



2ND INTERNATIONAL CONFERENCE ON

OPHTHALMOLOGY & VISION SCIENCE

**AUGUST
04, 2025**

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Genoa University,
Italy



Chan Zhao
Peking Union Medical Col-
lege Hospital, China



Stephen H Sinclair
Drexel University,
USA



Adam Reeves
Northeastern University,
USA

Thank You All

WELCOME MESSAGE



Adam Reeves
Northeastern University,
USA

On behalf of the Organizing Committee, I take great pleasure in welcoming you to the 2nd International Conference on Ophthalmology & Vision Science (IOVS 2025), here in Boston. As you will know, the theme of this year's conference is "Advances in Vision Science and Clinical Practice", will focus on integrating work in the eye clinic with recent developments in vision science. While you are here, you will have an opportunity to network, learn, share and collaborate with other experts in ophthalmology and basic vision science. All of us on the Scientific Committee would take great pleasure in meeting you in person and learning more about your amazing work. I wish you an enjoyable and productive conference. I hope you enjoy your stay in Boston and use pre and post conference times to enjoy the sites. We are enthusiastic about your attendance and participation. Enjoy the conference!

ADAM REEVES

Adam Reeves



**KEYNOTE
PRESENTATIONS**

**AUGUST
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August 04-05, 2025 | Virtual Event



Isabella Panfoli

Genoa University School of Medical
Italy

The unique functionality of the Oxidative Phosphorylation proteins in the rod disks offers new insights into rod-driven retinal degenerations

Abstract:

Rod photoreceptors, devoid of mitochondria, require significant chemical energy for visual processing. Biochemical analyses, proteomic and imaging studies of rod outer segment disks suggested that the metabolic support for phototransduction comes from ectopic oxidative phosphorylation (OxPhos) playing a key role in reactive oxygen species (ROS) production. Oxidative stress is associated with diabetic retinopathy and age-related macular degeneration. Studies on an ex vivo model of human retinal pigmented epithelium (RPE), ARPE-19 cells, examined the effects of phagocytosis of rod outer segments by cells maintained in normal versus high-glucose environments. ARPE-19 cells cultured in high glucose and treated with oxidized rod outer segments displayed altered intracellular trafficking and heightened oxidation markers compared to those treated with unoxidized rods. This data suggests that early oxidative damage in diabetic retinopathy may originate in the rods and subsequently impact the RPE, providing a new perspective to the current notion that retinal degeneration is solely dependent on redox alterations within the RPE. A proteomic and bioinformatic study comparing rod disks and retinal mitochondria identified differential enrichment of the OxPhos proteins in the disks versus retinal mitochondria. The rod disk proteins exhibited a stronger correlation than the mitochondrial proteins with the tricarboxylic acid cycle and OxPhos proteins. This indicates that OxPhos proteins represent a true component of the rod disk proteome, with different functionality. These findings shed new light on the pathogenesis of rod-driven retinal degenerative diseases and pave the way for new therapeutic approaches for these conditions.

Biography

Isabella Panfoli has completed her PhD in Biology from Genoa University School of Sciences and her M.D. degree from Genoa University School of Medicine (Italy). She is an associate professor of biochemistry at Genoa University School of Medical and Pharmaceutical Sciences, Department of Pharmacy, and a faculty member of the course on chemistry and pharmaceutical techniques in the same department. Dr. Panfoli is a member of various medical and scientific societies. She has published 163 papers in reputed journals and has been serving as an editorial board member of repute.

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Chan Zhao

Peking Union Medical College Hospital
China

Targeting the suprachoroidal space by a novel resistance sensing mechanical injector: beyond drug delivery

Abstract:

We invented a novel resistance sensing mechanical principle which enables precise injection of flowable material into the suprachoroidal space. Based on this principle, after three generations of iterative enhancements, the latest device has been optimized to administer with ease a liquid or viscoelastic substance into the suprachoroidal space of rabbit, porcine and donated human cadaver eyes. Building on this, we further propose a novel procedure of viscoelastic sheath protected suprachoroidal cannulation and subretinal injection. We can use the device to inject a viscoelastic material into the suprachoroidal space to facilitate dissection of the choroid from the sclera, further expanding the suprachoroidal space. Subsequently, a flexible cannula is introduced into this expanded space and carefully navigated toward the posterior segment of the eye. Using a microneedle housed within the cannula, targeted delivery of a therapeutic composition into the subretinal space could be achieved with precision, avoiding retinal penetration or vitreous removal. We have also developed a novel ab-externo suprachoroidal aqueous humor drainage MIGS implant. This implant, protected by the viscoelastic material, can be positioned into the supra-ciliary space with its anterior end located at the anterior chamber angle, forming a drainage canal between the anterior chamber and the suprachoroidal space. In a rabbit model of steroid-induced glaucoma, our device demonstrated a promising effect on lowering intraocular pressure, along with an excellent safety profile. A subsequent design was developed to enhance the stability of this MIGS implant. Additionally, the use of our novel suprachoroidal injector for suprachoroidal vitreopexy in cases of acute rhegmatogenous retinal detachment represents a potential future application.

