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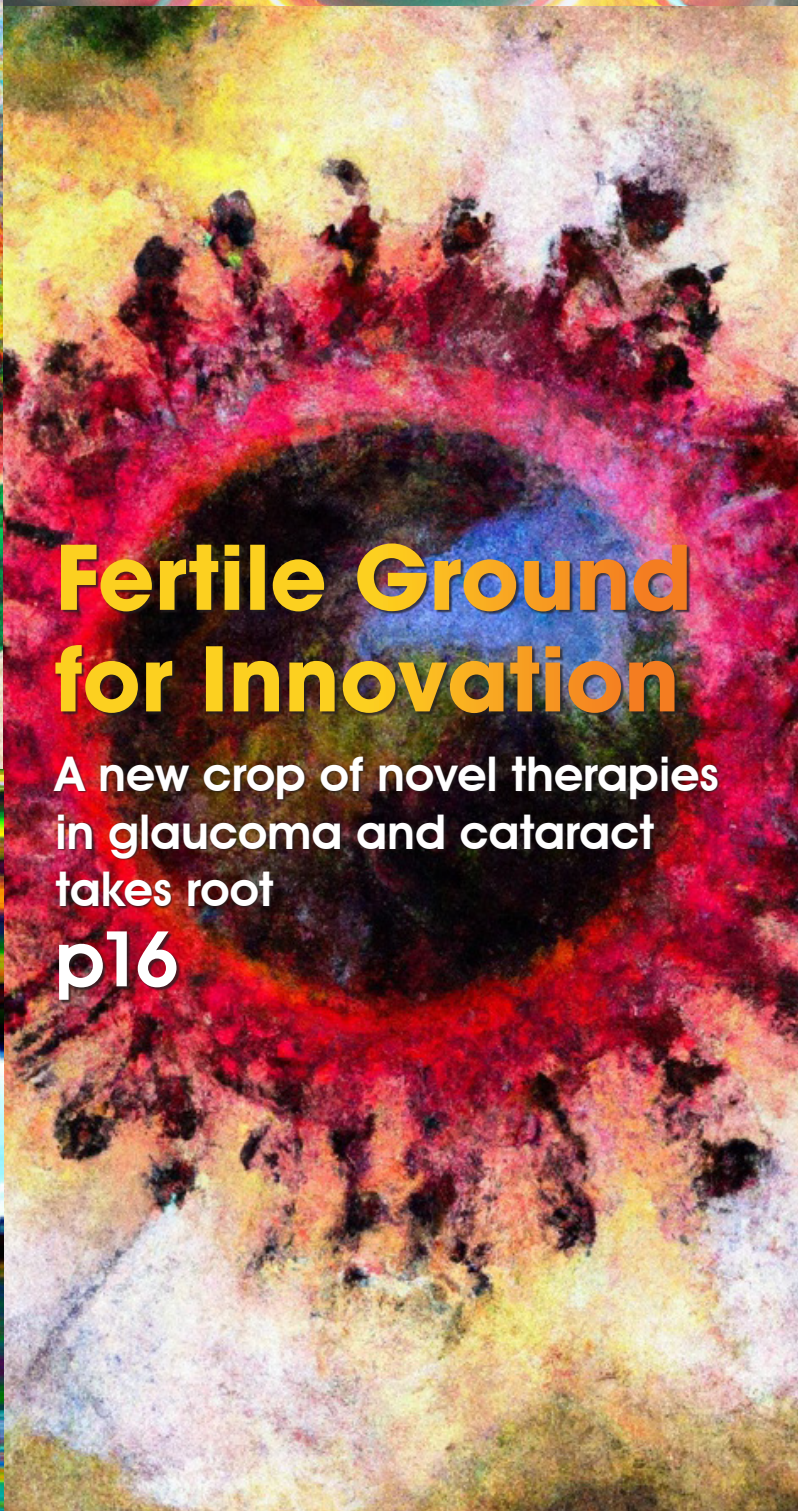
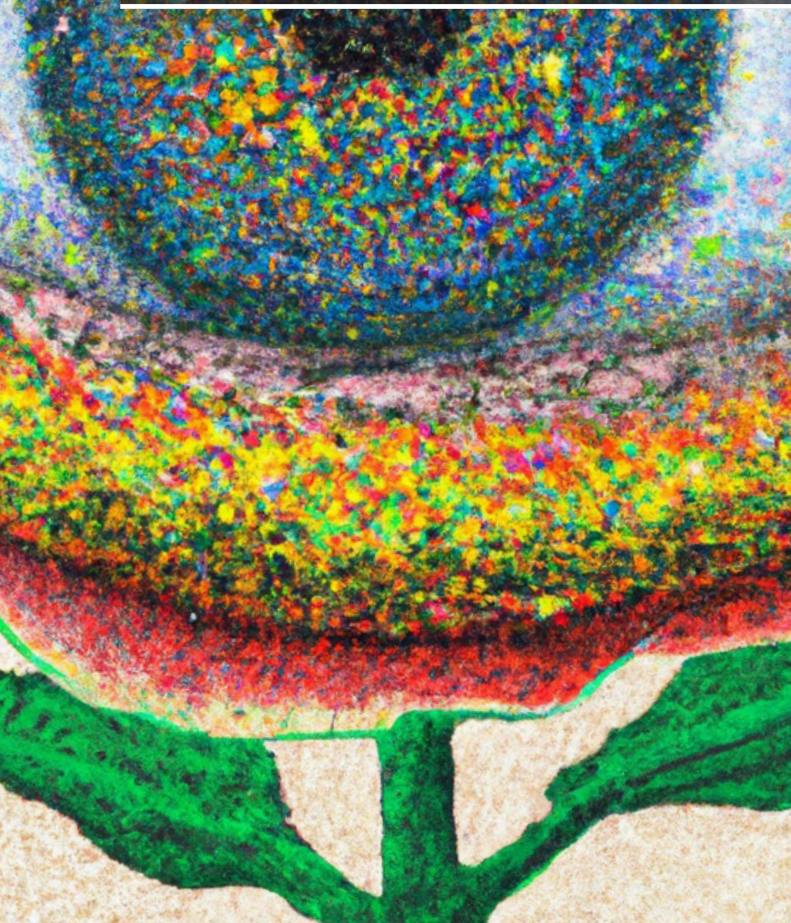
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THE CATARACT & GLAUCOMA ISSUE

