



AMERICAN ACADEMY
OF OPHTHALMOLOGY®

AAO 2019

EyeNet News

SUBSPECIALTY DAY EDITION
SAN FRANCISCO

Subspecialty Day Edition

An Insider's Guide to All 7 Meetings

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FOR THE RECORD

ANNUAL BUSINESS MEETING

Notice is hereby given that the Annual Business Meeting of the American Academy of Ophthalmology will be held in conjunction with the Opening Session on Sunday, Oct. 13, from 8:30-10:00 a.m., in West 3002 at Moscone Center in San Francisco. Candidates for membership will be approved during this meeting.

For the full list of candidates, visit aao.org/member-services.

To see the full order of business, refer to the Opening Session and Annual Business Meeting page in the printed *AAO 2019 Meeting Program* or online in the Mobile Meeting Guide (aao.org/mobile).

CALLING ALL VOTING MEMBERS AND FELLOWS

Remember to cast a ballot for the next President-Elect, Senior Secretary for Ophthalmic Practice, Secretary for the Annual Meeting, as well as two Trustees-at-Large, a Council Chair, and a Council Vice Chair. Election materials have been sent to all voting Academy fellows and members. Voting opens on Monday, Oct. 14, and closes Tuesday, Nov. 12, at noon EST. Results of the election will be posted on the Academy's website at aao.org/about/governance/elections by Nov. 15, 2019.

For candidates' full statements, visit aao.org/about/governance/elections, or visit the candidate display in the North, Exhibition Level of Moscone Center during AAO 2019.

Want to nominate somebody for the 2021 board? Information on the process will be at aao.org/about/governance/elections later this month.

NOTICE: This publication was printed in advance of Subspecialty Day and AAO 2019. For the most up-to-date information, check the Program Search (aao.org/programsearch) or the Mobile Meeting Guide (aao.org/mobile). American Academy of Ophthalmic Executives®, EyeNet®, EyeSmart®, IRIS® Registry, Ophthalmic News and Education Network® (ONE® Network), the Focus logo, Protecting Sight, Empowering Lives®, and Preferred Practice Patterns®, among others, are trademarks of the American Academy of Ophthalmology®. All other trademarks are the property of their respective owners. © 2019 American Academy of Ophthalmology.

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WARNINGS/PRECAUTIONS: Careful preoperative evaluation and sound clinical judgment should be used by the surgeon to decide the risk/benefit ratio before implanting a lens in a patient with any of the conditions described in the Directions for Use labeling. Physicians should target emmetropia and ensure that IOL centration is achieved. For the AcrySof® IQ PanOptix® Toric Trifocal IOL, the lens should not be implanted if the posterior capsule is ruptured, if the zonules are damaged or if a primary posterior capsulotomy is planned. Rotation can reduce astigmatic correction. If necessary, lens repositioning should occur as early as possible prior to lens encapsulation. Some visual effects may be expected due to the superposition of focused and unfocused multiple images. These may include some perceptions of halos or starbursts, as well as other visual symptoms. As with other multifocal IOLs, there is a possibility that visual symptoms may be significant enough that the patient will request explant of the multifocal IOL. A reduction in contrast sensitivity as compared to a monofocal IOL may be experienced by some patients and may be more prevalent in low lighting conditions. Therefore, patients implanted with multifocal IOLs should exercise caution when driving at night or in poor visibility conditions. Patients should be advised that unexpected outcomes could lead to continued spectacle dependence or the need for secondary surgical intervention (e.g., intraocular lens replacement or repositioning). As with other multifocal IOLs, patients may need glasses when reading small print or looking at small objects. Posterior capsule opacification (PCO) may significantly affect the vision of patients with multifocal IOLs sooner in its progression than patients with monofocal IOLs. Prior to surgery, physicians should provide prospective patients with a copy of the Patient Information Brochure, available from Alcon, informing them of possible risks and benefits associated with the AcrySof® IQ PanOptix® Trifocal IOLs.

ATTENTION: Reference the Directions for Use labeling for each IOL for a complete listing of indications, warnings and precautions.

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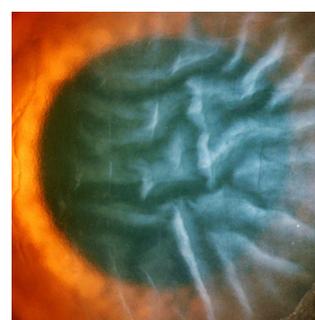
From the Editor

Welcome to Subspecialty Day 2019!

This year's Subspecialty Day features presentations on the latest developments in diagnosis, treatments, and procedures. The Subspecialty Day lineup includes refractive surgery on Friday and retina on both Friday and Saturday. On Saturday, there will be Subspecialty Day meetings in cornea, glaucoma, neuro-ophthalmology, oculofacial plastic surgery, and pediatric ophthalmology. I urge you to take time to explore disciplines other than your own. Often, pearls from one subspecialty can be applied to a completely different arena in surprising and useful ways. Check out this year's "Program Directors Share Insights on Subspecialty Day" (page 4) to find topics that might interest you. Look for the second edition of *AAO 2019 News* on Sunday and check your email each evening for *AAO 2019 Daily*, a roundup of news from Subspecialty Day and AAO 2019. The content can also be found at aao.org/eyenet/daily.



Ruth D. Williams, MD
Chief Medical Editor, *EyeNet Magazine*

On the Cover
Corneal Folds

John Leo
Tun Hussein Onn National Eye Hospital
Selangor Darul Ehsan, Malaysia

Program Directors Share Insights on Subspecialty Day From Cornea to Retina

To provide an inside look at Subspecialty Day, *EyeNet* contacted the program directors from each meeting and asked the following questions: 1) Which presentation will have broad appeal across subspecialties? 2) Which presentation might cause subspecialists to reconsider an area of their clinical practice? 3) Which presentation addresses particularly novel or exciting developments within the field? Here are those answers, accompanied by descriptions directly from the program directors.

Most Subspecialty Day meetings are held on Saturday. However, Refractive Surgery Subspecialty Day takes place on Friday only, allowing refractive surgeons to register for the Saturday Cornea Subspecialty Day program—or any other Saturday program. As always, Retina Subspecialty Day is scheduled for both Friday and Saturday.

Note: All summaries were written in advance of Subspecialty Day. Be sure to check the Subspecialty Day schedule in the Mobile Meeting Guide, accessible at aao.org/mobile, for the most up-to-date information.

Of Interest Across Subspecialties

CORNEA

West 2020

Dry Eye/Ocular Surface Disease, moderated by Sophie X. Deng, MD, PhD (Saturday, 9:12-10:55 a.m.)

Dry eye disease and meibomian gland dysfunction are among the most common ocular surface disorders seen by ophthalmologists. New diagnostic tests and treatments will be presented. Additionally, because neurotrophic keratitis, limbal stem cell deficiency, and ocular cicatricial diseases are often overlooked in their early stages, experts will present signs and symptoms of these disorders, as well as recent advances in their management. The session will end with discussion of a challenging dry eye case. Afterward, attendees will be able to recognize and treat different ocular surface diseases.

—Sophie X. Deng, MD, PhD
Cornea program director

GLAUCOMA

Esplanade Ballroom

Lombard Street: Winding Your Way Through Glaucoma and Anterior Segment Disease From Birth Until Death, moderated by Ian P. Conner, MD, PhD, and John T. Lind, MD (Saturday, 2:29-3:59 p.m.)

Which came first: the glaucoma or the corneal disease? There is something for everyone in this session on the interplay of glaucoma and anterior segment disease, as these conditions are frequently found together in the same patient. The presentation will start with an examination of these coexisting problems in the pediatric population. The next topic will be adult diseases, covering issues of IOP measurement in abnormal corneas and medical and surgical treatment in these patients, including a discussion of the applicability of newer microincisional glaucoma surgeries. Attendees will learn why glaucoma surgery sometimes makes the cornea fail and why corneal surgery exacerbates glaucoma.

—JoAnn A. Giaconi, MD, and
Eydie G. Miller-Ellis, MD
Glaucoma program directors

NEURO-OPHTHALMOLOGY

West 3014

Double Vision—50/50 Chance of Picking the Right One! moderated by Eric L. Berman, MD, and Anne S. Abel, MD (Saturday, 1:17-3:32 p.m.)

All ophthalmologists are faced with patients who have double vision, and the differential diagnosis for this symptom includes both common non-neuro-ophthalmic conditions, such as dry eye or a cataract that causes monocular diplopia, and potentially life-threatening disorders such as aneurysmal cranial nerve palsy. Patients describe their symptoms in a variety of ways, and the concept and perception of “double vision” varies across ages and across the country and world.

The session will engage the audience with several cases in which the initial symptoms alone could lead down several diagnostic and therapeutic pathways. This year features a discussion of new-onset diplopia in patients over the age of 50, a common problem that can lead to consternation and confusion in determining the extent of the workup. Speakers and expert panelists will help the ophthalmologist identify these problems and direct diagnosis and management in the most efficient and effective ways.

—Prem S. Subramanian, MD, PhD
Neuro-Ophthalmology program director

OCULOFACIAL PLASTIC SURGERY

West 2002

The Do’s and Don’ts of Starting Your Cosmetic Practice, moderated by Wendy W. Lee, MD (Saturday, 8:05-9:25 a.m.)



NEURO-OPHTHALMOLOGY. Coronal T1 MRI of brain, with contrast, demonstrates an enlarged left optic nerve. Does this patient, a 28-year-old with a family history of neurofibromatosis 1 and no visual complaints, require additional workup?

The practice of cosmetic oculofacial plastic surgery has been embraced by both the oculoplastic surgeon and the comprehensive ophthalmologist. Currently, nonincisional procedures, including dermal fillers, botulinum toxin, and skin resurfacing, are performed more often than incisional procedures.

This session will aid physicians in developing a successful cosmetic oculofacial plastic surgery practice. John D. McCann, MD, PhD, will share his tips on how to keep patients comfortable before, during, and after surgeries; and Femida Kherani, MD, Jill S. Melicher Larson, MD, and Julie A. Woodward, MD, will share their insights on introducing nonincisional surgeries into the practice. At the conclusion of the session, Rachna Murthy, MBBS, will review some of the frightening complications of dermal fillers, including tissue necrosis and central retinal artery occlusion, that may present to subspecialists and comprehensive ophthalmologists alike.

—Richard C. Allen, MD, PhD, and
Jeremiah P. Tao, MD
Oculofacial Plastic Surgery
program directors

PEDIATRIC OPHTHALMOLOGY

West 3020

“I Heard It Through the Grapevine”: Ophthalmic Technology Assessments, moderated by Gena Heidary, MD, and Stacy L. Pineles, MD (Saturday, 9:00-10:45 a.m.)

If you see children in your practice, you will find yourself fielding questions from parents on how to prevent myopia in their children. Faculty of the Pediatric Ophthalmology Subspecialty Day program will share in-depth analyses on the latest techniques in optical and pharmacological correction of myopia.

In addition, several other questions will be considered. For example, the use of beta-blockers for periocular hemangiomas has become mainstream, but how should these drugs be safely administered, and what is the most effective treatment regimen? Should you consider balloon dacryoplasty for children with nasolacrimal duct

obstruction? Presenters will explore the data and help you make recommendations for patients on these and other topics during a special session on technology assessments. All topics will be presented with detailed analysis of the usefulness of each technology.

—Scott A. Larson, MD, and
Michael F. Chiang, MD
Pediatric Ophthalmology
program directors

REFRACTIVE SURGERY

Esplanade Ballroom

Prevention and Management of Positive and Negative Dysphotopsias, presented by Jack T. Holladay, MD (Friday, 8:33-8:39 a.m.)

Patients may experience a wide variety of symptoms after cataract or refractive surgery, and finding the right descriptor for these manifestations can be challenging. This lecture is designed to present general terms for categorizing postsurgical dysphotopsias, as well as appropriate treatment for each type. Attendees will come away with greater confidence in their ability to identify and address their patients’ symptoms, whether they complain of halos, wobbling images, starbursts, monocular double vision, or any number of other visual disturbances.

—Marcony R. Santhiago, MD, and
George O. Waring IV, MD
Refractive Surgery program directors

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REFERENCE: 1. Samuelson TW, Sarkisian SR, Lubeck DM, et al. Prospective, randomized, controlled pivotal trial of an *ab interno* implanted trabecular micro-bypass in primary open-angle glaucoma and cataract. *Ophthalmology*. Jun 2019;126(6):811-821.

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RETINA

West 3002

Management of High-Risk Nonproliferative Diabetic Retinopathy Without Diabetic Macular Edema: Results

From **PANORAMA**, presented by Rishi P. Singh, MD (Saturday, 1:21-1:28 p.m.)

High-risk nonproliferative diabetic reti-

nopathy (NPDR), when left untreated, often precedes proliferative diabetic retinopathy marked by neovascularization and, possibly, vitreous hemorrhage. Rishi P. Singh, MD, will lead a presentation covering the results from a prospective double-masked randomized study, PANORAMA, to show how an intravitreal anti-VEGF drug (aflibercept) can be used

to slow the progression of even high-risk NPDR. Although this exciting discussion is retina focused, it contains interesting pearls for a wide variety of subspecialists as well as comprehensive ophthalmologists.

—Mark S. Humayun, MD, PhD, and
Judy E. Kim, MD
Retina program directors

Clinical Practices to Reconsider

CORNEA

West 2020

Avoiding Keratoplasty: Descemet Stripping Only

, presented by Kathryn A. Colby, MD, PhD (Saturday, 2:00-2:08 p.m.)

Fuchs endothelial corneal dystrophy (FECD) has been treated with corneal transplantation for decades, with endothelial keratoplasty being the current accepted surgical procedure. Recently, avoiding keratoplasty by stripping the Descemet membrane alone has generated interest as a novel and simple treatment for FECD, with the potential advantages of avoiding graft rejection and failure and reducing topical corticosteroid administration. But which patients are ideal candidates for the procedure? What should be modified in the surgical technique to achieve ideal outcomes? Do all patients need adjuvant topical therapy with Rho-kinase inhibitors? How quickly does vision recover? Kathryn A. Colby, MD, PhD, will help answer these questions as she discusses the topic of Descemet stripping only to update surgeons on the latest results and recommendations.

—Sanjay V. Patel, MD, FRCOphth
Cornea program director

GLAUCOMA

Esplanade Ballroom

Pacific Heights: Reaching 20/20 (or Near That) With Cataract Surgery and Glaucoma

, moderated by Vikas Chopra, MD, and Leon W. Herndon Jr, MD (Saturday, 3:59-5:11 p.m.)

Cataract surgery remains the most common surgery performed on patients with glaucoma, yet there is no consensus on the best way to do it. During this case-based video symposium, experts will debate how to manage some of the challenges they have encountered while performing cataract surgery in glaucoma patients. Attendees have the opportunity to weigh in on questions such as: Should a glaucoma procedure be done in conjunction with cataract surgery in medically well-controlled patients—or in patients whose pressure is controlled by previous trabeculectomy or tube shunt? During this session, panelists will also reveal tips for dealing with short eyes and those with narrow angles, as well as how to manage an intraoperative cataract complication in the setting of advanced glaucoma.