Biography

Chan Zhao completed his M.D. degree at Peking Union Medical College (PUMC) in 2007, after which he joined the Department of Ophthalmology at PUMC Hospital. He advanced through the ranks to secure a professorship in 2023. Dr. Zhao possesses a keen interest in the integrative research of ophthalmology and medical engineering, an passion that has earned him numerous national and international patents. He has spearheaded the development of several innovative medical devices, earning him the Clinical Medicine Gold Award at the inaugural National Health Industry Youth Innovation Competition. Dr. Zhao has published over 30 peer-reviewed research papers as the primary or corresponding author.



**ORAL
PRESENTATIONS**

**AUGUST
04, 2025**



Junghyo Ahn

Pusan National University,
Republic of Korea

The analysis of adipogenesis and inflammatory response in orbital fibroblast from adult and pediatric graves' ophthalmopathy

Abstract:

This study is to elucidate the differences in clinical characteristics between pediatric and adult patients with Graves' ophthalmopathy based on cellular and molecular level differences by examining the inflammatory response and adipogenic differentiation in orbital fibroblasts harvested from pediatric and adult patients with Graves' ophthalmopathy in response to the proinflammatory cytokine (IL-1 β).

Method: Orbital fat tissue was harvested from, healthy adults, healthy pediatric individuals, and adult patients with Graves' ophthalmopathy, and orbital fibroblasts were cultured from these samples. IL-1 β was administered at the early stage of adipogenic differentiation in orbital fibroblasts, followed by the exchange of adipogenic differentiation medium for 14 days. The expression levels of PGE2, COX-2, PPAR- γ , C/EBP- α , and C/EBP- β were measured on days 1, 3, 5, 10, and 14 during differentiation to assess the inflammatory response and adipogenic differentiation with Western Blotting and RT-PCR. Adipogenic differentiation was additionally confirmed with Oil-red O staining.

Result: Expression of PGE2, COX-2 was higher in healthy child and adult patients than in healthy adult, respectively. Expression of PGE2, COX-2 after IL-1B was more enhanced in all groups.

Conclusion: Compared to adults, orbital fibroblasts in pediatric patients may exhibit a more active inflammatory response and adipogenic differentiation, and they may be more sensitive to inflammatory conditions, potentially leading to enhanced differentiation into adipocytes. When managing and developing treatment strategies for pediatric and adult patients with Graves' ophthalmopathy, it will be necessary to adopt a personalized approach that takes into account the biological characteristics of each group.

Biography

Ahn has completed his PhD at the age of 35 years from Pusan National University and studied oculoplastic and reconstructive surgery over 18 years. He had clinical research in University of Washington, Seattle, USA for one year, in Japan and China. He is the chief professor in Pusan National University of Ophthalmology, Division of Oculoplastic and Orbital Surgery. He has published more than 15 papers in SCIE journals and has been serving as an editorial board member of global ophthalmology journal.



Kraig Jamieson

NHS Tayside,
UK

No drops after cataract surgery: a patient centred approach – feasibility study

Abstract:

Background: Although cataract surgery is one of the most cost-effective treatments offered on the NHS, it can still be improved. Within NHS Tayside, current practice is that patients are discharged with prednisolone acetate 1% eye-drops to instil four times a day for four weeks after routine cataract surgery. Some patients struggle with instillation, timing, and compliance with the large quantity of eye drops required post-cataract surgery. A recent retrospective cohort study published concluded that a once off subconjunctival triamcinolone injection is not only a cheaper treatment option, but it can also be as effective as steroid eye drops for the prophylaxis of complications associated with cataract surgery, such as delayed improvement of visual acuity and macular oedema (Shorstein, et al. 2024). The gold standard study would be a randomised control trial (RCT), but this type of study can be a very lengthy and costly process. Prior to carrying out an RCT, this feasibility study was performed to ensure that a subconjunctival triamcinolone injection is an effective treatment option, and that it is also a treatment option that patients would want.

Aims: To assess which treatment option patients would prefer after their cataract operation, the steroid eye drops or steroid injection. Patients who received the triamcinolone injection were followed up to monitor their visual acuity and complication rate over a six week period.

Methods: Initially, a questionnaire was trialled to assess how patients felt about the current cataract procedure and the potential of a once-off injection during the cataract operation. Every patient who attended Ninewells Hospital for phacoemulsification cataract surgery over a four week period received the questionnaire, which accounted for 109 patients. One surgeon saw the positive responses during this questionnaire trial and adopted to begin offering this treatment option throughout the month of May, 2024. Every patient on this surgeon's list was offered the injection, accounting for a total of 79 patients. One patient was excluded from receiving the injection due to poorly controlled glaucoma, and one patient was excluded due to intraoperative complications. Two patients who opted for the injection received drops post-operatively due to the increased demand for the injection during this study which resulted in NHS Tayside running out of triamcinolone.

Results: Reviewing the questionnaire responses, 95 patients reported they felt either 'Positive' or 'Very positive' to receiving the injection instead of the drops, with 53 of these responses being 'Very Positive'. Only two patients felt 'Negative' towards receiving the injection, with zero patients feeling 'Very negative'. Of the 79 patients offered the injection, only one patient opted for the steroid eye drops, which after the 4 excluded as mentioned previously, resulted in 75 patients, or 119 eyes, receiving the injection. Six patients went on to require a course of eye drops, three for corneal defects, one for cystoid macular oedema and two for post-operative uveitis.

