



AMERICAN ACADEMY
of OPTOMETRY

Times

Thursday Edition

Your AAO News Source Thursday

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Plenary 2017: A Call to Arms

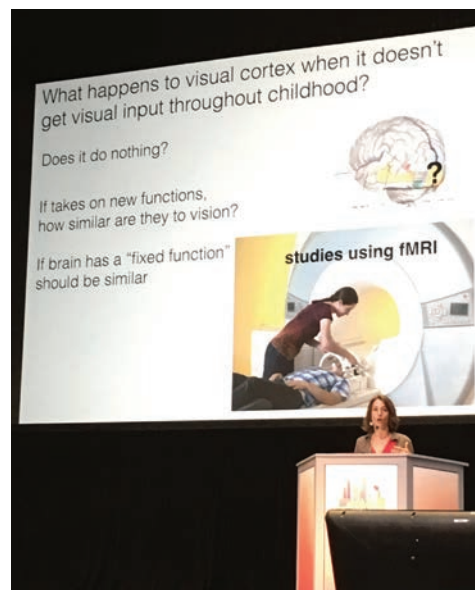
To detect neurodegenerative diseases, medicine needs optometrists on the front lines.

At yesterday's plenary session, three experts in neurodegenerative disease made a proclamation: optometrists are, or will soon be, the vanguard soldiers in the battle against diseases such as Parkinson's, Alzheimer's and multiple sclerosis. The session covered cutting-edge research on visual cortex adaptation, the eye's involvement in central nervous system processes and its potential prognostic value in disease detection. And it all points to the profession's increased involvement in the near future, said the speakers.

The Age of Plastic

Marina Bedny, PhD, of Johns Hopkins University, commenced the session with a compelling lecture on how blindness affects brain development. Using brain scans, she showed how the visual cortex in blind individuals is repurposed, and explained the intriguing differences between this structure in the blind and normal-sighted. In Dr. Bedny's lab, they have been studying "higher cognitive takeover" in the congenitally blind. These individuals are better at understanding the grammar of complex sentences and, on average, show superior memory.

"The brain is built to learn and adapt," she noted. But after early childhood, "it's difficult to gain full perceptual function" in adulthood. She cited a patient, blind since age three, who as an adult had his vision restored following a corneal transplant, but never gained full perceptual abilities such as recognizing gender and



Dr. Bedny, who directs the neuroplasticity and development lab at Johns Hopkins, explained the critical role that early visual development plays in shaping a person's sensory and cognitive capabilities.

emotion in faces. This suggests, according to Dr. Bedny, that early visual experience is essential for development of the visual system. In the blind, their unique perceptual experience causes the visual cortex to stop acting as a visual center, instead acting as a center for higher cognitive functions.

The Mind's Eye

The eyes are the window to the soul, according to da Vinci—and to the central nervous system, according to Christopher Hudson, PhD, MCOptom. Dr. Hudson, of the University of Waterloo's School of Optometry and Vision Science, is co-lead investigator with the Ontario Neuro-Degenerative Research Initiative (ONDRI) study, and gave attendees a sneak peek at ONDRI's findings,

as well as insights into why the initiative is targeting the retina. "An aging population has led to a surge in neurodegenerative disease, such as Parkinson's, Alzheimer's, Lou Gehrig's and temporal dementia, and Western medicine is asking 'How are we going to deal with this?'" said Dr. Hudson. "The thing that ties these diseases together is dementia," one of the most difficult manifestations. The existing treatments are limited and only address the symptoms, not the cause. A search is afoot for inexpensive, noninvasive and readily available objective assessment tools—and they may lie in the retina, according to

Dr. Hudson.

As an extension of the brain, the retina manifests morphological changes in neurodegenerative diseases. It's an appealing target, he says, that could serve as a surrogate marker. "Ultimately, spectral-domain OCT may play a role in diagnosis and monitoring," based on the results of ONDRI, which uses OCT to construct three-dimensional images.

As ONDRI gets ready to make its data public in the coming weeks, Dr. Hudson—himself diagnosed with Parkinson's—reminded the audience that disease doesn't come in neatly defined packages. The medical community needs to account for concomitant pathologies common in these patients.

(continued on page 4)

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Not Your Grandmother's Glaucoma

Progressive ideas about glaucoma were explored during the OGS/AAO symposium.

Shaking up conventional wisdom was a theme in Wednesday morning's session "Intracranial Pressure in Glaucoma," during the Joint Symposium of the Optometric Glaucoma Society (OGS) and the American Academy of Optometry (AAO).

Two Pressures

The prevailing belief is that glaucoma is a one-pressure disease, said John Berdahl, MD, a cataract, refractive, glaucoma and corneal surgeon with Vance Thompson Vision and medical director of the South Dakota Lions Eye Bank. In his talk, Dr. Berdahl argued that glaucoma isn't a one-pressure disease, but a two-pressure disease—a balance between intraocular pressure (IOP) and intracranial pressure (ICP).

The term *IOP* is a misnomer that has misled the field for decades, he said, as it suggests the pressure is inside the eyeball. "When we measure intraocular pressure, we're really measuring the pressure differential across the cornea; we're not measuring the absolute pressure inside the eye," Dr. Berdahl said.

This idea came to Dr. Berdahl as a medical resident while on vacation and scuba diving in the Caribbean. He wanted to understand why scuba divers don't get glaucoma, despite the fact that diving just 30 feet below sea level adds 760mm Hg of pressure to the eye. "The pressure inside the eyeball, I don't believe matters," Dr. Berdahl said. "It's the pressure differentials that matter because [they] cause forces to occur."

And while researchers and clinicians might measure the pressure differential across the cornea, he said the pressure differential across the optic nerve head (ONH)—where disease occurs—likely matters more. Anatomy, physiology, physics and research data support this idea, he noted.

Dr. Berdahl showed, with a histologic image, how cerebrospinal fluid (CSF) pressure encounters the optic nerve until the optic nerve inserts into the back of the eye at the lamina cribrosa. He noted that CSF is actually exposed to more of the ONH than IOP. A quick physics primer demonstrated how low CSF pressure or high IOP over time results in cupping and the backwards bowing of the ONH.

Dr. Berdahl concluded that glaucoma is

a metabolic disease of axonal transport: "If you have a really high pressure or a really low intracranial pressure, axonal transport can't get into that high-pressure environment in the eye from the brain. It's like a salmon that's trying to swim up a waterfall; it just can't get up there. The metabolic needs aren't met, the nerve slowly dies and you get glaucoma."

