown, Ohio, in 1985, followed by a residency in ophthalmology at Yale University in New Haven, Conn., and a fellowship in pediatric ophthalmology at Johns Hopkins University, Baltimore, Md. Prior to joining the UA, he was with the Wilmer Ophthalmological Institute at Johns Hopkins Hospital in Baltimore, Md.

A board-certified ophthalmologist, Dr. Miller specializes in pediatric eye care and strabismus. He is listed in the 2003-2004 *Best Doctors in America* database, and is a fellow of the American Academy of Ophthalmology and a member of the American Association for Pediatric Ophthalmology and Strabismus.

In addition to his clinical work, Dr. Miller’s research interests include the effect of refractive error on visual development and the invention of instruments to detect strabismus (misaligned eyes) and amblyopia (lazy eye) in young children. He is the recipient of the 2004 Walt and Lilly Disney Award for Amblyopia Research from Research to Prevent Blindness (RPB).

He is medical director of “Astigmatism and Amblyopia

Among Native American Children,” a project supported by a grant from the National Eye Institute of the National Institutes of Health involving Head Start and elementary school children of the Tohono O’Odham Nation.

Dr. Miller, Dr. Snyder and James T. Schwiegerling, PhD, UA Department of Ophthalmology assistant professor and optical scientist, invented a unique retinal camera for diagnosing retinal damage in eye disorders such as age-related macular degeneration (ARMD). The camera also can be used by emergency room pediatricians to help detect signs of child abuse, such as shaken baby syndrome, and the new system also will have applications in telemedicine, improving communication between ophthalmologists and primary care physicians.

University of Arizona Department of Ophthalmology

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Alan D. Marmorstein, PhD	Tomas D. Tredici, MD
Lihua Y. Marmorstein, PhD	J. Daniel Twelker, OD, PhD
Brian S. McKay, PhD	

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An Ode to My Eyes: Gratitude for a Gift of Colorless Sight

An Ode to My Eyes
By Meirav Malter, age 8

Oh, eyes, you are forever there,
Right above my nose,
Right below my eyebrows.

You are still very special,
Even if you don't see very well.
Eyes, I am glad I have you,
Glad that you let me see the world.
And all the things in it.
If I was blind it wouldn't be the same,
I wouldn't see the sparkling sea,
The big tree in my yard,
Or the shiny sunrise.
I would never see the excitement of the circus,
Or the gentle flowers.
So eyes, I just want to tell you once again,
I'm glad to know you're there,
Right above my nose.

▲ Above: Meirav uses a monocular device similar to a telescope to help her distance vision.

Imagine seeing the world only in shades of white, black and gray.

Imagine being unable to see in bright light.

Imagine having to wear dark sunglasses all the time, both indoors and out.

Imagine seeing your best only at night.

Now you can imagine what seeing is like for 9-year-old Meirav Malter, a third-grade student at Manzanita Elementary School in the Catalina Foothills School District and a patient of ophthalmology department head Joseph Miller, MD, MPH.

And you can begin to understand how remarkable it is that she would write "An Ode to My Eyes" even though she is severely vision impaired.

Meirav has achromatopia — sometimes called achromatopsia — a rare congenital vision disorder that affects one in 33,000 persons in the U.S., according to the Achromatopsia Network. Achromatopia is the

most severe form of color vision deficiency — people with the condition see little or no color.

Achromatopia affects the eye's cone cells, which are light-sensitive photoreceptor cells that function best in bright light and are responsible for color, detail and central vision. The eye has about 6 million cone cells, located mainly in the macula at the center of the retina. In achromatopia, the cone cells lack an enzyme so they have little or no function, leaving the eye's rod cells to provide vision.

There are about 100 million rod cells, which are photoreceptor cells located primarily at the retina's periphery. Rod cells function best in low light, allow the eye to adjust to a range of lighting conditions and enable night vision, but they can't differentiate color or provide good detail vision.

In addition to color vision deficiency, achromatopia symptoms include hypersensitivity to light, an inability to adapt to high levels of illumination, poor detail and distance vision, and nystagmus, an involuntary side-to-side movement of the eyes that can go away with age.