Conclusion: Patients were very enthusiastic about the no-drops post-cataract approach, which could be viewed as the superior treatment option due to the decreased cost, similar postoperative outcomes and patient preference.

Biography

Kraig Jamieson is a dedicated medical professional currently serving at NHS Tayside in Forfar, Scotland. He earned his Bachelor of Medicine and Bachelor of Surgery (MBBS) from the University of Aberdeen, one of the UK's leading institutions for medical education.



Selcan Ekicier Acar

Ankara Atatürk Sanatory Training and Research Hospital,
Turkey

Quality and reliability of cataract related videos on youtube platform

Abstract:

Increasing the accessibility of internet resources YouTube has started to be used frequently for accessing medical information. The aim of this study is to evaluate the quality and reliability of videos about cataracts. In this study, Youtube search was performed using the keyword "Cataract". The basic features of the videos, such as the number of days online, the video duration (minutes), video sources, number of views and number of likes were recorded. Evaluation of the videos was made with the benchmark criteria of DISCERN, Global Quality Scale (GQS) and Journal of the American Medical Association (JAMA). A total of 100 videos were scanned and 79 videos matching the criteria were included in the study. When analyzed according to their sources, the groups were as follows: Doctors (n=26; 32.9%), health institutions (n=41; 51.8%), social media platforms containing health information (n=12; 15.1%). According to the quality classification, 58% of all videos were high quality, 32.1% medium quality, 7.4% low quality. As a source of medical information, Youtube is a risky platform to reach precise and accurate information. More than half of his videos are of high quality. However, patients should be careful when using Youtube as a source of information due to the presence of low quality videos and the lack of difference between their basic features.

Biography

Selcan Ekicier ACAR obtained a Medical Degree in 2012 from Hacettepe University and finished an ophthalmology residency at Ankara Numune Training and Research Hospital. She is pursuing postdoctoral research in the Bioengineering Department at Hacettepe University. She is employed as an ophthalmologist with a specialized focus on ocular surface, cornea, cataract surgery, stem cells, and biomaterials.



Yuanping Hai

Southern Medical University,
China

Inflammatory profiling and immune cell infiltration in dysthyroid optic neuropathy: insights from bulk RNA sequencing

Abstract:

Dysthyroid optic neuropathy (DON), the most severe complication of thyroid eye disease (TED), lacks clear mechanisms and effective treatments. This study aimed to identify key pathways and inflammation-related genes driving DON progression. Retro-orbital tissues from DON, non-DON TED, and healthy controls were analyzed using bulk RNA sequencing. Differentially expressed genes (DEGs) were identified and subjected to GO enrichment and weighted gene co-expression network analysis (WGCNA). Immune cell infiltration was evaluated using single-sample Gene Set Enrichment Analysis (ssGSEA), and core inflammatory genes were validated by qPCR. Analysis revealed significant upregulation of inflammation- and fibrosis-related genes in DON, including CXCL14, CCL21, HP, MGP, and FN1. GO and WGCNA analyses highlighted immune activation and extracellular matrix remodeling. Key inflammatory-related DEGs (IRDGs) such as CCL21, HP, and SLCO2A1 were strongly associated with immune pathways. ssGSEA showed increased infiltration of activated B cells, CD4 T cells, mast cells, and Th1 cells in DON tissues. Correlation analysis linked IRDGs with various immune cells, notably activated B and regulatory T cells. qPCR confirmed upregulation of HP, TPSAB1, and PLA2G2A in DON. This is the first study to identify the key molecular and immune drivers of DON through bulk transcriptomic analysis, emphasizing the central role of inflammation-related molecules and immune cell infiltration in its pathogenesis. The identified IRDGs and their associated pathways provide novel insights for innovative diagnostic and therapeutic strategies.

Biography

Yuanping Hai obtained his PhD degree in June 2022 from Johannes Gutenberg University Mainz, Germany, with a research focus on Thyroid Eye Disease. He is currently a postdoctoral fellow at Southern Medical University, China. He was awarded a Youth Project grant by the National Natural Science Foundation of China (NSFC) in 2023. Dr. Hai has published over 20 scientific papers, including 6 studies related to Thyroid Eye Disease as first author, co-first author, or co-corresponding author.



Julia Goetz

Albert Einstein College of Medicine,
USA

A Systematic analysis of concomitant amblyopia and strabismus in children with autism spectrum disease (ASD) in the US

Abstract:

Purpose: To evaluate the prevalence, type, and management of strabismus and amblyopia in children with ASD in academic hospitals.

Methods: We analyzed 10,134 children with ASD from the SOURCE database. Diagnoses and procedures were identified using ICD and CPT codes. Prevalence, odds ratios, and surgical rates were calculated.

Results: Strabismus or amblyopia was present in 38% of ASD patients (95% CI 0.37–0.39). Exotropia was more common than esotropia (OR 1.45 vs. 1.07). ASD patients presented younger (mean age 6.14, SD=4.68) than controls (mean age 8.07, SD=6.57). In ASD patients with strabismus, 17.9% underwent surgery. Male predominance and racial variation were noted. While referral bias limited interpretation of control data, ASD findings were internally consistent.

Conclusion: Children with ASD have a high prevalence of strabismus, with distinct patterns in type and treatment. Findings support earlier screening and tailored care to improve visual outcomes in neurodivergent children.

