

# the Ophthalmologist®

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## Eye on the Horizon

Looking to the near future of  
ophthalmological advances

08

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06  
Living with TED: A  
Patient's Perspective

30  
My Choice of MIGS



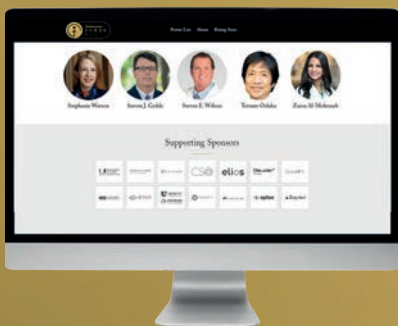
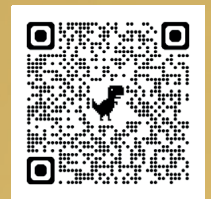


the  
**Ophthalmologist**  
**P O W E R**  
*L i s t*

## NOMINATIONS FOR 2025 *Are Now Open!*

Back for its 12th year, the Power List celebrates global ophthalmology's most impactful visionaries and leaders. Is there a mentor that the next generation couldn't do without? A surgeon who leads from the front line? Or a researcher who has achieved incredible things, overcoming all obstacles? Now is your chance to put them on a pedestal. Just head to our website, add your nominee's details to the form, and let us know why you feel they should have their place on the Power List 2025.

*Nominations Close*  
**JANUARY 31, 2025**



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*Congratulations  
on making the  
2024 Power  
List*

CHELVIN SNG



# Healing Power

*Nominations for the 2025 Ophthalmologist Power List are now open*

Our celebrated Power List will be returning next year for its 12th iteration, once again celebrating the top minds and personalities in ophthalmology. And once again we are asking you – the eye care community – to nominate those candidates you think are the most inspirational and influential leaders in the field.

2025 will see us changing things a little with the introduction of five distinct Power List categories. It's a chance to showcase the leading lights in a particular subspecialty or discipline, and open up the roll-call to names both new and well-known – researchers and practitioners, veterans and innovators.

The categories are:

1. **Cataract and Refractive** – Who is the most influential in the field of intraocular lens implantation and refractive surgery?
2. **Retina** – Who is setting and maintaining the highest standards of excellence in retina?
3. **Glaucoma** – Who is leading the global glaucoma treatment space?
4. **Innovation** – Who are the inventors and architects of technological change?
5. **Research** – Who is playing a critical role in advancing our understanding of eye diseases?

Do you have a strong feeling about who is driving us forward in one or more of these areas? Now is your chance to put them on a pedestal...

*Nominations will close on January 31, 2025 See further information at: [top.txp.to/power/list/25/nominate](http://top.txp.to/power/list/25/nominate)*

**Julian Upton,**  
*Group Editor*




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## Redressing Representation

*New JAMA Ophthalmology study highlights under-representation of racial and ethnic minorities in pediatric clinical trials*

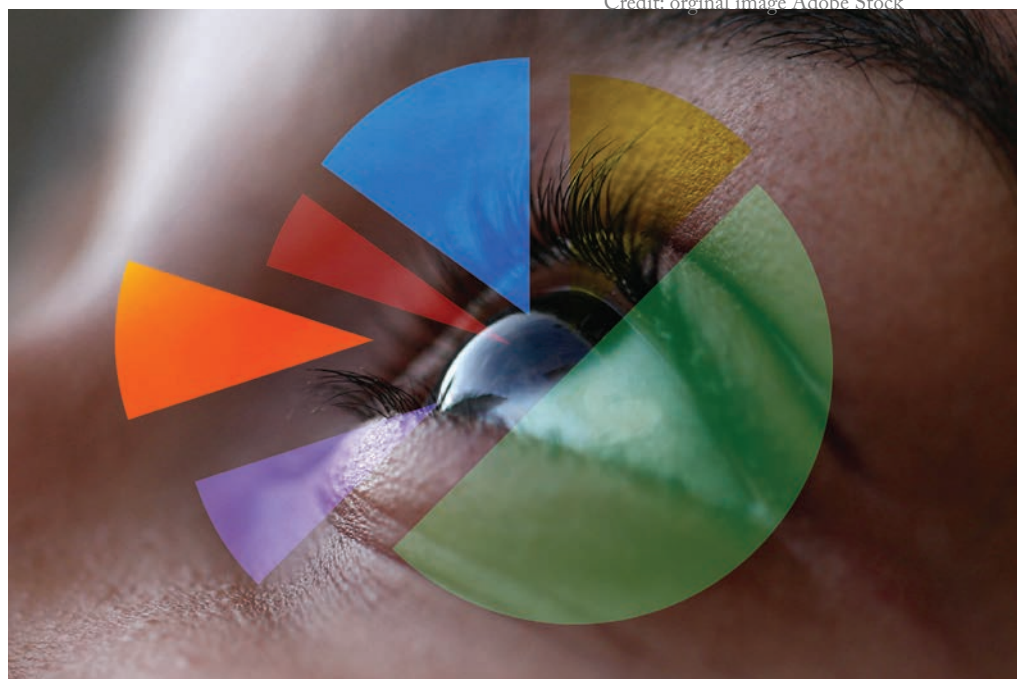
The under-representation of racial and ethnic minorities in clinical studies has been well-documented in existing literature; as recently as 2022, a report funded by the National Institutes of Health highlighted the continued lack of representation of these groups, existing “across numerous fields of medical research,” including cardiovascular, oncology, surgical trials, and ophthalmology (1).

The same issue affects pediatric ophthalmology, with a new JAMA Ophthalmology paper, “Race, Ethnicity, and Sex in Pediatric Eye Disease Investigator Group Clinical Studies,” revealing “a long-standing under-representation of Black, Asian, and Hispanic patients in PEDIG [Pediatric Eye Disease Investigator Group] studies,” says author Muhammad Z. Chauhan.

Chauhan and his team conducted a cross-section study of 41 completed PEDIG clinical trials involving 11,658 participants between 1997 to 2022. The researchers were primarily concerned with looking at how these trials reflected racial, ethnic, and gender representation in pediatric ophthalmology, and whether the trial participants accurately reflected the US pediatric population as reported in the 2010 US Census.

Using a 1-sample Wilcoxon rank test to compare results, the authors revealed that white participants were significantly over-represented in these clinical studies, whereas their Black, Hispanic, and Asian counterparts were underrepresented.

Specifically, the enrollment-census



Credit: original image Adobe Stock

difference (ECD) – “defined as the difference between groups’ median enrollment percentage and percentage representation in the 2010 US Census” (2) – showed a 19 percentage over-representation of white participants, with Hispanic, Black, and Asian participants being underrepresented by 9 percent, 7 percent, and 3 percent respectively.

Given these results, the study recommends implementing changes in trial recruitment practices (e.g., “identifying and improving existing biases in recruiting” and incorporating enrollment limits based on disease prevalence).

Meanwhile, several interventions in PEDIG have already been implemented to better engage under-represented pediatric populations, notes co-author Abdelrahman M. Elhusseiny. “These include expanding access to enrollment materials in languages other than English, partnering with trusted healthcare providers who are well-established within communities and can advocate for PEDIG, and the creation of a dedicated committee to actively promote equity, diversity, and inclusion in study enrollment.” These initiatives have already begun to yield measurable improvements,

notes Chauhan. “Notably, within just a short span of two years, we saw a marked increase in Hispanic patient enrollment, highlighting the positive impact of these efforts.”

The researchers believe there is still much work to be done within the space, however. “Advocating for expanded ophthalmology services in rural and socioeconomically underserved regions is essential,” adds co-author Qais A. Dihan. In addition, Dihan says that the socioeconomic barriers preventing families from participating in these clinical trials – such as transportation and flexibility of scheduling – also need to be addressed if we are to “resolve underlying issues that contribute to, and perpetuate, a cycle of inequitable care in underserved regions.”

### References

1. K Bibbins-Domingo, A Helman (Editors), *Improving Representation in Clinical Trials and Research: Building Research Equity for Women and Underrepresented Groups*, National Academies Press: 2022. PMID: 36137057.
2. QA Dihan et al., “Race, Ethnicity, and Sex in Pediatric Eye Disease Investigator Group Clinical Studies,” *JAMA Ophthalmology*, [Online ahead of print] (2024). PMID: 39235786.



## Through the Lens

Acrylic on canvas painting by Donjeta Decani, an ophthalmology resident at the University Clinical Center, Pristina, Kosovo.

Credit: Donjeta Decani <https://www.instagram.com/donjetadecaniartist/>

### QUOTE of the month

*“On the track, my blurred vision made it difficult to accurately judge the distance between hurdles. To compensate for this impairment, I developed a rhythmic approach, counting my steps to maintain pace and calculate when to leave the ground before each hurdle.”*

Gail Devers, nine-time World Champion and three-time Olympic gold medalist in track and field, discussing the impact thyroid eye disease (TED) had on her athletics career (See page 6).

## A New Vision for Alzheimer’s Detection

*Examining the future role of retinal imaging in diagnosing and monitoring Alzheimer’s disease*



A recent study has looked into the emerging role of the retina as a diagnostic tool for Alzheimer’s disease (AD) (1), exploring how the retina mirrors some pathological hallmarks of the disease, including amyloid  $\beta$ -protein ( $A\beta$ ) deposits, tau protein abnormalities, and neurodegeneration. Additionally, the study underscores the presence of inflammation and glial activation, emphasizing the retina’s vulnerability to AD’s neurodegenerative processes.

Advanced imaging techniques – such as OCT-angiography and hyperspectral imaging – are capable of detecting AD-specific retinal changes in vivo. In the future these technologies may become vital in clinical assessments, offering a non-invasive and cost-effective approach to early screening for AD. With more research, the authors are hopeful that standardized retinal imaging could revolutionize how the disease is diagnosed, making it possible to intervene earlier in the disease.

See references online at: [top.txp.to/vision/for/alzheimers/detection](http://top.txp.to/vision/for/alzheimers/detection)

## Living with TED: My Race from Patient to Advocate

*How thyroid eye disease (TED) put my life and olympic career on hold*

By Gail Devers

As the reigning American record holder in the 100-meter hurdles, going into the 1988 Olympics I should have been poised for success on the world stage. But instead of winning gold, I ran slower than I ever had before, and I could never expect what more was to come.

In the lead up to the Olympics and the months afterward, my health began deteriorating, which eventually forced me to abandon training and put my dreams on hold. I was experiencing weight loss, hair loss, fatigue, and various other symptoms, yet my doctors had no answers for me. At home, I started covering up all my mirrors in the house, because the reflection looking back at me was not me.

I stopped doing the things I loved, felt less independent, and withdrew from social life. I stopped going out of my house. All of this took a serious toll on my mental health.

During this time, I also began experiencing issues with my eyes – pain, redness and eye bulging – but again, it seemed no one could give me an answer.

As an athlete, I know my body, and I knew that something was seriously wrong. These issues began a more than two-year quest to find some answers. After a continuous battle to find out exactly what was wrong with me, I was eventually diagnosed with Graves' disease, an autoimmune condition that causes overactive thyroid, also known as hyperthyroidism.

Receiving this diagnosis came as an utter



relief, because at least now I understood what I was up against and could start taking steps to manage the disease.

But my story doesn't end there – despite managing my Graves' disease, I was still experiencing significant eye problems.

My eyes were constantly irritated, painful, and bulging outward, making it difficult to close them completely, even when I was sleeping. The glare from oncoming headlights made nighttime driving a challenge for years. On the track, my blurred vision made it difficult to accurately judge the distance between hurdles. To compensate for this impairment, I developed a rhythmic approach to the hurdles, counting my steps to maintain pace and calculate when to leave the ground before each hurdle.

It took 30 years for me and my doctors to understand that my eye problems were a separate – but related – condition called thyroid eye disease (TED).

TED is a debilitating and progressive autoimmune disorder where the immune system mistakenly attacks the muscle and fat tissue behind the eyes. Around 40 percent of Graves' disease patients go on to develop TED, but the condition requires a different treatment regime.

While I wish I had all these answers 30 years ago, I'm glad I finally have them now. My best advice to those living with thyroid conditions like Graves' disease is to speak up and advocate for yourself. You should

feel confident discussing any changes in your eyes or vision with your doctor, and be sure to stress the impact those symptoms may be having on your daily life.

As for my advice to doctors: you need to ensure that you are proactively discussing the risk of TED with your Graves' patients, and referring those patients to a specialist if it's needed. TED is progressive, meaning that it often gets worse with time, so early intervention is key when it comes to managing the disease.

Through my journey with TED, I've become passionate about raising awareness and advocating for improved care. By sharing my story, I hope to empower others to seek help and find their voice so they can self-advocate for better health outcomes and continue reaching for the stars and pursuing their dreams, whether that be olympic gold or, simply, a better quality of life when living with a visual impairment.

*Gail Devers is a five-time Olympian, nine-time World Champion and three-time Olympic gold medalist in track and field who was one of the fastest women alive for almost two decades. Amid this unprecedented feat, Gail has also been living with Graves' disease and Thyroid Eye Disease (TED) for more than 30 years. Today, Gail enjoys volunteering and giving back to the community through organizations that include The Boys and Girls Clubs of America and the Atlanta Track Club.*

# The 10 Commandments of Advertising for Vision Correction Clinics

*Rules to help you create campaigns that drive results and grow your practice*

By Rod Solar is Director of Practice Development at LiveseySolar, London, UK and a Scalable Business Advisor

In 20 years, I've learned what works in advertising for vision correction clinics. My team and I have spent over \$10,000,000 across my clients' accounts, testing countless tactics. We've seen the good, the bad, and the ugly, and now I want to share the key lessons we've learned. If you're starting or scaling, these 10 advertising rules will help guide you in creating campaigns that drive results and grow your practice.

