

AN EYE TO THE FUTURE

The Department of Ophthalmology
The University of Arizona
Health Sciences Center

Summer 2003



▲ Robert Park, MD

Robert Park, MD, Sees Bright Future for Treating Retinal Eye Disease

In the UA Department of Ophthalmology's quest to cure and prevent diseases of the aging eye, Robert I. Park, MD, focuses his diverse experience as an ophthalmologist, retinal surgeon and engineer on one pursuit – a brighter future for those whose vision has been affected by retinal eye disease.

As an ophthalmologist and surgeon, Dr. Park treats diseases of the retina, including age-related macular degeneration (ARMD) and retinal detachment.

As an engineer, he applies engineering techniques to ophthalmic research aimed at developing new treatments and prevention strategies for these conditions.

A member of the department's Southwest Age-Related Macular Degeneration (ARMD) Research Program, Dr. Park is working with Brian McKay, PhD, assistant professor of ophthalmology (see article in the previous issue of *An Eye To the Future*) on a promising new treatment for late dry or wet ARMD: transplantation of retinal pigment epithelium (RPE) cells.

Their three-step process will replace diseased macular RPE cells

with healthy ones. First, Dr. Park will surgically remove healthy RPE cells from an area of the patient's retina that is unaffected by ARMD. "The RPE cells we harvest won't affect vision dramatically," notes Dr. Park. Dr. McKay will grow the cells on an artificial substrate (sheet), a process that will take several months. Finally, Dr. Park will remove the patient's diseased RPE cells from the macula and implant the new healthy layer.

Although the procedure sounds simple, "the surgery is going to be on a scale that hasn't been done before," says Dr. Park. "We'll be manipulating tissues that are about one-tenth the thickness of a human hair, deep within the eye."

The RPE cell layer is the deepest of several layers that make up the retina. It is bound to a layer called Bruch's membrane, which lies on the choroid layer, where blood vessels and nerves supply nourishment to the outer retina.

The challenge will be removing the diseased RPE cells and implanting the new layer on top of the Bruch's membrane without rupturing it," explains Dr. Park, who will develop microscopic surgical techniques to accomplish the task.

Another challenge is finding material on which to grow the cells that will be transplantable into the patient's eye.

Dr. Park is optimistic, however. "We hope to be ready to use this new procedure in two years."

Dr. Park also hopes to prevent retinal detachment, a condition in which the inner layers of the retina separate from the underlying RPE. To find out why this occurs, Dr. Park is investigating

what happens inside the eye when it moves. "As an engineer, my mind turned to trying to find the answers in terms of stresses," he says.

Unable to find a suitable eye model for his research, he developed a computer model that simulates eye movement and measures the resulting stresses. His three-dimensional computer model includes every part of the eye, the surrounding muscles, and the material and optical properties of the different eye tissues. It is the only computer eye model of its kind in the country.

The model simulates eye movement that occurs when a person's eye position shifts focus from one object to another, such as during reading. Dr. Park found that this movement generates the highest stresses in the top outside quadrant of the eye, where most retinal detachments occur.

To better understand the relationship between these stresses and retinal detachment, Dr. Park plans to refine the model's eye movements and interactions between the parts of the eye. He'll also add stresses generated by body movements, such as walking, running and head trauma; eye conditions that have a greater risk of retinal detachment, such as myopia (nearsightedness); and the material properties of eye tissue at different temperatures and in various states of hydration.

(continued on page 2)

From the Chairman

There is new hope for people with dry eye syndrome.

These people may experience annoying burning, made worse by low humidity or windy days, or severe disabling symptoms and vision loss.

Dry eye syndrome is caused by a deficiency of one or more of the three components of tear film: the outer lipid (oily) layer, middle aqueous (water) layer or inner mucous layer. It is more common in women past menopause, older adults and patients with arthritis.

In the last decade, researchers found that these individuals' immune systems were rejecting their own tear-producing cells. This inflammatory reaction could be triggered by a number of factors, including decreased hormone production, as in menopause; eye surgery that reduces the sensation on the corneal surface; or exposure as seen in Parkinson's disease patients who have poor blinking.

About ten years ago, veterinary ophthalmologists discovered that they could treat dry eye in dogs with an anti-rejection drug called cyclosporin. Cyclosporin prevented the activation of inflammatory lymphocytes in these animals, reduced inflammation and allowed recovery of tear-producing cells. Research in humans confirmed that this drug could halt or reverse the process that leads to dry eye and even increase tear production in many of the treated patients.