Precis: Children with Autism Spectrum Disorder (ASD) show a high prevalence of strabismus and amblyopia. In a national database of 10,134 ASD patients, 38% had one or both conditions. Exotropia was more common than esotropia, and 17.9% underwent surgery, often at older ages. Findings support early screening and tailored care, as patterns of diagnosis and intervention differ from neurotypical children.

Background Statement: Children with ASD have higher rates of visual disorders, yet diagnosis and treatment may be delayed due to neurodevelopmental complexity. Understanding patterns of strabismus and amblyopia in this group is critical for timely, effective intervention.

Biography

Julia Goetz is a fourth-year medical student at Albert Einstein College of Medicine in the Bronx NY and a graduate of the University of Florida, where she earned her B.S. in Biology as well as her B.S. In Behavioral and Cognitive Neuroscience. Julia's research interests include strabismus and amblyopia, uveitis, as well as ocular surface diseases. She is deeply committed to the field of ophthalmology and her goal is to specialize in pediatric ophthalmology.



Kriti Saxena

Hackensack Meridian School of Medicine,
USA

Combined accelerated corneal collagen crosslinking and photorefractive keratectomy for keratoconus and ectasia using pulsed or continuous UV-A light

Abstract:

Keratoconus (KC) is a progressive corneal thinning disorder traditionally managed with rigid gas permeable contact lenses or Corneal Cross-Linking (CXL). CXL stabilizes the keratoconic cornea but does not improve vision. Recent studies suggest that combining CXL with Topography-Guided Photorefractive Keratectomy (TG-PRK) can enhance visual outcomes. This study evaluates the efficacy of two CXL protocols pulsed and continuous UVA light when combined with TG-PRK. In this single-site, prospective, unmasked clinical trial, patients were randomized into two groups receiving either pulsed or continuous UVA light during CXL. Outcomes measured included uncorrected and corrected distance visual acuity (UDVA, CDVA), manifest refraction spherical equivalent (MRSE), mean keratometry (Kmean), maximum keratometry (Kmax), and maximum flattening (Kmaxflat). Twelve eyes were followed for 12 months. CDVA improved from 0.19 ± 0.12 logMAR to 0.12 ± 0.12 ($p < 0.05$). Kmean

improved from 47.51 ± 4.10 D to 45.94 ± 3.62 D, and Kmax from 57.43 ± 6.20 D to 52.18 ± 5.33 D ($p < 0.05$). The mean Kmaxflat at 12 months was -7.98 ± 2.46 D. No significant differences were observed between UVA treatment groups. Simultaneous CXL and TG-PRK effectively improve vision and stabilize KC progression. Both pulsed and continuous UVA protocols are equally effective.

Biography

Kriti Saxena has completed her B.S. in Neural Science at the age of 21 years from New York University, graduating Summa Cum Laude. She is currently a medical student at Hackensack Meridian School of Medicine with an avid interest in Ophthalmology.



**KEYNOTE
PRESENTATIONS**

**AUGUST
04, 2025**



Stephen Sinclair

Drexel University,
USA

Multispectral Imaging (MSI) of choroidal ischemic melanin disruption and inflammatory hyperpigmentation features of atrophic AMD (AAMD) and Glaucoma Optic Neuropathy (GON)

Abstract:

Introduction: Recent research has noted the association of AAMD with GON and has identified choriocapillaris ischemia as not only causative of outer retinal and RPE apoptosis that incite inflammation in AMD but also ischemia of prelaminar capillaries in GON. However clinical imaging assessment of color fundus photographs or OCT B sectors has been limited to identifying only late manifestations of drusen accumulation and outer retinal structural atrophy in AMD and of optic nerve sectoral atrophy in GON, both of which occur after irreversible death of neuronal sectors. MSI of extended wavelengths provides imaging of chorio-retinal lesions such as ischemia induced melanin disruption and lesions of inflammation. Herein, MSI is used to assess the amount of melanin disruption and features of inflammation in the progressive atrophic stages of AAMD and association with pre-laminar ONH sectoral microvascular ischemia of GON.

Methods: A retrospective image-analysis study was conducted of eyes with clinical AMD from two retina practices imaging with both SDOCT and MSI (AISpectral). Eyes were excluded if poor image quality or manifested signs of exudative AMD. The SDOCT images were overlaid upon the MSI to further define aspects of the lesions identified in the enface MSI (after selecting the best image within 550-850nm). Ischemia induced melanin disruption of RPE and choriocapillaris was graded 0-4 based upon the degree of reduced veiling of underlying choroidal vessels. The induced inflammation was graded 0-4 defined by the size and boundaries of hyperpigmented lesions: 1) RPE punctate pigment, 2) pigment macrophage migration within the RPE generating granular alterations, 3) melanocyte proliferation and migration to produce nummular lesions between choroidal vessels with granules upon the vessels. ANOVA testing compared these grades among the AREDS updated staging of AAMD, combining AREDS1&2 due to similarity of images. The association of peri-papillary ischemic melanin disruption and inflammatory pigment grading was also assessed with segmental microvascular loss within the optic nerve head.