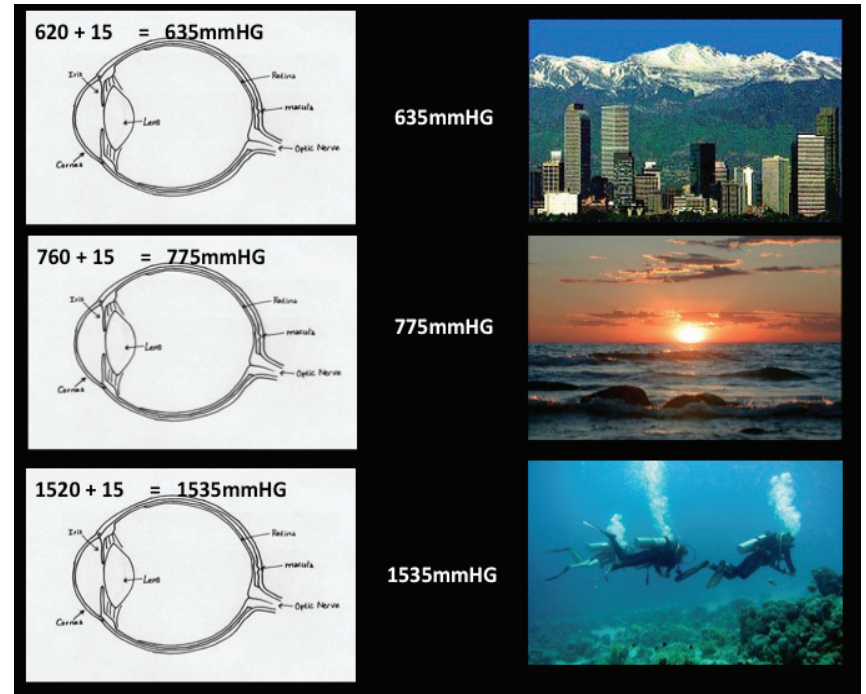
Dr. Berdahl suggested that if IOP could be "decoupled" from ICP, it might yield new ways to treat glaucoma.

He said lowering the absolute pressure in front of the eye via a chamber might relieve atmospheric pressure to effectively reduce IOP—while not affecting the CSF pressure—and, consequently, re-normalize the pressure gradient across the ONH. A Mayo Clinic team that developed goggles to do that found that applying a vacuum in front of the eye enabled IOP reduction. Subsequently, researchers, including Dr. Berdahl, developed prototype goggles with independent pumps to lower eye pressure. "I think that will allow us to predictively lower eye pressure," he said.

Two Diseases

During his lecture on "Ocular Surface Disease and Glaucoma Therapy," Robert D. Fechtner, MD, drew parallels from the recently published TFOS DEWS II report findings about dry eye disease (DED) and glaucoma. He mentioned research showing the high prevalence of DED alone and concomitantly with glaucoma.

One study looking at ocular surface disease (OSD) occurrence in glaucoma patients found that almost 60% of treated glaucoma patients had mild, moderate or severe OSD. Dr. Fechtner's team surveyed 630 patients being treated for glaucoma and also un-



In his OGS/AAO Symposium talk, Dr. Berdahl highlighted atmospheric pressure's effects on IOP.

covered mild, moderate or severe OSD in 48.4% of patients. The pathophysiology and mechanisms of OSD and how treating glaucoma can exacerbate symptoms were other areas of discussion.

A study evaluating risk factors for developing ocular surface disease in treated glaucoma or ocular hypertension patients determined that OSD was related to the number of medications used, prolonged use of preserved medications and total benzalkonium chloride (BAK) exposure. Other research has found a link between BAK-containing eye drops and OSD. "Glaucoma patients treated with eye drops tolerate their first bottle," said Dr. Fechtner. "Two medications, three medications, they were up to 40% with substantial ocular surface [disease] signs and symptoms." He urged doctors to think twice before adding more than one or two eye drops.

Also during yesterday's symposium, David Friedman, MD, MPH, PhD, the Alfred Sommer Professor at the Wilmer Eye Institute of Johns Hopkins University School of Medicine and professor in the departments of epidemiology and international health at Johns Hopkins Bloomberg School of Public Health, discussed key lessons from large glaucoma clinical trials.

Redefining Health in an Age of Evolving Clinical Challenges

Research is emphasizing the importance of holistic care—and so should you.

What we put in our bodies is a primary contributor to the level of morbidity we see in today's metabolic disease. Luckily, we can control much of what we eat and how we care for our bodies. Such was the premise of this year's Ocular Wellness and Nutrition Society meeting, which presented eye-opening insights into the role of epigenetics in ocular health and what optometrists can do to steer patient health in the right direction through supplementation and validated biomarkers.

Evolving Health Definition

Russell Jaffe, MD, PhD, Senior Fellow, Health Studies Collegium, initiated his keynote talk with a bold scientific claim: "8% of health is genetics, 92% is epigenetics." He emphasized that we must "stop fighting and start healing" by focusing on causes and not symptom consequences.

First citing the World Health Organization's (WHO) definition of health, "highest attainable state of physical, mental and social well-being," Dr. Jaffe then posited that how we define health is shifting. "The WHO definitions of health do not work in an era marked by new understandings of disease at molecular, individual and societal levels." As an example, Dr. Jaffe pointed to the modern inquiries that validated the concepts of ancient Chinese medicine. "Using relaxation techniques 20 minutes per day can have significant positive impacts on health," he said.

The lecture wasn't limited to simple health tips, however. He emphasized the need for a holistic approach to patient health. "What is [Chinese Medicine's] yin and yang?" Dr. Jaffe asked the audience, to which Stuart Richer, PhD, OD, FAAO, chimed in that *homeostasis* was the modern scientific term. Dr. Jaffe put forth a convincing argument that much can be learned from ancient practitioners.

The Biomarkers

According to Dr. Jaffe, a *predictive* biological marker—which differs from a biomarker—"is a specific subcategory of analytic observations. In other words, objective indications of medical state observed from outside the patient that can be measured accurately and reproducibly while predicting 10-year survival" and quality of life.

The goals of these predictive biological



Dr. Jaffe encouraged attendees to think holistically—and preemptively—about the role systemic inflammation plays in health and disease.

markers are to guide therapy, add years to life, improve health and outcomes, and lower costs and risks, he noted.

Dr. Jaffe outlined what he considered the important, high-sensitivity predictive biological markers: C-reactive protein, hemoglobin A1c, 8 oxo-guanine, omega-3 index, vitamin D, urine pH, homocysteine and lymphocyte response assay.

"The higher your hemoglobin A1c, the worse off you are. If you have less than 5.4 A1c, you have a 99% chance of living a decade or longer, but if you have 16.5, you have a 20% chance or less of living in that decade," explained Dr. Jaffe. Importantly, he stratified the results of studies on predictive biological markers and found the nor-

mal value ranges that American medicine uses in laboratory tests are not healthy ranges. Normative lab ranges based on population measurements may mean that the population could be suffering from poor health on the whole.

For instance, Dr. Jaffe asserted that achieving homocysteine levels less than 6 μmol/L is the true goal, which differs from standard ranges used by common commercial labs. Luckily, he said, proper

supplementation can return biomarker values to target ranges put forth by recent research. For example, he presented conclusions from his research suggesting that hydroxocobalamin in combination with folates and vitamin B6 can help return homocysteine values to normal in three months.

All these predictive biological markers can help practitioners evaluate the changes that need to be made in individual patients. "We are what we eat and drink, think and do—we have an epigenetic health bank account that we can replenish or deplete by choices and habits," Dr. Jaffe said. Biomarkers that identify where dietary and lifestyle changes can have positive effect can help markedly improve your patients' health.

Plenary 2017: A Call to Arms

(continued from page 1)

Six Simple Rules

Robert Sergott, MD, director of neuro-ophthalmology at Wills Eye Hospital, expounded on his six rules for OCT in his lecture, "The Eye as a Mirror of the Brain," which was brimming with clinical case examples. Each case helped solidify the concept that the retina, optic nerve and brain are all linked. Then, he put the onus on the OD to intervene.