—JoAnn A. Giaconi, MD, and
Eydie G. Miller-Ellis, MD
Glaucoma program directors

NEURO-OPHTHALMOLOGY

West 3014

Tests Will Give Me the Answer! moderated by Raghu Mudumbai, MD, and



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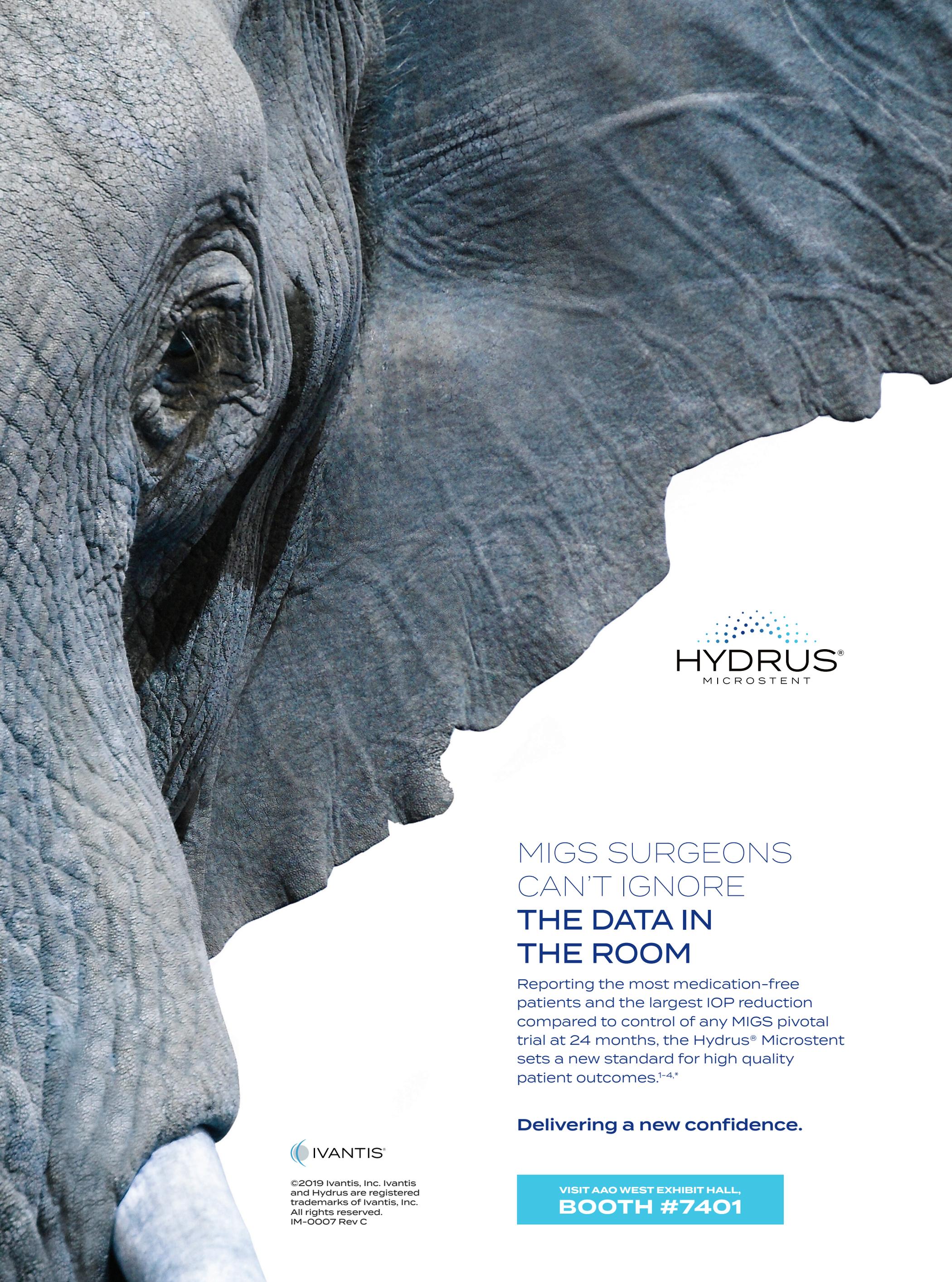
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References: 1. McAlinden C. An overview of thyroid eye disease. *Eye Vis.* 2014;1:9. doi:10.1186/s40662-014-0009-8. 2. Weiler DL. Thyroid eye disease: a review. *Clin Exp Optom.* 2017;100:20-25. 3. Verity DH, Rose GE. Acute thyroid eye disease (TED): principles of medical and surgical management. *Eye (Lond).* 2013;27:308-319. doi:10.1038/eye.2012.284. 4. Barrio-Barrio J, Sabater AL, Bonet-Farriol E, Velázquez-Villoria Á, Galofré JC. Graves' ophthalmopathy: VISA versus EUGOGO classification, assessment, and management. *J Ophthalmol.* 2015;2015:249125. doi:10.1155/2015/249125. 5. Bartalena L, Baldeschi L, Boboridis K, et al. The 2016 European Thyroid Association/European Group on Graves' Orbitopathy Guidelines for the Management of Graves' Orbitopathy. *Eur Thyroid J.* 2016;5:9-26. doi:10.1159/000443828.



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References: 1. Samuelson TW, Chang DF, Marquis R, et al; HORIZON Investigators. A Schlemm canal microstent for intraocular pressure reduction in primary open-angle glaucoma and cataract: The HORIZON Study. *Ophthalmology*. 2019;126:29-37. 2. Vold S, Ahmed II, Craven ER, et al; CyPass Study Group. Two-Year COMPASS Trial Results: Supraciliary Microstenting with Phacoemulsification in Patients with Open-Angle Glaucoma and Cataracts. *Ophthalmology*. 2016;123(10):2103-2112. 3. US Food and Drug Administration. Summary of Safety and Effectiveness Data (SSED): Glaukos iStent[®] Trabecular Micro-Bypass Stent. US Food and Drug Administration website. https://www.accessdata.fda.gov/cdrh_docs/pdf8/PO80030B.pdf. Published June 25, 2012. 4. US Food and Drug Administration. Summary of Safety and Effectiveness Data (SSED): iStent inject Trabecular Micro-Bypass System. US Food and Drug Administration website. https://www.accessdata.fda.gov/cdrh_docs/pdf17/P170043b.pdf. Published June 21, 2018.

*Comparison based on results from individual pivotal trials and not head to head comparative studies.



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PROGRAM SUBSPECIALTY DAY



OCULOFACIAL PLASTIC SURGERY. Dr. Seanna Grob, oculofacial plastic surgery fellow at the time, and Dr. Jeremiah Tao (right) tackling a tough orbital case.

John J. Chen, MD, PhD (Saturday, 3:32-5:04 p.m.)

Neuro-ophthalmologists and ophthalmologists in general often rely on ancillary tests to establish a diagnosis. However, abnormal test results may be found in asymptomatic patients as well as healthy individuals. This session will review the reliability and predictive value of ancillary and laboratory testing, and what to do when test results are at odds with the clinical exam and history. Is the MRI really “normal”? Does the abnormality seen on optical coherence tomography of the retinal nerve fiber layer require further workup in an otherwise asymptomatic patient? Does the pattern of visual field loss really fit the clinical picture? Is the headache just a headache? Should testing be reserved only for those instances when there is clinical uncertainty? Attendees will participate in case discussions centered around these dilemmas.

—Peter A. Quiros, MD
Neuro-Ophthalmology program director

OCULOFACIAL PLASTIC SURGERY

West 2002

Changing Paradigms in the Treatment of Orbital Disease, moderated by Cat Burkat, MD, FACS (Saturday, 11:00 a.m.-12:25 p.m.)

Orbital trauma, tumors, and cellulitis may seem like straightforward subjects, but recent studies have challenged previous dogma. M. Reza Vagefi, MD, will discuss the evaluation and current indications for the treatment of orbital fractures. Dr. Vagefi will also challenge the notion that surgery should be performed for fractures involving more than 50% of the orbital floor, as well as the concept that treatment must be performed within a set period of time. Next, Eva Dalfgard Kopp, MD, PhD, from Stockholm, will

discuss the technique and indications for fine-needle aspiration biopsy (FNAB) of orbital tumors. Although FNAB is the mainstay for the evaluation of tumors in other countries, it is rarely utilized—and is likely underused—for orbital tumor cases in the United States. Last, Roman Shinder, MD, will conclude the session with a discussion of the indications for using corticosteroids in patients with orbital cellulitis.

—Richard C. Allen, MD, PhD, and
Jeremiah P. Tao, MD
Oculofacial Plastic Surgery
program directors

PEDIATRIC OPHTHALMOLOGY

West 3020

“Everyday People”—Controversies in Neuro-Ophthalmology: Point Counterpoint, moderated by Stacy L. Pineles, MD, and Gena Heidary, MD (Saturday, 10:45 a.m.-12:05 p.m.)

Children with neuro-ophthalmic diseases present significant challenges to the ophthalmologist. How should you use neuro-imaging in children with neurofibromatosis? Is optical coherence tomography helpful in the diagnosis of children with swollen optic nerves? What is the treatment for children with optic neuritis? Do you really have to image children with esotropia?

This year’s program will explore pediatric neuro-ophthalmic issues faced by all ophthalmologists who see children. Speakers will weigh in on common controversies in a dynamic point-counterpoint format with plenty of opportunities for audience interaction. Attendees will feel more confident in managing these difficult cases and may learn new ways to approach these young patients.

—Scott A. Larson, MD, and
Michael F. Chiang, MD
Pediatric Ophthalmology
program directors



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NIHR Biomedical Research Center at Moorfields Hospital, NHS Foundation Trust, London, UK

Gus Gazzard, Evgenia Konstantakopoulou, David Garway-Heath, Anurag Garg, Victoria Vickerstaff, Rachael Hunter, Gareth Ambler, Catey Bunce, Richard Wormald, Neil Nathwani, Keith Barton, Gary Rubin, Marta Buszewicz

** Market Scope's 2018 Global Ophthalmic Laser Market Report

REFRACTIVE SURGERY

Esplanade Ballroom

Synthesizing Data to Optimize Astigmatism Correction in Lens Surgery, presented by Noel A. Alpins, MD, FACS (Friday, 8:15-8:21 a.m.)

The key to optimizing astigmatism outcomes after lens surgery is understanding

exactly how accurate your toric intraocular lens (IOL) calculator is in planning the surgery. In this presentation, Noel A. Alpins, MD, FACS, will address central questions that ophthalmologists should ask to assess their calculator, including the following: Does it calculate the spherical as well as the toric power of IOL? Does it use total corneal power?

Does it have the ability to analyze and calculate any rotation of the toric IOL to reduce post-refractive cylinder surprise? Understanding exactly what is and is not included in your toric IOL calculator will allow improved astigmatic outcomes.

—*Marcony R. Santhiago, MD, and
George O. Waring IV, MD
Refractive Surgery program directors*

RETINA

West 3002

Systemic Management of Acute Retinal Artery Occlusions, presented by Timothy W. Olsen, MD (Friday, 11:56 a.m.-12:03 p.m.)

Artificial Intelligence for Diabetic Retinopathy Screening, presented by Tien Yin Wong, MBBS (Saturday, 12:53-1:00 p.m.)

Given the complexity of acute retinal artery occlusions, Timothy W. Olsen, MD, will review what could be done from a systemic management standpoint when a patient with the condition is seen in the clinic. This multidimensional approach could provide additional therapeutic options that would allow ophthalmologists to explore beyond what can be done at the eye alone.

Among the recent technical innovations in retina, artificial intelligence and deep learning algorithms have become a focus for many researchers. In another presentation, Tien Yin Wong, MBBS, will discuss the great impact that the use of this methodology in screening for diabetic retinopathy has had—and will have—on public health.

—*Mark S. Humayun, MD, PhD, and
Judy E. Kim, MD
Retina program directors*

Exciting Developments

CORNEA

West 2020

Is Tissue Still the Issue? Anterior Segment Imaging for Management of Ocular Surface Tumors, presented by Carol L. Karp, MD (Saturday, 2:36-2:44 p.m.)

Ocular surface tumors can be a challenging diagnostic dilemma for ophthalmologists. An accurate and timely diagnosis of these lesions is crucial for appropriate management. In the past, diagnosis frequently required histopathology: Tissue was the issue, and when in doubt, you cut it out.

The development and advancement of optical coherence tomography (OCT) has revolutionized many areas of ophthalmology, and Carol L. Karp, MD, will discuss the use of high-resolution OCT (HR-OCT) as an adjunctive tool in the diagnosis of ocular surface lesions. In particular, HR-OCT can be useful in differentiating ocular surface squamous neoplasia from more benign entities such as pterygia and pinguecula.

The entire session will provide a review of the most up-to-date recommendations in the diagnosis and management of anterior segment tumors, including ocular surface squamous neoplasia, lymphoproliferative lesions, and pigmented lesions of the anterior segment.

—*Jennifer Y. Li, MD
Pediatric Ophthalmology program director*



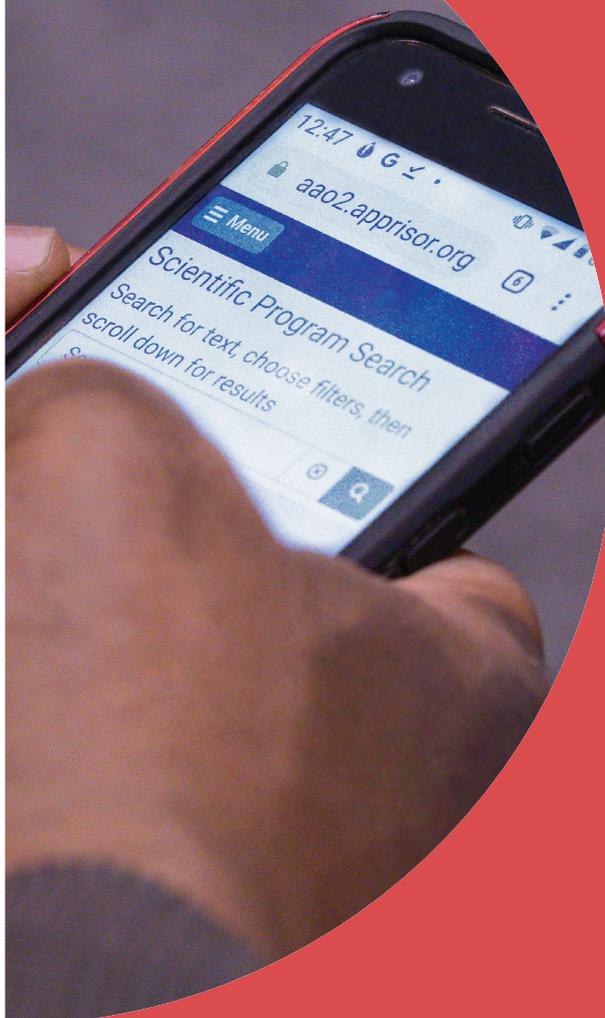
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AAO 2019

Mobile Meeting Guide

Everything You Need to Navigate the Meeting

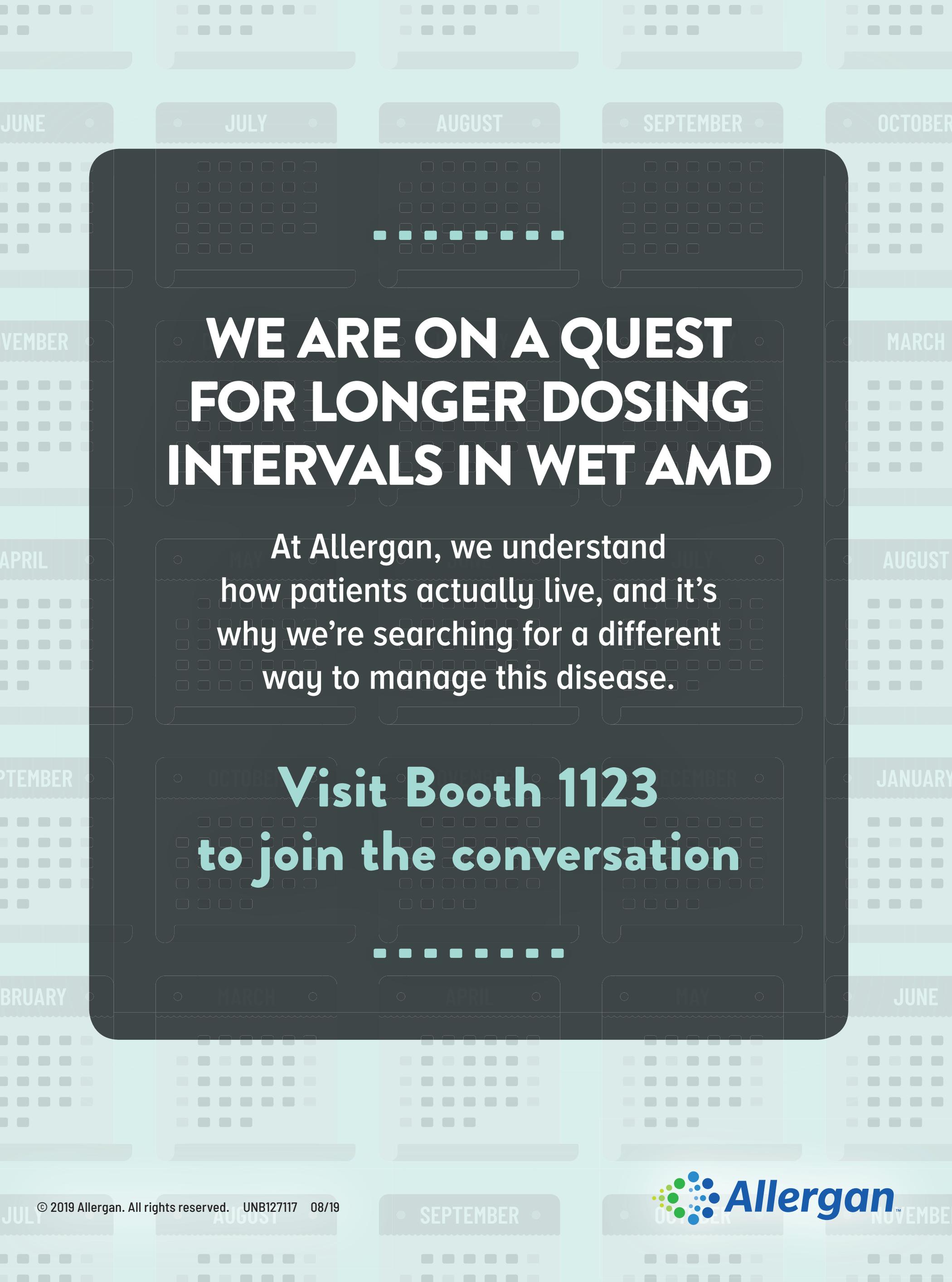
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GLAUCOMA

Esplanade Ballroom

Escape From OCT-A-Traz—Knowing the Ins and Outs of Imaging, moderated by Teresa C. Chen, MD, and Sanjay G. Asrani, MD (Saturday, 8:06-9:10 a.m.)