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Fertile Ground for Innovation

A new crop of novel therapies in glaucoma and cataract takes root

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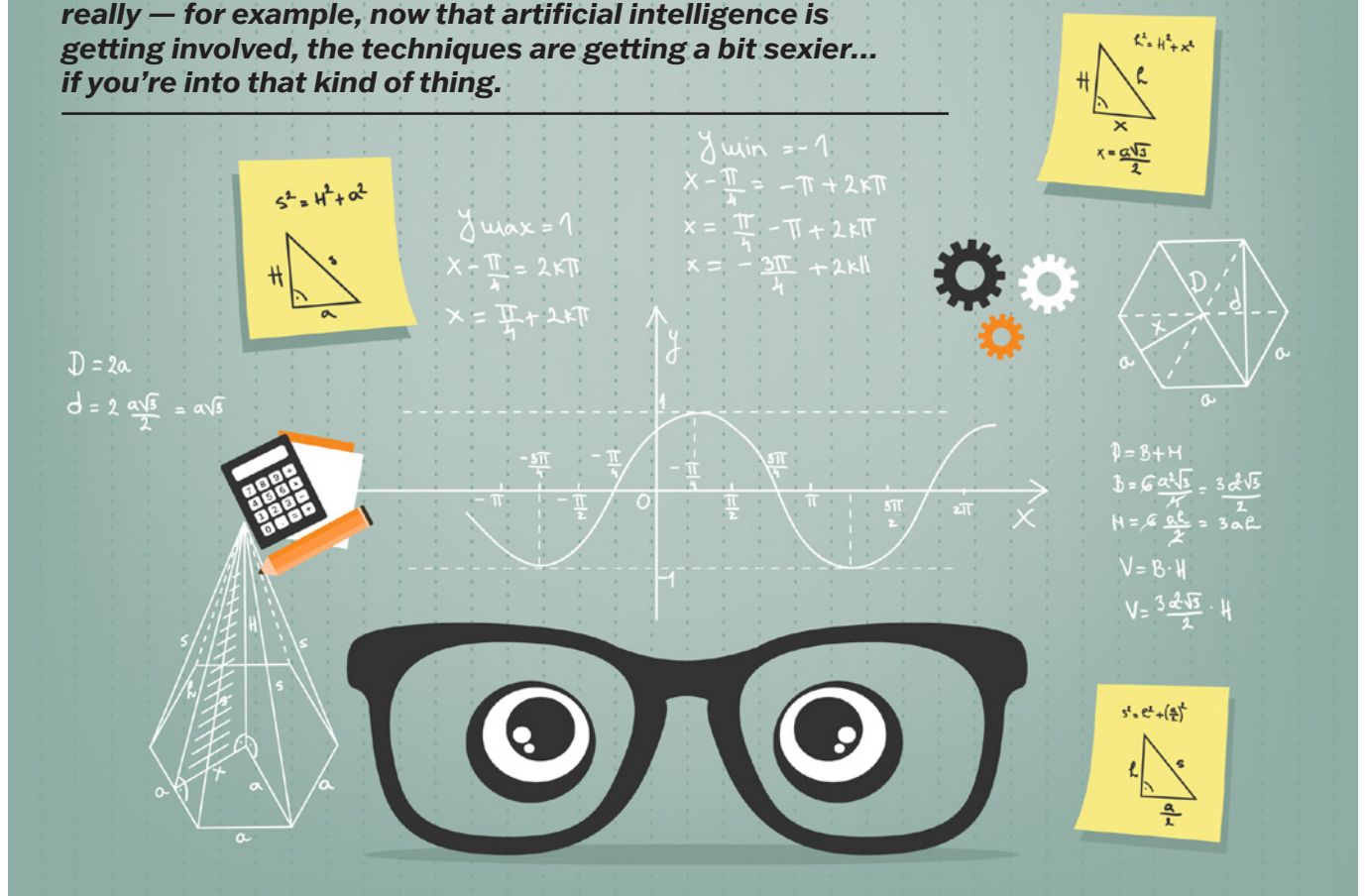
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What's Cracking in IOL Calculations?

News, increments and purchases

by Sam McCommon

New measurement techniques and devices are constantly being updated for intraocular lenses. And it's pretty cool, really — for example, now that artificial intelligence is getting involved, the techniques are getting a bit sexier... if you're into that kind of thing.



It makes sense that if you intend to remove a person's lens from their eye and insert an artificial lens, you'd want to be careful with your measurements. Even in carpentry, the maxim is "measure twice, cut once." A piece of lumber is significantly less sensitive than an eye and won't complain if it's cut wrong, so take that wisdom's necessity and multiply it umpteen times.