The severity of symptoms varies depending on how many cone cells are affected as well as lighting conditions. In bright light, vision can become hazy or washed out. In areas of both bright light and shade, objects in the shade can be difficult to see. At night, people with achromatopia see the way people with normal vision do after their eyes adjust to a dark room — they can see objects but not colors or details.

The condition is not progressive and doesn't lead to blindness. Currently, no treatments exist for achromatopia; genetic research one day may provide a therapy.



▲ Meirav and Mika on a recent camping trip. Mika often helps her older sisters to identify colors when working on art projects or to find small things in the house.

Symptoms are managed with sunglasses, hats and visors, low-vision aids such as magnifiers, and optical aids such as monoculars (small telescopes) that can help distance vision. Tinted contact lenses, especially those with red tints, can reduce the light entering the eyes and help the rod cells to function better.

Although legally blind, Meirav can see. She wears sunglasses all the time to manage her sensitivity to light. In school she uses enlarged materials to help compensate for her poor visual acuity. Activities involving distance vision, such as seeing the blackboard or perceiving fast-moving objects such as when playing ball, are extremely difficult.

Meirav's older sister, Ma'ayan, 11, also has achromatopia. Meirav's younger sister, Mika, 6, has normal vision and often helps her older sisters identify colors or spot either very small or very distant objects.

Neither of Meirav's parents has achromatopia. Her father, Alan Malter, PhD, is assistant professor of marketing at the UA Eller College of Management, and her mother, Gili, is an art teacher at Sunrise Drive Elementary School. They both have talked with their daughters "about children who are completely blind, so they appreciate the vision they do have," says Dr. Malter.

The "attitude of gratitude" that Meirav learned from her parents motivated her to write about her eyes when her second grade teacher, Kris Green, gave the class an assignment to write an ode.

Her teacher was so impressed by Meirav's piece that she proposed entering it in

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DEPARTMENT NEWS

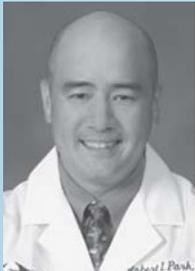
People on the Move



Alan Marmorstein, PhD ▲

The Department announces the following appointments and promotions:

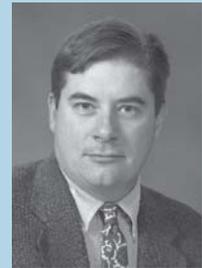
Alan D. Marmorstein, PhD, associate professor and a member of the Southwest Age-Related Macular Degeneration (ARMD) Research Program, has received a joint appointment as associate professor with the UA Optical Sciences Center.



Robert Park, MD ▲

Robert I. Park, MD, assistant professor and a member of the Southwest Age-Related Macular Degeneration (ARMD) Research Program, has received a joint appointment as assistant professor with the UA Optical Sciences Center.

James T. Schwiegerling, PhD, assistant professor with a joint appointment in the Departments of Ophthalmology and Optical Sciences, has been promoted to associate professor of ophthalmology and optical sciences, with tenure in ophthalmology.



▲ Jim Schwiegerling, PhD

J. Daniel Twelker, OD, PhD, assistant professor, has received a joint appointment as assistant professor with the Mel and Enid Zuckerman Arizona College of Public Health at the UA.



▲ Dan Twelker, OD, PhD

Dr. Miller receives Walt and Lilly Disney Award for Amblyopia Research

Joseph M. Miller, MD, MPH, professor and head, ophthalmology department, has received a Walt and Lilly Disney Award for Amblyopia Research from Research to Prevent Blindness (RPB).

Dr. Miller is one of only two scientists selected to receive the \$25,000 award in 2004. The RPB established the Walt and Lilly Disney Award for Amblyopia Research in 2002 to strengthen and promote research to improve the diagnosis and treatment of amblyopia. The award is offered to assist exceptional ophthalmic scientists, either MDs or PhDs, doing research of significance and promise in this area.

Amblyopia, also called “lazy eye,” is reduced vision in one eye that often results from a misalignment, such as crossed eyes, or a difference in image quality between the eyes (one eye focusing better than the other). One eye becomes stronger, suppressing the image of the other eye, which eventually may become useless. Early diagnosis and treatment can restore the sight in the affected eye.

