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#86

the Ophthalmologist™

the Ophthalmologist POWER List

RISING *Stars*

Rising Stars of Retina

10 specialists reaching for new heights, advancing patient care, and making a major impact on the field

10



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The Retina Horizon

Retina's rising stars remind us that progress is not a matter of career stage, but of a willingness to keep moving the field forward

There is something inherently optimistic about the idea of a rising star. The phrase suggests promise, momentum, and the sense that the best may still be ahead.

But as this issue's **Rising Stars of Retina** feature (page 10) makes clear, "rising" does not necessarily mean early career. Several of our 10 honorees have already accumulated formidable achievements. What unites them is something more interesting: a continuing upward trajectory, and an appetite to push retina into new territory.

Reading their profiles, one is struck by how often that territory lies at the intersection of disciplines. Imaging is becoming faster and more informative. Artificial intelligence is moving from a talking point to a practical research and clinical tool. Gene and cell therapies are opening possibilities that would have seemed extraordinary not so long ago. Meanwhile, longer-acting treatments, novel molecular targets, prosthetic technologies, and increasingly sophisticated clinical trials are changing what progress in retina can look like.

Yet the feature also offers a useful counterweight to the excitement around technology.

Again and again, our Rising Stars return to patients: reducing treatment burden, preserving independence, identifying disease earlier, improving access to research, and designing outcomes that reflect what people can actually do in their daily lives. And there is the recurring thread of mentorship. The honorees regularly point to someone who opened a door, encouraged curiosity, or demonstrated what a career in ophthalmology could be. That feels particularly appropriate for a feature chosen from nominations by our Power List alumni. The future of a specialty is not built by individuals in isolation; it is handed forward, challenged, and expanded by successive generations.

The future of retina, then, is not waiting somewhere over the horizon. In laboratories, clinics, operating rooms, imaging suites, and research networks, our Rising Stars of Retina are already busy building it.

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Smartphones Spot Ocular Malignancies

Could a smartphone-based AI system bring ocular oncology screening directly into the patient's home?

A smartphone-based artificial intelligence (AI) platform could offer a new route to earlier detection of rare but potentially sight- and life-threatening ocular surface malignancies, according to a nationwide clinical trial conducted in China.

Published in JAMA Ophthalmology, the researchers developed "CaptureTumor" (CaT), an AI-powered screening system that combines smartphone photography, automated image analysis, public health outreach, and specialist referral pathways. The goal was to address a longstanding challenge in ocular oncology: the late diagnosis of ocular surface tumors, which are frequently mistaken for benign lesions and often present only after significant disease progression.

In their study, the investigators trained the deep-learning system using more than a decade of slit-lamp photographs collected from multiple ophthalmic centers before adapting the algorithm for smartphone-based image capture. The final system was deployed as a WeChat Mini Program, enabling users to photograph suspicious pigmented ocular lesions at home and receive an immediate risk assessment.

To support image quality, the app incorporated real-time guidance on lighting, focus, and framing. Users were then classified into benign or malignant categories, with high-risk cases referred for specialist evaluation.

The public-facing screening campaign reached more than 256,000 people through television, social media, internet hospitals, and community outreach. Of these, 13,243 individuals accessed the application and 614 completed the self-screening process. After quality control filtering, 535 participants were included in the final analysis.

The smartphone-based system achieved an area under the receiver operating characteristic curve (AUC) of 0.905 during prospective smartphone testing, approaching the performance of the original slit-lamp-based model (AUC 0.945). In the real-world screening cohort, performance improved further, with an AUC of 0.977, sensitivity of 89.3 percent, and specificity of 95.9%.

During the real-world screening, the platform identified 20 histopathologically confirmed malignancies, including 14 basal cell carcinomas and six malignant melanomas. Nineteen of these cases represented previously undiagnosed disease. Notably, none of the patients required enucleation or orbital exenteration at presentation, suggesting that earlier detection may have enabled intervention at a more manageable stage.

The study authors also report substantial gains in referral efficiency. Historically, patients treated surgically at the investigators' center had undergone an average of nearly four referrals before reaching definitive care. By contrast, patients identified through the app typically required only a single visit to access specialist services.

The study highlights the growing role of consumer technologies in ophthalmic screening. While AI tools have shown promise in hospital-based image analysis, relatively few have successfully transitioned into large-scale public health applications. By integrating awareness campaigns, AI-enabled self-screening, and structured referral pathways, the authors describe a "closed-loop mobile health ecosystem" that may help address disparities in access to specialist eye care.

The Gut–Eye Cataract Connection

Multiomics study reveals reduced anti-inflammatory gut metabolites and altered bacterial populations in patients with age-related cataract



Researchers in China have identified significant alterations in the gut microbiome and fecal metabolome of patients with age-related cataract (ARC), adding further evidence to the emerging concept of a "gut–eye axis" in ocular disease. The findings, published in Scientific Reports, suggest that microbiome-driven inflammatory and metabolic changes could contribute to cataract pathogenesis.

Age-related cataract remains the leading cause of blindness worldwide, affecting an estimated 95 million people. While aging is the dominant risk factor, systemic contributors such as metabolism, oxidative stress, and inflammation are increasingly recognized as important drivers of lens degeneration. Yet the mechanisms linking these systemic factors to cataract formation remain poorly understood.

To investigate whether intestinal dysbiosis may play a role, researchers from Chongqing Medical University, China, analyzed stool samples from 30 patients with ARC and 30 healthy controls using 16S rDNA sequencing, untargeted metabolomics, and targeted short-chain fatty acid (SCFA) profiling.

Although overall microbial diversity did not differ significantly between groups, patients with cataract showed a markedly more dysbiotic microbiome profile.

The metabolic consequences of these microbial shifts were also substantial. ARC patients demonstrated distinct fecal metabolomic signatures, particularly involving disruptions in glycerophospholipid and choline metabolism pathways associated with cell membrane integrity and inflammatory signaling. Researchers identified 430 metabolites that differed between cataract patients and controls, with lipid metabolites comprising the majority of significant changes.

Most notably, levels of key anti-inflammatory SCFAs – acetate, propionate, and butyrate – were significantly reduced in ARC patients. These metabolites positively correlated with the abundance of beneficial SCFA-producing bacteria, suggesting that microbial depletion directly contributed to impaired fermentation activity.

The study authors propose that this combination of altered lipid metabolism and reduced SCFA signaling may promote chronic systemic inflammation and oxidative stress, ultimately accelerating lens opacification. Reduced butyrate availability, they note, may weaken intestinal barrier integrity and permit dissemination of inflammatory mediators capable of damaging lens proteins.

The study also raises the possibility that stool-based microbial or metabolic biomarkers could eventually aid non-invasive cataract risk assessment. The researchers suggest that microbiome-targeted interventions – including dietary fiber supplementation, probiotics, or other approaches aimed at restoring SCFA production – may represent future preventive or therapeutic strategies.

Still, the study authors caution that the work remains exploratory. The cohort was relatively small, the cataract group was modestly older than controls, and the cross-sectional design prevented conclusions about causality. Nonetheless, the study represents one of the first integrated multi-omics investigations of the gut microbiome in ARC and provides further support for the growing view that ocular diseases may be influenced by systemic microbial and metabolic health.

The Hormone Link in Keratoconus

Recent paper examines estrogen's role in keratoconus



Credit: AdobeStock.com

Keratoconus is usually framed as a disease of genetics, eye rubbing, inflammation, and corneal biomechanics. But a new study suggests another factor may deserve closer attention: sex hormone imbalance.

In an Investigative Ophthalmology & Visual Science study, researchers from Tianjin Medical University Eye Hospital enrolled 15 treatment-naïve keratoconus patients and 12 age- and sex-matched controls to investigate whether estradiol and testosterone influence corneal collagen metabolism and biomechanical stability in keratoconus. Their findings point to elevated estrogen as a potential upstream driver of stromal remodeling, collagen degradation, and corneal weakening.

The study could help to explain why the disease often emerges during adolescence, and why progression can be influenced by pregnancy or hormone therapy. It also adds sex hormone–responsive matrix remodeling to the expanding keratoconus pathophysiology framework, raising potential new therapeutic targets beyond mechanical stabilization alone.

See references online

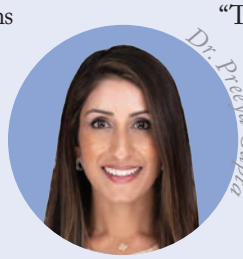
Elara 900 – Part 2: Comfort in Practice

Part 2 of a three-part series on Elara 900 explores how ergonomic design is reshaping the slit lamp experience for clinicians and patients alike.


Dr. Yuri McKee


Prof. Filomena Ribeiro


Prof. Gerd Auffarth


Dr. Preeya Gupta

In the first article of this series – "Elara 900: Clarity in Focus" – we considered how the Haag-Streit Elara 900 is encouraging clinicians to rethink what clinical observation can mean in everyday practice with its projector-based "P-Type" illumination.

But visualization is only one part of the examination experience. Slit lamp biomicroscopy is one of the most physically demanding routine tasks in ophthalmology: a repeated sequence of close visual work, fine manual adjustment, static posture, and patient positioning. Over a long clinic day, small strains can accumulate, affecting how clinicians work, how smoothly examinations run, and how sustainable daily practice feels.

The ergonomic challenge

Traditional slit lamps were built around optical performance, mechanical stability, and clinical reliability. Those features remain essential, but in practice a slit lamp is also a human interface – one that must accommodate the examiner, the patient, and the examination itself.

The ergonomics white paper underpinning this article[1] highlights the scale of the wider challenge. Published literature has repeatedly associated slit lamp work with posture-sensitive strain. In one survey, eye care providers reported neck pain more frequently than General Practitioners (GPs).[2] Another US survey found that two-thirds of ophthalmologists reported occupation-related musculoskeletal pain. Other studies have linked slit lamp posture with forward head positioning and measurable ergonomic risk.[3]

The Elara 900 was developed against this backdrop. Rather than treating ergonomics as a single feature, Haag-Streit implemented a redesigned ergonomic concept. This offers inclined oculars, centralized controls, motorized height and magnification adjustments, and a more spacious patient interface. The goal is to minimize physical stress, promote natural posture, and improve the examination experience for both examiner and patient.

Designed around the user

For Dr. Yuri McKee, an ophthalmic specialist at East Valley Ophthalmology in Mesa, Arizona, and one of the first users of Elara 900, the intent is immediately apparent. "The Elara 900 was built around ergonomics," he says, "making it easy and fast to use, and giving the surgeon more options than they've had in the past."

That idea – ease, speed, and comfort working together – runs throughout the Elara 900 design. The joystick and illumination controls have been repositioned around a centralized operating concept so that essential adjustments can be made without repeated shifts in hand position. Motorized height adjustment reduces the need for repeated manual lifting movements. Motorized magnification enables smooth changes from the joystick. And the inclined oculars support a more natural head and neck position during examination.

