

the Ophthalmologist™

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BromSite® (bromfenac ophthalmic solution) 0.075% Brief Summary

INDICATIONS AND USAGE

BromSite® (bromfenac ophthalmic solution) 0.075% is indicated for the treatment of postoperative inflammation and prevention of ocular pain in patients undergoing cataract surgery.

CONTRAINDICATIONS

None

WARNINGS AND PRECAUTIONS

Slow or Delayed Healing

All topical nonsteroidal anti-inflammatory drugs (NSAIDs), including BromSite® (bromfenac ophthalmic solution) 0.075%, may slow or delay healing. Topical corticosteroids are also known to slow or delay healing. Concomitant use of topical NSAIDs and topical steroids may increase the potential for healing problems.

Potential for Cross-Sensitivity

There is the potential for cross-sensitivity to acetylsalicylic acid, phenylacetic acid derivatives, and other NSAIDs, including BromSite® (bromfenac ophthalmic solution) 0.075%. Therefore, caution should be used when treating individuals who have previously exhibited sensitivities to these drugs.

Increased Bleeding Time of Ocular Tissue

With some NSAIDs, including BromSite® (bromfenac ophthalmic solution) 0.075%, there exists the potential for increased bleeding time due to interference with platelet aggregation. There have been reports that ocularly applied NSAIDs may cause increased bleeding of ocular tissues (including hyphemas) in conjunction with ocular surgery.

It is recommended that BromSite® be used with caution in patients with known bleeding tendencies or who are receiving other medications which may prolong bleeding time.

Keratitis and Corneal Reactions

Use of topical NSAIDs may result in keratitis. In some susceptible patients, continued use of topical NSAIDs may result in epithelial breakdown, corneal thinning, corneal erosion, corneal ulceration or corneal perforation. These events may be sight threatening. Patients with evidence of corneal epithelial breakdown should immediately discontinue use of topical NSAIDs, including BromSite® (bromfenac ophthalmic solution) 0.075%, and should be closely monitored for corneal health.

Post-marketing experience with topical NSAIDs suggests that patients with complicated ocular surgeries, corneal denervation, corneal epithelial defects, diabetes mellitus, ocular surface diseases (e.g., dry eye syndrome), rheumatoid arthritis, or repeat ocular surgeries within a short period of time may be at increased risk for corneal adverse events which may become sight threatening. Topical NSAIDs should be used with caution in these patients.

Post-marketing experience with topical NSAIDs also suggests that use more than 24 hours prior to surgery or use beyond 14 days postsurgery may increase patient risk for the occurrence and severity of corneal adverse events.

Contact Lens Wear

BromSite® should not be administered while wearing contact lenses. The preservative in BromSite®, benzalkonium chloride, may be absorbed by soft contact lenses.

ADVERSE REACTIONS

The following serious adverse reactions are described elsewhere in the Brief Summary:

- Slow or Delayed Healing
- Potential for Cross-Sensitivity
- Increased Bleeding Time of Ocular Tissue
- Keratitis and Corneal Reactions
- Contact Lens Wear

Clinical Trial Experience

Because clinical trials are conducted under widely varying conditions, adverse reaction rates observed in the clinical trials of a drug cannot be directly compared to rates in the clinical trials of another drug and may not reflect the rates observed in clinical practice.

The most commonly reported adverse reactions in 1–8% of patients were: anterior chamber inflammation, headache, vitreous floaters, iritis, eye pain and ocular hypertension.

USE IN SPECIFIC POPULATIONS

Pregnancy

Risk Summary

There are no adequate and well-controlled studies in pregnant women to inform any drug associated risks. Treatment of pregnant rats and rabbits with oral bromfenac did not produce teratogenic effects at clinically relevant doses.

Clinical Considerations

Because of the known effects of prostaglandin biosynthesis-inhibiting drugs on the fetal cardiovascular system (closure of ductus arteriosus), the use of BromSite® during late pregnancy should be avoided.

Data

Animal Data

Treatment of rats with bromfenac at oral doses up to 0.9 mg/kg/day (195 times a unilateral daily human ophthalmic dose on a mg/m² basis, assuming 100% absorbed) and rabbits at oral doses up to 7.5 mg/kg/day (3243 times a unilateral daily dose on a mg/m² basis) produced no structural teratogenicity in reproduction studies. However, embryo-fetal lethality, neonatal mortality and reduced postnatal growth were produced in rats at 0.9 mg/kg/day, and embryo-fetal lethality was produced in rabbits at 7.5 mg/kg/day. Because animal reproduction studies are not always predictive of human response, this drug should be used during pregnancy only if the potential benefit justifies the potential risk to the fetus.

Lactation

There are no data on the presence of bromfenac in human milk, the effects on the breastfed infant, or the effects on milk production; however, systemic exposure to bromfenac from ocular administration is low. The developmental and health benefits of breastfeeding should be considered along with the mother's clinical need for bromfenac and any potential adverse effects on the breast-fed child from bromfenac or from the underlying maternal condition.

Pediatric Use

Safety and efficacy in pediatric patients below the age of 18 years have not been established.

Geriatric Use

There is no evidence that the efficacy or safety profiles for BromSite® differ in patients 65 years of age and older compared to younger adult patients.

NONCLINICAL TOXICOLOGY

Carcinogenesis, Mutagenesis and Impairment of Fertility

Long-term carcinogenicity studies in rats and mice given oral doses of bromfenac up to 0.6 mg/kg/day (129 times a unilateral daily dose assuming 100% absorbed, on a mg/m² basis) and 5 mg/kg/day (540 times a unilateral daily dose on a mg/m² basis), respectively revealed no significant increases in tumor incidence.

Bromfenac did not show mutagenic potential in various mutagenicity studies, including the bacterial reverse mutation, chromosomal aberration, and micronucleus tests.

Bromfenac did not impair fertility when administered orally to male and female rats at doses up to 0.9 mg/kg/day and 0.3 mg/kg/day, respectively (195 and 65 times a unilateral daily dose, respectively, on a mg/m² basis).

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Indications and Usage

BromSite[®] (bromfenac ophthalmic solution) 0.075% is a nonsteroidal anti-inflammatory drug (NSAID) indicated for the treatment of postoperative inflammation and prevention of ocular pain in patients undergoing cataract surgery.

Recommended Dosing

One drop of BromSite[®] should be applied to the affected eye twice daily (morning and evening) 1 day prior to surgery, the day of surgery, and 14 days postsurgery.

Important Safety Information

- **Slow or Delayed Healing:** All topical nonsteroidal anti-inflammatory drugs (NSAIDs), including BromSite[®], may slow or delay healing. Topical corticosteroids are also known to slow or delay healing. Concomitant use of topical NSAIDs and topical steroids may increase the potential for healing problems.
- **Potential for Cross-Sensitivity:** There is the potential for cross-sensitivity to acetylsalicylic acid, phenylacetic acid derivatives, and other NSAIDs, including BromSite[®]. Therefore, caution should be used when treating individuals who have previously exhibited sensitivities to these drugs.
- **Increased Bleeding Time of Ocular Tissue:** With some NSAIDs, including BromSite[®], there exists the potential for increased bleeding time due to interference with platelet aggregation. There have been reports that ocularly applied NSAIDs may cause increased bleeding of ocular tissues (including hyphemas) in conjunction with ocular surgery. It is recommended that BromSite[®] be used with caution in patients with known bleeding tendencies or who are receiving other medications which may prolong bleeding time.
- **Keratitis and Corneal Effects:** Use of topical NSAIDs may result in keratitis. In some susceptible patients, continued use of topical NSAIDs may result in epithelial breakdown, corneal thinning, corneal erosion, corneal ulceration or corneal perforation. Patients with evidence of corneal epithelial breakdown should immediately discontinue use of topical NSAIDs, including BromSite[®], and should be closely monitored

for corneal health. Patients with complicated ocular surgeries, corneal denervation, corneal epithelial defects, diabetes mellitus, ocular surface diseases (e.g., dry eye syndrome), rheumatoid arthritis, or repeat ocular surgeries within a short period of time may be at increased risk for corneal adverse events which may become sight threatening. Topical NSAIDs should be used with caution in these patients. Post-marketing experience with topical NSAIDs also suggests that use more than 24 hours prior to surgery or use beyond 14 days postsurgery may increase patient risk for the occurrence and severity of corneal adverse events.

- **Contact Lens Wear:** BromSite[®] should not be administered while wearing contact lenses. The preservative in BromSite[®], benzalkonium chloride, may be absorbed by soft contact lenses.
- **Adverse Reactions:** The most commonly reported adverse reactions in 1% to 8% of patients were anterior chamber inflammation, headache, vitreous floaters, iritis, eye pain, and ocular hypertension.

Please see brief summary of Full Prescribing Information on the adjacent page.

NSAID=nonsteroidal anti-inflammatory drug.

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A Brief History of the Power List, by Mark Hillen

On The Cover



Balloons, representing the 2018 Power Listers, lift ophthalmology UP!

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- 12 **The Ophthalmologist Power List 2018**
This year's Power List celebrates 100 of the most influential leaders, enthusiastic educators and groundbreakers in the field of ophthalmology, as nominated by you.

Sitting Down With

- 50 **Napoleone Ferrara**,
Distinguished Professor of Pathology and Distinguished Adjunct Professor of Ophthalmology, UC San Diego School of Medicine, California, USA.

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The 2018 Power List is our fifth Power List, and it's the third time we've produced a ranking of the Top 100 influencers in ophthalmology today. There have been a few misconceptions – and many people end up asking me the same questions. So let's review the concept, its processes, and its periodicity.

The Power List isn't a novel concept. The Ophthalmologist isn't even the first title within our publishing company, Texere, to have run one; that honor goes to our sister title, The Analytical Scientist. Our Editorial Director back then was driving and listening to BBC Radio 4, when he heard one of their programs, Woman's Hour, introduce the "Woman's Hour Power List", in which a panel of seven female judges got together to decide (and rank) which women exhibited the most influence on society, under themes such as "Influencers" and "Game-changers".

We took a slightly different approach by asking our readers to nominate the people who they felt were the most influential in ophthalmology today. But they didn't necessarily have to be ophthalmologists; engineers, scientists and businesspeople have all made the Top 100 in the past (and have again this year). Early on, we recognized that there were definite attempts to "game" the system, so we turned to a judging panel that could act, in effect, as a quality filter.

We decided to change the theme for the next year, and looked to list ophthalmology's up-and-coming influencers – "The Top 40 Under 40." Given that these are the people likely to lead the field in the future, it was great to recognize and celebrate their hard work to date. But 40 years is rather young for an ophthalmologist – so the next time (in 2017), we relaxed the criteria slightly, and decided upon our "Rising Stars" theme.

So we've settled into a pattern of alternately ranking the Top 100 and the Rising Stars... or have we? We've been toying with ideas of what to do next – and we'd love to hear your thoughts. Would a women-only Power List work in our field – or would it be considered patronizing, as some people have suggested? Another option is to break the list down into subspecialties and other categories – pioneered by another sister magazine – this time, The Medicine Maker. Or is our current formula – alternate Top 100/Rising Stars – ticking all your boxes?

In any case, enjoy our – or rather, your – 2018 Power List!

Mark Hillen
Editor

Upfront

Reporting on the innovations in medicine and surgery, the research policies and personalities that shape the practice of ophthalmology.

We welcome suggestions on anything that's impactful on ophthalmology; please email edit@theophthalmologist.com



An ARISocratic Endeavor

Why do up to a fifth of patients with early-stage AMD progress to late-stage disease within five years – while the rest do not?

Around 10–20 percent of people who are diagnosed with early-stage age-related macular degeneration (AMD) go on to develop late-stage disease within five years, which throws up some important questions: Who are the people in this 20 percent? Can we predict who is (or is not) likely to be in this 20 percent? And, perhaps most importantly, why do these patients progress so quickly?

It's against this background that the US National Eye Institute (NEI) is running a new AMD natural history study (1) called ARIS: the AMD Ryan Initiative Study, in memory of the late Stephen J. Ryan, an expert in retinal disease and former

President of the Doheny Eye Institute. The study will recruit up to 500 participants aged 55 years and older and follow them over a five-year period with the primary outcome measure of “Enhancing the understanding of the natural history of AMD and reticular pseudodrusen (RPD).”

Participants are required to have BCVA of 20/25 or better at enrolment and submit to yearly assessment. Those with a history of peripheral laser and cryotherapy for peripheral tears or cataract surgery >3 months beforehand were not excluded from the trial, although people with glaucoma/ ocular hypertension, any evidence of choroidal neovascularization or geographic atrophy were excluded from trial entry. Any ocular disease (other than AMD), prior ocular surgery, or receipt of chronic therapy that might confound the assessment of the retina are also exclusion criteria.

Those under assessment will be split into three cohorts:

- Early AMD: medium drusen

(>63 μm and ≤ 125 μm) OU, n=200;

- RPD: ≥ 1 eye with RPD with ≤ 1 large drusen (>125 μm in either eye), n=200;
- Age-matched controls: No drusen >63 μm , no RPD or pigmentary changes OU, n=100.

Despite being funded by the US NEI, sites in the UK, Australia, Germany, and Italy (as well as a number in the US) will participate. The study investigators will employ the latest imaging and functional vision assessment instruments to assess the retinæ of the study participants,

including SD-OCT; dark-adapted fundus perimetry and dark-adaption testing, as well as dilated pupil eye exams, fundus photography, visual acuity assessments, medical histories and physical exams and questions about their vision and general health. The study may also include genetic analysis to determine if any correlations exist between gene sequences and AMD progression.

In return for running the study, the NEI will receive a comprehensive dataset from patients with a multifactorial disease and differing genetic and environmental risk factors – any of which may tip them into the late-stage

bracket more rapidly than others. NEI Deputy Director Emily Chew explains the aim: “The findings will contribute to our understanding of the underlying biology driving the transition from early to late-stage disease so that therapies can be developed to halt its progression. Treatments that halt the disease at its early stage would have an enormous public health impact.”

Reference

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Night Light: Yes, Bright Light: No!

**Children's circadian
clocks are extremely sensitive
to disruption**

Evening or night-time exposure to bright light is known to suppress melatonin production – and result in sleep disruption. Now, research by a team at the University of Boulder, Colorado, USA, suggests that young children may be more sensitive to this effect. And it could be because of their eyes.

“We know that young children have larger pupils and clear lenses – two factors that would facilitate a greater amount of light entering the eye,” says Lameese Akacem, lead author on the associated paper (1). “As there is a direct connection between the retina and the body clock, more light hitting the retina

likely provides a stronger signal to the clock.” Their study examined 10 children (aged 3–5 years) over a seven-day period. Over days one to five, participants followed a strict bedtime schedule to synchronize their body clocks. On day six, the children’s bedrooms were converted into dim light environments (<15 lux), with saliva samples acquired after 1 hour of dim light exposure until 50 minutes after the ‘scheduled’ bedtime. Day seven was a repeat of day six, but participants were exposed to

bright light (~1,000 lux) 1 hour before bedtime (Figure 1).

They found that melatonin production was reduced by 88 percent after children were exposed to bright light, and remained significantly reduced for 50 minutes after exposure ($p < 0.008$) – notably, 7 out of 10 failed to recover even half the average melatonin level recorded in dim light conditions. Akacem says that although they were expecting to see melatonin suppression in response to bright light, they were surprised at the

magnitude. The group’s findings expand knowledge on a poorly understood area; the circadian rhythms of young children. Further studies are in the pipeline: “We are interested in measuring pupil diameter in response to different light intensities in young children to see how it relates to melatonin suppression, as well as looking at varying intensities of light in the evening and timing of melatonin onset in young children,” says Akacem. Perhaps their findings will help save many parents from sleepless nights...



Figure 1. Robert MacLaren using the Preceyes robot for the first time in a live patient to perform an ILM peel.

Probing the Limits

Intraocular distance sensor + surgical robot = better outcomes, safer procedures and speedier surgery.