## 1. Thou shalt say what only you can say

Your practice's story is unique. For example, "We've helped 10,000 people reach 20/20 vision without glasses and contact lenses." Mine: "Our average client's practice grew by 213 percent within three years." This is your proof of expertise. No one can copy it.

## 2. Thou shalt evoke emotions

Stock photos and formal, technical writing kills emotion. Show actual patients, real results, and the human side of your clinic. Highlight their journey from fear to freedom. Your advertising needs to make people feel, not just see.



## 3. Thou shalt collect testimonials

Every time a patient says something positive, make it a testimonial – video if possible. User-generated content (UGC) builds trust. Patients are more likely to connect with a real person's story than a polished advertisement.

## 4. Thou shalt focus on one message per ad

Clarity beats cleverness. Choose one messaging bucket per ad: proof, dream transformation, results, or a direct pitch. Each ad should focus on a single idea. Trying to do too much confuses your audience.

## 5. Thou shalt always have a reason why

Every offer should explain its reason. "We're offering free consultations to make vision correction more accessible." The "why" humanizes your business and adds credibility to the offer.

## 6. Thou shalt own your flaws

Admit a minor flaw, then pivot to something better. For example, say, "We're not the cheapest, but we deliver results that last a lifetime." This builds trust by showing honesty.

## 7. Thou shalt spend 80 percent of your time on your headline and hook

The headline and first line of your ad need to hook your audience. Use the Value Equation: create irresistible value in the first few seconds. For example, "Get clear vision in under 20 minutes – with zero downtime."

## 8. Thou shalt have an irresistible offer

Your offer should make it impossible to say no. Guarantee results or a risk-free trial: "Book a consultation. If we can't help, we'll refund you."

## 9. Thou shalt write at a third-grade reading level

Simplicity wins. Your prospects don't want to think; they want answers. Write as you speak. Use short sentences and simple words. Tools like Hemingway can help you keep it simple.

## 10. Thou shalt have congruence through the entire funnel

From the ad to the landing page, to the consultation, everything should match. If your messaging shifts halfway, you lose trust. Keep the tone, offer, and experience consistent from start to finish.

*The free LiveseySolar practice marketing assessment is available at: [top.txp.to/vision/correction/clinics](http://top.txp.to/vision/correction/clinics)*

# *Looking Ahead:* Ophthalmology of the Near Future

*Our annual exploration of  
some of the cutting-edge  
technologies and therapies  
destined to shape the future  
of the ophthalmic space*

By Alun  
Evans



Artificial intelligence, machine learning, personalized healthcare, targeted therapeutics – these are among the advances we’ve been hearing about for many years, if not decades. But there comes a point where what started out as a vision, a concept, or a prediction, starts to “come true.” That is, it evolves into an affordable and manageable practicality. And when this occurs, we finally see this idea being adopted not just by pioneers, but emerging as a tool or procedure for everyday use.

Similarly, robotic-assisted surgery, smart contact lenses, and gene therapy are all terms we’ve long been aware of. But as we outline here, these technologies and advances could soon be crossing the Rubicon, and moving from an eye care professional’s “wish list” to part of their daily reality.

## ROBOTIC - ASSISTED SURGERY

Robotic-assisted surgery can present an array of benefits for a number of procedures in the operating room. The types of systems currently available can offer greater precision beyond the capabilities of human hands, no matter how experienced the surgeon. In turn, this greater precision for complex maneuvers results in less invasive operations, causing less trauma for the patient and, generally speaking, better outcomes all round.

Recognized as one of the mainstays of robot-assisted surgery, the da Vinci System (1) – developed by American biotech firm, Intuitive Surgery, for use in general surgery and other medical fields, such as cardiology, gynecology, and prostate removals, uses three or four robotic arms controlled from a central console by the surgeon. The system can perform a variety of tasks, such as holding objects and controlling 3D cameras, as well as imitating surgical instruments like Bovie’s and scalpels. However, while the current iteration of the system, the da Vinci Xi, has become the most commonly used robotic surgery system in the world, the system itself has never been marketed as a device to be used specifically for ophthalmology. Criticisms of the da Vinci also include its difficulty to learn how to operate, its use of proprietary software which can’t be modified by physicians, and its hefty \$2 million price tag, which puts it out of reach of many public institutions.

Considering these factors, a team at the Laboratory for Computational Sensing and Robotics (LCSR) at John Hopkins University have developed an ophthalmic-centric robotic device, the Steady-Hand Eye Robot.

*“The types of robot-assisted surgery systems currently available can offer precision beyond the capabilities of human hands, no matter how experienced the surgeon.”*

Now in its third iteration (2), the SHER 3.0’s main function is assisting ophthalmologists in vitreoretinal surgery, more specifically in delivering subretinal injections.

The SHER 3.0 “eliminates the physiological hand tremor (around 180  $\mu$ m)” of physicians, says Iulian Iordachita, director of the Advanced Medical Instrumentation and Robotics (AMIRo) Research Lab at John Hopkins, so as to “provide the necessary positioning accuracy at the tooltip, and keep the needle tip steady inside the tissue during the cargo delivery.” Compared to previous iterations, explains Iordachita, the “3.0 has better ergonomics, is more responsive to control commands, and, more generally, is closer to a clinical grade device.”

Similar to other robotic systems aimed specifically at retinal surgery, the SHER 3.0 can also assist with retinal vein cannulation. And in terms of the training required for surgeons to use such a device in clinical practice, Iordachita says that, “as a cooperative controlled robot, SHER 3.0 is a very intuitive device to work with. In our preliminary tests, a beginner could reach the learning curve plateau after 25-30 trials.”

However, Iordachita and his team believe that the current generation is not quite ready for FDA preapprovals. “It may take at least another iteration to fulfill the requirements,” he says. “Generally, we know what must be done to move forward, but as an academic research lab we can’t support this effort. We need to work with a company to go through the whole process. With the proper budget (and expertise) it should be possible to get it approved for the market in 2-3 years.”




In order for robotic-assisted surgery to become an established cornerstone of ophthalmology, as with any other medical technology practitioners need to first embrace these devices in order to render them more widely available. If it is adopted by ophthalmologists, then this technology – further supported by artificial intelligence and the potential for surgeons to perform operations remotely – could help to provide urgent medical services to those patients most in need, as well as mitigating the risks associated with manual surgery.

## SMART CONTACT LENSES

The evolution of smart contact lenses (SCLs) and their potential uses are being accelerated by a number of major players in the industry, including quite a few names not usually linked to

ophthalmology: Google, Samsung, Sony, etc. These household names are currently experimenting with everything from augmented reality (AR) and virtual reality (VR) add-ons, to how the next generation of SCLs might be able to record visual data.

There are also a number of more immediately recognizable companies in the ophthalmic space – Alcon, RaayonNova, Sensimed, Medella Health, and Innovega – who are investing in research and development in the SCL arena. Unsurprisingly, these companies are less interested in the media and entertainment prospects of SCLs, and focused more specifically on the healthcare potentials of the technology. Monitoring of intraocular (IOL) pressure and glucose levels, automated drug elution, diabetic retinopathy (DR) treatments, and eye tracking using electrooculography (in order to aid vision therapy) have all been proposed as research candidates for future SCL inclusion.



*“It is not yet evident whether any of the additions to existing smart contact lens technology – as novel and exciting as they may sound – will endure through the initial novelty phase....”*

While Alcon’s initial foray into the SCL world – a collaboration with Google and its Verily Life Sciences division on a glucose-monitoring lens project – was put on indefinite hold in 2018, the Swiss-American medical device company remains involved in projects investigating how smart intraocular lenses might be used in cataract surgery and vision correction. RaayonNova successfully submitted a patent for their SCL featuring an AR/VR smart lens with peripheral and focused vision in May 2022.

Meanwhile, another Swiss medical technology company, Sensimed, has concentrated its focus on glaucoma management. Its flagship product, the Sensimed Triggerfish, a silicone-based soft contact lens, can be used to monitor IOL fluctuations in glaucoma patients over a 24-hour period. Approved by the FDA back in March 2016, the device provides insights into ocular volume changes throughout the day and night, helping guide glaucoma treatments for the physician.

Providing an alternative to the finger-prick tests associated with glucose monitoring, Medella Health is continuing work on SCLs that include embedded biosensors that can monitor glucose levels in tear fluid. According to Medella Health, the lenses will be able to transmit near-real-time data to an external mobile device.

In terms of drug delivery potential for SLCs, in 2022 the FDA passed phase III trials for Johnson & Johnson Vision Care’s Acuvue Theravision, a daily disposable etafilcon contact lens infused with ketotifen. The product was made available in Canada, but Johnson & Johnson have ultimately decided to discontinue the lens from December 28, 2024. Meanwhile, Innovega’s iOptik system combines SLCs with a pair of specialized glasses to create a wide field of view for AR/VR experiences. The soft disposable lenses – when paired with the specialized glasses – allow wearers to experience digital content projected “directly on the retina.”

There are a number of barriers routinely cited in bringing SLCs to market: biocompatibility, regulatory approval, and cost-effectiveness. Notably, Mojo Vision’s research into an immersive AR prototype contact lens (the Mojo Lens) was canceled at the beginning of 2023 due to lack of funding, with CEO Drew Parkins citing “extremely tight capital markets” and a “slumping global economy” as reasons for the discontinuation (3).

The research into SLCs continues to evolve, bringing more capabilities and potential to this form of wearable technology. And while several SLCs are already commercially available, such as the Sensimed Triggerfish (currently in use in some UK hospitals as part of their research studies), it remains to be seen how widespread the adoption will be of such technology. It’s also not yet evident whether any of the additions to existing SCL technology – as novel and exciting as they may sound in print – will endure through the initial novelty phase, presenting them as long-term, viable alternatives to smart glasses in the healthcare and entertainment sectors.

*“The approval of the RPE65 gene mutation treatment has led to an increase in clinical trials exploring gene therapy treatments for both inherited and non-hereditary retinal diseases...”*

## GENE THERAPY

Gene therapy represents a unique method for how ophthalmologists might treat – as well as prevent – inherited retinal diseases (IRDs) and other vision disorders such as glaucoma and corneal neovascularization. But as the literature attests, currently the retina is where gene therapies might prove most beneficial. Indeed, as Selina Drag et al. note in their 2023 IOVS study, the light-sensitive layer of tissue “holds the distinction as the first tissue targeted by an approved gene therapy for inherited disorders in the United States” (4).

“The first ophthalmic gene therapy was approved by the FDA in 2017,” Vice President of Emerging Therapies at Cardinal Health, Fran Gregory, told *The Ophthalmologist*. Gregory was referring to the approval of Luxturna (voretigene neparvovec-rzyl), a therapy used to treat retinal dystrophy.

Since the 2017 FDA approval of Luxturna, various companies have sought to make further headway into the ophthalmic gene therapy space. These include innovative candidates such as GenSight Biologics’ light-stimulating goggles (GS030-MD), which, when combined with its AAV2-based gene therapy (GS030-DP), aim at enhancing visual restoration in end-stage retinitis pigmentosa (RP) patients. Then there is Adverum’s clinical-stage gene therapy, Ixoberogene soroparvovec (Ixo-vec, formerly referred to as ADVM-022), which is currently in phase II trials for wet age-related macular degeneration (AMD).

SparingVision – a biotechnology company based in Paris – is working on SPVN06, a gene therapy treatment with mid-stage RP as its primary disease target. The FDA cleared SPVN06’s Investigational New Drug application (IND) in December 2022.

SparingVision has stated its gene therapy candidate could potentially address over 80 genetic mutations of RP; the company also announced its intentions to extend trials of SPVN06 to geographic atrophy (GA) (5). “PRODYGY is the phase I/II clinical trial of SPVN06 in patients with moderate-to-severe RP,” says Stéphane Boissel, President and CEO of SparingVision. “The trial has since completed step one of patient recruitment. We are now preparing transition to the controlled, randomized extension phase of the trial aimed to take place in Q4 2024.”

“SPVN06 aims to slow or stop cone photoreceptor degeneration, regardless of the disorder’s genetic cause. This not only allows reaching a larger cohort of RP patients... [but also] offers a larger window of intervention over the

“SPVN06 aims to slow or stop cone photoreceptor degeneration, regardless of the disorder’s genetic cause. This not only allows reaching a larger cohort of RP patients... [but also] offers a larger window of intervention over the

course of the disease, as cone photoreceptors degenerate later than rod photoreceptors,” explains Boissel. “This approach can also be expanded beyond inherited retinal diseases, to other more prevalent conditions such as dry age-related macular degeneration (AMD) or geographic atrophy (GA), which are also linked to cone photoreceptor degeneration.”

Aside from Luxturna, no other gene therapies for ocular conditions have yet received FDA backing. However, the 2017 approval of the RPE65 gene mutation treatment has motivated other companies, leading to an increase over the last few years in clinical trials exploring gene therapy treatments for both inherited retinal diseases and non-hereditary ocular conditions. As Fran Gregory noted at the beginning of 2024, “With at least 25 treatments in phase I-III clinical trials, the advanced medicine pipeline is full of potential treatments for ocular conditions. The excitement for gene therapy is palpable, and for patients with genetic or inherited ocular conditions who have never before had treatment options, the future is promising.”

“The ocular field has seen incredible progress with genomic medicines in recent years, notably with the approval of Luxturna, but single-gene correction or single technology

approaches are not enough,” Boissel adds. “We firmly believe that to transform the treatment of retinal disease, you need a multi-technology approach. At SparingVision, we are pioneering the treatment of blinding retinal diseases through a suite of gene-agnostic gene therapies, as well CRISPR-based products, with a view to providing treatment to large patient populations.”