So, let's take a look at what's new in

intraocular lens (IOL) calculations and where they're headed. After, we'll look at big news surrounding a specific IOL and what to expect from it.

IOL calculations: What's new?

Let's set some expectations here before we dive in. The changes we're seeing are positive, but not earth-shattering. As Dr. Boris Malyugin put it: "These changes are more incremental than absolute.

So the results that we have are slightly better than before, but not dramatically. Irrespective of the innovative tools we have, the clinical results are improving, but improving incrementally."

Baby steps are a good thing — they show that things were on the right track before, and they're continuing that way. They also mean that surgeons don't have to go back and unlearn and relearn everything they've learned before. Small tweaks

are much easier to work in than radical retooling.

IOL calculations have improved very much over the last few years, though, said Dr. Malyugin. What's more, we have renewed formulas that are already in use, such as the Barrett Universal II, with constantly improving quality. For him, this measurement represents the gold standard that other formulas can be compared to.

Dr. Malyugin sees two trends developing. One is the increasing viability and reliability of calculations that rely to some degree on artificial intelligence (AI) calculations, like Hill-RBF and Kane formulas.

The second trend is an improvement in toric calculations, since toric lenses are growing in popularity. "I believe the most groundbreaking improvement was the publication about the posterior astigmatism playing a role. We should account for it in formulations such as the Barrett Toric Calculator."*

Tech trends and gray zones

Being able to make adjustments during surgery is a pretty neat development, Dr. Malyugin told us. "There are technologies like digital markers that help position the lens in a specific direction. There are also intraoperative aberrometers, that can help to adjust the actual power of the lens if needed," he said.

The extreme biometric outliers still need some work, though. "I think there will still be a gray zone where we have highly myopic eyes or highly hyperopic eyes, or eyes with previous refractive surgery or different refractive procedures."

He continued: "We are very much improving in the area where we have more normal eyes, but those extremes will always be the place we need to go further and have further improvement."

So, what's working currently with less common eyes? Dr. Malyugin pointed out that the Haigis formula was working well for very short eyes, for example. While surgeons can rely on standard formulas for normal biometric parameters, more specific

formulas will be needed for extreme parameters.

Ray tracing is under development and looks promising, but isn't quite here yet. It should take into account individual geometrical patterns of each lens implanted, leading to individualized implants and refractive powers. This takes a lot of technical information, of course, which is why Dr. Malyugin expects manufacturers to come up with ray tracing formulas, which will not be universal for each lens.

Biometric machines are constantly improving, as well. Dr. Malyugin pointed to the Zeiss (Jena, Germany) IOLMaster 700® and its improved ability to read the anterior ocular surface, greatly improving biometric readings.

Digital transfer of information between IOL machines can help reduce human error as well. It can be shared from one machine to another, ending up right in the operating microscope so there's no need for adjustment.

Of course, keep your eye on AI developments. A combination of exponential growth in AI power and availability and more widely available data can lead to improved measurements in many ways we don't yet understand, but can still anticipate. This will be especially helpful when improving formulas for specific ethnicities, as there are ocular anatomical characteristics distinct to different ethnic groups.

AcuFocus small aperture IOL: Big news

Since we're talking about IOL developments, let's look specifically at an IOL that just hit the market in the US. In July 2022, the AcuFocus (Irvine, California, USA) IC-8 Aphera® became the first small aperture, presbyopia-correcting lens available in the country, and it was first implanted in 2023. The goal is to give a broad range of vision from near to far without any blurry zones. This appears to be a step forward from trade-offs associated with extended depth-of-focus (EDOF) lenses or others that aim to specifically improve one depth of vision.

The Aphera is also the first non-toric IOL designed for cataract patients with up to 1.5 diopters of corneal astigmatism. It's been available in Europe since 2015, and is well-suited to patients with corneal aberrations, keratoconus, or previous cataract or refractive surgery.

Big moves have just taken place, business-wise: Bausch + Lomb just acquired the AcuFocus company as of January 18, 2023, adding a huge business boost to the company and the lens itself.

Watch this space, as doctors are likely to hear a lot more about this lens in the near future. 📖

Reference

* Yang S, Byun YS, Kim HS, Chung SH. Comparative Accuracy of Barrett Toric Calculator With and Without Posterior Corneal Astigmatism Measurements and the Kane Toric Formula. *Am J Ophthalmol.* 2021;231:48-57.



Contributing Doctor

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MIGS

Making inroads in glaucoma specialization

by Sam McCommon

In the future, medical archaeologists and historians will look at the 2010s and 2020s as a wildly explosive era of ophthalmic evolution. The marriage of technology and medicine has produced all sorts of viable offspring, and the proliferation of new treatments and tools will continue to evolve. Those historians will probably look at the widening array of MIGS the way an entomologist studies highly-specialized beetles in the jungle.

Nowadays, there are a lot of different microinvasive glaucoma surgery (MIGS) procedures, and plenty more in the pipeline. Since the term was first coined in 2009, many treatments have entered the market. These work in a myriad of ways, from being miniature versions of trabeculectomy to numerous angle-based treatment options to help fluid drain from the eye.

But what kind of a role can we expect MIGS to play in the future, and where are we now? Are we in the era of MIGS? Where do MIGS fit into glaucoma treatment regimens?