Dr. Miller plans to use the award funding to promote legislative efforts to increase the number of children who receive vision screening before starting school, and to develop new visual acuity test methods that are faster and more reliable when used with preschool children.

Dr. Miller is a board-certified pediatric ophthalmologist whose amblyopia research focuses on the development of instruments to detect the condition in young children. Most of the research involves computerized image analysis and is done in conjunction with the Optical Sciences Institute.

He is medical director of “Astigmatism and Amblyopia Among Native American Children,” a project supported by a grant from the National Eye Institute of the National Institutes of Health involving Head Start and elementary school children of the Tohono O’odham Nation. A very large proportion of Native American children need

glasses because of astigmatic refractive error. This study will determine the best way to identify children in the Head Start age group who need glasses, and also determine if the use of eye glasses during the preschool years improves the vision of children when they start first grade. This also will provide valuable information to help prevent amblyopia in all Americans.

RPB is the world’s leading voluntary organization supporting eye research. Since it was founded in 1960, RPB has channeled more than \$220 million into eye research. RPB currently supports eye research at 54 medical institutions throughout the United States.

A Clear Vision for Trade: Ophthalmology Department Considers Research Relationship with Canadian Firm

The Department of Ophthalmology is investigating a potential research relationship with a Canadian-based company dedicated to the design and manufacture of eye care diagnostic devices.

Department faculty members met with executives and scientists from ERIC Technologies Corporation, based in Calgary, Alberta, on Aug. 9 to explore research opportunities and the possibility of establishing a U.S. headquarters in Tucson.

The scientific discussions, held on the UA campus, were a follow-up to a June 8 meeting between ERIC Chairman Larry Novak and then-Department of Ophthalmology head Robert W. Snyder, MD, PhD.

The August meeting included ophthalmology department members Joseph Miller, MD, MPH, professor and head, UA Department of Ophthalmology, and professor of optical sciences and public health; Robert Park, MD, UA assistant professor, ophthalmology and optical sciences; James Schwiergerling, PhD, UA associate professor, ophthalmology and optical sciences; and Dr. Snyder, UA professor of biomedical engineering. The meeting also included an overview of the UA Optical Sciences Center by director James C. Wyant, PhD, and tours of the center's laboratories.

ERIC is an acronym for Elastic Reflectivity Information of the Cornea. The three-year-old company's initial product is a medical instrument for diagnosing and monitoring glaucoma. According to the World Health Organization,

glaucoma is a leading cause of blindness, with more than 100 million cases worldwide. Accurately measuring the pressure inside the eye (intraocular pressure) is critical as a key predictor for glaucoma.

The device is a breakthrough in ERIC Technologies' patent-pending vibration tonometry that measures intraocular pressure. Different versions of the simple-to-use, non-invasive and highly accurate device are being developed for home and professional use. ERIC also measures cornea thickness and will enhance the outcome of cataract and refractive surgery.

"ERIC Homecare" is the company's first product targeted at glaucoma — or glaucoma-suspect — patients and postoperative eye surgery patients. The product will be a self-administered test to monitor intraocular pressure.

A professional device for ophthalmologists is under development to measure the eye's intraocular pressure, elasticity, pachymetry

(thickness of the cornea) and axial length.

With five ophthalmology faculty members holding joint appointments with the UA Optical Sciences Center, there is much common ground for pursuing research and clinical trials related to ERIC's technologies. The ophthalmology department's special interest in preventing blindness among Hispanics also is an area of interest to the company.

Mr. Novak noted his company's relationships with the University of Calgary and the need to seek a U.S. location with a similarly strong university connection. In discussing possible research and development collaborations, Dr. Snyder noted that the ERIC technology is "a quite remarkable screening tool... with a huge potential economic impact."

Mr. Novak has a long history with Arizona as a business owner in the Phoenix area and as chairman of the Calgary/Phoenix Sister City Committee.