Results: 49 eyes of 49 patients were analyzed (13,12, and 24 eyes in the AREDS 1-2, 3, and 4 categories). Significantly greater, widespread melanin disruption was noted within short posterior ciliary artery distribution, worse in AREDS stage 3 ($p=0.04$) and 4 ($p=0.02$) compared with stage 1-2. Greater severity of inflammatory pigmented lesions were observed in AREDS 3 ($p=0.007$) and 4 ($p=0.008$) compared with AREDS 1-2. Focal, deep, prelaminar ONH microvascular reduced density was noted in 47% of eyes, and in all but one eye was associated in the same quadrant with significant parapapillary localized ischemic melanin loss and dense granular hyperpigmentation.

Conclusions: Detailed, retinal, enface, MSI enables visualization of ischemic melanin disruption and inflammatory hyperpigmented lesions in AAMD and with secondary ONH focal reductions in microvascular density. This study demonstrates that both ischemic and inflammatory lesions worsened in the later stages of AAMD, revealing this aspect of the pathophysiology and the utility of MSI to map the progressive pathology of AAMD as well as with associated microvascular reduced density within the optic nerve, now recognized in the pathophysiology of GON. Certainly, to examine further, ICG IV and continuous flow studies are required to examine further the ischemia along with longitudinal studies to establish progression risks.

Biography

After finishing medical school at Harvard, ophthalmology residency at Massachusetts Eye and Ear Infirmary, and a vitreo-retinal fellowship at the Medical College of Wisconsin, Dr. Sinclair spent 8 years as Assistant Professor of Ophthalmology and head of the vitreo-retinal service at the Hospital of the University of Pennsylvania in Philadelphia. He then migrated across town to Hahnemann University School of Medicine as Professor and of Ophthalmology to establish a new department as Chairman and then spent 6 years as vice-chairman of the Department. He left academia in 1993 and currently maintains a referral, private practice in vitreo-retinal diseases and surgery at in Media, Pennsylvania with affiliation at Riddle Memorial Hospital in the western and southwestern suburbs of Philadelphia. He remains as Adjunct Professor of Ophthalmology at Hahnemann, University teaching residents and students at Hahnemann and Temple Universities and at the Pennsylvania College of Optometry.

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Adam Reeves

Northeastern University,
USA

How visual attention controls the range and properties of crowding

Abstract:

Crowding occurs when easily seen visual stimuli become indecipherable due to flanking stimuli. When the stimuli are letters or Gabor patches, the flankers must be within half-eccentricity to crowd (Bouma's law) and must share features such as oriented segments. These well-known findings have been explained by feature overlap in receptive fields (RFs) in occipital cortex, but they depend on advance knowledge of the locations of targets and a fixed disposition of spatial attention. Thus cues to focus attention shrink the range of crowding (Yeshurun & Rashal), and we have shown that shifting attention from central to peripheral targets, while keeping the eyes fixed, doubles the region of crowding and abolishes the dependence on mutual orientation (Nador & Reeves). It appears that when focused, attentional feedback is scaled with eccentricity to match the typical RF size in occipital cortex, but when shifting, attention expands to cover multiple RFs. Since attention often shifts across the visual field, practical measures of crowding in patients should ideally employ conditions with both fixed and varied attention, but the essential labor of developing a suitable protocol has yet to be undertaken.

Biography

Adam Reeves completed his BA with Philip Liss at CUNY and his PhD with George Sperling at NYU. He undertook post-doctoral work with John Krauskopf at Bell Labs, Murray Hill, and Richard Cavonius at ifARDO in Germany. He has been a professor of Psychology at Northeastern University since 1982.



**POSTER
PRESENTATIONS**

**AUGUST
04, 2025**



Peter Podar

Vanderbilt University
USA

Tunable focus ophthalmic lens for refractive error diagnosis and correction

Abstract:

Presbyopia affects over two billion people worldwide, yet current optical solutions—such as multifocal and progressive lenses—often compromise peripheral clarity, introduce distortion, and limit dynamic focus. We present a tunable focus ophthalmic lens designed to overcome these limitations by providing continuous, distortion-free vision correction across near, intermediate, and far distances. The lens features a soft, deformable membrane and fluid-filled chamber that adjust focal power in response to low-voltage actuation. A customizable resting power allows alignment with the user's baseline prescription, and a variable actuation speed mimics natural accommodation transitions. Bench testing confirmed a reproducible relationship between applied voltage and dioptric shift ($\Delta D/\Delta V$), with effective correction demonstrated from +6D to -6D. High-resolution target tests showed sharp visual performance across focal states, without the field-of-view artifacts typical of static or segmented lenses. To enable automatic focusing, a low-power, camera-free vergence tracking system was developed using infrared-based pupil localization to triangulate viewing distance and apply corresponding focal adjustments in real time. By combining correction and diagnostic capabilities in a single wearable system, this technology introduces a scalable, personalized solution for presbyopia and astigmatism. It holds particular promise for both modern clinical practice and low-resource settings, supporting broader efforts to advance accessible, adaptive eye care worldwide.

Biography

Peter Podar is affiliated with the Department of Biomedical Engineering at Vanderbilt University, Tennessee, USA. His work focuses on advancing biomedical technologies through interdisciplinary research, contributing to innovations in medical diagnostics, therapeutics, and healthcare engineering.



