



Clinical Spotlight:

All Around the Eye: the Oculoplastics Division

A retired businessman with a tumor behind his eyeball. A 16-year-old baseball player who has a fractured eye socket after being hit with a fastball. A 50-year-old teacher with double vision and eyes bulging resulting from thyroid eye disease. Patients like these, and many others with widely varying conditions, receive care from the Department of Ophthalmology's Oculoplastics Division, which treats all disorders of, and trauma to, the eyelids, orbit, and the tear drainage system.

"In oculoplastic and orbital surgery, we care for a greater diversity of conditions than perhaps any other subspecialty in ophthalmology," says Bryan Winn, MD, Associate Professor of Ophthalmology, who heads the division.

Oculoplastics has a long history at Columbia, beginning with the late Algernon Reese, MD whose text "Tumors of the Eye" was the definitive volume on the subject for many years. With Ira Snow Jones, MD, Dr. Reese ran a children's referral center at the Edward S. Harkness Eye Institute, where children from all over the world were examined and treated for eye tumors. He pioneered surgical techniques to diagnose and treat tumors that surround the eye in the orbit.

Noted laser surgery expert Stephen Trokel, MD, Professor of Ophthalmology, pioneered imaging techniques and surgical approaches to thyroid eye disease. Michael Kazim, MD, Clinical Professor of Ophthalmology and Surgery, and co-founder of

the International Thyroid Eye Disease Society (ITEDS), is known worldwide as a leading expert in thyroid eye disease.

Working with Columbia's renowned Division of Neuroradiology within the Department of Radiology at Columbia University Medical Center, the oculoplastics group broke new ground in the radiographic diagnosis of exophthalmos (a protruding eyeball, often caused by thyroid eye disease). They were also the first in the country to demonstrate that the cause of vision loss in severe thyroid eye disease was a compressive optic neuropathy due to enlarged extraocular muscles. More recently, Dr. Kazim has advanced the customized approach to orbital decompression surgery for thyroid eye disease, and has made significant advancements in surgery to correct the disabling double vision and eyelid changes that can result from the disease.

Within the past several years, the division has grown significantly, as research has advanced understanding of the disease processes behind many orbital conditions and provided new options for treatment. In 2016, former Columbia Ophthalmology chief resident Lora Dagi Glass, MD, (see page 7) returned to Columbia after a two-year fellowship in ophthalmic plastic and reconstructive surgery at the Massachusetts Eye and Ear Infirmary. Together, she and

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Bryan Winn, MD

Brian Marr, MD Launches New Ocular Oncology Division

Brian Marr, MD, a renowned ophthalmic oncologist and one of only a handful of experts trained in all aspects of eye cancer, has joined the Department of Ophthalmology, where he will launch a new, comprehensive division of ophthalmic oncology.

During his nearly two decades of practice, first at the Wills Eye Hospital in Philadelphia and then at Memorial Sloan-Kettering Cancer Center, Dr. Marr devised and performed thousands of surgical procedures to treat tumors of the eye, eyelid, orbit, and conjunctiva in adults, children, and infants. He is one of the few surgeons experienced in resection of intraocular tumors, as well as laser, radiation, and chemotherapy treatments.

The conditions that Dr. Marr treats are among the rarest and most complex in either ophthalmology or oncology. "A condition treated frequently by ocular oncologists is uveal melanoma, which is a cancer of the iris, the ciliary body and choroid," he explains. Tumors in the uvea develop within the pigment cells (melanocytes) that give color to the eye. About 2,500 to 3,000 cases of uveal melanoma are diagnosed in the United



Brian Marr, MD

States every year. Other conditions he treats, such as conjunctival melanoma, pediatric retinoblastoma, and "simulating lesions" that mimic ocular cancers, are much rarer. "There are only a small number of centers throughout the country that deal with these different rare diseases, and I've had the opportunity to work at and grow two big centers over the last 17 years," he says.