▲ From left: John Greivenkamp, PhD, professor, UA Optical Sciences Center and Department of Ophthalmology; Don James, BSc, senior engineer, ERIC Technologies Corporation; Oscar Cuzzani, MD, DSc, chief technical officer, ERIC Technologies; Marcello Epstein, DSc, professor, Department of Mechanical and Manufacturing Engineering, University of Calgary; Bill Halina, general manager, ERIC Technologies; Larry Novak, chairman, ERIC Technologies

For more information, visit the websites: www.ericcorp.ca, www.eyes.arizona.edu, www.optics.arizona.edu and www.glaucomaCanada.com.

In Memoriam: David Brian Stidham, MD



▲ David Brian Stidham, MD

David Brian Stidham, MD, clinical instructor for the UA Department of Ophthalmology, died October 5 at age 37. He was slain in the parking lot outside his Tucson office.

He is survived by his wife, Daphne, and two children, Alexandre Brian, 3, and Catherine, 13 months.

A highly respected pediatric ophthalmologist, Dr. Stidham joined the UA ophthalmology department faculty in 2003, teaching ophthalmology and pediatric residents.

Before opening his practice in Tucson in November 2001, Dr. Stidham was clinical assistant professor with the Department of Ophthalmology at the University of Texas Health Science Center at Houston.

He received his bachelor of science degree from Vanderbilt University, Nashville, Tenn., in 1989 and his medical degree from Harvard Medical School, Boston, in 1993. He completed an internship in internal medicine and a residency in ophthalmology at the University of Texas Southwestern Medical School in Dallas from 1993 to 1997, and a fellowship in ophthalmology at Indiana University Medical Center. He was a member of the Pima County Pediatric Society.

His primary interest was in treating strabismus (misalignment of the eyes) and retinopathy of prematurity.

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An Ode to My Eyes *(continued from page 3)*



▲ *Ma'ayan excels at rock climbing despite her achromatopia, although she may need assistance walking over rocky terrain to get to the climbing site.*

the school's poetry competition. Meirav's poem won in her grade level. Mrs. Green then submitted the poem to the Catalina Foothills School District's 2003-2004 poetry contest and it won first place in the second grade category.

Reflecting about her experience with achromatopia, Meirav says, "It's frustrating when people tease me and test me on colors that I can't see. Some kids don't understand how much that hurts my feelings." (Meirav's father notes this especially was a problem when the children were learning their colors and teachers often identified things by color.) "It's hard for me when I am playing with other kids, how hard it is to see them when they run ahead of me," she says.

Meirav's future plans include more than writing poetry. "When I grow up I want to meet other people with achromatopia," she says. "If I meet little kids I would want to help them out with their problem because I know what it's like. I want to give speeches about achromatopia. It's such a rare problem and I want more people to know about it.

"I hope that when I'm a grown-up things will be easier for me."

In Memoriam *(continued from page 5)*

"He helped a huge number of kids and he was an exceptional doctor," said Joseph Miller, MD, MPH, professor and head, UA ophthalmology department. Dr. Stidham was an excellent surgeon who "loved taking care of people and helping children see. It's a terrible loss to the community."

Dr. Stidham also was involved in community service, including performing free eye exams at Pueblo High School's Care Fair.

Families of patients of Dr. Stidham, and his former medical partner and accused murderer, pediatric ophthalmologist Bradley Schwartz, MD, should contact

their primary care physician for a new eye care referral. They also can contact directly any of the four remaining pediatric ophthalmologists in Tucson for routine care: Wayne W. Bixenman, MD, 1500 N. Wilmot Rd. Ste. 180-C, 886-4137; Dr. Miller, University Physicians Healthcare (UPH) ophthalmology clinic, 707 N. Alvernon Way, 694-1460; Sam Sato, MD, 3910 N. Campbell Ave., 323-2466; and Lydia BaZielos, MD, UPH ophthalmology clinic, 707 N. Alvernon Way, 694-1460. UPH is providing free immediate care for patients who have had eye surgery and need urgent eye care, to

Don't miss these upcoming events!

Science of Eye Disease Seminar

Wednesday, March 9, 2005

Topic to be announced

Speaker: Maria Grant, MD, professor, Department of Pharmacology and Therapeutics, University of Florida, Gainesville, Fla.

