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2nd International Conference on

Ophthalmology and Vision Science

July 09-10, 2026 | Frankfurt, Germany

Prof.Dr. Andrea Allmendinger

Ten 23 Health, Switzerland

Intravitreal Preparations: Industry insights from Drug Product Development

Intravitreal drug delivery represents a critical therapeutic approach for treating a range of sight-threatening ocular diseases, including age-related macular degeneration and diabetic retinopathy. However, developing intravitreal parenteral preparations presents unique technical challenges that can impact drug safety, efficacy, and patient compliance. This talk will explore key issues encountered during drug product development of pre-filled syringes for ocular use, including formulation and stability challenges. The presentation will also cover the technical difficulties posed by handling and filling small-volume doses, particularly with respect to visual inspection, as well as dosing accuracy depending on fill volume. Furthermore, the selection of appropriate container closure systems will be examined, considering factors such as device performance, stability implications, and overall product quality. A case-study about particulate matter related to choosing the adequate primary packaging material for IVT use will be presented. Attendees will gain insights into overcoming the technical and regulatory hurdles associated with designing safe and effective intravitreal drug products.

Learning objectives:

- Understand technical key issues during drug product development and manufacturing of intravitreal products
- Understand key requirements for the selection of primary packaging containers related to product stability and product quality
- Understand regulatory requirements for intravitreal drug products

Biography

Prof. Dr. Andrea Allmendinger is a pharmaceutical scientist at Ten23 Health, Switzerland, with expertise in drug product development, formulation science, and pharmaceutical technology. Her work focuses on advancing innovative solutions for biopharmaceutical development and delivery.

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Dr. Lisa Brothers Arbisser

Moran Eye Clinic University of Utah adjunct professor, USA

Mastering the Posterior Capsule: Thinking out of the Bag Paradigm Shift

The anterior hyaloid membrane defines the two-chambered eye. The posterior capsule is redundant. Posterior optic capture of an intraocular lens after cataract removal controls fibrosis, eliminates secondary visual axis obscuration, allows prediction and stability of intraocular lens position, and maintains an intact anterior hyaloid for life. Hone your skills and open your mind.

Biography

Dr. Lisa Brothers Arbisser is an ophthalmologist specializing in cataract and anterior segment surgery. She is associated with Eye Surgeons Associates, USA, and has contributed extensively to clinical education, surgical innovation, and advancements in ophthalmic care. She is also involved in academic teaching and professional organizations, sharing her expertise in modern cataract surgery and eye care.

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[1]Leo Ren, [1]Drake Ren, [2]**Yi Pang**, Ph.D., O.D

1: Whitney M. Young Magnet High School
2: Illinois College of Optometry

Myopia Magnitude before, during, and after COVID-19 in children aged 3 to 17 years

Purpose

The purpose of this study was to investigate the change of myopia magnitude before, during, and after COVID-19 pandemic. In addition, myopia magnitude over the last 11 years (from 2014 to 2024) was reported.

Methods

Medical records from 2014 to 2024 in a primary eye clinic in Chicago, Illinois Eye Institute, were reviewed. Myopia was defined as the spherical equivalent (SE) ⩽ -0.50 D in the right eye. A total of 51,880 medical records of myopic children aged 3 to 18 years were qualified for this study. To determine the effect of COVID-19 on myopia magnitude, myopia magnitude in two years before (year of 2018 and 2019), during (year of 2020 and 2021) and after COVID-19 (year of 2022 and 2024) were compared using One-way ANOVA. $P < 0.05$ was considered statistically significant.

Results

There were 3430 children with myopia in 2014 with an average myopia magnitude of -2.42 ± 2.32 D, which increased to -3.02 ± 2.67 D in 2024 (n=4,505). The mean myopia magnitude was -2.59 ± 2.35 D, -2.84 ± 2.56D, and -2.93 ± 2.57 D before, during, and after COVID-19 with a statistically significant difference ($P < 0.0001$). Post-hoc analysis with Bonferroni correction revealed that myopia magnitude during COVID-19 was statistically significantly higher than that before COVID-19 ($P < 0.0001$). In addition, myopia magnitude after COVID-19 was also significantly higher than that before COVID-19 ($P < 0.0001$). However, there was no significant difference in myopia magnitude during and after COVID-19 ($P = 0.10$).

Conclusion

Our study found that the COVID-19 pandemic significantly impacted myopia in children aged 3 to 18 years with a higher myopia magnitude during and after COVID-19 pandemic compared to that before the COVID-19 pandemic.