We reached out to two top glaucoma specialists to get their take on the big picture and some exciting new developments. These are Dr. Boris Malyugin, deputy director at S. Fyodorov Eye Microsurgery Institution in Moscow, and Dr. Chelvin Sng, a director and senior consultant ophthalmologist with numerous appointments in Singapore.

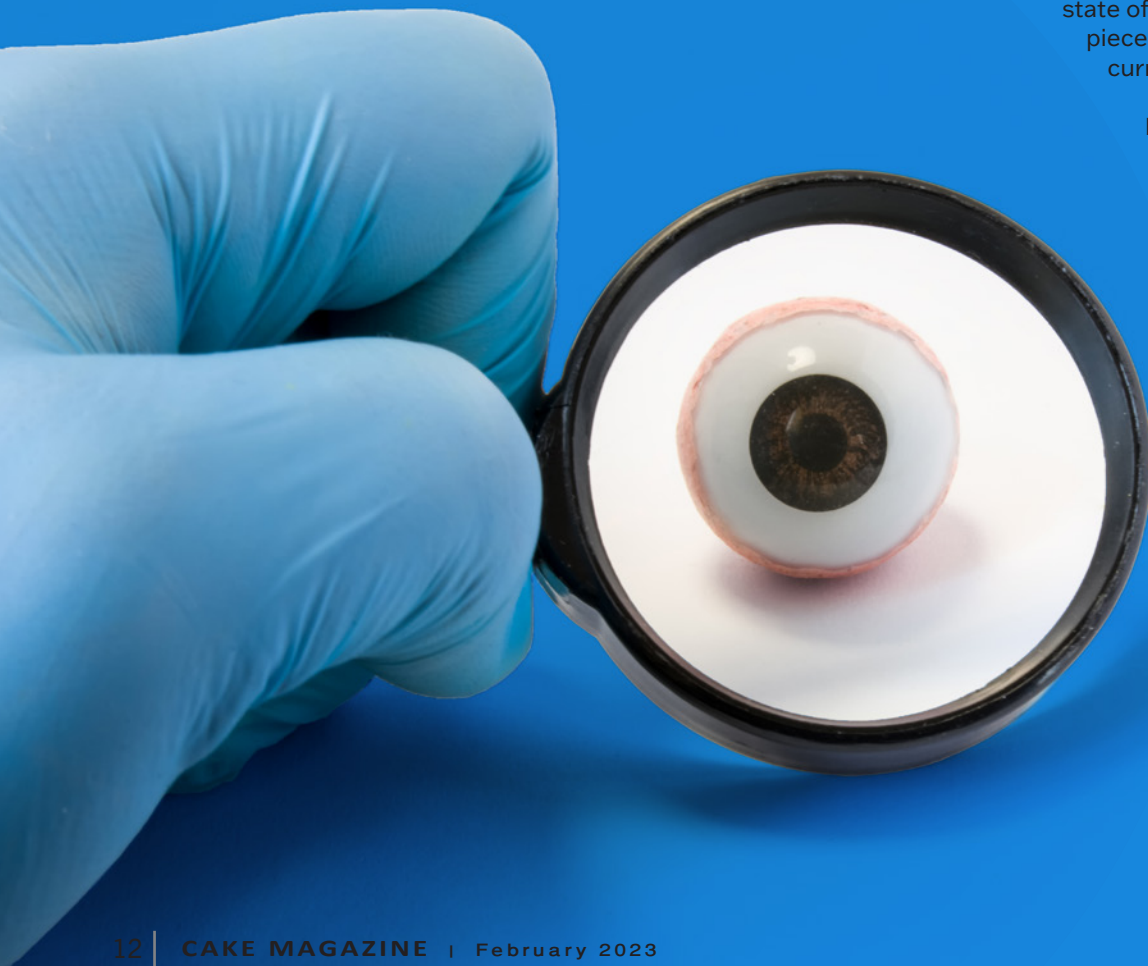
Let's dive in.

How big is MIGS?

First, let's get a look at the current state of MIGS — and how big a piece of the puzzle they are in current glaucoma treatments.

Dr. Malyugin weighed in here. As he explained, "At least for now, MIGS represent a small to moderate piece of the glaucoma treatment puzzle." But it looks like things are set to expand soon, and for good reason.

Let's step back though. There are some hurdles to clear. Quoth Dr. Malyugin: "The current situation is that there is a huge variety of different devices, and sometimes surgeons are being confused with respect to what device to choose properly. But I believe there is a good trend now



to classify MIGS devices, like with the trabecular stenting seen in iStent (Glaukos, San Clemente, California, USA). Similarly, there are devices that improve suprachoroidal outflow — some of which, like CyPass, did not stand the test of time.”

Classifying MIGS into different categories will certainly help surgeons get a hold on the rapidly developing field, he noted. There are more than a few ways to categorize: method of drainage, use for early or late-stage glaucoma, or placement in the eye, for example. Keep your eye on this space as types of MIGS become more clearly classified.

There’s a lot of room for growth, especially since the field is developing so rapidly. “Maybe tomorrow there will be new technology, such as MIGS with devices that have sustainable release of intraocular medication. In the future, we will have much better long-term solutions than we have now,” shared Dr. Malyugin.

It’s not all roses, however, and there is plenty of more work to be done. “Glaucoma is generally about proper diagnostics and proper follow-up, and MIGS is kind of a one-step procedure,” he continued. “Obviously, it does not cover the lifespan of the glaucoma patient. The patient should be followed for a long, long time, and the treatment — as we know — should be adjusted according to the individual needs.”