"The design of the Elara 900 really allows us to keep a more natural & comfortable position." – Prof. Filomena Ribeiro

Prof. Filomena Ribeiro, ophthalmologist at Hospital da Luz, Portugal, describes this as a meaningful shift in how new technology should be evaluated. "Ergonomics is a very, very important feature," she says. "The design of the Elara 900 really allows us to keep a more natural and comfortable position."

What the pilot data suggest

To assess whether this ergonomic concept translated into real-world experience, Haag-Streit compiled pre-launch pilot evaluations from multiple clinical sites, alongside an internal patient-comfort comparison. These were exploratory evaluations, but the findings were consistent: users tended to rate the Elara 900 as more comfortable and more ergonomic than conventional slit lamps.[1]

One of the clearest examiner-side signals came from Prof. Ribeiro's prospective routine-use comparison. After one month of use:

- **all 10 participants reported that the combined ergonomic redesign had either a very positive or somewhat positive effect on examiner posture,**
- **7 of the 10 participants described posture as strongly or significantly improved, while three of 10 described it as somewhat improved,**
- **8 users rated patient setup and headrest as strongly or significantly improved, with 2 of the 10 rating it as somewhat improved.**

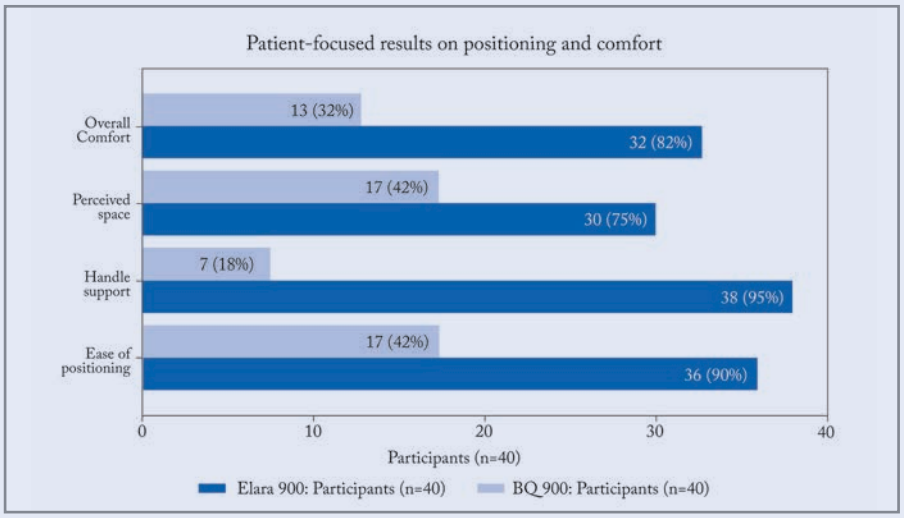


Figure 1: Positive response share by domain in the internal patient-comfort comparison. A total of 40 respondents were asked to rate the ergonomic performance of the Elara 900 & BQ 900 in four categories. Each bar shows the positive scores achieved per device. Positive responses correspond to somewhat/very comfortable, somewhat/very spacious, well/very well positioned & easy/very easy positioning.

A second dataset, from Prof. Gerd Auffarth's evaluation at Heidelberg University Hospital (Germany), supported these findings. Among 20 completed questionnaires, 70 percent of users described the Elara 900 as the more ergonomic slit lamp compared with the Haag-Streit BQ 900. The findings suggested that ergonomic improvement is not the product of a single component. It emerges from the relationship between posture, reach, control, device movement, patient positioning, and user familiarity.

Patient comfort

The ergonomics conversation often centers around the clinician, but patient positioning is central to slit lamp examination quality. If the patient is uncomfortable or poorly aligned, the examiner must compensate, which can increase strain on both sides of the instrument.

The Elara 900 addresses this through a redesigned patient interface, including a more spacious headrest, comfortable chinrest and forehead band, and optional patient handles. The aim is to create room, reduce upper-body pressure, and make it easier for patients to settle into a stable position.

As Dr. McKee notes, "Most slit lamps in the past did not take into consideration the patient position. It was always a challenge to get the patient and the doctor properly aligned."

With the Elara 900, however, the forward-canted headrest gives patients more room behind the instrument, reducing the need to bend at the waist to place the chin and forehead correctly. Once the patient is sitting upright and looking straight ahead, Dr. McKee adds, "It's much easier for me to address the patient without bending over as well."

Less strain, smoother workflow

A more comfortable examination is not only about reducing discomfort; it can also reduce friction in the workflow. When controls are easier to reach, height adjustments are motorized, magnification can be changed without breaking focus, and "preset" examination scenarios are available at a touch, the clinician spends less time managing the instrument and more time attending to the examination.

For Dr. Preeya Gupta, cornea and cataract surgeon at Triangle Eye Consultants in North Carolina, this combination is fundamental to the overall experience. She highlights the ergonomic tabletop* that allows examiners to sit closer to the slit lamp without leaning forward, the angled oculars that help minimize neck strain, and the added space for clinicians working directly at the patient's eye during procedures. "To me, that is super valuable," she says.

The same theme extends to digital "presets" and integrated imaging. Dr. Gupta describes the ability to save preferred settings and quickly switch examination modes as part of the improved experience. The value is not simply speed; it is consistency, reduced manual adjustment, and less interruption to the clinician's posture and concentration.

Feeling better, seeing better

The Elara 900's ergonomic design does not replace the fundamentals of slit lamp examination. Technique, training, positioning habits, and adaptation time still matter. But the device suggests a new direction for slit lamp design: one in which optical performance, workflow efficiency, examiner comfort, and patient experience are treated as connected parts of the same clinical encounter.

Part 1 of this series looked at what happens when illumination helps clinicians see differently. Part 2 asks what happens when the instrument itself helps clinicians work differently. The answer, from the early data and KOL experience, is that ergonomics is more than a comfort feature; it is a foundation for sustainable, efficient, patient-centered examinations – helping clinicians see more, work smarter, and feel better.

** Reliance Ergonomic Tabletop available in the US only.*

Learn more about Elara 900:

Read the full white paper:

References

1. *Elara 900 white paper series – ergonomics.*
2. *AS Kitzmann et al., "A survey study of musculoskeletal disorders among eye care physicians compared with family medicine physicians," Ophthalmology, 119, 213-20 (2012). PMID: 21925736.*
3. *SA Schechet et al., "Survey of musculoskeletal disorders among US ophthalmologists," Digit J Ophthalmol., 26, 36 (2020). PMID: 33867881.*

HAAG-STREIT USA

Look closer. See further.

Before You Say Yes

Three things to look for in an industry invitation that tell you whether it's worth accepting

By Bernie Ursell



Earlier this year, I argued that collaboration between doctors and industry can be valuable – but only when it's done properly, and that patience for the current badly-designed version of this collaboration has run out on both sides. Several clinicians came back with a fair challenge: they agreed, but then asked: 'How do I tell the difference before I've given up a theater list to find out?'

It's the practical question, and the right one to ask. Because you usually can tell. If you know how to read them, the signals are there in the invitation itself, before you commit a single hour of your time. What follows applies whether the invitation is to an advisory board, a steering committee, a paper, or a single call – the format changes, but what gives a company away doesn't.

Here's what makes this easy. A well-designed engagement and a hollow one don't necessarily look different on the day; they look different in the asking. The company that knows what it wants from you can name the question it needs answered; the company that doesn't simply cannot, because it doesn't yet know itself what question it is asking.

So, three things to look for before you reply:

First: What are you being asked to change, not just attend?
A serious engagement is there to get something the company genuinely needs – an idea tested, a question answered, input it doesn't already have. Your contribution might actually change what they do. A hollow one exists simply to fill a room: the thinking is already done, and the meeting is there to decorate it with clinical faces. The tell for this is simple. Does the invitation say what they're genuinely unsure about and what your input is actually for? If the purpose is vague or framed entirely around their product rather than around any genuine question, that vagueness is the product. A clear invitation lets you decide whether the task is worth your time. A vague one decides for you.

Second: Read what the invitation tells you against what it withholds.
A clumsy invitation – no agenda, no clear objective, the dates before the purpose – isn't just rude, it's revealing. A company that asks for your diary before it explains the question has shown its hand: it wants your attendance, not your thinking. The serious ones work the other way round. They lead with the question, because the question is the point. You can read how seriously a company takes you based on the order in which it details the invite.

Third (and this is the one that matters most): Ask what will happen afterward.
You can't know in advance whether a company will follow up. But you can ask what they intend: what will they do with the information they are given? And will I hear what came of it? How a company answers – or the discomfort the question causes – tells you most of what you need to know. Ask, because so often the answer is nothing. You give up a day, you say something useful, and then silence – no feedback on what has changed, no decision you can point to, and not even a thank-you. An engagement that vanishes the moment it ends was never about your insight; it was about your attendance and your name on the list.

None of this requires confrontation, or assuming bad faith. Most companies that send poor invitations aren't cynical; they've simply defaulted to process over design. Bad design has never cost them anything and so it persists. The compliance framework both sides experience as friction – the MedTech Europe Code's insistence on a legitimate business need, a documented purpose, an evidenced output (1) – isn't the obstacle. Read plainly, it asks for exactly what a good engagement already has: a real reason to meet, and something that comes out of that meeting. The rules aren't the problem. The effort companies put into meeting them meaningfully, rather than minimally, is.

So the practical move isn't to refuse industry, or to treat every invitation you get with suspicion. Neither side can afford that; the good collaborations are too valuable. It's to recognize that the invitation is the first thing a company tells you about how it will treat you – and to read it before you answer.

The companies worth your time have already asked themselves the questions you're putting to them, so asking them costs you nothing and clarifies the company's intent and legitimacy. And the companies that resent these questions were going to waste your time anyway.

The good ones won't mind you asking.

Bernie Ursell is Managing Partner at ArtiaCo. and a senior consultant in ophthalmology and medical communications, with over 30 years' experience working with clinicians, industry, and global eye-health organizations on education, engagement, and strategy.

Reference

1. *MedTech Europe Code of Ethical Business Practice (revised 2022, in force 2023): consulting arrangements with healthcare professionals require a legitimate business need, a written agreement, and documented deliverables.*

The Fellow Eye Is Never Just a Bystander

By Hashem Abu Serhan



Ophthalmology has traditionally trained us to think in pairs, but to treat in singles.

One eye has glaucoma; one eye has diabetic macular edema – one eye undergoes surgery; one eye receives an intravitreal injection. Even our documentation reinforces this separation: OD and OS, right and left, treated and untreated.

But my own clinical experience keeps challenging this unilateral assumption.

Over time, I have become increasingly fascinated by what many ophthalmologists quietly observe yet rarely discuss: the fellow eye often refuses to remain uninvolved.

Sometimes the signs are subtle: a patient receives unilateral anti-VEGF therapy, and the untreated eye unexpectedly improves; a glaucoma drop lowers intraocular pressure in both eyes despite being administered in only one; a surgeon notices that the second eye seems almost destined to mirror the inflammatory behavior or healing response of the first. Occasionally, this phenomenon can be dramatic, as in sympathetic ophthalmia, where trauma to one eye ignites bilateral inflammation.