Biography

Dr. Yi Pang is affiliated with the Illinois College of Optometry, USA. His research interests are focused on vision science, optometry, and ocular health. He contributes to advancing understanding in eye care and vision-related research through academic and scientific activities.

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Dr Ayah Ibrahim Al-Rababah, Prof. Muawyah Dawoud Al Bdour, Dr. Óscar García Espinilla

Department of Optometry, Faculty of Allied Medical Sciences, Amman Al-Ahliyya University, Amman, Jordan

Cross-Cultural Adaptation and Psychometric Validation of the Arabic Functional Vision Questionnaire for Children (FVQC-Ar)

Childhood visual impairment significantly impacts academic and social development yet validated Arabic language tools to assess functional vision in real-world settings are lacking in Jordan. This study cross culturally adapted and psychometrically validated the Arabic Functional Vision Questionnaire for Children (FVQZ-Ar) to evaluate how visually impaired students use residual vision in educational environments. Following WHO/ISPOR guidelines, the 15-item FVQC underwent forward backward translation, expert committee review and cognitive debriefing. It was administered to 67 children (aged 5-18) at a schools for the visually impaired in Jordan, Proxy respondents included teachers and parents. Data were analysed for descriptive statistics, internal consistency (Cronbach's α) and subgroup differences by optical aids use. Response completeness exceeded 98%. Mean total functional vision scores was 72.3% ± 24.1%. Domain performance varied: Distance Vision (85.2%) and Classroom Participation (78.4%) showed higher independence, while Near Vision (62.1%) and Mobility (58.7%) indicated greater challenge. Internal consistency was strong (total α = 0.89; subscales α = 0.71–0.84). Children using prescribed optical aids scored significantly higher on Near Vision tasks (p= 0.03). No floor/ceiling effects were observed in 13/15 items. The FVQC-Ar shows excellent preliminary reliability and feasibility for assessing functional vision in Arabic speaking children with visual impairment. This validated tool enables evidence based educational accommodations and low vision rehabilitation, directly supporting Jordan's inclusive education mandates and advancing reasonable paediateric eyecare in Middle East.

Keywords: functional vision, pediatric low vision, Arabic validation, questionnaire, inclusive education, Jordan

Biography

Iam an optometrist and academic researcher specialising in motion perception, psychophysics, and low vision rehabilitation. Holding a PhD in Optometry from Aston University (UK), an MSc in Low Vision Rehabilitation focusing on diabetic retinopathy from the German Jordanian University, and a BSc in Optometry from Jordan University of Science and Technology. My clinical work at the National Centre for Diabetes, Endocrinology & Genetics informs my dedication to culturally responsive eye care, functional vision tool validation, and mentoring future optometrists. Fluent in Russian Arabic and English.

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Mayu Nishimura, Daphne Maurer, and Agnes Wong

McMaster University, Hamilton, ON, Canada
The Hospital for Sick Children, Toronto, ON, Canada

Cluster-Randomized Controlled Trial of School-Based Visual Screening for Preschool Children

About 10% of preschool children have undetected visual problems such as refractive errors and strabismus, and 3-5% need treatment to prevent amblyopia. We hypothesized that offering visual screening to children aged 4-5 years would lower the prevalence of amblyopia and other visual problems. 50 high-needs schools in Toronto, Canada, were randomly assigned to screening or no screening. Children (n = 1468) 25 schools were screened using three tests (visual acuity, stereoacuity, photoscreener). 747 children (50.9%) passed screening, 551 children (37.5%) failed screening, 163 children (11.1%) were absent for screening, and 7 children (0.05%) opted out. Children who failed screening or were absent were offered a comprehensive eye exam (with cycloplegia) at school with an optometrist and it was attended by 408 (74%) students who failed screening. If glasses were needed, they were dispensed at no cost (n = 225). When the children were in Grade 2 (~1.5 years after screening), visual acuity, stereoacuity, and uncyclopleged refractive errors (with photoscreener) were assessed in all 50 schools (n = 2715 children). The prevalence of amblyopia in Grade 2 did not differ between screened schools (8.6%) and non-screened schools (7.5%), p = .10. There was also no difference in the prevalence of visual problems other than amblyopia (45.1% versus 47.1%, p = .51). However, in screened schools more children were wearing glasses (5.0% versus 3.5%, p = .05), and more children reported that they had lost or broken their glasses (8.3% versus 4.7%, p = .01). These results suggest that visual screening is effective in identifying children with previously undiagnosed visual problems. However, the benefits may not translate to better visual outcomes 1.5 years later because of other factors (e.g., delays in seeing an optometrist, no support for buying or replacing glasses, parents' (and teachers') lack of understanding about the importance of treatment, lack of treatment compliance). In addition to visual screening, strategies to mitigate these factors are necessary to improve children’s visual health.