Because glaucoma can only be treated and not cured, customized care is crucial. “MIGS is only one piece of this puzzle and we just need to integrate it into clinical practices properly,” said Dr. Malyugin.

Specific devices

So let’s look a bit closer. Dr. Malyugin mentioned treatments that work for early and late-stage glaucoma. For early glaucoma, there’s the iStent — a silicon tube that goes into the subconjunctival space. According to Dr. Malyugin, there are very optimistic results with respect to the Hydrus Microstent (Ivantis, Irvine, California, USA), which stents the Schlemm’s canal and remains there.

There are also devices that help remove the trabecular meshwork,

such as Kahook Dual Blade (New World Medical, Rancho Cucamonga, California), the iTrack system (Nova Eye Medical, Adelaide, Australia) for ab-interno trabeculectomy, and Trabectome (NeoMedix, Tustin, California, USA), one of the first MIGS treatments.

“Glaucoma is generally about proper diagnostics and proper follow-up, and MIGS is kind of a one-step procedure.”

— Dr. Boris Malyugin

While there is increasing data that MIGS devices aren’t particularly effective at improving trabecular outflow, there is still an added benefit to having them, Dr. Malyugin noted.

Getting cataract surgeons involved

There’s room for cataract surgeons to get involved in MIGS devices, even if they don’t commonly use them now. This is largely down to skillset.

As Dr. Malyugin put it: “Cataract surgeons can dig in because these surgeons don’t usually deal with glaucoma patients very much. But cataract surgeons are skilled surgeons with a good level of dexterity who can accommodate these new devices into their surgical

practice. For them, it’s natural and easy to use these MIGS devices during their procedure.”

There are certainly

technical challenges involved with implanting some MIGS devices, which cataract surgeons appear readily suited for. “You have to know how to do intraoperative gonioscopy. You have to adjust the operation microscope. It should be tilted by at least 30 degrees to view the angle structure. And there are certain limitations in the movement that are the result of the gonioscopic lens positioned on the cornea,” he continued.





While these are technical skills to be mastered, Dr. Malyugin believes the average cataract surgeon with a good level of dexterity can tackle the skills and add them to their repertoire.

Three exciting MIGS developments

There are three intriguing MIGS devices we wanted to discuss with Singapore star Dr. Chelvin Sng, and she gave us the goods. These are the Paul Glaucoma Implant (Advanced Ophthalmic Innovations, Singapore), the MINInject (iSTAR, Wavre, Belgium), and PreserFlo (Santen, Osaka, Japan).

We'll start in that order. The Paul Glaucoma Implant (PGI) was designed by Singapore's Professor Paul Chew and is a novel, valveless glaucoma drainage device developed to reduce complications seen in some other drainage devices. Dr. Sng was a co-inventor of the PGI, so she knows what's up.

Paul Glaucoma Implant

So what's up with the PGI? What's its future, how does it work, and how safe is it?

Dr. Sng sang a song for us. "The PGI has the potential to replace the Ahmed and Baerveldt tubes as the preferred tube implant," she incanted. "A recent publication in the *Journal of Glaucoma* reporting the two-year outcomes of the PGI shows that it significantly reduces the IOP to the low teens, with a significant reduction in medications. My personal experience with the PGI is that its efficacy is similar to the Baerveldt with a higher safety profile than the Baerveldt, and now I use the PGI in more than 95% of my tube implant surgeries," Dr. Sng continued.

Avoiding endothelial cell loss, hypotony, and tube erosions are potential concerns with existing glaucoma drainage devices. Steps to reduce those effects — which the PGI is designed to do — are valuable ones for the development of MIGS.

MINInject

The MINInject implant creates an alternate drainage pathway from the anterior chamber to the supraciliary space. This makes it a bit special in

the MIGS world and certainly helps it stand out.

We asked Dr. Sng what she liked about it, what about its placement made it different, who it is for, and what advice she'd give to fellow doctors.

"The MINInject drains aqueous from the anterior chamber to the supraciliary space," she began. "Though this space is potentially able to lower IOP significantly, scarring also occurs here and, unlike the subconjunctival space, we are unable to modulate wound healing with anti-metabolites."

There's a lot more to be done to fully understand this approach, according to Dr. Sng. As she put it, "I think we still have a lot to learn about the supraciliary space and how we can unlock its full potential

in glaucoma surgery. Compared to trabecular bypass procedures, supraciliary drainage is associated with a higher risk of complications, including hypotony. Hence, I would not offer this to patients with very mild glaucoma, especially as a phaco-plus procedure when the eye pressure is controlled with eye drops."

So, is there room for it in the MIGS world? "It may have a role in refractory glaucoma in the context of failed subconjunctival drainage procedures, though this still awaits investigation," said Dr. Sng.



Contributing Doctors

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Dr. Chelvin Sng, BA, MBBChir, MA(Cambridge), MRCSEd, FRCSEd, MMed, FAMS, is the medical director of Chelvin Sng Eye Centre at Mount Elizabeth Novena Hospital. She is also an adjunct associate professor at the National University of Singapore (NUS), a visiting consultant at the National University Hospital, Singapore, and an adjunct clinician investigator at the Singapore Eye Research Institute (SERI). A pioneer of minimally invasive glaucoma surgery (MIGS), Dr. Sng was the first surgeon in Asia to perform XEN, InnFocus Microshunt, and iStent Inject implantation. A co-author of an open-access book on "Minimally Invasive Glaucoma Surgery", Dr. Sng has also written several book chapters and publications in various international journals. Proficient in conventional glaucoma surgery and trained in complex cataract surgery, Dr. Sng co-invented a new glaucoma drainage device (currently known as the "Paul Glaucoma Implant"), which was patented in 2015. Dr. Sng has received multiple international awards, including the Asia Pacific Glaucoma Society Young Investigator Award and the Asia Pacific Academy of Ophthalmology Achievement Award. When not working, Dr. Sng can be found volunteering in medical missions in India and across Southeast Asia.