Retina specialists have probably encountered the fellow eye effect more than any other specialty (1). For years, reports have described contralateral anatomical improvement following unilateral intravitreal anti-VEGF injections. Initially, these observations were easy to dismiss as coincidence or measurement variability. Yet the pattern persisted. Pharmacokinetic studies later confirmed what clinicians were already suspecting: these agents enter the systemic circulation and suppress circulating VEGF levels beyond the injected eye.

Suddenly, the concept no longer sounded anecdotal. It became biological.

This realization carries major consequences. Intravitreal therapy has long been marketed – both conceptually and practically – as a localized treatment. But if unilateral injections can influence the fellow eye, then systemic exposure is not merely theoretical. The implications extend beyond efficacy and into safety, trial design, and even how we counsel our patients.

Glaucoma provides another fascinating example. We have known for decades that topical beta-blockers can reduce IOP in the untreated eye through systemic absorption. Yet we often mention this as a pharmacologic side note rather than recognizing it as part of a broader principle: ocular interventions do not always respect ocular boundaries.

Even surgery seems to obey this mysterious bilateral logic.

Many surgeons will admit – often informally rather than academically – that the second eye frequently behaves like the first. A patient who develops exaggerated inflammation after cataract surgery in one eye may show a similar postoperative response in the fellow eye. Fibrotic tendencies, healing patterns, steroid responsiveness, and even patient tolerance often appear remarkably reproducible between eyes.

The first eye becomes more than a procedure; it becomes a preview for what might also occur in the fellow eye.

This is particularly interesting because not all of these observations can be explained purely by systemic drug absorption. Some likely involve immune pathways, while others may reflect neurogenic signaling, autonomic regulation, or central visual system adaptation. Sympathetic ophthalmia remains the most striking reminder that disturbing one eye can trigger immune consequences in the other. Meanwhile, neuro-ophthalmology and amblyopia therapy demonstrate how profoundly interconnected binocular processing truly is.

Perhaps ophthalmology has underestimated the degree to which the visual system functions as a unified network rather than two independent organs sharing a face.

What makes the fellow eye effect so compelling is that it sits at the intersection of multiple disciplines: immunology, neuroscience, pharmacology, surgery, and even psychology. It challenges reductionist thinking. We like clean anatomical divisions because they simplify treatment paradigms and clinical trial design. But biology rarely respects the convenience of our classifications.

And maybe patients understand this intuitively before we do.

My own patients will often ask whether treating one eye will help the other. Historically, many ophthalmologists instinctively answered "no," framing the eyes as separate therapeutic entities. Increasingly, however, this answer feels incomplete.

This does not mean that every unilateral intervention produces bilateral consequences. Nor does it mean all apparent fellow-eye effects are truly biological; some undoubtedly reflect behavioral factors, such as improved medication adherence or closer monitoring, but the accumulation of evidence across ophthalmology suggests something larger is occurring.

The fellow eye is not merely an observer.

As our understanding evolves, this concept may come to influence how we design future therapies, interpret unilateral treatment outcomes, and monitor systemic effects of local interventions. It may even reshape how we think about ocular disease itself. Because perhaps there is no such thing as a truly unilateral eye disease – only asymmetric manifestations within an interconnected visual system.

Reference

1. *H Abu Serhan, "The fellow eye effect," Eye (2026). https://doi.org/10.1038/s41433-026-04517-x.*

the Ophthalmologist POWER List

RISING *Stars of Retina*

Welcome to our celebration of 10 ophthalmologists whose ideas, achievements, and ambitions are helping to shape the future of the specialty. Here, "rising" does not necessarily mean someone at the beginning of their career. As you will see, several of this year's honorees already have a formidable list of accomplishments behind them. But what unites all 10 is their continuing upward trajectory – reaching for new heights, advancing patient care and making an increasingly significant impact on the field.

Read on for our Rising Star profiles.



Ajay E. Kuriyan

Associate Professor, Retina Service/Mid Atlantic Retina, Wills Eye Hospital

Sidney Kimmel Medical College, Thomas Jefferson University, Pennsylvania, USA.



There are so many exciting things happening in the retina space right now, it's hard to highlight just one aspect, says Ajay Kuriyan. But he believes that gene therapy – with "its potential for vision restoration in inherited retinal degenerations, either through targeted applications for specific genetic mutations or genotype-agnostic approaches using optogenetics" – is a great example of how the retina space is evolving. "Gene therapy offers the potential for decreasing treatment burden by inducing patients' intraocular cells to produce anti-vascular endothelial growth factor for some of our most commonly treated diseases, such as diabetic retinopathy, neovascular age-related macular degeneration, and vein occlusion," Dr. Kuriyan observes.

Over the next few years, Dr. Kuriyan's primary career goal is to work towards developing an effective medical therapy to prevent proliferative vitreoretinopathy (PVR). While a safe, effective, and well-tolerated treatment to prevent PVR remains a key unmet need in retina, he points out that Wills Eye's collaborative translational research program has "identified several promising therapeutic targets that have demonstrated efficacy in preclinical models." His team's goal now is to complete the laboratory and translational studies that are needed to advance these therapies into early-phase clinical trials.

"The opportunity to translate discoveries from the laboratory into treatments that preserve vision is what motivates and inspires my research every day," Ajay says. "I hope to complete the necessary experiments to move these agents to early clinical studies and eventually develop a treatment for PVR."

Looking to his mentors, Dr. Kuriyan thanks Steven Feldon for spurring his love of research, and credits Jean-Marie Parel – one of the most prolific inventors in ophthalmology – for teaching him "the importance of perseverance." He also points to the "outstanding faculty across all the specialties at Bascom Palmer," paying tribute to "tremendous mentors" such as Harry Flynn, Nina Berrocal, Bill Smiddy, Justin Townsend, Tom Albini, Sander Dubovy, Phil Rosenfeld, Ninel Gregori, and Janet Davis for both his clinical and surgical training. He adds: "Although I never trained with Sunil Srivastava, he has also been an important mentor to me."

"At the Retina Service of Wills Eye Hospital, I also have fantastic peer collaborators and mentors, especially Jay Sridhar and Yoshi Yonekawa, with whom I've worked closely through every stage of training and my career," Dr. Kuriyan continues. And while his former and current trainees are not his mentors, "their energy constantly inspires me and they are major contributors to so many of our research projects."

"Gene therapy offers the potential for vision restoration while reducing treatment burden."

Outside ophthalmology, Kuriyan is an avid basketball supporter and "diehard Knicks fan." He loves to spend time with his family – his wife, Tuma, and their two children, Asha and Ashish – exploring hiking trails, playing board games, and taking vacations together. "Their love, patience, and support have been the foundation of everything I've been fortunate to achieve," he says.

From the nominator: "Dr. Ajay Kuriyan has devoted his career to perfecting the latest surgical techniques and is making great strides in the lab with PVR pathogenesis on the path towards finding effective prevention treatments."

Christiana Dinah

Consultant Ophthalmologist and Director of Research and Innovation, London North West University Healthcare NHS Trust; Director, NIHR London North West Commercial Research Delivery Centre; Honorary Senior Lecturer, Imperial College London; and Chair, British & Eire Association of Medical Retina Specialists, UK

Christiana Dinah has built her career around a conviction that progress in retina should be judged not only by what clinicians can measure in the clinic, but by what patients are able to do in their everyday lives. As a medical retina specialist, she leads research in age-related macular degeneration (AMD), diabetic retinopathy (DR), and sickle cell retinopathy, with a particular emphasis on patient-centered functional outcomes, equitable access to clinical research, and improving care for underserved populations.

She also serves as Chair of the British & Eire Association of Medical Retina Specialists and has acted as Chief Investigator or Principal Investigator for more than 30 clinical trials spanning Phases 1 to 4. She also contributes to national guidance through expert roles on National Institute for Health and Care Excellence (NICE) committees, including work on diabetic retinopathy guidance and the appraisal of remote monitoring technologies for macular disease.

A common theme of Christiana's work is her determination to ensure that research reflects the realities of patients' lives. She is a strong advocate for inclusive, patient-centered trial design and for the development of outcome measures that capture more than changes on a visual acuity chart.

Christiana notes that the retina field has relied heavily on anti-VEGF therapy, while many of the underlying biological challenges of retinal disease remain unresolved. "We are currently in a holding pattern, with anti-VEGF therapies tiding us along for over two decades and various challenges keeping the field stagnant," she explains. What gives her optimism is the growing combination of advanced imaging, deeper biological understanding, and the ambition to move towards genuinely disease-modifying treatment. Rather than managing the consequences of disease indefinitely, she hopes the field can begin to intervene more directly in the mechanisms that drive progression.

"There is also increasing awareness of the need to improve functional testing and patient-reported outcomes to understand how retinal disease affects the activities that matter to people in everyday life," she explains. "The convergence of improved, potentially disease-modifying treatments with more meaningful outcome measures will give us an opportunity to design trials – and ultimately clinical services – that preserve not only letters on a chart, but independence, confidence, and quality of life."

Christiana hopes to generate evidence that can refine functional endpoints across AMD and DR, and "move beyond an overreliance on best-corrected visual acuity by validating measures that better reflect the visual demands of daily living." A second major priority is sickle cell retinopathy, where she wants to help establish consistent, high-quality care for people affected by the disease across the UK. "It is evident from the literature and inequity in access to high-quality care for people with sickle cell disease – including those living in high-income countries – that this is a disease that has been neglected for too long," she says.

Addressing that neglect will require a stronger evidence base, more consistent pathways for screening and treatment, and interventions that prevent progression before severe complications develop. Christiana is particularly concerned by models of care that respond only after retinal damage has become advanced.

Christiana's approach to research and leadership has been shaped by two particular mentors: Professors David Steel and Sobha Sivaprasad. She was inspired by Steel's "relentless clinical curiosity." Steel's lesson that influential research need not be confined to a major academic institution "has profoundly shaped my own career and my determination to build high-quality research within a district general hospital setting," she says.

As for Professor Sivaprasad, Christiana admires her intellectual openness, approachability, and willingness to acknowledge uncertainty even at the highest level of expertise. "She makes it acceptable to say, 'I don't know,' however expert you may be, and then to pursue the answer with rigor."

Away from ophthalmology, Christiana writes fiction and is fascinated by storytelling, character, and the ways people make sense of the world. She is an enthusiastic theatregoer and admirer of classic films, and says that in another life she might have become a film or theater director. She is also a keen tennis spectator, enjoying the drama of live matches.



Frank Brodie

Assistant Professor of Ophthalmology, University of California, San Francisco, USA

What is the most exciting thing happening in the retina space right now?

"The last 20 years have validated vascular endothelial growth factor (VEGF) as a key mediator in many of the diseases we treat, and we now have progressively longer-acting anti-VEGF therapies. We are seeing two parallel developments: steady-dosing agents, and the exploration of novel mechanisms beyond VEGF.