When patients reach Dr. Marr, they have often exhausted all hope. "They've been told by multiple specialists, 'You have something I haven't seen very often, and you need someone with experience to help you.' They're desperate," he says. "Two of the biggest fears we have as humans are going blind and having cancer. I deal with both of those on a daily basis."

At Columbia, Dr. Marr believes he has the best of all possible locations to create a center of excellence in ocular oncology. "Wills Eye Hospital is a top eye hospital and Sloan-Kettering is a top oncology hospital. But here at Columbia, we have both," he says. "In my field, you need a comprehensive

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Herbert Irving



Dear Friends,

The health of the human eye depends upon the structures that surround it: the orbital socket, the lacrimal system (the tear ducts), and the skin, muscles, and nerves of the eyelids and eyebrows. This issue of *Viewpoint* spotlights the versatile and innovative clinician-scientists of our Oculoplastics Division, who provide both medical and surgical treatment for the wide array of conditions that can affect these areas. With the recent addition of Columbia alumna Lora Dagi Glass, MD, to the program headed by Bryan Winn, MD, this division is experiencing robust growth.

Working closely with the Oculoplastics Division will be another outstanding new faculty member, ophthalmic oncology specialist Brian Marr, MD. Coming to Columbia from Memorial Sloan-Kettering Cancer Center, Dr. Marr is one of a small and elite group of physicians specializing in the complex intersection of oncology and the eye. He will see patients at the 880 Third Avenue facility, which is also home to our comprehensive ophthalmology, optometry, and cornea practices.



This past December, we were proud to host the first-ever national symposium in Precision Ophthalmology™. As you know, Columbia has distinguished itself as a key leader in advancing the concept of precision medicine, and we have coined the term Precision Ophthalmology™ to represent the integration of state-of-the-art clinical characterization with an unprecedented depth of genetic analyses to achieve personalized treatment of eye diseases. The conference brought together over 180 attendees from across the country for a comprehensive update on the latest innovations in this field.

One such innovation is a new clinical trial of a cell-based therapy for glaucoma, a treatment that also holds promise for other eye diseases.

Columbia is only the second clinical site in the country to participate in this randomized trial, which aims to restore lost visual field to patients with open-angle glaucoma. Our Vice Chair and Director of our Glaucoma Service, Jeffrey Liebmann, MD, and I will be leading this trial.

In this issue of *Viewpoint*, we are also delighted and honored to share with you details and photographs from the January 30th grand opening of Jonas Children's Vision Care, a state-of-the-art pediatric diagnostic and imaging center. Made possible by the dedication and generosity of entrepreneur and philanthropist Donald Jonas and his wife Barbara, this center serves as the fulcrum of Jonas Children's Vision Care, a first-of-its-kind, integrated effort to prevent and treat blindness and other serious eye disorders in children.

Sadly, we have recently lost a dear and devoted friend to the Department of Ophthalmology and to Columbia itself. Herbert Irving, who, with his wife Florence, has been one of Columbia's greatest benefactors, passed away in October 2016 at the age of 98. Our thoughts are with Florence, their children, and grandchildren.

As always, we at Columbia Ophthalmology are grateful for your continued interest in and support for our important work to preserve and restore sight and advance the science of ophthalmology.

Sincerely,

G. A. (Jack) Cioffi, MD
Jean and Richard Deems Professor
Edward S. Harkness Professor
Chairman, Department of Ophthalmology

Comprehensive Eye Services Expand to New Space at 880 Third Avenue

After many successful years at 880 Third Avenue, Columbia's comprehensive ophthalmology, optometry, cornea and oculoplastic practices have officially opened in their expanded space on the third floor. These practices, formerly located on the building's second floor, began seeing patients on March 6 in modern, renovated quarters that include six ophthalmology exam lanes, a dedicated procedure room, and a contact lens insertion and training room. The space also features a brand-new facility for its Laser Vision Center.