Optic nerve imaging can frustrate the clinician. It is considered an objective method for following glaucoma and glaucoma suspect patients, but it may yield ambiguous or confounding results in difficult cases. What is a clinician to do with false positives (“red disease”), algorithm failures, peripapillary atrophy, and myopic nerves? How much progression in the optic nerve, retinal nerve fiber layer, and macula should prompt escalation of therapy? What does the physician say to the patient when optical coherence tomography (OCT) and visual fields don’t match?

Start off Glaucoma Subspecialty Day with expert advice about how to better interpret and utilize OCT in the practice.

—*JoAnn A. Giaconi, MD, and Eydie G. Miller-Ellis, MD*
Glaucoma program directors

NEURO-OPHTHALMOLOGY

West 3014

Bugs and Drugs—Do They Matter? moderated by Collin M. McClelland, MD, and Mitchell B. Strominger, MD (Saturday, 10:17 a.m.-11:52 a.m.)

This session will look at new and emerging therapies as well as review drug toxicities that are common yet often difficult to diagnose. Until recently, patients with optic nerve disease have been offered little in the way of pharmacologic therapy other than corticosteroids. Now, new treatments, new drugs, and revised regimens for existing drugs are available that will increase the ophthalmologist’s armamentarium.

Speakers and panelists will discuss cases of arteritic and nonarteritic anterior ischemic optic neuropathy and consider new evidence for alternative therapies. They will also review neuro-ophthalmic side effects of common systemic medications.

—*Peter A. Quiros, MD*
Neuro-Ophthalmology program director

OCULOFACIAL PLASTIC SURGERY

West 2002

Corneal Neurotization, presented by Steven M. Couch, MD (Saturday, 1:55-2:10 p.m.)

Treatment of the neurotrophic cornea has undergone a major change. Steven M. Couch, MD, will discuss the use of corneal neurotization in the rehabilitation of the neurotrophic cornea. This procedure involves the use of an autogenous or cadaver nerve graft that is anastomosed



PEDIATRIC OPHTHALMOLOGY. Pediatric cataracts pose unique surgical challenges.

to a functioning branch of the trigeminal nerve. The distal end of the graft is then placed in the subconjunctival space, and fascicles of the nerve are fastened to the perilimbal sclera. This procedure has proved to be a game changer.

Dr. Couch will describe the indications and surgical pearls for this procedure. He will also review the results from the literature as well as his own practice, emphasizing the fact that patients who previously had little hope of regaining sight have had their vision restored to a functional level.

—*Richard C. Allen, MD, PhD, and Jeremiah P. Tao, MD*
Oculofacial Plastic Surgery program directors

PEDIATRIC OPHTHALMOLOGY

West 3020

Break on Through: New Innovations in Strabismus Surgery, moderated by Nils K. Mungan, MD, and Scott A. Larson, MD (Saturday, 2:00-3:30 p.m.)

See Me, Heal Me: Pediatric Cataract Surgery Pearls, moderated by David G. Morrison, MD, and Michael F. Chiang, MD (3:30-5:00 p.m.)

Pediatric cataracts often present unique surgical challenges for ophthalmologists. During this session, experts in cataract surgery will talk about how they use new imaging technologies and will share their latest surgical techniques for both routine and complex cases. Attendees will learn new ways to help patients with pediatric cataracts.

The strabismus surgery innovations session will include an expert panel that will share insights on superior oblique surgery, treatments for nerve palsies, transposition surgeries, imaging in pre-operative planning, and management of complications. These presentations will help attendees consider new options that may improve surgical outcomes for their patients.

—*Scott A. Larson, MD, and Michael F. Chiang, MD*
Pediatric Ophthalmology program directors

REFRACTIVE SURGERY

Esplanade Ballroom

Advances in Presbyopic IOLs: Expanding Eligibility in Previous Borderline Cases, presented by Arthur B. Cummings, MD (Friday, 8:45-8:51 a.m.)

Patients undergoing intraocular lens (IOL) implantation, whether for cataract extraction or refractive lens exchange, are increasingly opting for multifocal or other presbyopia-correcting IOLs, although the growth in this population of patients is relatively slow. In our experience, patients who have already had vision correction are more likely to consult us for near-vision solutions than those who have not had previous refractive surgery. However, prior corneal surgeries may have resulted in an increase in higher-order aberrations with small optical zones, decentered optical zones, or a combination of the two.

This session will discuss the appropriateness of using presbyopic IOLs in various cases. It will also feature pro-con debates on topography-guided laser vision correction (LVC) for aberrated corneas, IOL power calculations using optical biometry, and regular wavefront-optimized LVC, as well as the timing and sequence of the procedures.

—*Marcony R. Santhiago, MD, and George O. Waring IV, MD*
Refractive Surgery program directors

RETINA

West 3002

Anti-VEGF Treatment Can Diminish Signs of Diabetic Retinopathy Without Reducing Nonperfusion, presented by Ramin Tadayoni, MD, PhD (Saturday, 1:28-1:35 p.m.)

Although the use of anti-VEGF therapies has dramatically changed the management of diabetic macular edema and has been shown to reduce the severity of diabetic retinopathy, ophthalmologists have long been concerned about the effect of these drugs on retinal perfusion. Thus, this presentation, based on two recent studies, will be of keen interest to retina specialists and generalists alike, as it addresses the topic of retinal perfusion in diabetic eyes receiving intravitreal injections of anti-VEGF agents. Moreover, it demonstrates that these drugs can diminish signs of diabetic retinopathy without reducing nonperfusion. In addition, Dr. Tadayoni will discuss the role of different types of imaging in the assessment of diabetic retinopathy.

—*Mark S. Humayun, MD, PhD, and Judy E. Kim, MD*
Retina program directors

BE SURE TO CLAIM CME

The American Academy of Ophthalmology is accredited by the Accreditation Council for Continuing Medical Education to provide Continuing Medical Education (CME) for physicians.

The Academy designates this live activity for a maximum of 33.5 AMA PRA Category 1 Credits. Physicians should claim only the credit commensurate with the extent of their participation in the activity.

Those whose attendance has been verified at AAO 2019 can claim their CME credit onsite at the CME Credit Reporting kiosks in South lobby, West lobby, and in the Academy Resource Center (West, Booth 7337), or online after the meeting.

Registrants will receive an email on Monday, Oct. 14, with the link and instructions on how to claim credit online. Attendees may use this link until Wednesday, Oct. 30.

For more information on CME accreditation and the Academy, visit aao.org/annual-meeting/cme.

GET SELF-ASSESSMENT CREDITS AT AAO 2019

Selected AAO 2019 courses and sessions meet the Self-Assessment CME (SACME) requirements defined by the American Board of Ophthalmology (ABO).

U.S. ophthalmologists can complete all eight annually required SACME hours at AAO 2019. Please be advised that the ABO is not an accrediting body for purposes of any CME program. The ABO does not sponsor AAO 2019 or any outside activity, and the ABO does not endorse any particular CME activity.

Credit designated as SACME is AMA PRA Category 1 Credit and is also preapproved by the ABO for the MOC Learning and Self-Assessment Activity requirements.

Find a listing of courses that meet the SACME requirements in the Mobile Meeting Guide at aao.org/mobile. In addition, please note that Subspecialty Day meetings no longer carry SACME.

How Ophthalmology Is Leveraging Instagram

A Vivid Window Into Three Physicians' Lives

With more than 60,000 followers between them, the three physicians profiled below have been using Instagram to document their journey through ophthalmology. They have been leveraging the social media platform to maximum effect—mentoring the next generation of physicians, educating the public, and celebrating their enthusiasms within ophthalmology and beyond.

This week, they are in San Francisco.

Dr. Abugo @MentorMeMD

Usiwoma Abugo, MD, is an oculoplastics specialist based in Greensboro, North Carolina. She is passionate about motivating inspired change through her social media platform.

@MentorMeMD. Dr. Abugo's Instagram account allows her to mentor, educate, and empower people from across the globe. Through @MentorMeMD she is able to turn her experiences—in both ophthalmology and life at large—into teachable moments, and she has also made many durable connections along the way.

At AAO 2019. Dr. Abugo is using Instagram to share tips and tricks on making the most of your time in San Francisco, including where you should be throughout the meeting. She will also be posting live from Tuesday's session on creating online content (639), where she'll be speaking as a panelist (see page 16).

Dr. Melendez @EyeQDoctorRob

Robert F. Melendez, MD, MBA, is a high-volume cataract surgeon in Albuquerque, New Mexico, and is the Academy's Secretary for Online Education. He is passionate about educating his medical students and has used the handle, or username, EyeQDoctor, across his social media accounts, including Twitter and Instagram.

@EyeQDoctorRob. Dr. Melendez' Instagram account features educational content about the eye, plus posts on his personal journey in ophthalmology.

At AAO 2019. Dr. Melendez is using Instagram to share interesting cataract surgery pearls. His main goal this year: Take selfies with as many Academy presidents (past, present, and future) as possible.

Dr. Tooley @Dr.AndreaTooley

Andrea A. Tooley, MD, is an ASOPRS fellow in oculoplastic surgery in New York City.

@Dr.AndreaTooley. Dr. Tooley's Instagram account has showcased her life

as a medical student, resident, and now fellow, with the focus on inspiring others to choose a career in medicine and learn about ophthalmology. Dr. Tooley shares her daily routine as a fellow, her study strategies, life hacks, and more. She also uses her platform to support the medical community around her.

At AAO 2019. Dr. Tooley will be posting from Young Ophthalmologist (YO) events, from Monday's Learning Lounge discussion on social media (LL30) that she'll be facilitating, from the presentation that she'll be delivering during Tuesday morning's YO symposium (Sym52) that focuses on millennial ophthalmologists, and from happenings throughout the meeting.

Instagram Do's and Don'ts

Drs. Abugo, Melendez, and Tooley shared the following Instagram tips.

- Do be authentic, share photos of yourself, and speak with your true voice. People want to connect with you. Don't feel the need to act or post a certain way. Authenticity online goes a long way.
- Do identify what you are most passionate about, and—assuming it is legal—post about that topic.
- Do post frequently and with consistency. As challenging as this can be, the Instagram algorithm favors accounts that post often and on a consistent basis.
- Do your research, and don't post false information.
- Do ask permission from friends before posting their picture. Don't violate patient trust or privacy. Ever!

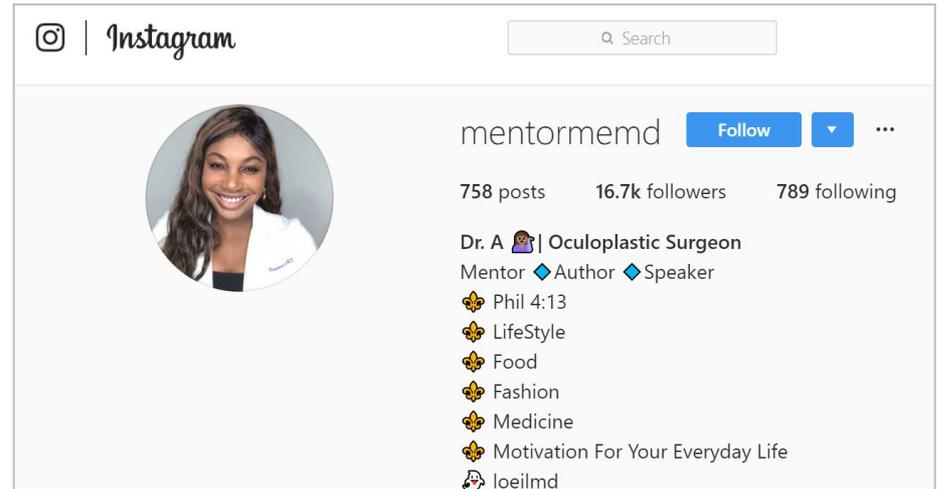
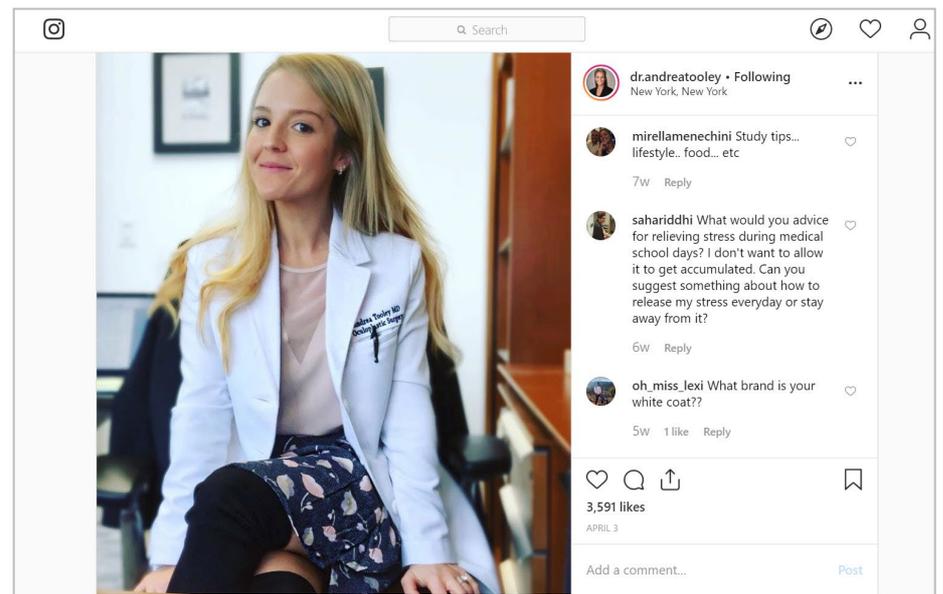
Social Media at AAO 2019

Make sure you include #aao2019, the official meeting hashtag. Posts that feature this hashtag will get the attention of anybody who is following the meeting on Twitter and Instagram.

You also should familiarize yourself with the Academy's policy on social media at its annual meetings. The policy includes the following rules on photography and videos:

- Nonflash photography is allowed for personal, social, or noncommercial use.
- Attendees taking photos must do so in a nondisruptive manner, so as not to disturb the presenter and other attendees.
- Slides with patient faces or other identifiable information cannot be shared on social media due to HIPAA regulations.
- Video recording, live audio, and/or video streaming is strictly prohibited.

Read the policy in full at aao.org/annual-meeting/policies-and-disclaimers#socialmedia.



MENTORING ONLINE. Drs. Tooley, Abugo, and Melendez are using Instagram to provide encouragement and advice to the next generation of ophthalmologists. Follow them at [Dr.AndreaTooley](https://www.instagram.com/Dr.AndreaTooley), [MentorMeMD](https://www.instagram.com/MentorMeMD), and [EyeQDoctorRob](https://www.instagram.com/EyeQDoctorRob).

Saturday

Communicating Research and Education Advances in Ophthalmology (Spe24).

Presenters: Matthew Timothy Feng, MD, Lorraine A. Provencher, MD, Rajesh C. Rao, MD, and Edmund Tsui, MD. This event will focus on how to 1) best share information when attending ophthalmology meetings or posting research sound bites on Twitter, Instagram, LinkedIn, etc. and 2) strengthen the dissemination

of late-breaking news in an accurate way in order to make an impact in the field. **When:** Saturday 11:30 a.m.-12:30 p.m. **Where:** South 204. **Access:** Free.

Marketing 101: Kickstarting Your Website, Social Media, and Blog (Spe34).

Presenter: Randall V. Wong, MD. This course offers an overview of marketing strategy based on blogging, publishing, and sharing your ideas on the internet. **When:** Saturday 1:00-4:00 p.m. **Where:**

South 201. Access: Free.

Giving A Voice to Your Patients: Best Practices for Grassroots Advocacy in Your Local Community (Spe38). Moderator: Jeff Maltzman, MD. This 101 course on grassroots advocacy includes—among many other topics—guidance on using social media as an advocacy tool. **When:** Saturday 3:15-4:15 p.m. **Where:** South

204. Access: Free.

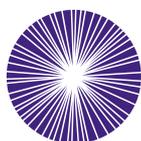
Protect Your Online Reputation: Five Pearls to Build a Physician Brand and Social Media Presence. Instructor: Ravi D. Goel, MD. Monitoring your online presence and social media to address negative comments is a daunting task that can no longer be ignored. Learn about techniques to support promoters,

address critics, engage in social media, and establish a positive internet presence. **When:** Saturday 3:00-4:00 p.m. **Where:** Technology Pavilion (West, Booth 7755). **Access:** Free.