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PreserFlo

The PreserFlo Ab-Externo Microshunt has been available in Europe since 2012, while FDA approval in the US is pending. It can be used on its own or in conjunction with cataract surgery, producing a bleb under the conjunctiva and Tenon's capsule.

We were curious about what Dr. Sng liked about PreserFlo, how it could fit into a treatment regimen, and what else it works well with.

"I like the design of the PreserFlo implant, which has a fin that prevents peri-implant leak, or migration of the implant into the anterior chamber. It is very rare to encounter persistent hypotony after the surgery," said Dr. Sng. "The sub-tenon placement of

"I think we still have a lot to learn about the supraciliary space and how we can unlock its full potential in glaucoma surgery. Compared to trabecular bypass procedures, supraciliary drainage is associated with a higher risk of complications, including hypotony. Hence, I would not offer this to patients with very mild glaucoma, especially as a phaco — when the eye pressure is well controlled with eye drops."

— Dr. Chelvin Sng

the implant and its length ensures that the bleb is posterior, and patients are less likely to complain of bleb dysesthesia compared with trabeculectomy blebs."

She continued: "I would offer the PreserFlo MicroShunt to patients

with moderate to severe medically uncontrolled glaucoma. I have paired this procedure with cataract surgery in patients with visually significant cataracts, though that may increase the risk of subconjunctival scarring."

MIGS moves

So, as you can see, a lot is changing in the MIGS world — and fast. The upshot? More

options for doctors and patients, and more room for development in the future. It makes sense to take almost an evolutionary lens to MIGS development since the proliferation is so fast and diverse. What'll we call the MIGS Cambrian Explosion in the future, do you think? 📱



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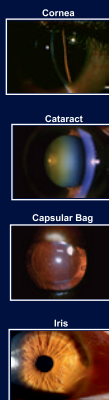


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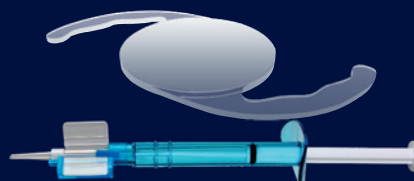
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Fertile Ground for Innovation

A new crop of novel therapies in glaucoma and cataract takes root

by Matt Herman

The seeds of glaucoma and cataract research are coming to fruition. CAKE magazine talked to an international cast of doctors about what they are most excited about in the future.

Medical research can be a tough sell. As societal problems mount, splashy investments by governments in research seem increasingly like a luxury to a public weary of wasteful spending, corruption, and wealth inequality.

Private investors, too, are not exactly entranced by the idea of waiting long years for returns on their investment. Though flawed, the widely-cited ‘time lag’, or time it takes research to turn into medical intervention of 17 years¹ is enough to give pause to even the most patient potential financiers. Even if a generous 12 years is knocked off of this figure, five years is still a long time to wait for a payday on an already risky proposition, especially in the world of meme stocks and cryptocurrency.

This isn't to say that we are entering a Dark Ages for medical research. Pharma firms themselves have enthusiastically picked up the slack in funding where governments and private capital have turned skittish. After all, self-funded research means higher profits, especially in the United States.

The result is that, despite waning enthusiasm, pharmaceuticals, with eye care included, are still in a golden age of discovery. New drugs, devices, and treatments are rolling off the line with consistency, and the coming year and beyond a promise to be better than ever — especially for cataract and glaucoma, two of the leading causes of blindness worldwide.

The harvest in novel therapies for these critical diseases is bountiful, indeed. So we caught up with top anterior segment MDs from around the world to see the cream of the crop rise to the top.

ROCK: What's growing on?

Of all the novel innovations, devices, treatments, and tricks coming out, there was one in particular that generated the most buzz out of the doctors we interviewed — ROCK inhibitors (RKIs). So named because they inhibit pathways associated with Rho kinases (ROCKs), these drugs have the potential to be used in everything from hypertension to erectile dysfunction.

“The ROCK inhibitors currently available are ripasudil and netarsudil,” summarized Dr. Chelvin Sng, glaucoma expert and founder and medical director of the Chelvin Sng Eye Centre in Singapore. “Both increase trabecular outflow, and netarsudil also reduces aqueous production,” she explained.

Intraocular pressure (IOP)-lowering agents like RKIs are not new for glaucoma. But it is the mechanism of action of this novel treatment that has doctors talking. There are many drugs that ultimately lower IOP and ocular hypertension, but none do so by actually relaxing the trabecular meshwork as ripasudil and netarsudil do. This is accomplished due to the downstream effects of Rho kinase inhibition, and the hype over this novel approach to IOP reduction is turning heads, including Dr. Harvey Uy’s, Medical Director at Peregrine Eye and Laser Institute in the Philippines.