Keywords: vision screening, refractive errors, amblyopia, health policy, pediatric vision

Biography

Dr. Mayu Nishimura is an Assistant Professor in the department of Psychology, Neuroscience & Behaviour at McMaster University, Canada. Her research interests lie in pedagogy and visual development, including face and object perception and recognition, impact of early visual experience, and the intersection of perception and cognition. She is currently a teaching-stream professor, teaching courses in developmental psychology, applied psychology, and scientific writing.

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Oculox Technologies SA, Muzzano, Switzerland

Development of a Dichoptic Chromatic Pupillometer

Chromatic pupillometry is a well-established method for assessing photoreceptor function across a wide spectrum of ophthalmic and neurological conditions. This work presents the integration of tailored light stimuli with advanced pupillary response assessments. To this end, we developed an innovative pupillometer, retinaWISE, designed to enhance pupillometric evaluations by enabling independent and simultaneous stimulation of both eyes. The system employs a dichoptic Maxwellian-view optical layout and delivers spectrally calibrated chromatic stimuli to each eye, while pupil dynamics are recorded in real-time using cameras arranged in a triangulation-based configuration. Dedicated stimulation protocols were designed and optimized to selectively activate rods, cones, and intrinsically photosensitive retinal ganglion cells (ipRGCs), while a robust pupil-tracking algorithm ensures reliable, high-quality data acquisition. The device generates chromatic stimuli via six custom LEDs covering the visible and near-infrared range (420–630 nm), provides a configurable retinal stimulation field of up to 35°, and enables adjustable retinal luminance across five orders of magnitude. Real-time pupillometry is achieved through 50 Hz imaging with 940 nm infrared illumination. Chromatic pupillometry continues to demonstrate strong potential for detecting and characterizing pupillary dysfunction associated with diverse pathologies. Ongoing clinical studies aim to validate its role in the early diagnosis and monitoring of neuro-ophthalmologic disorders. Preliminary results indicate that the combination of targeted chromatic stimulation and precise pupillary measurements offers a powerful framework for evaluating visual pathway function.

Keywords: Chromatic pupillometry, Retinal assessment, Selective Photoreceptor stimulation, Pupillary response.

Biography

Sébastien Buchwalder is the Head of Product at Oculox Technologies, where he leads the development of innovative ophthalmic diagnostic solutions. He has several years of experience in product/solution development, including roles in strategy and business development. He holds a PhD in Biomedical Engineering from the University of Bern, Switzerland, working previously on implantable barrier coatings in collaboration with industries.

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Dr. Russell Phillips

Mc Kenzie Clinic, Australia

Nutritional and environmental influences on mitochondrial function, cell signaling and chronic eye disease.

In the last 40 years a global epidemic of chronic non-communicable diseases has
emerged, driven by a combination of overconsumption of ultra-processed foods and environmental toxins. The result is alteration in metabolic and cell signalling processes leading to obesity, mitochondrial dysfunction, insulin resistance, inflammation, vascular endothelial dysfunction and dysbiosis which are the unifying factors which underlie the majority of chronic non-communicable diseases.

Common chronic ophthalmic diseases, such as age-related macular degeneration (AMD), glaucoma, and diabetic retinopathy, are the ophthalmic manifestations within the spectrum of chronic non-communicable diseases, sharing a common aetiology.

This paper aims to raise awareness of the science at a cellular level underlying chronic non-communicable eye diseases. In addition, it suggests an upstream approach to nutrition and lifestyle which offers the potential to both improve patient health and improve outcomes in the management of chronic ophthalmic and systemic non-communicable diseases. These concepts need to be given greater emphasis in medical educational curricula. The epidemic of chronic non-communicable diseases overlaps with socioeconomic and environmental pressures which governments and economies are struggling to manage.

Keywords: Diet; Mitochondria; Microbiome; Vascular endothelium; Glycocalyx; Lifestyle

Biography

Dr. Russell Phillips is a healthcare professional and researcher affiliated with the McKenzie Clinic, Australia. He is involved in clinical practice and evidence-based approaches aimed at advancing patient care and improving health outcomes. His work reflects a commitment to professional development, research, and the advancement of healthcare practices.