#### References

1. *Mirrorworld*, “No More Mojo: Start Up Cancels AR Contact Lens,” (2023). Available at: <https://bit.ly/3YPqwrzr>
2. *Intuitive Surgical*, “Robotic-assisted Surgery with da Vinci systems” (2024). Available at: <https://bit.ly/3YMo7Wu>
3. *A Alamdar et al.*, “Steady-Hand Eye Robot 3.0: Optimization and Benchmark Evaluation for Subretinal Injection,” *IEEE Trans Med Robot Bionics*, 6, 135 (2023). PMID: 38304756.
4. *S Drag et al.*, “Gene Therapy for Retinal Degenerative Diseases: Progress, Challenges, and Future Directions,” *Invest Ophthalmol Vis Sci*, 64, 39 (2023). PMID: 37389545.
5. *SparingVision*, “SparingVision Reaches Final Dose Escalation Step in PRODYGY Trial with SPVN06 for retinitis pigmentosa” (2024). Available at: <https://bit.ly/3YN12CP>.

Utpal Sarkar, Disha Eye Hospitals, India

And the  
winner is...

“SLIT LAMP IMAGING  
COMPETITION 2024”

Congratulations to Utpal Sarkar, from Disha Eye Hospitals, India, who was awarded first place.



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<https://haag-streit.com/winners-2024>



Look closer. See further.

## Breaking Barriers on Presbyopia Correcting Surgery

*Experts discuss the success and effectiveness of Alcon's PanOptix, Vivity, and Clareon IOLs*

The incredible proliferation of intraocular lens (IOL) implants continues to gather speed around the world – an Alcon IOL, for example, is implanted in an eye every four seconds. However, there are still some misconceptions around cataract surgery that can confuse patients and surgeons alike (1).

This was the theme of a seminar hosted by Canada's Ike Ahmed, MD, FRCSC, for a packed audience of cataract and refractive surgeons at this year's ESCRS Congress in Barcelona, Spain (6-10 September, 2024). Featuring expert contributions from the US and Europe, "Breaking Barriers on Presbyopia Correcting Surgery" sought to highlight the reasons for choosing one presbyopia-correcting intraocular lens (PC-IOL) over another, clarify the classification of different IOLs, and most importantly, emphasize the importance of clearly communicating the value and benefits of particular IOLs to patients.

### PanOptix

The patient communication issue was underscored by an audience poll that showed that a key challenge regarding PC-IOL utilization was the "lack of time to educate patients and involve them in the decision-making process." Addressing this point, Satish Modi, MD, FRCSC, a surgeon in private practice in Poughkeepsie, New York, highlighted the importance of really getting to know one's patients and their daily needs before educating them on IOLs. Some well-informed patients come to the

ophthalmologist's office with strong, preconceived ideas about IOLs, so the surgeon needs to "un-educate them and then re-educate them," he observed. And it's not just vital that patients know about all the options available to them – e.g., monofocal, trifocal, EDOF – but that the surgeons themselves have a thorough knowledge of what is available and what different IOLs can do.

For example, in terms of addressing visual disturbances, especially severe disturbances, Modi pointed to a recent study showing that the trifocal AcrySof® PanOptix® IOL demonstrated a higher percentage of patients not experiencing or not at all bothered by visual disturbances of starbursts and glare compared to the extended depth of focus (EDOF)/multifocal TECNIS Synergy IOL ( $p < 0.05$ ). Additionally, results in patients bilaterally implanted with the PanOptix and Synergy IOLs also indicated that the PanOptix provides a similar range of vision compared to the Synergy from distance to near (33 cm) under photopic and mesopic conditions(2).

### Vivity

Discussing EDOF lenses specifically, Sarah Maling, MD, Pediatric Ophthalmology and Strabismus Lead and Joint Lead for Cataracts at Buckinghamshire Healthcare NHS Trust, presented cases for "turning the page" on EDOF. Based on her experience with Vivity® lenses, Dr. Maling said, "There are times now when you should be thinking about EDOF when perhaps you wouldn't have done in the past." She highlighted that surgeons should help patients understand what a starburst or a halo is, for example, and understand what their vision is going to be like after surgery. Echoing Dr. Modi's point, she added that the surgeon needs to know what their patients do every day – their hobbies, their activities, their requirements – in order to best prepare them for the outcome.

Dr. Maling highlighted two cases where she successfully implanted Vivity lenses in unilateral cases: a 76-year-old man with

reduced vision and a 28-year-old man with a left cataract. She explained that EDOF lenses are not "only for people with perfect eyes." Thanks to Vivity's wavefront-shaping technology, "even patients with some degree of ocular pathology can achieve excellent outcomes." Dr. Maling pointed out that a growing body of research supports using EDOF lenses instead of monofocals in these cases. For her, Vivity represents a significant advancement in presbyopia correction for a broader range of patients. "It is a 'REAL' EDOF lens," she observed – in this case, REAL standing for (3):

- Revolutionary wavefront-shaping X-Wave™ technology ("which means it works")
- Extended range of vision (these cases showing "excellent distance, intermediate and functional near vision")
- ANSI and ISO standards (which the Vivity "meets and exceeds"), and
- Low rate of visual disturbance.

### Clareon monofocal and toric

Edoardo Ligabue, MD, Chief of the Cataract and Refractive Department at the Centro Diagnostico Italiano in Milan, Italy, outlined options available to ophthalmologists when a presbyopia-correcting IOL is not an option – for example, with patients with severe dry eye disease, severe maculopathy, and irregular or ectatic cornea. In such cases, Dr. Ligabue recommended choosing a monofocal IOL such as Clareon®. Citing a recent study by Micheletti et al., Dr. Ligabue noted that there was no significant difference observed in the range of vision between Clareon and the TECNIS Eyhance monofocal IOL. This was a non-interventional, examiner masked comparative study (n=155 per group) on binocular visual acuities at distance and intermediate. In this study, non-inferiority (1 EDTRS line) was confirmed with step down statistical analysis of multiple visual acuities. He pointed to a further prospective, evaluator-masked study (Blehm and Hall) showing that Clareon IOL can provide stable refraction, excellent distance vision,

and range of vision postoperatively that was consistent with the Micheletti et al. findings (4-7).

Sharing a surgical case of a patient implanted with Clareon toric, Dr. Ligabue also pointed out that Clareon toric provides the same benefits as Clareon monofocal in terms of consistent visual outcomes, with the addition of astigmatism correction (7).

Like Dr. Modi and Dr. Maling, Dr. Ligabue emphasized the importance of patient communication. To help convey this information to patients, Dr. Ligabue recommended using the Alcon Smart Educator. Patients who are looking for consistent, excellent intermediate vision should consider a PC-IOL instead (4,5).

Concluding the seminar, Dr. Ahmed thanked the speakers for “addressing some of the challenges around PC-IOL lenses and clearing up some of the classifications.” He added: “Between Vivity, PanOptix, and Clareon, I think we have a wide variety of options to serve the vast majority of our patients.”

#### Important Product Information - Clareon® Family of IOLs

**CAUTION:** Federal law restricts these devices to sale by or on the order of a physician.

**INDICATION:** The family of Clareon® intraocular lenses (IOLs) includes the Clareon® Aspheric Hydrophobic Acrylic and Clareon® Aspheric Toric IOLs, the Clareon® PanOptix® Trifocal Hydrophobic IOL, Clareon® PanOptix® Toric, Clareon® Vivity™ Extended Vision Hydrophobic Posterior Chamber IOL and Clareon® Vivity™ Toric IOLs. Each of these IOLs is indicated for visual correction of aphakia in adult patients following cataract surgery. In addition, the Clareon® Toric IOLs are indicated to correct pre-existing corneal astigmatism at the time of cataract surgery. The Clareon® PanOptix® lens mitigates the effects of presbyopia by providing improved intermediate and near visual acuity, while maintaining comparable distance visual acuity with a reduced need for eyeglasses, compared to a monofocal IOL. The Clareon® Vivity™ lens mitigates the effects of presbyopia by providing an extended depth of focus. Compared to an aspheric monofocal IOL, the lens provides improved intermediate and near visual acuity, while maintaining comparable

distance visual acuity. All of these IOLs are intended for placement in the capsular bag.

#### WARNINGS/PRECAUTIONS:

General cautions for all Clareon® IOLs: Careful preoperative evaluation and sound clinical judgment should be used by the surgeon to decide the risk/benefit ratio before implanting any IOL in a patient with any of the conditions described in the Directions for Use that accompany each IOL. Physicians should target emmetropia, and ensure that IOL centration is achieved.

For the Clareon® Aspheric Toric, PanOptix® Toric and Vivity™ Toric IOLs, the lens should not be implanted if the posterior capsule is ruptured, if the zonules are damaged, or if a primary posterior capsulotomy is planned. Rotation can reduce astigmatic correction; if necessary lens repositioning should occur as early as possible prior to lens encapsulation.

For the Clareon® PanOptix® IOL, some visual effects may be expected due to the superposition of focused and unfocused multiple images. These may include some perceptions of halos or starbursts, as well as other visual symptoms. As with other multifocal IOLs, there is a possibility that visual symptoms may be significant enough that the patient will request explant of the multifocal IOL. A reduction in contrast sensitivity as compared to a monofocal IOL may be experienced by some patients and may be more prevalent in low lighting conditions. Therefore, patients implanted with multifocal IOLs should exercise caution when driving at night or in poor visibility conditions. Patients should be advised that unexpected outcomes could lead to continued spectacle dependence or the need for secondary surgical intervention (e.g., intraocular lens replacement or repositioning). As with other multifocal IOLs, patients may need glasses when reading small print or looking at small objects. Posterior capsule opacification (PCO), may significantly affect the vision of patients with multifocal IOLs sooner in its progression than patients with monofocal IOLs.

For the Clareon® Vivity™ IOL, most patients implanted with the Vivity™ IOL are likely to experience significant loss of contrast sensitivity as compared to a monofocal IOL. Therefore, it is essential that prospective patients be fully informed of this risk before giving their consent for implantation of the Clareon® Vivity™ IOL. In addition, patients should be warned that they will need to exercise caution when engaging in activities that require good vision in dimly lit environments, such as

driving at night or in poor visibility conditions, especially in the presence of oncoming traffic. It is possible to experience very bothersome visual disturbances, significant enough that the patient could request explant of the IOL. In the parent AcrySof® IQ Vivity™ IOL clinical study, 1% to 2% of AcrySof® IQ Vivity™ IOL patients reported very bothersome starbursts, halos, blurred vision, or dark area visual disturbances; however, no explants were reported.

Prior to surgery, physicians should provide prospective patients with a copy of the Patient Information Brochure available from Alcon informing them of possible risks and benefits associated with these IOLs.

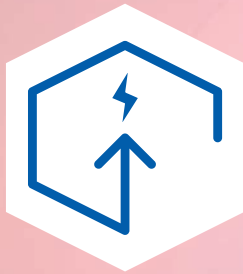
**ATTENTION:** Reference the Directions for Use labeling for each IOL for a complete listing of indications, warnings and precautions.

#### References

1. Alcon Data on File, 2023.
2. S Modi et al., “Comparison of Visual Function Between Two Presbyopia-Correcting Intraocular Lenses: A Randomized Bilateral Study.” Paper presented at ASCRS Annual Meeting, Boston, April 5-8, 2024.
3. Clareon Vivity Directions for Use
4. Clareon Monofocal Directions for Use
5. JM Micheletti et al., “Head-to-Head Comparison of Intermediate Vision of Two Monofocal Intraocular Lenses,” *Clin Ophthalmol.*, 21, 3983 (2023). PMID: 38146452.
6. C Blehm, B Hall. “Evaluation of Visual Outcomes and 3-Month Refractive Stability of a New Hydrophobic Acrylic Intraocular Lens,” *Clin Ophthalmol.* 17, 1859 (2023). PMID: 37425027.
7. Clareon Monofocal Toric Directions for Use

For important product information on PanOptix, Vivity, Clareon monofocal and Clareon toric, please see your local Directions for Use, or visit MyAlcon.com. Refer to operator’s manual for a list of indications, warnings and precautions.

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**the Ophthalmologist**

*The*  
**INNOVATORS**

## Powering a New Era of Practice

*Ophthalmology is in constant evolution; here, we present some of the newest innovations, pioneering therapeutics, and cutting-edge technology shaping the future of the field*

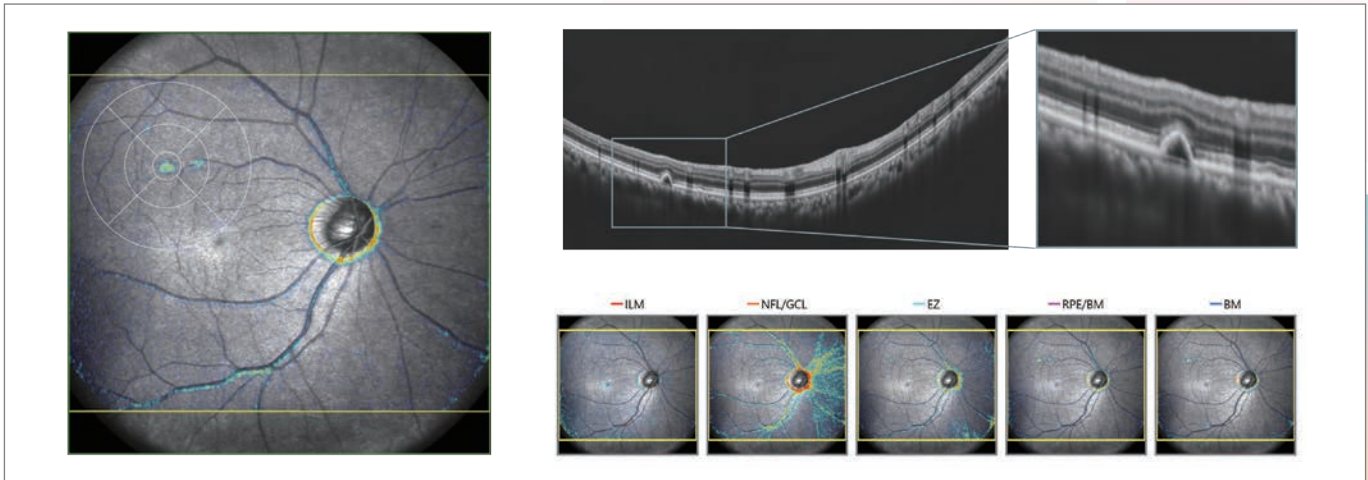


Figure 1. SN Map.