“[RKIs are] intriguing drugs because [they are the first] new class of therapeutic agents in more than a decade,” Dr. Uy shared. “[They are] also the first to work directly on the trabecular meshwork, which is believed to be the site of pathology for many cases of glaucoma,” he continued. This direct effect on the trabecular meshwork sans invasive methods is the calling card of RKIs driving the hype train.

Netardusil is the darling of the RKI ball, as it goes a step further by reducing aqueous humor outflow, further amplifying its IOP-reducing superpowers. This is because it includes a norepinephrine transporter (NET) inhibitor, giving the drug an edge over its competitors.

All in all, the ball is just getting rolling for netardusil and ripasudil, and their advantages are clear for Dr. Uy and Dr. Sng. One great advantage over existing treatments for Dr. Sng is the lack of systemic side effects. Though conjunctival hyperemia can occur within two hours of use, it subsides after this window without the systemic risks in other IOP-lowering agents.

The list goes on. “The efficacy of netardusil is similar to that of timolol,” Dr. Sng continued. “[And] studies have shown that the efficacy

of rhopressa [ripasudil] is similar in patients with lower pressures as those with moderately elevated pressures,” she concluded.

And there’s more to be excited about beyond raw efficacy. Compliance with glaucoma eye drops can be marred by the need for frequent application. This ends with RKIs. “The once-a-day dosing offers much-desired convenience,” Dr. Uy added. This once-a-day dosage is unprecedented with IOP-reducing agents. Many popular medications like timolol require at least two doses a day,² meaning more failure points for patients struggling to keep up with their treatment regime.

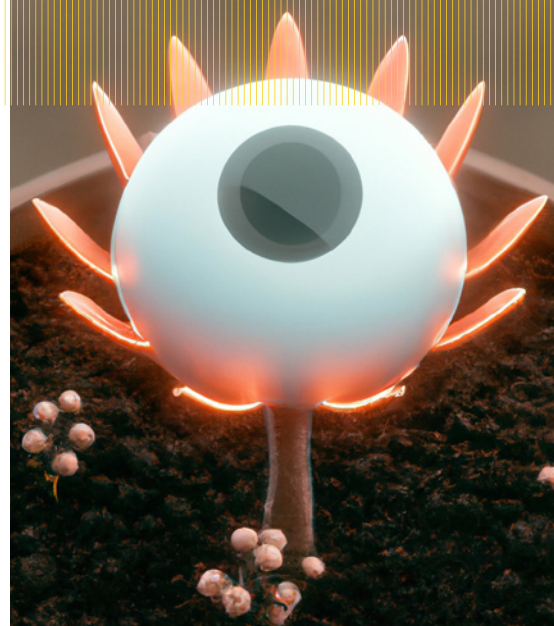
Dr. Sng sees even further patient compliance potential when RKIs are combined with other drugs. “There are also fixed combination eye drops containing ROCK inhibitors and FP agonist prostaglandin analogs, which would improve patient adherence,” added Dr. Sng.

Whatever the advantages of RKIs have already proven to be, there are likely still many more to be found, both inside and outside of ophthalmology. But regardless of what is coming down the line for these therapies, Dr. Sng agrees that they have arrived in a big way in glaucoma. “ROCK Inhibitors are a mainstay, as they are a useful addition in our armamentarium of glaucoma eye drops,” she confirmed.

Sowing the seeds of digital tech

The world at large is half-drunk on artificial intelligence (AI). Tools like ChatGPT are sparking fevered discussions around the planet about the future of work and of humanity and its relationship to machine intelligence. So frenzied is the din surrounding this breakout technology that a recent gaffe by Google’s Bard AI during a live demonstration instantly vaporized nearly \$100 billion of the tech giant’s market capitalization.

Fortunately for eye care, the dawn of the era of intelligent machines has taken on a more reserved air. AI’s prowess in analyzing images has paid dividends in everything from diabetic retinopathy to glaucoma to wet age-related macular degeneration (AMD).



Tools like AI retinal fluid monitoring are starting to see widespread clinical use around the world.

“There’s a variety of different applications for AI — it is very good at analyzing images, and we have a lot of visual information in ophthalmology,” explained world-renowned cataract and refractive expert Dr. Boris Malyugin, deputy director of S. Fyodorov Eye Microsurgery Federal State Institute in Moscow, Russia. “We love images and we rely on them. That’s why AI is a good tool for ophthalmologists — because we have a lot of optical and visual information.”

And one space where this optical and visual information comes together is in the increasingly complex web of biometric data and imaging involved in IOL power calculations. For Dr. Malyugin, the need is glaring. “What we are doing [with AI in IOL



power calculations] is improving our refractive results, and this will benefit our patients,” he remarked. But the benefits are there for doctors, too. “We know that one of the major sources of litigation is incorrect IOL power.”

To this end, there are promising new formulae incorporating AI and machine learning algorithms in them. These include, among others, Hill RBF 2.0, Kane, PEARL-DGS, and the Ladas Super Formula 2.0. Though the function of these proprietary formulae remains largely opaque, the results they are clocking are starting to turn heads.

One major contribution that the predictive power of AI is making to minimize postoperative refraction prediction error is in one of the major bugaboos of modern IOL implantation — effective lens position (ELP) predictions. An influx of postoperative data has led to the ability to train AI to predict postoperative anterior chamber depth (ACD) with unprecedented accuracy. A 2021 study³ showed that

with ACD and ELP values predicted with machine learning methods, the mean absolute error (MAE) in refraction prediction was significantly lower than with the original formulae.