Sunday
Employment Law Basics for the Small Ophthalmology Practice (225). Senior

instructor: Robert A. Wade, JD. This session will include a brief discussion on use of email, internet, and social media. **When:** Sunday 2:00-3:00 p.m. **Where:** South 213. **Access:** Academy Plus course pass.

Social Media on Steroids: Perils and Pitfalls. Instructors: Rob Melendez, MD, MBA; Andrea Tooley, MD; Elisabeth Sledz, MS; and Gabriella Acosta, MS. With a focus on Instagram and Facebook, the presenters will share some dos and don'ts and highlight some exemplary accounts. **When:** Sunday 3:00-4:00 p.m. **Where:** Technology Pavilion (West, Booth 7755). **Access:** Free.



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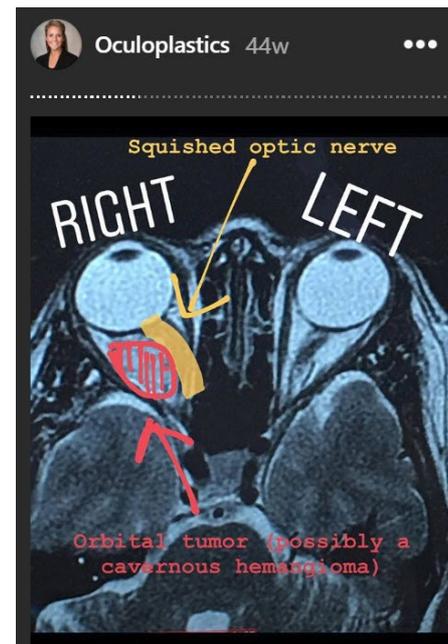
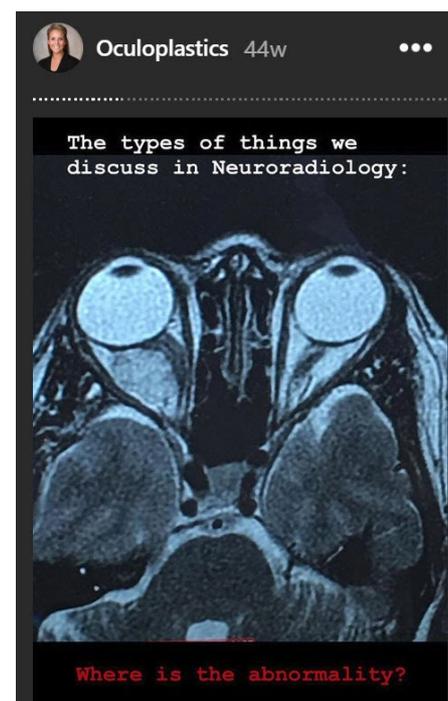
Fill knowledge gaps and hone your skills with the Academy's **Ophthalmic News and Education (ONE®) Network**. Get on-demand access to the most relevant curated content, including thousands of instructional videos, self-assessment questions, simulators and courses — plus *EyeNet® Magazine*, *Ophthalmology®* and 12 other journals — so you can stay sharp and excel.

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Monday

Growing Patient Volume: Ten Effective Online Strategies to Maximize LASIK, Premium IOL, and Other Elective Procedures (404). Senior instructor: Jim Flynn. This interactive session will discuss



SHARING OPHTHALMIC KNOWLEDGE. As a visual medium, Instagram can be a good fit for ophthalmology, a specialty that is rich in images. In this example Dr. Tooley shares some neurology tips.

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the use of measurable online tactics— website optimization, social media, and keyword-focused content—to promote your practice. **When:** Monday 9:00-10:00 a.m. **Where:** South 214. **Access:** Academy Plus course pass.

The Key to Digital Success? Diversification (and the Data Proves It!) (407). Senior instructor: David Woodson Evans,

PhD. Social media is one of five key touch points that will be discussed in this presentation on marketing your practice.

When: Monday 9:00-10:00 a.m. **Where:** South 212. **Access:** Academy Plus course pass.

Protect Your Online Reputation: Five Pearls to Build a Physician Brand and Social Media Presence (431). Senior

instructor: Ravi D. Goel, MD. Learn best practices to support patient promoters, address critics, engage in social media, and establish a positive internet presence.

When: Monday 10:15-11:15 a.m. **Where:** South 214. **Access:** Academy Plus course pass.

Stay Hip With Instagram and Social Media (part of Sym36). Speaker: Ruth D.

Williams, MD. This presentation is part of the Technology Update symposium cosponsored by the Senior Ophthalmologist committee. **When:** Monday 10:41-10:53 a.m., during Technology Update for Seniors (10:15-11:15 a.m.) **Where:** West 3020. **Access:** Free.

Enhancing Your Social Media Presence (LL30). Senior instructor: Andrea A. Tooley, MD. Dr. Tooley will be joined by copresenter Ashley R. Brissette, MD, during this informal, small group discussion. **When:** Monday 1:30-2:30 p.m. **Where:** Learning Lounge 3 (North, Booth 5315). **Access:** Free.

Monitoring Your Online Reputation. Instructor: Randall Wong, MD. Learn how to monitor the internet for reviews of your practice, how to respond to negative reviews, and how to proactively enhance your reputation. **When:** Monday 2:00-2:30 p.m. **Where:** Technology Pavilion (West, Booth 7755). **Access:** Free.

Tuesday
Online Content Creation (Blogs, Podcasts, Videos, Social Media) for Ophthalmology Education and Marketing (639). Senior instructor: Jayanth S. Sridahr, MD. Panel of instructors: Usiwoma E. Abugo, MD; Ravi D. Goel, MD; Robert F. Melendez, MD, MBA; and Lorraine A. Provencher, MD. Learn about the different electronic media that are available for educational tool creation and how to blend peer-to-peer education with patient education, while avoiding any ethical and legal pitfalls. **When:** Tuesday 10:15-11:15 a.m. **Where:** West 2003. **Access:** Academy Plus course pass.

Social Media Exploits and How to Protect Yourself. Instructor: Jude Brown. The integration of social media into many aspects of daily life is helping people to stay connected with one another, but it also is being misused. Learn how scammers are using social media to acquire personal information, find out how to identify reliable sources of information, and determine who are real friends. **When:** Tuesday 11:30-12:00 p.m. **Where:** Technology Pavilion (West, Booth 7755). **Access:** Free.

Follow aaoeye

The Academy's Instagram account, aaoeye, shares images and videos that show how ophthalmologists detect and treat eye disease and what the public can do to protect their eyes. Conceived to bring ophthalmic knowledge to the public, the account has both physician and nonphysician followers, and each group has shown high levels of engagement.

Follow the Academy's Instagram account by searching for aaoeye in the Instagram app, and encourage your patients to do so as well.

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Get the AAO Ophthalmic Education App

A Tutorial for App Newbies

In March, the Academy launched the AAO Ophthalmic Education App, which features a select subset of clinical content from the Academy's website. It includes access to EyeWiki as well as Diagnose This quizzes, News, and 1-Minute Videos from the ONE Network. The app uses the phone's notification system to alert you to new content in your areas of subspecialty interest as soon as it becomes available. Within the app you will see a list of content—or "feed"—tailored to your interests.

Install the App

Download. From your phone, go to aao.org/education-app. By clicking "Download on the App Store," you go directly to the AAO Ophthalmic Education App page within the App Store. (Same process for Google Play.) After you download and open the



app, it will ask you to allow (or disallow) notifications. Select "Allow." Then close out of the Sponsors screen to get to the login screen.

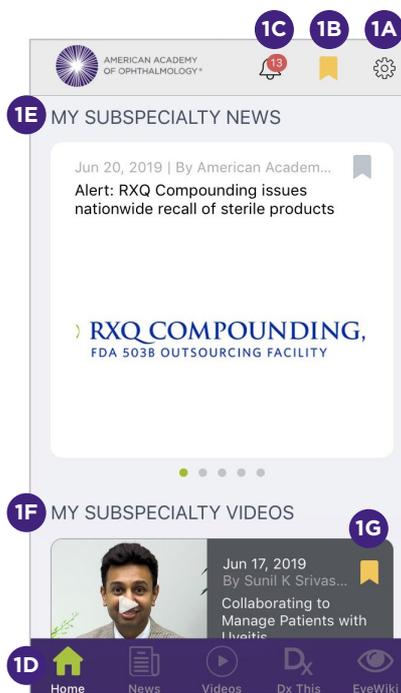
Enter username and password. Current Academy members should use their existing aao.org username (primary email address) and password. Don't remember this info? Touch "Forgot Email" or "Forgot Password" to get your email or reset your password. If you are not an Academy member, select "Continue as Guest."

Remember me. Check the "Remember Me" box to avoid retying each time.

Use Touch ID or Face ID. If your smartphone recognizes your thumbprint, you can activate Touch ID to enter the app by placing your thumb on your phone's Home button. (Don't press down on the Home button or the app will minimize.) You can always select Touch ID during a future login or from within the app (see "Touch ID," below). Face ID entry is also available for phones with this capability.

At the Top of the Screen

Settings icon. Tapping the Gear icon



(Fig. 1A) brings up the Settings page, where four links let you personalize the app. **Subspecialties.** The app automatically sets subspecialty preferences based on your membership profile. Feel free to select different or additional subspecialty areas of interest, and then hit "Done" to save your selections. When new app content in those subspecialty areas becomes

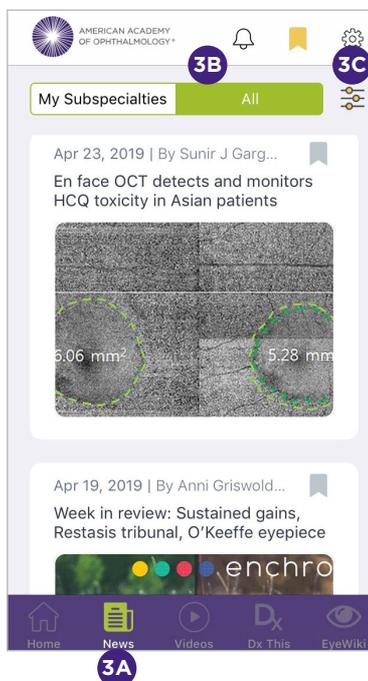
available, you will be notified within the app or, if the app is closed, by the phone's notification system (see "Notifications icon," below). The app also places the latest news, videos, and quizzes in your feed on the app Home screen. Note: If you choose different subspecialties within the app, this will not affect your Academy membership profile.

Customize Notifications. This area allows you to further refine notifications by *type* of content (e.g., News and Journal Reviews, Videos and Podcasts, etc.). Select one or more content types that interest you and hit "Done" to save your selections. Note that this customization does not affect your feed; all app content types related to your preferred subspecialty areas will appear.

Log in to AAO.org. Click "We will log you in automatically" to access aao.org, the full Academy website.

Use Touch ID or Face ID. This provides another way to activate Touch ID or Face ID.

Bookmark icon. Back on the main page, hit the Bookmark icon (Fig. 1B) to display a list of your bookmarked News



and Videos (see "Bookmarking," below).

Notifications icon. When new content is available, a red dot may appear in two places.

Within the app. A dot will appear on the Bell icon (Fig. 1C). Click the bell to scroll through content you have not yet viewed.

On your phone's Home screen. Depending on your phone's settings, a dot may appear on the AAO Ophthalmic Education App (AAO Oph Edu) icon (Fig. 2) and banner notifications may appear on your Home screen. You can control these in your phone's general Settings under Notifications/AAO Oph Edu.

Turn off notifications. Don't want notifications? From within the app, toggle all content types off. Or, use the general settings on your phone to disable notifications for AAO Oph Edu. The red dot will not appear within the app, nor will it—or banners—appear on your phone's home screen.

At the Bottom of the Screen

Use the buttons along the bottom of the app's screen to navigate to various content.

Home. Content related to your areas of subspecialty interest appears on the Home page (Fig. 1D). Under My Subspecialty News (Fig. 1E), swipe left to see up to five news stories. Just below that, under My Subspecialty Videos (Fig. 1F), swipe through up to five videos.

Below your subspecialty-specific content, the Weekly Case Challenge will be followed by the Latest News and Videos from all subspecialty areas.

Bookmarking. To store an article for later reading, tap the Bookmark icon in the upper right of any news or video summary box (Fig. 1G). Later, when you are ready to view the item, hit the Bookmark icon at the top of the app to see a list of your book-



marked News and Videos. After viewing an item, hit its Bookmark icon again to delete it from your Bookmark list.

News. The News button (Fig. 3A) takes you to a screen that defaults to news items in your areas of subspecialty interest. All items are bookmarkable. For news from across ophthalmology, select "All" at the top of the page (Fig. 3B).

Ad hoc customization. From the All screen, you can narrow down to a subspecialty on the fly. Tap the filter icon, scroll to the desired subspecialty, activate it, and hit "Apply." The filter icon will turn yellow to remind you that it is activated (Fig. 3C).

Videos. On this page, find brief interviews and surgical and clinical videos (Fig. 4). The page also defaults to your areas of subspecialty interest. For bookmarking and ad hoc subspecialty customization, follow the steps described above in Home and News, respectively.

Dx This (Fig. 5A). This page displays the latest Diagnose This quizzes across all subspecialties. To narrow down to your subspecialty, touch the top Filter icon (Fig. 5B), scroll to your subspecialty and toggle it on; remember to hit "Apply"! You will return to the Dx This page, but this time you will see only those quizzes that fall within your area of interest. After you've taken a quiz, the item's flag will change from New to Done (Fig. 5C).

EyeWiki. The EyeWiki button (Fig. 5D) takes you to eyewiki.org, a website written by ophthalmologists and covering the spectrum of eye disease, diagnosis, and treatment. It's a handy quick reference, especially for point-of-care information.

Check It Out

Download the app at aao.org/education-app, or learn more at the Clinical Education kiosk in the Resource Center (West, Booth 7337).



The Jackson Memorial Lecture AMD: Nutrition, Genes, and Deep Learning

Early in her first year of medical school at the University of Toronto, Emily Y. Chew, MD, decided she wanted to become a pediatrician. But by the end of her medical school tenure, she was heading toward ophthalmology. She did not know that she would spend her future career uncovering the secrets of age-related macular degeneration (AMD) and other eye diseases of adulthood.

How did she come to develop an interest in medical retina and ophthalmic research? Dr. Chew gives credit to her mentor in Toronto, retinoblastoma expert Brenda L. Gallie, MD. “I met her at a social function, and she persuaded me to come in and work with her in her lab—and I loved it.”

Dr. Gallie was “really keen about research,” Dr. Chew recalled. “Her mantra was that you can help more people by doing research than you can [by treating them] one at a time.” And she even took Dr. Chew to her first ARVO meeting. “I thought, ‘Wow, this is kind of fun. She’s really cool. I could be like her.’”

Dr. Chew was also mentored by Arnall Patz, MD, who did the original clinical trial that proved the role of oxygen in retinopathy of prematurity (then known as retinal fibroplasia), and by Frederick L. Ferris III, MD, who was a mentor in her first job at the NEI.

In more than four decades since meeting Dr. Gallie, Dr. Chew has distinguished herself not only as a dogged epidemiologic and clinical researcher in her own right but also as a driving force behind landmark AMD studies sponsored by the NEI, where she has worked since 1987. She currently directs the NEI’s Division of Epidemiology and Clinical Applications (DECA) and is the chief of DECA’s Clinical Trials Branch.

Importance of Mentoring

In reflecting upon the importance of mentors—and of receiving and providing mentorship throughout one’s career—Dr. Chew added that, as a medical retina fellow at the Wilmer Eye Institute, she was impressed by the newly designed clinical trials in AMD and diabetic retinopathy that were the mainstay of research at the Retinovascular Center.

“They generated great energy and enthusiasm from the clinicians and the entire research team,” she said. Moreover, it was there that she learned the power of clinical research that involves experts from multiple disciplines.

All Eyes on AREDS

Notably, Dr. Chew was the principal investigator in the Age-Related Eye Disease Studies (AREDS) and AREDS2 nutritional trials, which, for more than a decade, have followed nearly 9,000 patients with varying degrees of AMD.