## Glaucoma and Retinal Assessment for High-Volume Practices

*The NIDEK RS-1 Glauvas offers superior operability, high-quality wide and deep area imaging, and deep learning-based analytics*

Efficiently managing patient flow and maintaining quality care are among the challenges of performing glaucoma and retinal assessment in a high-volume clinical ophthalmology practice. Large patient numbers can reduce the time available for comprehensive exams, especially when using imaging techniques like optical coherence tomography (OCT), where the depth of assessment might be compromised.

This makes the engineering and technical advances featured in NIDEK's newly launched OCT system RS-1 Glauvas with the OCT Viewer – particularly important as its imaging capabilities and excellent operability help to ease physician and staff workload.

Offering up to 250kHz scan speed, high-quality wide and deep area imaging, and deep learning-based analytics by the OCT Viewer, the device serves to boost the ophthalmologist's confidence in diagnosing glaucoma and retinal vascular diseases in busy practice environments.

The RS-1 Glauvas features auto alignment and auto switch to the fellow eye functions, a newly designed joystick for smooth operation, enhanced SLO sensitivity, and an intuitive user interface.

The incorporation of 250kHz scan speed reduces capture time and self-compensates for patient fixation errors, contributing to greater image clarity and patient comfort. Meanwhile, the device's single

B-scan images of up to 16.5 mm-width clearly present the optic nerve head to the temporal vascular arcade, with the 4.2 mm-depth B-scan imaging readily capturing the oblate retinal shape of myopic eyes. Improvements in optional AngioScan OCT-Angiography include wider and clearer images for assessing chorioretinal microvasculature.

The OCT Viewer features deep learning (DL) segmentation that reduces errors in the analysis results of the normative database and thickness maps even in eyes with opacities, thus decreasing false positives, especially in glaucoma analysis, and enhancing clinic efficiency by reducing unnecessary follow-up visits. The algorithm for DL segmentation was developed using a data set of human-annotated correctly labeled B-scan images and allows retinal thickness to be segmented more accurately when compared with previous algorithms.

Furthermore, the DL segmentation provides a Structural Normality Map (SN Map), which helps clinicians to detect minute structural changes at a glance. Using the results of the improved retinal layer segmentation, the SN Map calculates uncertainty from the probability distribution (entropy). Since the entropy value is related to structural abnormalities in a layer, the more uniform the layer segmentation probability distribution, the higher the entropy. Based on the entropy calculation results, the SN Map visualizes the structural abnormalities in a heat map (Fig. 1).

With general OCT devices, clinicians often need to scroll down the sync line carefully from the top to the bottom to check any abnormalities in fundus. This method not only takes time for the clinicians to interpret, but also leaves the possibilities of overlooking the minor abnormalities. However, since the SN Map detects and highlights structural abnormalities for each layer, clinicians only need to switch each layer and easily check the abnormalities with the visualized display.

All of these innovated features position the RS-1 Glauvas as a practical and effective solution in high-volume clinical practices.

*\* At the time of printing, the RS-1 and OCT Viewer are available globally except in the USA and China for regulatory reasons.*



## Cosmetics That Care for Eyes

*Introducing Èyes Are The Story – the world’s first line of optocosmetics*

In the realm of eye health, true innovation lies in preventive care.

Topical skincare products can contribute to ocular surface disease, and with the majority of individuals using facial skincare and cosmetics regularly, understanding this link is essential. Over 90 percent of women under 55 use cosmetics, and more than 50 percent of girls as young as 12 use mascara that can damage the ocular surface. In addition, the male grooming market is expanding rapidly. Many patients apply cosmetics and skincare products around their eyes on a daily basis, not just makeup! But such products remain largely unregulated, containing ingredients that can disrupt the delicate periocular and skin microbiome.

A recent TFOS Lifestyle report, “Impact of cosmetics on the ocular surface,” highlights a critical link between lifestyle choices – including cosmetics use and clinical treatments – and ocular health, showing that certain ingredients and procedures

can be harmful to the eyes (1). Such ingredients are toxic to meibomian gland epithelial, corneal, and conjunctival cells, even at concentrations thousands of times lower than cosmetic regulations permit, exacerbating dry eye symptoms and ocular surface disease. Moreover, infections and disruptions to the skin, nasal, and gut microbiomes can trigger inflammation, contributing to autoimmune dry eye disease.

### Eye-safe skin care

Èyes Are The Story from ÈSSIRI Labs is a range of cosmetics and skincare products that is clinically proven to be safe for sensitive eyes and skin and could help prevent lifestyle related dry eye. The first optocosmetics brand to leverage ocular surface science, ÈYES is developed with eye-safe ingredients, removing harmful chemicals commonly found in conventional cosmetics and skincare products. ÈYES products are formulated without ingredients such as formaldehyde, parabens, and retinols, which can disrupt the periocular microbiome and damage eye cells.

When integrated into eye care protocols and mainstream cosmetic routines, ÈYES products have the potential to reduce the burden of dry eye disease through preventive care, allowing patients to actively support and maintain their eye health between visits to their eye care practitioner (ECP). The range caters to informed consumers seeking safe beauty options that



Patient VISIA skin analysis (courtesy of Dr. R Murthy). Images show cutaneous and subcutaneous redness indicating rosacea. Left: Before EYES topical skin and eye care. Right: One month after EYES topical skin and eye care.

NB. The patient has consented for publication of her photographs on VISIA. (VISIA, Canfield Scientific, Inc., New Jersey USA.)

avoid eye-related issues while enhancing aesthetics. It also offers ECPs a tool to extend clinical care at-home, promoting a healthier periocular microbiome and reducing eye sensitivity. Just as daily teeth-brushing maintains oral hygiene, EYES supports daily periocular hygiene to protect, preserve, and optimize the ocular surface.

EYES can enhance the effectiveness of in-clinic treatments and even surgical outcomes. Dr. Rachna Murthy,\* a consultant ophthalmic, aesthetic, oculoplastic, and reconstructive surgeon at FaceRestoration London, previously Cambridge University Hospital & East Suffolk NHS Trust, notes that her patients “expect optimal surgical outcomes, minimal downtime, and a quick return to their routines, even attending black-tie events shortly after blepharoplasty.” Dr. Murthy’s practice however was an early adopter of Eyes Are The Story – and with these products, she says, she is able to “have patients ready for public appearances within days, and I’ve seen dramatic improvements in rosacea and sensitive eye conditions even before beginning other treatments.”

#### Setting a new standard

Securing EU approval is a significant challenge for US-made brands, given the stark contrast in regulations – only 11 chemicals are banned in the US, while over 1,300 are restricted in the EU. Eyes Are The Story, however, is currently approved in more than 30 countries, and selling in the

US, Canada, France, Ireland, Spain, Portugal, United Kingdom, Australia, and New Zealand. The range’s formulations are grounded in peer-reviewed, science-based research, with clinical trials underscoring ESSI RI Labs’ commitment to advancing beauty products that prioritize eye health and set a new standard for responsible, science-driven cosmetics.

In an age that values longevity and wellness, Eyes Are The Story establishes a new benchmark for safety in beauty, leading a movement that aligns with the priorities of a health-conscious, globally minded, and aesthetically discerning audience.

#### References

1. DA Sullivan et al., “TFOS Lifestyle: Impact of cosmetics on the ocular surface,” *Ocul Surf*, 29, 77 (2023). Epub Apr 13, 2023. PMID: 3706122.

\*Rachna Murthy BSc (Hons) MB BS FRCOphth, Consultant Ophthalmic, Aesthetic, Oculoplastic & Reconstructive Surgeon, FaceRestoration.com; Allergan Medical Institute Faculty – Complications; Council Royal Society of Medicine (Ophthalmology Section). Previously Consultant Ophthalmologist, Oculoplastic & Reconstructive Surgeon, Cambridge University Hospital & East Suffolk NHS Trust.

For more details, please contact [info@essirilabs.com](mailto:info@essirilabs.com) or visit [eyesarethestory.com](http://eyesarethestory.com)



# From Posterior to Anterior Segment, From Clinic to the OR – Driving Innovation to Empower Clinicians to Improve Patient Care

*Optimizing emerging and existing technologies places Heidelberg Engineering at the forefront of ophthalmic imaging and the healthcare IT space*

Heidelberg Engineering is dedicated to helping healthcare professionals preserve eyesight and improve patient care. The company continually optimizes its imaging and healthcare IT technologies for specific clinical applications. These solutions also play a vital role in obtaining and analyzing data across patient populations, driving the discovery of new biomarkers and advancing therapeutic breakthroughs.

## Posterior segment

SPECTRALIS is an ophthalmic imaging platform with an upgradable, modular design. The platform allows clinicians to configure each SPECTRALIS to the specific diagnostic workflow in the practice or clinic. Confocal scanning laser ophthalmoscopy (cSLO) is at the heart of the SPECTRALIS platform. Combining the selectivity of laser light with the pinpoint resolution of confocal optics, cSLO provides image detail and clarity not available from flood illumination fundus photography. High-resolution, three-dimensional spectral-domain-OCT (SD-OCT) is specifically optimized for imaging the posterior segment and provides structural insight below the surface of the retina.

TruTrack Active Eye Tracking, also fundamental to the SPECTRALIS, is an imaging technology that utilizes two beams of light simultaneously to track and image the eye. Using the SPECTRALIS fundus image like a map, the AutoRescan function automatically places follow-up scans in precisely the same position visit after visit. Studies have shown that SPECTRALIS with AutoRescan technology can reliably measure changes in retinal thickness as small as 1 micron. The recent development of SHIFT technology allows a clinician to select between scan rates to find the ideal balance between image quality and clinical workflow. SPECTRALIS with SHIFT technology offers full backward compatibility of existing patient data.

The combination of cSLO, SD-OCT and TruTrack offers

unparalleled retinal image quality and reproducibility. This unique combination of technologies is currently being used at the International Space Station (since 2017) to monitor the effect of microgravity on astronauts.

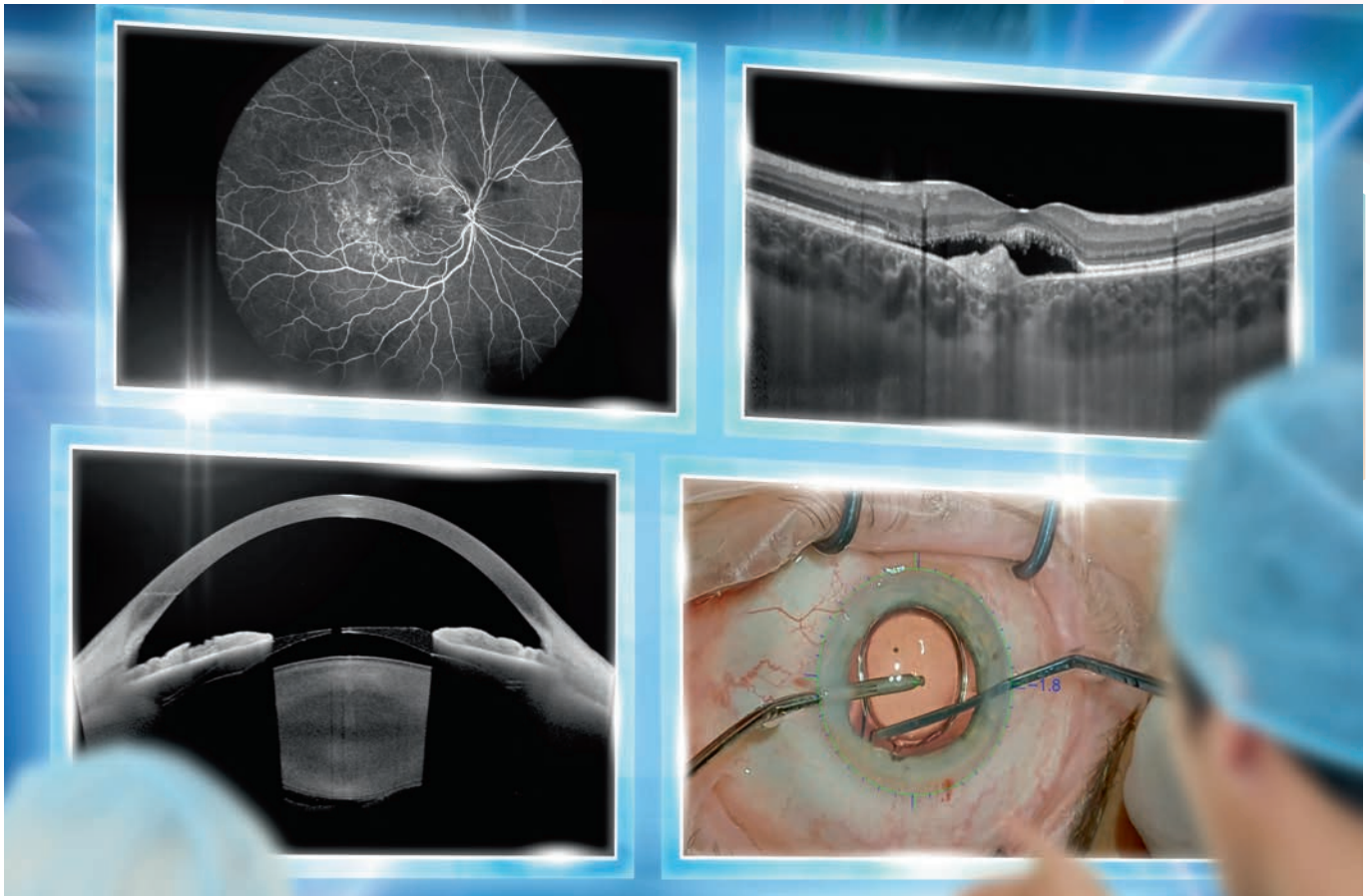
Further, the SPECTRALIS Flex Module, having just received FDA clearance, is a groundbreaking imaging-only diagnostic platform designed specifically for the posterior segment, allowing physicians and researchers to examine people who cannot present to a static headrest. The Flex Module makes it possible to perform ophthalmic examinations on pediatric and adult patients in a supine position, and helps capture the fine details essential for precise diagnosis and treatment planning, even in the most challenging patients.