Tremor. It’s the surgeon’s scourge. You spend years training in medical school, years training after medical school, then you spend years in the operating theater honing your skills... And then age kicks in! Even the most experienced and gifted surgeons out there have to hang up their surgical hats once their hands

start to shake – even very slightly. But even the best surgeon’s hands aren’t perfectly still, which makes certain procedures, such as dealing with friable retinal tissue or injecting a bolus of retinal gene therapy over an extended period, very challenging – and almost impossible for the human hand. The Ophthalmologist has

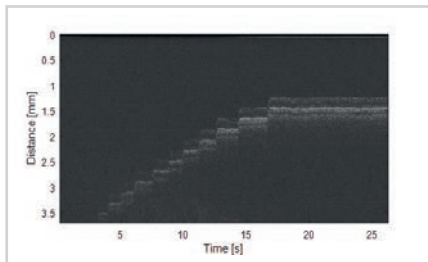


Figure 2. OCT A-scans, measured while the instrument approaches the retina in 200 μm steps. Movements due to heartbeat are visible (period ~ 1 s, amplitude ~ 40 μm), especially during periods where the instrument is at a standstill.

already covered the rise of the robots (1–4) – how they can filter tremor from the human hand, bring with it features like scaling of movements and micrometer precision, and how they can not only extend the careers of veteran surgeons, but also extend the ability to deal with the most challenging cases from the ‘rock star’ surgeons to everyone.

Famously, Preceyes B.V. (Eindhoven, the Netherlands) produced the first surgical robot to be used intraocularly in a live human patient – Oxford University’s Professor of Ophthalmology, Robert MacLaren used it to successfully perform an ILM peel (2; Figure 1). But, even at the time of the procedure, the company’s Medical Director, Marc de Smet, was considering an improvement: intraocular distance sensing. The robot now has that feature.

“Our new OCT-based intraocular distance sensor tells us the size of the retina”, explains de Smet. “For the moment, we are taking the images it generates and the distances it measures (Figure 2) to place a limit on how far the sensor goes in the direction of the retina. I believe we could use this to make injections into the subretinal space so much safer and more precise. Once we incorporate this in to different instruments, we

will make them safer and be able to automate steps.”

The new distance sensor was successfully used in a clinical validation study at Rotterdam Eye Hospital (REH). What did the surgeons think? Lead investigator at REH, Koorosh Faridpooya, said that the “robot brings vitreoretinal surgery to the next level by maximizing the surgeon’s precision and control. Using this revolutionary sensor in the eye enables us to operate with enhanced vision and it supports the surgeon to improve surgery.” Matteo Cereda, a senior retinal surgeon at Sacco Hospital Eye Clinic, added, “Using the robot definitely makes me a better surgeon. I felt really safe using it and all movements of the surgeon become really precise. In combination with the sensor, accidental trauma to the retina can now be avoided. A robot with this sensor paves the way to new scenarios in eye surgery and new therapeutic approaches.”

Just how much of an advance is this, and what difference will it make? According to de Smet, “This sensor represents a highly significant milestone. It promises to enhance the surgical skills of retinal surgeons at all levels of training and experience. The robot-sensor combination promises to improve the safety, the outcomes and speed of everyday surgical procedures. Analysis of the data generated and stored during surgery will allow us to optimize surgical steps by providing training and evaluating surgical performance.”

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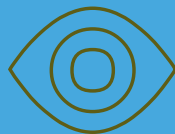
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Welcome to The Power List 2018

For a third time, we have mapped the Top 100 most influential people in the world of ophthalmology. The list includes surgeons, scientists, engineers, CEOs and more – and each one has been nominated by you, our readers.

We realize our Power Lists can – and should – never be definitive. But who can argue that the faces within – both familiar and new – do not beautifully highlight the brilliance and diversity found within the field? Accordingly, we bring you 100 reasons to be proud of ophthalmology.

Check out the online version of the Power List – theophthalmologist.com/power-list – for full biographies and more on this year's cadre's mentors, career highlights, and goals for the future.

1. DONALD TAN

ARTHUR LIM
PROFESSOR
AT THE SNEC
AND DUKE-
NUS MEDICAL
SCHOOL;
PARTNER AND
SENIOR CONSULTANT
OPHTHALMIC SURGEON
AT EYE & RETINA SURGEONS
(ERS), CAMDEN MEDICAL
CENTRE, SINGAPORE

Donald has made some major contributions to ophthalmology, which include the development of new forms of selective lamellar keratoplasty such as DALK, DSAEK, and DMEK, including new surgical instrumentation and devices, keratoprosthesis surgery, and the development of low-dose atropine eyedrops as therapy to reduce myopia progression in children.

A recent Past President of the US-based Cornea Society, Donald is also



the founding and current President of the Asia Cornea Society, which he formed in 2007, and the founding and current chair of the Association of Eye Banks of Asia (AEBA).

He has published over 350 peer-reviewed articles in the field of cornea, and is the recipient of over 20 international awards, which include the 2009 AAO/ISRS Casebeer Award, the 2012 EuCornea Medal, the 2013 Albrecht von Graefe Innovator's Lecture, the CLAO 2014 Oliver H. Dabiezies, Jr. Lecture, the CLAO 2015 Richard L. Lindstrom Lecture, the 2015 ASCRS Binkhorst Lecture, the 2017 APAO Jose Rizal Medal, the Netherlands Society of Ophthalmology 2017 Donders Lecture, and the 2018 Charles Tillett Lecture.



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UNIVERSITY-EYE CLINIC OF
HEIDELBERG, GERMANY

Gerd is one of the world's leading experts on IOLs: their design, in terms of optics, haptics, and materials, and their surgical implantation, their safety and occasionally, their pathology too. If an IOL has to be explanted, and if there's an issue with it, it's more likely than not it will be sent to the DJ. Apple lab (which Gerd leads) for analysis – his group is responsible for the post-market surveillance of many of the IOLs available today.

3. IKE AHMED

ASSISTANT PROFESSOR,
UNIVERSITY OF TORONTO;
CLINICAL PROFESSOR,
UNIVERSITY OF UTAH;
DIVISION HEAD OF
OPHTHALMOLOGY AT
TRILLIUM HEALTH PARTNERS,
MISSISSAUGA, ONTARIO,
CANADA

People aren't joking when they refer to Ike as a "Rock Star of Ophthalmology." If you've ever seen surgical videos of his cases – often some of the most complex in the world – you'll know that he is one

of the most sublimely gifted ophthalmic surgeons on the planet today. He's developed many novel therapeutic approaches for glaucoma, cataract and lens implant surgery, and designed innovative microsurgical instruments, devices, implants and techniques for the management of the dislocated cataract, iris reconstruction, and even a diamond scalpel for use in glaucoma. He's rightly acknowledged as "The Father of MIGS"; after all, he coined the term, and ushered in this new generation of surgical devices into glaucoma. He's also an innovator in the bigger picture of eyecare; his cataract surgery triage system, e-CAPS, according to one

nominator, "could very well remedy the cataract crisis in Ontario, and the entire country."



4. ANAT LOEWENSTEIN

CHAIR OF THE
DEPARTMENT OF
OPHTHALMOLOGY, TEL AVIV
SOURASKY MEDICAL CENTRE
(TASMC), PROFESSOR OF
OPHTHALMOLOGY AND
VICE DEAN, TEL AVIV
UNIVERSITY, ISRAEL

Anat is a retina specialist, expert in retinal toxicity, and has a strong research interest in the early detection of retinal disease. Her expertise has led her to be in great demand as a consultant – not only with the big pharmaceutical companies evaluating medical retina therapies, but also in the diagnostics and device world. She's led the development of a novel technology for detecting macular degeneration, automated retinal disease detection, and an augmented reality system that aims to replace the trusty old traditional surgical microscope. Her career path started with four years serving as a physician-officer in the Israeli Navy, a residency in TASMC, a fellowship in retinal vascular diseases and vitreoretinal surgery at The Johns Hopkins Wilmer Eye Institute in Baltimore, before returning to Israel, where before long, she was appointed head of TASMC's vitreo-retina unit, and then went on to become the Chair of the Department of Ophthalmology. Anat also managed to complete a Master of Health Administration degree at the Tel Aviv University Business School, and she also has found the time to publish more than 300 peer-reviewed articles, write multiple textbook chapters, and take on leadership roles within international societies (she is the current General Secretary of EURETINA and serves on the international committee of the Macula Society).



5. DAVID CHANG

CLINICAL PROFESSOR,
UNIVERSITY OF CALIFORNIA,
SAN FRANCISCO, CA, USA

David has chaired the AAO Annual Meeting program committee and their cataract guidelines (Preferred Practice Pattern) panel. David is a past Chief Medical Editor for both EyeWorld and Cataract & Refractive Surgery Today, and has written best-selling – and many would say definitive – textbooks on refractive IOLs and phaco chop/complex cases. As the ASCRS Foundation co-chair and Himalayan Cataract Project advisor, he is involved in efforts to improve access to cataract surgery in the developing world, and has delivered the ASCRS Binkhorst and AAO Kelman Lectures, the APACRS Lim Lecture, and received the APAO Rizal International Medal.

Chang was the first in the US to implant a light-adjustable IOL and the first to implant the Synchrony accommodating IOL.

6. AMAR AGARWAL

CHAIRMAN, DR. AGARWAL'S
GROUP OF EYE HOSPITALS,
CHENNAI, INDIA

Amar Agarwal is a name that's perennially at the top of the Top 100 Power Lists in The Ophthalmologist. Why? He's a pioneer of microincisional cataract surgery: he was first to remove cataracts through a 0.7 mm tip; first to develop no-anesthesia cataract surgery; first to implant a glued IOL, and the first to implant a mirror telescopic IOL in AMD. He coined the term "aberrastia" to describe uncompensated HOA profiles following refractive surgery, and produced a modified Malyugin ring for miotic pupil cataract surgeries with posterior capsular defects. Most recently, he and Harminder Dua (qv) pioneered Pre-Descemet's Endothelial Keratoplasty, which allows for the use of younger corneal donors than previous techniques, greatly increasing the donor tissue pool.

His passion is surgery: his surgical videos wow and amaze the audience – and have won numerous awards at the ASCRS, AAO and ESCRS film festivals. Amar also organizes the popular Ophthalmic Premier League sessions during AAO, IIRSI, AIOC and WOC.





7. RICHARD LINDSTROM

FOUNDER AND ATTENDING SURGEON OF MINNESOTA EYE CONSULTANTS, AND ADJUNCT CLINICAL PROFESSOR EMERITUS AT THE UNIVERSITY OF MINNESOTA DEPARTMENT OF OPHTHALMOLOGY, MINNEAPOLIS, MN, USA

It's hard to overstate the difference Dick Lindstrom has made to ophthalmology. He's served as President of the ASCRS,

ISRS, IIIC and the IRSC, and is an internationally recognized leader in corneal, cataract, refractive, glaucoma and laser surgery. He has been at the forefront of ophthalmology's evolutionary changes throughout his career as a recognized researcher, teacher, inventor, writer, lecturer and highly acclaimed physician and surgeon.

He is an innovator through-and-through, and his business nous is unparalleled: he's been awarded over

40 patents and has developed a number of corneal preservation solutions, IOLs and instruments that are used in clinical practices globally. He serves on the boards of directors of nearly 20 companies. Amongst all that, Dick served for 20 years as Chairman and CEO of Lindstrom Cleaning and Construction, a three-generation family business. His list of top awards is long – it's notable that he received the lifetime achievement award from the ISRS twice – once in 1995, and again in 2002!

8. BRENT SAUNDERS

CHAIRMAN, PRESIDENT AND CEO, ALLERGAN

Brent is a significant player in the pharmaceutical industry – and has been for some time, having served as President of Global Consumer Health Care at Schering-Plough, CEO of Bausch + Lomb, and CEO and President of Forest Laboratories. Forest was acquired by Actavis in July 2014; Brent became CEO and President of the combined organization. Nine months later, Actavis had acquired Allergan, and in July 2015, Actavis changed its name to Allergan.

But Brent isn't all about acquisition and integration. One nominator stated, "His passion and commitment in eyecare is clear. He is prominent at key ophthalmology congresses where he spends most of his time talking with and listening to ophthalmologists' needs and ideas." Acquisitions and collaborations within eyecare include devices (Oculieve/TrueTear), new biologics (Molecular Partners/DARPin) and even CRISPR gene editing (Editas/CRISPR) – and his high ranking in this year's Power List – suggest both statements are true.



9. ADNAN TUFAIL

CONSULTANT OPHTHALMOLOGIST, MOORFIELDS; INSTITUTE OF OPHTHALMOLOGY, UCL, LONDON, UK

Adnan is the clinical and research lead for AMD at Moorfields, and he's achieved a lot in that role. He was a co-principal investigator in the seminal ABC Trial that focused on examining bevacizumab for the treatment of neovascular AMD, which had a profound effect on eyecare in the UK: it defined anti-VEGF treatment protocols for wet AMD therapy within the NHS. He's also an early pioneer of big data and machine learning in ophthalmology, with numerous publications to his name on that topic to date. He founded an ARVO AI special interest group that grew into an all-day course, and is involved in the validation of machine learning algorithms that are being introduced into the UK for diabetic screening.

10. KEITH BARTON

CONSULTANT OPHTHALMOLOGIST AND DIRECTOR OF THE GLAUCOMA SERVICE, MOORFIELDS, LONDON, UK

Keith's principal interests are the surgical management of glaucoma (especially with aqueous shunt devices and MIGS approaches) and secondary glaucomas – Keith runs an NHS clinic at Moorfields that's uniquely dedicated to the management of glaucoma in uveitis. However, Keith's skillset goes beyond surgery. He's well known for organizing and running glaucoma educational symposia that have attracted significant acclaim, and he famously co-founded and organized (with Kuldev Singh [qv]) the Ophthalmology Futures Forum, investor networking events in ophthalmology that take place in both Europe and Asia.





11. DANIEL PALANKER

PROFESSOR, DEPARTMENT OF OPHTHALMOLOGY AND DIRECTOR OF THE HANSEN EXPERIMENTAL PHYSICS LABORATORY AT STANFORD UNIVERSITY, STANFORD, CA, USA

With more than 50 patents to his name, Daniel Palanker is a crucial innovator for ophthalmology. His research led to the development of the Pulsed Electron Avalanche Knife (Plasma Blade), the Pattern Scanning Laser Photocoagulator (PASCAL), the OCT-guided femtosecond laser system for cataract surgery (Catalys), and the neural stimulator for enhanced tear secretion (TrueTear). His research focuses on optical and electronic technologies for diagnostic, therapeutic, surgical and prosthetic applications in ophthalmology. His photovoltaic retinal prosthesis (PRIMA) aiming at restoration of central vision in patients with advanced AMD has entered its first clinical trial. He is also working on interferometric imaging of neural signals, electronic control of organs and, of course, laser-tissue interactions, their mechanisms and therapeutic applications.

Career highlights? "I'm very proud to see many of our developments in clinical practice, and a few more in clinical trials. The longest and the most difficult project so far was the development of photovoltaic retinal prosthesis, PRIMA. I'm very excited to see excellent initial results with this system in patients with advanced AMD."



12. JORGE ALIÓ

PROFESSOR AND CHAIRMAN OF OPHTHALMOLOGY, UNIVERSITY OF ALICANTE, SPAIN, AND MEDICAL DIRECTOR OF VISSUM CORPORATION

A leading authority in refractive surgery (and experienced – he's performed 45,000 surgeries to date), Jorge is at the forefront of much of the research in this field. He is the medical director of Vissum, Europe's largest eye institute and research facility, an ESCRS board member and co-founder (with his wife) of an eponymous foundation dedicated to blindness prevention. He created the concept of microincisional cataract surgery, pioneered multifocal, toric, phakic and accommodative IOLs, and many aspects of laser refractive surgery. Understandably, fellows come from around the globe to be trained under his supervision. Jorge has authored or co-authored over 525 peer-reviewed papers (his h-index is 57), and edited or co-edited 360 book chapters and 91 books, and he's received 103 international and national awards to date.



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13. KULDEV SINGH

PROFESSOR OF
OPHTHALMOLOGY AND
DIRECTOR OF THE GLAUCOMA
SERVICE AT STANFORD
SCHOOL OF MEDICINE,
STANFORD, CA, USA

Kuldev's research interests include glaucoma and cataract surgical trials, epidemiology, genetics and health care delivery in underserved communities. His clinical practice focuses on medical, laser and surgical management of glaucoma and cataract. Kuldev is a Past President of the AGS and an advisor to the ISGS.