"We have already been thriving in this location, and the expansion to the third floor gives us the additional space we need," said G. A. (Jack) Cioffi, MD, Chair of the Department. "For the first time, physicians from the Departments of Dermatology and Otolaryngology-Head & Neck Surgery will also be practicing here, which offers abundant opportunities for collaboration and cross-referral, as there are many synergies between these practices."

Clinicians with new space on the third floor include comprehensive ophthalmologist James Auran, MD; cornea and refractive surgery specialists Leejee Suh, MD, Danielle Trief, MD, MSc, and Stephen Trokel, MD; and optometrist Suzanne Sherman, OD, FAAO, a specialist in complex and medically necessary contact lens fittings and ocular disease.

Brian Marr, MD, a nationally known expert in ocular oncology (see page 1), will have his practice on the second floor. The retina and glaucoma services will also remain in their practice spaces on that floor. ■



Above: Exam Room

Left: Entrance and Waiting Room of new third floor space

Clinical Spotlight:

Ribbon Cutting Opens Jonas Children's Vision Care

On January 30, more than 70 supporters and faculty members gathered to celebrate the opening of the new state-of-the-art pediatric ophthalmology center at New York-Presbyterian/Morgan Stanley Children's Hospital. The center is the hub of Jonas Children's Vision Care, an unprecedented program focused on preventing and treating blindness in children.

Before cutting the ribbon on the new center, philanthropist and entrepreneur Donald Jonas told the story of his own battle with eye disease, the rare genetic condition Late Onset Retinal Dystrophy (LORD). It was this experience, combined with the unparalleled expertise and responsive care of his ophthalmologist, Stephen H. Tsang, MD, PhD, Laszlo T. Bito Associate Professor of Ophthalmology and Pathology & Cell Biology, that inspired Mr. Jonas to make a major gift to create Jonas Children's Vision Care. "This moment is the culmination of a great deal of effort on the part of

Columbia and the Jonas Family Fund," said Mr. Jonas. "I am grateful to Dr. Tsang for his outstanding care, and for providing the inspiration and impetus for the creation of this program."

Introducing Mr. Jonas was his wife Barbara, who said that in turbulent and difficult times, it was particularly rewarding for her and her husband to be able to make a contribution that will have long-lasting benefit for so many children. Department Chair G. A. (Jack) Cioffi, MD, thanked the Jonases for their generosity and commitment to children's eye health. "It has taken a tremendous amount of planning

The importance of this aspect of the program was addressed by guest speaker Irene Maumenee, MD, Director of the Ocular Genetics Laboratory at the Illinois Eye and Ear Infirmary and a co-founder of the International Society for Genetic Eye Diseases. "When I chose the field of genetics, people were saying things like, 'What a waste of a perfectly good career,'" Dr. Maumenee said. "Now everyone understands the importance of genetics to ophthalmology, and Columbia is an ideal place to



Above, left to right: G. A. (Jack) Cioffi, MD and Donald Jonas

Left to right: Stephen H. Tsang, MD, PhD, Barbara Jonas, Jeffrey Liebmann, MD, and John Jonas



move that partnership forward. This endeavor is extraordinary, combining scientific and clinical excellence with great imagination. It will establish Columbia as one of the nation's most important pediatric eye institutions."

Jonas Children's Vision Care will seek to partner with existing pediatric subspecialty programs and geneticists at Children's Hospital of New York to enhance the team approach for complex care management. "The program will also seek to establish clinical and scientific training programs for promising individuals to pursue careers dedicated to preserving, restoring, and maintaining eyesight in children," said Dr. Brooks.

and organization to create this program, and I am so pleased to be here today to see our efforts come to fruition."

Steven Brooks, MD, Anne S. Cohen Professor and Chief of Pediatric Ophthalmology, will serve as Medical Director for Jonas Children's Vision Care, while Dr. Tsang has been named Research Director for the program. At the new center, children with sight-threatening disorders will receive cutting-edge care, including gene sequencing, genetic counseling, and precision medicine-based therapies for those with genetic mutations linked to vision problems.