## Anterior segment

ANTERION is a single workflow-efficient solution that optimizes high-resolution swept-source OCT technology to provide the most important anterior segment examinations and measurements in one modular, upgradeable platform. ANTERION combines biometry and IOL power prediction with corneal topography and tomography, as well as anterior chamber metrics all based on high-resolution imaging to help transform clinical routine. Additional proprietary features such as patented eye tracking and composite imaging technologies help deliver exceptional Heidelberg image quality, allowing eye care professionals to perform anterior segment examinations and acquire key measurements via high-resolution swept-source OCT images that support clinical and surgical decision-making. Surgeons using ANTERION benefit from improved clinical workflows by performing all important anterior segment examinations on one device without having to move the patient.

## Clinical workflow

HEIDELBERG EYE EXPLORER streamlines and simplifies workflow, enhances security, and future-proofs clinical practice. HEYEX 2 is a secure, scalable image management platform that facilitates third-party device integration and data sharing based on standards. As the image management platform for all Heidelberg Engineering products, HEYEX 2 scales from a small practice with just a single device to a large enterprise with hundreds of imaging devices across multiple sites. Unique peer-to-peer exchange technology (HEYEX 2 Cloud Exchange) raises the standard for simple and secure sharing of data and images providing a simple end-to-end encrypted, peer-to-peer data transfer. Data can be exchanged directly with insurance providers, referral networks, multisite enterprises, multi-center research collaborators and AI application providers through Heidelberg AppWay. HEYEX EMR (Electronic Medical Record) captures high-quality, structured data that enables limitless analytical possibilities, enhancing diagnostic accuracy and streamlining clinical communication. It simplifies planning, and documentation, and enables quick review of comprehensive patient summaries at a glance.



Uncover More - From posterior to anterior segment. From clinic to operating room.

### Operating room

SeeLuma, distributed by Bausch+Lomb, and developed and manufactured by Heidelberg Engineering, is the world's first fully digitalized surgical microscope, delivering Heidelberg image quality in the operating room. The SeeLuma also addresses the ergonomic challenges of digitalized surgery, with its C-shaped suspension arm, which enables surgeons to view the 55" and 31" 3D 4K monitor straight ahead of them. The fully digital binoculars can be positioned freely, allowing one to take on an ergonomic posture and work with greater ease.

### Scientific research

Among the company's research innovations – which are not currently for clinical use – the Heidelberg CHAMELEON, is designed to unlock imaging of a wider range of fluorophores critical for basic vision research, thanks to its interface to tunable laser light sources. Fluorescence Lifetime Imaging Ophthalmoscopy (FLIO) is an experimental non-invasive imaging modality that provides another fluorescence dimension, which yields phenotypic results that may be indicative of alterations in retinal metabolism preceding structural changes. High-Res OCT is also a research SD-OCT device with a light-source capable of providing an

axial resolution of up to 3  $\mu\text{m}$  that could bring researchers new insights into the retinal structure and vasculature. In addition to the optimization of SD-OCT for the posterior segment and SS-OCT for the anterior segment, Heidelberg Engineering is developing full-field OCT technology to make remote monitoring a reality.

### Streamlining the patient journey

Heidelberg Engineering innovations empower clinicians to deliver the highest quality care throughout the patient journey, from the moment they enter the clinic to documentation, early diagnosis, referrals, treatment planning, treatment delivery, monitoring, and follow-up. Clinicians benefit from optimized workflows, precise, accurate, and comprehensive diagnostic data and monitoring capabilities, efficient data management, and outstanding image quality. These technologies also assist technicians in capturing high-quality images, even in difficult cases, and ensures precision and accuracy in follow-up examinations. Meanwhile, patients benefit from a comfortable experience, accurate diagnostics and monitoring, and a more efficient imaging workflow.

Heidelberg Engineering seeks out unmet needs and develops clinically relevant solutions. The purpose of every innovation is to empower eyecare professionals to improve the quality of life for their patients.



## Simplifying Retinal Detachment Repair

*Fluoron's EasyGas® tamponades offer the first ready-to-use air-gas mixture*

The surgical repair of retinal detachment and other vitreoretinal disorders necessitates precision tools and materials to ensure optimal outcomes. Fluoron's EasyGas® series offers surgeons a range of gas tamponades designed to meet the variable demands of these procedures.

The EasyGas® ready-to-use pre-filled and pre-mixed 40 ml sterile syringe enables easy and safe application. The fixed mix-ratios of non-expansive gas and synthetic air could reduce the risk of hypertension or ischemia while delivering reproducible results. The tamponades' design facilitates seamless integration into the operating room (OR) environment and aligns with the high standards required in vitreoretinal surgery. With no manual mixing required, time in the OR is saved and unintended gas leakage is prevented, and color coding prevents the mix-up of gases. Further, by contributing to a sustainable usage of gas, these tamponades help in protecting the environment (1).

The EasyGas® range features three tamponades for customizing treatment duration according to the severity and nature of each case.

EasyGas® SF6 offers an effective tamponade time of 6 days and a mixture of 20 percent non-expansive gas and 80 percent synthetic air. It is indicated for retinal detachments with giant tears; retinal detachments without proliferation; retinal detachments in cases of proliferative diabetic retinopathy (PDR); or vitreoretinopathy (PVR); traumatic retinal detachments; and cases of idiopathic macular hole. Furthermore, SF6 is suitable as a short-term tamponade for fixating the implanted Descemet membrane in DMEK.

For the same indications, EasyGas® C2F6 allows for an effective tamponade time of 15 days and provides a mixture of 16 percent non-expansive gas and 84 percent synthetic air.

Indicated for retinal detachments with giant tears, PDR, and cases of idiopathic macular hole, EasyGas® C3F8 offers an effective tamponade time of 30 days, with a mixture of 12 percent non-expansive gas and 88 percent synthetic air (2).

Overall, the Fluoron EasyGas® series equips ophthalmologists with a flexible, easy to use suite of tools that enhances sterility and secures surgical precision.

### References

1. G Moussa et al., "Environmental Effect of Fluorinated Gases in Vitreoretinal Surgery: A Multicenter Study of 4,877 Patients," *Am J Ophthalmol.*, 235, 271 (2022). Epub 2021 Sep 26. Erratum in: *Am J Ophthalmol.*, 257, 254 (2024). PMID: 34587498.
2. S Mohamed, TY Lai, "Intraocular Gas in Vitreoretinal Surgery," *HKJ Ophthalmol.*, 14, 8 (2010).



## STREAMLINE® Surgical System: A Novel, Implant-Free Solution

*New World Medical's simple and versatile system now offers a host of enhanced features*

The STREAMLINE® Surgical System by New World Medical provides ophthalmologists with a first-line, implant-free solution designed to deliver pressurized viscoelastic where patients need it most. This device combines innovation with simplicity, making it adaptable for both standalone use and in combination with cataract surgery, with the upmost flexibility and confidence to deliver tissue-sparing outcomes without leaving an implant behind.

### Two primary functions in one STREAMLINE device

STREAMLINE's unique design offers two distinct functions, allowing surgeons to deliver controlled amounts of viscoelastic fluid directly to specific areas and, when needed, create incisions in trabecular meshwork tissue. These incisions can be titrated and extended over several contiguous clock hours of the trabecular meshwork. This versatility helps streamline procedures and provides surgeons with a greater degree of control.

### Treatment that suits the delicate environment of the eye

At the heart of STREAMLINE's design is the proprietary ClickPulse® Technology, which ensures a controlled and consistent application of viscoelastic fluid with each click of a button. Each actuation performs three steps:

- Retraction of the outer sleeve to guide proper positioning
- Facilitation of inner cannula alignment
- Dual port injection of viscoelastic to the targeted site

The device enables up to eight ClickPulse applications per procedure, allowing surgeons the ultimate control to titrate treatment based on the patient's needs.

### Commitment to innovation: User-centered enhancements for an optimized surgical experience

New World Medical has recently introduced thoughtful enhancements to the STREAMLINE Surgical System, based on user feedback, including an extended cannula and a clear sleeve to improve visualization and ease of use. Additionally, the actuator button was redesigned to enhance ergonomics and visualization with a lower button profile and improved internal spring mechanism, minimizing button depression resistance. These features reflect a commitment to providing efficient, practical solutions that integrate smoothly into surgical workflows.

With its implant-free, innovative design, the STREAMLINE® Surgical System exemplifies New World Medical's dedication to innovation in ophthalmology, offering a valuable tool for safe and effective tissue-sparing procedures.

*To learn more about the unique mission of New World Medical or its innovative product line, please visit <https://www.newworldmedical.com>.*



## Ahmed ClearPath®

*The clear choice for non-valved glaucoma drainage devices*

As a leading innovation in glaucoma treatment, developed by New World Medical, the Ahmed ClearPath is a clear choice for ophthalmologists seeking effective, non-valved implant solutions for intraocular pressure (IOP) management. With its thoughtful design and convenient features, the device supports both efficient surgical implantation and long-term patient outcomes (1).

### **Innovative design for reliable IOP control**

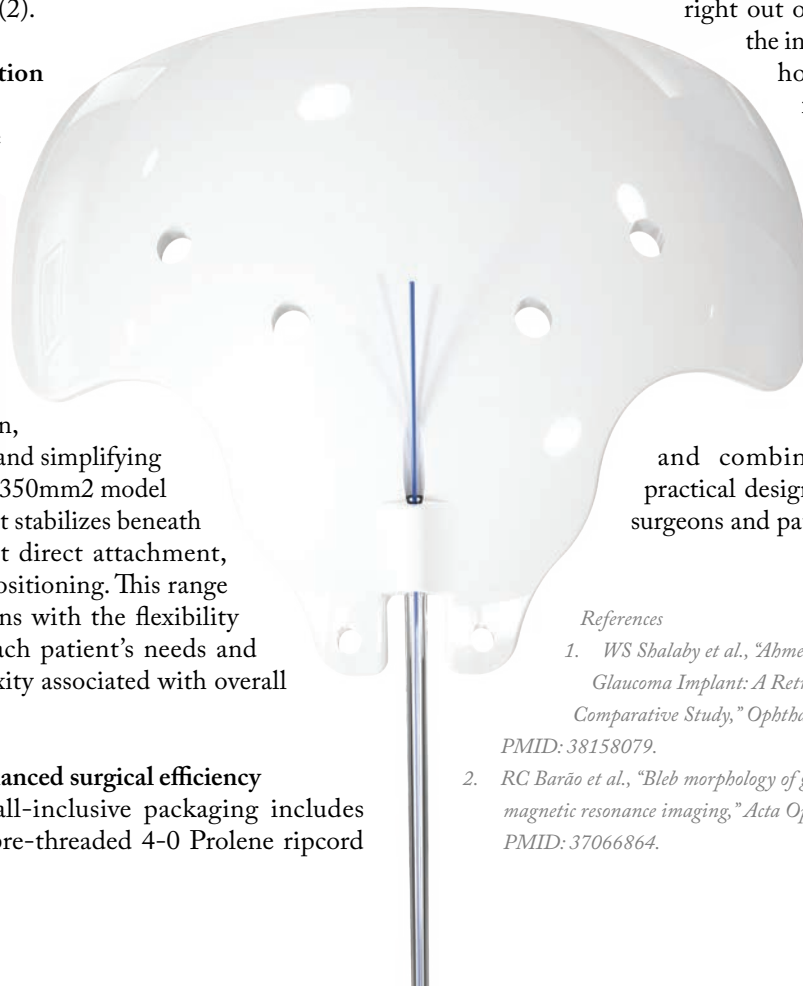
The Ahmed Clear Path introduces an innovative solution for non-valved glaucoma drainage devices, providing surgeons with precise control over IOP management. Its flexible plate material and low-lying profile are designed to promote the formation of a low diffuse bleb, enhancing IOP stability over the long term (2).

### **Single-quadrant implantation for surgical convenience**

Designed with convenience in mind, the Ahmed ClearPath is available in two sizes: 250 mm<sup>2</sup> and 350 mm<sup>2</sup>. The 250mm<sup>2</sup> model facilitates a true single-quadrant implantation between the rectus muscles, eliminating the need for muscle isolation, streamlining the procedure and simplifying positioning. Meanwhile the 350mm<sup>2</sup> model features a winged design that stabilizes beneath the rectus muscles without direct attachment, further supporting stable positioning. This range of options provides surgeons with the flexibility to select the best fit for each patient's needs and reduce the surgical complexity associated with overall implant placement.

### **Thoughtful features for enhanced surgical efficiency**

The Ahmed ClearPath's all-inclusive packaging includes a 23-gauge needle and a pre-threaded 4-0 Prolene ripcord



suture, making it convenient and ready for use right out of the box. Additionally, the inclusion of anterior suture holes allows for precise fixation and improved access, giving surgeons added control and positioning accuracy during implantation. The Ahmed ClearPath represents a clear choice for non-valved glaucoma drainage devices, setting new standards and combining innovation with practical design for a device that both surgeons and patients can rely on.