15. ARTHUR CUMMINGS

CONSULTANT EYE SURGEON
AND MEDICAL DIRECTOR,
WELLINGTON EYE CLINIC,
DUBLIN, IRELAND

Arthur is behind some of the smartest and most advanced interventions and instruments in refractive surgery, and his opinion – borne of years of experience at the leading edge of the field – carries considerable weight. He currently sits on

14. CAROL SHIELDS

CO-DIRECTOR OF THE
ONCOLOGY SERVICE, WILLS
EYE HOSPITAL, PHILADELPHIA,
PA, USA

Carol runs Wills Eye Hospital's Oncology Service with her husband Jerry (qv) and their associates. Wills manages over half of all the eye cancer cases in the USA and many more from around the world, every year. These often-complex cases include but are not limited to uveal melanoma, retinoblastoma and numerous other intraocular, orbital and adnexal tumors. Carol – and her husband Jerry – are pioneers in the field of eye cancer; they

wrote the key textbooks used worldwide and created the number one method and acronym for diagnosing eye tumors. In 2011, Carol was the recipient of the AAO's Life Achievement Honor Award, and has received many others, including the Donders Medal from the Netherlands Ophthalmological Society. She has authored or co-authored nine textbooks, over 1,000 articles, nearly 300 textbook chapters, and given almost 600 lectureships. On being the 2014 Paul A. Chandler Visiting Professor at Harvard Medical School's Department of Ophthalmology, the Bostonians lauded her "expertise in ocular oncology that spans a range of specialties, including oculoplastics, retina, and cornea."



the medical advisory boards of more than 10 companies in the ophthalmic space, including lasers, IOLs, diagnostics and dry eye diagnosis and management. His research interests include refractive surgery, cataract surgery and corneal surgery for keratoconus. Arthur's an entrepreneur too; he was part of the team behind ClearSight Innovations' ocular biometer, which recently made its way to a successful exit. If you had any doubts about his influence, let this fact put them to rest: he's currently the President of the European Division of AECOS.



16. BURKHARD DICK

PROFESSOR OF OPHTHALMOLOGY
AND CHAIRMAN OF THE
UNIVERSITY EYE HOSPITAL
BOCHUM, BOCHUM, GERMANY

Throughout his career, Burkhard has covered the full spectrum of ophthalmologic surgery, and regularly performs cataract surgeries, LASIK procedures, phakic IOL implantations, glaucoma operations, corneal transplants and pars plana vitrectomies. He is the

author of several books and more than 300 peer-reviewed articles, and is the Editor of "The Use of the Femtosecond Laser in Ophthalmology" that many already consider to be the definitive textbook on the topic.

Burkhard is an active member of numerous ophthalmologic associations; currently, he is President of both AECOS and the German Society of Cataract and Refractive Surgery (the DGII).

He has received a number of international awards such as the Waring Medal in 2014 and the Visionary Award of AECOS in 2015. Both the German Ophthalmological Society, DOG, and the Australian Society of Cataract and Refractive Surgery have awarded Burkhard their Gold Medal Awards. And in 2016, his endeavors as a researcher, educator and clinician were recognized by the AAO with the Academy's Senior Achievement Award.





17. DAVID (TED) GARWAY-HEATH

IGA PROFESSOR OF OPHTHALMOLOGY FOR
GLAUCOMA AND ALLIED STUDIES, CONSULTANT
OPHTHALMOLOGIST, MOORFIELDS, LONDON, UK

Ted's research has yielded many new diagnostic and monitoring tools, including the Moorfields Motion Displacement Test that identifies the loss of peripheral vision; the Moorfields Regression Analysis, software that assists glaucoma diagnosis from scanning laser tomography images; and the Garway-Heath Map, which is used in research and clinical practice to map the correspondence between visual field and optic nerve head damage. He was chief investigator for the UK Glaucoma Treatment Study, the first placebo-controlled trial for the medical treatment of glaucoma with a visual field loss outcome. In his research, he aims to continue to improve glaucoma diagnostic techniques, clinical trial design and identify risk factors for glaucoma. He recognizes the importance of multidisciplinary collaboration for successful research and has long-term productive collaborations with statisticians, computer scientists and academics in other fields of medicine.



18. DENNIS LAM

PRESIDENT, HONG KONG
C-MER INTERNATIONAL
EYE CARE GROUP LIMITED,
HONORARY DIRECTOR OF
THE ZHONGSHAN OPHTHALMIC
CENTER (ZOC) OF SUN YAT-SEN UNIVERSITY,
GUANGZHOU, CHINA; DIRECTOR OF ZOC'S STATE
KEY LABORATORY; SECRETARY-GENERAL AND
CEO OF BOTH THE APAO AND THE APVRS

Dennis has been described as a "visionary leader, physician-scientist, entrepreneur and philanthropist." His contributions to the literature (>800 publications) and education (membership of >10 editorial boards, leadership roles in many ophthalmic societies) are great. Dennis has also served the National People's Congress of China as a Congressman since 2008.

After building up the Department of Ophthalmology & Visual Sciences at the Chinese University of Hong Kong to a world-renowned eye institute, he moved on in 2012 to establish "CMER Eye Care," which was listed on the HK Stock Exchange in January 2018 and currently has a market capitalization of more than US\$1.4 billion. He is passionate about eliminating cataract blindness in China and instrumental in establishing two major charity projects in China, "Lifeline Express" and "Project Vision."



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19. GRAHAM BARRETT

PROFESSOR, LIONS EYE INSTITUTE; CONSULTANT OPHTHALMIC SURGEON AND HEAD OF DEPARTMENT AT SIR CHARLES GARDINER HOSPITAL, PERTH, AUSTRALIA

Graham is the first Australian ophthalmologist to win, in the same year, the prestigious Binkhorst, Ridley, Sushruta, and Choyce Awards. He was also selected by the ASCRS to deliver the 2016 Kelman Innovator Lecture.



He devised the popular Barrett Toric Calculator in his quest to improve surgical outcomes and reduce refractive surprises in patients receiving toric IOLs and is a popular speaker at international congresses on all things IOL: from planning and conducting to speculating on the future of the art. Graham is also a founder of the Australasian Society of Cataract & Refractive Surgeons, and a former President of the Asia Pacific Association of Cataract and Refractive Surgeons.

A. JOHN KANELLOPOULOS

CLINICAL PROFESSOR, LASERVISION EYE INSTITUTE, ATHENS, GREECE AND NYU SCHOOL OF MEDICINE, NEW YORK, NY, USA

Over the last 20 years, John has applied and described innovative laser approaches in the management of cataract and, in particular, irregular corneas such as keratoconus. His work with CXL has provided many of the technique's evolutions: higher fluence, combinations with topo-guided PRK ("The Athens Protocol") and LASIK, and as a sole refractive procedure. John has also contributed dozens of reports on more sensitive diagnostics for keratoconus and ectasia, and in the last few years, he has described "topography-modified refraction" as a potentially more accurate target for topography-guided laser vision correction.



ABHAY VASAVADA

DIRECTOR OF RAGHUDEEP EYE CLINIC AND ILADEVI CATARACT & IOL RESEARCH CENTRE, AHMEDABAD, GUJARAT, INDIA

A cataract/refractive surgeon and Fellow of the Royal College of Surgeons, Abhay has expertise in the successful resolution of complicated cataract and pediatric cases. This knowledge is in great demand: Abhay is a renowned educator and is regularly asked to share his experiences by performing live surgery. He started Raghudeep Eye Clinic as a cataract specialty center in 1984 in Ahmedabad, India.



20. FARHAD HAFEZI

PROFESSOR, UNIVERSITY OF GENEVA; CLINICAL PROFESSOR OF OPHTHALMOLOGY, USC KECK SCHOOL OF MEDICINE, LOS ANGELES, CA, USA; CHIEF MEDICAL OFFICER, THE ELZA INSTITUTE, ZÜRICH, SWITZERLAND

Farhad is an eye surgeon dedicated to improving clinical treatments to solve some of the most complex cases in his field. As an internationally recognized pioneer of CXL and a pacemaker for newer indications like infectious keratitis, he combines his medical expertise to help translate research findings into clinical practice. Farhad and the members of his research groups were the first to publish a clinical study on treating ectasia after LASIK using CXL in 2007, they also proposed the use of hypo-osmolaric riboflavin to treat thin corneas in 2009 and identified oxygen as essential in the CXL process in 2013, all of which are in clinical practice today.

Farhad's research revolves around the cornea, its biomechanics, and in particular, corneal ectasias like keratoconus and laser refractive surgery. His research labs are at the University of Zurich and the USC Roski Eye Institute, Los Angeles in collaboration with Brad Randleman (qv). With over 170 publications in peer-reviewed journals and 18 book chapters, Hafezi's work has been cited 6,900 times. His h-index is 42 and his impact factor is 590.

Farhad and his wife Nikki are also responding to a market need to provide a low-cost portable, slit lamp mountable cross-linking device to help people perform this sight-saving procedure in a considerably more affordable, safe and effective manner. Farhad and Nikki also founded the Light for Sight Foundation, whose mission is to increase awareness about keratoconus, and screen children for this disease and to ensure that no child with keratoconus goes untreated.



ALAN BIRD

EMERITUS PROFESSOR
AND CONSULTANT
AT THE INSTITUTE OF
OPHTHALMOLOGY AT UCL
AND MOORFIELDS, LONDON, UK



Best known for his work on retinitis pigmentosa and research into inherited retinal degeneration, Alan studied neurology and neurosurgery, but later turned to ophthalmology. While at the Institute of Ophthalmology, he worked with numerous fellows in a variety of multidisciplinary activities involving electrophysiology, specialized imaging, psychophysics, immunology, and pathology – which resulted in the development of new technologies to define the clinical characteristics of retinal disease.

His studies have also correlated abnormal gene expression with metabolic dysfunction at the cellular level, which has led to a clearer understanding of retinal degenerative diseases, and has had significant implications for clinical management of these disorders, including better genetic counseling for patients and the development of new treatment approaches, including gene therapy. Bird has undertaken extensive international work: in Africa tackling river blindness, and in Jamaica, examining the retinal changes that occur in patients with sickle cell disease.

ALLEN HO

WILLS EYE HOSPITAL
ATTENDING SURGEON AND
DIRECTOR OF RETINA
RESEARCH, PA, USA



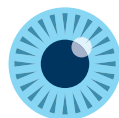
Allen specializes in state-of-the-art and compassionate patient care, and is a leader in the development of new medical and surgical treatments for retinal disease. He is principal investigator on several collaborative clinical trials evaluating new treatments for AMD and diabetic retinopathy, and maintains special interests in macular and surgical retinal diseases, as well as clinical trials investigating new treatments for vitreoretinal diseases.

ALLEN FOSTER

CO-DIRECTOR OF THE
INTERNATIONAL CENTRE FOR
EVIDENCE IN DISABILITY AND
INTERNATIONAL CENTRE FOR
EYE HEALTH, LSHTM, LONDON, UK



Allen's interests encompass the control of blinding disease, cost-effectiveness and quality of life studies, the implementation of VISION 2020, and health service research for children and adults with disabilities.



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ANDRÉ MERMOUD

CONSULTANT CATARACT AND GLAUCOMA SURGEON, CLINIQUE DE MONTCHOISI, LAUSANNE, SWITZERLAND

André has been involved in pushing forwards new and safer surgical treatments for glaucoma. He was also instrumental in creating (with other Swiss ophthalmologists) the “Vision For All” foundation that financed the construction of an ophthalmic hospital in Southern India in 2003, where he volunteers at least several weeks of his time each year.



BALA AMBATI

PROFESSOR OF OPHTHALMOLOGY, MORAN EYE CENTER, UNIVERSITY OF UTAH, UT, USA

Bala is the world’s youngest person to graduate from medical school at the age of 17; since specializing in ophthalmology he has received many awards. Experienced in anterior segment surgery, his research focuses on ocular angiogenesis and the cornea; his group was the first to identify that sVEGFR-1 normally keeps the cornea clear of blood vessels. Bala also routinely volunteers in humanitarian projects.



BORIS MALYUGIN

DEPUTY DIRECTOR GENERAL AT S. FYODOROV EYE MICROSURGERY INSTITUTION, MOSCOW, RUSSIA

Boris says his career highlights include developing his eponymous Malyugin Ring pupil expansion device, which has gained wide-spread popularity internationally and allowed him to help surgeons on more than 1 million cataract procedures worldwide. Another highlight was delivering the Binkhorst medal lectures at the ASCRS and ESCRS meetings in 2017.



BORIS STANZEL

CONSULTANT RETINA SPECIALIST AND DIRECTOR, MACULA CENTRE, KNAPPSCHAFT EYE HOSPITAL; GROUP LEADER, CLINICAL STEM CELL TECHNOLOGY, FRAUNHOFER INSTITUTE FOR BIOMEDICAL TECHNOLOGY, SAARBRÜCKEN-SULZBACH, GERMANY; SCIENTIFIC CONSULTANT, NEI, BETHESDA, MD, USA

Boris gained international renown for his transplantation of retinal pigment epithelium (RPE) into the subretinal space of rabbits – a first in a large-eyed animal model – followed closely by successful transplantation into pigs.

Recently, he and his colleagues at the Singapore Eye Research Institute, the NEI and Tampere University, Finland, have successfully created a non-human primate model platform, guided by intraoperative OCT, for stem cell-based RPE replacement therapy evaluation – bringing this modality a step closer to clinical use. His next goal is to initiate a European cell replacement therapy clinical trial.

BRUCE SPIVEY

IMMEDIATE PAST PRESIDENT, ICO AND CHAIRMAN OF PACIFIC VISION FOUNDATION, SAN FRANCISCO, CA, USA

Recipient of the AAO 2015 Laureate Recognition Award, Bruce’s contributions span from educator and clinician to hospital and medical society CEO – he was the founding CEO of the AAO. Bruce now devotes much of his time to the Pacific Vision Foundation, an organization he founded in 1977. He says his future goals are to complete and ensure sustainability of the foundation.



CARL REGILLO

DIRECTOR, WILLS EYE
HOSPITAL RETINA SERVICE,
PHILADELPHIA,
PA, USA

Carl says one of his career highlights was becoming the Director of the Retina Service at Wills Eye Hospital. As the former Director of the Wills Eye Retina Research Unit, Carl has been principal investigator of several major international clinical trials investigating new forms of treatment for retinal conditions including macular degeneration and diabetic retinopathy. He has authored over 100 scientific papers, lectured nationally and abroad, and has published five major textbooks in the field.

CYNTHIA ROBERTS

PROFESSOR,
DEPARTMENT OF
OPHTHALMOLOGY
& VISUAL SCIENCE
AT THE HAVENER
EYE INSTITUTE
AND PROFESSOR OF
BIOMEDICAL ENGINEERING,
THE OHIO STATE UNIVERSITY,
COLUMBUS, OH, USA

Cynthia's research interests include corneal and ocular biomechanics in cornea, refractive surgery and glaucoma; in vivo measurement of corneal biomechanics, IOP measurement error, and ophthalmic imaging applications including corneal topography and OCT. She received a research award from the NEI/NIH to study the separate



effects of IOP and stiffness on corneal biomechanics, and she has also received a foundation award to investigate a new biomechanical mechanism of optic nerve damage in glaucoma, which includes the influence of the pulsatile components of both IOP and intracranial pressure. She has given over 200 national and international invited lectures, has published over 120 papers in peer-reviewed journals, has contributed to more than 20 book chapters and has co-edited two books on corneal topography and corneal biomechanics.

CHARLES MCGHEE

MAURICE PAYKEL
PROFESSOR AND CHAIR
OF OPHTHALMOLOGY,
UNIVERSITY OF AUCKLAND;
DIRECTOR, NEW ZEALAND EYE
CENTRE, AUCKLAND, NEW
ZEALAND

Future goals? "To continue a world-class series of clinical research fellowships and grow the New Zealand National Eye Centre. Completion of a number of advanced clinical and laboratory trials on modifying, reshaping and replacing the human cornea including biological corneal substitutes, patented topical agents and stem cell therapies. To complete a series of risk stratification and outcome studies for cataract



surgery (commenced in 2014) and introduce a validated, uniform, simple risk stratification system to the New Zealand public health system that will significantly reduce the complication rate of cataract surgery."