Above left, left to right: Susan Jonas Klein, John Jonas, Dr. Cioffi, Adam Purcell, Barbara Jonas, Kirby Jonas, and Donald Jonas

Above, left to right: Adam Purcell, Susan Jonas Klein, John Jonas, Barbara Jonas, Kirby Jonas, Donald Jonas, and Dr. Cioffi

Brian Marr, MD Launches New Ocular Oncology Division

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base of support: otolaryngologists, craniofacial surgeons, neurosurgeons, and oncologists. I also do intricate eye operations where having top retinal and corneal experts close by is crucial. Ocular oncology represents the melding of two very significant programs, and Columbia is the perfect place to do that."

Dr. Marr received his medical degree from Temple University School of Medicine in Philadelphia. He completed his residency at the New York Eye and Ear Infirmary in New York City and a fellowship in ocular oncology at Wills Eye Hospital. He has researched evolving areas in eye cancer, such as proteomics of the vitreous (the clear gel that fills the space between the lens and the retina)

and new drug delivery systems. In addition to contributions to major ophthalmic journals, Dr. Marr has published chapters in several textbooks, including *Duane's Foundations of Clinical Ophthalmology and Ophthalmology Pearls*. He is the current chief editor of the American Academy of Ophthalmology's One network for Oncology and Pathology.

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Symposium Makes a Splash for Precision Ophthalmology™

With a first-of-its-kind symposium in December that drew experts from around the country, Columbia has firmly established itself as a national leader in defining and advancing the field of Precision Ophthalmology™. Defined by customized genetic, diagnostic, and translational clinical care, Precision Ophthalmology™ has the goal of using each patient's own genetic profile, along with variations in environment and lifestyle, to help tailor a course of treatment specifically designed for him or her.

Entitled *Precision Ophthalmology 2016: Applying Science to Improve Care*, the symposium, held December 9-10 at the Vivian and Seymour Milstein Family Heart Center, capitalized on Columbia's campus-wide precision medicine initiative, as well as the federal precision medicine program launched in 2015 by former President Barack Obama.

"The purpose of this inaugural meeting was to highlight the cutting-edge work being done by our own faculty, as well as other colleagues from New York and around the nation, many



of whom are research collaborators," says Department Vice Chair Jeffrey Liebmann, MD, Shirlee and Bernard Brown Professor of Ophthalmology and Director of the Glaucoma Service.

The agenda featured three named lectures that are part of the Department of Ophthalmology's traditional annual education program. These compelling talks on translational science included:

- Henry J. Kaplan, MD, Chair of the Department of Ophthalmology and Visual Sciences at the University of Louisville, presenting the Arthur Gerard DeVoe, MD Lecture entitled "Rescue of Lost Cone Photoreceptor Vision in Retinitis Pigmentosa;"
- Ronald R. Krueger, MD, Medical Director of the Department of Refractive Surgery at the Cleveland Clinic's Cole Eye Institute, presenting the John H. Dunnington, MD Lecture on "The History and Future of Laser Vision Correction;" and



- Harry A. Quigley, MD, Professor of Ophthalmology at Johns Hopkins' Wilmer Eye Institute, delivering the Max Forbes, MD Lecture on "21st Century Glaucoma Care."

Course directors Leejee Suh, MD, Tongalp Tezel, MD, and G.A. (Jack) Cioffi, MD, describe the speakers as "thought-provoking." Dr. Liebmann points out that the speakers received "extraordinarily high reviews from our attendees," adding "Dr. Kaplan discussed a novel way to reverse the dormancy of the injured photoreceptors in retinitis pigmentosa which may open up a new avenue to restore the sight of patients suffering from hereditary retinal degenerations; Dr. Quigley addressed the impact of big data and how it is altering our understanding of glaucoma; and Dr. Krueger spoke on the future of refractive surgery, which began here at Columbia, where he worked with Dr. Stephen Trokel."