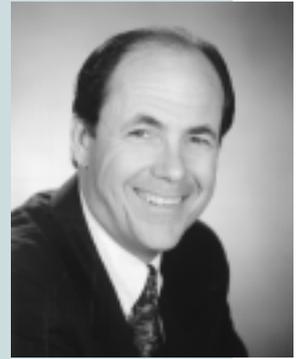
Cyclosporin, however, was not very soluble and only became a wonder drug for dry eye treatment when scientists at Allergan, Inc., a pharmaceutical company, learned how to formulate it in a stable suspension so it could be applied as an eye drop.

This new drug, called Restasis™, has given new hope to those who suffer from dry eye. Restasis™ may well prevent the progression of mild dry eye to a more severe tear deficiency state as patients age and the inflammatory cycle takes its course in destroying tear producing cells.

Dry eye sufferers should ask their doctors about Restasis™ and see if it may be right for them.

Researchers at the University of Arizona played an important role in the development of the drug, conducting clinical trials that led to Food and Drug Administration approval. This serves as another example of how basic science research can be translated into new therapies to fight disease and prevent vision loss.

Robert W. Snyder, MD, PhD



▲ *Robert Snyder, MD, PhD*

Dr. Snyder receives research funds from Allergan, serves on their advisory board, and is on their speaker's bureau.

Robert Park, MD, Sees Bright Future for Treating Retinal Eye Disease (continued from page 1)

Dr. Park's eye model research will enable doctors to identify patients at high risk for retinal detachment and predict where detachments may occur. Prophylactic treatment to these patients may be able to prevent detachments from occurring. Additionally, surgeons may give patients recovering from retinal surgery more specific instructions about post-surgery activities.

Dr. Park's interest in engineering led him to earn a bachelor of science degree in materials science and engineering from the Massachusetts Institute of Technology (MIT) in

Cambridge. Although four generations of his family have practiced medicine, his own interest in the field was kindled by ophthalmic research he performed at MIT.

Seeing that the two disciplines could complement each other, he pursued a medical degree at Albany Medical College in New York, where he received the Trager Award for excellence in surgery, followed by an internship in medicine at Baystate Medical Center in Springfield, Mass.

After a residency in ophthalmology at New York

University School of Medicine (where he received the Zitrin Award for excellence in bioethics), Dr. Park completed a two-year fellowship in vitreoretinal diseases and surgery at Tufts University School of Medicine in Boston, Mass.

Dr. Park has combined engineering and medicine in ophthalmic research at MIT; Massachusetts General Hospital, a teaching affiliate of Harvard Medical School, Boston; and the Schepens Eye Research Institute, an affiliate of Harvard Medical School. He also holds a patent for the development

of a new low-current electrocycloablation surgery system for the treatment of severe glaucoma.

Dr. Park joined the UA Department of Ophthalmology as assistant professor in 2002. Recently, he was appointed director of the ophthalmology residency program.

A native of Boston, he and his wife, Danna Park, MD (a fellow in the UA College of Medicine's Program in Integrative Medicine), are enjoying rock climbing, cycling, hiking and skiing in Tucson and the Southwest.

Clear Vision Ahead

As a child growing up on a farm in Linn County, Iowa, Don Miles, MD, wore glasses to correct myopia, an inability to see distant things clearly.

He also wasn't able to see the future: his long career as an ophthalmologist in Phoenix; the dramatic advances in vision correction and the diagnosis and treatment of many eye diseases; and his service on the UA Department of Ophthalmology Advisory Board.

In fact, despite his early experience wearing glasses, Don was more interested in engineering and mathematics than in ophthalmology as a student. Although he took pre-med courses at the University of Iowa, it wasn't until he was in medical school that he gained an interest in ophthalmology.

He became drawn to the field as a specialty because "in this field you can apply optics and scientific optical engineering principals to the eye," he says.

While a medical student at the University of Iowa College of Medicine, he joined the United States Naval Reserve Program. Before completing his medical studies in 1957, he served a three-month clinical clerkship at Oak Knoll Naval Hospital in Oakland, Calif., where he spent time with the ophthalmology clinic. His future direction in life was becoming clear.