#### *References*

1. WS Shalaby et al., "Ahmed ClearPath vs. Baerveldt Glaucoma Implant: A Retrospective Noninferiority Comparative Study," *Ophthalmol Glaucoma*, 7, 251 (2024). PMID: 38158079.
2. RC Barão et al., "Bleb morphology of glaucoma drainage devices on magnetic resonance imaging," *Acta Ophthalmol*, 101, 789 (2023). PMID: 37066864.



Diffractive trifocal IOL: Halo and glare simulator at 3-months. Adapted from Kretz FT et al. J Refract Surg. 2015 Aug;31(8):504-10



RayOne Galaxy IOL: Halo and glare simulator at 1-month. Courtesy of Mr Allon Barsam, OCL Vision (London, UK)

## RayOne Galaxy: The Future of IOL Technology

*Introducing the world's first spiral intraocular lens*

For years now, diffractive trifocal intraocular lenses (IOLs) have largely provided similar visual outcomes, with successive innovations only making incremental steps forward in patient outcomes, always hindered by associated halo and glare.

However, in collaboration with Brazilian ophthalmic surgeon, Dr. João Lyra, Rayner has made a leap into the future of IOL technology with RayOne Galaxy, the world's first spiral IOL.

What started when Dr. Lyra saw an intriguing spiral structure on the cover of a book turned into a fully-fledged optical development project, working with a team of skilled optical engineers and IT professionals specializing in artificial intelligence (AI) to turn the idea into a manufacturable IOL.

Dr. Lyra partnered with Rayner to finalize and launch the RayOne Galaxy – the result breaks the glass ceiling in terms of what surgeons can offer their premium lens replacement patients.

Designed with AI, the RayOne Galaxy features a revolutionary spiral optic that progressively elongates focus, creating a smooth and continuous variation in optical power along the defocus curve. The result is a full range of vision without the wave-like defocus pattern seen with trifocal IOLs.\*

Importantly, RayOne Galaxy patients experience significantly less halo and glare than with diffractive lenses\* – the unique non-

*“In collaboration with Brazilian ophthalmic surgeon, Dr. João Lyra, Rayner has made a leap into the future of IOL technology with RayOne Galaxy, the world's first spiral IOL.”*

diffractive spiral structure avoids abrupt transitions in the lens' surface, which are known to increase dysphotopsia and light loss.

The RayOne Galaxy IOL utilizes the same fully preloaded injector as the rest of the RayOne IOL family. With over 5 million in use worldwide, the single-use RayOne injector is simple to prepare and use, reducing training for clinic teams and supporting surgeon confidence in the operating room.

When patient satisfaction is non-negotiable, the RayOne Galaxy is a new premium lens solution designed to eliminate dysphotopic compromise.

*\*Rayner R&D data on file.*

*Note: RayOne Galaxy is not yet approved for sale in every country. Customers should contact their local Rayner distributor for details of which products are available in their area.*

ANTERIOR SEGMENT

# How Dry Eye Disease Impacts Younger Patients

*Primary and pre-op care can help the millions of young patients with DED*

Although the prevalence of dry eye disease (DED) increases with age, its relationship isn't exactly linear as the condition affects a significant portion of the population (1). This includes children and teens, 5.5 percent to 23.1 percent of whom have DED (2). Thus, regardless of age, it is essential to screen every patient for dry eye disease. Timely diagnosis, evaluation, and intervention are essential for primary care, as well as to prepare the ocular surface for surgery, the outcomes of which may be altered by refractive changes and other symptoms related to an unstable tear film.

**Omnipresent screens, contact lenses, and other factors**

I have diagnosed DED in patients as young as seven years old, as well as many teens and young adult college students. Extensive screen use (digital eye strain) is a major contributor (3). Most children under age eight exceed the established screen time recommendations for their ages (">"), and teens average 4.8 hours per day on social media, in addition to school laptops and TV (5). It is not surprising, then, that a study of school children (mean age 12) showed 97 percent had at least one symptom of digital eye strain or dryness, most commonly eyelid heaviness (80 percent) and eye redness (69 percent) (6).

DED is also common in young contact lens wearers (3). Many other health,

Melissa Barnett



behavioral, and lifestyle factors contribute to the unexpectedly high rate of DED in this population, including poor sleep quality, allergies, smoking, medications (isotretinoin, oral contraceptives, antidepressants, oral antihistamines), poor diet or hydration, and environmental challenges (wind, very low humidity, air conditioning).

**Treatments and modifications**

Most young people are not accustomed to hearing they have a chronic condition. I keep the explanation simple and share images of their eyes so they can visualize the problem. To ensure that patients and parents follow my specific recommendations for therapy, I offer easy access to the products they need in the practice, as well as written instructions with QR codes for acquiring them online.

Healthy young people have a high capacity to respond to DED therapies and can often benefit from basic treatments and simple lifestyle changes.

- Contact lenses. Daily lenses ensure that teens start each day with

a clean lens. In my experience, if patients wearing dailies are uncomfortable, contact lens-compatible DED therapies are often successful. These patients can also benefit from the addition of a preservative-free artificial tear that is compatible with contact lenses.

- Therapies for mild to moderate DED. I always recommend patients start with a high-quality, preservative-free artificial tear to lubricate the surface in the morning, at night, and as needed. iVIZIA (Thea) artificial tears, for example, give my patients immediate and long-lasting relief, and patients like the easy-to-use multi-dose bottle. For contact lens wearers, iVIZIA has been demonstrated to keep eyes more comfortable for a longer time without blurriness (7). Preservative-free Refresh Optive (Allergan) and Systane PF (Alcon) are good options as well. Another drop called Retaine MGD (OCuSOFT) stabilizes the tear film with electrostatic attraction, providing

long-lasting treatment for DED associated with meibomian gland dysfunction (MGD) (8).

I also want young people to do eyelid hygiene every night; makeup removers, for example, can have ingredients that exacerbate DED. I recommend specific DED-friendly eyelid cleansers, such as iVIZIA micellar eyelid cleansing wipes, OCuSOFT Lid Scrub Plus foaming eyelid cleanser, or a variety of hypochlorous acid sprays.

We also discuss the importance of drinking water and getting plenty of sleep. Nutritional supplements such as Omega fatty acids are quite beneficial. In younger patients, I'm inclined to see if lifestyle modification factors such as eyelid hygiene, artificial tears, breaks on digital devices, adequate hydration, and sleep would work before adding another product to their regimen.

- Screen use modifications. Young people are often surprised to learn that they blink more than 60 percent less while reading or using digital devices (9), so it's crucial to remember to blink regularly. I explain the 20-20-20 rule (every 20 minutes, take a 20-second break to blink and focus on something at least 20 feet away). Daily reminders such as setting a 20-minute reminder on their phone or laptop or having a sticky note on their laptop are beneficial for patients. We review best practices for optimal screen distance and viewing angle, along with tips on managing lighting, glare, and airflow from fans and air vents during screen use.
- Skin care and cosmetics. Many cosmetics and skin care products contain chemicals that can exacerbate or even cause DED. Facial cleansers, sunscreens, moisturizers, shave creams, makeup, and makeup removers are all

potentially irritating. I offer patients a list of the most common eye irritants in these products: alcohol, acetyl hexapeptide-3, benzalkonium chloride (BAK), butylene glycol, ethylenediaminetetraacetic acid (EDTA), formaldehyde and formaldehyde donors, isopropyl cloprostenate, parabens, phenoxyethanol, and retinol. The handout also lists ingredient-conscious eye makeup brands, such as Blinc, Eyes are the Story, Eye Ecco, Twenty Twenty Beauty, and We Love Eyes.

- Therapies for more severe cases. In moderate to severe cases, a systemic evaluation to rule out autoimmune and thyroid disease is essential, particularly after adolescence. I advise a combination of therapies in severe cases. In addition to preservative-free artificial tears and lifestyle modifications, therapies can potentially include punctual plugs; prescription medications such as perfluorohexyloctane (Miebo, Bausch & Lomb), lifitegrast (Xiidra, Bausch & Lomb), cyclosporine (Restasis, Allergan) or varenicline (Tyrvaya, Viatrix); lotilaner (Xdemyv, Tarsus), a medication for demodex blepharitis; and in-office procedures such as thermal meibomian gland expression (TearCare, Sight Sciences) or IPL (OptiLight, Lumenis). Other options include scleral lenses, autologous serum, amniotic membranes, and night goggles.

Many of my young patients who experience headaches and digital eye strain find relief after receiving an updated prescription and addressing their DED symptoms. It is critical to ensure that young patients continue to have regular dilated eye exams for evaluating ocular health, maintaining optimal vision, and managing DED.

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*Disclosures: ABB, Acculens, Abbvie, Azura, Bausch + Lomb, BCLA, Bruder, Bruno Vision Care, CooperVision, Dompé, Epion, JJVC Vistakon, Lentechs, Ocusoft, Orasis, Percept, RVL Pharmaceuticals, Science Based Health, STAPLE program, Sun Pharma, Tarsus, Thea Pharma, Visus Therapeutics*

#### References

1. F Stapleton et al., "TFOS DEWS II Epidemiology Report," *Ocul Surf*, 15, 334 (2017). doi:10.1016/j.jtos.2017.05.003
2. F Stapleton et al., "Dry eye disease in the young: A narrative review," *Ocul Surf*, 31, 11 (2024). doi:10.1016/j.jtos.2023.12.001
3. F Stapleton et al., "TFOS lifestyle: Impact of societal challenges on the ocular surface," *Ocul Surf*, 28, 165 (2023). doi:10.1016/j.jtos.2023.04.006
4. MH Trinh et al., "Association of Trajectory and Covariates of Children's Screen Media Time," *JAMA Pediatr*, 174, 71 (2020). doi:10.1001/jamapediatrics.2019.4488
5. BJ Rothwell, "Teens spend average of 4.8 hours on social media per day," *Gallup.com*. <https://news.gallup.com/poll/512576/teens-spend-average-hours-social-media-per-day.aspx> Published February 9, 2024.
6. JS Wolfsobn et al., "TFOS Lifestyle: Impact of the digital environment on the ocular surface," *Ocul Surf*, 28, 213 (2023). doi: 10.1016/j.jtos.2023.04.004. Epub 2023 Apr 14. PMID: 37062428.
7. Thea data on file.
8. G Ousler III et al., "An evaluation of Retaine ophthalmic emulsion in the management of tear film stability and ocular surface staining in patients diagnosed with dry eye," *Clin Ophthalmol*, 9, 235 (2015). Published 2015 Feb 5. doi:10.2147/OPHTH.S75297
9. NC Chidi-Egboka et al., "Blink Rate Measured In Situ Decreases While Reading From Printed Text or Digital Devices, Regardless of Task Duration, Difficulty, or Viewing Distance," *Invest Ophthalmol Vis Sci*, 64, 14 (2023). doi:10.1167/iov.64.2.14

ANTERIOR SEGMENT

# Surgical Efficiency in Cataract Surgery

*Exploring key intraoperative metrics and the role of R-Evo Smart technology*

Surgical efficiency is pivotal for ophthalmologists. How well a procedure can be streamlined without compromising safety and effectiveness not only influences the experiences of the surgeon, staff, and patients, but it is increasingly tied to postoperative outcomes. In cataract surgery, focusing on key intraoperative metrics such as surge, total ultrasound time, and fluid consumption may lead to improved efficiency (see sidebar). These three considerations can be particularly helpful when integrated with a femtosecond laser-assisted cataract surgery (FLACS) technique.

I have used several modern phaco systems with varying levels of surgical efficiency. Today, the gold standard is the Centurion Vision System (Alcon) (1-5). Additionally, my colleagues and I recently conducted a study showing equivalent surgical efficiency with the R-Evo Smart (BVI Medical).

**Comparative study**

We conducted a prospective, consecutive-comparative study of 301 eyes undergoing routine phaco surgery or FLACS with either the R-Evo Smart (n = 155) or Centurion (n = 146) at two different private practices – Oftalvist Clinic in Madrid and Alicante, Spain – between May and October 2023. When FLACS was performed, we used the Catalys Precision Laser platform (Johnson & Johnson Vision). In all cases, we performed a 5-mm capsulotomy through a 2.2-mm temporal clear corneal incision. There was no statistical significance in mean cataract grade between the R-Evo and Centurion groups (3.07 ±0.78

	R-Evo Smart	Centurion	P Value
WHOLE SAMPLE			
Eyes (N)	155	146	
Estimated cataract grade	3.07 ±0.78	2.96 ±0.85	0.12
Total U/S time (sec)	18.99 ±12.85	40.24 ±21.91	<.01
Total estimated fluid aspirated (cc) / Drainage bag weighting (g)	53.00 ±14.56	54.34 ±14.88	0.21
ROUTINE PHACO			
Eyes (N)	98	63	
Estimated cataract grade	2.95 ±0.74	2.97 ±0.91	0.44
Total U/S time (sec)	19.96 ±11.20	42.84 ±28.35	<.01
Total estimated fluid aspirated (cc) / Drainage bag weighting (g)	55.95 ±14.76	55.97 ±13.63	0.49

Table 1. Surgical outcomes obtained with R-Evo Smart and Centurion Vision System

vs 2.96 ±0.85; P = .12), respectively.

Surgical efficiency was objectively measured by total ultrasound time during lens removal and fluid consumption during both lens removal and irrigation and aspiration (Table 1). Drainage bag weighting was used to measure fluid consumption in the R-Evo group. The mean total ultrasound time was 18.99 ±12.85 seconds and 40.24 ±21.91 seconds (P<.01) in the R-Evo Smart and Centurion groups, respectively, and the mean total estimated fluid aspirated/drainage bag weighting was 53.00 ±14.56 g and 54.33 ±14.88 cc (P<.21), respectively. We also analyzed results in the subgroup of routine phaco eyes. In this group of 98 R-Evo Smart eyes and 63 Centurion eyes, the mean total ultrasound time was 19.96 ±11.20 seconds and 42.84 ±28.35 seconds (P<.01), respectively, and the estimated fluid aspirated/drainage bag weighting was 55.95 ±14.76 g and 55.97 ±13.62 cc, respectively (P=.49).