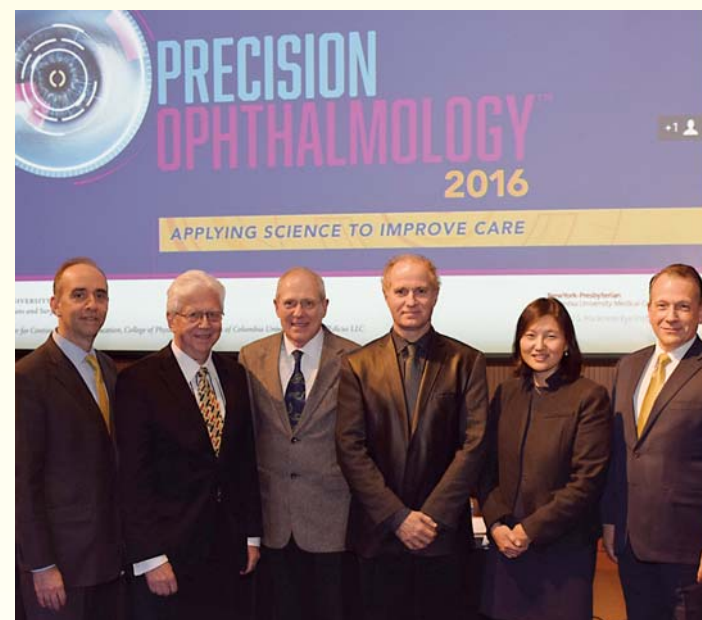
The symposium filled the auditorium to its capacity at 185 attendees, a turnout which exceeded expectations for a first-time meeting. Plans are already underway for the next meeting in December, which is intended to address the application of genetic science to clinical care.

One of the purposes of the meeting was to integrate rapid advances in science into management tools for clinicians. Dr. Liebmann concludes, "This is one additional step in furthering our understanding of glaucoma and fostering the research collaborations that will be so important in the development of new treatment paradigms and the prevention of unnecessary vision loss."



Above: Introductory slide to Presentations

Left: Panel consisting of left to right: Bryan Winn, MD, James Auran, MD, Danielle Trief, MD, and Leejee Suh, MD



Above: Presenters of named lectures and Course Directors. Left to right: Jeffrey Liebmann, MD, Henry J. Kaplan, MD, Harry A. Quigley, MD, Ronald R. Krueger, MD, Leejee Suh, MD, and Tongalp Tezel, MD

Far left: Speaker Jason Horowitz, MD with retina panelists, left to right: Ronald Gentile, MD, Gaetano Barile, MD, Stanley Chang, MD, and Tongalp Tezel, MD

Below: Attentive audience





Above: Stanley Chang, MD, Tongalp Tezel, MD, Henry J. Kaplan, MD, and G. A. (Jack) Cioffi, MD

Left: Dr. Cioffi giving a presentation

Below, left to right: Aakriti Garg, MD, David Ritterband, MD, Priya Mathews, MD, Joaquin De Rojas, MD, G. A. (Jack) Cioffi, MD, Danielle Trief, MD, Jeffrey Liebmann, MD, George Florakis, MD, and Leejee Suh, MD



All Around the Eye: the Oculoplastics Division

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Dr. Winn and their colleagues see more than 4,000 patients every year, a number that will only grow with the recent recruitment of Brian Marr, MD, who is a nationally known ocular oncology expert (see page 1).

“Oculoplastics is becoming more and more specialized as we strive to understand what happens at the cellular level to cause the wide range of problems that can develop in the tissue in and around the eye,” says Dr. Glass, Assistant Professor of Ophthalmology. “And as the field advances, our options for treatment continue to improve as well. Even as recently as five or ten years ago, we had very few options for treating orbital inflammation. Now, we are able to use a variety of steroid-sparing agents and biologics.”

Dr. Glass notes that oculoplastics sits at a cross-section between ophthalmology and many other disciplines, including neuroradiology, neurology, rheumatology, dermatology, and plastic surgery. “You may be treating children one day and adults the next, and doing ten different types of surgery on the same day. You never know what’s coming next.”