After four years on active duty as a medical officer in the United States Navy, he obtained a residency in ophthalmology at Baylor University College of Medicine in Houston, Texas. His residency included a year at the Harvard Program at Massachusetts Eye and Ear Hospital in Boston. He went on to a six-month Heed Fellowship at the University

of Iowa College of Medicine, where he studied oculomotor defects of the eye.

After completing his fellowship in December 1965, Don and his wife, Judith, settled in the "Valley of the Sun," where they raised three children, Eric and twins Sara and Sterling. Their decision to settle in Phoenix was the result of Don's visits there, first in 1950 and then several times during his medical training, including an internship at Good Samaritan and Maricopa County Hospitals. The city's growth impressed him. "I felt a bit of the pioneer spirit to be part of a developing area," he recalls.

He entered private practice with respected Phoenix ophthalmologist Paul Case, MD, and saw many dramatic changes in the field in his 35 years of practice. "Things I hadn't even thought of developed during my time as an ophthalmologist," he notes.

Although he retired in 2001 at age 69, Don has kept active his Arizona State License to practice medicine and he continues to volunteer in many ophthalmology-related ventures.

He joined the UA Department of Ophthalmology Advisory Board about 10 years ago, as a result of his friendship with department head Robert Snyder, MD, PhD. "I first befriended Dr. Snyder when he came to the department in the 1980s," recalls Don. "Upon Bob's advancement to department head, research and training became the department's goal. That is why I was happy to work on the advisory committee and help in any way that I can."

Don also serves on the board of the Arizona Foundation for the Eye (AFE), which he co-founded in 1998 with patient Abby Guiver to identify and address unmet eye care needs in the

Board Spotlight



▲ Don Miles, MD

metropolitan and rural areas of greater Phoenix. The medical focus of AFE is diabetic retinopathy, a leading cause of blindness in adults. "Early detection and treatment is important in reducing the risk of blindness from diabetic eye disease," Don emphasizes.

In 2002, AFE launched the Arizona Telemedicine Ophthalmic Program (ATOP), its first sight-saving program for Arizona diabetics. A collaborative effort with the UA Telemedicine Program and Mountain Park Community Health Center, ATOP provides diabetic retinopathy screenings using digital transmission of eye images. "ATOP's telemedicine link will allow easy access to early eye screening and diagnosis of patients with diabetic retinopathy, and other potentially blinding problems, who are far from, or underserved by, eye-care specialists," says Don.

Linking the UA Department of Ophthalmology and Phoenix is one of Don's goals as a member of the Advisory Board. "I see my role as helping with administrative direction here in Phoenix, in setting up a tele-ophthalmology program, establishing research and clinical programs, teaching and other areas," says Don.

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After 35 years in ophthalmology, Don still has a great deal of interest in research, care and treatment of eye disease. "The surgical outlook is amazing – use of laser energy, resurfacing the eye – these techniques are being refined. The cellular biology of the retina and the possibility of transplanting tissues to prevent degenerative diseases also are of much interest to me."

Don is the opposite of another definition of myopia: "lack of foresight or discernment." Instead, he sees a bright future for the UA Department of Ophthalmology in the "Valley of the Sun" and beyond, with exciting new advances that will literally change how people see the world.

DEPARTMENT NEWS



▲ Robert Noecker, MD

Study Shows Leading Glaucoma Medication Significantly Lowers Eye Pressure

by Robert Noecker, MD, associate head, clinical affairs, and associate professor, UA Department of Ophthalmology

A recent study comparing two leading glaucoma medications found that one was better at reducing elevated eye pressure.

Results of the study, which was conducted at the UA Department of Ophthalmology and 17 other locations in the U.S., were published in the January issue of the *American Journal of Ophthalmology*. The findings could allow the more than 3 million Americans with glaucoma to treat their condition more aggressively.

The clinical trial found that Lumigan® (bimatoprost) reduced eye pressure more significantly than Xalatan® (latanoprost) in patients with glaucoma or elevated eye pressure.

While ophthalmologists long have known of the pressure-lowering ability of Lumigan® in practice, the study results now offer statistically significant evidence that Lumigan® offers a greater reduction in pressure than Xalatan®.

The study involved 269 ocular hypertension and/or glaucoma patients, ages 24 to 88, who were randomly assigned to receive once-daily treatment with either Lumigan® or Xalatan® for six months. Participants' eye pressure was then measured at 8 a.m., noon and 4 p.m.