Starting with the port delivery system and continuing with bio-factory gene therapies, we can offer patients steady-state VEGF inhibition, which should reduce treatment burden and provide disease-modifying effects beyond the peak-trough kinetics of intravitreal injections. Faricimab has already shown, through its inhibition of Ang-2, the value of thinking beyond VEGF, and late-stage data from tyrosine kinase inhibition, along with early WNT pathway data, prove that multiple high-impact routes exist beyond VEGF inhibition. Alongside these new pathways, the growing power of AI models, combined with higher-resolution imaging and molecular diagnostics, will soon let us subtype "wet AMD" and target therapy far more precisely than we can today.

Another exciting area of innovation is the explosion of vision restoration therapies. Across three categories – retinal prosthesis, cell therapy, and optogenetics – we are seeing significant investment and remarkable results. I'm fortunate to be part of the PRIMA program at Science Corporation, where we have shown, for the first time, restoration of formed vision (the ability to read) with a subretinal photovoltaic implant in patients with very advanced geographic atrophy. Other groups are transplanting RPE cells into areas of macular atrophy, and late-stage trials in gene therapy and optogenetics have shown promising results."

Who have been your most important mentors?

"In medical school at UPenn, Alexander 'Sandy' Brucker took me under his wing, teaching me in the clinic and guiding me through a series of research projects. During my residency at UCSF, Eugene De Juan opened my eyes to translational research and how to develop innovative projects that could directly impact care. In my fellowship at Duke, Cindy Toth was a surgeon and clinician I tried to learn from at every opportunity. She showed me the critical relationship between a busy clinical practice and being a successful researcher and innovator, and taught me how to dive into research and engineering challenges, dissecting problems and building teams to solve them creatively.

Beyond these mentors, the person who has had the greatest influence on me, professionally and personally, is Dan Schwartz, a colleague in the retina division at UCSF and, importantly, my uncle. I grew up watching Dan develop the light adjustable lens with Bob Grubbs (Nobel laureate at Caltech), inspired by how they worked from theory to clinical trials and ultimately FDA approval – a technology now used in clinics worldwide. Dan's dedication to patient care, creativity, passion for translational work, and determination to push projects to fruition have shaped my career, personality, and life "choices."

What career goals do you want to achieve in the next five years?

"I hope to secure FDA approval for two exciting technologies I'm working on: the PRIMA subretinal implant and the LensOne prosthetic capsular bag.

PRIMA's momentum gives me confidence in that same five-year timeline. Our multicenter clinical trial, published in the New England Journal of Medicine, followed 38 patients in five countries and found meaningful vision improvement in over eighty percent of patients at one year. LensOne addresses a problem surgeons have long lacked a solution for: how to reliably fixate a secondary intraocular lens in eyes without capsule support. Our first-in-human results are promising, and the FDA has granted LensOne Breakthrough Device Designation and cleared us to begin the GOLDEN GATE pivotal trial, a multicenter study that will build the evidence base this device needs to become a standard of care.

I believe both technologies have the potential to fundamentally transform patient care and to give ophthalmologists better solutions for treating patients."





Hiroyuki Takahashi

Associate Professor, Institute of Science Tokyo, Tokyo, Japan

Hiroyuki Takahashi specializes in myopia, vitreoretinal diseases, and advanced ophthalmic imaging. After completing a retina fellowship in Tokyo, he earned his PhD in prototype widefield OCT technology and later conducted OCT research at the Massachusetts Institute of Technology (MIT) and Tufts University. His work has won the AAO Best Poster Award and the Japan Ophthalmological Society Research Award. He continues to lead clinical research using the latest OCT technologies at his institution, advancing the understanding and management of pathologic myopia and vitreoretinal disorders.

Dr. Takahashi believes that high-speed, high-resolution OCT and OCTA represent some of the most exciting advances in the field of retinal imaging. "Their capabilities extend beyond simply providing a wider field of view; by capturing dynamic changes, they can provide four-dimensional information," he says. "Representative technologies include VISTA OCTA, and I am keeping my eyes on novel biomarkers generated by these next-generation OCT and OCTA systems."

He notes that Kyoko Ohno-Matsui, Chair of the Department of Ophthalmology at Institute of Science Tokyo, has mentored him since his very first publication. "One of the most valuable lessons I have learned from her is an unwavering passion for science. Even at major international meetings such as the AAO Annual Meeting, I have seen her speak up proactively and engage openly in vigorous debate, and she continues to build trust and lasting international relationships through repeated scientific discussion. Her example has taught me that a sincere commitment to pursuing science can inspire and move others."

Dr. Takahashi also lists James Fujimoto at MIT and Nadia Waheed at Tufts University for providing him with "an unparalleled learning experience." He explains, "I worked in an environment where engineers and physician-scientists collaborated closely to address unmet clinical needs, and I witnessed how emerging technologies were evaluated in clinical settings and progressively refined toward real-world implementation."

He was also fortunate to encounter mentorship in other aspects of his life. "My uncle and cousin are Buddhist monks, and during my childhood I spent time with them at their temple every summer and winter," he says. "The most important thing was living my life according to the three Japanese tenets – obligation and duty, compassion and tolerance, and shame. In addition, the influences of the Buddhist teachings are still active in me and have urged me to help people in need."

Outside work, Dr. Takahashi enjoys spending time with his family, whether at the beach during the summer or skiing in the mountains during winter. "Tokyo also offers an abundance of outstanding seasonal foods," he says, "and I enjoy cooking and sharing meals with my family."

From the nominator: *"Dr. Hiroyuki Takahashi has extensive experience in the imaging diagnosis and surgical treatment of pathologic myopia and is well positioned to provide leadership in the development of clinical practice guidelines. He has international research experience in biomedical imaging and is capable of driving innovation in the field of ophthalmology."*

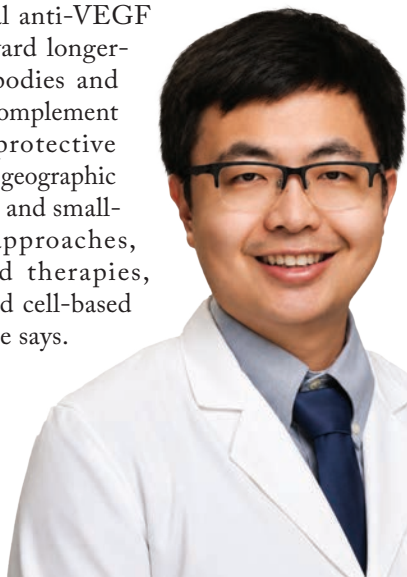
Liangbo "Linus" Shen

Vitreoretinal Surgery Fellow, Duke University School of Medicine; Incoming Assistant Professor of Ophthalmology, Retina Division, University of California, San Francisco, USA

Liangbo "Linus" Shen's career sits at the intersection of vitreoretinal surgery, engineering, retinal imaging, and artificial intelligence. As a surgeon, scientist, and inventor, he is interested not only in developing new technologies, but in ensuring that they address real clinical problems and ultimately improve the care of patients with retinal disease.

Dr. Shen's work includes the development of surgical devices, digital tools, and computational methods designed to model retinal disease progression, improve patient stratification, and strengthen the design of clinical trials in age-related macular degeneration and inherited retinal diseases. The aim is not simply to generate more data, but to extract information that can help clinicians understand which patients are at greatest risk, how their disease is likely to progress, and which treatments may be most effective.

For Dr. Shen, the most exciting development in retina is the convergence of advanced imaging, AI, and an increasingly diverse therapeutic pipeline. "Retina is moving beyond conventional anti-VEGF therapy toward longer-acting antibodies and bispecifics, complement and neuroprotective therapies for geographic atrophy, oral and small-molecule approaches, RNA-based therapies, and gene and cell-based therapies," he says.





Mark P. Breazzano

Associate Professor of Ophthalmology, Director of Vitreoretinal Fellowship Program, Flaum Eye Institute, University of Rochester Medicine, Rochester, New York, USA

In private practice, Mark Breazzano has already built up impressive experience as a high-volume retina surgeon, as well as serving previously as full-time faculty at the Johns Hopkins Wilmer Eye Institute.

After graduating cum laude from Hamilton College and magna cum laude from SUNY Upstate Medical University, Dr. Breazzano received several scholarships and was elected into Alpha Omega Alpha honor medical society, before taking on an internship at Yale University and ophthalmology residency at Vanderbilt University. While at Vanderbilt, he won both the university's inaugural Lefkovitz Discovery Award and Ophthalmology Times' First Place Resident Writer's Award. He then completed his retinal surgery fellowship at Columbia University, where he was recognized for Best Clinical Research Paper.

Throughout his career, Dr. Breazzano has been directly involved in both research and clinical trials, as well as mentorship. He holds a patent for an eyeball stabilizing device that is based on the structural framework of the Hoberman sphere – a favorite toy from his childhood – and has published over 100 peer-reviewed research articles, book chapters, and abstracts in ophthalmology and retina. He is a member of American College of Surgeons, the Retina Society, American Society of Retina, and the American Academy of Ophthalmology, as well as serving on the editorial advisory board for Ophthalmology Times.

Of the current retina landscape, Dr. Breazzano says: "There are so many exciting advancements across retina such as gene therapy, multimodal imaging, and multi-targeted immunologic therapy. I also think the large database analyses and consolidation of information is an innovative trend. This approach should help guide relationships and outcomes between diseases, old and new therapies, as well as complications and comorbidities, that were previously not possible or too nuanced. Of course, all of these facets have limitations and our collective experience should refine them over time."

During his time in ophthalmology, he has been impacted by a "list of legends and mentors far too long for this segment," but notes that it was ophthalmologist and eye pathologist, Ann Barker-Griffith, who first mentored him as a medical student when he was just beginning his foundational understanding of retinal anatomy and disease. Towards the end of his training, he also says that Stanley Chang and Larry Yannuzzi helped him to learn the big-picture approaches to retinal surgery and medical retina, respectively. "The wisdom, generosity, patience, and mentorship that they, and others in between, gave me, cannot be understated," he says. "I hope I can give back half as much to my fellows, residents, and medical students as they each provided me."

In his downtime, Dr. Breazzano enjoys hiking and biking along the Erie Canal with his wife and growing family, as well as traveling and exploring the coffee scene in new cities.

From the nominator: *"Mark is one of the most promising young vitreoretinal surgeons of his generation - a high-volume surgeon who has already published over 100 peer-reviewed papers, holds a patent, and directs a vitreoretinal fellowship. His work on endogenous candida endophthalmitis and retinal screening practices is genuinely unique in ocular infection, and his honors – from the national first place resident writer's award to an ASRS honor award and Columbia's best clinical research paper – speak to a rare combination of surgical skill, scholarship, and leadership. He has a very bright future, and the field is better for it."*

Nimesh A. Patel

Director of Pediatric Retina, Mass Eye and Ear and Massachusetts General Hospital; Director of Pediatric Retina Surgery, Boston Children's Hospital; Assistant Professor of Ophthalmology, Harvard Medical School, USA



For Nimesh A. Patel, progress in pediatric retina begins with a fundamental question: "Can care be made safer, more effective, and more individualized for every infant?"

His clinical and research work centers on developing and validating risk-stratified approaches to ROP screening and treatment. The prevailing model in many settings relies on relatively uniform screening protocols, but he believes that a more personalized approach could improve both safety and efficiency.