Megan M. Tran

University of Pennsylvania,
USA

Metastatic testicular primitive neuroectodermal tumor of the orbit

Abstract:

Background: Orbital metastases are rare, occurring in 2–5% of systemic malignancies, and are exceptionally uncommon from testicular germ cell tumors (GCTs). Diagnosis is often delayed, as symptoms are nonspecific and precede primary cancer diagnosis in up to 32% of cases. No prior report has described orbital metastasis secondary to a testicular GCT arising from a teratoma.

Case: We present a novel case of a 21-year-old male with widespread metastatic testicular GCT involving the skull base, orbit, and optic canal, who developed acute, vision-threatening compressive optic neuropathy. After initial orchiectomy at outside hospital and liver biopsy on hospital day 8, initiation of oncologic therapy was delayed pending final pathology. Given a reassuring early ophthalmologic exam and suspected diagnosis of embryonal carcinoma—a chemosensitive tumor—surgical resection was initially deferred. However, daily ophthalmic monitoring revealed rapid visual decline by hospital day 20, prompting emergent multidisciplinary approach with orbitotomy and craniotomy for mass debulking and optic nerve decompression. Postoperative exams demonstrated immediate and sustained visual improvement. Molecular testing was concerning for medulloblastoma arising from a teratoma.

Conclusion: This is the first reported case of orbital metastasis from a testicular GCT of teratomatous origin, which required emergent surgical decompression for vision preservation. The case demonstrates the importance of comprehensive systemic evaluation, including of the genitourinary tract, in young men with nonspecific orbital symptoms. Also, close ophthalmic monitoring during diagnostic workup is essential to detect rapid visual decline and allow for timely surgical intervention in the setting of metastatic disease.

Biography

Megan is a second-year medical student at the Perelman School of Medicine, University of Pennsylvania, who aspires to be an ophthalmologist

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Adriana Kaganovski

New York Eye and Ear Infirmary of Mount Sinai,
USA

Elevated prevalence of age-related macular degeneration associated with lower socioeconomic status in an urban primary care setting

Abstract:

Age-related macular degeneration (AMD) is a leading cause of irreversible vision loss in older adults, yet its relationship with socioeconomic status (SES) remains understudied. This study investigates the association between lower SES and AMD prevalence in a diverse urban primary care population. Color fundus photographs were collected from 312 patients aged 50 to 89 years during routine primary care visits at Mount Sinai Hospital–Union Square. All images were evaluated and graded for AMD by two ophthalmologists using standard clinical criteria. Socioeconomic status was estimated by linking patient ZIP codes to median household income data from the U.S. Census Bureau. Results revealed that patients diagnosed with AMD had a significantly lower median household income (\$72,000) compared to those without AMD (\$151,000), with a highly significant difference ($p < 0.0001$; Z-test). These findings suggest a strong association between lower SES and increased prevalence of AMD, potentially due to disparities in healthcare access, lower disease awareness, and underutilization of preventive eye care services. The study highlights the need for targeted vision screening and early detection strategies in underserved urban populations to help reduce inequities in eye health outcomes and prevent avoidable vision loss.

Biography

Adriana Kaganovski is a third-year medical student at SUNY Downstate College of Medicine, with a strong interest in ophthalmology, health equity, and population-based research. She has contributed to clinical research on age-related macular degeneration and the impact of socioeconomic disparities on vision health. Adriana's work emphasizes the importance of improving access to screening and care in underserved urban communities. She has presented at national ophthalmology meetings and is committed to pursuing a career in academic medicine. Her current research focuses on integrating public health approaches into clinical ophthalmology to reduce preventable vision loss.



Laura Haller

Touro University,
USA

Comparing outcomes of adjustable spectacles and conventional refraction methods among mongolian children in a service-delivery program

Abstract:

Objective: To compare the vision and refractive power outcomes of self-refraction with adjustable spectacles vs non-cycloplegic refraction by an ophthalmologist among Mongolian school-aged children in a large service-delivery program.

Design: Cross-sectional study

Setting: One urban and three rural schools in Mongolia.

Participants: A total of 4,144 children aged 8-17 years old, with presenting visual acuity $\leq 6/12$ in either eye due to uncorrected or under-corrected refractive error.

Interventions: All participants underwent at least one of three refractive modalities without cycloplegia: self-refraction supervised by a trained school physician, self-refraction supervised by an ophthalmologist, or subjective refraction by an ophthalmologist. The main analyses focus on children undergoing all three modalities. **Main Outcome Measures:** Proportions achieving target visual acuity (VA, defined as 6/9 or better in the better-seeing eye).

Results: Among 4,144 school-aged children (mean age: 12.6 ± 2.63 years), 65.3% were girls and 34.7% were boys. The mean spherical equivalent refractive power in the better-seeing eye was -1.25 D (SD: 1.25 D). A total of 1,074 children (25.9%) underwent all three refraction modalities. The proportion of participants achieving a VA of 6/9 or better in the better-seeing eye was significantly higher for subjective refraction by an ophthalmologist (93.6%, $P < 0.001$) compared to ophthalmologist-supervised self-refraction (80.8%, $P < 0.001$), and school physician-supervised self-refraction (77.6%, $P < 0.001$). In multivariable logistic regression models, older age (OR 0.87, 95% CI - 0.13, $p < 0.001$), female sex (OR 0.75, 95% CI -0.29, $p = 0.004$), lower cylindrical refractive power (OR 0.75, 95%, CI -0.29, $p < 0.001$) and self-refraction supervised by an ophthalmologist were independently associated with lower risk of failing to achieve target VA.