Our results show that the average reduction in pressure was greater for patients treated with Lumigan® at all visits and all time points during the six-month study period. In addition, our data showed a significant difference between the numbers

of patients who responded to Lumigan® compared to those who did not respond at all to Xalatan®.

The most frequently observed side effect was red eye for both medications. Eyelash growth also was reported with both medications. Itching was more common with Lumigan®, and ocular burning was more common with Xalatan®.

Glaucoma is a group of eye diseases that cause gradual vision loss, often without symptoms, due to elevated pressure in the eye (intraocular pressure or IOP), or blood supply deficiency to the optic nerve. Although there is no cure, treatment can control eye pressure and prevent blindness.

New Dry Eye Therapy Studied at UA Now Available

A new therapeutic eye drop now is available by prescription for treating dry eye syndrome.

The UA Department of Ophthalmology was one of several centers throughout the country that studied cyclosporine 0.05 percent ophthalmic emulsion, marketed as Restasis™. Restasis™ was approved by the U.S. Food and Drug Administration in December 2002 and became available in the U.S. in April 2003.

The clinical trial compared Restasis™ with Refresh® (a lubricant eye drop that acts as an artificial tear, temporarily replenishing eye moisture) in patients with mild to moderate dry eye syndrome. Allergan, Inc., manufacturer of both products, sponsored the study.

Unlike artificial tears, Restasis™ helps treat the cause of dry eye syndrome: reduced tear production due to inflammation. Study participants treated with Restasis™ showed increased tear production and had less need for artificial tears. Restasis™ is used twice a day, one drop in each eye.

"This new use of cyclosporine to treat dry eye syndrome provides the first alternative therapy for this frustrating and painful condition," says Robert Snyder, MD, PhD, principal investigator for the study.

When taken by mouth, cyclosporine prevents rejection of kidney, liver, heart and bone marrow transplants, and sometimes is used to treat rheumatoid

arthritis and other conditions. In eye drop form, it helps reduce inflammation of the tear-producing lacrimal gland and the eye's surface.

Dry eye syndrome affects more than one million people in the U.S., especially older adults, post-menopausal women and those with Sjogren's Syndrome (a disease in which the body's immune system attacks its own moisture producing glands), rheumatoid arthritis, lupus and other chronic diseases. Symptoms, which may include a dry, gritty feeling in the eyes, burning and redness, can be extremely uncomfortable and disabling and can lead to vision loss.

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Glaucoma Screening



The Arizona Medical Eye Unit, UA Department of Ophthalmology, U.S. Congressman Jim Kolbe and the Friends of the Congressional Glaucoma Caucus Foundation, Inc., teamed up again to host the second annual free glaucoma screening event at St. Cyril's Church in Tucson on April 6.

Volunteers from the Arizona Ophthalmology Society, an organization of Arizona ophthalmologists in private practice, performed the screenings in the Arizona Medical Eye Unit (AMEU), a mobile eye clinic.

While open to anyone, the event focused primarily on Hispanics. A UA ophthalmology department study, Proyecto VER, showed glaucoma as the leading cause of blindness among Hispanics. Based on these findings, the ophthalmology department worked with Congress and Rep. Kolbe to convince Medicare to extend glaucoma screening benefits to Hispanics.

Last year, the department received a \$60,000 grant from the Friends of the Congressional Glaucoma Caucus Foundation, Inc. (The Congressional Glaucoma Caucus is a non-partisan group of Congressmen and interested private individuals whose purpose

is to educate their communities about the risks of glaucoma and other eye diseases that cause blindness and to provide glaucoma screening and implement risk-reduction programs across the nation.) The funds were used by the AMEU to provide diagnostic glaucoma screening for underserved groups across Arizona, and to purchase a new vision testing device called Frequency Doubling Perimetry (FDP) for the St. Elizabeth Clinic in Tucson. A recently developed technology, FDP is a quick and simple method of screening for eye disease before it is apparent in the eye examination.

The AMEU is a fully-equipped mobile eye clinic administered by the UA ophthalmology department and staffed by Arizona Ophthalmology Society members. The AMEU was donated by the Odd Fellows and Rebekahs of Arizona and is towed by a Ford F-350 truck donated by Canyon Ranch Health Resorts.