For example, the Oculoplastics Division has recently worked with colleagues in

the Division of Neuroradiology to identify a new type of blood vessel tumor in the orbit, which requires specialized intervention by both orbital surgeons and interventional radiologists. In a parallel project, they are collaborating with Ronald Silverman, PhD, Professor of Ophthalmic Science, using Dr. Silverman’s newly developed ultrasound to help guide the preoperative planning of surgery on blood vessel tumors in an effort to make the surgery safer. “We are also working with the Division of Neuropathology within the Pathology Department to identify a method to predict the behavior of optic nerve glioma, a type of tumor affecting young children that can threaten both their vision and lives,” Dr. Kazim says. “We hope to determine which of the children are at risk for rapid tumor growth and therefore require more regular follow-up, while reassuring parents in those cases where the tumor is expected to grow little, if at all.”

A promising new area of research for the field lies within the microbiome—the community of about 100 trillion microbial organisms that inhabit our bodies. A growing number of studies

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Prominent Recruit Brings Comprehensive Ophthalmology to 51st St.

As Chief of Ophthalmology at Bellevue Hospital for more than a decade, Lisa Park, MD, successfully treated just about every type of eye trauma and eye condition imaginable. Beginning in June 2017, she is bringing that expertise, along with her years of experience as a cataract surgeon and comprehensive ophthalmologist, to Columbia as an Associate Professor of Ophthalmology and as the first ophthalmologist at its multi-specialty midtown location at 51 West 51st Street. Until June, Dr. Park will be seeing patients on a limited basis at the 880 Third Avenue facility (see page 2).

Dr. Park is accustomed to firsts. After obtaining her undergraduate degree at Harvard and her MD from Yale, she completed her residency training at NYU Langone Medical Center, followed by a fellowship in anterior segment and refractive surgery at Manhattan Eye and Ear Hospital. In 2005, she joined NYU, becoming the first member of the ophthalmology faculty practice. Dr. Park also served as the Associate Director of Residency Training for more than 11 years, teaching and mentoring more than 70 residents and pioneering the use of virtual surgery simulation in training. She also co-hosted a twice-monthly radio show on ophthalmology for the hospital’s “Doctor Radio” satellite network.

“I’m very excited about joining Columbia because of its excellent reputation and the outstanding facility for ambulatory care at 51st Street,” Dr. Park says. She hopes to work closely with the other providers at the midtown location to identify eye care needs that their patients may have. “There are many opportunities for synergy here—for example, with patients who have diabetes and need diabetic eye care screening, with those with inflammatory conditions that can often have accompanying eye manifestations, and with patients going for rehabilitation, particularly those in the geriatric population.”

As a comprehensive ophthalmologist, Dr. Park has a particular expertise and interest in geriatric eye care. “People are living longer, and their expectations

for an active lifestyle are only increasing,” she says. “For these reasons, it is critical that people have regular, comprehensive eye examinations as they age.”



Lisa Park, MD

Dr. Park is passionate about global health, traveling frequently to Africa and Central America, volunteering as a telemedicine mentor through ORBIS International and as a volunteer surgeon with the Hospital de La Familia Foundation in Guatemala. She serves on the board of the International Foundation of the American Society of Cataract and Refractive Surgery and on the board of Vision Care USA, an organization dedicated to teaching modern surgical techniques at Ras Desta Hospital in Addis Ababa,

Ethiopia. “Vision Care’s goal is to eradicate reversible causes of blindness,” she says. “285 million people worldwide are visually impaired, and 40 million people are blind. Millions of people in the world are unnecessarily blind, and 80% of these cases can be reversed with surgery.”

Dr. Park stresses that vision is something unique to the individual, with each person having particular needs based on profession, hobbies, and other aspects of life. “I treat patients with a wide variety of visual needs, such as interventional radiologists who need precise near vision to be able to put catheters in. I treat musicians in pit orchestras who sit in the dark and need to be able to see their music stands and the conductor. I treat artists with particular needs for sensitivity to color and perception of light. My goal is to maximize each person’s potential for good vision, and that is different for everyone.”