Key findings from AREDS and AREDS2 include the following:

- Supplementation with a combination of vitamin C, vitamin E, beta-carotene, zinc, and copper—the initial AREDS formula—reduced the risk of advanced AMD by about 25% over five years.¹

- The risk was slightly lower with the AREDS2 supplementation. This formula replaced the beta-carotene with the xanthophylls lutein and zeaxanthin (because of clinical trials demonstrating that beta-carotene increased the risk of lung cancer among current and former smokers).²

“These are pretty important findings,” Dr. Chew said, as even a modest reduction in the risk of AMD progression stands to affect a large number of people. By ensuring that patients with AMD take the appropriate AREDS supplement, “We would be saving a number of people at the other end of this disease from needing anti-VEGF therapy at \$2,000 a pop,” Dr. Chew said. “If you can prevent that progression, that’s a huge savings for our society, for the patients, and for our health care systems.”

Importance of Nutrition

New analyses of the exhaustively detailed, long-term data gathered in the AREDS trials are reinforcing the importance of nutrition for AMD, Dr. Chew said, and she plans to discuss some of the latest findings during her Jackson Memorial Lecture.

“There was a time when we were looking at nutritional supplements for reducing heart disease and cancer, and none of that came to fruition. But there’s something about nutrition and the eyes that is actually quite compelling. For example, we suspect that perhaps the



SUNDAY HIGHLIGHT. Dr. Chew will deliver the Edward Jackson Memorial Lecture at the Opening Session of AAO 2019. **When:** Sunday, Oct. 13, from 8:30 to 10:00 a.m. **Where:** West 3002. **Access:** Free.

B vitamins—folate and others—may be quite important in AMD, along with lutein and zeaxanthin,” she said.

However, omega-3 fatty acids from fish oil supplements do not appear to be as helpful as was once thought, she said. “The evidence is quite compelling that the Mediterranean diet itself is protective, but we found that fish oil in a supplement did not make any difference at all,” Dr. Chew said. “What does appear to drive the protective effect is the fish itself [along with] vegetables and other dietary components. So we think it’s something in fish that is important, but we don’t know what that may be. If only we could isolate the ingredients!”

What About Genetics?

Because AMD is a multifactorial disease, it has been difficult to determine how and when AMD-associated genes might interact with other risk factors to lead to disease or disease progression, Dr. Chew said. “Genes so far haven’t added a huge amount to our analysis for prediction of disease, even though 60% of AMD is accounted for by genes.”

Nonetheless, her group is looking to AREDS data for possible answers. “The beauty of these two studies is that their phenotypes are well curated, and patients are seen every year. Altogether, there are almost 9,000 patients, and they have been followed very well.” She added, “We

now have published 10-year follow-up in AREDS; in AREDS2, we just finished a 10-year follow-up—[and this is] on a disease that’s very slow growing, with very gradual changes.”

Her research group has contributed all of its AREDS data, as well as retinal images from the subjects, to the database of Genotypes and Phenotypes (dbGaP). This online open-access archive enables other scientists to perform their own genetic studies (<https://www.ncbi.nlm.nih.gov/gap/>). AREDS2 data and retinal images will soon be placed on the same website for researchers who are interested in pursuing this line of inquiry.

The Future: Deep Learning

There is much excitement in the retina community about the potential that deep learning (computerized machine learning) algorithms have in a field that increasingly relies on high-tech images to inform diagnostic and treatment decisions. The hope is that machine learning eventually will be able to interpret images faster or better than human graders can, Dr. Chew said.

Dr. Chew and her NEI colleagues have been experimenting with using these techniques to analyze the AREDS images to gain new insights. They published a paper on the DeepSeeNet model in April,³ and two others have been submitted for publication and are under review, she said.

“We and other investigators have proven already that machine learning can actually do better than the physician at finding this particular condition [AMD], and it remains to be seen if early detection/diagnosis would help get the patient into treatment earlier,” Dr. Chew said. She added, “We hope to use the large number of images and longitudinal data that we have and deep learning to be able to predict, on an individual level, the potential risk of progression—and to better understand how to incorporate this technology in the delivery of health care.”

1 Age-Related Eye Disease Study Research Group. *Arch Ophthalmol*. 2001;119(10):1417-1436.

2 Age-Related Eye Disease Study 2 Research Group. *JAMA*. 2013;309(19):2005-2015.

3 Peng Y et al. *Ophthalmology*. 2019;126(4):565-575.

Financial interests: None.

FURTHER READING

Chew EY. Nutrition, genes, and age-related macular degeneration: What have we learned from the trials? *Ophthalmologica*. 2017;238(1-2):1-5.

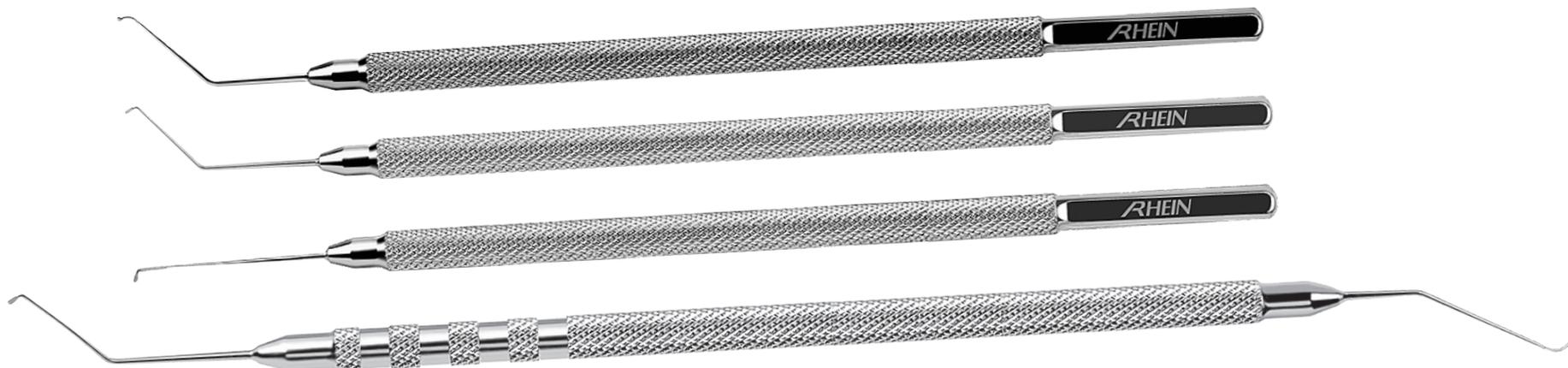
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With 35 years of ophthalmic OR experience, Carolyn can answer questions and resolve problems that protect your instrument investment.

Carolyn will be at the Katena booth during exhibition hours.

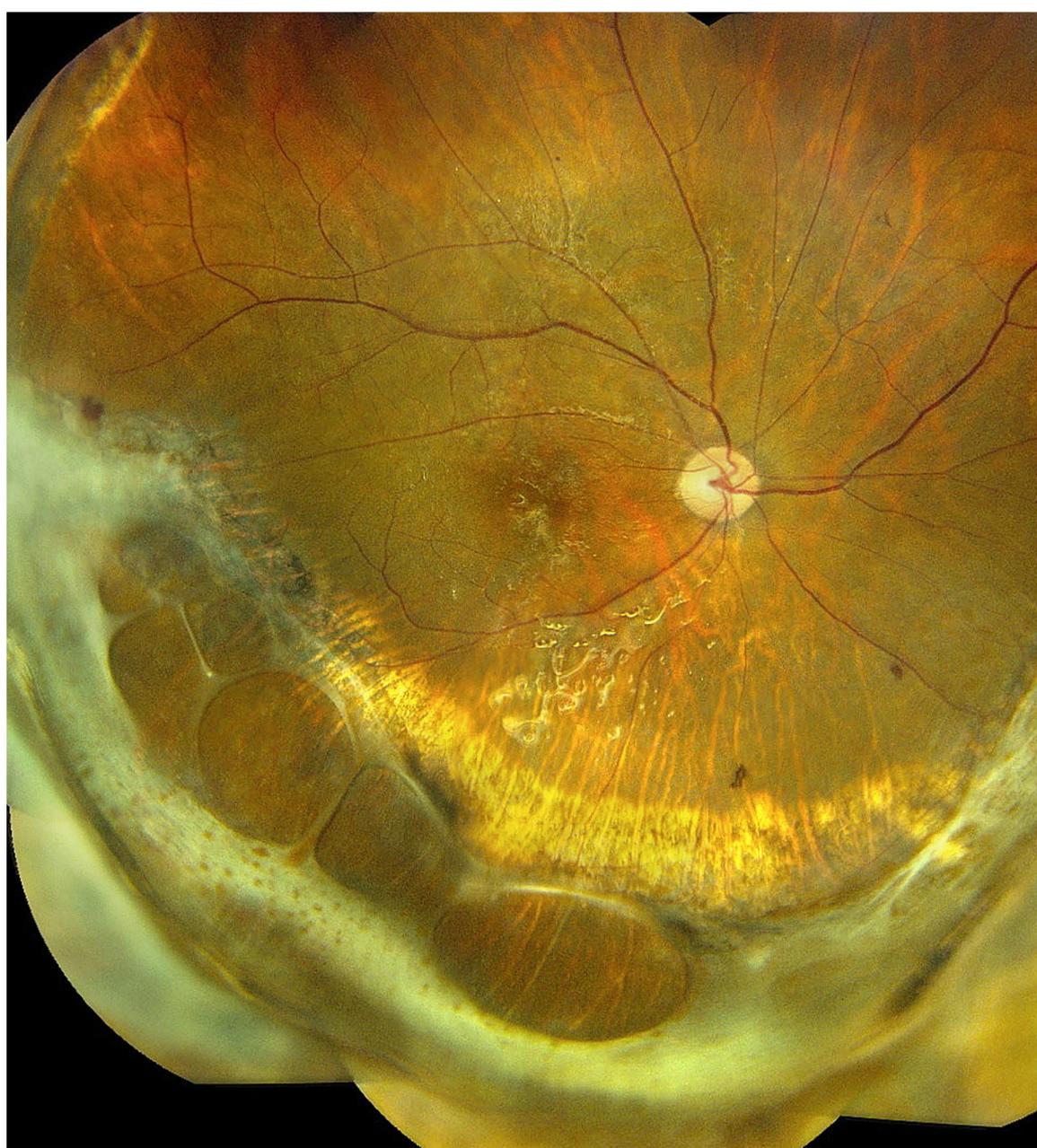
Enter a drawing to win one of 8 Amazon Echos.



Winning Photography Is on Display

The photos shown here were selected from among the First and Second Place winners at the 2018 Ophthalmic Photographers' Society (OPS) Scientific Exhibit during AAO 2018 in Chicago.

This year OPS is celebrating its 50th anniversary. Stop by the 2019 OPS Scientific Exhibit (North, Booth 5152) to see this year's winners and to learn more about special events taking place at the Hotel Nikko during the OPS Annual Program, Oct. 11-14.



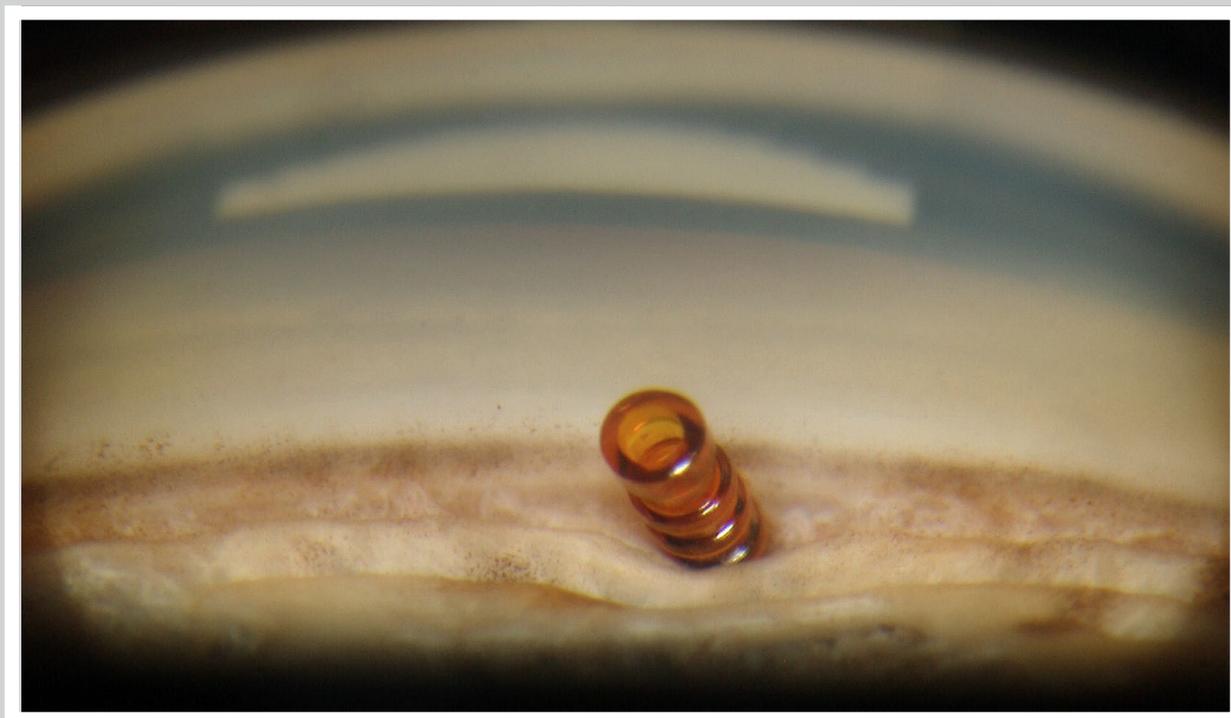
2018 OPS Exhibit Winners

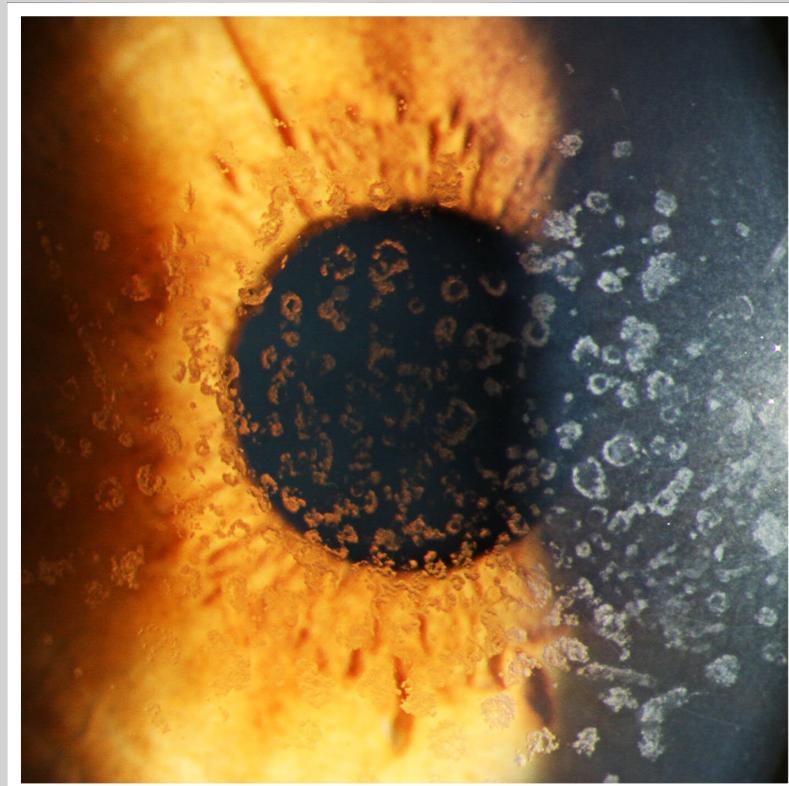
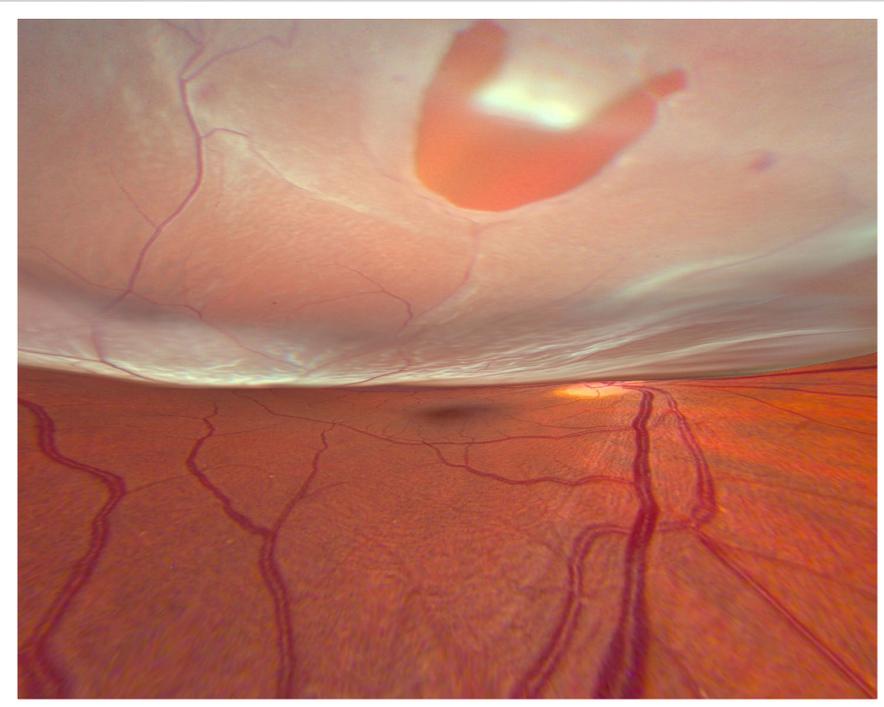
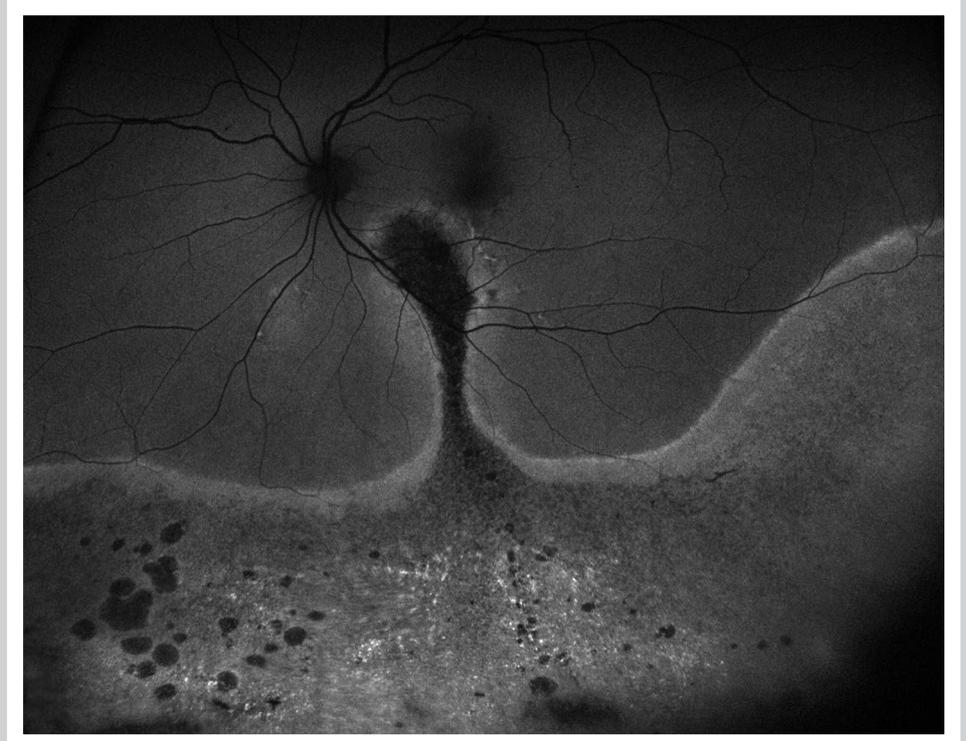
From left to right, and top to bottom.