Top to bottom

Screening participants are Jill Brickman, right, Department of Ophthalmology program development/outreach coordinator, and Leticia Lugo with The University Physicians teleservices.

Ophthalmologist Lansing Brown, MD, provides a glaucoma screening.

Standing by the AMEU are Robert Spurny, MD, left, AMEU medical director, and Gregory King, MD, AMEU program coordinator.

First Jorge Rodríguez Memorial Lecture

The first seminar in the Jorge Rodríguez Memorial Lectureship was held June 20 at the Four Points by Sheraton Conference Center in Tucson.

Part of the UA Department of Ophthalmology quarterly Science of Eye Disease Seminar Series presented free for the medical community and the public, the lecture honored the late Jorge Rodríguez, MD, MPH, who passed away Sept. 1, 2002.

Dr. Rodríguez conceived of, and was principal investigator for, Proyecto VER (Project Vision, Evaluation, Research), the first comprehensive study of the prevalence and causes of eye disease among Hispanic

Americans.

The study found that Hispanics over age 40 are at greater risk than other ethnic groups for undiagnosed diabetic retinopathy and glaucoma — potentially blinding eye diseases.

Guest speaker was Sheila West, PhD, El-Maghraby professor of preventive ophthalmology at Johns Hopkins University School of Medicine, Baltimore, Md., and a co-investigator for Proyecto VER.

Dr. West discussed the incidence of diabetic retinopathy compared to other eye diseases in a Hispanic population in Southern Arizona/Northern Mexico.

The event also showcased current research by ophthalmology department faculty, fellows, residents



▲ Dr. West, second from left, with Dr. Rodríguez' son Jorgito, daughter Pamela and wife Lupita.

and students.

For more information about upcoming Science of Eye Disease seminars, contact W. Daniel Stamer, PhD, assistant professor of ophthalmology, (520) 626-7767, or check the website, <http://www.eyes.arizona.edu/eyedisease.htm>.

“Road Apple Roulette”

The Arizona Lions Eye Center at the UA Department of Ophthalmology was among the sight and hearing charities benefiting from a unique fundraiser held by the Tucson Breakfast Lions Club during the 2003 Tucson Rodeo Parade.

Called “Road Apple Roulette,” the fundraiser was the idea of event organizer Sandy Shiff, a member of the Tucson Breakfast Lions Club and current president of the Department of Ophthalmology advisory board. Co-sponsored by Casino of the Sun, the event was the first of its kind for the parade, which was held February 20.



▲ From left to right are Preston Eldridge, Event Chair Lion Tim Batben, Randy Rudd and Lion Sandy Shiff.

For a \$50 contribution per square, players could purchase random squares within a 10 foot by 100 foot grid of 1,000 squares painted onto the parade route, near the beginning of the parade route on Ajo Way.

Players could win one of three cash prizes if an official parade entry horse walking over the grid between 9 and 10 a.m. left a “road apple” (a polite name for horse dropping) in their square.

Winners were determined by judges Preston Eldridge and Randy Rudd, members of the Western legends musical group, the Sons of the Pioneers.

The first road apple, for the \$1,000 third prize, dropped at 9:12 a.m. on Grid Square 363, owned by Yvonne T. Acuna.

The second road apple, worth \$2,500, hit Grid Square 642, owned by Howard’s Hydraulic, at 9:13 a.m.

The third road apple, for the \$5,000 grand prize, dropped at 9:29 a.m. on Grid Square 328, owned by Francine Arendall.

The event raised \$7,500 for the Arizona Lions Eye Center. Sandy already is planning next year’s Road Apple Roulette, so keep checking the event web site, <http://www.roadappleroulette.com>, for details.

In Memoriam

The UA Department of Ophthalmology announces with sadness the passing of several individuals over the past year who made positive impacts on the lives of many people affected by eye disease.

Wanda D’Antimo, wife of Lion and UA Department of Ophthalmology board member Dan D’Antimo, passed away on March 13, 2003, at age 74. She and Dan were VISIONaries, donors who contributed more \$1,000 to the

department, helping to equip the Arizona Lions Eye Care and Howard A. Shiff Diagnostic Center.

Ernie Rizek, husband of Agnes Rizek, passed away on October 2, 2002, at age 71. An international director of the Lions Clubs International, Ernie led the development of the Arizona Lions Eye Care Center, enlisting the help of fellow Lions Dan D’Antimo and Howard Shiff.