"OCT gives you objective data vs. subjective data," he said. "We still get fooled as to what is an optic neuropathy and what's a maculopathy, but OCT doesn't."

The six rules, according to Dr. Sergott, are:

1. Always image both eyes, optic nerves and maculas with OCT in suspected neuro disease.
2. Consider 'Where is the disease?' before 'What is it?'

3. Decreased or increased thickness takes you to the pathology.

4. White signal is ischemia, lipid, hemorrhage, exudate or fibrosis. Black is edema.

5. Always correlate fields with OCT, as 88% of a first associated field will contain artifacts.

6. Inner nuclear layer cysts occur in many diseases.

Every time we have new technology, said Dr. Sergott, we make better diagnoses and take better care of our patients. Combining advanced retinal and optic nerve imaging with functional MRI and big data analytics could yield methods to diagnose these conditions earlier. But, he warned, be wary of confirmation bias. New tools need new thinking to help make breakthroughs possible.

Today's Paper Sessions

Category	Room Number	Time
SE-07 - Hot Topics: Novel Treatments	E353	8am
SE-08 - Hot Topics: Glaucoma: Innovative Concepts	E354A	8am
SE-09 - Hot Topics: OCT-Angiography: New Insights from a Novel Technique	E354B	8am
P-07 - Scleral Lens Super Session <i>Paper presentations from 9:30am to 10:30am</i> <i>Poster Data Blitz presentations begin at 10:30am, followed by interactive session with poster and paper authors until noon.</i>	E351	9:30am
P-08 - Papers: Teaching with Technology	E352	9am
P-09 - Papers: Effects of Light on Visual Function	E352	10:45am
P-10 - Papers: Retina Imaging Papers: Current and Future Clinical Values	E351	1pm
P-11 - Papers: Visual Performance - Driving and Athletics	E351	2pm
P-12 - Papers: Health Care Delivery	E352	1pm
P-13 - Papers: Myopia	E352	2:30pm

Friday's Paper Sessions

Category	Room Number	Time
P-14 - Papers: Spatial Vision with Keynote Address by: John Robson	E351	10:15am
P-15 - Papers: Low Vision I	E351	2pm
P-16 - Glaucoma Super Session: Improving Glaucoma Management <i>Paper presentations from 8am to 9:30am</i> <i>Poster Data Blitz presentations begin at 9:30am, followed by interactive session with poster and paper authors until 11am</i>	E351	8am
P-17 - Papers: Low Vision II	E352	8am

FRIDAY THE 13TH VEIN DRAIN

THIS FRIDAY THE 13TH...



The Academy invites you to give back during Academy 2017 Chicago and participate in our second blood drive benefiting the American Red Cross—this time taking place on Friday the 13th!

Date: Friday, October 13

Hours: 10am to 5pm

Location: E256, Lakeside Center

Donors will receive snacks and drinks. Please join us in supporting the local Chicago community!

COBURN TECHNOLOGIES

BOOTH 303



AAO 2017



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TODAY: 3PM TO 5PM ARIE CROWN THEATER

Review What's New with DEWS II

This seminal study is rewriting the rules of dry eye. Here's your chance to get up to speed.

The Tear Film and Ocular Surface Society's (TFOS) Dry Eye Workshop (DEWS) updated its venerated 2007 report this summer. The additional 10 years of research and collective expertise allowed the group to clarify optometry's definition, understanding and approaches to the condition. Now, three of the top investigators behind that research are here to explain the updates, their own conclusions and new treatment modalities at "Incorporating TFOS DEWS II Into Clinical Practice" at the Arie Crown Theater.

"An improved understanding of the types of dry eye, how to accurately diagnose the presence and type of dry eye and then how to appropriately manage the patient using contemporary treatments is a must," says Lyndon Jones, PhD, FCOptom, FAAO, of the University of Waterloo.

The presentation will review precisely those topics as well as "clinically useful tips that ODs can apply in practice, straight after returning from the conference," adds researcher Jennifer P. Craig, BSc, MSc, FAAO, of the New Zealand National Eye Centre. "Dry eye disease is incredibly common, but selecting the best management for the individual patient can be challenging." The course will "assist practitioners in differentiating dry eye from other ocular surface disease, in making a dry eye diagnosis confidently and in choosing the most appropriate therapies," Dr. Craig says.

Course Highlights

The course's outline primarily highlights three sections from the TFOS DEWS II publication:

1. Update on the definition, classification and diagnosis of dry eye.
2. Critical assessment of the etiology, mechanism, distribution and impact of this disorder.
3. Management and therapy of the condition.

The 2017 TFOS DEWS II definition states that "dry eye is a multifactorial disease of the ocular surface characterized by a loss of homeostasis of the tear film, and accompanied by ocular symptoms, in which tear film instability and hyperosmolarity, ocular surface inflammation and damage, and neurosensory abnormalities play etiological roles."

The presenters will review that update as well as their diagnostic test battery, which starts with a dry eye questionnaire and includes testing patients' lipid layer thickness, tear volume and disease severity to help inform the dry eye subtype classification.

Finally, the management and therapy recommendations will cover options for treating tear insufficiency and lid abnormalities with anti-inflammatory medications, dietary and environmental considerations and even surgical comanagement.

"Even non-specialists need to be able to advise and refer if necessary any of their patients with this common chronic condition," explains Aston University's Associate Pro-Vice Chancellor James Wolffsohn, PhD, MCOptom, FAAO. "TFOS DEWS II has consolidated the evidence basis for this complex multifactorial condition, and the AAO presentation will include live diagnosis and management to embed the findings in a way that can easily be adopted in clinical practice."

Note: DEWS II is a registered trademark of the Tear Film and Ocular Surface Society.

TODAY'S HIGHLIGHTS

THURSDAY, OCTOBER 12

TODAY'S SCIENTIFIC PROGRAM SCHEDULE

Today, 11:30am Room S406

Ms. Amber Mathias (the Ohio State University) and Mr. Kaleb Abbott (University of Houston) will be recognized during the Student and Resident Award Lunch. Their presentations at Academy 2016 Anaheim were selected as the two best student scientific presentations.

Hot Topic Paper Sessions

Today 8am to 8:50am

Lectures won't begin until 9am this morning, so join us at a Hot Topic Paper Session for some CE and information on the latest developments in the field:

- Novel Treatments (E353)
- Glaucoma: Innovative Concepts (E354A)
- OCT-Angiography: New Insights from a Novel

Technique (E354B)

Special Evening Poster Event

Today, 4pm to 6pm, Exhibit Hall D

Stop by the exhibit hall for CE and a complimentary cocktail (with ticket) during this special evening poster session. This will be a fun way to catch up on some of the latest research that will shape our profession in the years to come! Posters are available to view starting at 9am. Poster topics include:

- Cornea / Anterior Segment / Contact Lenses
- Glaucoma
- Health Policy / Health Care Delivery
- Low Vision
- Neuro-ophthalmic / Orbit
- Optometric Education
- Ocular Physiology
- Posterior Segment
- Systemic & Other Disease
- Visual Function / Perception



PUBLIC HEALTH AND ENVIRONMENTAL VISION SECTION AWARDS AND HENRY B. PETERS LECTURE

Join us today from 5pm to 6pm to hear the Public Health and Environmental Vision Section

Awards and Henry B. Peters Lecture in E264:

Henry B. Peters Memorial Award in Public Health and Environmental Vision

Provided by the American Academy of Optometry Foundation

Melvin D. Shipp, OD, DrPH, FAAO, Public Health; Optometry; 2020

DID YOU KNOW THAT THE ACADEMY IS MORE THAN JUST A MEETING?