His work is founded on the hypothesis that infants should be screened and treated according to their individual risk profiles, rather than through a one-size-fits-all system. By identifying which infants require the closest surveillance, and which may safely begin screening later or undergo fewer examinations, clinicians could use limited resources more effectively while maintaining, or potentially improving, clinical outcomes.

This emphasis on personalization reflects a wider shift taking place throughout retina – one increasingly supported by artificial intelligence (AI).

"It might be cliché, but the most exciting, and scary, thing happening everywhere is probably artificial intelligence," Dr. Patel says. Although he describes himself as having been "late to the game," he has quickly become impressed by the technology's rapidly expanding capabilities.

Much of the attention surrounding AI has focused on future clinical applications, but Dr. Patel is currently most enthusiastic about the ways it can strengthen research and improve efficiency. Even early-generation tools, he says, can analyze large datasets accurately within minutes and turn complex findings into clear graphical representations.

AI has also begun to influence his daily organization. Dr. Patel uses AI agents to review his calendar, schedule meetings, and identify available operating room time. In one recent example, an AI tool independently edited a 45-minute surgical video into a concise four-minute version while preserving the key operative steps.

"The future of pediatric retina lies in moving beyond one-size-fits-all care toward screening and treatment tailored to each infant's individual risk."

"I have realized this is really only the beginning," he says. "It won't be long before we look back and say, 'I can't believe we used to have to do that time-consuming task ourselves.'"

Dr. Patel's priorities remain grounded in patient care, however. "I want to continue to try to be the best doctor I can be and take good care of as many patients as I can," he says.

Beyond that, his clinical and research ambitions are closely aligned. While ROP is largely preventable, retinal detachments continue to occur both nationally and internationally – Dr. Patel hopes to reduce those cases by improving screening, education, treatment strategies, and access to specialist resources.

A major part of that effort involves working with nonprofit organizations, including Orbis, Zero Blind Babies, O2 Science, and ROPGO, particularly in Africa. In many underserved areas, clinicians face limited resources, variable access to screening, and insufficient data about how the disease presents in different populations.

"There is a need to gather data to understand the different phenotypes and characteristics of the disease in underserved areas," Dr. Patel explains.

He is also interested in research supporting earlier treatment with anti-VEGF therapy. Current guidelines generally define specific thresholds for intervention, but Dr. Patel believes that treating selected infants at an earlier stage may help prevent unfavorable outcomes. Generating the evidence needed to identify which infants could benefit will be an important part of his future work.

At the same time, Dr. Patel and his collaborators are seeking to further validate algorithms that individualize screening schedules. For lower-risk infants, beginning screening later could reduce unnecessary examinations, ease pressure on healthcare systems, and allow specialist attention to be directed toward those at highest risk.

He hopes these projects will ultimately contribute to a global collaborative clinical and research network, supported by what he describes as his "superstar research fellows." Education is already a significant part of his career: he serves as Associate Fellowship Director for the Mass Eye and Ear Vitreoretinal Surgery Fellowship and Co-director of the Pediatric Retina and Ocular Oncology Fellowship at Boston Children's Hospital.

Away from the clinic and operating room, Dr. Patel enjoys traveling with his family and often brings them to professional conferences. Work, he admits, is never far away and remains "one of my main hobbies." More recently, however, he has taken up road cycling as a low-impact way to exercise, spend time outdoors, and create some distance from an otherwise demanding professional life.

Omer Trivizki

Associate Professor of Ophthalmology, Deputy Chair, Division of Ophthalmology
Director, Unit for Research and Innovation in Ophthalmology, Tel Aviv Sourasky University Medical Center - Ichilov.
Research Associate, Bascom Palmer Eye Institute, Miami, Florida, USA.
Adjunct Assistant Professor, Moran Eye Center, University of Utah, Salt Lake City, Utah, USA

Omer Trivizki's clinical and research work focuses on age-related macular degeneration (AMD), retinal imaging, geographic atrophy (GA), artificial intelligence (AI), and clinical trial development. He completed a retina fellowship at Bascom Palmer Eye Institute and maintains active international collaborations in retinal imaging, AMD research, and the development of new endpoints for retinal disease.

Dr. Trivizki is also deeply involved in innovation and early-stage clinical trials, including novel therapeutic approaches and gene therapy studies. He serves as chair of AI validation initiatives under the International Retina Imaging Society, aimed at translating research and imaging-based technologies into practical tools that can improve patient care.

For him, the most exciting change happening in the retina space is in moving from treating late disease to trying to intervene much earlier. "In AMD, especially in patients with intermediate AMD, we are finally seeing a combination of better imaging, new therapeutic approaches, genetic and molecular insights, and AI-based tools that may allow us to identify the right patient at the right time," he exclaims. "It is not just about having more injections or more drugs. The exciting part is the possibility of building a much more personalized retina clinic, where imaging, biology, function, and patient risk are integrated into real decisions."

Looking to his mentors, Dr. Trivizki says that Anat Loewenstein and Philip Rosenfeld have shaped different parts of how he works. "Anat taught me how to think big and how to build something rather than simply take part in it," he explains. "From her, I learned that leadership in medicine is not just about being a good physician, but also about creating an environment where people, ideas, clinical work, research, innovation, and industry collaboration can all join forces and move forward. Rosenfeld has probably had the most profound impact on his scientific thinking, Dr. Trivizki says. "Phil taught me how to ask questions that are simple on the surface, but clinically important and scientifically deep. He has taught me to look at a complex problem and identify the one question that really matters. That way of thinking changed the way I approach research."



"We are finally seeing a combination of better imaging, new therapeutic approaches, genetic and molecular insights, and AI-based tools."

Looking ahead, Dr. Trivizki's career goal is to help to develop Tel Aviv Medical Center into one of the leading international centers for AMD research and clinical trials. He wants to continue developing the Israeli GA Research Center and its Research and Innovation Unit into places where patients, imaging, clinical trials, AI, and industry partners are not separate worlds, but part of the same effort. "I also hope to play an active role in bringing some of the next generation of retinal treatments from clinical trials into real clinical practice," he adds. "For me, it would be especially meaningful to be part of the work that helps make a new treatment available to patients, from the early research and trial phase all the way to the point where it can change care."

On a more personal level, he also wants to continue growing as both a father and a partner to his family. "Medicine and research can easily take over so much of your life," he notes, "and one of my goals is to continue building a career that is meaningful but also leaves space for the people who matter most."

Varun Chaudhary

Professor and Academic Head, Ophthalmology, McMaster University, Hamilton, Canada; City-Wide Chief of Ophthalmology, St. Joseph's Healthcare Hamilton & Hamilton Health Sciences; President, Canadian Retina Society; Editor-in-Chief, Canadian Journal of Ophthalmology

Varun Chaudhary has built his career around a deceptively simple ambition: to create the collaborative infrastructure needed to turn promising ideas in retina into better care for patients.

His research focuses on retinal imaging, evidence generation, and the design and leadership of pragmatic international clinical trials. He has contributed to more than 160 publications and secured over $50 million in research funding, but the defining feature of his work is its emphasis on collaboration. Rather than treating research as the activity of a single laboratory or institution, Chaudhary has sought to build networks capable of answering clinically important questions across borders and healthcare systems.

To advance that goal, Dr. Chaudhary founded Retina Consultants of Hamilton, the International Retina Trials Consortium, the R.E.T.I.N.A. (Retina Evidence & Trials INternational Alliance) initiative, and the Thomas Kevill Advanced Vitreoretinal Imaging Lab. Together, these organizations reflect his belief that practice-changing advances are most likely to emerge when clinicians, researchers, engineers, methodologists, and data scientists work as part of a shared ecosystem.

This collaborative model is particularly important at a moment when several powerful technologies are beginning to converge. "Retina is entering an era where our greatest advances will come not from a single breakthrough, but from the convergence of technologies and collaboration," he says. "Artificial intelligence, advanced imaging, gene and cell therapies, and longer-acting treatments are each transforming patient care."

Although each area offers considerable promise on its own, Dr. Chaudhary believes their greatest potential will be realized when they are combined and evaluated through rigorous international research. Advanced imaging and artificial intelligence could help clinicians identify disease earlier and predict how it will progress, while emerging treatments may make it possible to tailor therapy more closely to the biology and circumstances of the individual patient.

"Their real power lies in bringing them together through international clinical research that can rapidly translate innovation into everyday practice," he explains. "I believe the future of retina is increasingly predictive, personalized, and collaborative – using imaging and AI to identify disease earlier, tailoring treatment to individual patients, and generating high-quality evidence through global research networks that improve outcomes for patients everywhere."

His approach to clinical care and leadership has been shaped by mentors at every stage of his career. His earliest influence was his older brother, also a retina specialist, who inspired his interest in the field and demonstrated the importance of perseverance, integrity, and lifelong learning.

During Dr. Chaudhary's fellowship, Wai-Ching Lam, Robert Devenyi, and Peter Kertes helped establish the clinical foundations on which his career would be built. He credits them with instilling the values of clinical excellence, sound surgical judgment, and compassionate patient care.

More recently, Charles Wykoff and Sobha Sivaprasad have inspired him through their scientific curiosity and commitment to collaborative, practice-changing research.

"Their collective influence continues to shape how I care for patients, pursue meaningful research, build collaborative teams, and mentor the next generation of retina specialists," he says.

Over the next five years, Chaudhary hopes to further strengthen the infrastructure supporting retinal innovation. Through the International Retina Trials Consortium and R.E.T.I.N.A., he aims to expand research networks that can answer meaningful clinical questions more efficiently, inclusively, and at a greater international scale.

One important initiative is INSITE-DME, an international trial intended to generate evidence that can help individualize care while reducing the treatment burden experienced by patients. Its goals reflect Dr. Chaudhary's wider philosophy: research should not only establish whether a treatment works, but also help clinicians understand how, when, and for whom it can work best.

Equally important is the development of future clinician-scientists. Dr. Chaudhary wants to create environments in which emerging retina specialists can work alongside experts from other disciplines, bringing different forms of knowledge to increasingly complex retinal diseases.

"I hope to continue to grow global collaborations that generate better evidence and better care for patients with retinal disease," he says. For Varun Chaudhary, the next era of retina will be defined not simply by the innovations the field produces, but by its ability to connect people, technologies, and evidence in pursuit of a common purpose.



Yoshihiro Yonekawa

Associate Professor of Ophthalmology,
Wills Eye Hospital / Mid Atlantic Retina
Thomas Jefferson University,
Pennsylvania, USA



Graduating from Cornell Medical College, where he received grants from the National Eye Institute and Fight for Sight and was recognized with the Edward Norton Award in Ophthalmology, Dr. Yoshihiro Yonekawa went on to undertake an ophthalmology residency at Harvard Medical School. After Harvard, Dr. Yonekawa underwent specialized fellowship training in adult and pediatric retina surgery at Associated Retinal Consultants, William Beaumont Hospital, where he received a number of prestigious national awards, including awards from the Retina Society, the Heed Ophthalmic Foundation, and the Ronald G. Michels Foundation.