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Yo-Ping Huang, Thanh Trung Do

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Ordinal Plus Disease Grading for Longitudinal Assessment in Retinopathy of Prematurity

Retinopathy of prematurity (ROP) is a retinal disease affecting preterm infants, particularly those with low gestational age (⩽ 32 weeks) and low birth weight (⩽1500g), leading to visual impairment and permanent blindness when screening and treatment are not provided in time. Among the clinical signs used in ROP evaluation, plus disease is regarded as a major marker of retinal vascular abnormality severity and plays an important role in treatment decision-making. The Third International Classification of Retinopathy of Prematurity further emphasizes regression, reactivation, and the continuous spectrum of vascular abnormality from normal to plus disease, particularly in eyes undergoing laser photocoagulation or anti-vascular endothelial growth factor (anti-VEGF) injection, where longitudinal follow-up is essential before and after treatment. In established clinical grading, however, plus disease continues to be interpreted largely within the three-level annotation of normal, pre-plus, and plus. Although this ternary scheme remains clinically practical, it may not fully capture gradual vascular change, especially in borderline cases and during longitudinal assessment of treatment response. Recent advances in deep learning-based diagnostic tools have expanded the role of automated retinal image assessment in ophthalmology. Despite these developments, it remains challenging to build grading systems that preserve established clinical labels while also reflecting the ordered and continuous nature of vascular severity. This study aims to highlight a finer grading direction for plus disease in ROP by taking advantage of the strong feature representation capability of deep learning models and extending it into a multi-task learning setting. By jointly combining a categorical classification branch optimized with cross-entropy loss and an ordinal prediction branch guided by regression loss (MAE/MSE), the grading output can move beyond rigid class assignment toward a more continuous representation of disease severity. This method holds promise for enabling more clinically meaningful grading and more detailed follow-up of treatment response over time.

Keywords: ROP, fundus imaging, multitask learning, ordinal classification, plus disease

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Biography

Yo-Ping Huang (Fellow, IEEE) received the Ph.D. degree in electrical engineering from Texas Tech University, Lubbock, TX, USA. He is a Chair Professor in the Department of Electrical Engineering, National Taipei University of Technology, Taipei, Taiwan, where he served as the Secretary General. He also serves as the President of Chinese Automatic Control Society. He was the President of National Penghu University of Science and Technology, Penghu, Taiwan. He was a Professor and the Dean of Research and Development, the Dean of the College of Electrical Engineering and Computer Science, and the Department Chair with Tatung University, Taipei. His current research interests include deep learning modeling, intelligent control, machine learning, and AIoT systems design.

Dr. Huang received the FUTEX (Future Tech) Award and the Outstanding Research Award from the National Science and Technology Council, Taiwan. He is Fellows of IET, CACS, TFSA, and AAIA. He serves as the IEEE SMCS VP for Conferences and Meetings, and Chair of the IEEE SMCS Technical Committee on Intelligent Transportation Systems. He was the IEEE SMCS BoG, the President of the Taiwan Association of Systems Science and Engineering, the Chair of the IEEE SMCS Taipei Chapter, the Chair of the IEEE CIS Taipei Chapter, and the CEO of the Joint Commission of Technological and Vocational College Admission Committee, Taiwan.

Thanh Trung Do received the B.S. degree in robotics and artificial intelligence from Ho Chi Minh City University of Technology and Education, Ho Chi Minh City, Vietnam, in 2023, and is currently pursuing the M.S. degree in electrical engineering and computer science with the Department of Electrical Engineering, National Taipei University of Technology, Taipei, Taiwan. His current research focuses on medical image analysis, computer-aided diagnosis, and deep learning applications for ophthalmic diseases, with particular interest in retinal fundus image analysis for retinopathy of prematurity.

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1Oculox Technologies SA, Muzzano, Switzerland

Combined light therapy for intermediate age-related macular degeneration: the retinaSEES device

Age-related macular degeneration (AMD) represents one of the leading causes of irreversible visual impairment and blindness, particularly in individuals over the age of 50, with a prevalence of about 10% of the worldwide population. Currently, no effective treatments exist for early and intermediate AMD, creating a significant unmet clinical need. Light-based therapies are well established across various medical disciplines, and in ophthalmology, both photo-thermal and photochemical modalities have successfully addressed many eye disorders.