We invite you to become a Fellow of the American Academy of Optometry (FAAO) and to join a group of professionals dedicated to the highest standards in patient care. Visit the Academy's membership booth in the Exhibit Hall (#551) to meet current Fellows of the Academy, ask questions, and learn more about the Candidacy for Fellowship process. Also, if you submit your Candidacy for Fellowship application during the meeting, we will waive the application fee (that's a savings of \$60)! We also invite you to join us for the Fellowship Information Session being held **TODAY, 3pm to 4pm in E256, Lakeside Center.**

INFORMATION FOR CURRENT MEMBERS — MAINTENANCE OF FELLOWSHIP

Stop by the Academy's membership booth to learn more about Maintenance of Fellowship (MOF). If you became a Fellow in or after 2010, you are required to achieve points towards the MOF certification. The requirements can be obtained through a variety of ways including authorship, CE attendance, Academy annual meeting attendance, and Academy meeting paper or poster presentations.

ATTENTION OD STUDENTS, RESIDENTS AND POST-DOCTORAL STUDENTS

Stop by the booth to pick up Academy information or apply for student membership.

Did you graduate from optometry school in 2017? If so, submit your Candidacy for Fellowship application by the end of the year and we will waive your 2018 Academy dues. Visit the Academy booth for more information.

CONTINUING EDUCATION WITH EXAMINATION (CEE) CREDITS AT ACADEMY 2017 CHICAGO

The courses listed below will be presented with an option to take an exam, administered by the University of Houston College of Optometry. All CEE exams are offered by mail or online. All are welcome to attend the courses without taking the exam. Instructions to request the exams are available at the Education Desk.

Thursday, October 12			
Time	Course	Lecturer(s)	COPE ID
9am	Glaucoma Progression	Murray Fingeret	53996-GL
10am	Technology for the Posterior Segment	Mohammad Rafieetary, Steven Ferrucci, Leo Semes	54693-PS
1pm	From Retina to Neuro	Kelly Malloy, Carlo Pelino	53989-PS
Friday, October 13			
Time	Course	Lecturer(s)	COPE ID
8am	Wake Up - Sleep Disorders and Eye Care	Stuart Richer, Alexander Golbin	54346-SD
8am	Lab Testing in Optometric Practice: The Basics	Blair Lonsberry	53983-SD
9am	Evaluation and Management of Special Populations	Catherine Heyman	54694-FV
10am	Innovations in Ocular Drug Delivery Systems	Justin Schweitzer, Walter Whitley, Derek Cunningham	54002-PH
2pm	Anatomical Considerations in Neuro-ophthalmic Management	Kelly Malloy, Lorraine Lombardi	53988-NO
3pm	Optical Coherence Tomography (OCT): Posterior Segment Applications	Nancy Wong, Nicholas Beaupre	53987-PD
4pm	Case Based Approach to Ophthalmic Ultrasound	Peter Russo, Charles Kinnaird	54004-PD
Saturday, October 14			
Time	Course	Lecturer(s)	COPE ID
8am	Minor Surgical Procedures (Blades and Radio-Waves)	Jason Duncan	54692-SP
9am	Contemporary Retinal Care: Evidence-Based vs. Real World	Diana Shechtman, Jeff Gerson	53984-PS
10am	My Doc Told Me to Get an Eye Exam Because...	Bruce Onofrey	54003-PH
2pm	The Herpes Group	Joseph Shovlin, Greg Caldwell, Michael DePaolis, Andrew Mick	53995-AS



This year the Alcon Foundation, in partnership with the American Academy of Optometry Foundation (AAOF), returns to the Academy's exhibit hall floor with its popular charitable initiative, Cycle for Sight.

The event, which celebrates the 16th annual World Sight Day, features a bank of stationary bikes that keeps a running tally of minutes logged by optometrists and other attendees in a collective effort to reach the challenge goal of 2,020 (20/20!) minutes of total riding time. Once that goal is met, the Alcon Foundation will issue a \$25,000 donation to the AAOF.

For those ODs who can't take the ride in person, there's still an opportunity to help fund innovative eye health research with a contribution to AAOF. You can check in with them at their booth, #539, for details on how to contribute.



Participants sweat it out for a charitable cause in the Cycle for Sight Challenge.

Ocular Photography Contest Winners

The 2017 Comprehensive Eye Care Section Ocular Photography Contest received 153 image submissions from 96 different optometrists. The submissions were divided into anterior and posterior segment categories, which received 77 and 76 submissions, respectively. Grand prizes were awarded for the anterior and posterior segments, followed by four honorable mentions from the combined submissions.

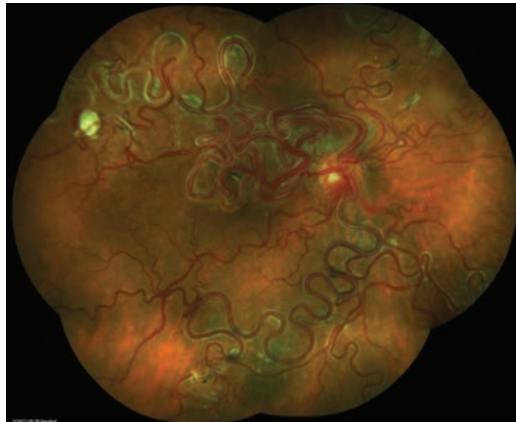
Submissions were graded in seven categories—each assigned a numerical value between 1 and 10—focus, exposure, field of view, difficulty of capturing image, absence of distracting elements, lighting and visual impact (wow! factor). The total scores from eleven optometrist judges were averaged to determine the winners.

Special thanks to our judges Drs. Anthony DeWilde, Amy Huddleston, Amanda Jimenez-Myers, Albert Nemiroff, Devina Patel, Glenn Saxon, Mollie C. Saxon, Melissa Turner, Karen Wadhams, Janis Winters and Bryan Wolynski.

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Honorable Mentions



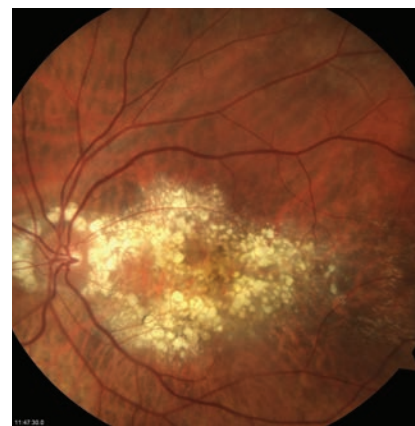
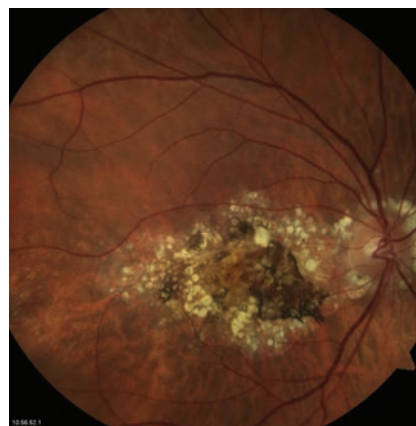
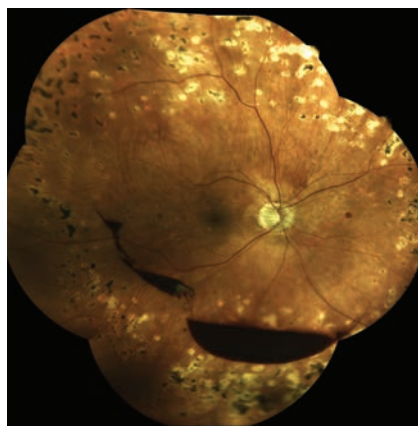
Honorable Mention #1:

Stefania M. Paniccia, OD, MS, FAAO

Instituto de Ojos;
Puerto Rico

*Arteriovenous
Malformation of the
Optic Nerve and Retina
in Wyburn-Mason
Syndrome*

Imaging system used: Zeiss
Visucam NM/FA



Honorable Mention #2:

Steven Ferrucci, OD, FAAO

Chief of Optometry, Sepulveda VA;
Professor, SCCO/MBKU

*Moby Dick and the Pequod: Two
Unusually Shaped Pre-retinal
Hemorrhages in a Patient with
Diabetes*

Imaging system used: EIDON AF True Color
Confocal Scanner by Centervue

Honorable Mention #3

Brad Sutton, OD, FAAO

Indiana University School of Optometry / Indianapolis Eye Care Center

Doyne's Honeycomb Retinal Dystrophy OU

Imaging system used: Carl Zeiss Meditec Visucam Pro Non-Mydriatic Fundus Camera

Honorable Mention #4

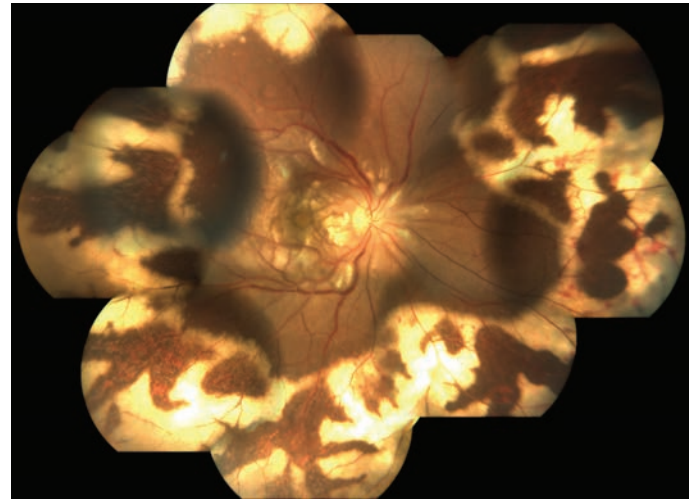
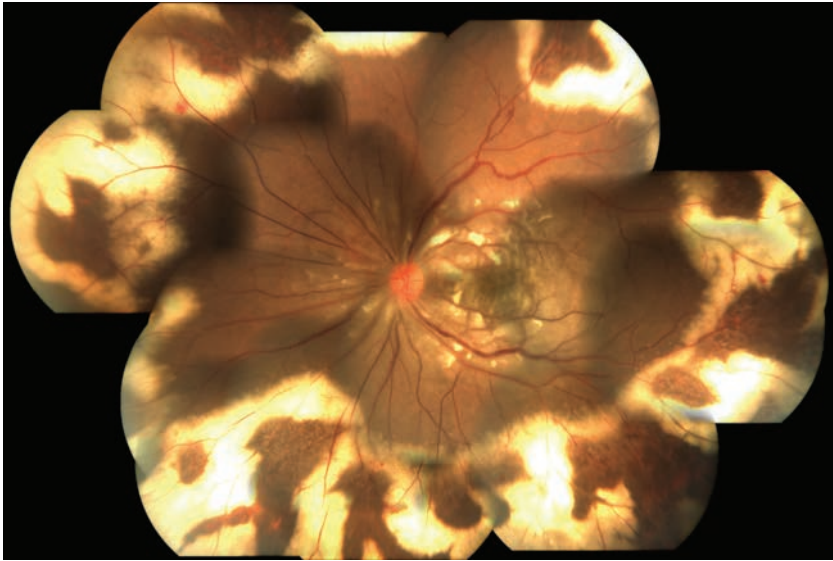
Michael Lacina, OD

Clear Vision Family Eyecare
Mars, PA

*Macular Pucker You Can Almost
Feel*

Imaging system used: Eidon Fundus camera

Grand Prize: Posterior Segment



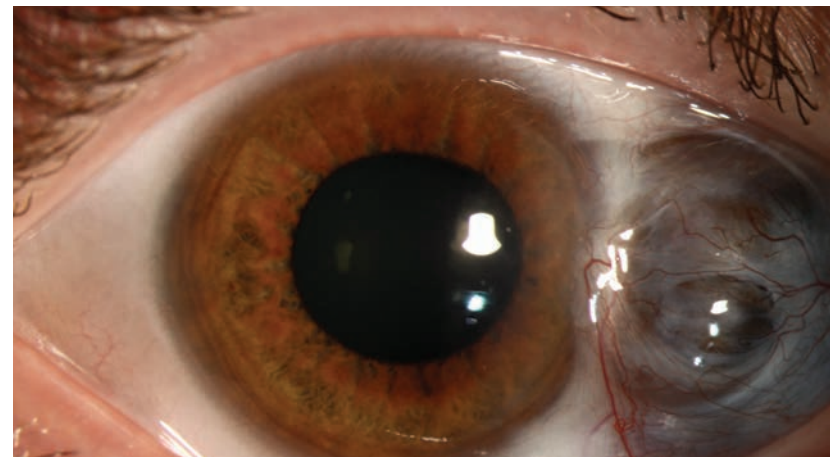
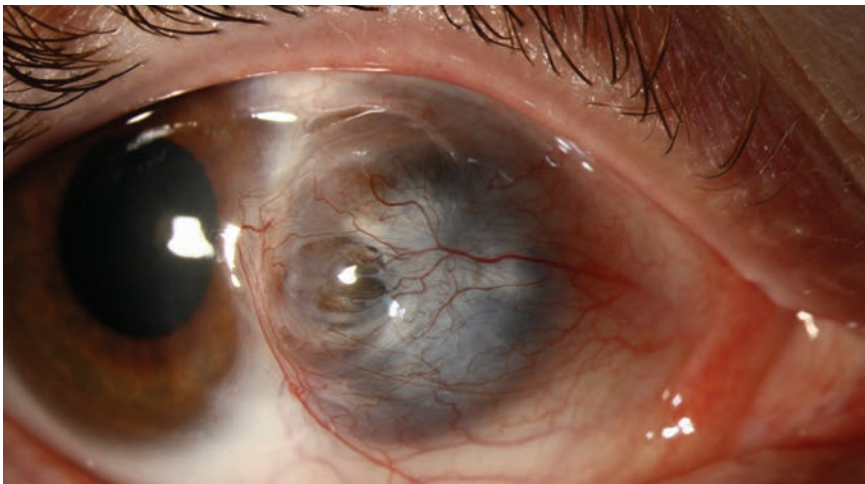
Krushna Gopal Panda, B.Optom

L.V. Prasad Eye Institute, Bhubaneswar, KIIT, Patia, India, India

Acute Retinal Necrosis (Purtscher-like Retinopathy) in a Case of Non-Hodgkin's Lymphoma