Gentry Elston, husband of Margo Elston, passed away

August 28, 2002, at age 87. Gentry and Margo also were VISIONaries, whose contributions helped provide funding for cornea research by Robert Snyder, MD, PhD, head of the UA Department of Ophthalmology and the development of the Southwest Age-Related Macular Degeneration Research Program.

Alice Williams Sheets, wife of Ralph L. Sheets, who predeceased her, passed away on August 7, 2002, at age 91. Her

donations to the department enabled the purchase of a digital imaging system to evaluate retinal disease.

The UA Department of Ophthalmology is grateful for these individuals’ vision and energy. “Many people have benefited from these individuals’ substantial contributions of time, effort or money to the department,” says Dr. Snyder, “and many others will continue to benefit in the future.”

PUBLICATIONS AND PRESENTATIONS

ARTICLES

Patel H, Cross H, Proukakis C, Hershberger R, Bork P, Ciccarelli FD, Patton MA, McKusick VA, Crosby AH: SPG20 is mutated in Troyer syndrome, an hereditary spastic paraplegia. *Nature Genet* 2002;31:347-348.

Yang P, McKay BS, Allen JB, Roberts W, Jaffe GJ: Effect of mutant IκB on cytokine-induced activation of NF-κB in cultured human RPE cells. *Invest Ophthalmol Vis Sci* 2003;44:1339-1347.

Miller JM, Anwaruddin R, Straub J, Schwiegerling J: Higher order aberrations in normal, dilated, intraocular lens, and laser in situ keratomileusis corneas. *J Refract Surg* 2002;18:S579-S583.

Dobson V, Miller JM, Harvey EM, Mohan KM: Amblyopia in astigmatic preschool children. *Vision Res* 2003;43:1081-1090.

Miller JM, Dobson V, Harvey EM, Sherrill DL: Cost-efficient vision screening for astigmatic Native American preschool children. *Invest Ophthalmol Vis Sci* 2003;44:3756-3763.

Joish VN, Malone DC, Miller JM: A cost-benefit analysis of vision screening methods for preschoolers and school-age children. *JAAPOS* 2003;7:283-90.

Marmorstein AD, Peachey N, Csaky: In vivo gene transfer as a means to study the physiology and morphogenesis of the retinal pigment epithelium in the rat. *Methods* 2003;30:277-285.

Bakall B, Marmorstein LY, Hoppe G, Peachey NS, Wadelius C, Marmorstein AD: Expression and localization of bestrophin during normal mouse development. *Invest Ophthalmol Vis Sci* 2003;44:3622-3628.

EXPLANATION OF PUBLICATION AND PRESENTATION INFORMATION

Publications

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

Presentations

Presenter: Presentation Title. Name of Conference/Organization, Presentation Location, Conference/Presentation Date(s).

PRESENTATIONS

McKay BS: To RPE or not to RPE. Diseases of the Aging Eye Symposia, Tucson AZ, January 29, 2003.

Dobson V: Peripheral vision in infants and young children: normal and abnormal development. Doings in Motor Control, Department of Physiology, University of Arizona, Tucson, AZ, February 14, 2003.

Miller JM: Optics and refraction. University of Miami School of Medicine, Miami, FL, March 14, 2003. [Invited]

Stamer WD: Adherens junction in Schlemm's canal: A novel target for glaucoma therapy. 4th International Glaucoma Symposium, Barcelona, Spain, March 19-22, 2003.

Dobson V: (1) Social Security Administration criteria for visual disability determination: What changes are likely; (2) Retinopathy of prematurity: Ocular, visual and quality of life outcomes. Featured Speaker. Arizona Chapter of the Association for Education and Rehabilitation of the Blind and Visually Impaired One-Day Conference, Phoenix, AZ, April 4, 2003.

Dobson V: Where did you get those numbers when talking about my child's vision? University of Arizona, Department of Special Education, Rehabilitation, and School Psychology's Seminar for Families of Young Children with Visual Impairments, Tucson, AZ, April 5, 2003.

Dobson V, Quinn G, on behalf of the CRYO-ROP Cooperative Group: Health related quality of life at age 10 years in very-low-birth-weight children with and without retinopathy of prematurity. Annual Meeting of the American Association for Pediatric Ophthalmology and Strabismus, Waikoloa, HI, April 23-27, 2003.