Monochromatic Photography, First Place. *Edema and Optic Nerve Hemorrhage Secondary to Sarcoidosis.* Michael Bono, CRA, COT. University of Colorado Eye Center, Aurora, Colorado.

Composite Image, First Place. *Chorioretinal Scar After Surgery.* Jody Troyer, CRA, OCT-A. University of Iowa, Iowa City, Iowa.

Gonioscopic Photography, Second Place. *High Mag CyPass.* Brittany Richardson, CRA, OCT-C, COA. Flaum Eye Institute, University of Rochester, Rochester, New York.





Gonioscopic Photography, Second Place. *Iris Tumor.* Kit Morehead, CRA. University of Michigan Kellogg Eye Center, Ann Arbor, Michigan.

Fundus Autofluorescence, First Place. *Central Serous Retinopathy.* BJ Graham, CRA. Mark H. Nelson, MD, Specializing in Diseases of the Retina, Winston-Salem, North Carolina.

Eye as Art, Second Place. *The Fluid Is Coming.* Stefanie Palmer, CRA. Retina Vitreous Surgeons of Central New York, Syracuse, New York.

Slit-Lamp Biomicroscopy, First Place. *Corneal Dystrophy.* Amber Kates, COA, CRA, OCT-C. Flaum Eye Institute, University of Rochester, Rochester, New York.

Get Involved With Academy Programs

Opportunities range from short-term microprojects to bigger commitments. There are many to choose from—take your pick!

Did you know that the annual meeting is brought to you by a multitude of volunteers—many of whom serve on annual meeting and Subspecialty Day-related committees? Likewise, many Academy members volunteer their time and talent on other Academy committees. And many more members would like to volunteer, but committee opportunities are limited.

Noncommittee opportunities. In March, the Academy launched a concise volunteering web page in the Member Services area of aao.org. It is designed to increase awareness among members of the many volunteer opportunities available outside the scope of committee work. It describes opportunities to speak, write, advocate, and more to further the work of various Academy programs (see “Volunteer,” next page). Each opportunity provides instructions and outlines expectations.

The breadth of opportunities is shown below, along with one example from each category, inclusive of a description of the volunteer activity and a quote from a member who has participated in that activity.

Get involved! Visit aao.org/volunteering.

Write

Write articles for Academy publications aimed at a variety of audiences, including ophthalmologists, practice administrators, and the public.

- Write an *EyeNet* Ophthalmic Pearls Article
- Write an *EyeNet* Morning Rounds Article
- Write or Edit an EyeWiki Article
- Write a *Scope* Article
- Write a *YO Info* Article
- Author EyeSmart Articles (for patients)
- Reply to Ask an Ophthalmologist

Questions (from the public)

- Write a Practice Management Express Article
- Submit an *EyeNet* Mystery Image and Case Report

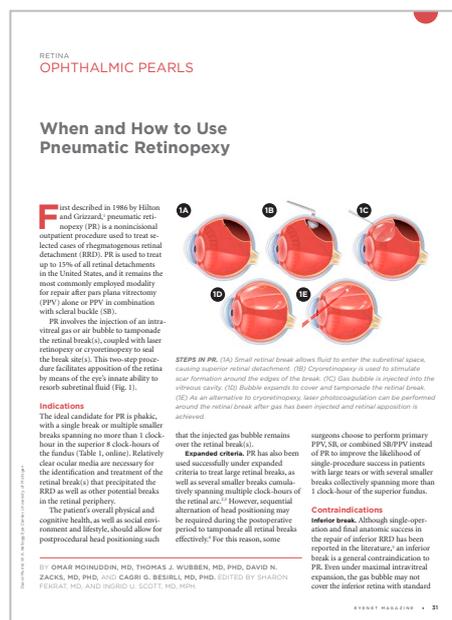
Example: Write an *EyeNet* Ophthalmic Pearls Article. Each 1,500-word Pearls article reviews a medical or surgical entity or procedure. Many of the articles offer step-by-step overviews of etiology, diagnosis, treatment, and follow-up.

“Having the opportunity to author an article for Ophthalmic Pearls has been an outstanding experience and a valuable milestone in my early career growth. On a personal level, it was enlightening to study a topic in eye care in great depth and then to creatively discover how to best educate others in the ophthalmology community on this topic. From a professional perspective, this opportunity uniquely empowered me to collaborate with and learn from leaders from institutions around the country, advance my scientific writing ability, and to learn how to create medical diagrams—aspects essential to my journey as an ophthalmology resident and researcher.”



—Omar Moinuddin, MD

Dr. Moinuddin and his coauthors wrote the June 2019 Ophthalmic Pearls, titled “When and How to Use Pneumatic Retinopathy.” Dr. Moinuddin is an ophthalmology resident at the University of Michigan W.K. Kellogg Eye Center in Ann Arbor.



WRITE. Omar Moinuddin, MD, Thomas J. Wubben, MD, PhD, David N. Zacks, MD, PhD, and Cagri G. Besirli, MD, PhD, wrote the Ophthalmic Pearls article that appeared in the June 2019 EyeNet.



CONNECT. Dr. Smith (left) with ECA patient Andrea Franklin.

Review

The Academy seeks members who can do volunteer reviews of journal manuscripts, reviews of clinical content for currency, and reviews associated with quality of care documents.

- Review Journal Manuscripts
- Provide Clinical Currency Review
- Review OTAs and PPPs
- Serve as a Methodologist

Example: Review Journal Manuscripts.

At the invitation of the *Ophthalmology*, *Ophthalmology Retina*, and *Ophthalmology Glaucoma* editorial boards, reviewers registered in the journals’ database provide thorough and constructive critiques to guide authors on how they can improve their manuscripts. The journals look to volunteer reviewers who offer thoughtful reviews with the goal of helping improve papers, which in turn provide better information to readers, ultimately improving patient care and outcomes.

“I have served as a peer reviewer for more than a decade and find the opportunity as valuable today as I did when I received the first request.

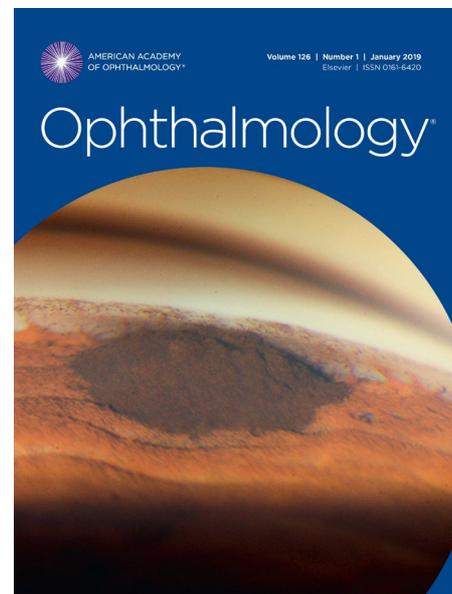


Ophthalmology sits at the pinnacle of our peer-reviewed literature and in that position receives the best papers that our field publishes each year. Reviewing allows me to see the next breaking idea at its early stages and helps keep me at the forefront

of my specialty. My peer-review experience definitely created the opportunity for me to assume the Editor position for Journal of Refractive Surgery and honed my ability to critically evaluate the literature and determine how to incorporate the latest data into my clinical practice.”

—J. Bradley Randleman, MD

Dr. Randleman has served as a peer reviewer for *Ophthalmology* journal articles since 2003. Dr. Randleman is professor of ophthalmology at the Cleveland Clinic and Editor-in-Chief for the *Journal of Refractive Surgery*.



REVIEW. Excellence in peer review contributes to the high quality of the Academy’s three Ophthalmology journals. Register to be a reviewer by going to any of the journals’ home pages, clicking “For Authors and Reviewers,” and “Register to Review.”

Develop Interactive Content

Academy members can volunteer to submit or develop a variety of interactive content that will help their colleagues advance their clinical knowledge.

- Author Interactive Cases
- Write Self-Assessment Questions (for residents)
- Contribute to Online Education (for medical students)
- Submit Your Clinical Images

Example: Author Interactive Cases.

All cases are physician-written, drawn from clinical experience, and intended to intrigue and challenge those who visit the Academy's ONE Network. Cases introduce patients (using fictitious names) and their personal stories, relevant clinical and/or family history, and symptoms.

"Authoring interactive cases through the Academy has been a wonderful and stimulating experience. On a personal level, it was very satisfying to work with



the Academy to educate others in ophthalmology. Professionally, doing so gave me the chance to collaborate with leaders and broaden my research and

writing skills, and it prepared me for advancement within the Academy and at my institution. Intellectually, the project was engaging and fulfilling. I'd highly recommend getting involved!"

—Ashvini K. Reddy, MD

Dr. Reddy has coauthored numerous Interactive Case Studies, for example "Man With Bilateral Lagophthalmos and Bell's Palsy" (see screenshot). Dr. Reddy is associate professor of ophthalmology at Dean McGee Eye Institute in Oklahoma City.

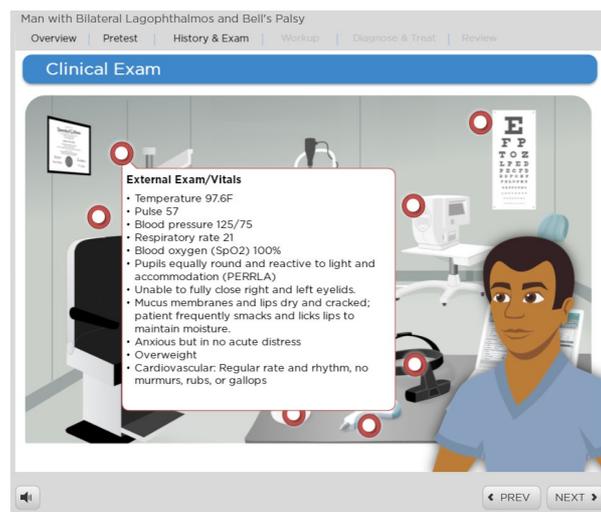
Speak

The Academy seeks members to deliver important messages to the media and the public, other Academy members, residents, and medical students.

- Record Your Resident Lectures
- Become a Clinical Spokesperson
- Promote Ophthalmology to Under-



SPEAK. Tiffany Morton (middle), a first-year medical student at the Ohio State University College of Medicine, and Marcia Carney, MD, (right) at the Minority Ophthalmology Mentoring program's Student Engagement Weekend at AAO 2018 in Chicago on Oct. 27, 2018.



DEVELOP INTERACTIVE CONTENT. Dr. Reddy's case pictured above (ao.org/case/man-with-bilateral-lagophthalmos-bell-s-palsy) offers 1 Self-Assessment CME credit, and it's fun to walk through it!

- Represented Minority Medical Students
- Present a Practice Management Instruction Course

Example: Promote Ophthalmology to Under-Represented Minority Students.

The Academy and the Association of University Professors of Ophthalmology (AUPO) have partnered to create the Minority Ophthalmology Mentoring program. The program provides tools and resources to help students from under-represented minorities in ophthalmology (African Americans, Hispanics, Native Americans) become competitive ophthalmology residency applicants. Volunteers are needed to help promote the program to interested students at local medical schools and college campuses.

"I am honored to be a part of the Academy/AUPO Minority Ophthalmology Mentoring Program since its start in 2016.

Working together nationally to make a difference for each student locally is at the heart of this program. Each student we reach can become an advocate for eye care and a leader in ophthalmology. Collaborating nationally to create innovative solutions that can have a longitudinal impact on patient care has been one of the highlights of my career. This program empowers students to recognize their inherent talents and grow into outstanding ophthalmologists. It is a joy seeing the students go beyond what they believed was achievable, as they simultaneously learn the beauty and depth within our field."



—Anju Goyal, MD

Dr. Goyal has been involved with the MOM program since 2016. This spring she created a pilot

program for premedical students who are under-represented in medicine at Kresge Eye Institute/Wayne State University in Detroit, where she is associate professor of ophthalmology.

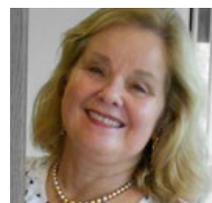
Advocate

The Academy plays a significant leadership role advocating at the state and federal levels on issues affecting health policy and patient care. Those efforts depend significantly on the volunteer efforts of Academy members. Here are a few ways you can help.

- Be a Congressional Advocate
- Share Your State Legislative Contacts
- Attend Congressional Advocacy Day
- Host an OphthPAC Fundraiser

Example: Attend Congressional Advocacy Day.

The Academy's Congressional Advocacy Day is a unique opportunity to lobby members of the U.S. Congress on the issues that affect ophthalmology practices and patients. Ophthalmology must play a leadership role in educating new and seasoned lawmakers so that they can make informed decisions that promote quality eye care.



"I've attended Congressional Advocacy Day meetings on Capitol Hill. During one of these sessions, a legislative assistant made a canny suggestion for accomplishing an Academy goal. This assistant's dedication, coupled with youth and energy, was really fantastic to observe. However, these assistants must have the facts in order to act correctly. Through the Academy's advocacy program, ophthalmologists go to the Hill and provide information to and build

relationships with congresspeople and their legislative assistants. This work is so important because it can—down the road—protect our patients and their care, and our profession for the next physician generation."

—Pamela S. Chavis, MD
Pamela S. Chavis, MD, is a retired neuro-ophthalmologist in Crozier, Virginia.

Connect

Academy volunteer opportunities offer a chance to connect with minorities considering careers in ophthalmology, international first-time annual meeting attendees, and underserved patient populations.

- Mentor an Under-Represented Minority Student
- Serve as a Meeting Ambassador to an International First-Time Annual Meeting Attendee
- Provide Medical Eye Exams for Underserved Populations (EyeCare America Program)

Example: Medical Eye Exams for Underserved Populations.