We present retinaSEES, an innovative ophthalmic device that addresses early pathological stage of AMD with synergistic photo-thermal and photo-biological stimulation (810-830 nm) through pre-programmed protocols. Key technical features include a non-contact design, real-time confocal scanning laser ophthalmoscopy (cSLO) for continuous retinal visualisation, and a modular architecture that enhances patient comfort and operator workflow. Advanced optical arrangements allow rapid, semi-automatic eye positioning and monitoring without the need for a Goldmann contact lens. Initial clinical experiences with e-AMD patients confirm a safe profile and promising efficacy performance, with encouraging signals in vision-related outcomes. retinaSEES introduces a novel treatment modality with the potential to achieve unprecedented clinical outcomes and establish new standards of care for early AMD intervention.

Keywords: Subthreshold Micropulse Laser (SMPL), Photobiomodulation (PBM), Low-Level Laser Therapy, light-based combination therapy, Intermediate AMD (iAMD)

Biography

Gabriella Fernandes Pires is Head of Compliance at Oculox Technologies, where she oversees regulatory affairs, quality assurance, and clinical strategies for the company's innovative ophthalmic solutions. She has a strong background in the biomedical field, with expertise in regulatory and quality management as well as clinical affairs, including oversight of clinical trial operations and coordination. She holds a PhD in Neuroscience from the University of Lausanne, Switzerland, where she previously conducted research on gene therapy for neurodegenerative and metabolic diseases.

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Amar Alwitry FRCS FRCOphth MMedLaw

Consultant Ophthalmologist and Medico-Legal Expert, Nottingham, United Kingdom

Cannula Detachment During Intraocular Surgery: An Endemic, Under-Reported and Avoidable Cause of Visual Loss – a Review of Incidence, Reporting Failure and Health-Economic Impact

Background
Cannula detachment during intraocular surgery is a recognised but poorly quantified complication in which a fine-gauge cannula attached to a Luer-lock syringe separates under hydraulic injection pressure and is propelled into the eye, causing iris trauma, posterior capsule rupture, vitreous loss, retinal detachment and, in severe cases, permanent visual loss. Despite repeated professional safety alerts, its true scale, reporting behaviour and economic cost have remained undefined. Purpose: To review the mechanism, incidence, under-reporting and health-economic impact of cannula detachment, and to examine why an apparently avoidable complication persists.

Methods
A structured review of the published literature was combined with a survey of 551 anterior segment surgeons and a health-economic analysis modelling event frequency, attributable harm, treatment costs and litigation.

Results
Of surveyed surgeons, 84% reported having experienced cannula dislodgement, 78% had witnessed resulting patient harm, 50% reported ocular damage at the most recent event, and 87% considered a dedicated safety device necessary. The complication is systematically under-reported: because neither the syringe nor the cannula individually malfunctions, the event falls between adverse-event reporting categories and is routinely misattributed to surgical technique, so few cases reach regulators or manufacturers. Health-economic modelling estimated a global burden of approximately US$204 million per year, comprising direct treatment and litigation costs, with a conservative United Kingdom burden of £6.56 million per year.

Conclusion
Cannula detachment is an endemic, under-reported and largely preventable cause of avoidable visual loss with substantial clinical and economic consequences. Recognition as a device-interface failure, improved reporting, and adoption of an effective securing solution would materially reduce patient harm.

Keywords: cannula detachment, intraocular surgery, patient safety, under-reporting, health economics, medicolegal

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Biography

Mr Amar Alwitry is a Consultant Ophthalmologist and anterior segment surgeon with a particular interest in surgical patient safety. He holds a Masters in Medical Law and is the author of the textbook Complaints, Litigation and Clinical Errors. As a medico-legal expert he has assessed more than thirty cases of serious ocular injury arising from cannula detachment. His peer-reviewed research on the prevalence and health-economic burden of this complication has been published in the Journal of Cataract & Refractive Surgery and Eye (London).

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Dr. Ismail Zaitoun

McPherson Eye Research Institute, United States

Ocular Damage in Hypoxic-Ischemic Encephalopathy

Hypoxic-ischemic encephalopathy (HIE) frequently leads to visual impairment. Post-HIE visual impairment is routinely attributed to brain injury, but direct retinal damage is rarely considered. The retina shares its blood supply with the ipsilateral hemisphere, and our research demonstrated that the retina is a primary target of hypoxic-ischemic injury. HIE causes irreversible retinal neurovascular damage, including loss of retinal vascular layers, endothelial cell and pericyte dropout, and retinal neuronal degeneration, which can occur independent of brain injury. This damage is permanent and progressive."