Miller JM: A digital camera fundus lens for documenting retinal hemorrhages. Annual Meeting of the American Association for Pediatric Ophthalmology and Strabismus, Waikoloa, HI, April 23-27, 2003.

Dobson V: Testing visual function in infants and young children. Department of Ophthalmology, University of Turin, Turin, Italy, June 16, 2003.

The following are presentations made at the Annual Meeting of the Association for Research in Vision and Ophthalmology, Ft. Lauderdale, FL, May 4-9, 2003:

Bruhn RL, Conley SM, Morgan P, Stamer WD: Selenium effects on metalloproteinase activity in human trabecular meshwork cell supernatants.

Stamer WD, Chan DWH, Read AT, Ethier CR: Efficiency of adenoviral gene transfer to outflow cells in perfused human anterior segments.

Gonzalez P, Liton PB, Caballero M, Stamer WD, Liu X, Bodman MB, Epstein DL: Search for promoters to target gene expression in selected cells of the outflow pathway.

Karl MO, Fleischhauer JC, Stamer WD, Peterson-Yatorno K, Mitchell CH, Stone RA, Civan MM: Cells acutely harvested from inner-wall cells and explant-derived cells from inner- and outer-wall of Schlemm's canal display functional adenosine receptors.

Harvey EM, Dobson V, Miller JM, Clifford C: Accommodation in uncorrected astigmatic children.

Clifford C, Harvey EM, Dobson V, Miller JM: Accuracy of the Grand Seiko Autorefractor in children.

Apple HP, Hartmann EE, Miller JM, Apple DC: Automated cover/uncover test: Evaluation of two prototypes.

Dobson V, Miller JM, Sherrill DL, Harvey EM: Stability of astigmatism in Native American preschool children.

Miller JM, Sherrill DL, Dobson V, Harvey EM: Stability of spherical equivalent refraction in Native American preschool children.

Lee JH, Snyder RW, Schwiegerling J, Nedrud C, Chang M: Longitudinal spherical aberration after LASEK and LASIK.

Chang MK, Snyder RW, Lee J, Schwiegerling JT, Nedrud C: Posterior corneal curvature changes comparing LASIK versus LASEK.

Nedrud CM, Snyder RW, Nix DE, Lee J, Chang M: Comparing kill rates for two new fluoroquinolones to Ofloxacin and Vancomycin against staphylococcal endophthalmitis isolates.

McKay BS: Tissue specific protein expression in cultured adult human RPE.

Twelker JD, Bailey IL: Sun exposure in unilateral and bilateral pterygium cases.

Schwiegerling J: Wavefront aberrations measurement incorporating the Stiles-Crawford effect.

Beverage J, Schwiegerling J, Straub J: Predicting refraction data from pre-op and post-op LASIK wavefront data.

Straub J, Schwiegerling J: Impact of wound healing after laser refractive surgery on higher order aberrations in the human eye.

Baldwin MB, Dobson V, Clifford C, Ellis V, Schmidt S, Haynes B: Young children's larger measured visual field extent for flickering versus non-flickering stimuli: Is it simply a preference for flicker?

Park RI: Human eye simulation II: Retinal stresses generated during medial saccadic eye movements.

Donnenfeld ED, Solomon R, Doshi S, Berry HD, Snyder RW, Jensen HG: Prophylaxis of streptococcus pneumoniae keratitis with Gatifloxacin in a rabbit LASIK model. Pirenzepine Study Group (Siatkowski R, Cotter S, Miller J, Scher C, Crockett RS, Novack GD): *In vivo* Transscleral delivery of FITC-conjugated molecules to the rabbit choroid and retina.

AN EYE TO THE FUTURE newsletter is published by the UA Department of Ophthalmology to share news and showcase research activities. Correspondence or inquiries should be addressed to: Newsletter, UA Department of Ophthalmology, 655 N. Alvernon Way, Suite 108, Tucson, AZ 85711; phone (520) 322-3800 ext. 200.

The University of Arizona
Department of Ophthalmology
655 N. Alvernon, Suite 108
Tucson, AZ 85711

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

Entering the 21st Century:

◆ In the U.S., 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 causes visual loss in about 1.2 million people in the U.S. By age 60, nearly 15 percent of Americans develop symptoms of ARMD; by age 80, the percentage rises to nearly 40 percent.

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 that are still 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.

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