The Academy's EyeCare America (ECA) program is the country's leading public service program providing eye care. It provides access to eye care for seniors who have not had a medical eye exam in three or more years and people at increased risk for glaucoma. Make a difference in the lives of these patients with minimal time commitment and without leaving your office.

"All of us as ophthalmologists have an infinite innate need to reach out and help someone, but sometimes it's just knowing how to do it. EyeCare America helped me to fulfill that need. You leave work that day, having this deep feeling knowing you have helped somebody other than yourself."

—Oluwatosin U. Smith, MD
(See main photo on page 22.)

Dr. Smith has been volunteering with ECA since September 2017. She is a glaucoma specialist at Glaucoma Associates of Texas, which has branches in Dallas, Fort Worth, Plano, and Rockwall.

Volunteer

Academy members may become active members of our community by volunteering in many ways — from small behind-the-scenes contributions to highly visible leadership roles. Every volunteer effort makes an impact on the Academy and ultimately helps its members provide the best possible patient care. Review the opportunities listed here to learn how you can get involved.

- Write +
- Review +
- Develop Interactive Content +
- Speak +
- Advocate +
- Connect +

AAO.ORG/VOLUNTEERING. Visit the new volunteering web page and click the links to explore 28 opportunities within six different categories.

Pioneers Against Purulence: The Aseptic Revolution

At AAO 2019, explore how rudimentary changes in equipment and practices have influenced the contemporary world of surgery: Visit the Truhlsen-Marmor Museum of the Eye's exhibit—Aseptic Revolution (West, Booth 7037)—and read the complementary article below.

In the days of so-called “heroic medicine,” general surgeons were cutting off patients’ limbs to save lives. By contrast, ophthalmologists were practicing delicate eye surgery on their patients. The aseptic revolution, born out of germ theory and antiseptic practice, improved outcomes for general surgeons and ophthalmologists alike, and eventually changed the way physicians practiced medicine.

Developing an antiseptic protocol.

Near the end of the 1850s, Dr. Joseph Lister expanded on Louis Pasteur’s germ theory by pioneering the antiseptic method. Dr. Lister introduced a carbolic acid solution that would kill germs in air, on objects, and in wounds. His research at Glasgow Royal Infirmary resulted in a 100% reduction of infections for his patients over a nine-month period. This discovery ushered in a new standard of care, and he became known as “The Father of Modern Surgery.” His method evolved into the practices of today, where germs are removed from the surgical environment and instruments are sterilized.

Instrumentation redesigned with antisepsis in mind. In 1876 ophthalmologist Dr. John Couper, one of Dr. Lister’s students, introduced aseptic methods and instrument sterilization at the London Hospital Medical College. Dr. Couper is responsible for developing ophthalmic instruments at a time when many surgeons were reluctant to give up their ornate instruments that were made of bone or wood and were stored in velvet-lined boxes that harbored germs and bacteria. The Aseptic Revolution exhibit displays several surgical sets, including instruments in their beautiful presentation boxes alongside sleek, all-metal instruments closer in design to those used today.

The introduction of rubber surgical gloves. Another devoted acolyte of Dr. Lister was the Chief Surgeon at Johns Hopkins Hospital, Dr. William Halsted, who became known as “The American Father of Modern Surgery.” In the

1880s, Dr. Halsted was the first in the United States to perform surgery in a theater built to Dr. Lister’s specifications. Possibly the greatest contribution that Dr. Halsted made to the aseptic revolution was an act inspired by affection rather than infection. His head surgical nurse, Caroline Hampton, developed severe contact dermatitis from the use of mercuric chloride and carbolic acid as disinfectants. To protect her hands, he presented her with a pair of rubber gloves that he had commissioned, and the two eventually married. The Aseptic Revolution exhibit includes a display case devoted to the history of surgical gloves.

Tincture of iodine as an affordable and effective antiseptic. The museum’s exhibit will highlight one more important character in the history of aseptic surgery: Dr. Lionel Stretton. Dr. Stretton is identified as “The Iodine Surgeon” because he developed the use of iodine as a cost-effective antiseptic.

Rethinking surgical furniture. Dr. Stretton also contributed revolutionary designs for the furniture used in doctors’ offices and operating theaters. Previously, surgical chairs and cabinets had been designed to look like parlor furniture. This practice, which predated anesthesia, had the goal of putting patients at ease before the surgeon embarked on a harrowing invasive procedure. Dr. Stretton argued for a more aseptic approach to furniture design. In a 1915 article in the *British Medical Journal*, he highlighted some of the design principles that he had been championing, such as eliminating “cornices, panels, and ornamentation,”¹ commonplace features that rendered surgical furniture difficult to sterilize.

He also advocated for the use of enameled wood rather than cast metal, arguing that the enamel on metal furniture chips far more easily, and that “these chipped places provide spaces which form commodious dwelling places for germs as the caves in the rocks did for our ancestors.”¹

The Museum of the Eye exhibit



THE IODINE SURGEON. In the early 20th century, Dr. Stretton developed an efficient, effective, and affordable way to sterilize wounds.

features several furniture pieces that illustrate how equipment has evolved to support the aseptic approach.

Adoption of Aseptic Practices

While the pioneers of asepsis were setting new standards, it took time for many of their colleagues to adopt the new practices. Surgical gloves, for example, didn’t come into universal use overnight, as demonstrated by these two excerpts from the museum’s oral history collection.

Carl Koller at work. James Ravin, MD, described how his father—Louis C. Ravin, MD—had the privilege of watching Carl Koller in surgery: “Koller had made the important discovery that cocaine applied to the surface of the eye will anesthetize it, and this discovery revolutionized ophthalmology. The discovery took place in Vienna in 1884, and dad met him more than 50 years later. . . [Dr. Koller was] very old school. He’d walk into the operating room in street clothes. No mask, no cap, no gloves. Just loosen his tie, no real scrub, a bit of hand washing. But his technique was meticulous. He never touched the same instrument twice, certainly never touched the tip of his instruments, and there were no infections.”

A surgical symphony. Edward Raab, MD, described watching a much-admired surgeon operating without gloves during the 1960s: “It was almost a symphony to watch him. He was such a smooth surgeon and so precise in his movements, and, yes, he handled the instruments in a way that didn’t contaminate them. He didn’t let any of us or the rest of his attending staff work without gloves.”

Explore the oral histories at [aao](#).

[org/oral-histories](#). The oral history collection preserves the memories and experiences of people whose lives are an inspiration.

Your Moscone Center To-Do List

1) Visit the Aseptic Revolution exhibit (West, Booth 7037) and 2) attend the museum’s annual

symposium: **Glaucoma: the Twisted History of a Complex Disease** (Sym40). Join the symposium chairs—Michael F. Marmor, MD, and Christopher Theodore Leffler, MD—and enjoy this year’s speakers:

- M. Bruce Shields, MD, on “What Is in a Name: ‘Glaucoma’” (12:17 p.m.)
- Daniel M. Albert, MD, FACS, on “The Pressure Rises: Before and After Schiötz” (12:29 p.m.)
- Sayoko E. Moroi, MD, PhD, on “Aqueous Circulation and the Vasculature” (12:41 p.m.)
- Christopher Theodore Leffler, MD, on “San Francisco Connection: Gonioscopy and Open-Angle Disease” (12:53 p.m.)
- Frances Meier-Gibbons, MD, on “The Evolution of Glaucoma Surgery” (1:05 p.m.)
- Eve J. Higginbotham, MD, on “Unsung Heroes” (1:17 p.m.)
- Harry A. Quigley, MD, on “Of All the Nerve . . .” (1:29 p.m.)

When: Monday 12:15-1:45 p.m.

Where: South 152. **Access:** Free.

Coming Soon . . .

The Truhlsen-Marmor Museum of the Eye is slated to open to the public in January 2020. Located in Fisherman’s Wharf, San Francisco, and dedicated to the exploration of sight and the profession of ophthalmology, the new facility is expected to attract 30,000 visitors per year.

For more information, see [aao.org/museum-new-home](#) and also read “An Introduction to the Truhlsen-Marmor Museum of the Eye” in the second edition of *AAO 2019 News*.

¹ Stretton JL. *Br Med Jr.* 1915;2(2861):642-643.



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New Thinking in Ophthalmology 10 Honorary Lecturers Preview Their Presentations

The Opening Session and many Academy symposia are capped by an honorary lecture. These informative presentations by leaders in their field are easy to fit into your schedule, as they are usually between 15 and 35 minutes long. The speakers preview their own lectures below and in the Sunday AAO 2019 News.

FRIDAY, Oct. 11

RETINA

Charles L. Schepens, MD, Lecture: Retinal Gene Therapy: From Theory to Practice, presented by Jean Bennett, MD, PhD, and Albert M. Maguire, MD.

When: Friday, 9:30-10:30 a.m., during Retina Subspecialty Day 2019.

Where: West 3002.



“It was not long ago that patients with inherited retinal degeneration (IRD) were told that nothing could be done to treat their disease.

With the great progress in identifying the genetic bases of IRDs and the development of gene transfer techniques,

it became possible to evaluate gene-based treatments, first in animals with IRDs and then in humans. The durable reversal of the visual deficits revealed in gene therapy clinical trials for RPE65 mutations led to the first FDA-approved gene therapy drug for a genetic disease in the United States and in Europe. This drug—the first approved treatment for an IRD—establishes the path for development of other gene-based treatments for retinal disease.”

Retina Subspecialty Day 2019: I²—Inspire Innovation (Friday, 8:00 a.m.-5:28 p.m., and Saturday, 8:00 a.m.-5:30 p.m.) is organized in conjunction with the American Society of Retina Specialists, the Macula Society, the Retina Society, and Club Jules Gonin.

REFRACTIVE SURGERY

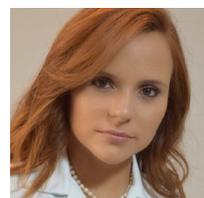
Troutman Award: The Impact of Photorefractive Keratectomy and Mitomycin C on Corneal Nerves and Their Regeneration, presented by Carla Santos Medeiros, MD.

When: Friday, 2:42-2:57 p.m., during Refractive Surgery Subspecialty Day 2019.

Where: Esplanade Ballroom.

“Abnormal nerve regeneration often follows corneal injury, predisposing patients

to pain, dry eye, and vision loss. However, the mechanism is not yet completely understood. In order to determine how refractive surgery affects corneal nerves



and their regeneration, we used photorefractive keratectomy as a model for nerve injury. By means of a three-dimensional analysis,

we investigated the changes in corneal nerve tissue, layer by layer, to determine the mechanisms of neural damage and recovery as well as the effects of mitomycin C on this process. Based on these new histological findings, this lecture aims to provide insight into the neural remodeling after corneal refractive surgery.”

Refractive Surgery Subspecialty Day 2019: As Far as the Eye Can See (Friday, 7:00 a.m.-5:19 p.m.) is the annual meeting of the International Society of Refractive Surgery.

SATURDAY, Oct. 12

GLAUCOMA

The American Glaucoma Society Subspecialty Day Lecture: A Lymphatic-like Pump Controls Aqueous

Outflow: POAG Management & MIGS Implications, presented by Murray A. Johnstone, MD.

When: Saturday, 11:48 a.m.-12:18 p.m., during Glaucoma Subspecialty Day 2019.

Where: Esplanade Ballroom.

“Minimally invasive glaucoma surgery (MIGS) is changing the management of



glaucoma with reduced morbidity and earlier intervention.

In clinical glaucoma management, the questions of why, whether, when, what,

and where to intervene with MIGS are not settled. The trabecular meshwork (TM) is in constant dynamic motion and requires motion to control intraocular pressure. TM motion slows and eventually stops in glaucoma. Novel noninvasive phase-based OCT (PhS-OCT) sheds new light on glaucoma mechanisms and management options by identifying reduced TM movement in glaucoma patients. This lecture will focus on answers to the MIGS questions posed above, based on knowledge of TM motion and the new ability to measure it with OCT.”

2019 ISRS AWARDS

On Friday, the president of the International Society of Refractive Surgery (ISRS), John So-Min Chang, MD, presents some of the profession’s most prestigious awards at Refractive Surgery Subspecialty Day 2019: As Far as the Eye Can See.

When: Friday. **Where:** Esplanade Ballroom. **Access:** Ticketed event.

Following are the awards and their recipients. Details also are provided about associated lectures if applicable.

2019 José I. Barraquer Lecture and Award: Noel A. Alpíns, MD FACS (Australia). The José I. Barraquer Lecture and Award honors a physician who has made significant contributions in the field of refractive surgery during his or her career. This individual exemplifies the character and scientific dedication of José I. Barraquer, MD—one of the founding fathers of refractive surgery. This award has an associated lecture.

When: Monday, 4:52-5:12 p.m., during Sym49, Innovations in Refractive Surgery (3:45-5:15 p.m.). **Where:** Esplanade Ballroom. **Access:** Free.

28th Annual Richard C. Troutman, MD, Dsc (Hon) Prize: Carla Santos Medeiros, MD (Brazil). The Troutman Prize recognizes the scientific merit of a young author publishing in the *Journal of Refractive Surgery*. This prize honors Dr. Richard C. Troutman. This award has an associated lecture.

When: Friday, 2:42-2:57 p.m., during Refractive Surgery Subspecialty Day. **Where:** Esplanade Ballroom. **Access:** Subspecialty Day registration (Fri.).

Casebeer Award: Rohit Shetty, MBBS (India). The Casebeer Award recognizes an individual for his or her outstanding contributions to refractive surgery through nontraditional research and development activities.

Founders’ Award: John So-Min Chang, MD (Hong Kong). The Founders’ Award recognizes the vision and spirit of the Society’s founders by honoring an ISRS member who has made extraordinary contributions to the growth and advancement of the Society and its mission.

Kritzinger Memorial Award: Marcony R. Santhiago, MD (Brazil). The Kritzinger Memorial Award recognizes an individual who embodies the clinical, educational, and investigative qualities of Dr. Michiel Kritzinger, who advanced the international practice of refractive surgery.

Lans Distinguished Award: Cynthia Roberts, PhD (United States). The Lans Distinguished Award honors Dr. Leedert J. Lans. Given annually, this award recognizes an individual who has made innovative contributions to the field of refractive surgery, especially in the correction of astigmatism.

Lifetime Achievement Award: Ronald R. Krueger, MD (United States). The Lifetime Achievement

Award honors an ISRS member who has made significant and internationally recognized contributions to the advancement of refractive surgery during his or her career.

Presidential Recognition Award: Robert E.T. Ang, MD (Philippines) and J. Bradley Randleman, MD (United States). Dr. Chang has selected Dr. Ang as a Presidential Recognition Award recipient for being a pioneer in presbyLASIK and accommodating IOLs, as well as for serving as an ISRS extern host. Dr. Chang has selected Dr. Randleman as a Presidential Recognition Award recipient for his commitment to the *Journal of Refractive Surgery* as its editor in chief, as well as for being a leader in cornea biomechanics and ectasia.

Waring Memorial Award for a Young Ophthalmologist: Alain Saad, MD (France). The Waring Memorial Award for a Young Ophthalmologist recognizes an ISRS member early in his or her career who has demonstrated a commitment to ISRS, as well as a commitment to the promulgation of knowledge and the practice of refractive surgery. This award honors Dr. George O. Waring III for his commitment to the profession and ISRS.

To join ISRS, visit the Member Services desk at the Academy Resource Center (West, Booth 7337), where you can pick up an application form. You also can visit www.isrs.org.

Glaucoma Subspecialty Day 2019: Crossing the Golden Gate to Exceptional Glaucoma Care (Saturday, 7:00 a.m.-5:11 p.m.) is organized in conjunction with the American Glaucoma Society.

SUNDAY, Oct. 13

RETINA

Jackson Memorial Lecture: Age-Related Macular Degeneration: Nutrition, Genes, and Deep Learning, presented by Emily Y. Chew, MD.

When: Sunday, 9:33-9:58 a.m., during Sym67, Opening Session and Annual Business Meeting.

Where: West 3002.

“Age-related macular degeneration (AMD), a leading cause of blindness in



the United States, still lacks effective therapy, especially for those with geographic atrophy (GA). Lifestyle modifications such

as high adherence to a Mediterranean diet (driven mostly by increased fish intake) are associated with decreased risk of AMD, especially for GA. The data are compelling for all stages of AMD. Genetic modifications and interactions are also being evaluated. In this era of big data, we have developed deep learning algorithms that may play an important role in both diagnosing and predicting progression of disease. The future implementation of such technology may indeed change how we manage our patients with AMD.”

Opening Session and Annual Business Meeting (8:30-10:00 a.m.).

PEDIATRIC OPHTHALMOLOGY

Marshall M. Parks Lecture: How Artificial Intelligence Will Affect the Future of ROP Care, presented by Michael F. Chiang, MD.