Imaging system used: Zeiss FF-450 fundus camera

Grand Prize: Anterior Segment



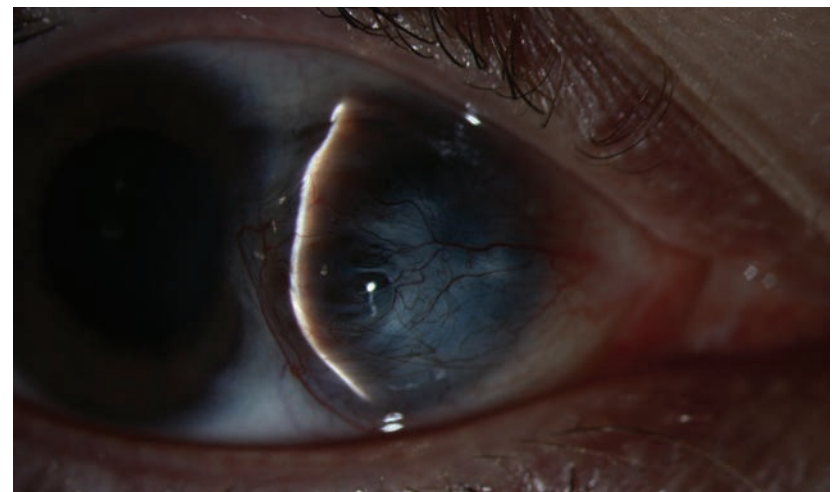
Alison Bozung, OD

Jody Troyer, CRA

University of Iowa, Department of Ophthalmology and Visual Sciences

Scleromalacia in Granulomatosis with Polyangiitis

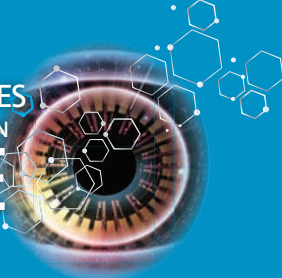
Imaging system used: Haag-Streit BX-900 Photo Slit Lamp with a Canon 50D DSLR



Earn up to
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2018 MEETINGS

FEBRUARY 16-20, 2018

Winter Ophthalmic Conference
ASPEN, CO

Westin Snowmass Conference Center
Program Chairs: Murray Fingeret, OD & Leo Semes, OD

APRIL 6-8, 2018

NASHVILLE, TN
Nashville Marriott at Vanderbilt
Program Chair: Paul Karpecki, OD

APRIL 26-29, 2018

SAN DIEGO, CA**
San Diego Marriott Del Mar
Program Chair: Paul Karpecki, OD

MAY 17-20, 2018

ORLANDO, FL
Disney's Yacht & Beach Club
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NOVEMBER 2-4, 2018

ARLINGTON, VA
The Westin Arlington Gateway
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**15th Annual Education Symposium
Joint Meeting with NT&T in Eye Care

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See Review website for any meeting schedule changes or updates.

AAO Exhibits

The Academy 2017 Chicago exhibit hall is the perfect place to experience cutting-edge products and services. Remember, badges are required for admission to the exhibit hall.

The remaining exhibit hall hours are as follows:

THURSDAY, Oct. 12

11am–6pm

FRIDAY, Oct. 13

10am–3pm

TODAY'S STUDENT-FOCUSED HOUR

10am–11:30am

Company Name	Booth Number	Company Name	Booth Number	Company Name	Booth Number
ABB Optical Group	504	Fashion Optical Displays	167	Pentavision	164
AccuLens, Inc.	565	Freedom Scientific/Optelec	500	Percepto, Inc.	174
Aerie Pharmaceuticals, Inc.	609	Good-Lite Co.	501	PNC Healthcare Business Banking	165
Akorn Pharmaceuticals	663	Haag-Streit USA/Reliance	137	Practice Director	760
Alcon Foundation, Inc.	631	Hadley Institute for the Blind and Visually Impaired	564	Precision Vision	313
Alcon Laboratories	119	HAI Laboratories, Inc.	351	Premier Ophthalmic Services, Inc.	160
Alcon Novartis Pharmaceuticals	731	Halsted Eye Boutique (Vision Source)	170	Prestige Brands	569
All About Vision	563	HCPN Alliance/Pharmanex	664	Primary Care Optometry News and Healio.com by Slack, Inc.	311
Allergan	409	Heart of America Eye Care Congress	753	Proof Eyewear	150
American Academy of Optometry	551, 669, 761	Heidelberg Engineering	525	Puriton	608
American Academy of Orthokeratology and Myopia Control	556	Heine USA, Ltd.	200	Quantel Medical	158
American Board of Optometry	571	Hero Practice Services	755	Quark Pharmaceuticals, Inc.	513
American Foundation for the Blind	566	Hoya Vision Care	161	Reichert, Inc.	113
American Optometric Association	519	Icare-USA	412	Review of Optometry	741
American Optometric Foundation	539	Illinois College of Optometry	552	RightEye, LLC	745
Annidis Corp.	245	iMatrix	410	Scan Optics	739
Armed Forces Optometric Society	774	ImprimisRx	309	ScienceBased Health	463
Art Optical Contact Lens, Inc.	300	Indigo Iris Designs, LLC	562	Shire	231
Association of Schools and Colleges of Optometry	675	Innexus by Interactive Media	159	Singlecare	266
Bausch + Lomb	431	Innova Systems, Inc.	168	Sjögren's Syndrome Foundation	465
Bernell	605	Invision Magazine	152	Solutionreach	211
BioD, LLC	619	IrisVision	460	Spark Therapeutics	603
BioTissue	403	Johnson & Johnson Vision	321	SpecProtect	401
Blanchard Contact Lens, Inc.	626	Keeler Instruments, Inc.	400	Stella Lighting Inc.	757
BlephEx LLC	208	Kentucky College of Optometry	662	Stereo Optical Company, Inc.	554
Boston Foundation For Sight	505	King Devick Test	404	Sun Ophthalmics	439
Brien Holden Vision Institute	365	Konan Medical USA	408	Surefire Local	604
Bruder Healthcare Company	455	Lippincott Williams & Wilkins, Wolters Kluwer Health	358	SynergEyes, Inc.	614
Bryn Mawr Communication	105	Lombart Instrument	143	TearLab, Corp.	109
CareCredit	302	LS&S Products Inc.	458	Tearsience, Inc.	625
Centre for Contact Lens Research	1	Luneau Technology USA	612	Telscreen	615
Chadwick Optical, Inc.	267	M&S Technologies, Inc.	314	Topcon Medical Systems, Inc.	344, 345
Coburn Technologies	303	MacuLogix, Inc.	359	Tru-Form Optics	515
Compulink	157	Marco	357	Tsehootsoi Medical Center	467
CooperVision, Inc.	131	Menicon America	201	United States Air Force	670
DemandForce	305	MiBo Medical Group	255	Valley Contax, Inc.	509
Designs for Vision, Inc.	461	Modern Design Architects	558	Vision Service Plan	350
DGH Technology Inc.	215	Moria, Inc.	210	Visionary Optics, LLC	202
Digital Heat Corp.	153	National Vision, Inc.	527	Visioneering Technologies, Inc.	265
Diopsys	521	NBEO – Board Certification, Inc.	402	Vivid Vision	550
Dyop Vision Associates	613	NCI Vision Systems	610	Vmax Vision Inc.	253
Elektron Eye Technology	258	Nidek	308	Volk Optical	214
Elsevier, Inc.	205	Nova Southeastern University	560	VOSH International	762
Enhanced Vision	251	Novabay Pharmaceuticals, Inc.	242	VRMagic	660
Eschenbach Optik of America	451	Oculus, Inc.	343	Walla International Inc., Click Heaters	301
Essilor of America	101	Ocusoft, Inc.	310	Wells Fargo Practice Finance	624
Euclid Systems Corporation	364	Ocutech, Inc.	459	Western University of the Health Sciences College of Optometry	163
Eye Care and Cure	304	Opticwash	561	Williams Group	751
Eye Designs, LLC	661	Optometry Times	262	X-Cel Specialty Contacts	156
Eye Photo Systems, Inc.	243	OptoPrep	342	Younger Optics	209
Eyecheck, LLC	764	Optos, Inc.	151	Zeavision, LLC	256
Eyeefficient, LLC	601	Optovue, Inc.	259	Zeiss	236
EyeMed Vision Care/Luxottica Group	212	OpTranslate	154		