DAMIEN GATINEL

HEAD OF THE ANTERIOR AND REFRACTIVE SURGERY DEPARTMENT OF THE ROTHSCHILD FOUNDATION, PARIS, FRANCE

Damien is not only an excellent surgeon and innovator extraordinaire. He is also a co-inventor of the first trifocal IOL, and devised a new classification for HOAs in his applied mathematics PhD thesis. With his colleague, Alain Saad, he developed an AI system for the detection of ectasia-

susceptible eyes, the SCORE analyzer. He leads one of the most advanced departments in cataract, cornea and refractive surgery in Europe at the Rothschild Foundation in Paris. He teaches and trains around 12 residents and fellows per year, has published more than 100 peer-reviewed manuscripts and has given more than 200 invited oral presentations all over the world. His website, www.gatinel.com, is a national and international reference for ocular optics and optical wavefront understanding, receiving above 2,000 visits per day. Damien is also the co-creator of the website www.defeatkeratoconus.com."

DAN LINDFIELD

CONSULTANT OPHTHALMOLOGIST AND GLAUCOMA DIRECTOR, ROYAL SURREY COUNTY HOSPITAL, GUILDFORD, UK

Career highlights? "Hopefully, I'm still on an upward trajectory. It's exciting to trial new diagnostic and therapeutic technology, but I find seeing my patients every day the most rewarding. Gathering data and trying to evolve surgical techniques challenges me but it's the translation to day-to-day practice that I most enjoy."

What inspires you? "My trainees. The daily challenge to analyze what I'm doing and to find the words, means (and data) to explain why I'm doing it. It's symbiotic. They push me and hopefully, I gently push them back. It's great to see their energy and their potential flourish."



DAWN SIM

CATARACT CONSULTANT OPHTHALMOLOGIST, MOORFIELDS, LONDON, UK

Dawn is a consultant ophthalmic surgeon in the medical retina service at Moorfields, and a former chief resident and current clinical lead for diabetic screening there. She has a PhD from the UCL Institute of Ophthalmology for her work on endothelial progenitor cells in retinal vascular disease, and has published extensively on diabetic macular ischemia. She also has a special interest in the area of virtual clinics and teleophthalmology and is working on device-agnostic platforms to facilitate acceleration of new technology into clinical practice.



DAVID FRIEDMAN

PROFESSOR AND DIRECTOR OF THE DANA CENTER FOR PREVENTIVE OPHTHALMOLOGY, WILMER EYE INSTITUTE, JOHNS HOPKINS HOSPITAL, BALTIMORE, MD, USA

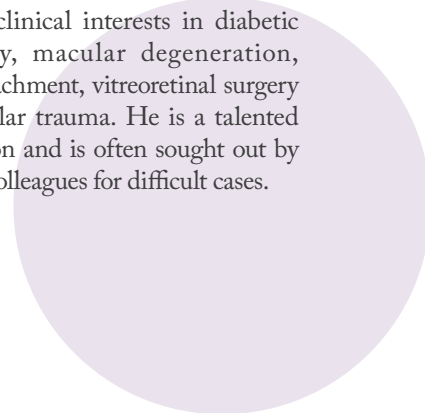
Career highlights? "Directing a team of researchers trying to determine best practices in managing blinding eye diseases in less developed countries including trachoma, diabetic retinopathy and refractive error. Being elected to the Glaucoma Research Society (limited to the top 100 researchers globally in glaucoma) and to the Alcon Research Institute (which selects the six best researchers in all of ophthalmology each year). Finally, being listed as a Best Doctor many years in a row."



DEAN ELLIOTT

ASSOCIATE DIRECTOR OF THE RETINA SERVICE, MASSACHUSETTS EYE AND EAR INFIRMARY, BOSTON, MA, USA

Dean has clinical interests in diabetic retinopathy, macular degeneration, retinal detachment, vitreoretinal surgery and ocular trauma. He is a talented surgeon and is often sought out by his colleagues for difficult cases.



Leading the Way in Eyecare

The 2018 Ophthalmologist Power List celebrates the outstanding individuals who have been recognized by their peers as leaders in the field of ophthalmology. Here, our industry sponsors tell us about their commitment to eyecare, and how they are leading the way in the field to make a difference to ophthalmologists and patients.

Mike Ball
CEO
Alcon



How does Alcon support leaders – both internal and external?

We recognize that our success depends on the creativity, dedication and performance of our leaders and associates. That's why we encourage our leaders to foster a performance-oriented culture that supports achievement through collaboration and innovation, and provide resources for them to do so. We also pride ourselves in offering tailored learning opportunities for our customers. We have developed and launched the Alcon Experience Academy, which allows ophthalmologists and their teams to immerse themselves in our products and technologies, providing a hands-on and engaging experience.

What does it take for a company like Alcon to rise to a position of influence within eyecare?

For more than 70 years, we've followed the approach laid out by our founders: "We concentrate our efforts on seeing the needs of patients through the eyes of the specialists who are treating

them." We continue to build on that philosophy by driving continued innovation, excellent customer service and true collaboration across ophthalmology. Everything we do is patient-centered, and we have continuously focused on strengthening our pipeline and improving product quality and availability to drive better outcomes. This approach has led us to the leadership position we are in today and will fuel our growth in the future.

How does Alcon plan to continue leading the field – and making a difference to ophthalmologists and patients – in the coming years?

Innovation is the driving force that will carry Alcon – and our industry – forward. That's why we must continue building on our long-term partnerships with customers and patients to find new opportunities to collaborate, and address unmet needs through ideation and development. This is a very exciting time to be in ophthalmology. The innovations we're developing today – from advanced IOL

and surgical glaucoma technologies to improved refractive outcomes using cloud data-driven surgical procedures – will sweep in a new era of ophthalmology that hasn't been seen since the widespread adoption of phacoemulsification technology. This is still in the very early stages and I'm proud that Alcon is helping drive this shift in our industry for the ultimate benefit of patients around the world. With more than 70,000 pieces of Alcon surgical equipment installed globally, we have intensified our clinical and technical service support to optimize patient outcomes.

Alcon A Novartis
Division

www.alcon.com

Tom Frinzi
Worldwide President
Johnson & Johnson Vision, Surgical



How does J&J Vision support leaders – both internal and external?

We believe the best talent, provided with the best resources, produce the best results. To this end, we invest heavily in individual development so our leaders can truly serve their teams. We work in cross-functional, global teams across the Johnson & Johnson network to accelerate innovation. And, we aim to make our workforce the healthiest in the world through initiatives like J&J Human Performance Institute trainings, which teach work/life balance.

Externally, we provide 360° support of the ophthalmology community. From advocacy with policymakers and professional societies to teaching facilities and education, we support those on the front lines of care.

What does it take for a company like J&J Vision to rise to a position of influence within eyecare? Over the last year, Johnson & Johnson Vision has really become a broad-based, global leader in

eyecare by uniting our contact lens and dry eye portfolios with our surgical solutions to treat and correct refractive error. As a result, we're able to make a meaningful difference for patients across the full spectrum of their vision needs.

On top of this, we have the backing of Johnson & Johnson, the world's largest and most trusted healthcare company. This allows us to better serve our communities, through work with organizations like Cure Blindness, and really change the overall trajectory of eye health.

How does J&J Vision plan to continue leading the field – and making a difference to ophthalmologists and patients – in the coming years?

We'll continue to stay relevant and lead the field by outpacing the market with new solutions to best meet our patients' lifelong eye health needs, as well as solutions to help the health care professionals treating them. And, when I think about that, it's not

only about bringing new products to market, but also providing innovative ways to address the challenges ophthalmologists and patients face – whether that be through community outreach, education, resources, digital solutions, and beyond.

Johnson & Johnson VISION

Vicente Anido, Jr., PhD
Chief Executive Officer and Chairman of the Board
Aerie Pharmaceuticals, Inc.



How does Aerie support leaders – both internal and external?

Aerie was founded to pursue the dream of Dr. David Epstein who insisted that we should be doing more to protect the sight of patients with glaucoma. All of Dr. Epstein's extraordinary talents – as a visionary, teacher, entrepreneur and clinician – were dedicated to making this dream a reality. With his inspiration, we have focused on building the best R&D, clinical, regulatory, commercial and manufacturing teams in ophthalmology, recruited from across the global pharmaceutical industry. Our external collaborations involve established and emerging leaders in research, patient care and medical technology. To be a leader, we will cultivate leadership all around us.

What does it take for a company like Aerie to rise to a position of influence within eyecare?

Our single-minded goal of becoming a leading global ophthalmic pharmaceutical company will be

achieved by providing a continuous source of innovative products that give clinicians new tools to protect their patients' vision. We must also behave as a trusted partner whose commitment to ophthalmology is demonstrated in everything we do. Our first opportunity to earn a position of influence will be the US launch of the first new class of drugs for glaucoma in more than 20 years. The science behind this product, its clinical performance and the seasoned team that will introduce it will establish Aerie's reputation for leadership.

How does Aerie plan to continue leading the field – and making a difference to ophthalmologists and patients – in the coming years?

The next several years will see tremendous growth at Aerie, all driven by our efforts to deliver truly-differentiated ophthalmic therapeutics to ophthalmologists and their patients. We plan to launch two first-in-class products for glaucoma in

the US, complete clinical development and regulatory filings in the EU and Japan for our glaucoma portfolio, and advance our lead retina candidates into the clinic. From robust, science-driven discovery and development efforts to the construction of our own manufacturing facility, we have made significant investments in full integration that will enable us to remain in the vanguard of eyecare for years to come.



James V. (Jim) Mazzo
Global President Ophthalmic Devices
Carl Zeiss Meditec



How does ZEISS support leaders – both internal and external?

As the pioneers in scientific optics, ZEISS has been challenging the limits of human imagination for a long time. We support leaders through our passion for excellence and pursuit of scientific advancement, while being in close proximity with our customers and the leaders in science and medicine today. This symbiosis is simply a part of our DNA. Following our founder Carl Zeiss' entrepreneurial footsteps, we seek to recruit and to partner with the top minds of today, and promote the education of scientists and developers of tomorrow – our future leaders. The ZEISS Group is owned by the Carl Zeiss Foundation which promotes and supports science and education for the benefit of mankind. Both, ZEISS and the Foundation, support leading academic, scientific and cultural institutions in a variety of ways from fellowships, to our active involvement with global and regional associations.

What does it take for a company like ZEISS to rise to a position of influence within eyecare?

Innovation is deeply rooted in our history. We've been able to introduce many industry-first solutions like surgical microscopes, OCT and trifocal IOLs through close collaboration with our customers. We believe this cross-sectoral exchange of ideas promotes progress in medicine and development of new technologies and innovative products.

Our company is characterized by the partnership between industry and science. We work closely with clinicians who bring years of experience and clinical leadership as doctors in private practice, or in hospitals. In technology development, we collaborate with leading universities and research institutes. Together, our goal is to achieve best possible outcomes for patients and to develop market-shaping solutions that advance ophthalmic care.

How does ZEISS plan to continue leading the field – and making a difference to ophthalmologists and patients – in the coming years?

Ophthalmology and optometry are rapidly evolving. Digital technology is fundamentally changing our world and majorly impacting the healthcare industry. Doctors are working under entirely different conditions, especially with increases in patient demand, treatment options, patient access to information, and cost pressure. Thus, we will continue to expand our portfolio with solutions that address these challenges with a focus on digital solutions tailored to help doctors achieve better patient outcomes while streamlining workflows at the same time. If we consistently live up to this, we are confident that our business will continue to grow.



Robert Dempsey
Group Vice President, Head of Global Ophthalmics Franchise
Shire



How does Shire support leaders – both internal and external?

At Shire, we foster an environment where leaders are positive, accountable, results driven and great people managers. Through a fast-paced, entrepreneurial and international culture, we give people freedom and opportunity to excel while also setting a high bar for ethics and responsibility. From an external perspective, we value feedback and insight from thought leaders within the eyecare community. We believe it is critical to engage and seek advice from the global leaders in ophthalmology as we have built out the franchise and expanded globally to address the millions of patients with eye diseases.

What does it take for a company like Shire to rise to a position of influence within eyecare?

Recognizing the potential of emerging scientific innovation to treat conditions of the eye, Shire made a strategic commitment to ophthalmology in 2013. Since then, growth in this

highly specialized field has been driven by a combination of organic research, academic collaborations, acquisitions (e.g. SARcode Bioscience, Foresight Biotherapeutics), and a collaborative license agreement with Parion Sciences.

Shire brings unique and specialized disease expertise to treating conditions of the eye. Our commitment to providing potential therapies in ophthalmology stems from the same focus that drives our discovery, development and delivery of new treatments for each of our therapeutic areas: patient need.

How does Shire plan to continue leading the field – and making a difference to ophthalmologists and patients – in the coming years?

Despite the increasing demands we place on our eyes, very few companies or organizations take an interest in eye health. Shire recognized this vacuum of innovation in ophthalmology, and the need for innovation directed towards addressing some of the many

unmet patient needs in this area. At the moment, we are particularly committed to dry eye disease, glaucoma and infectious conjunctivitis. We also have a strong desire to expand in the near term, from a research focus on the anterior segment to the posterior segment, as well as inherited retinal diseases. We are engaged across the entire ophthalmology community, and listen to patients and professionals as we evaluate more opportunities to advance eye health.



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DOUGLAS KOCH

PROFESSOR AND ALLEN, MOSBACHER, AND LAW CHAIR OF OPHTHALMOLOGY, BAYLOR COLLEGE OF MEDICINE, HOUSTON, TX, USA

A recipient of several prestigious honors, including the AAO Lifetime Achievement award, Douglas' work focuses on improving the outcomes of cataract surgery and refractive surgery procedures, such as LASIK and PRK. He specializes in the management of complex conditions including cataract and IOL problems, iris repair and replacement, and management of LASIK and PRK problems, and conducts research and teaches internationally in these areas.

EMILY CHEW

DIRECTOR OF THE DIVISION OF EPIDEMIOLOGY AND CLINICAL APPLICATIONS & AND DEPUTY CLINICAL DIRECTOR AT NEI/NIH, BETHESDA, MD, USA

Emily is a medical retinal specialist with extensive experience in the design and implementation of clinical trials across all phases. Her principal research interests are diabetic- and age-related eye diseases.



EDUARDO ALFONSO

CHAIRMAN AND DIRECTOR OF THE BASCOM PALMER EYE INSTITUTE, MIAMI, FL, USA

Eduardo is a renowned medical academic leader known for his clinical expertise and research in eye diseases, corneal surgery and ocular microbiology. In 2006, he documented the increased incidence of an aggressive form of fungal corneal infection related to soft contact lens use, significantly reducing the numbers of new infections worldwide. His research interests include bacterial and fungal sensitivity, and the development and clinical applications of keratoprosthesis.

ERIC DONNENFELD

FOUNDING PARTNER OF OPHTHALMIC CONSULTANTS OF LONG ISLAND AND OPHTHALMIC CONSULTANTS OF CONNECTICUT; CLINICAL PROFESSOR OF OPHTHALMOLOGY AT NEW YORK UNIVERSITY MEDICAL CENTER; SURGICAL DIRECTOR OF THE LIONS EYE BANK OF LONG ISLAND, NY, USA

During his nearly 30-year career, Eric has lectured and taught around the world, and has made significant advancements in the field; he was the first surgeon in the northeast US to perform laser cataract surgery, participated in the studies that led to FDA approval of the excimer laser technology, and he has been selected as an investigator for numerous other FDA clinical studies. Eric is currently Editor-in-Chief of EyeWorld, and has written over 190 peer-reviewed papers on cornea, external disease, cataract and refractive surgery, and 30 book chapters and books.



EDWARD HOLLAND

DIRECTOR OF CORNEA SERVICES AT CINCINNATI EYE INSTITUTE AND PROFESSOR OF OPHTHALMOLOGY AT THE UNIVERSITY OF CINCINNATI, OH, USA

Edward formerly served as the ASCRS President from 2011–2012 and was awarded the Binkhorst Medal by the ASCRS in 2008. He was awarded the AAO's Life Achievement Honor Award in 2012 and has received both the Senior Achievement Award and The Honor Award. Further, Edward is the Past President of the Cornea Society and Past President of the Eye Bank Association of America. In his role of Director of Cornea Services at the Cincinnati Eye Institute, Edward has attracted worldwide referrals for medical and surgical corneal problems and for stem cell transplantation.