Biography

Dr. Ismail Zaitoun is a researcher affiliated with the McPherson Eye Research Institute, United States. His work focuses on advancing knowledge in vision science and ophthalmic research, contributing to the understanding of eye diseases and innovative approaches in ocular health. He is involved in scientific research aimed at improving diagnosis, treatment, and prevention of visual disorders.

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Julius Lin

Artificial Intelligence Technology, Inc. (AITek), USA

Multimodal Ocular Imaging Platforms: From Non-Invasive Jaundice Monitoring via Spectral-Band Expansion to Early Alzheimer's Disease Biomarker Detection

Background

Traditional diagnostics for systemic metabolic issues and neurodegenerative disorders often rely on invasive procedures or high-cost clinical infrastructure, leading to delays in early intervention. Recent breakthroughs have shown that the eye can serve as an accessible, non-invasive window into overall human health. Building upon our foundational work published in Nature, which successfully demonstrated non-invasive jaundice detection by evaluating the spectral features of the sclera, this research presents an expanded technological framework. We demonstrate how these initial biophotonic and spectral-band concepts have transitioned into a multi-modal retinal imaging platform tailored for the early detection of neurodegenerative pathologies, specifically Alzheimer's Disease (AD) and other neurodegenerative diseases.

Methods

The core methodology expands on our original image spectral-band expansion technique and direct Hyperspectral Imaging (HSI). While our primary model extracted hidden spectral data from standard ocular RGB and HSI scans to monitor hyperbilirubinemia, our evolved platform integrates deep structural and functional retinal metrics. This system fuses Optical Coherence Tomography Angiography (OCT-A), direct HSI, and traditional fundus photography. By combining these three modalities, the platform simultaneously tracks retinal layer thinning, microvascular density alterations, and specific spectral-reflectance signatures associated with early-stage neurovascular degradation.

Results

Our foundational ocular-based analysis for jaundice yielded highly accurate predictive capabilities, achieving a strong correlation with serum bilirubin levels (R^2 = 0.9880, Pearson r = 0.9945) and revealing distinctive spectral signatures between 400–1000 nm. Leveraging this high-resolution spectral infrastructure, preliminary evaluations from our integrated retinal fusion framework successfully isolated subtle biomarker changes in pre-symptomatic AD models. The combination of OCT-A and HSI mapping demonstrated clear microvascular dropouts and altered metabolic reflectance patterns in the inner retinal layers, correlating with early neurodegenerative progression before overt clinical symptoms manifest.

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Conclusion

Moving from superficial scleral profiling to multi-modal retinal tissue analysis proves the versatility of advanced optical technologies in vision science. Fusing OCT-A, HSI, and fundus imaging bridges the gap between systemic metabolic monitoring and neuro-ophthalmological screening. This scalable, non-invasive platform holds massive clinical promise for both rapid point-of-care diagnostics and early screening for complex neurodegenerative conditions like Alzheimer's disease.

Biography

Mr. Julius Lin is a prominent technology executive, clinical AI strategist, and systems architect specializing in artificial intelligence, Ubiquitous computing, mobile biophotonics, computer vision based on RGB[-IR] and HyperSpectral Imaging and neuro-ophthalmic computing networks. He serves as the Chief Executive Officer at AITek.com (Artificial Intelligence Technologies Corporation), where he directs the research and commercialization of patented, mobile-accessible hyperspectral diagnostics. Mr. Lin’s extensive industry background includes leading large-scale architectural design and hardware integration across the server(back end big data processing), mobile App., embedded software, and consumer tech sectors—pioneering core advancements in high-throughput mobile processing, and immersive AR/VR hardware ecosystems. Prior to AITek, he worked for Facebook Vision Science Lab. Mr. Lin's scientific research focuses on developing non-invasive optical screening platforms that utilize the human eye as an immediate diagnostic window into systemic and neurodegenerative health. His group's foundational work on mobile hyperbilirubinemia monitoring—which leverages a patented thirteen-channel chromatic expansion pipeline to extract high-fidelity metabolic signatures from standard smartphone camera inputs—was recently published in Nature-BioSensing. By introducing precise reference calibrations and anchoring algorithms, this technology successfully bypasses traditional laboratory hardware constraints to bring scientific-grade materials analysis to a commercial mobile footprint. Expanding on this proprietary biophotonic architecture, Mr. Lin's recent initiatives focus on building a multi-modal, five-dimensional (5D) data fusion pipeline for early neurodegenerative detection. By computationally co-registering structural, depth-resolved Optical Coherence Tomography Angiography (OCT-A) with functional Fundus Hyperspectral Imaging (HSI), his team maps subtle pre-clinical biomarkers—such as microvascular dropout, foveal avascular zone (FAZ) alterations, and distinct label-free protein transmittance profiles—deep within the retinal matrix. This highly robust, neuro-symbolic AI platform bridges the gap between hardware engineering and vision science, paving the way for accurate, label-free preclinical screening for Alzheimer’s disease at the point of care.