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MEETING CO-CHAIRS:

Murray Fingeret, OD, FAAO
Leo Semes, OD, FAAO

SPEAKERS:

Robert Fechtner, MD
Andrew Morgenstern, OD, FAAO
Jack Schaeffer, OD
Amilia Schrier, MD
Edward Smith, MD, OD



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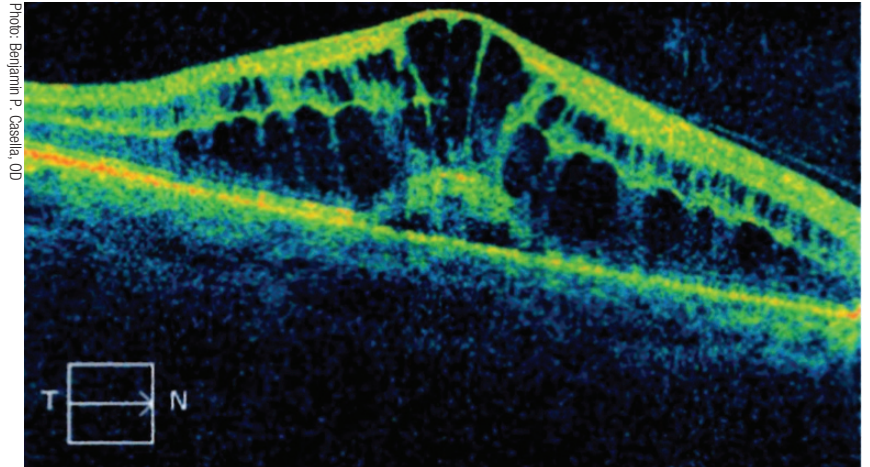
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When Systemic Meds Attack

Ocular toxicity may be the root cause of any number of findings, so be on the lookout for systemic conditions.

Systemic diseases and their associated treatments are a crucial discussion point when taking a history, according to yesterday morning's lecturers Megan Hunter, OD, FAAO, and Michelle Marciniak, OD, FAAO. "Sometimes patients don't tell us about their systemic conditions or their medications, and I will be at the slit lamp and I will see something," said Dr. Marciniak. "Then my next point will be to ask, 'Do you have a problem with your heart?' and 'What medications are you taking?' And that's when we go down the differentials."

After a brief review of ocular anatomy, Drs. Hunter and Marciniak discussed the particulars of ocular toxicity from systemic therapy such as dosage, delivery system and multi-drug interactions. They then zeroed in on common treatments for several conditions and the associated ocular effects, including those for tuberculosis, hepatitis C, atrial fibrillation, breast cancer, benign prostate hyperplasia, multiple sclerosis, erectile dysfunction and acne. They also wove in case examples to drive home the point: You are going to see these patients. The common acne treatment isotretinoin, known as Accutane, for example, spurred plenty of controversy when first introduced in the 80s, with significant side effects, including dry skin and mouth, nosebleeds, birth defects, mental and mood changes, pancreatitis and inflammatory bowel disease. "It's very effective," Dr. Hunter admitted, but "there are a lot of ocular side effects. It dries out everything, and patients will say their skin is just peeling off, so that is the most common side effect, and that means dry eyes, meibomian gland dysfunction and atrophy," for starters. While the branded drug was discontinued in 2009, according to Dr. Hunter, more than 100 generics are still prescribed regularly. "These kids who are taking Accutane are so happy because it is so effective," but you just have to watch out for negative ocular effects, Dr. Hunter said.



Drug-induced macular edema is uncommon, but a potentially sight-threatening side effect of fingolimod therapy.

They then broke down the specifics of certain drugs with many uses. Topamax (topiramate, Janssen Pharmaceuticals), for example, is prescribed to help treat anything from epilepsy, migraines and psychiatric conditions to neuromuscular and neurologic conditions and obesity. Despite its widespread use, the medication can cause ciliochoroidal effusion syndrome, induced myopia and angle-closure glaucoma.

The bottom line? "Whenever you see acute or subacute vision loss unexplained by objective ophthalmoscopic findings, you should consider drug toxicity," Dr. Marciniak concluded. "The patient may not realize they have accompanying systemic symptoms, so you need to ask for specifics."

TODAY: 1PM TO 3PM ARIE CROWN THEATER

Joint Symposium Takes a Hard Look at Dry Eye

The American Academy of Optometry will welcome representatives from the American Academy of Ophthalmology this afternoon as the two groups combat a common foe: ocular surface dryness. This growing field is overflowing with improved treatment options, diagnostic gadgets and groundbreaking research into its pathogenesis.

The program's focus on dry eye was determined with this expansion in mind, according to Barbara Caffery, OD, PhD, FAAO. "We believe that practitioners face this group of diseases frequently and that they are frustrated by the lack of successful treatments. They will benefit from the research in pathophysiology and neuropathology as well as novel treatments. TFOS DEWS II is an impetus as well," she says, referring to the comprehensive dry eye report published this year.

The presenters include symposium chairpersons Dr. Caffery—who will also moderate—and Stephen C. Pflugfelder, MD as well

as invited lecturers Ellen Shorter, OD, FAAO, and Victor Perez, MD. This team will rely on case presentations to help attendees understand the diagnostic classification schemes of the condition as well as consider the latest novel treatments, including anti-inflammatory/immunomodulatory agents, neurostimulation, blood products and scleral contact lenses.

The group will review the topics together in a roundtable-style discussion of the cases each presenter brings. Dr. Caffery, for instance, will lead a discussion on neuropathic pain, Dr. Shorter will take the lead on contact lenses and ocular surface disease and Dr. Perez will offer attendees a look into the future of prescribing options.

The program is designed to offer optometrists of any level "a fresh look at the understanding of ocular surface disease, including the neuropathological component and novel ideas for treatment," says Dr. Caffery.

Crosslinking: A Bridge to the Future

With this new medical procedure, doctors can treat what was once untreatable.