Our results showed a significant reduction in ultrasound time with the R-Evo Smart technology, and in some cases, the ultrasound time was almost half that of the Centurion. This is likely due to the R-Evo Smart’s Minimal Stress system, which maintains consistent elongation of the phaco tip regardless of the cataract density. There was, however, a correlation between cataract grade and ultrasound time in both groups. The R-Evo Smart also incorporates an Agile Fluidics system to adjust the IOP based on the aspiration demand, thereby reducing the surge effect. There was no statistically significant difference in fluid consumption between groups.

*“Surgical efficiency was objectively measured by total ultrasound time during lens removal and fluid consumption during both lens removal and irrigation and aspiration.”*

**Improved efficiency and predictability**

Surgeons who prioritize efficiency often seek improved predictability. Consistency in surgical time, reduced variability in outcomes, and a streamlined workflow allow surgeons to maintain focus and confidence during surgery, contributing to better outcomes for patients.

I appreciate how the R-Evo Smart technology maintains a stable anterior chamber as well as IOP during surgery while efficiently managing fluid consumption. In my opinion, this allows a seamless surgical experience for myself as well as my staff and patients. The enhanced efficiency contributes to a calmer surgical environment. This more

predictable and efficient surgical process has also translated into shorter procedure times, reduced stress for the surgeon and staff, and ultimately, a better experience for patients.

### Benefits of streamlined efficiency in FLACS

FLACS has gained traction in recent years due to its precision in performing capsulotomies and nucleus fragmentation as well as reducing the need for ultrasound energy during phacoemulsification. The learning curve for FLACS has significantly shortened over the past decade, making it easier for surgeons to incorporate into their practice. When paired with a reduction in ultrasound energy and efficient cataract removal, both of which can be achieved with the R-Evo Smart system, the benefits of FLACS are further amplified.

In my hands, the procedure feels faster and smoother, with less stress on the

eye. Moreover, integration of the R-Evo Smart with a FLACS technique allows me to perform more surgeries in a single session without compromising safety and effectiveness. This increased throughput not only improves my ability to treat more patients, but it also creates a predictable and organized workflow that me and my staff have come to depend on during a time of increased demand for cataract surgery. As the surgeon shortage continues, it will become increasingly important to reduce surgical time to accommodate our growing patient population (6).

### Conclusion

Surgical efficiency in cataract surgery is a multifaceted goal that impacts patient outcomes, surgeon satisfaction, and overall procedural success. By focusing on key intraoperative metrics such as surge, ultrasound time, and fluid consumption,

surgeons can make informed decisions about the technology and techniques they use in the operating room.

The R-Evo Smart phaco technology has shown itself to be a promising tool for improving efficiency, especially when combined with FLACS. Its ability to reduce ultrasound time and optimize fluidics leads to faster surgeries, fewer complications, and improved patient outcomes.

As cataract surgery continues to evolve and the population with cataracts grows, our focus on efficiency remains paramount. Modern phaco systems like the Centurion Vision System and R-Evo Smart are paving the way for safer, faster, and more predictable outcomes—benefits that extend to surgeons, staff, and most importantly, patients.

*See references online at:  
[top.txp.to/Surgical/Efficiency](http://top.txp.to/Surgical/Efficiency)*



## Did you notice Tecfen Medical post-surgery eye protection at the ESCRS congress?

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GLAUCOMA

## My MIGS of Choice, with Sally Ameen

*A minimally invasive option that cuts recovery time and reduces reliance on eye drops*

One of the most reliable procedures that glaucoma surgeons use is the iStent, which continues to offer significant utility in clinical practice because of how well it can manage intraocular pressure (IOP) in patients. The iStent is a microscopic, FDA-approved device implanted into the eye either during cataract surgery or as a standalone procedure. The smallest implant currently used in the human body, the main function of the iStent is to create a permanent opening in the trabecular meshwork, the eye's natural drainage system. This allows for better outflow of aqueous humor, which in turn helps to reduce intraocular pressure. By doing so, it helps to control the progression of glaucoma.

It is minimally invasive, meaning shorter recovery times and fewer complications compared to traditional glaucoma surgeries, and it effectively lowers intraocular pressure by improving aqueous outflow. Additionally, the iStent can be implanted at the same time as cataract surgery, providing comprehensive care in a single procedure. Many patients also find that they can reduce their reliance on glaucoma medications after having the iStent implanted, which improves their overall quality of life.

### Comparison with other MIGS options

My preference for the iStent stems from its long-standing presence in the market. It has been available for longer than other MIGS options, which means we have a wealth of data and extensive clinical testing to back up its efficacy and safety. Studies consistently show that the iStent is effective in lowering intraocular pressure and reducing



the progression of glaucoma. Furthermore, the safety profile of the iStent is outstanding, which is paramount when considering surgical options for my patients.

In one study, a significantly higher proportion of iStent inject with cataract surgery (INJ) eyes (75.8 percent) than cataract surgery-alone (CS) eyes (61.9 percent) achieved a  $\geq 20$  percent reduction in medication-free diurnal intraocular pressure (DIOP) from baseline at 24 months ( $p=0.005$ ), and the mean reduction in medication-free DIOP from baseline to 24 months was significantly greater in treatment versus control eyes ( $p<0.001$ ), respectively (1).

Furthermore, iStent-injected eyes reduced their mean medication burden by 75 percent (versus 47 percent in CS eyes), with 84 percent of stent eyes becoming medication-free at two years (vs. 67 percent of control eyes), and a 50 percent lower final mean medication burden in stent eyes than in control eyes.

Safety was excellent in the iStent inject treatment group, comparable to phacoemulsification alone. This included results for best spectacle-corrected visual acuity (BSCVA), visual field MD, C:D ratio, and endothelial cell stability. There were no unanticipated adverse events and no cases of significant inflammatory responses, myopic shift, choroidal hemorrhage or effusion, hypotony, stent dislocation or migration, significant hyphema, corneal decompensation, shallow anterior chamber, cyclodialysis, or endophthalmitis (1).

### Patient feedback

The outcomes have been very encouraging. Patients often report significant improvements

in their quality-of-life post-surgery, with many experiencing enhanced vision and a reduced need for glaucoma medications. Additionally, the peace of mind that comes from knowing their glaucoma is being effectively managed cannot be overstated.

At eight years postoperative, IOP reduced by 26 percent from  $19.2 \pm 3.9$  mmHg preoperatively to  $14.2 \pm 2.4$  mmHg ( $P < 0.001$ ), 91.1 percent of eyes achieved IOP  $\leq 18$  mmHg (vs. 51.6 percent preoperatively), 69.6 percent of eyes achieved IOP  $\leq 15$  mmHg (vs. 14.5 percent preoperatively), and 25 percent of eyes achieved IOP  $\leq 12$  mmHg (vs. 1.6 percent preoperatively). Medication use decreased by 17.9 percent from  $2.8 \pm 1.1$  preoperatively to  $2.3 \pm 1.2$  ( $P = 0.018$ ). Surgical success was 90 percent, as six eyes underwent subsequent glaucoma surgeries. Safety measures of BCVA, cup-to-disc ratio (CDR), retinal nerve fiber layer (RNFL) thickness, and GC-IPL thickness remained stable through eight years postoperative. Visual field mean deviation (VF-MD) remained stable until postoperative year five and subsequently progressed according to the natural history of glaucomatous disease (2).

For me, these positive outcomes are a testament to the efficacy and safety of the iStent.

*Sally Ameen MBBS, BSC, FRCOphth is a consultant ophthalmic surgeon at OCL Vision where she is the lead in the glaucoma clinic. She has no financial conflict or disclosure with any procedure or product in this article.*

*For the full version of this article and references, visit [top.txp.to/migs/of/choice](http://top.txp.to/migs/of/choice)*

## An Interventional Glaucoma Solution for Long-Term Success

*How PRESERFLO MicroShunt continues to prove its effectiveness and longevity in a crowded market*

The PRESERFLO™ MicroShunt subconjunctival glaucoma drainage device, made from a uniquely biocompatible, degradation-resistant material called SIBS, is designed to reduce IOP in patients with primary open-angle glaucoma (1).

Since its first commercialization in 2018, over 65,000 PRESERFLO MicroShunts have been implanted globally, generating an extensive amount of real-world evidence showing that the device an effective and predictable option in a busy interventional glaucoma market that sees many devices come and go.

Attesting to the PRESERFLO MicroShunt’s success and longevity, Keith Barton, Consultant Ophthalmologist, at Moorfields Eye Hospital, and Professor of Ophthalmology at UCL, London,

talks to us about his long experience with the device, and how he uses it to secure the best outcome for his patients.

**How long have you been using the PRESERFLO MicroShunt, and how many surgeries have you done with it?**  
I put in the first PRESERFLO MicroShunt in the UK in May 2016. Since then, according to our International Glaucoma Surgery Registry data (IGRS.org), I have implanted just over 300.

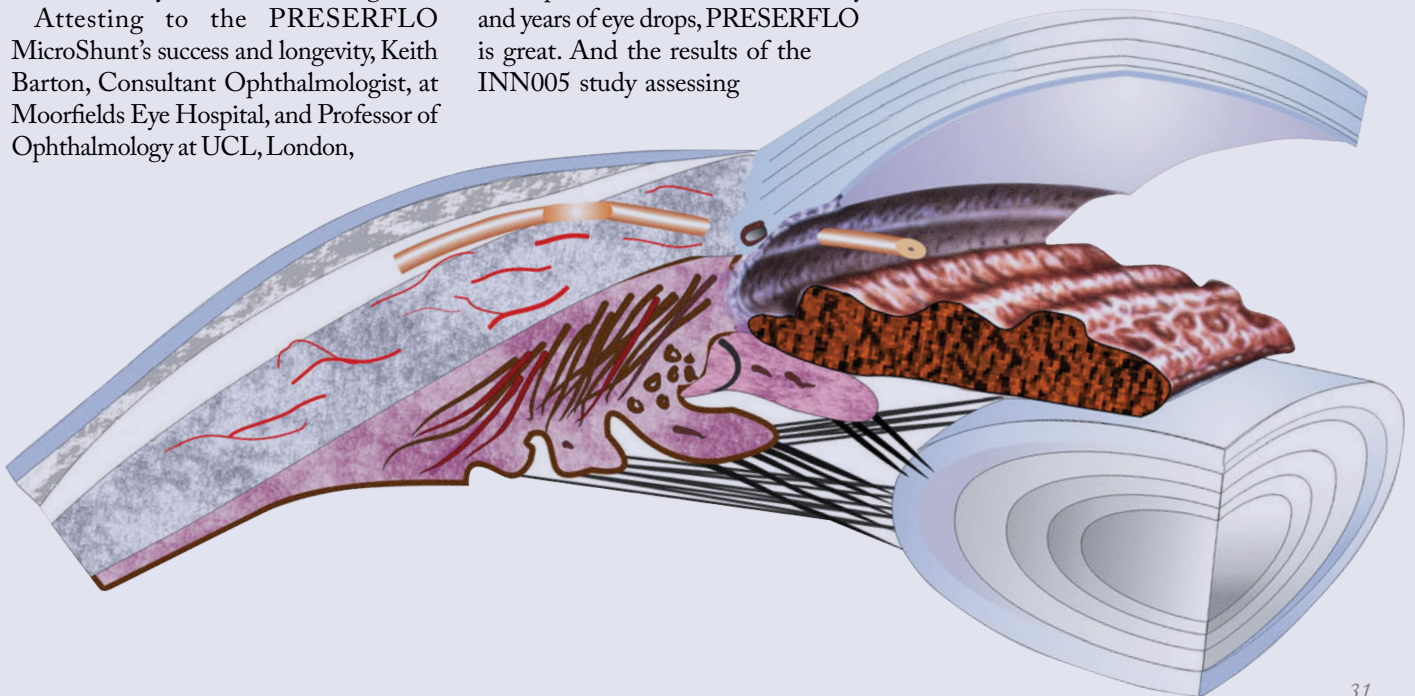
**How has the PRESERFLO MicroShunt changed the way you work from a surgical perspective?**

While I still think trabeculectomy is the most effective procedure for people with advanced glaucoma, in virgin eyes that have no failure risk factors, that number is diminishing. At one end of the spectrum, tube surgery is making more of an impact, whereas the PRESERFLO MicroShunt is impacting the other end of the spectrum. It is my go-to procedure for patients who don’t have vision-threatening field defects, for example, paracentral defects or very advanced glaucoma. In other words, patients that have had no previous surgery and whose conjunctiva is in reasonable shape.

For patients who haven’t endured years and years of eye drops, PRESERFLO is great. And the results of the INN005 study assessing

*“Unlike canal-based MIGS, PRESERFLO MicroShunt actually lowers the pressure quite significantly.”*

the efficacy and safety of MicroShunt or trabeculectomy in patients with primary open-angle glaucoma (POAG), for example, showed that early postoperative adverse events were significantly less common overall in the MicroShunt group (2), interventions were significantly less common overall at two years post-op (3), and incidences of bleb leak were proportionally lower with MicroShunt compared with trabeculectomy (p=0.113) (3). My only caveat to that is you have to be careful when using PRESERFLO in high-scarring ethnicities where the efficacy will be less.