Dr. Yonekawa is currently a pediatric and adult retina surgeon at Wills Eye Hospital, the current president of the Vit Buckle Society (VBS), and serves on the board of the American Society of Retina Specialists (ASRS). He has published over 450 scientific papers, editorials and book chapters focusing on vitreoretinal diseases, and serves as Assistant Editor for RETINA, Associate Editor for Graefe's Ophthalmology, Section Editor for Journal of VitreoRetinal Diseases, OSLI Retina, and Review of Ophthalmology, and on the editorial boards for JAAPOS, Retina Today, and RETINA Roundup.

Dr. Yonekawa believes it is a great time to be an investigator for novel retinal therapeutics. "Retina is leading all fields of medicine in gene and cell therapies, and that excites me the most," he says. "We will be entering a new era of medicine soon, and many patients with previously untreatable conditions can now have hope. Even closer on the horizon, and currently available, are longer-acting intravitreal treatments and implantable devices that lower treatment burden for patients with neovascular conditions. The pipeline for promising novel therapies is also extensive and hopefully many of these interventions will be approved for clinical use soon."

Looking forward, Dr. Yonekawa says he loves "waking up to go to work every morning" and hopes he will still be doing exactly what he does in his role right now: taking care of patients in clinic, repairing the retinas of both children and adults in the OR and training Wills Eye's "excellent fellows," as well as committing his after-hours time to research and editorial work in a bid to help societies advance their missions in the retina field. "The most important thing is to keep doing what we love, and opportunities will naturally arise," he adds.

Outside ophthalmology, Dr. Yonekawa spends time with his wife and four children practicing the traditional Japanese martial art of kendo (Japanese fencing). "Medical training took me away from kendo for 15 years, but I got back into it a few years ago when our children started and it's become a big part of our lives. Once or twice a week, all six of us practice together at our dojo, Cherry Hill Kenyukai, where I function as an assistant instructor. One of our most memorable kendo tournaments recently was the US kendo nationals in Las Vegas, where my wife was on the women's team for our federation, my two older boys were on the youth team, and I was on the men's team. My seven-year-old daughter just started practicing with her armor on, which is the cutest thing ever."

"Retina is leading all fields of medicine in gene and cell therapies, and that excites me the most."

From the nominator: *"Dr. Yonekawa is a highly accomplished retina specialist who is leading the charge in the advancement of pediatric retinal surgery."*



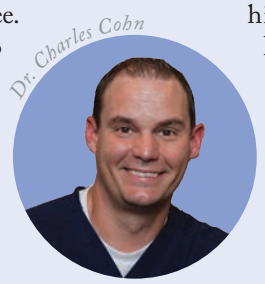
METIS 900: Precision Through Visualization

How does Haag-Streit's "surgical control center" help surgeons see more clearly, operate more comfortably, and support better surgical confidence in complex cataract and MIGS procedures? Leading surgeons Dr. Charles Cohn and Dr. Kenichiro Yamazaki weigh in.

For ophthalmic surgeons, visualization is everything. Every movement, every adjustment, and every decision in cataract or MIGS surgery depends on what the surgeon can – and cannot – see. Increasingly, surgeons are also seeking technologies that not only improve image quality but also reduce fatigue, enhance ergonomics, and support more efficient workflows for the entire OR team.



Dr. Kenichiro Yamazaki



Dr. Charles Cohn

According to surgeons using Haag-Streit's METIS 900 ophthalmic microscope, the platform is redefining what is possible in surgical visualization – and doing so across multiple dimensions simultaneously.

Dr. Charles Cohn, an ophthalmologist at Fredericksburg Eye Associates in Texas, puts it simply: "The clarity and accuracy are unmatched. I've used virtually all competitor microscopes, and prior generations of Haag-Streit, and none is better than the METIS 900. It's just stunning. You have to see it to believe it."

Dr. Kenichiro Yamazaki of Omiya Nanasato Eye Institute in Japan – the first physician in the country to evaluate and receive the METIS 900 – agrees. "With the METIS 900," he says, "fine structures remain clearly visible even at low illumination."

Seeing more, seeing better

For cataract surgeons, red reflex quality can fundamentally influence both confidence and precision. Dr. Cohn describes the METIS 900's reflex as stable regardless of eye position. "The red reflex on the METIS 900 is amazing. It doesn't matter if the eye is in the center of the view; the red reflex doesn't degrade. This reduces the number of cases that need staining with trypan blue and allows a great anterior capsulorhexis. With other microscopes, it can be hard to see fluid wave during hydrodissection, but I always see it with the METIS 900. This results in faster cases and fewer complications."

For Dr. Yamazaki, whose practice includes high volumes of multifocal IOL implantation and complex cataract cases, visualization directly affects postoperative outcomes. "With multifocal IOLs, centration of IOL fixation is known to have a greater influence on postoperative visual quality compared to monofocal IOLs. The excellent red reflex provided by the METIS 900 makes it significantly easier to assess IOL positioning, allowing for more precise centration during fixation."

The platform also extends what is surgically possible in challenging eyes. "The superior visualization of the METIS 900 allows us to confidently offer cataract surgery to patients who would otherwise present significant challenges," says Dr. Yamazaki – including those with corneal opacity or vitreous opacities such as asteroid hyalosis that would typically compromise visualization during the procedure.

The benefits of low-light surgery

A recurring theme among surgeons using the METIS 900 is its ability to maintain excellent visibility at lower illumination levels – a combination that benefits both surgeon and patient. "I find that I can operate at a lower light level than I could with any microscope before," says Dr. Cohn. "This means more comfort for the patient, especially in topical cases. With the METIS 900, that doesn't compromise the surgeon's view. The best of both worlds."

Dr. Yamazaki describes a longstanding surgical tension: brighter illumination improves visibility of fine structures, but creates problematic reflections during phacoemulsification. "With the METIS 900, fine structures remain clearly visible even at low illumination, effectively resolving this conflict."

The patient benefits are equally significant. "Lower illumination reduces the discomfort of prolonged exposure to intense light throughout the procedure," Dr. Yamazaki explains, adding that patients experience less postoperative photophobia – particularly important when the fellow eye has poor vision. There is also a direct surgical benefit: "Under high illumination, patients tend to involuntarily close their eye due to photophobia, causing eye movement or upward deviation." Reduced illumination improves fixation stability, which in turn supports smoother surgical

flow and, in high-volume settings, more consistent case progression throughout the operating day.

Customization and control

Both surgeons highlight the METIS 900's ability to adapt visualization parameters in real time – without interrupting concentration or workflow. "Corneal clarity, anterior chamber depth, and the degree of lens opacity and hardness vary considerably from case to case," says Dr. Yamazaki. "With the METIS 900, being able to adjust the depth of field and red reflex via the foot pedal to find the optimal setting for each case and each moment of the procedure allows us to achieve a quality of visualization that would not be possible with other microscopes. The ability to control these parameters without taking your eyes off the surgical field is critically important."

Dr. Cohn highlights an additional benefit of depth-of-field control: surgical video quality. "I have found that adjusting the depth of field is crucial to getting great videos. With the METIS 900, the video quality is outstanding and more closely mimics what the surgeon sees through the microscope head." That enhanced visualization extends beyond the surgeon. "The staff actually understand better what is happening during surgery since they can see so much more detail," he adds – a practical benefit in any OR environment where team awareness and communication matter.

Dr. Yamazaki's clinic takes this further, using live surgical imagery as a communication tool for patients' families. "Staff provide real-time explanations to the patient's family while displaying the surgical view from the microscope on a monitor during the procedure. The ability to display high-resolution imagery with the METIS 900 helps family members gain a more accurate understanding of what is taking place during surgery" – a capability that supports both transparency and patient confidence.

Ergonomics designed for modern surgery

Visualization defines surgical precision; ergonomics define surgical longevity. With musculoskeletal strain a well-documented occupational hazard in ophthalmology, the physical design of a microscope system matters as much as its optical performance. "The ergonomics on the METIS 900 are the best I've ever seen," says Dr. Cohn. "The electromagnetic brakes are flawless, the scope tilts to exactly where you need it, and once you know what setting you like, you can get there with the push of a button," he continues. For MIGS procedures, precise tilt control is especially valuable. "The view of the angle is what makes or breaks the surgery. I also love that there is a one-button press feature to go to exactly the tilt you want for the MIGS cases."



"The ergonomics on the METIS 900 are the best I've ever seen."
– Dr. Charles Cohn

Dr. Yamazaki highlights the system's compact footprint as a benefit in busy OR environments, improving both staff access and patient positioning. He also points to the shorter vertical body unit as a practical design detail: "When this section is long, the clearance between the surgeon's knees and the back section of the patient bed becomes restricted. The METIS 900 largely eliminates this concern."

Raising expectations

For both surgeons, the METIS 900 represents more than incremental improvement. Dr. Cohn offers a telling example – confirming IOL haptic position. "With other microscopes, I've had to manipulate the IOL to make sure it's in the bag. With the METIS 900, you can just see if the haptic is anterior or posterior to the capsular edge."

For surgeons accustomed to balancing illumination, ergonomics, visualization, and workflow demands, the METIS 900 appears to offer something increasingly rare: fewer compromises and greater control throughout the procedure.

Learn more about METIS 900

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ANTERIOR SEGMENT

Between the Snapshots: The Case for Continuous Engagement

Taking care of eye patients between visits

By Jon Olav Hunderi

A woman in her early 60s cycles home from the office through light rain. She has worn glasses and contact lenses since she was 19. A burning, gritty sensation has been building under her upper eyelid the past few weeks, coinciding with a move to a new office space. She blinks, rubs her eyes, keeps going. Her last optometry appointment was four months ago. Her next is months away. Between those two dates, her symptoms will fluctuate, worsen on some days, ease on others, and leave behind a trail of clinical data that nobody will collect.

By the time she sits in the examination chair again, what she reports will be a vague reconstruction shaped by whatever happened to be bothering her that morning. For most patients with chronic ocular conditions, this is how care works. The consultation is a snapshot in time. It only tells the clinician what the patient's eye health is like at that moment, rather than what has changed since last time. The trajectory that actually defines the disease plays out in the long gaps between these snapshot consultations, where nobody is watching. Two areas where this shows up most clearly are contact lens retention and dry eye progression.

The numbers between the chairs

UK research on contact lens retention rates puts the first-year dropout rate among new wearers at roughly one in four. Visual problems, discomfort, dryness, and handling difficulties top the list (1, 2). Most of those who discontinue never try an alternative lens type, or an adjusted wearing regime. They just go back to spectacles.

Meanwhile, dry eye disease remains one of the most diagnosed conditions across optometry and ophthalmology worldwide. It spans screen-dependent children, menopausal women with altered ocular surface chemistry, and older patients on medications that suppress mucous membrane function (3). The international consensus is that it is a chronic, multifactorial disease capable of causing corneal damage and vision loss. Patients, for the most part, treat it as a minor irritation. That mismatch between clinical reality and patient perception delays presentation, undermines adherence, and leaves a large population under-treated.