ERIC SOUÏED

HEAD OF DEPARTMENT OF OPHTHALMOLOGY, HÔPITAL INTERCOMMUNAL DE CRETEIL AND HENRI MONDOR HOSPITAL, PARIS, FRANCE

Eric has contributed to more than 380 peer-reviewed articles on AMD, ophthalmic genetics and retinal disease, and he was first to publish on genetic polymorphisms in AMD. He leads a dynamic group focused on multimodal imaging of the retina.



FLORIAN KRETZ

CEO OF AUGENÄRZTE GERL, KRETZ & KOLLEGEN; LEAD SURGEON, AUGENTAGESKLINIKEN RHEINE & GREVEN; CONSULTANT & RESEARCH COORDINATOR OF THE INTERNATIONAL VISION CORRECTION RESEARCH CENTER NETWORK (IVCRC.NET), UNIVERSITY OF HEIDELBERG; AND CEO OF THE NGO AUGENÄRZTE FÜR DIE WELT GMBH, GERMANY

Who inspires you? “My grandfather with his dedication to perfection. Also, my 8-year old daughter planting her fantasies in my



head and helping me to look for solutions in a different direction.”

Career highlights? “Performing CE & FDA studies at our clinics and yearly philanthropic missions to Cambodia or Uganda. Also having met my wife who continuously supports me and holds our family together so I can live my hobby: being an eye surgeon.”

FRANK HOLZ

CHAIRMAN, DEPARTMENT OF OPHTHALMOLOGY, BONN UNIVERSITY, GERMANY

Frank is a researcher whose many interests include the pathogenesis, prognostic factors, biomarkers and therapy of macular and retinal diseases with a particular interest in AMD. He also focuses on phenotyping retinal diseases using innovative high-resolution imaging technologies and the development and validation of outcome measures for clinical trials. He has also been involved in several high profile clinical trials involving innovative therapies for macular disease. Frank is coordinator of the large-scale IMI2-EU-funded MACUSTAR project on intermediate AMD. He has contributed in the context of the international MacTel consortium in the understanding of macular telangiectasia type 2, including characterizing the natural

history and identifying early markers of the disease. For the last three decades, he has been at the forefront of clinical research using the most advanced retinal imaging modalities and is one of the early adopters of fundus autofluorescence and OCT-angiography. He founded the GRADE Reading Center, has published over 400 articles in peer-reviewed journals, is Editor-in-Chief of the journal of the German Ophthalmological Society (DOG), Der Ophthalmologe, a Past President of DOG, and President-elect of EURETINA.



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GEORGIOS KYMIONIS

PROFESSOR OF OPHTHALMOLOGY, UNIVERSITY OF LAUSANNE, AND HEAD OF ANTERIOR SEGMENT, JULES GONIN EYE HOSPITAL, LAUSANNE, SWITZERLAND

Georgios' main areas of expertise are corneal and laser refractive surgery, and he has led the development of several new techniques and surgical protocols for the treatment of patients with corneal diseases. He is a board member of EuCornea, and has authored more than 300 publications in peer-reviewed journals and numerous textbooks. Georgios is also Associate Editor of the Journal of Refractive Surgery and serves on many journals' editorial boards.



GEORGE SPAETH

LOUIS J. ESPOSITO RESEARCH PROFESSOR AT THE WILLS EYE HOSPITAL, PHILADELPHIA, PA, USA

George discovered the disease homocystinuria as a resident at Wills Eye Hospital, and published much of the early work on the condition, including the use of pyridoxine as a successful treatment. He developed methods of describing the anterior chamber angle, the optic nerve head (The Disc Damage Likelihood Score), and detecting visual loss (SPARCS), that are clinically more useful than other systems.

A busy practitioner, teacher and investigator, he has been recognized by several awards, including the Weisenfeld Medal from ARVO, and the Albert Schweitzer Leadership Award (something that he has in common with Ronald Reagan, George H.W. Bush, Madeline Albright, Hillary Clinton and Mikhail Gorbachev, to name but a few).



GEORGE O. WARING IV

FOUNDER AND MEDICAL DIRECTOR OF THE WARING VISION INSTITUTE IN MOUNT PLEASANT, SC, USA

George is in the fortunate position of being described by one nominator as "a wonderful speaker, and an excellent clinician and researcher. He is quite involved in numerous projects and initiatives. Despite all of his accomplishments, he is very humble." A lesser man might not be. While at the State University of New York, George was the first resident to win "Physician of the Year" twice in a row (and the awards haven't stopped coming since); his publication record is long, he's in great demand as a lecturer and instructor, and he was recently selected to be the Program Chair for the ISRS Refractive Surgery Subspecialty Day for 2019 and 2020. George has led the dysfunctional lens syndrome classification efforts, and is a leading figure in the surgical correction of presbyopia.



GERRIT MELLES

CORNEA SPECIALIST/DIRECTOR, NIIOS, ROTTERDAM, THE NETHERLANDS

Gerrit is a legend of corneal surgery, pioneering and developing techniques for corneal tissue preparation and transplantation, such as DALK, DLEK, DSEK/ DSAEK, DMEK, DMET and Bowman's layer transplantation. He's

been described as "the father of lamellar keratoplasty," particularly for DMEK, which represented a milestone in corneal surgery. His objective is to treat corneal disorders with minimally invasive techniques, and he has also developed several instruments and medical devices to facilitate these surgical procedures, as well as vital dyes (Vision Blue and Membrane Blue), and

has invented a device, SurgiCube, that provides sterile airflow over a patient enabling certain procedures to be performed under sterile conditions, but outside of an operating theater. Melles has received several awards including the Barraquer Award in recognition of his contribution to ophthalmology.



GIOVANNI STAURENGHI

PROFESSOR OF
OPHTHALMOLOGY,
UNIVERSITY OF MILAN,
ITALY

His principal interests are ocular imaging and the application of lasers to macular disease. His work extends to clinical trials and he is currently involved in more than 25 of them. A prolific author on both eye anatomy and disease, Giovanni is a fellow of ARVO, AAO and EURETINA.

**GUY KEZIRIAN**

FOUNDER OF SURGIVISION
CONSULTANTS, SCOTTSDALE,
AZ, USA

Guy's work focuses on the global delivery of surgery as the primary treatment of refractive errors and cost-effective models of cataract surgery to eliminate global blindness. He has overseen many FDA approvals for excimer laser platforms, and is the founder of the Refractive Surgery Alliance, as well as the Physician CEO Program at the Kellogg School of Management, Northwestern University, Evanston, IL, USA.

**HARMINDER DUA**

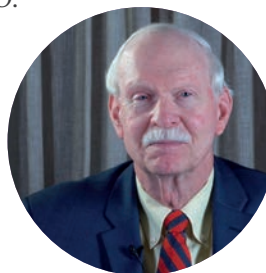
CHAIR, PROFESSOR OF
OPHTHALMOLOGY, AND
HEAD OF THE DIVISION OF
OPHTHALMOLOGY
AND VISUAL SCIENCES,
UNIVERSITY OF NOTTINGHAM,
UK

Harminder is an active clinician, teacher and prolific researcher; one of his most notable achievements was the discovery of a new corneal layer in 2013. He is currently President of EVER and serves as Editor-in-Chief of the British Journal of Ophthalmology. Of his achievements, Harminder says "I have been very fortunate to have the trust and confidence of my peers and colleagues who have supported and promoted me to a number of positions on the national and international stage."

**HARRY FLYNN JR.**

DONALD M. GASS
DISTINGUISHED CHAIR
IN OPHTHALMOLOGY
AT THE UNIVERSITY OF
MIAMI, MILLER SCHOOL
OF MEDICINE; PROFESSOR
OF OPHTHALMOLOGY AT
THE BASCOM PALMER EYE
INSTITUTE, MIAMI, FL, USA

Harry specializes in medical and surgical treatment of diseases of the retina and vitreous. He has a long and distinguished career in academic medicine through a combination of teaching, research and patient care. In November 2017, he received the "Secretariat Award" from the AAO.

**HARRY QUIGLEY**

A. EDWARD
MAUMENEY
PROFESSOR OF
OPHTHALMOLOGY,
GLAUCOMA CENTER OF
EXCELLENCE, WILMER EYE
INSTITUTE, JOHNS HOPKINS
UNIVERSITY, BALTIMORE, MD,
USA

Harry is a founding member of the American Glaucoma Society (serving as its first Secretary), and has been both the former CEO of ARVO and the Editor-in-Chief of IOVS. His research into glaucoma has enabled earlier diagnoses, and he was one of the first to describe the degree of optical nerve damage that has already occurred before glaucoma is typically detected. His current research interests include gene and stem cell therapies for ophthalmic disease.





HENDRIK SCHOLL

CHAIRMAN OF THE DEPARTMENT OF OPHTHALMOLOGY, UNIVERSITY OF BASEL, HEAD OF THE EYE CLINIC, UNIVERSITY HOSPITAL BASEL; AND CO-DIRECTOR OF THE IOB, BASEL, SWITZERLAND

Hendrik specializes in medical and surgical management of retinal diseases, especially inherited retinal degenerative diseases. He is a co-leader of the IOB, a new research institute in Basel, Switzerland, for which he played an instrumental role in securing funding.



IOANNIS PALLIKARIS

FOUNDER AND DIRECTOR OF THE INSTITUTE OF VISION AND OPTICS, UNIVERSITY OF CRETE, GREECE

Ioannis was the first to perform the LASIK procedure on a human eye. He went on to develop Epi-LASIK, and has a current research interest in corneal inlays. He is also an enthusiastic educator who has over 30 years of teaching experience in both Greece and Switzerland at undergraduate and post-graduate levels.

IRINI CHATZIRALLI

ACADEMIC UNIVERSITY SCHOLAR AT THE 2ND DEPARTMENT OF OPHTHALMOLOGY, NATIONAL AND KAPODISTRIAN UNIVERSITY OF ATHENS, GREECE

Irini's expertise is in medical retina, and she was previously a Medical Retina Fellow at King's College Hospital and Moorfields. She has published more than 125 publications in peer-review journals and participated in many clinical trials, as well as scientific congresses.



J. BRADLEY RANDLEMAN

PROFESSOR OF OPHTHALMOLOGY AT THE KECK SCHOOL OF MEDICINE, USC, AND MEDICAL DIRECTOR OF BEVERLY HILLS CLINIC, USC GAYLE AND EDWARD ROSKI EYE INSTITUTE, LOS ANGELES, CA, USA

Brad's career highlights include his work in the US trials that led to FDA approval for CXL, as well as his work in identifying risk factors for ectasia after LASIK and screening strategies to minimize this complication. He has authored four textbooks, including the gold standard "Corneal Cross-Linking Second Edition." Brad is also Editor-in-Chief of the Journal of Refractive Surgery.



JERRY SHIELDS

PROFESSOR OF OPHTHALMOLOGY, SIDNEY KIMMEL MEDICAL COLLEGE AT THOMAS JEFFERSON UNIVERSITY, PHILADELPHIA, PA, USA

Jerry and his colleagues have made vast research contributions to the diagnosis and treatment of ocular cancers. He has authored or co-authored more than 1,200 articles and textbook chapters, and has authored or co-authored 13 major textbooks related to ocular tumors.



JERZY NAWROCKI

LEAD SURGEON, OPHTHALMIC CLINIC JASNE BLONIA, LODZ, POLAND

Jerzy invented and introduced the inverted ILM flap technique in repairing macular holes. He has also introduced a new technique for optic pit maculopathy.





JAMES V. (JIM) MAZZO

GLOBAL PRESIDENT
OPHTHALMIC DEVICES, CARL
ZEISS MEDITEC; CHAIRMAN,
NEUROTECH; MEMBER OF THE
BOARD, IANTECH

Career highlights? “As I look back at my 37 years in the ophthalmic industry, what stands out most for me is that I have had the opportunity and privilege to work alongside

many great physicians and great leaders, such as Gavin Herbert, David Pyott and Michael Kaschke; and to build and to lead world-class organizations and teams – both large and small – which have been pivotal in driving advancements that have shaped ophthalmic care – phaco, diagnostics, retinal implants, the first bio-focal contact lens, the refractive change with LASIK at AMO.

Creating AMO (Advanced Medical Optics Inc.) from a spin-off, and creating,

with my mentor, Gavin Herbert, the Gavin Herbert Eye Institute at the University of California, Irvine, are two highlights that stand out in my mind.

I have also been honored to serve on the governing boards of ophthalmic societies – being the only non-doctor, non-MD on the ASCRS Governing Board, and being the first non-ophthalmologist on the IIIC

I’ve had the opportunity to live and work overseas – to learn, understand and interact with different cultures.”

JOHN BERDAHL

PARTNER AT VANCE THOMPSON
VISION, SIOUX FALLS, SD, USA

What inspires you? “Delivering on the trust that employees, patients and partners, the people and our profession put in me. I am inspired by meeting people in their moments of vulnerability and making their life better. I am also inspired by challenging dogma and seeing if what we’ve always believed or always done is really true, and finding the best way to do things.”

Future Goals? “My future goals are simple. I just want to be a person who gives a little bit more to the world than what I take out of it. And that’s going to be a challenge because the world gives me so much. Hopefully, the people that I interact with feel like their life is a little better because we had a chance to get to know each other.”



JOHN MARSHALL

FROST PROFESSOR OF
OPHTHALMOLOGY AT
THE INSTITUTE OF
OPHTHALMOLOGY IN
ASSOCIATION WITH
MOORFIELDS AND UCL, UK

John Marshall invented and patented the excimer laser, and today more than 35 million laser vision correction procedures have been performed worldwide. He created the world’s first diode laser for treating the eye problems of diabetes, glaucoma and aging. Over the past 40 years he has held posts chairing the medical advisory boards of many international companies, held many academic positions across a great number of top academic institutions, been the Editor and co-Editor of many international journals, and has worked on many national and international committees concerned with protecting the public against the possible damaging effects of lasers and other artificial light sources – perhaps most notably, addressing the United Nations to obtain a Geneva Convention banning the use of anti-personnel laser weapons.

JULIA HALLER

OPHTHALMOLOGIST-IN-CHIEF,
WILLS EYE HOSPITAL; WILLIAM
TASMAN ENDOWED CHAIR,
PROFESSOR AND CHAIR OF
OPHTHALMOLOGY, THOMAS
JEFFERSON UNIVERSITY,
PHILADELPHIA, PA, USA

Julia has been at the forefront of some of the most groundbreaking work in the field of ophthalmology. She was one of the first physicians in the US to perform early intravitreal injections of anti-VEGF medications, and led investigations into their use – as well as novel steroid formulations – in retinal diseases. She has served as surgeon-investigator in many of the pioneering trials for new therapies to treat blindness, including the development of the ARGUS II chip for retinitis pigmentosa and gene therapy. With her colleagues, she has developed new public health approaches for reaching underserved populations, including telemedicine. She has led Wills Eye Hospital for more than a decade, and is the first and only female chair of a top-three US eye department.





MALIK KAHOOK

PROFESSOR OF OPHTHALMOLOGY, SLATER FAMILY ENDOWED CHAIR, DIRECTOR, GLAUCOMA SERVICE AND GLAUCOMA FELLOWSHIP, UNIVERSITY OF COLORADO, DENVER, CO, USA

Malik is a phenomenal innovator: of his 60 patents filed, 25 have already been licensed by some of the biggest companies in ophthalmology—and four of his devices are either commercially available or in human trials, including the Kahook Dual Blade (New World Medical) and Alcon's Harmoni intraocular lens. He's received multiple "Inventor of the Year" awards, as well as the AAO's Achievement (2011), Senior Achievement (2017), and Secretariat (2014) awards, and the Ludwig Von Smallman Clinician-Scientist award from ARVO in 2013. Malik is also a consultant to the FDA's Ophthalmic Device Division. He's also authored over 300 peer-reviewed manuscripts, abstracts, and book chapters, and is editor of *Essentials of Glaucoma Surgery*, *MIGS: Advances in Glaucoma Surgery* and the seminal textbook of glaucoma, *Chandler and Grant's Glaucoma*.