5-6:30 p.m., Ophthalmology Administrative Offices, 655 N. Alvernon Way, Suite 108, Tucson. A social precedes the seminar from 5 to 5:30 p.m.; hors d'oeuvres and soft drinks provided. Continuing Medical Education (CME) credits given.

For more information, contact W. Daniel Stamer, PhD, UA Department of Ophthalmology, (520) 626-7767.

Visit our website for updates: www.eyes.arizona.edu

Glaucoma Screenings

Third Saturday of each month (except December, no screening)

St. Elizabeth of Hungary Clinic, 140 W. Speedway, Tucson

Free glaucoma screenings by medical students from the UA College of Medicine's Student Sight Savers Program and volunteer ophthalmologists from the community. Screenings include glaucoma risk factors evaluation, blood pressure measurement, visual acuity exam, eye pressure measurement and peripheral vision check.

For an appointment or more information, contact St. Elizabeth of Hungary Clinic, (520) 628-7871.

These events are free and open to the public.

avoid delays due to insurance coverage.

Dr. Miller will continue teaching the pediatric ophthalmology residents.

Dr. Stidham's coworkers and friends have established a college fund for his children. Donations can be sent to: Stidham Children Fund, account number 1811704479, Northern Trust

Bank, 3450 E. Sunrise Dr., Tucson, AZ 85718.

A separate fund has been established to provide emergency assistance for the family. Donations are tax-deductible. For more information, call (520) 740-5729, or send a donation to: Homicide Survivors, Stidham Family Fund, 32 N. Stone Ave., Ste. 1408, Tucson, AZ 85701.

PUBLICATIONS AND PRESENTATIONS

ARTICLES

Simpson MA, **Cross H**, Proukakis C, Pryde A, Hershberger R, Chatonnet A, Patton MA, Crosby AH. Maspardin is mutated in Mast syndrome, a complicated form of hereditary spastic paraplegia associated with dementia. *Am J Hum Genet* 2004;71:online version.

Proukakis C, **Cross H**, Patel H, Patton MA, Valentine A, Crosby AH: Troyer syndrome revisited: A clinical and radiological study of a complicated hereditary spastic paraplegia. *J Neurol* 2004;251:1105-1110.

Harvey EM, Dobson V, Miller JM, Sherrill DL: Treatment of astigmatism-related amblyopia in 3- to 5-year-old children. *Vision Res* 2004;44:1623-1634.

Wu J, **Marmorstein AD, Kofuji P, Peachey NS**: Role of Kir4.1 in the mouse electroretinogram. *Mol Vis* 2004;10:650-654.

Klenotic P, Munier FL, **Marmorstein LY**, Anand-Apte B. Tissue inhibitor of metalloproteinases-3 (TIMP-3) is a binding partner of EGF-containing fibulin-like extracellular matrix protein 1 (EFEMP1): Implications for macular degenerations. *J Biol Chem* 2004;279:30469-30473.

Marmorstein AD, Stanton JB, Yocom J, Bakall B, Schiavone MT, Wadelius C, Marmorstein LY, Peachey NS. A model of Best vitelliform macular dystrophy in rats. *Invest Ophthalmol Vis Sci* 2004;45:3733-3739.

Wu J, Peachey NS, Lem J, **Marmorstein AD**: Light-evoked responses of the mouse retinal pigment epithelium. *J Neurophys* 2004;91:1134-1142.

Park RI: The bionic eye: Retinal prostheses. *Int Ophthalmol Clin* 2004;44(4):139-154.

Fiedler E, **Nayak R**, Marsch WCh, Helmbold P. Melanocytes express 3G5 surface antigen. *Am J Dermatopathol* 2004;26(3):200-204.

Stramer B, Kwok MGK, **Farthing-Nayak P**, Fini ME, **Nayak RC**. Monoclonal antibody (3G5) defined ganglioside: cell surface marker of corneal keratocytes. *Invest Ophthalmol Vis Sci* 2004;45:807-812.

Conley SM, Bruhn RL, Morgan P, Stamer WD: Selenium effects on MMP-2 and TIMP-1 activity in human trabecular meshwork cell supernatants. *Invest Ophthalmol Vis Sci* 2004;45:473-479.