Conclusions: Among a large cohort of children in this low-resource setting, results with self-refraction were worse than with traditional refraction by an ophthalmologist, but some 80% of children could still achieve good results

Biography

Laura Haller, ranked 1st in her class with a 4.0 GPA, is a dedicated and compassionate medical student with a strong commitment to serving others. Before medical school, she worked as the lead ophthalmic technician in ocular oncology at Columbia University Irving Medical Center, gaining extensive experience in complex eye disease management. She has served thousands in Harlem, New York through vision screenings and glasses delivery programs and has participated in medical missions to Nicaragua which reinforced her commitment to global healthcare. Outside of medicine, she has a background as an international professional dancer and is an accomplished marathon runner.



**ACCEPTED
PRESENTATIONS**

**AUGUST
04, 2025**

Anna Flts

Rowan- Virtua School of Osteopathic Medicine,
New Jersey

Impact of the ACGME Merger on Ophthalmology Match Success: A Pre- and Post-Merger Comparative Analysis

Abstract:

This study evaluated the impact of the ACGME merger on ophthalmology match outcomes for MD and DO applicants. In 2020, the merger unified the residency match process for both applicant types, creating a single, standardized system. Using SF Match and AUPO data from 2016 to 2024, applicants were divided into pre-merger (2016–2019) and post-merger (2020–2024) cohorts. Match rates were calculated and compared using chi-square analysis. Results showed a statistically significant decline in match rates for MD applicants, from 85.32% pre-merger to 78.26% post-merger ($p < 0.05$). DO match rates also declined, from 45.07% to 38.62%, but this change was not statistically significant ($p \geq 0.05$). In both time periods, MD applicants had significantly higher match rates than DO applicants ($p < 0.05$). While the merger aimed to standardize training and improve equity across applicant backgrounds, these findings suggest that disparities persist. The downward trend in DO match rates, although not statistically significant, may reflect ongoing challenges such as fewer rotation opportunities, limited advising, or differences in applicant familiarity with programs. The consistently lower match rates for DO applicants, pre- and post-merger, underscore the need for further research into structural barriers and support mechanisms that may influence match outcomes in competitive specialties like ophthalmology.

Biography

Anna Flts is a third-year medical student at Rowan-Virtua School of Osteopathic Medicine and a graduate of Rutgers University, where she earned her B.A. in Cell Biology and Neuroscience. Her research interests include ocular surface disease, systemic conditions with ophthalmic involvement, and the impact of social determinants of health. She is actively involved in community outreach and organizes free eye screenings for underserved patients through her school's student-run clinic. Deeply committed to the field of ophthalmology, she continues to explore the specialty through both research and clinical experiences, with the goal of pursuing an ophthalmology residency after graduation.

Hasan Ehsan

University of Texas Medical Branch John Sealy School of Medicine,
USA

Risk of postoperative complications following cataract surgery in non-tobacco nicotine dependent patients

Abstract:

Post-operative complications following cataract surgery, though uncommon, can hinder vision recovery due to various risk factors. While the negative impact of tobacco use on surgical healing—primarily through delayed wound recovery—is well established, the effects of nicotine dependence without tobacco use remain less understood. This study investigates whether non-tobacco nicotine dependence increases risk of post-operative complications following cataract surgery. We conducted a retrospective cohort study using the TriNetX global federated health research network. 116,056 non-tobacco nicotine-dependent cataract surgery patients and 492,543 cataract surgery patients with no nicotine dependence between January 1, 1984, and January 1, 2024, were analyzed. These cohorts were propensity matched by age, gender, race, BMI, and several comorbidities including Type 2 Diabetes and hypertension. 106,579 propensity-matched patients were analyzed for postoperative complications within 30 days of having undergone cataract surgery using risk ratios (RR) and 95% confidence intervals (CI), with statistical significance set at $p < 0.05$. Non-tobacco nicotine dependent patients exhibited significantly increased risk for purulent endophthalmitis (RR 3.066, 95% CI 2.641–3.558, $p < 0.0001$), anterior uveitis (RR 1.819, 95% CI 1.633–2.026, $p < 0.0001$), and retinal detachment (RR 1.278, 95% CI 1.2–1.36, $p < 0.0001$) compared to control. The risk of choroidal hemorrhage ($p=0.3313$), vitreous hemorrhage ($p=0.7082$), and cystoid macular edema ($p=0.106$) did not differ significantly between cohorts. Based on these findings, targeted perioperative management and nicotine cessation interventions are indicated to optimize surgical outcomes.

Biography

Hasan Ehsan is a third-year medical student at the University of Texas Medical Branch John Sealy School of Medicine in Galveston, Texas. He graduated from the University of Texas at Austin in 2023 with a degree in Public Relations.