KANG ZHANG

PROFESSOR OF OPHTHALMOLOGY, CHIEF OF OPHTHALMIC GENETICS, UNIVERSITY OF CALIFORNIA SAN DIEGO, CA, USA

Kang's clinical and research focuses are on novel disease gene targets and treatment, gene and stem cell-based therapies in AMD, diabetic retinopathy, and inherited retinal degeneration. His laboratory uses genetic analyses to gain insights into the molecular mechanisms that underpin macular degeneration and other eye diseases; this knowledge is then used to make genetic changes that either protect the retina from damage, or actively encourage regeneration.

MARIE-JOSÉ TASSIGNON

PAST CHIEF AND CHAIR OF THE DEPARTMENT OF OPHTHALMOLOGY OF THE ANTWERP UNIVERSITY HOSPITAL, ANTWERP, BELGIUM

A Past President of the EBO and the ESCRS, and the pioneer of bag-in-the-lens cataract surgery which avoids PCO, Marie-José is also a keen proponent of the need for ophthalmologists to understand physiology and the physics of optics, and she's behind the development of a novel femtosecond laser floater treatment method.



LILIANA WERNER

CO-DIRECTOR OF THE INTERMOUNTAIN OCULAR RESEARCH CENTER AND TENURED PROFESSOR OF OPHTHALMOLOGY AND VISUAL SCIENCES, JOHN A. MORAN EYE CENTER, UNIVERSITY OF UTAH, UT, USA

Liliana's career highlights include: promotion to full Professor and award of Tenure by the University of Utah; being a member of the JCRS editorial board since 2004; acting as Chair of the ASCRS Continuing Medical Education Advisory Committee since 2011; becoming a member of the International Intra-Ocular Implant Club (IIIC) in 2001; and becoming an Honorary Member of the Brazilian Society of Cataract and Refractive Surgery (BRASCRS) in 2014. "Also, any time any paper, presentation, video, or poster from our laboratory is recognized by peers I am very happy," says Werner.



MICHAEL MROCHEN

FOUNDER AND CEO OF IROC SCIENCE; CO-FOUNDER AND CHAIRMAN OF THE BOARD AT VIVIOR, ZURICH, SWITZERLAND; AND PRESIDENT OF ALLOTEX, ZURICH, SWITZERLAND, AND BOSTON, MA, USA

Michael is most recently known for his pioneering work on CXL. He has many other notable achievements, including the co-development of both wavefront-guided and wavefront-optimized LASIK, which has transformed outcomes, minimized errors, and made LASIK a safer and more predictable procedure.



MARK HUMAYUN

DIRECTOR, USC INSTITUTE FOR BIOMEDICAL THERAPEUTICS; CO-DIRECTOR, USC ROSKI EYE INSTITUTE AT THE UNIVERSITY OF SOUTHERN CALIFORNIA, LOS ANGELES, CA, USA

Mark has dedicated 30 years to the development of Argus II, a bioelectronic artificial retina to restore sight to the blind. His perseverance and ability to lead multi-disciplinary teams culminated in this artificial retina which was approved by the FDA; the first and only implant to have such approval.



OLIVER FINDL

CHIEF OF THE INSTITUTE AND CHIEF OF THE DEPARTMENT OF OPHTHALMOLOGY, HANUSCH HOSPITAL, VIENNA, AUSTRIA

Oliver is a cataract and refractive surgeon with research interests in the field of optical biometry and post-surgical visual quality assessment. He is a prolific author, having published over 200 peer-reviewed articles in international journals, a popular podium speaker, an editorial board member of JCRS and an executive board member of the ESCRS.

What inspires you? “Attempting to fuse clinical routine with cutting-edge technology and research to hopefully, at some point in time, achieve the perfect outcome for patients.”

NEIL BRESSLER

INAUGURAL JAMES P. GILLS PROFESSOR OF OPHTHALMOLOGY, WILMER EYE INSTITUTE, JOHN HOPKINS UNIVERSITY SCHOOL OF MEDICINE, BALTIMORE, MD, USA

Neil joined the Wilmer Eye Institute (Department of Ophthalmology) faculty at Johns Hopkins in 1988 and works in the Retina Division where he served as Chief (2005 to 2018) with 19 full-time clinical faculty in retina. He has authored over 400 peer-reviewed publications. He continues to work on the NIH-sponsored Diabetic Retinopathy Clinical Research

Network that he chaired for 7 years, and currently chairs the National Eye Institute's Data and Safety Monitoring Committee for intramural clinical trials. He also has been Chair of the FDA Ophthalmic Devices Panel, and was President of the Macula Society in 2013 to 2014. He currently serves as Editor-in-Chief of JAMA Ophthalmology and has been on The JAMA Network Editorial Board since 2013.



POWER TO PREVAIL

As demonstrated in phase 3 clinical trials evaluating BCVA,* as measured by ETDRS letters, in patients with Wet AMD, Macular Edema following RVO, DME, and by ETDRS-DRSS[†] in DR in Patients with DME,¹ as well as your clinical experience

Start with EYLEA for proven efficacy outcomes¹



AMD = Age-related Macular Degeneration; DME = Diabetic Macular Edema; DR = Diabetic Retinopathy; RVO = Retinal Vein Occlusion.

Dosing driving efficacy outcomes across all indications.¹
Learn more at EYLEA.us/dose

INDICATIONS AND IMPORTANT SAFETY INFORMATION

INDICATIONS

EYLEA® (aflibercept) Injection is indicated for the treatment of patients with

- Neovascular (Wet) Age-related Macular Degeneration (AMD): The recommended dose is 2 mg administered by intravitreal injection every 4 weeks (monthly) for the first 12 weeks (3 months), followed by 2 mg once every 8 weeks (2 months). Although EYLEA may be dosed as frequently as 2 mg every 4 weeks (monthly), additional efficacy was not demonstrated in most patients when EYLEA was dosed every 4 weeks compared to every 8 weeks. Some patients may need every 4 week (monthly) dosing after the first 12 weeks (3 months).
- Macular Edema following Retinal Vein Occlusion (RVO): The recommended dose is 2 mg administered by intravitreal injection every 4 weeks (monthly).
- Diabetic Macular Edema (DME) and Diabetic Retinopathy (DR) in Patients with DME: The recommended dose is 2 mg administered by intravitreal injection every 4 weeks (monthly) for the first 5 injections, followed by 2 mg once every 8 weeks (2 months). Although EYLEA may be dosed as frequently as 2 mg every 4 weeks (monthly), additional efficacy was not demonstrated in most patients when EYLEA was dosed every 4 weeks compared to every 8 weeks. Some patients may need every 4 week (monthly) dosing after the first 20 weeks (5 months).

CONTRAINDICATIONS

- EYLEA® (aflibercept) Injection is contraindicated in patients with ocular or periocular infections, active intraocular inflammation, or known hypersensitivity to aflibercept or to any of the excipients in EYLEA.

WARNINGS AND PRECAUTIONS

- Intravitreal injections, including those with EYLEA, have been associated with endophthalmitis and retinal detachments. Proper aseptic injection technique must always be used when administering EYLEA. Patients should be instructed to report any symptoms suggestive of endophthalmitis or retinal detachment without delay and should be managed appropriately. Intraocular inflammation has been reported with the use of EYLEA.

Please see adjacent Brief Summary.

*Best-corrected visual acuity.

[†]Early Treatment Diabetic Retinopathy Study—Diabetic Retinopathy Severity Scale: an established grading scale for measuring the severity of DR.

Reference: 1. EYLEA® (aflibercept) Injection full U.S. Prescribing Information. Regeneron Pharmaceuticals, Inc. May 2017.

EYLEA is a registered trademark of Regeneron Pharmaceuticals, Inc.

REGENERON

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777 Old Saw Mill River Road, Tarrytown, NY 10591



EYLEA®
(aflibercept) Injection
For Intravitreal Injection

- Acute increases in intraocular pressure have been seen within 60 minutes of intravitreal injection, including with EYLEA. Sustained increases in intraocular pressure have also been reported after repeated intravitreal dosing with VEGF inhibitors. Intraocular pressure and the perfusion of the optic nerve head should be monitored and managed appropriately.
- There is a potential risk of arterial thromboembolic events (ATEs) following intravitreal use of VEGF inhibitors, including EYLEA. ATEs are defined as nonfatal stroke, nonfatal myocardial infarction, or vascular death (including deaths of unknown cause). The incidence of reported thromboembolic events in wet AMD studies during the first year was 1.8% (32 out of 1824) in the combined group of patients treated with EYLEA. The incidence in the DME studies from baseline to week 52 was 3.3% (19 out of 578) in the combined group of patients treated with EYLEA compared with 2.8% (8 out of 287) in the control group; from baseline to week 100, the incidence was 6.4% (37 out of 578) in the combined group of patients treated with EYLEA compared with 4.2% (12 out of 287) in the control group. There were no reported thromboembolic events in the patients treated with EYLEA in the first six months of the RVO studies.

ADVERSE REACTIONS

- Serious adverse reactions related to the injection procedure have occurred in <0.1% of intravitreal injections with EYLEA including endophthalmitis and retinal detachment.
- The most common adverse reactions (≥5%) reported in patients receiving EYLEA were conjunctival hemorrhage, eye pain, cataract, vitreous floaters, intraocular pressure increased, and vitreous detachment.

10/2017
US-LEA-13945



BRIEF SUMMARY—Please see the EYLEA package insert for full Prescribing Information.

1 INDICATIONS AND USAGE

EYLEA is a vascular endothelial growth factor (VEGF) inhibitor indicated for the treatment of: **Neovascular (Wet) Age-Related Macular Degeneration (AMD); Macular Edema Following Retinal Vein Occlusion (RVO); Diabetic Macular Edema (DME); Diabetic Retinopathy (DR) in Patients with DME**

4 CONTRAINDICATIONS

4.1 Ocular or Periocular Infections

EYLEA is contraindicated in patients with ocular or periocular infections.

4.2 Active Intraocular Inflammation

EYLEA is contraindicated in patients with active intraocular inflammation.

4.3 Hypersensitivity

EYLEA is contraindicated in patients with known hypersensitivity to aflibercept or any of the excipients in EYLEA. Hypersensitivity reactions may manifest as rash, pruritus, urticaria, severe anaphylactic/anaphylactoid reactions, or severe intraocular inflammation.

5 WARNINGS AND PRECAUTIONS

5.1 Endophthalmitis and Retinal Detachments. Intravitreal injections, including those with EYLEA, have been associated with endophthalmitis and retinal detachments [see *Adverse Reactions* (6.1)]. Proper aseptic injection technique must always be used when administering EYLEA. Patients should be instructed to report any symptoms suggestive of endophthalmitis or retinal detachment without delay and should be managed appropriately [see *Dosage and Administration* (2.7) and *Patient Counseling Information* (17)].

5.2 Increase in Intraocular Pressure. Acute increases in intraocular pressure have been seen within 60 minutes of intravitreal injection, including with EYLEA [see *Adverse Reactions* (6.1)]. Sustained increases in intraocular pressure have also been reported after repeated intravitreal dosing with vascular endothelial growth factor (VEGF) inhibitors. Intraocular pressure and the perfusion of the optic nerve head should be monitored and managed appropriately [see *Dosage and Administration* (2.7)].

5.3 Thromboembolic Events. There is a potential risk of arterial thromboembolic events (ATEs) following intravitreal use of VEGF inhibitors, including EYLEA. ATEs are defined as nonfatal stroke, nonfatal myocardial infarction, or vascular death (including deaths of unknown cause). The incidence of reported thromboembolic events in wet AMD studies during the first year was 1.8% (32 out of 1824) in the combined group of patients treated with EYLEA. The incidence in the DME studies from baseline to week 52 was 3.3% (19 out of 578) in the combined group of patients treated with EYLEA compared with 2.8% (8 out of 287) in the control group; from baseline to week 100, the incidence was 6.4% (37 out of 578) in the combined group of patients treated with EYLEA compared with 4.2% (12 out of 287) in the control group. There were no reported thromboembolic events in the patients treated with EYLEA in the first six months of the RVO studies.

6 ADVERSE REACTIONS

The following potentially serious adverse reactions are described elsewhere in the labeling:

- Hypersensitivity [see *Contraindications* (4.3)]
- Endophthalmitis and retinal detachments [see *Warnings and Precautions* (5.1)]
- Increase in intraocular pressure [see *Warnings and Precautions* (5.2)]
- Thromboembolic events [see *Warnings and Precautions* (5.3)]

6.1 Clinical Trials Experience. Because clinical trials are conducted under widely varying conditions, adverse reaction rates observed in the clinical trials of a drug cannot be directly compared to rates in other clinical trials of the same or another drug and may not reflect the rates observed in practice.

A total of 2711 patients treated with EYLEA constituted the safety population in seven phase 3 studies. Among those, 2110 patients were treated with the recommended dose of 2 mg. Serious adverse reactions related to the injection procedure have occurred in <0.1% of intravitreal injections with EYLEA including endophthalmitis and retinal detachment. The most common adverse reactions (≥5%) reported in patients receiving EYLEA were conjunctival hemorrhage, eye pain, cataract, vitreous floaters, intraocular pressure increased, and vitreous detachment.

Neovascular (Wet) Age-Related Macular Degeneration (AMD). The data described below reflect exposure to EYLEA in 1824 patients with wet AMD, including 1223 patients treated with the 2-mg dose, in 2 double-masked, active-controlled clinical studies (VIEW1 and VIEW2) for 12 months.

Table 1: Most Common Adverse Reactions (≥1%) in Wet AMD Studies

Adverse Reactions	EYLEA (N=1824)	Active Control (ranibizumab) (N=595)
Conjunctival hemorrhage	25%	28%
Eye pain	9%	9%
Cataract	7%	7%
Vitreous detachment	6%	6%
Vitreous floaters	6%	7%
Intraocular pressure increased	5%	7%
Ocular hyperemia	4%	8%
Corneal epithelium defect	4%	5%
Detachment of the retinal pigment epithelium	3%	3%
Injection site pain	3%	3%
Foreign body sensation in eyes	3%	4%
Lacrimation increased	3%	1%
Vision blurred	2%	2%
Intraocular inflammation	2%	3%
Retinal pigment epithelium tear	2%	1%
Injection site hemorrhage	1%	2%
Eyelid edema	1%	2%
Corneal edema	1%	1%

Less common serious adverse reactions reported in <1% of the patients treated with EYLEA were hypersensitivity, retinal detachment, retinal tear, and endophthalmitis.

Macular Edema Following Retinal Vein Occlusion (RVO). The data described below reflect 6 months exposure to EYLEA with a monthly 2 mg dose in 218 patients following CRVO in 2 clinical studies (COPERNICUS and GALILEO) and 91 patients following BRVO in one clinical study (VIBRANT).

Table 2: Most Common Adverse Reactions (≥1%) in RVO Studies

Adverse Reactions	CRVO		BRVO	
	EYLEA (N=218)	Control (N=142)	EYLEA (N=91)	Control (N=92)
Eye pain	13%	5%	4%	5%
Conjunctival hemorrhage	12%	11%	20%	4%
Intraocular pressure increased	8%	6%	2%	0%
Corneal epithelium defect	5%	4%	2%	0%
Vitreous floaters	5%	1%	1%	0%
Ocular hyperemia	5%	3%	2%	2%
Foreign body sensation in eyes	3%	5%	3%	0%
Vitreous detachment	3%	4%	2%	0%
Lacrimation increased	3%	4%	3%	0%
Injection site pain	3%	1%	1%	0%
Vision blurred	1%	<1%	1%	1%
Intraocular inflammation	1%	1%	0%	0%
Cataract	<1%	1%	5%	0%
Eyelid edema	<1%	1%	1%	0%

Less common adverse reactions reported in <1% of the patients treated with EYLEA in the CRVO studies were corneal edema, retinal tear, hypersensitivity, and endophthalmitis.

Diabetic Macular Edema (DME). The data described below reflect exposure to EYLEA in 578 patients with DME treated with the 2-mg dose in 2 double-masked, controlled clinical studies (VIVID and VISTA) from baseline to week 52 and from baseline to week 100.