Ethier CR, Chan DWH, Wada S, **Stamer WD**: Experimental and numerical studies of adenoviral delivery to outflow tissues of perfused human anterior segments. *Invest Ophthalmol Vis Sci* 2004;45:1863-1870.

Gonzalez P, Caballero M, **Stamer WD**, Liton PB, Epstein DL: Expression analysis of the matrix GLA protein and VE cadherin gene promoters in the outflow pathway. *Invest Ophthalmol Vis Sci* 2004;45:1389-1395.

Burke AG, Zhou W, Roberts BC, O'Brien ET, **Stamer WD**: Effect of pressure gradients and Na₂EDTA on transendothelial electrical resistance and hydraulic conductivity of Schlemm's Canal cell monolayers. *Curr Eye Res* 2004;28:391-398.

Siatkowski RM, Cotter S, **Miller JM**, Scher CA, Crockett RS, Novack GD, for the US Pirenzepine Study Group: Safety and efficacy of 2% Pirenzepine Ophthalmic Gel in children with myopia: A 1-year, multicenter, double-masked, placebo-controlled parallel study. *Arch Ophthalmol* 2004;122:1667-1674.

PRESENTATIONS

Park RI: Diabetes research. National Federal of the Blind State Convention, Tucson, September 11, 2004.

Simpson MA, **Cross H**, Proukakis C, Priestman DA, Nevill DCA, Reinkenmeier G, Wang H, Wiznitzer M, Gurtz K, Verganelaki A, Pryde A, Patton MA, Dwek RA, Butters TD, Platt FM, Crosby AH: Infantile onset symptomatic epilepsy syndrome caused by a homozygous loss of function mutation in GM3 synthase. Platform presentation at the American Society of Human Genetics annual meeting, Toronto, Canada, October 30, 2004.

The following are presentations made at the Annual Meeting of the Association for Research in Vision and Ophthalmology, Ft. Lauderdale, FL, April 25-29, 2004:

Clifford CE, Haynes BM, Dobson V: Are Teller Acuity Card norms obtained with the Teller Stage appropriate for use when testing is conducted without the stage?

Dobson V, Miller JM, Harvey EM, Clifford CE, Haynes BM, Mohan KM: A compact computer-based stimulus display for use in preferential looking assessment of infant vision.

Harvey EM, Dobson V, Miller JM: Treatment of astigmatism-related amblyopia: Evidence for a sensitive period that extends beyond early childhood.

McKay BS, Erbe E, Rak D, Sherman S: Pigmenting RPE secrete neurotrophic agents.

Haynes BM, Clifford CE, Dobson V: Are Teller Acuity Card norms based on the original Vistech Acuity Cards appropriate for use with the new Stereo Optical Acuity Cards?

Herrymers LA, Noecker R, **Kearsley L, Kim N**: Evaluation of the effect of various artificial tears on Latanoprost-induced corneal toxicity in rabbits.

Marmorstein AD, Rosenthal R, Stanton JB, Bakall B, Wadelius C, Marmorstein LY: Bestrophin is not a chloride channel.

Wu J, Marmorstein AD, Kofuji P, Peachey NS: Role of Kir4.1 and CFTR in RPE-generated components of the ERG.

Strauss O, **Marmorstein AD, Marmorstein LY, Bakall B, Stanton JB, Wadelius C, Peachey NS, Rosenthal R**: Bestrophin modulates activity of L-type Ca²⁺ channels in RPE cells.

Gallemore RP, Bok D, Hu J, Maruiwa F, **Yocom J, Strauss O, Peachey N, Marmorstein AD**: Role for Bestrophin in generating the light peak of the DC electroretinogram.

Kinnick TR, McKay B, Hu J, Bok D, Marmorstein AD: Differences in differentiation potential between human retinal pigment epithelial cultures derived from fetal and non-fetal donors.

Rak DJ, McKay BS: Interaction between OA1 and Beta-Arrestin.

Hardy KM, Hoffman EA, McKay BS, Stamer WD: Biochemical properties of extracellular Myocilin.

Hoffman EA, Poncius A, McKay BS, Stamer WD: Cell cycle synchronization and transfection efficiency of human trabecular meshwork cells.