This is great news for ray tracing IOP calculation methods, another novel technology on the verge of a breakout. Extremely accurate in ways that traditional formulae are not (like corneal aberrations), but ultrasensitive to errors in things like ELP, ray tracing might just be on the verge of a breakthrough on the heels of the AI revolution.

Dr. Malyugin thinks there are other reasons ray tracing is about to get its long-awaited day in the sun. “[Ray tracing] must take into account the individual geometric parameters of each lens, like anterior and posterior surface curvature,” he explained. “Some manufacturers will come up with their own ray tracing formulas because they have specific information that will not be universal for each lens that we have in our machines,” predicted Dr. Malyugin.

Despite the obstacles, the future of more accurate, more capable IOL power calculation is upon us — thanks to the advances brought about by AI and ray tracing. But while the massive leaps forward like RKIs and machine learning are grabbing headlines in the vision space, doctors are also looking at a host of smaller-scale innovations poised to make power moves.

Fresh picks: Medication miscellanea

Dr. George Beiko, associate clinical professor at McMaster University and a lecturer at the University of Toronto, Canada, has his eye on one important niche in glaucoma. “I am looking forward to an expansion of preservative-free glaucoma medications,” Dr. Beiko wrote.

He sees the current landscape of glaucoma management meds as not meeting the demands of the modern patient. “As glaucoma therapy is chronic and tends to be lifelong, toxicity from preservatives is an eventuality,” he continued. Benzalkonium chloride (BAK) is by far the most common preservative used in eye drops, and is known to be toxic to many ocular structures, and in

particular the ocular surface.⁴

“Patients frequently come in with irritated eyes. However, stopping their current treatment may not be a desirable option since their glaucoma may be controlled,” shared Dr. Beikos. Replacing highly toxic and outdated preservatives like BAK, which has been in use since the 1940s,⁴ should be a priority after around 80 years of the same noxious substance.

“Preservative-free options make the treatment bearable,” added Dr. Beiko. And for sufferers of a lifelong, chronic disease like glaucoma, bearable should just be the bare minimum.

Outside of RKI’s, Dr. Chelvin Sng is keeping tabs on another game-changing pharmaceutical innovation this year. “I am most excited about sustained release drug delivery devices,” Dr. Sng said.

The harvest of potential drug implants that deliver critical glaucoma management drugs is abundant, indeed. Punctal plugs are one promising direction, with the Evolute by Mati Therapeutics leading the way after it completed a phase II trial this year. Contact lenses that deliver drugs like timolol and latanoprost are also in the early stages of development. Both have shown promise, but also come with a plethora of issues. Punctal plugs become dislodged. Both run the risk of bacterial infection. But research and more tinkering might just unlock the significant latent potential.

Intracameral inserts seem to be the most promising contender in the near future. Glaukos’ iDose TR travoprost delivery system is coming off of extremely promising Phase III clinical trial results, while the OTX-TIC from Ocular Therapeutix (USA), ENV515 from Aerie Pharmaceuticals (USA), and Alcon (SUI) and Latanoprost FE SR from PolyActiva (AU) look to join the FDA-approved DURYSTA bimatoprost implant from Allergan (IRL).

Whatever modality is still standing when the dust settles, Dr. Sng sees a host of benefits for those who need it most. “[Sustained drug delivery devices] can potentially improve our patients’ quality of life by reducing or eliminating glaucoma medications,” she stated.



A bountiful harvest for cataract and glaucoma

All in all, the future is ablaze with possibilities in ophthalmology. Impending breakthroughs in AI implementation loom large across the field, and cataract and glaucoma are well-positioned to take immediate advantage. And despite the pandemic hangover and a waning appetite

for government-funded research in novel medicines, industry is more than happy to pick up the slack with lucrative drugs like RKIs and quality-of-life boosting innovations like sustained drug delivery devices. The ground for innovation in cataract and glaucoma is more fertile than ever, and patients with these potentially debilitating disorders are already starting to reap the benefits. 🍌

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Contributing Doctors

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Surgery at AAO. He is on the review panel or editorial board of over 30 ophthalmology journals. His honors include being elected to membership in the IIIC, named one of the "Premier Surgeons" of North America and made an Officer of the Most Venerable Order of the Hospital of St. John of Jerusalem, by Her Majesty The Queen of England. He was honored on 3 occasions with the Gold Medal by the IIRS, an Achievement award and a Senior Achievement award by the AAO, an Achievement Award by the APAO, the Presidential Award of the ISRS and the Boberg-Ans Award of the Danish Ophthalmological Society.

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She is also an adjunct associate professor at the National University of Singapore (NUS), a visiting consultant at the National University Hospital, Singapore, and an adjunct clinician investigator at the Singapore Eye Research Institute (SERI). A pioneer of minimally invasive glaucoma surgery (MIGS), Dr. Sng was the first surgeon in Asia to perform XEN, InnFocus Microshunt, and iStent Inject implantation. A co-author of an open-access book on "Minimally Invasive Glaucoma Surgery", Dr. Sng has also written several book chapters and publications in various international journals. Proficient in conventional glaucoma surgery and trained in complex cataract surgery, Dr. Sng co-invented a new glaucoma

drainage device (currently known as the "Paul Glaucoma Implant"), which was patented in 2015. Dr. Sng has received multiple international awards, including the Asia Pacific Glaucoma Society Young Investigator Award and the Asia Pacific Academy of Ophthalmology Achievement Award. When not working, Dr. Sng can be found volunteering in medical missions in India and across Southeast Asia.

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