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Enhancing Microsurgical Skills in Aspiring Ophthalmologists: Impact of a National Training Conference

Undergraduate UK medical curricula provide minimal exposure to ophthalmic microsurgery, despite its importance for surgical training and career motivation. To address this gap, Anglia Ruskin X Bart's Ophthalmology 2025 included a dedicated microsurgical workshop. This study evaluated its impact on medical student confidence in performing suturing techniques and understanding microsurgical principles, while also comparing outcomes between pre-clinical and clinical students. Sixty-nine attending medical student completed post-workshop surveys rating confidence (5-point Likert scale) for simple interrupted, horizontal and vertical mattress sutures, as well as their general microsurgery understanding . Data was analysed using Wilcoxon Signed-Rank and Mann–Whitney U tests.Significant improvements ($p<0.001$) were observed across all domains. Confidence in simple interrupted suturing rose markedly, with many students shifting from low to high confidence. Mattress suturing, a more technically demanding technique, also showed a significant post-workshop gain, though baseline confidence was lower. Understanding of microsurgical principles demonstrated the greatest relative improvement, with the majority of students reporting strong confidence after training. No significant differences were found between pre-clinical and clinical attendees ($p>0.05$).A short, focused microsurgical workshop markedly enhanced student confidence in ophthalmic suturing and microsurgery understanding, regardless of training stage. Early structured exposure could help address curricular gaps and inspire future ophthalmologists.

Keywords: Oculoplastic, Microsurgery, Education, Confidence

Biography

Vinesh Mistry-Final-Year Medical Student, Anglia Ruskin University School of Medicine Vinesh Mistry is a final-year UK medical student at Anglia Ruskin University with a strong passion for ophthalmology and medical education. He has presented various Ophthalmology research internationally and chaired the highly regarded Anglia Ruskin X Bart's Ophthalmology Conference 2025. His research interests include artificial intelligence in ophthalmology, where he has won two national prizes. He recently completed a medical placement in retinal surgery in Los Angeles and general Ophthalmology in Vietnam. Dedicated to advancing microsurgical training and innovation, Vinesh aspires to a career in ophthalmology.

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July 09-10, 2026 | Frankfurt, Germany

Dr. Nancy Anis Kamel

MS Ain Shams University, Egypt

MEDICOLEGAL TRAPS OF PEDIATRIC OCULAR TRAUMA

Childhood eye injuries are a common occurrence and represent a major cause of acquired monocular blindness globally, carrying a heavy lifetime economic and social burden. It is essential for healthcare providers to be aware of the legal responsibilities associated with these injuries to protect patients and ensure appropriate safety measures. This presentation explores the medicolegal traps of pediatric ocular trauma, emphasizing the necessity of age-specific evaluation protocols ranging from infants to adolescents. Key medicolegal focal points include the need for objective, neutral documentation, exact timelines, and vigilance in identifying red flags for nonaccidental injuries (NAI) or abuse. Through practical mock scenarios—such as mismanaged hyphema, missed open globe injuries, and delayed referrals for pediatric endophthalmitis—the presentation highlights that poor documentation is indefensible in court. Common faults in trauma reports include incomplete patient information, inadequate history, and omission of informed consent. Ultimately, meticulous medicolegal reporting and early, aggressive management are vital; failure to document or refer appropriately can result in permanent blindness for the child and severe legal liability for the practitioner.

Keywords: functional vision, pediatric low vision, Arabic validation, questionnaire, inclusive education, Jordan

Biography

Dr. Nancy Anis Kamel holds an MS from Ain Shams University. Her work focuses heavily on the intersection of pediatric ophthalmology and medical liability, specifically addressing the medicolegal traps associated with pediatric ocular trauma. Through her expertise, she educates healthcare providers on the standards of care, proper diagnostic protocols, and the critical importance of meticulous documentation required to prevent childhood blindness and mitigate legal risks in medical practice.