Hadar K. Shimshon

SUNY Downstate Health Sciences University

Analysis of Patient Preferences when Purchasing Consumer Products for Ocular Redness and Dry Eye Disease

Abstract:

Ocular redness and Dry Eye Disease (DED) are prevalent conditions that significantly impact quality of life. Over-the-counter (OTC) treatments such as eye drops are frequently used for symptom relief. This study evaluates consumer preferences for OTC red and dry eye products available on Amazon, analyzing factors such as preservative content, cost, and application methods. A total of 32 dry eye and 25 red eye products were examined and data was collected on product cost, preservative status, consumer ratings, and sentiments derived from AI analysis of customer reviews. Key findings indicated that preservative-free dry eye products were preferred for ease of use, while preservative-containing products were favored economically. In contrast, red eye products containing preservatives were associated with higher satisfaction in ease of use. Additionally, cost per unit was a significant factor in consumer decisions. AI-driven sentiment analysis revealed important insights into consumer satisfaction, with preservative-free products performing better in categories related to safety and ease of use, while preservative-containing products excelled in economics. Given the known risks of preservatives, such as irritation and toxicity, understanding how economics may drive patient decisions on platforms without physician guidance is essential to ensuring patient safety. These results underscore the complexity of consumer choices, balancing cost, effectiveness, and long-term safety concerns, while highlighting the value of AI in understanding consumer preferences and informing clinicians in recommending suitable OTC treatments for ocular conditions.

Biography

Hadar Shimshon is a second-year medical student at SUNY Downstate Health Sciences University. She completed her B.S. in Environmental Health at SUNY College of Environmental Sciences and Forestry in 2023, graduating as the departmental scholar and receiving the Chancellor's Award for Excellence. Hadar is actively involved in ophthalmology, organizing free eye screenings and participating in research projects within the field. As the community outreach leader in her ophthalmology club, she is committed to supporting underserved communities in Brooklyn and improving access to care for these populations.

Maryam Emadi

Hamadan University,
Iran

Combined treatment for tinnitus

Abstract:

Tinnitus is a relatively common disorder with a heterogeneous nature. Combining methods in its treatment may offer greater effectiveness. We aim to explore the impact of concurrently applying tRNS neuromodulation and acoustic stimulation for tinnitus control. Thirty-two tinnitus patients participated in this study and were divided into two groups. The first group underwent 8 sessions of electrical stimulation (tRNS) and acoustic stimulation simultaneously, while the second group received only tRNS. The outcomes were assessed using psychoacoustic evaluation and tinnitus handicap inventory (THI) and visual analog scale (VAS) for loudness and annoyance of tinnitus. The SF-36 questionnaire was utilized to evaluate the quality of life before, immediately after intervention, and at one-month follow-up. A notable reduction in tinnitus loudness was observed in both groups. Both groups had significant differences in the scores before and after the intervention. However, the first group exhibited larger effect sizes for changes in loudness and THI scores. The scores of the SF-36 questionnaire improved in both groups; the increase in general health and emotional scores was particularly significant in the first group. According to the results of this study, using electrical and acoustic stimulation simultaneously with dual-modality stimulation is more effective in reducing the loudness and annoyance of tinnitus, compared to using electrical stimulation alone

Biography

I am an Assistant Professor of Audiology with a strong commitment to advancing audiology, Tinnitus, and auditory system electrophysiology. With over a decade of experience, my journey in audiology has been marked by academic excellence, teaching, research, and numerous accolades. My research interests primarily focus on tinnitus.

Normila Barthelemy

University of Miami Miller,
USA

Effects of Socioeconomic Factors on Visual Outcome and Management of Wet Age-Related Macular Degeneration Patients

Abstract:

The purpose of this non-comparative retrospective analysis is to analyze the relationship between socioeconomic status (SES) and neovascular age-related macular degeneration (nAMD) and management with anti-vascular endothelial growth factor (anti-VEGF) injections.

The study population encompassed of 1449 patients with nAMD based on stringent inclusion/exclusion criteria who received intravitreal anti-VEGF (aflibercept, bevacizumab, ranibizumab, brolucizumab, faricimab) treatments at Bascom Palmer Eye Institute between 2016–2024. Patient characteristics and best corrected visual acuity (BCVA) at baseline and most recent follow-up were recorded and compared across ethnicities and measures of SES.

Lower income was associated with poorer baseline ($p < .001$) and final ($p < .001$) BCVA. Lower baseline BCVA ($p < .001$), lower income ($p = .05$) and older age ($p < .001$) correlated with worse final BCVA, while insurance types did not ($p = .558$). Non-Hispanic patients had a higher rate of delayed injections per scheduled visit than Hispanic patients ($p = .002$). Ethnicity correlated with insurance status ($p = .008$), with Hispanics more likely to have Medicaid or commercial insurance and non-Hispanics more likely to have Medicare. Higher-income patients were more likely to receive aflibercept ($p < .001$) and faricimab ($p = .021$). Hispanics were more likely to receive bevacizumab injections compared to non-Hispanic (OR, 2.49; $p < .001$), but insurance type modified this association (OR, 3.42; $p = .010$).

This study contributes to the growing body of evidence that socioeconomic factors significantly influence visual outcomes in nAMD, more importantly identifies novel associations between anti-VEGF types and factors such as ethnicity and income level.

Biography

Normila Barthelemy, MD, is a research fellow in ophthalmology at the Bascom Palmer Eye Institute and a graduate of the Miller School of Medicine. Her research focuses on retinal diseases, including age-related macular degeneration, diabetic retinopathy, and inherited retinal disorders, as well as ocular immunology and oncology. She has experience in meta-analysis, statistical programming and has authored multiple first-author publications. She is pursuing a career in ophthalmology.

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