When discussing corneal crosslinking (CXL) with patients, don't use the word "surgery," advised Barry Eiden, OD, FAAO, at Wednesday morning's "Rapid Fire: Corneal Crosslinking, Keratoconus and Beyond" session. "Corneal crosslinking is not a surgical procedure, it's a medical procedure," he said, and thus should be within the scope of optometry. "It'll be really interesting to see how our profession gets involved in this over the years to come," he said. While state laws do not indicate CXL for optometrists, any doctor can expand their skillset and keep abreast of breakthrough procedures that may benefit patients. Dr. Eiden, along with Clark Chang, OD, MSA, FAAO, William Tullo, OD, FAAO, and Andrew Morgenstern, OD, FAAO, sought to provide that knowledge.

That talk went beyond the mere mechanics of CXL. Dr. Eiden discussed the warring methodologies still in development. The epi-on method—which leaves the epithelium relatively intact—has low risk and the advantage of a quicker recovery time. However, the only FDA-approved method is epithelium-off. He also provided some insight into a study he's involved with investigating the prevalence of keratoconus in the pediatric population. "In my opinion, [doctors should initiate] the earliest treatment possible, before vision is negatively impacted, especially when you have a proce-

cedure like epi-on crosslinking that has a very low risk and a high benefit." He shared the haunting anecdote of a patient—a man in his 20s—seeking aid for his mother's keratoconus. He didn't think he needed an eye exam himself; after all, his vision was so flawless, friends asked him to read road signs when they drove. But Dr. Eiden insisted, knowing the strong hereditary association of the condition. Sure enough, the young man had keratoconus. Intervention with corneal crosslinking gave him a new lease on sight.

Examining the Cornea

Before starting any treatment, ODs must properly diagnose. Additionally, "now that we have CXL, we need to know if the cornea is, indeed, stable or if it's progressing," according to Dr. Tullo. He lists as mandatory findings to establish a keratoconus diagnosis: abnormal posterior ectasia, abnormal corneal thickness distribution or clinical, non-inflammatory corneal thinning.

Additionally, to confirm progression, optometrists must note any two of the following:

1. Steepening of the anterior segment
2. Steepening of the posterior segment
3. Thinning or changes in the pachymetric rate of change.

These measurements can be achieved via a variety of tools on the market. Dr. Morgenstern warned of the dangers of skipping screening, specifically for children.

"Myopia that we control is an axial length problem," he explained. "For a kid getting more and more myopic, you might just start controlling it, but you could be missing their actual disease if it's keratoconus."

LASIK, PRK and Crosslinking

Dr. Morgenstern also reviewed the relationship between LASIK and CXL. LASIK weakens the cornea, whereas CXL stiffens the cornea. The two can be balanced to achieve improved corneal stability, says Dr. Morgenstern, who shared a number of studies reviewing the safety and efficacy of post-LASIK crosslinking.

He also discussed a twist on the procedure currently in the pipeline: customized CXL. "Keratoconus is not the same for every person. Why shouldn't we use a different type of treatment for every person?"

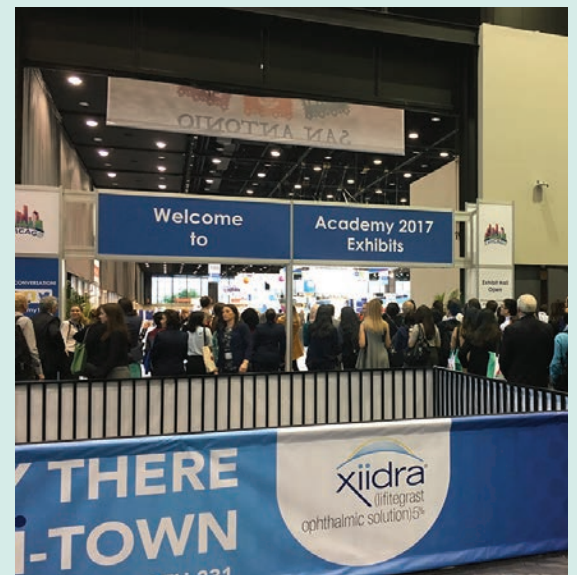
Academy Comes Alive

This particular lecture featured an interactive element—attendees were encouraged to submit questions live via the Academy.17 app, and those who participated were rewarded by the speakers with \$10 gift cards to Starbucks. In fact, the questions asked are retained on the app and can be reviewed by searching for the lecture's title.

Dr. Chang answered questions from the app, and he'll be speaking on this topic again at "An Optometrist's Guide to Corneal Crosslinking" today at 11am in room E253 A-D.

ATTENDEES STREAM IN AS EXHIBIT HALL OPENS

With the bulk of the day's CE behind them, conference-goers were eager for a change of pace as they gathered for the exhibit hall opening at 4pm yesterday. This year's hall showcases more than 175 exhibitors, giving attendees an opportunity to check out the latest technology and products transforming optometric practice today.



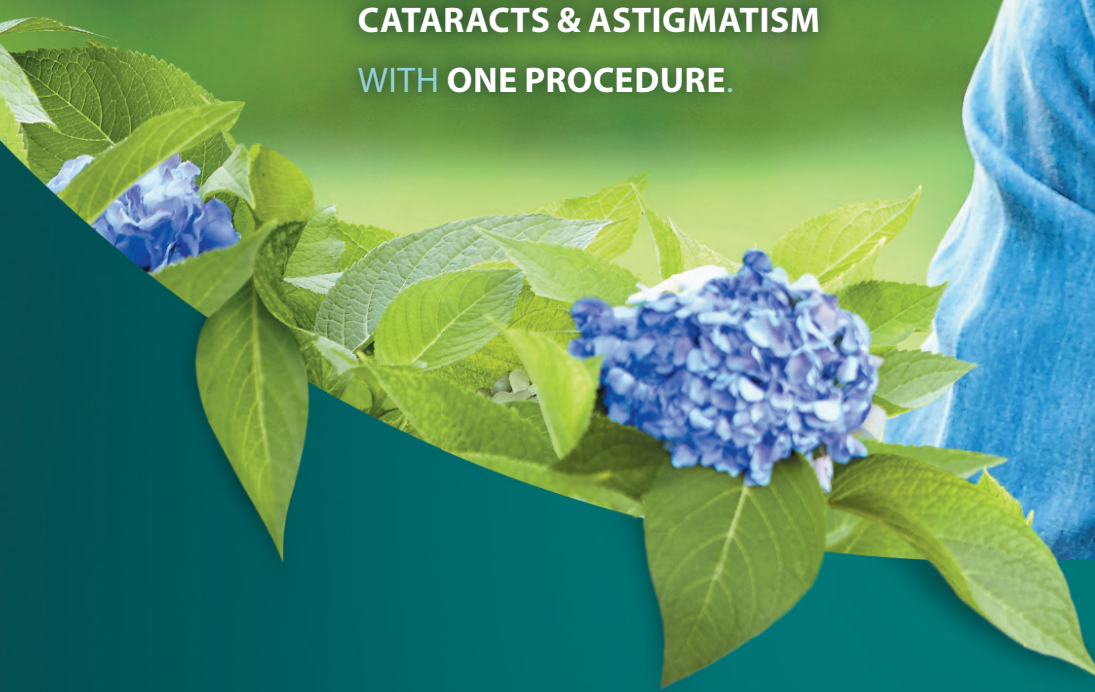


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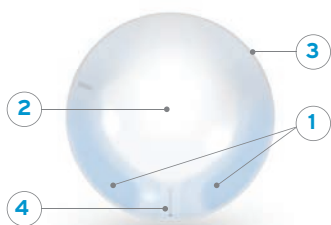
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