When: Sunday, 11:35-11:55 a.m., during Sym15, *How to Use the Latest Imaging and Diagnostic Technology in the Pediatric Patient*.

Where: West 3020.

“Retinopathy of prematurity (ROP) is a leading cause of childhood blindness throughout the world, and the societal burden of infancy-acquired blindness is enormous. Furthermore, clinical ROP diagnosis is often highly subjective and qualitative. Artificial intelligence (AI) is an emerging technology that has potential to improve the quality of ROP care through improved diagnostic accuracy and consistency. This talk will discuss basic principles of AI and how recent research is being applied to ROP care. More broadly, it will cover the implications of AI’s potential to significantly change the practice of ophthalmology.”



How to Use the Latest Imaging and Diagnostic Technology in the Pediatric Patient (10:30 a.m.-12:00 p.m.) is cosponsored by the American Association of Pediatric Ophthalmology and Strabismus.

OPHTHALMOLOGY AND THE ARTS

Michael F. Marmor, MD, Lecture: Blind Organists and the King of Instruments,

presented by Bruce Lamott, PhD.

When: Sunday, 12:50-1:10 p.m., during Sym19, *Michael F. Marmor Lecture in Ophthalmology and the Arts*.

Where: West 2002.

“For centuries, vision-impaired musicians have turned to the organ, once acclaimed by Mozart as ‘the king of instruments,’ as their instrument of



choice. In the history of classical music, blind organists far outnumber other visually impaired instrumentalists despite facing the unique physical and spatial challenges of multiple keyboards played by both the



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Check-in and Lunch Pick-up
12:15-12:30 p.m.
Lunches are provided on a first-come basis.

Program
12:30-1:30 p.m.

Programs

Saturday, Oct. 12 **Update on a Treatment Option for Wet Age-Related Macular Degeneration, Diabetic Macular Edema, and Diabetic Retinopathy**
Speakers: Jordana G. Fein, MD, MS, and Ehsan Rahimy, MD
Presented by Regeneron Pharmaceuticals and designed for U.S. retina specialists.

Sunday, Oct. 13 **CONNECTiNG THE DOTS: Evidence Based Perspectives on Dry Eye Disease**
Speakers: Terry Kim, MD, W. Barry Lee, MD, FACS, Marguerite B. McDonald, MD, FACS, and Elizabeth Yeu, MD
Presented by Novartis Pharmaceuticals and designed for U.S. eye care specialists.

Monday, Oct. 14 **Life is Beautiful When the Pupil Behaves**
Speakers: Eric D. Donnenfeld, MD, John A. Hovanesian, MD, Steven M. Silverstein, MD, Denise M. Visco, MD, and Keith A. Walter, MD
Presented by Omeros Corporation and designed for U.S. cataract surgeons.

Check aao.org/eyenet/corporate-events for updated program information.

* These programs are non-CME and are developed independently by industry. They are not affiliated with the official program of AAO 2019 or Subspecialty Day. By attending a lunch, you may be subject to reporting under the Open Payments Program (Sunshine Act).

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hands and feet, an array of dozens of stop knobs labeled in a variety of languages, and lack of standardization from instrument to instrument. Using examples from the 14th to 19th centuries, this presentation will be illustrated with the music they wrote, the instruments they played, and circumstances that may have led them to choose the most complex

instrument of their time.”

Michael F. Marmor Lecture in Ophthalmology and the Arts (12:45-1:45 p.m.).

RETINA

Arnall Patz Lecture: *The Evolving Pathophysiology and Treatment of Retinopathy of Prematurity*, presented by Mary Elizabeth Hartnett, MD, FACS.

When: Sunday, 12:55-1:30 p.m., during Sym65, Arnall Patz Lecture.

Where: West 3020.

“In the 1950s, Arnall Patz, MD, identified high oxygen at birth as a cause of retinopathy of prematurity (ROP). Despite technical advances, ROP remains a major cause of childhood blindness worldwide. Today, it is recognized that high vascular



endothelial growth factor (VEGF) leads to several features of ROP; however, inhibition of VEGF can lead to unwanted outcomes in some

infants. The Arnall Patz Lecture presents the current understanding of the pathophysiology of ROP, its risk factors, and challenges in treating preterm infants, as well as data from clinical trials and concerns that encourage the development of future treatments.”

Arnall Patz Lecture (12:45-1:45 p.m.) is cosponsored by the Macula Society.

CORNEA

Castroviejo Lecture: *Acanthamoeba Keratitis: Getting the Treatment Right*, presented by John K.G. Dart, MD.

When: Sunday, 3:38-3:58 p.m., during Sym25, *Picture This: Imaging for the Anterior Segment Specialist*.

Where: West 2020.

“*Acanthamoeba keratitis (AK)* is a devastating cause of keratitis that affects



predominantly young contact lens users. Twenty-five percent of those with AK suffer severe sight loss during a disease course that

lasts more than nine months. Treatment is complicated by delayed diagnosis, lack of a licensed topical antiamebic drug,



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Purchase or learn more about free access at the **Meetings on Demand booth, North Lobby**, or at the **Academy Resource Center, West, Booth 7337**. Access instructions will be emailed on Oct. 13.

aao.org/ondemand

EYECARE AMERICA: A Reception for Volunteers

Since 1985, EyeCare America (ECA) has helped more than 2 million people by providing medical eye exams, often at no out-of-pocket cost.

During every annual meeting, ECA honors the dedicated volunteer-ophthalmologists who perform this vital public service. This year, residents who have pledged to become ECA volunteers (once they become practicing ophthalmologists) are invited to join the reception.

Come mingle with seasoned volunteers, pick up a gift, enjoy snacks and beverages, and participate in a raffle (the raffle is scheduled to take place at 4:00 p.m.).

Ophthalmologists may enroll as new ECA volunteers, and residents can pledge to become volunteers onsite in the Resource Center (West, Booth 7337) or online at aao.org/volunteer or aao.org/pledge.

When: Saturday, 3:30-4:30 p.m.

Where: Museum of Vision, West, Booth 7037. **Access:** Free.

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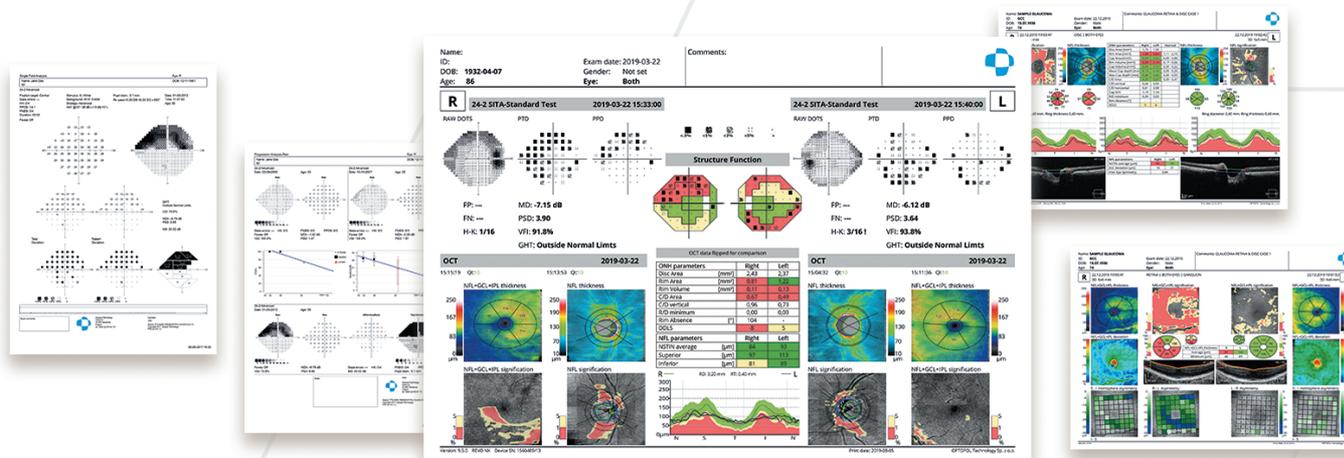
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PROGRAM
NAMED LECTURES

difficulty differentiating between inflammation due to viable organisms or the immune response, scleritis, rapidly maturing cataract, glaucoma, and extracorneal spread. The lecture will focus on the evidence-based management of *Acanthamoeba* keratitis and its complications, and it will show how these management pathways are integrated into a comprehensive protocol developed for a current randomized controlled European trial.”

Picture This: Imaging for the Anterior Segment Specialist (2:00-4:00 p.m.) is cosponsored by the Cornea Society.

CORNEA

Whitney G. Sampson Lecture: Expanding CXL From Keratoconus to Infectious Keratitis, presented by Farhad Hafezi, MD, PhD.

When: Sunday, 4:46-5:11 p.m., during Sym29, *CXL for Corneal Ectasia: Real World Experience*.

Where: Esplanade Ballroom.



“Corneal cross-linking (CXL), originally developed to treat ectasias such as keratoconus, involves applying riboflavin and ultraviolet

light to the cornea to cross-link and biomechanically strengthen the stroma. Cross-linking usually flattens corneas and is under investigation as a refractive procedure. Furthermore, the cross-linking biochemical reaction also reduces the microbial load in the cornea and can be used to treat infectious keratitis of bacterial, fungal, and mixed origins (a process that is known as PACK-CXL); and, in many cases, it accelerates time to healing. As antimicrobial resistance increases, the utility of an alternative/adjunctive treatment to antibiotics—especially in developing countries—becomes increasingly important.”

CXL for Corneal Ectasia: Real World Experience (3:45-5:15 p.m.) is cosponsored by the Eye and Contact Lens Association.

OCULOPLASTICS/PROSTHETICS

Ruedemann Lecture: An I for an Eye Removal: Innovations in Enucleation, presented by Jeremiah P. Tao, MD.



When: Sunday, 4:59-5:15 p.m., during Sym28, *Eyelid Malposition With Ocular Prosthesis in Place*.

Where: West

3014.

“Surgical eye removal poses many reconstructive challenges. Adequate orbital volume and motility are keys to creating a realistic ocular prosthetic. A variety of implants and surgical techniques have been tried to optimize results, yet opportunities for improvement remain.

This lecture will cover advancements in enucleation surgery as well as explore new frontiers such as digital microscreen technologies designed to improve eye prosthetic movement.”

Eyelid Malposition With Ocular Prosthesis in Place (3:45-5:15 p.m.) is cosponsored by the American Society of Ocularists.

ETHICS EVENTS

Get ethics-specific CME credit by attending the following events.

AAO Code of Ethics in the Courtroom: A One-Act Play (665)

Using a hypothetical malpractice litigation scenario, this course highlights the importance of several components of ethical practice, including adequate informed consent, appropriate perioperative care, and compliant advertising practices. (This session is cosponsored by the Ophthalmic Mutual Insurance Company.)

When: Tuesday, 11:30 a.m.-12:30p.m. **Where:** West 2003. **Access:** Academy Plus course pass.

Dr. Allan Jensen and Claire Jensen Lecture in Professionalism and Ethics: Ethical Aspects of Global Ophthalmic Practice, (Sym48), presented by Anthony J. Aldave, MD

An increasing number of ophthalmologists in training and in practice are interested in participating in global health activities. This lecture will help them to navigate many of the common ethical challenges that they might encounter, including competence, informed consent, pre-op assessment, delegation of care, and post-op care and patient privacy.

When: Monday, 3:15-4:15 p.m. **Where:** West 2002. **Access:** Free.

Join Duke Eye Center at AAO (Booth W 7109)

Faculty and alumni experts will discuss new techniques, emerging therapies and the latest research.



Saturday, October 12

- 11:30 am** Optical Coherence Tomography Angiography in Pediatric Diseases
Lejla Vajzovic, MD
- 12:30 pm** How to Turn an Idea into a Reality
John Berdahl, MD
- 1:30 pm** Glaucoma Surgery: So Many Options, How Do I Choose the Correct Procedure for the Correct Patient?
Leon Herndon, Jr., MD
- 2:30 pm** New Techniques and Technologies for Complex Cataract and IOL Surgery
Terry Kim, MD
- 3:30pm** Clinician-Scientist Perspectives in Glaucoma
Sayoko Moroi, MD



Lejla Vajzovic, MD
Director, Pediatric Retina and Optic Nerve Center



John Berdahl, MD
Duke Eye Center Alumni
Vance Thompson Vision
Sioux Falls, SD



Leon Herndon, Jr., MD
Chief, Glaucoma Division



Terry Kim, MD
Chief, Cornea, External Disease and Refractive Surgery Division



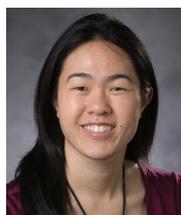
Sayoko Moroi, MD
Duke Eye Center Alumni
Kellogg Eye Center,
University of Michigan
School of Medicine



Cynthia Toth, MD
Director, Duke
Pediatric Retina and
Optic Nerve Center



Carl Awh, MD
Duke Eye Center
Alumni, Tennessee
Retina Physicians



Grace Prakalapakorn, MD
Associate Professor of
Ophthalmology



Miguel Materin, MD
Director, Ophthalmic
Oncology



Julie Ann Woodward, MD
Chief, Oculofacial and
Reconstructive Surgery Division

Sunday, October 13

- 11:30 am** Best Practices for a Pediatric Retina Clinic
Cynthia Toth, MD
- 12:30 pm** A New Method and Device for Macular Membrane Peeling
Carl Awh, MD
- 1:30 pm** Congenital Zika and the Eyes
Grace Prakalapakorn, MD
- 2:30 pm** Ocular Tumor Surgical Videos
Miguel Materin, MD
- 3:30pm** Baffled About Botulinums? Feeling Filler Frustration? Comparison of New Options
Julie Ann Woodward, MD

For more information, visit
dukeeyecenter.duke.edu/ao2019.



The Duke Eye Center booth presentations are not affiliated with the official program of AAO 2019



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VISIT ALLERGAN BOOTH 1123

Saturday, October 12, 2019

9:30 AM

Designed to Perform When the Pressure Is On

Steven Simmons, MD

10:00 AM

Advance Your Intravitreal Approach— The Impact of 1

John Huang, MD

10:30 AM

Flow and Flux: The Problem of Outflow and IOP Fluctuation in Glaucoma

Arsham Sheybani, MD

11:00 AM

NEW Panel Discussion—Pearls and Pitfalls: Managing Complex Cataract and Cornea Surgeries

Zaina Al-Mohtaseb, MD; Preeya Gupta, MD;
Marjan Farid, MD

12:00 PM

Nasty Cataracts: Prevention and Management of Complications

Robert Osher, MD

12:30 PM

Toric IOL Pearls: Preventing and Managing Misalignment

David Chang, MD

1:00 PM

Optimizing Treatment for Pseudophakic DME Patients

Daniel Kiernan, MD

1:30 PM

A Minimally Invasive Approach to IOP Control

Manjool Shah, MD

2:00 PM

Is Treatment Change Happening Too Late in DME?

David Eichenbaum, MD

2:30 PM

Flow and Flux: The Problem of Outflow and IOP Fluctuation in Glaucoma

Joseph Panarelli, MD

3:00 PM

The Key Elements of Effective Intravitreal Injection Reimbursement

Kari Rasmussen

3:30 PM

Glaucoma Progression: The Patient Factor

Jason Bacharach, MD

Sunday, October 13, 2019

9:30 AM

Advance Your Intravitreal Approach— The Impact of 1

Nathaniel Roybal, MD

10:00 AM

A Minimally Invasive Approach to IOP Control

Arsham Sheybani, MD

10:30 AM

How Do We Stop the Suffering? Before, During, and After Cataract Surgery

Karl Stonecipher, MD

11:00 AM

Is Treatment Change Happening Too Late in DME?

Ashkan Abbey, MD

11:30 AM

Flow and Flux: The Problem of Outflow and IOP Fluctuation in Glaucoma

Manjool Shah, MD

12:00 PM

Designed to Perform When the Pressure Is On

Nathan Radcliffe, MD

12:30 PM

Optimizing Treatment for Pseudophakic DME Patients

Roger Goldberg, MD

1:00 PM

Glaucoma Progression: The Patient Factor

Jonathan Myers, MD

1:30 PM

Dry Eye Disease: Understanding the Sign-Symptom Disconnect

Richard Adler, MD

2:00 PM

The Key Elements of Effective Intravitreal Injection Reimbursement

Kari Rasmussen

2:30 PM

Flow and Flux: The Problem of Outflow and IOP Fluctuation in Glaucoma

Inder Paul Singh, MD

3:00 PM

Designed to Perform When the Pressure Is On

Inder Paul Singh, MD

3:30 PM

Is Treatment Change Happening Too Late in DME?

David Callanan, MD



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