What links these two problems is that the clinically significant changes are happening outside the practice, and the care model does not reach them there – creating an avoidable gap in patient safety between visits.

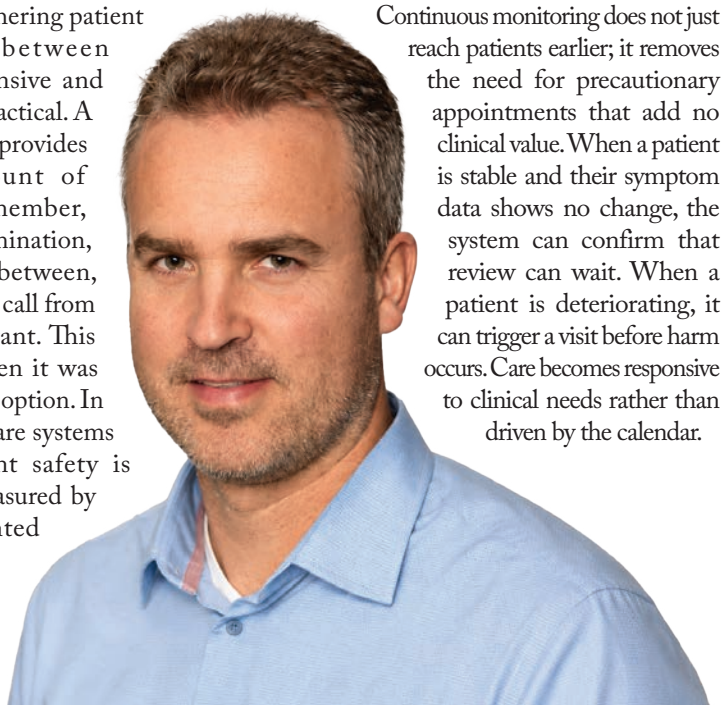
A model designed for a different era

Interval-based review was built for a time when gathering patient information between visits was expensive and logistically impractical. A patient attends, provides a verbal account of what they remember, receives an examination, and leaves. In between, perhaps a phone call from a practice assistant. This made sense when it was the only realistic option. In modern healthcare systems – where patient safety is increasingly measured by what is prevented between encounters as much as what is detected during them – this gap becomes more difficult to justify.

Nearly every other area of chronic disease management has begun incorporating continuous patient engagement in some form, whether through remote monitoring, automated follow-up protocols, or digital symptom tracking that feeds back into clinical decision-making. Cardiology and diabetes care have both moved in this direction. Respiratory medicine is doing the same. Eye care, broadly speaking, has not. It's behind the curve, and patients are the ones living with the consequences.

For example, a 32-year-old mechanic switches to contact lenses because his glasses fog up and interfere with safety goggles. Four weeks in, his right eye feels gritty by the afternoon. His vision is slightly off. He has not been back to his optometrist since his fitting. Nobody has asked how he is getting on, and he is unlikely to volunteer the information himself. He is considering giving up on lenses entirely. The discomfort is often addressable with a simple change of lens material or a different wearing schedule, sometimes just targeted lubrication (4). But the window to intervene passes without anyone knowing there was a window at all.

There is another dimension to this. Continuous monitoring does not just reach patients earlier; it removes the need for precautionary appointments that add no clinical value. When a patient is stable and their symptom data shows no change, the system can confirm that review can wait. When a patient is deteriorating, it can trigger a visit before harm occurs. Care becomes responsive to clinical needs rather than driven by the calendar.



"Continuous engagement has the potential to transform eye care from a model based on periodic snapshots into one that responds dynamically to changes in a patient's condition."

For dry eye patients, the pattern is slower but no less consequential. Symptom fluctuation with environment, season, screen exposure, and medication makes a single annual data point a poor basis for treatment decisions. Evidence-based guidelines still lack robust frameworks for adjusting therapy based on continuous symptom data (5). That gap is partly a data collection problem. We have not had the infrastructure to track what happens between visits, so our treatment models have been built without it.

Closing the gap

The point of digital follow-up is not to replace the consultation. It is to change what the clinician has in front of them before the patient walks in, and to reach the patient while the intervention can still make a difference.

In practice, it looks like this: The woman with worsening dry eyes receives a brief check-in on her phone one evening, a few structured questions from her optometrist's practice. She completes them while making tea. The system registers increasing discomfort and flags her clinician. The next morning, she gets a message acknowledging the change and offering a call or appointment. Her dry eye is now part of a monitored trajectory, rather than an isolated measurement taken twice a year.

For the mechanic, a similar check-in at week three picks up afternoon dryness and visual discomfort. He receives a tailored guide explaining what those symptoms typically indicate, what he can try at home, and when to come in. If the problem persists, an appointment is triggered automatically. He stays in the system instead of drifting out of it.

The consultation itself changes too. When each appointment begins with weeks or months of structured symptom data, the clinician's starting point is a pattern, not a patient's best recollection. Deteriorations and improvements become visible when they are actionable. Treatment adjustments can be more responsive, more personalized, and better timed. Those are gains for individual patients, but the effects compound when you apply this across a whole practice or patient population.

What continuous follow-up means at scale

Patient safety rankings increasingly reflect not just what happens in the clinic, but what happens between visits. Countries that perform well, such as Norway, have recognized that continuity of monitoring is itself a safety intervention.

Contact lens wearers who are drifting toward dropout get reached in the critical early weeks, not at a six-month review that arrives too late. Dry eye patients whose symptoms are escalating receive earlier intervention, potentially avoiding the complications that require more intensive treatment downstream. Patients who feel their care extends beyond the appointment room have less reason to disengage from the practice, and more reason to follow through on treatment.

Across a population, earlier intervention means fewer complications. Better retention means fewer lost patients. And continuous data, collected across cohorts, starts to surface patterns that fixed-interval consultations will never pick up.

The technology to support this already exists. Digital follow-up platforms can sit alongside existing patient management systems, running pre-visit questionnaires, automated symptom check-ins, clinician alerts, and tailored patient communication with minimal administrative overhead for the practice. Dry eye monitoring and contact lens retention pathways are among the most developed applications, and early deployments in partnership with major optical chains are already underway in Europe.

So, what does this look like for the patient?

Care that follows you home

The woman on her bicycle is nearly home. The rain has stopped, and thin sunlight is breaking through above the canal. In her jacket pocket, her phone holds a notification she hasn't opened yet. It is asking how her eyes have been today.

For her and millions of other patients living with chronic eye conditions, it is a few questions on a screen. But it is also what eye care starts to look like when someone is paying attention between the visits. The tools exist, and it is time we used them to close a preventable gap in patient safety between visits.

Jon Olav Hunderi, MD, PhD, Co-Founder and CEO of Medicue

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GLAUCOMA

The Neuroprotective Shift

Eugene de Juan Jr. explains why neuroprotection is gaining momentum and how emerging pathways may reshape future glaucoma care



Following his keynote speech, "Neuroprotection: The Need, The Opportunity, The Path," at Glaucoma 360 in San Francisco earlier this year, The Ophthalmologist caught up with retina specialist Eugene de Juan Jr., Jean Kelly Stock Distinguished Professor at University of California, San Francisco, to learn more about why neuroprotection is seeing such a resurgence in the glaucoma field, and where the future is heading for neuroprotective strategies for the disease.

Can you tell us about the focus of your Glaucoma 360 speech?

Despite many patients having been identified with glaucoma, and treated with various medications and surgeries to lower pressure, many of them will still progress. This explains the "need" of the keynote title. We know that pressure control is important, but it's not the whole story. As we start to need to lower the pressure more and more – for example, in normal-tension glaucoma – you have to be more and more aggressive, and so the likelihood of having issues increases.

If you think about it more globally, one medicine can handle a lot of ocular hypertension. But to get the pressure down really where it needs to go, you need two or three medicines, and patient compliance is a huge problem – especially if they're older and if they have any difficulties with memory or the physical ability to put the drops in. The current therapies are wonderful on one hand, but clearly inadequate on the other.

What kind of scientific advances have fueled this renewed interest in neuroprotection for glaucoma?

The resurgence has come from several key researchers in the field – from Johns Hopkins University, Stanford University, and other places – which have basically discovered molecules and genetic pathways that are highly protective of glaucomatous damage.

One of those pathways we're particularly focused on is the DLK/LZK (Dual Leucine Zipper Kinase/Leucine Zipper Kinase) pathway. This is a signaling pathway that's very active early on in development, and then basically is not needed. When it's activated, this pathway kills cells – and when you're growing, you have to kill almost as many cells as you make to make things work. But then, particularly in neural tissues, this is a pathway that needs to be turned off, because you don't want to kill these neural cells.

In glaucoma, this is one of the first signaling pathways that are activated when you have axonal damage at the optic nerve. The research from Johns Hopkins determined that this pathway was the primary, earliest, and strongest pathway identified with optic nerve axonal damage.

From a company standpoint, we decided to start helping the Johns Hopkins team develop this further. The company is called Perceive Pharma, and it has done animal experiments that show almost complete protection of retinal ganglion cells in the presence of this drug. We're now trying to develop it for sustained release so you don't have to use drops. You just go ahead and see the doctor, get an injection, and months later you come back and get another injection. When Derek Welsbie (now at UC San Diego) – who has been studying this for years – saw the primate results, he said he got goosebumps. It really was that dramatic.

Given that glaucoma progresses slowly, what trial designs will finally allow us to test neuroprotective strategies efficiently?

For cost and other reasons, these trials need to show improved outcomes within a year and within a reasonable number of patients. Historically, there's been no way to do that with visual fields. But now with artificial intelligence (AI), you can select a group of patients that are progressing and show that they are likely to progress because of multiple reasons, as well as where the visual field loss will be. You can be more precise and predictive in determining progression.