Table 3: Most Common Adverse Reactions (≥1%) in DME Studies

Adverse Reactions	Baseline to Week 52		Baseline to Week 100	
	EYLEA (N=578)	Control (N=287)	EYLEA (N=578)	Control (N=287)
Conjunctival hemorrhage	28%	17%	31%	21%
Eye pain	9%	6%	11%	9%
Cataract	8%	9%	19%	17%
Vitreous floaters	6%	3%	8%	6%
Corneal epithelium defect	5%	3%	7%	5%
Intraocular pressure increased	5%	3%	9%	5%
Ocular hyperemia	5%	6%	5%	6%
Vitreous detachment	3%	3%	8%	6%
Foreign body sensation in eyes	3%	3%	3%	3%
Lacrimation increased	3%	2%	4%	2%
Vision blurred	2%	2%	3%	4%
Intraocular inflammation	2%	<1%	3%	1%
Injection site pain	2%	<1%	2%	<1%
Eyelid edema	<1%	1%	2%	1%

Less common adverse reactions reported in <1% of the patients treated with EYLEA were hypersensitivity, retinal detachment, retinal tear, corneal edema, and injection site hemorrhage.

6.2 Immunogenicity. As with all therapeutic proteins, there is a potential for an immune response in patients treated with EYLEA. The immunogenicity of EYLEA was evaluated in serum samples. The immunogenicity data reflect the percentage of patients whose test results were considered positive for antibodies to EYLEA in immunoassays. The detection of an immune response is highly dependent on the sensitivity and specificity of the assays used, sample handling, timing of sample collection, concomitant medications, and underlying disease. For these reasons, comparison of the incidence of antibodies to EYLEA with the incidence of antibodies to other products may be misleading.

In the wet AMD, RVO, and DME studies, the pre-treatment incidence of immunoreactivity to EYLEA was approximately 1% to 3% across treatment groups. After dosing with EYLEA for 24-100 weeks, antibodies to EYLEA were detected in a similar percentage range of patients. There were no differences in efficacy or safety between patients with or without immunoreactivity.

8 USE IN SPECIFIC POPULATIONS

8.1 Pregnancy

Risk Summary

Adequate and well-controlled studies with EYLEA have not been conducted in pregnant women. Aflibercept produced adverse embryofetal effects in rabbits, including external, visceral, and skeletal malformations. A fetal No Observed Adverse Effect Level (NOAEL) was not identified. At the lowest dose shown to produce adverse embryofetal effects, systemic exposures (based on AUC for free aflibercept) were approximately 6 times higher than AUC values observed in humans after a single intravitreal treatment at the recommended clinical dose [see *Animal Data*].

Animal reproduction studies are not always predictive of human response, and it is not known whether EYLEA can cause fetal harm when administered to a pregnant woman. Based on the anti-VEGF mechanism of action for aflibercept [see *Clinical Pharmacology* (12.1)], treatment with EYLEA may pose a risk to human embryofetal development. EYLEA should be used during pregnancy only if the potential benefit justifies the potential risk to the fetus.

All pregnancies have a background risk of birth defect, loss, or other adverse outcomes. The background risk of major birth defects and miscarriage for the indicated population is unknown. In the U.S. general population, the estimated background risk of major birth defects and miscarriage in clinically recognized pregnancies is 2-4% and 15-20%, respectively.

Data

Animal Data

In two embryofetal development studies, aflibercept produced adverse embryofetal effects when administered every three days during organogenesis to pregnant rabbits at intravenous doses ≥3 mg per kg, or every six days during organogenesis at subcutaneous doses ≥0.1 mg per kg.

Adverse embryofetal effects included increased incidences of postimplantation loss and fetal malformations, including anasarca, umbilical hernia, diaphragmatic hernia, gastroschisis, cleft palate, ectrodactyly, intestinal atresia, spina bifida, encephalomeningocele, heart and major vessel defects, and skeletal malformations (fused vertebrae, sternbrae, and ribs; supernumerary vertebral arches and ribs; and incomplete ossification). The maternal No Observed Adverse Effect Level (NOAEL) in these studies was 3 mg per kg. Aflibercept produced fetal malformations at all doses assessed in rabbits and the fetal NOAEL was not identified. At the lowest dose shown to produce adverse embryofetal effects in rabbits (0.1 mg per kg), systemic exposure (AUC) of free aflibercept was approximately 6 times higher than systemic exposure (AUC) observed in humans after a single intravitreal dose of 2 mg.

8.2 Lactation

Risk Summary

There is no information regarding the presence of aflibercept in human milk, the effects of the drug on the breastfed infant, or the effects of the drug on milk production/excretion. Because many drugs are excreted in human milk, and because the potential for absorption and harm to infant growth and development exists, EYLEA is not recommended during breastfeeding.

The developmental and health benefits of breastfeeding should be considered along with the mother's clinical need for EYLEA and any potential adverse effects on the breastfed child from EYLEA.

8.3 Females and Males of Reproductive Potential

Contraception

Females of reproductive potential are advised to use effective contraception prior to the initial dose, during treatment, and for at least 3 months after the last intravitreal injection of EYLEA.

Infertility

There are no data regarding the effects of EYLEA on human fertility. Aflibercept adversely affected female and male reproductive systems in cynomolgus monkeys when administered by intravenous injection at a dose approximately 1500 times higher than the systemic level observed humans with an intravitreal dose of 2 mg. A No Observed Adverse Effect Level (NOAEL) was not identified. These findings were reversible within 20 weeks after cessation of treatment [see *Nonclinical Toxicology* (13.1)].

8.4 Pediatric Use. The safety and effectiveness of EYLEA in pediatric patients have not been established.

8.5 Geriatric Use. In the clinical studies, approximately 76% (2049/2701) of patients randomized to treatment with EYLEA were ≥65 years of age and approximately 46% (1250/2701) were ≥75 years of age. No significant differences in efficacy or safety were seen with increasing age in these studies.

17 PATIENT COUNSELING INFORMATION

In the days following EYLEA administration, patients are at risk of developing endophthalmitis or retinal detachment. If the eye becomes red, sensitive to light, painful, or develops a change in vision, advise patients to seek immediate care from an ophthalmologist [see *Warnings and Precautions* (5.1)].

Patients may experience temporary visual disturbances after an intravitreal injection with EYLEA and the associated eye examinations [see *Adverse Reactions* (6)]. Advise patients not to drive or use machinery until visual function has recovered sufficiently.

Manufactured by:
Regeneron Pharmaceuticals, Inc.

777 Old Saw Mill River Road
Tarrytown, NY 10591

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Issue Date: June 2017
Initial U.S. Approval: 2011

Based on the May 2017 EYLEA® (aflibercept)
Injection full Prescribing Information.

REGENERON

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100
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* Alcon data on file.

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PEARSE KEANE

CONSULTANT
OPHTHALMOLOGIST,
MOORFIELDS AND; NIHR
CLINICIAN SCIENTIST AT
INSTITUTE OF OPHTHALMOLOGY,
UCL, LONDON, UK

What drives you? “Being a clinical academic is my dream job! Firstly, because it gives me the freedom to generate my own ideas and set my own goals. Secondly, because I love working with my research group to explore these.

Finally, because I love the final process of writing about my research and sharing it with the world.”

Future goals? “I believe that healthcare will be transformed in the next 10 years by the introduction of AI, in particular deep learning. I would like ophthalmology to be the medical specialty leading the way in this regard (and I would like my institution, Moorfields Eye Hospital, to be playing a key role in this).”



PENG KHAW

PROFESSOR AND
CONSULTANT AT
MOORFIELDS AND
THE UCL INSTITUTE
OF OPHTHALMOLOGY,
DIRECTOR OF THE UK NIHR
BRC IN OPHTHALMOLOGY,
LONDON, UK

Peng’s many career highlights include being elected to the UK Academy of Medical Sciences, designing Moorfields’ Safer Surgery System which minimizes complications worldwide, helping to raise £20 million for Moorfields International Children’s Eye Center (the largest in the world) and over £100 million for eye research, and being knighted in 2013 for services to ophthalmology.



PETER KAISER

CHANEY FAMILY
ENDOWED CHAIR
IN OPHTHALMOLOGY
RESEARCH AND PROFESSOR OF
OPHTHALMOLOGY, COLE EYE
INSTITUTE, CLEVELAND CLINIC
LERNER COLLEGE OF MEDICINE,
CLEVELAND, OH, USA

Peter is actively involved in retinal clinical research and leads a team involved in the evaluation of vascular biology in AMD and diabetic retinopathy. He has been the study chairman of numerous major, multi-center, international clinical trials and a principal investigator on over 60 others. He serves on numerous scientific advisory boards, and has authored seven textbooks, 25 book chapters and more than 250 peer-reviewed manuscripts. Among other notable appointments, he is also currently Editor-in-Chief of Retinal Physician and the team ophthalmologist for the Cleveland Cavaliers basketball team.



PHILIP J. ROSENFELD

PROFESSOR OF OPHTHALMOLOGY,
BASCOM PALMER EYE INSTITUTE,
MIAMI, FL, USA

Philip, a specialist in vitreoretinal diseases, pioneered the use of Avastin to treat wet AMD. This discovery has saved vision in millions, has become the standard of care for retina specialists throughout the world for its effectiveness, and has saved healthcare agencies billions of dollars. Philip also developed OCT-guided therapy, which has prevented unneeded injections and, once again, saved healthcare agencies billions of dollars. His numerous algorithms for SD-OCT and SS-OCT imaging are used in patient care and as endpoints in clinical trials. He has been heavily involved in developing anti-VEGF therapy for wet AMD and is now actively involved in developing novel therapies for dry AMD.



RENATO AMBRÓSIO JR

DIRECTOR
OF CORNEA
AND REFRACTIVE
SURGERY, INSTITUTO DE OLHOS
RENATO AMBRÓSIO / VISARERIO
REFRACTA PERSONAL LASER IN
RIO DE JANEIRO, BRAZIL.

A major contributor to advances in corneal imaging, Renato Ambrósio holds multiple academic appointments. His work has helped from basic science, into the diagnosis and treatments for different corneal conditions, including keratoconus and post-LASIK dry eye. He is a strong proponent of pre-surgical Scheimpflug corneal tomography and biomechanical assessments, along with OCT for custom planning therapeutic and refractive procedures.

RICHARD PARRISH II

EDWARD W.D. NORTON CHAIR IN OPHTHALMOLOGY, PROFESSOR OF OPHTHALMOLOGY, BASCOM PALMER EYE INSTITUTE, MIAMI, FL, USA

Richard is a world-renowned glaucoma specialist, dedicated scientist and educator. A widely published author and internationally recognized speaker, he has published more than 100 peer-reviewed original scientific publications and many more chapters and abstracts. His research interests have focused on improving patient care through clinical trials in glaucoma. In 1994, he was named Vice



Chair and a principal investigator of the NEI-sponsored landmark Ocular Hypertension Treatment Study (OHTS and OHTS II) and will serve in this capacity for OHTS III, a 20-year follow-up investigation.

ROBERT EDWARD ANG

SENIOR CONSULTANT AND HEAD OF CORNEA AND REFRACTIVE SURGERY SERVICES AT THE ASIAN EYE INSTITUTE, MAKATI CITY, THE PHILIPPINES

A very active researcher and a clinical investigator for many of the biggest names in corneal, refractive and glaucoma spaces, Robert has authored several book chapters and international publications and is a much sought-after lecturer at international conventions. Robert is a five-time winner of Best Paper of Session awards at the ASCRS congresses, and in 2013, Robert received the Certified Educators Award from the APACRS, and won the Top Gun Instructors Award at ASCRS in 2017.



ROBERT MACLAREN

PROFESSOR OF OPHTHALMOLOGY AT THE UNIVERSITY OF OXFORD, UK

The focus of MacLaren's research is to develop gene therapy and other surgical technologies relevant to retinal diseases. In 2014 he co-founded Nightstar, a University of Oxford spin-out company established to develop gene therapy for choroideremia and which is now leading the Phase III trial involving seven countries across the EU and North America, making it the largest gene therapy clinical trial for any



disease to date. He is also listed as an inventor on several patents for gene therapy, including a codon-optimization algorithm that overcame the inherent instability of the RPGR gene, which is the major cause of X-linked retinitis pigmentosa. In 2017 he led the first treatment of the disease with another landmark gene therapy trial in Oxford. He has also led pioneering clinical trials, collaborating on robotic surgery with Preceyes BV and the electronic retina with Retina Implant AG.



ROBERT OSHER

PROFESSOR OF
OPHTHALMOLOGY AT THE
UNIVERSITY OF CINCINNATI
COLLEGE OF MEDICINE;
MEDICAL DIRECTOR EMERITUS
OF THE CINCINNATI EYE
INSTITUTE, CINCINNATI,
OH, USA

After completing his Residency at the Bascom Palmer Eye Institute and three Fellowships there and at the Wills Eye

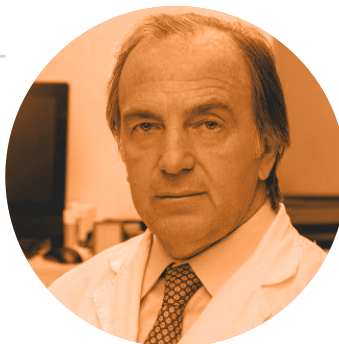
Hospital, Osher limited his practice to referral cataract and implant surgery in 1980. He has designed many of the IOLs, instruments, and new surgical technology in this subspecialty. Many of these have been captured in video and Robert's surgical videos have won over 25 first-prize honors at congresses across the world, including 3 Grand Prizes at ASCRS and ESCRS. A globe-trotting lecturer (who racks up over 100,000 miles a year traveling to teach), he has delivered over 100 international Named and

Keynote lectures. He introduced the Video Symposium format in 1982 which changed the way surgeons learned how to manage challenging cases and complications, which still attracts standing room crowds at AAO, ASCRS, and ESCRS. He also started the very first video journal in medicine, the Video Journal of Cataract and Refractive Surgery which he has edited for 35 years. More recently, he started his own unique meeting, "Cataract Surgery: Telling It Like It Is!" which attracted just under 1,000 cataract surgeons and exhibitors in its eighth year in Florida.

ROBERT WEINREB

DIRECTOR, SHILEY EYE
INSTITUTE UNIVERSITY OF
CALIFORNIA, SAN DIEGO,
CA, USA

What inspires you? "Inspiration is everywhere, and I find it daily in my patients, research and mentoring. Patients inspire me by placing their trust in me to make the right decisions and always act in their best interests. As a physician-scientist, I am inspired by impactful innovation and discovery that is translated from the laboratory to the patient. Knowing that those I mentor will impact the lives of countless individuals throughout the world now and into the future is also very inspiring."



ROBERTO ZALDIVAR

FOUNDER, INSTITUTO
ZALDIVAR, MENDOZA,
ARGENTINA

Roberto has designed more than 60 original instruments used for surgical ophthalmic practice and has collaborated with numerous companies in the development of technology including: STAAR Surgical, Nidek, ASICO, Technolas, ASICO, IntraLase, AMO, Carl Zeiss Meditech and Rumex. One of his major accomplishments was introducing excimer laser technology in Latin America. Roberto has received many accolades over the course of his career, including an Achievement Award from the AAO in 1999 and the Jan Worst Medal Award from the ASCRS in 2010.

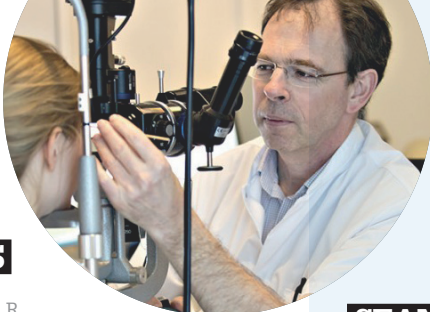
ROBYN GUYMER

DEPUTY
DIRECTOR,
CENTRE FOR
EYE RESEARCH
AUSTRALIA AND
DEPUTY HEAD, DEPARTMENT
OF OPHTHALMOLOGY,
UNIVERSITY OF MELBOURNE;
AND SENIOR MEDICAL
RETINAL SPECIALIST, ROYAL
VICTORIAN EYE AND EAR
HOSPITAL, EAST MELBOURNE,
AUSTRALIA



What inspires you? "The loyalty and faith that patients put in us to do our best for them and continue researching towards advances that will help them. This inspires me to keep researching despite the time it takes to translate any new knowledge into actual tangible patient benefits. The amazing research advances made in the past decade for neovascular AMD inspires me to think that in one lifetime it is possible to make enormous advances that influence the quality of life of many millions of people now and into the future."