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Dr. Seema Varshney

Dayalbagh Educational Institute, India

From Content-Based Image Retrieval to Ophthalmic DecisionSupport: Deep Feature Fusion and Explainable Similarity-Based Retrieval for Vision Care

Image-based decision-making is progressively getting assistance from Artificial intelligence (AI). For this purpose, it utilizes content-based image retrieval (CBIR) and explainable visual analytics techniques primarily. A deep feature fusion framework is proposed in this presentation, which is authentically originated and validated for the retrieval of Indian traditional textile motifs. This framework analyzes its potential translation to ophthalmology and vision-care applications. The proposed methodology integrates complementary deep features, extractedfrom multiple convolutional neural network architectures, to assemble a discriminative representation with the potentialto encapsulate fine-grained visual patterns, textures, and structural characteristics. Subsequently, the fused feature space is used for similarity-based retrieval, enabling recognition of visually related images in large-scale databases. When evaluating the textile motif datasets experimentally, enhanced retrieval performance is observed compared with single-network feature-extraction approaches. This confirms the effectiveness of deep feature fusion in representing complex visual information. Further, to enhance transparency and user trust, the framework incorporates similarity-based visual explanations and saliency analysis,highlighting the imageregions that contribute most to retrieval outcomes.

The current validation was performed on cultural heritage image collections; however, the underlying methodology is domain-independent and has promising applicability to ophthalmic imaging too. In particular, the retrieval of clinically similar retinal images could assist ophthalmologists in disease screening, differential diagnosis, case-based reasoning, medical education, and explainable clinical decision support. The study clearly demonstrates how advances in AI- driven image retrieval developed in one domain can be translated to healthcare settings. The capability of deep feature fusion and explainable CBIR frameworks as nurturing tools for prospective ophthalmic research and vision-care applications is highlighted throughout this study.

Biography

Dr. Seema Varshney is a research scholar at Dayalbagh Educational Institute (Deemed to be University), Agra, India. Her research interests include artificial intelligence, machine learning, image processing, pattern recognition, and the development of Indian traditional textile designs using advanced computational techniques. She has contributed to scientific publications in the areas of deep learning and computer vision.

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Green International University, Lahore, Pakistan

Comparative study between JAWS® And NVDA® in academic performance of students with visual impairment

Assistive technology (AT) plays a significant role in improving academic activities of visually impaired students. Through these ATs, visually impaired students can be empowered to engage actively in academic activities. To investigate the impact of JAWS® (job access with speech) and NVDA® (nonvisual desktop access) on the academic performance of visually impaired students. This study employed a prospective analytical design. Age-matched groups of severely visually impaired students were enrolled and divided into two groups: Group A (N = 25) received NVDA® and Group B (N = 25) received JAWS®. The MNREAD acuity chart was used to measure the reading acuity, maximum reading speed, and critical print size. In addition, a self-designed questionnaire was employed to gather qualitative data on the features of the software and the students' experiences while using it. Statistical Package for Social Science (SPSS) was used for data tabulation and analysis. An independent samples t-test was conducted to analyze the differences between variables. Furthermore, a qualitative assessment was performed using Pearson's chi-square association test to determine the association between software usage and student experience. Statistical significance was set at $p < .05$. The results revealed that NVDA® exhibited better outcomes than JAWS® in terms of improved academic activity among visually impaired students. These findings contribute to the existing literature on AT and underscore the potential of NVDA® in supporting the educational experiences of visually impaired students. Use of screen reader software not only enhanced the reading and learning experience but also promoted independence in the classroom. NVDA is the superior choice for several reasons. It caters to the individual needs of students, effectively supports their learning processes, and demonstrates a high level of appreciation among the users.

Keywords: Academic performance, JAWS®, NVDA®, screen reader software, Visual impairment

Biography

Dr. Nida Amin is an Assistant Professor and Head of the Department at Green International University, Lahore. She holds postgraduate qualifications in Optometry from The University of Faisalabad and is currently pursuing her PhD in Optometry. With over Seven years of teaching and clinical experience, her research focuses on retinal diseases, low vision, and diabetic microvascular changes. She has presented at national and international conferences, including in Paris, and serves as a reviewer for peer-reviewed journals.

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