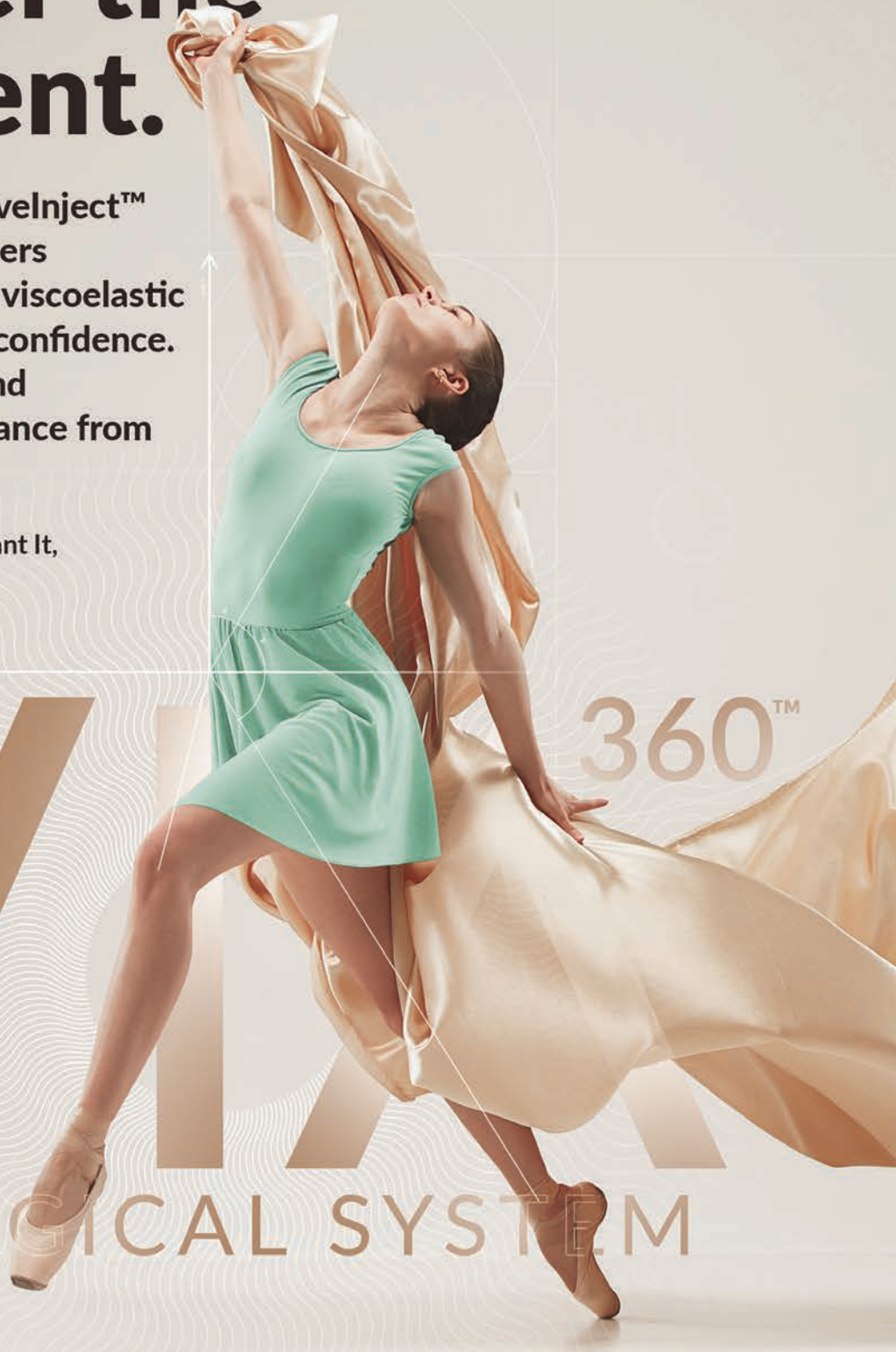
The Glaucoma Research Foundation has been investing in this research to get the experts together to identify the best patients and best protocols for visual fields. For example, in terms of imaging, OCT can now see individual ganglion cells – it's amazing. Losing a ganglion cell is not going to show up on a visual field test, it's not going to decrease your vision, and so I think this type of data will act as an important indicator for regulators but most regulatory agencies still need to show a visual benefit of the drug, not just an anatomic benefit.

In the future, I think that the regulatory agencies will say, "Well, if you lose this many ganglion cells over this period of time, then that's indicative of visual loss and we can approve this drug, depending on how safe it is." I think that'll eventually happen, but that's not today.

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Lessons from a Retina Pioneer

Sitting Down With… Joan W. Miller, David Glendenning Cogan Professor of Ophthalmology, Harvard Medical School; Retina Service, Mass Eye and Ear; Founder, Joan W. Miller AMD Research Group at Mass Eye and Ear

How and why did you become an ophthalmologist?
One of my first clerkships was in orthopedic surgery with a superb female resident, Dr. Colleen Kennedy, and I loved it. I thought about choosing orthopedics as a specialty, but I was expecting our first child and the ortho residency schedule was daunting. My intern in medicine suggested ophthalmology, as it combined medicine and surgery and was a specialty that sought to improve a patient's function and quality of life. I spent a half day in an ophthalmologist's office (Dr. Claudia Richter) and then did six months of lens research with Dr. Judy Jedziniak during the required year off from medical school after having our baby. I thought ophthalmology was a great choice and still do.

What are some of the main challenges you have faced throughout your career?
In the early 2000s, Mass Eye and Ear was struggling with leadership challenges. My mentor, Dr. Ephraim Friedman, told me that while I had been successful with my own career as a clinician scientist, it was now my time to give back to the institution, and build an environment to support young people to succeed as I had done. That was a compelling argument – I threw my hat in the ring to be Chair and was ultimately selected.

In the early days, I was terrified by the thought that if I messed up as the first woman Chair of the Harvard Medical School Department of Ophthalmology, I would set things back for women by a decade. I used to drive into work listening to "Les Mis" to psych myself up. Well, after serving as Chair for 22 years, I think I did a good job and I had the pleasure of working alongside great administrative partners and faculty leadership teams. Together, we tripled the size of the department, brought Schepens Eye Research Institute back into Mass Eye and Ear, fostered innovation and translational research, and built strong educational and training programs supported by a formal mentoring program.

Can you describe your proudest professional moments?
When I finished my training in 1991, neovascular AMD was a great unmet need and I wanted to find a better treatment. I had become interested in photodynamic therapy (PDT). PDT using Benzoporphyrin derivative (or Verteporfin) was in clinical trial for metastatic skin cancer, which meant that if I could demonstrate effectiveness in models of neovascular AMD, there would be an easier path to clinical trial.

This meant first going to Coherent, an ophthalmic laser company in California, to build a laser that could deliver the lower power laser light needed through a slit lamp to treat macular lesions with PDT. One of the early challenges was that the parameters being used for tumors necessitated very long laser application times, which were not practical when treating the macula. I decided to increase the laser irradiance even though this flew in the face of expert dogma; but eureka – it worked! Our successful experiments led to successful clinical trials, which led to regulatory approval for the first treatment for AMD. It was very exciting to be involved in the proverbial bench to bedside – going from laboratory experiments to patients, and then to clinical trials and an approved therapy that was used worldwide.

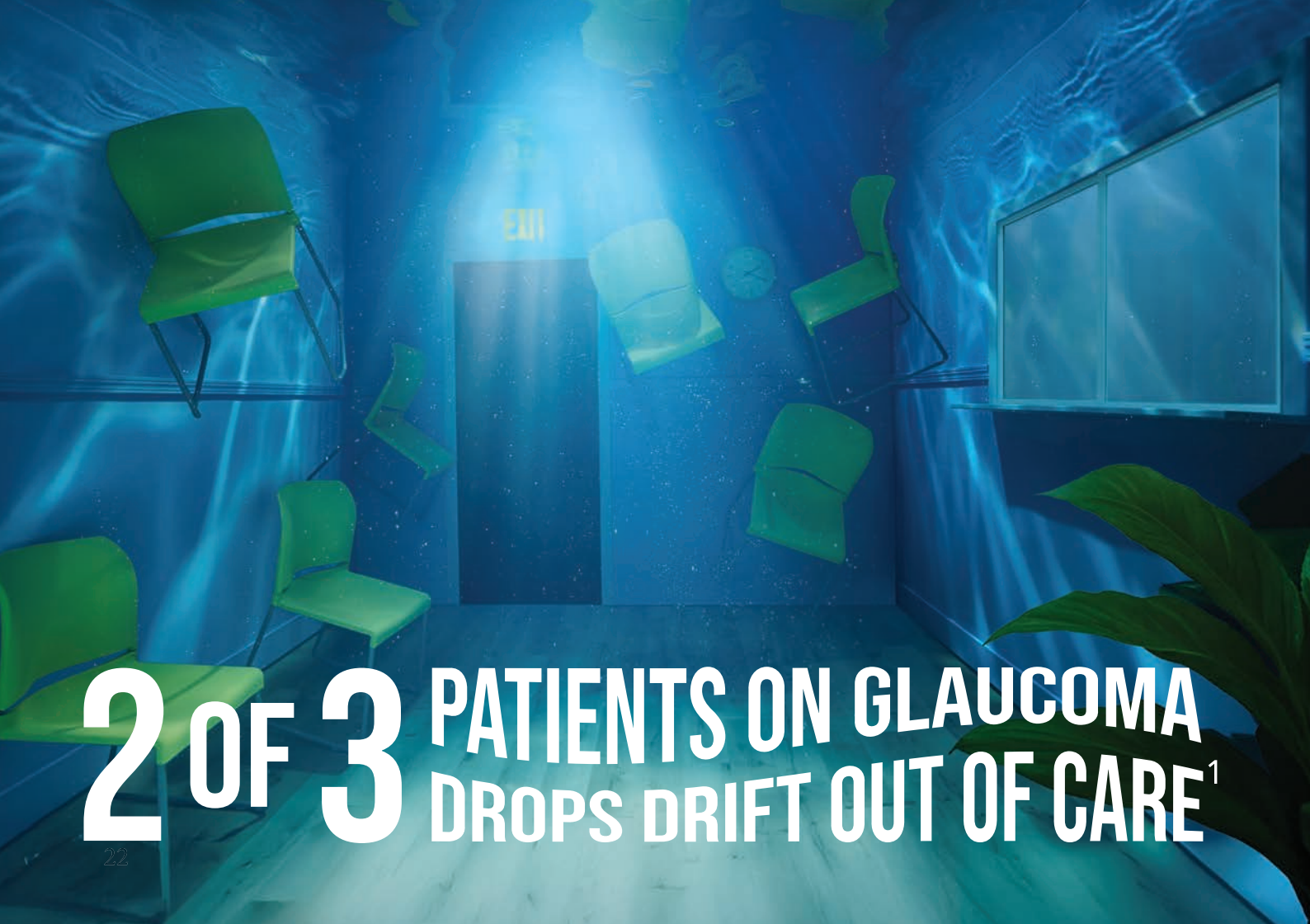
During this time, Drs. Tony Adamis, Pat D'Amore and I were also investigating the drivers of ocular angiogenesis. This work demonstrated the key role of VEGF, and led to anti-VEGF therapies that largely supplanted PDT, and are now used to treat millions of patients annually around the world. I am honored to be a part of these two very exciting stories and breakthroughs in ophthalmology.

"We have the privilege of making a huge impact in our patient's lives with our medical and surgical interventions."

What are your main interests within ophthalmology right now?
I am now working as a full-time faculty member focused primarily on research with a great group of clinician scientists: Drs. Demetrios Vavvas, Deeba Husain, John B. Miller, Ivana Kim, David Wu, and Inês Laíns.

Our group believes that early and intermediate AMD are comprised of multiple disease subtypes rather than a single disease. Each subtype is potentially driven by different mediators, ultimately culminating in the same advanced stages of the disease. We are working to better characterize these subtypes through a combination of demographics, functional testing – including quantitative contrast sensitivity and dark adaptation – metabolomics, genomics, proteomics, imaging, and developing deep learning algorithms.

Using these approaches we have been able to develop biomarkers to predict disease progression, and we anticipate that we will also uncover novel targets for treatment. Along the way, we are pursuing targets of interest already identified, including intensive lipophilic statin treatment in intermediate AMD as well as neuroprotection.



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