RUDY NUIJTS

DIRECTOR
CORNEA
CLINIC, DEPARTMENT
OF OPHTHALMOLOGY,
MAASTRICHT UNIVERSITY
MEDICAL CENTER, THE
NETHERLANDS

Rudy identified the etiology of toxic endothelial cell destruction after cataract surgery (Toxic Anterior Segment Syndrome). His current research interests include innovations in corneal, cataract and refractive surgery, particularly the use of femtosecond lasers and transscleral drug delivery. He is treasurer of ESCRS, and serves on the Corneal and Educational Committee.



SEAN IANCHULEV

PROFESSOR OF
OPHTHALMOLOGY, DIRECTOR
OF OPHTHALMIC INNOVATION
AND TECHNOLOGY, NEW YORK
EYE AND EAR INFIRMARY,
ICAHN SCHOOL OF MEDICINE,
MOUNT SINAI, NEW YORK,
NY, USA

Sean is an ophthalmologist-innovator who pioneered and developed some of the biggest breakthroughs in the field over the last decade including Lucentis, intraoperative aberrometry, CyPass, miLOOP and micro-therapeutics.

What inspires you? “As someone who emigrated to the United States from a post-communist country at the age of 18, I rise every day thinking how lucky I am to be an ophthalmologist and able to help my colleagues and patients by advancing technology and science through innovation. I am inspired by the opportunity to make a positive change in life. Having developed multiple technologies which impact hundreds of thousands of patients every year – one needs no more to be inspired.”



SHIGERU KINOSHITA

PROFESSOR AND CHAIR OF
FRONTIER MEDICAL SCIENCE
AND TECHNOLOGY FOR
OPHTHALMOLOGY, KYOTO
PREFECTURAL UNIVERSITY OF
MEDICINE, KYOTO, JAPAN

Future goals? “I would like to establish the cultured corneal endothelial cell injection therapy for bullous keratopathy, and to try to educate young, energetic clinician-scientists.”

Who have been your mentors? “Richard A Thoft, Wayne Streilein, and Reizo Manabe.”



SHERAZ DAYA

MEDICAL DIRECTOR, CENTRE
FOR SIGHT, EAST GRINSTEAD,
UK

Sheraz was amongst the first in the UK to perform LASIK, and he has pioneered a number of corneal and anterior segment techniques and invented several ophthalmic instruments.

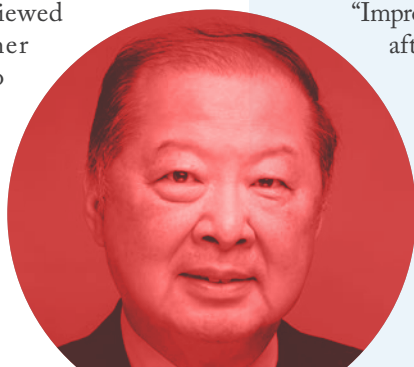
What motivates you? “It’s really curiosity that motivates me – asking a question or encountering a problem, and then going out there to find the solution. I have a considerable dislike for dogmatic thinking and process and confess that when I find flaws, I do challenge them using fundamentals as a basis.”



SOBHA SIVAPRASAD

PROFESSOR AND CONSULTANT
OPHTHALMOLOGIST,
MOORFIELDS, LONDON, UK

NIHR Researcher of the Year in 2017, Moorfields' Innovator of the Year in 2016 and the recipient of the Macula Society's 2017, Sobha's 2018 Lancet paper was shortlisted as one of the finalists for the BMJ awards. She is the first Ophthalmologist to receive a Research Council UK funding of £6.3 million for a project that aims to increase research capability and capacity in India and the UK. She has active clinical and laboratory research interests in AMD, diabetic retinopathy, and retinal vascular disorders, and also runs several clinical trials in these areas and has over 200 peer-reviewed publications to her credit. She is also the Editor-in-Chief of Eye.



SONIA YOO

PROFESSOR OF
OPHTHALMOLOGY
WITH A JOINT
APPOINTMENT IN BIOMEDICAL
ENGINEERING, ASSOCIATE
MEDICAL DIRECTOR, BASCOM
PALMER EYE INSTITUTE,
MIAMI, FL, USA

Sonia's areas of clinical practice are cornea, cataract and refractive surgery, and her areas of research interest include laser applications in cornea, cataract and refractive



surgery, and restoring accommodation. Her research in cutting-edge technology includes the use of high-resolution OCT imaging for anterior segment diseases. She is also using this technology to develop a novel-imaging device for the early detection of keratoconus. She holds several patents and has authored more than 150 book chapters and peer-reviewed journal articles, as well as serving as the principal investigator in numerous drug and device trials.



SUNIL SHAH

CONSULTANT
OPHTHALMOLOGIST AT
MIDLAND EYE AND THE
BIRMINGHAM AND
MIDLAND EYE CENTRE,
BIRMINGHAM, UK

As well as being a cataract and cornea specialist, Sunil is an active researcher, innovator (he invented LASEK) and teacher. He is also International Medical Chair of the Khmer Sight Foundation, which organizes eyecare programs in Cambodia.

What motivates you? "When you love your work, you love to innovate further and try things which will help your patients even more."

Future goals? "To develop a new charity hospital in Cambodia and improve the standard of training in the country."

STANLEY CHANG

K.K. TSE AND KU TEH
YING PROFESSOR OF
OPHTHALMOLOGY,
COLUMBIA UNIVERSITY
MEDICAL CENTER, NEW
YORK PRESBYTERIAN,
NEW YORK, NY, USA

Stanley is a specialist in vitreoretinal disorders and surgery, and has pioneered many of the surgical techniques currently used in this field. He says he has been inspired by the amazing mentors throughout his career.

Career highlights? "Seeing something developed in my lab become used routinely by all vitreoretinal surgeons."

The future of retinal surgery?
"Improved recovery of vision after retinal detachment repair, gene therapy and stem cell treatments."



THEO SEILER

FOUNDER OF THE
INSTITUTE OF
REFRACTIVE AND
OPHTHALMIC SURGERY
(IROC), ZÜRICH,
SWITZERLAND

Theo is a specialist in corneal and refractive therapy, physiologic optics, lasers in ophthalmology, and anterior segment surgery. His doctorates in physics and medicine enabled him to become a pioneer of modern refractive surgery. Among his achievements are

the development of the first clinical dye laser and the invention of CXL; he also performed the first ever PTK, PRK and wavefront-laser guided surgical techniques on the human eye, and was also the first to combine LASIK and rapid CXL. He also performed the first ever CXL in humans.

Future goals? “To promote scleral crosslinking and to make refractive surgery better and less expensive.”

Who have been your mentors? “Professor Josef Wollensak, Berlin and George O. Waring III, Atlanta.”



THOMAS FRINZI

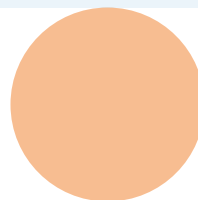
WORLDWIDE PRESIDENT OF
JOHNSON & JOHNSON VISION
SURGICAL

Prior to joining Abbott Medical Optics – now Johnson & Johnson Vision Surgical – Tom held a number of leadership positions in ophthalmology and medical device companies. Most recently, he served as President and CEO of WaveTec Vision, a developer of surgical systems for eye surgery. He also held senior positions in commercial operations, business development, and sales and marketing at Bausch & Lomb Surgical, Refractec and... Johnson & Johnson.

THOMAS KOHNEN

CHAIRMAN AND DIRECTOR,
DEPARTMENT OF
OPHTHALMOLOGY, GOETHE-
UNIVERSITY, FRANKFURT,
GERMANY

Thomas has over 25 years of clinical and research experience in cataract and refractive surgery, has performed or supervised over 35,000 procedures, authored more than 300 peer-reviewed publications, and he also managed to obtain a Health Economics degree during that period. His opinions and insight are widely sought, as reflected by his many podium appearances at international congresses. He is also a member of the editorial boards of many ophthalmology journals, and has received many awards over the years, including the AAO’s Achievement Award in 2002.



THOMAS SAMUELSON

GLAUCOMA SPECIALIST,
MINNESOTA EYE
CONSULTANTS, BLOOMINGTON,
MN, USA

Thomas Samuelson is a glaucoma, refractive and cataract surgeon at (and also a founding partner of) Minnesota Eye Consultants, and a former Glaucoma Fellow at Wills Eye Hospital. He was described by a nominator as “One of the few truly knowledgeable, ethical, honest, innovative, most competent glaucoma surgeons in the world,” and He brings great observation, great organization, great honesty and great experience to what he does.”



TIN AUNG

EXECUTIVE DIRECTOR, SINGAPORE EYE RESEARCH INSTITUTE; DEPUTY MEDICAL DIRECTOR (RESEARCH) AND SENIOR CONSULTANT OF THE GLAUCOMA DEPARTMENT, SNEC; PROFESSOR OF OPHTHALMOLOGY, YONG LOO LIN SCHOOL OF MEDICINE, NATIONAL UNIVERSITY OF SINGAPORE, SINGAPORE

Tin is a clinician-scientist whose research interests include angle-closure glaucoma and the molecular genetics of eye diseases. He is also active in clinical research, having conducted studies on



therapeutics, imaging, screening and surgical outcomes of glaucoma. Tin says that one of his career highlights was helping to organize worldwide consortia for glaucoma genetics.

What drives you? “Challenging patients and tough research questions.”

USHA CHAKRAVARTHY

PROFESSOR, OPHTHALMOLOGY AND VISION SCIENCES, ROYAL VICTORIA HOSPITAL (THE BELFAST TRUST) AND QUEENS UNIVERSITY OF BELFAST, NORTHERN IRELAND

Notable achievements? “Receiving a national honor (CBE) for services to ophthalmology, receiving the Alderman Award for macular degeneration research and being selected to deliver the Bowman lecture at the Royal College of Ophthalmologists.”

What excites you right now? “The increasing awareness of the importance of neural cell health and not just the amelioration of exudative manifestations of AMD and diabetes, as well as the consideration of combined therapies to reduce neural cell loss.”

**WILLIAM LINK**

PRINCIPAL, FLYING L PARTNERS, MANAGING DIRECTOR OF VERSANT VENTURES

A mechanical engineer by training, Bill is one of the biggest names in



the eyecare business. Founder of both Chiron Vision and American Medical Optics, Bill served as President of American Medical Optics, and later on the Board of its successor company, Advanced Medical Optics. Bill was a partner at Brentwood Venture Capital,

where he invested in a number of companies including eyeonics, Genyx, IntraLase, Intra Therapeutics, and OraMetrix. Now MD of Versant Ventures and Principal of Flying L Partners, his investments include: AcuFocus, Cameron Health, ForSight, Glaukos, Inogen, LenSx, Neurotech, Oculeve, Rox Medical, Second Sight and Wavetec.



VEGF Veteran

Sitting Down With... Napoleone Ferrara,
Distinguished Professor of Pathology and
Distinguished Adjunct Professor of Ophthalmology,
UC San Diego School of Medicine, California, USA

Take us back to the beginning...

In 1983, after finishing medical school in Catania, I came to the US. At that time in Italy, going to medical school was a good route if you were interested in research – as PhD programs were not well established yet. Fortunately, I was offered a great opportunity to do a fellowship at the University of California in San Francisco (UCSF) – and that's where the VEGF story began. In those early years at UCSF working on neuroendocrinology, I came across an intriguing finding: pituitary cells seemed to be stimulating blood vessel growth. I tested pituitary cell supernatant on endothelial cells, and to my surprise there was strong angiogenic activity. I speculated that it could lead to something interesting, so I began to follow it up.

Can you give a 'potted' history of your VEGF work?

I started trying to purify the protein that was behind the activity. However, the technology in that period was very different from today. Now, we have a completed genome, but at that time very few genes were known. If you wanted to advance the field, there was a long way to go. You needed to isolate the protein and determine its amino-terminal amino acid sequence, a task that could take 10 years. But I was young and irresponsible, so I decided to take on the challenge. Many people told me I was crazy for spending many years working on something that could already be well-known or unimportant. But I decided to pursue it anyway.

A key event in the history was joining Genentech in 1988. I was extremely fortunate that the company allowed some time for discretionary research. I used this time to pursue my favorite project. They had incredible technology and great people, and we made very rapid progress. Within six months, we were able to determine the amino acid sequence of the protein – which was very exciting because it was a novel sequence with no match in

any database. Based on the amino acid sequence we were able to clone the gene, which really opened up further research opportunities. Knockout studies revealed how important VEGF activity was for angiogenesis; when one copy of the gene was inactivated, embryos couldn't develop any blood vessels and died. We'd also developed a monoclonal antibody against VEGF – the precursor to bevacizumab – and found it had a profound effect in limiting tumor growth.

And the eye?

Around the same time, there was a hypothesis that angiogenesis might also be important in eye diseases such as diabetic retinopathy. So we started looking into that too. Along with collaborators in Boston who provided clinical samples and animal models, we were able to show a striking correlation between the level of VEGF in the vitreous and retinal angiogenesis. Using the monoclonal antibody and other VEGF blocking agents developed in our laboratory, we demonstrated that blocking VEGF had a profound effect on blood vessel growth and retinopathy in animal models.

It must be rewarding to see bevacizumab having such an impact...

It's done pretty well! It has 10 FDA approvals and has become a standard therapy in several cancers. But I think that anti VEGF therapy, which today includes multiple molecules, has had the biggest impact in ophthalmology. I don't think I'm biased in saying that VEGF has completely transformed and revolutionized the field. It is incredibly gratifying to see and I am extremely happy that the work I initiated so long ago has reached this point.

How did you find the transition back into academia?

I've spent most of my career at Genentech, and have been back in academia five years. They are different worlds. Academia can expand your ability to collaborate, but at

Genentech there was a very rigorous kind of work that would lead you somewhere faster. I am very pleased to have the opportunity to see these two different perspectives!

What are you focusing on right now?

We, like many people, are trying to go beyond VEGF in cancers and eye diseases. So far, it has been difficult. But there are some interesting things on the horizon, such as inflammatory angiogenesis. We've also been working on the eye and cancer and have obtained intriguing preliminary data suggesting the existence of new molecules to target, in addition to VEGF. At this point, the data is too early to share, but we are hopeful that the work will pan out.

The future of anti-angiogenesis?

Although it has been unfortunate that most clinical trials investigating combination therapies with anti-VEGF have proved unsuccessful, I see combined therapies being important. Data suggests that combining anti-angiogenesis with immunotherapy could provide significant benefits in cancer. In the eye, the story is a little more complex. There was a lot of hope that combining anti-VEGF agents with drugs targeting the complement pathway could be beneficial in treating macular degeneration. Unfortunately, this has not yet worked; it was disappointing that lampalizumab failed in phase III clinical trials because this drug could have opened up the possibility of targeting another critical component of the disease, geographic atrophy. However, lampalizumab was only an initial attempt; further research may succeed.

What inspires you?

I started with a real curiosity to discover what was happening in a biological process – angiogenesis. Curiosity has become the common denominator in my career – it's what makes being a scientist fun. I am no longer a young investigator but I am still just as intrigued, which inspires me to go work.

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WARNINGS: May cause a reduction in contrast sensitivity under certain conditions, compared to an aspheric monofocal IOL. Inform patients to exercise special caution when driving at night or in poor visibility conditions. Some visual effects may be expected due to the lens design, including: perception of halos, glare, or starbursts around lights under nighttime conditions. These will be bothersome or very bothersome in some people, particularly in low-illumination conditions, and on rare occasions, may be significant enough that the patient may request removal of the IOL. Rotation of the TECNIS Symfony® Toric IOLs away from their intended axis can reduce their astigmatic correction, and misalignment greater than 30° may increase postoperative refractive cylinder. If necessary, lens repositioning should occur as early as possible prior to lens encapsulation. **ATTENTION:** Reference the Directions for Use for a complete listing of Indications and Important Safety Information.