Conley SM, McKay BS, Stamer WD: Selenium effects on Integrin activity and intracellular signaling in trabecular meshwork cells.

Miller JM, Harvey EM, Dobson V: Use of the Dimensions Technology Autostereoscopic Monitor for monocular and binocular testing.

Siatkowski RM, Cotter SA, **Miller JM, Scher CA, Crockett RS, Novack GD** (US Pirenzepine Study Group): Pirenzepine 2% Ophthalmic Gel retards myopic progression in 8-12 year old children over two years.

Park RI: Intraretinal stresses during internal rotation saccadic eye movements in pre- and post-vitreotomy eyes: a dynamic finite element simulation.

Beaudry N, Chipman R, Liston S, **Park R, Salyer D, Twietmeyer K**: Camera comparisons for hyperspectral fundus imaging.

Chipman RA, Beaudry N, Liston S, **Park R, Salyer D, Twietmeyer K**: Spectral analysis of retinal vessels without blood.

Twietmeyer K, Beaudry N, Chipman R, Liston S, **Park R, Salyer D**: Retinal vessel width as a function of wavelength.

Salyer D, Twietmeyer K, Beaudry N, Liston S, Chipman R, **Park R**: Hyperspectral fundus light scattering measurements.

Simon BR, **Park RI**, Rigby PH: Finite element models of the eye. [Paper]

Schwiegerling J: The effect of wavefront misalignment on visual performance predictors.

Liton PB, Challa P, Liu X, Caballero M, **Stamer WD**, Epstein DL: Specific targeting of gene expression to a subset of human trabecular meshwork cells using the Chitinase-3-like-1 promoter in adenoviral-mediated gene transfer experiments.

Stamer WD, Rak DJ, McKay BS: Coiled-coil interactions of native myocilin.

Wan Z, **Atodaria N, Noecker RJ, Stamer WD**: Bimatoprost affects hydraulic conductivity of outflow cell monolayers.

Karl MO, Fleischhauer JC, **Stamer WD**, Peterson-Yantorno K, Mitchell CH, Stone RA, Civan MM: Schlemm's canal cells and trabecular meshwork cells as potential targets in IOP modulation.

EXPLANATION OF PUBLICATION AND PRESENTATION INFORMATION

Publications

Author(s): Article title. *Journal* Year Published; Journal Number: Journal Page Number(s).

Presentations

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Our Mission Is to Benefit the People of Arizona, the Southwest and Beyond

Entering the 21st Century:

In the United States, one child in 20 may suffer abnormal eye development. These children are at risk for serious vision problems that may lead to permanent vision loss.

Glaucoma is the leading cause of preventable blindness in the United States, affecting an estimated 3 million Americans. It is a silent villain that with little or no warning robs a person of their ability to see. Once destroyed, vision lost to glaucoma cannot be restored.

Age-related macular degeneration (ARMD) is the leading cause of irreversible blindness and vision impairment in people over age 50 in the United States and the western world. About 13 million Americans have evidence of ARMD, according to Prevent Blindness America. An estimated 1.7 million Americans over age 65 have visual impairment caused by ARMD, according to the National Eye Institute.

With the latest laser applications, computers and other new technologies, we enter the 21st century with far greater hope for preservation of vision. However, we continue to seek better answers for eye conditions, such as glaucoma and retinal diseases, which still are major causes of blindness.

UA Department of Ophthalmology

The UA Department of Ophthalmology is dedicated to preserving healthy eyesight and preventing blindness through innovative research and comprehensive eye care for all patients whose vision is threatened by eye disease or injury.

Become an Annual Member of the VISIONaries

We invite you to support the exciting work of the UA Department of Ophthalmology. Gifts of all sizes have been utilized throughout the Department, in the clinics, and in the research laboratories, helping the Department increase medical knowledge and offer the best possible vision care.

Donors of \$1,000 or more will have their name listed on the permanent donor recognition wall at the Lions Eye Care Center.

To find out more about the many other ways you can participate in our mission, call (520) 321-3677.

AN EYE TO THE FUTURE newsletter is published by the UA Department of Ophthalmology to share news and showcase research activities.

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