**Can you touch on why you don't implant PRESERFLO MicroShunt at the 12 o'clock position?**

This goes back to trabeculectomy. Traditionally, surgeons used to position trabeculectomies in the 10 o'clock and 2 o'clock positions – you could almost tell whether the surgeon was right-handed or left-handed, according to the position of the trabeculectomy. Over the years, my colleagues and I have repeatedly emphasized the importance of performing trabeculectomies at 12 o'clock in order to maximize bleb coverage by the eyelids and hence minimize the risk of uncomfortable exposed blebs which are at a higher risk of infection. With the PRESERFLO MicroShunt, however, the bleb is much further from the limbus and consequently the risk of a limbal dysfunctional bleb is much lower if the bleb is slightly temporal or nasal. In addition, due to the position of the vascular supply, the 12 o'clock position bleeds much more and also risks the PRESERFLO draining straight onto superior rectus. My preference is

therefore slightly temporal because the temporal quadrant has more space and, if you do get a limbal dysfunctional bleb, temporal tends to be less dysesthetic than nasal. Overall the PRESERFLO blebs are nice – they're really good blebs.

**Can you talk about how you use stenting in the PRESERFLO procedure?**

I'm happy to implant a PRESERFLO MicroShunt in the very elderly, high myopes, or anyone who would otherwise be at a high risk of hypotony, by inserting a ripcord inside the implant to reduce flow. I usually adjust the ripcord so there's not too much and not too little drainage. I do not block it completely; the intention is to have a physiological IOP level on day 1. So basically, I do not stent PRESERFLOs to occlude them but simply to reduce the flow a little bit, so that the risk of hypotony is low and that hopefully the pressure in the early post-op period is fine. This takes a few minutes extra and works very well.

The mitomycin dosage is likely to be important as I did not experience any

*“Overall, the key to success is case selection. If you use PRESERFLO MicroShunt with patients where there is a realistic chance of success, it has a high chance of working very well!”*

significant hypotony when using lower doses of mitomycin C. The mito itself does not cause hypotony, but if you have excessive drainage after surgery and you've used high doses of Mitomycin C, the hypotony is likely to be worse and for longer. Stenting takes that out of the equation for patients at higher risk e.g., in their mid-80s or older and very high myopes. There has been a randomized clinical trial of PRESERFLO, the FDA study, but lower doses of mitomycin C were used in that study than the levels we routinely use in practice. In general, with PFM you need to use higher mitomycin doses than with trabeculectomy, so now use 0.5 mg/ml for three minutes on sponges for almost everybody except the very elderly, in whom I'll use 0.4mg/ml, but I also stent them, which removes the concern about hypotony.

**What would you say about the impact and longevity of PRESERFLO MicroShunt compared to other MIGS and MIGS-like devices from the last 5-10 years?**

Unlike canal-based MIGS, for example, PRESERFLO MicroShunt actually



Keith Barton



lowers the pressure quite significantly. There is an IRIS registry publication in Ophthalmology Glaucoma this year that reports that in a large cohort of patients, after standalone canal-based MIGS, more than 30% of patients required further glaucoma surgery in three years (4). I fear that there is a huge amount of self-deception developing in the glaucoma community as to the benefits of canal-based surgery, borne out of the attraction of innovative procedures that have a better safety profile and are easier. Canal-based MIGS are very innovative and certainly very cool and have a good safety profile, but they are not nailing glaucoma properly for those that are uncontrolled. This is where PRESERFLO comes in. In a post hoc analysis of the FDA randomised clinical trial, PRESERFLO reduced the pressure by 40 percent at one year (2). Additionally, in my experience this procedure requires a lot less follow-up and a lot less intervention than a trabeculectomy, so I'm very optimistic.

Overall, the key to success is case selection. If you use PRESERFLO MicroShunt with patients where there's a realistic chance of success, it has a high chance of working very well!

**The 2023 EGS guide on surgical innovation in glaucoma (5) discussed the efficacy of PRESERFLO versus another**

**commercially available MIBS device, Xen 45, with the panel expressing a clear opinion that PRESERFLO was more efficacious. What is your experience around this subject?**

Overall, I prefer PRESERFLO because of the more posterior drainage bleb that is more diffuse and, in my experience, less likely to cause dysesthesia and other bleb-related problems. The caveat to that is that the difference is probably more related to surgical technique than the device itself. While the Xen is shorter, which is a disadvantage compared with the 8.5 mm PRESERFLO, I think that the difference between the two devices would be reduced where the Xen is implanted ab externo with MMC sponge application like a PRESERFLO.

#### References

1. PRESERFLO MicroShunt Instructions for Use.
2. ND Baker et al., (INN005 Study Group), "Ab-Externo MicroShunt versus Trabeculectomy in Primary Open-Angle Glaucoma: One-Year Results from a 2-Year Randomized, Multicenter Study," *Ophthalmology*, 128, 1710 (2021). PMID: 34051211.
3. JF Panarelli et al., "Ab-Externo MicroShunt versus Trabeculectomy in Primary Open-Angle Glaucoma: Two-Year Results from a Randomized, Multicenter Study," *Ophthalmology*, Volume 131, Issue 3, 266-276 (2023).
4. W Mitchell et al., "Effectiveness of Angle-Based

*Minimally Invasive Glaucoma Surgery after Laser Trabeculoplasty: An Analysis of the IRIS® Registry (Intelligent Research in Sight),* *Ophthalmology Glaucoma*, 7, 335 (2024). PMID: 38519027.

5. EGS Surgery Taskforce, "European Glaucoma Society - A guide on surgical innovation for glaucoma," *Br J Ophthalmol.*, 107 (Suppl 1) (2023). PMID: 38128960.

*Mitomycin C (MMC) is not approved for the specific use shown in this presentation. Long term effects of MMC with the use of this device have not been evaluated. Necessary precautions and interventions on the use of MMC are highly recommended.*

*The PRESERFLO® MicroShunt glaucoma drainage system is intended for reduction of intraocular pressure in eyes of patients with primary open-angle glaucoma where IOP remains uncontrollable while on maximum tolerated medical therapy and/or where glaucoma progression warrants surgery. Please read the PRESERFLO® MicroShunt Instructions for Use carefully and complete the relevant training before using the device.*

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*“My long-term goal is to set up a network of ophthalmic medical centers in Central Asia...”*

## Scanning the Eye Care Horizon

*Sitting Down With... Nikki Kristoffersen-Hafezi, Co-Founder & CEO, EMAGine, ELZA Institute AG, GroupAdvance Consulting GmbH, National Eye Institute LLC (Uzbekistan)*

### What major projects are you currently involved with?

Ophthalmology and vision research have been central to my career for over 20 years. Currently, I am building and training teams to support the growth of the companies and organizations that my husband, Farhad Hafezi, and I have founded. In Europe, we now rely on a trusted team to oversee the daily operations of our two ELZA clinics in Zurich – the original clinic located in an industrial area called Dietikon and our new site at the main train station (Zurich HB) in Zurich – as well as our medical device company, EMAGine, and the various activities linked to our research laboratory and non-profit organization.

Since 2021, Uzbekistan has been a major focus for my consulting firm, GroupAdvance Consulting. Our largest project at the moment is establishing the National Eye Institute, Uzbekistan (NEI-UZ), which has four primary objectives: medical education, clinical training, outreach/access, and research. Importantly, NEI will not only introduce modern technology to Uzbekistan, but also train professionals in its use. To ensure that the training is at the highest level, I have established a local medical device distribution company in Uzbekistan that prioritizes education and service training as core elements of the business.

My long-term goal is to set up a network of ophthalmic medical centers in Central Asia. Currently, I am in the daily operations in

Uzbekistan, but I hope that my role will evolve into an advisory board member. Regardless of the role, I plan to support the development of future leaders, ensuring that they have the skills to manage daily operations. I will know if I reach the goal if the future network of medical centers will be locally managed as well as guiding many of the future leaders onto international career paths. Already, we see there are so many bright, multilingual, and eager young people in Uzbekistan, so I hope that this goal will be achieved soon.

### You've been involved in developing new corneal cross-linking (CXL) technology into real-world applications. Can you talk about your vision for this technology?

Since 2012, Farhad and I have been joined at the hip in the development and commercialization of a CXL technology through a SMART approach: Small, Mobile, Affordable, Reliable Technology. Initially, our goal was to develop the technology, secure CE marking, and then expand internationally. However, when you create a start-up, your business plan changes on a daily basis. No one expected COVID-19 to have such a dramatic and substantial impact on the world. Despite these challenges, EMAGine launched its product into the international market in October 2020.

Now, four years later, EMAGine has established a distribution network in over 70 countries. While we made significant efforts to increase accessibility, diagnostic tools in some low-to-middle-income countries (LMIC) were still lacking. This void led us to develop another medical device for corneal screening and diagnosis, once again using the SMART approach. We created a handheld Placido-based topographer that used the camera and processing power of a smartphone to capture and process images to detect corneal irregularities. This prototype was tested in two Swiss clinics, and its imaging was comparable to modern devices such as the Oculus Pentacam and CSO Italia MS-39.

My vision for this technology is to facilitate early detection of the leading cause of preventable blindness – keratoconus – which

is especially prevalent among children and adolescents, and to generate data for AI-driven diagnostics to reduce the risk of human error in interpreting diagnostic measurements.

### What steps should ophthalmologists take before introducing new technologies or treatments into clinical practice?

Patient satisfaction is probably the most important aspect of building a successful clinical practice, yet it can be interpreted in many different ways. When considering the introduction of a new medical technology or clinical application in their clinical practice, ophthalmologists should consider the following – Has the proposed device been clinically proven through peer-reviewed publications? What alternatives are available? Do you have a sufficient patient base to achieve a relatively rapid return on investment? Do you fully understand how the new technology works? Is the manufacturer or distributor reliable for service and support? Have you sought feedback from trusted colleagues about their experiences with this technology or application?

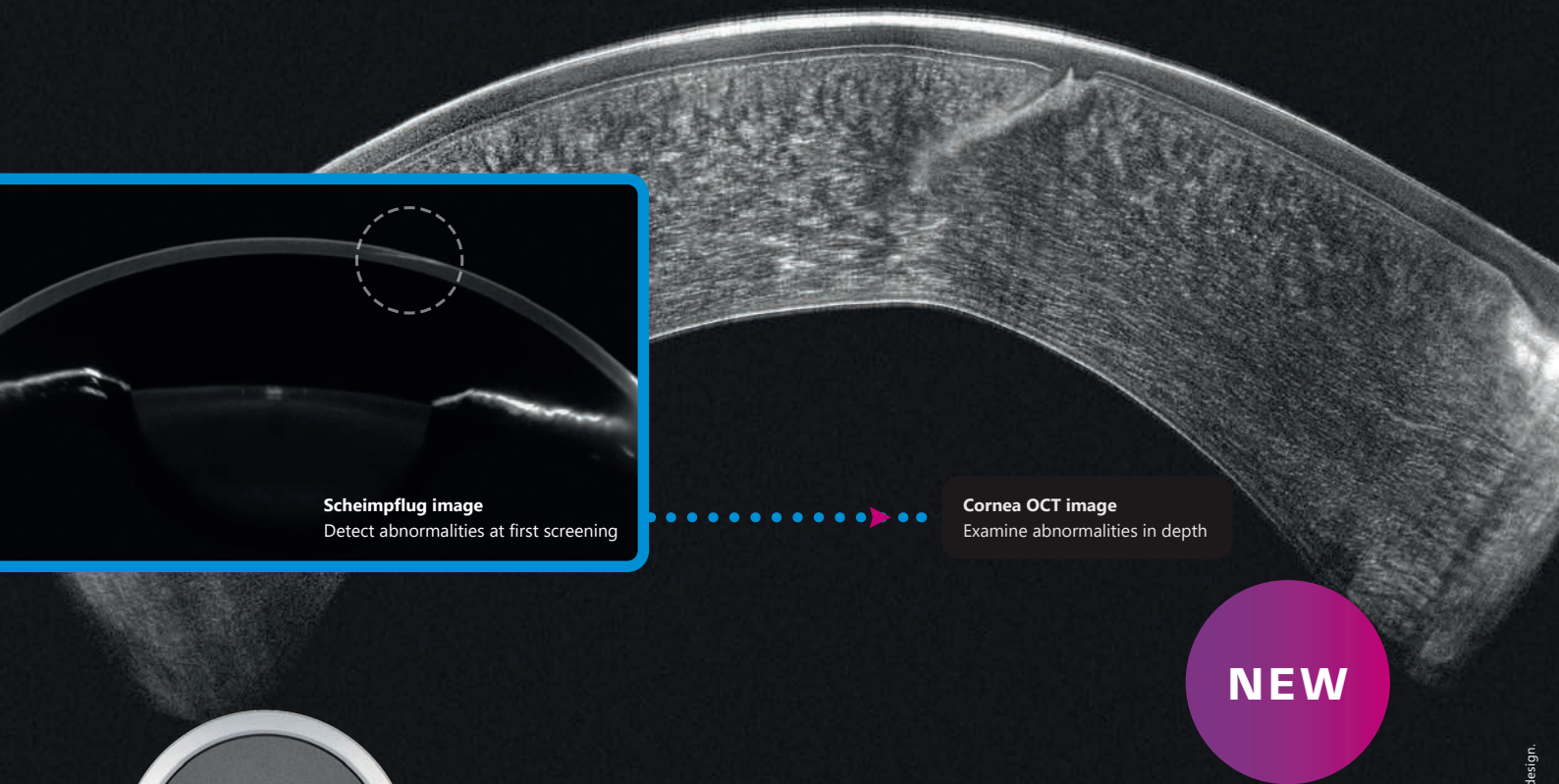
I also recommend incorporating “reverse thinking” – considering potential acquisition – when developing the business plan. This way, you will identify what brings value to the company, enabling you to focus on those areas as priorities. Sometimes, it has less to do with the technology itself and more with securing your IP.

### What do you still hope to accomplish within the field of ophthalmology?

Besides the commercial success of my business ventures, I aim to accomplish three key milestones. 1) Establish public policy for standardized eye and vision care as part of a future national healthcare program in Central Asian countries. 2) Enhance medical education and clinical training for ophthalmology students in Central Asia and beyond by connecting them with an international network of key opinion leaders. 3) Introduce optometry as a discipline in the Central Asian region to improve access to quality basic vision care at affordable prices.

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