Dr. Park’s unique sensitivity to the delicate and the precise make her an artful and celebrated addition to Columbia’s Department of Ophthalmology.

Research Spotlight: The Tracks of Our Tears: Xin Zhang, PhD

Even if you're a particularly stoic person who never cries, your body still produces between five and ten ounces of tears every day. Every time you blink, tears spread across the cornea, lubricating it and flushing away debris, supplying the eye with oxygen and nutrients, and smoothing away irregularities to keep vision sharper.

When the body doesn't produce enough tears, the eyes grow dry, leading to irritation, blurry vision, and even significant inflammation and scarring of the cornea. Dry eye syndrome can occur at any age, but it becomes more prevalent as we grow older, with nearly five million Americans over 50 estimated to have dry eye. Dry eye is more common in women and in people with autoimmune diseases, such as Sjogren's syndrome, rheumatoid arthritis, and lupus.

Dry eye most frequently results from deficiencies in the lacrimal glands, a pair of almond-shaped glands located above and just to the outer corner of each eye that produce the watery component of tears. Associate Professor of Ophthalmic Sciences Xin Zhang, PhD, is using his expertise in genetics and biology to understand and treat dysfunction in these glands.

"To date, there is no cure for dry eye," he says. "The only treatments are various types of artificial tears, which have to be used quite often and are not nearly as good as the real thing."

By understanding the development of the lacrimal gland, Dr. Zhang hopes to define the mechanisms behind dry eye and ultimately to identify solutions that could promote tear production—perhaps even by regeneration of the lacrimal gland itself. "Early-stage research has shown that lacrimal glands do have the potential to regenerate, and we would like to understand how we can promote that," he says.

Dr. Zhang is particularly interested in a group of cells within the lacrimal gland called acinar cells. "They are the cells that do the secretion of the aqueous

component of tears, the heavy lifting," he says. "In autoimmune disease, they are attacked by the immune system and eventually die off. With age, it's possible that they just start to lose their function and don't secrete well."

To produce functional acinar cells in the lacrimal gland, two other types of cells must interact: epithelium cells, the precursor cells which give rise to acinar cells, and mesenchymal cells. Produced in the spinal cord very early in embryonic development, mesenchymal cells migrate all the way to the lacrimal gland, where they secrete fibroblast growth factor (FGF), which entices acinar cells to grow, develop properly, and branch out.

Dr. Zhang's laboratory has recently identified the protein-coding gene ALX4, which is associated with craniofacial development, as playing an important role in the development of lacrimal mesenchymal cells. When the gene was "knocked out" – or eliminated – in a mouse model, the mouse was unable to produce a functional lacrimal gland.

To determine if the same relationship exists in humans, Dr. Zhang turned to the scientific literature, where he found case reports from physicians in Iran regarding a

family there with hereditary mutations to the ALX4 gene. One case involved a child who inherited two mutated copies of the gene and was born with a number of congenital defects, including frontonasal dysplasia (abnormal development of the head and face). He contacted the Iranian physicians and asked if this patient also had lacrimal gland problems. It turned out that the child does indeed produce almost no tears and has severe corneal irritation. In fact, MRI images revealed that the child's lacrimal gland had never developed at all. "Now, we are confident that the mechanism that we studied at the cellular and animal level can be translated into humans," Dr. Zhang says.

Armed with this confirmation, he and his team now plan to investigate the gene's unusual expression pattern—it presents in some cells, but not in

others—in order to understand its function more clearly. Next, he hopes to use ALX4 gene expression in a mouse model to promote the growth of functional lacrimal acinar cells. If he is successful in identifying treatments that can restore the tear-generating properties of the lacrimal gland, there won't be a dry eye in the house.



Xin Zhang, PhD

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suggests that there may be a connection between abnormalities in the microbiome and these inflammatory diseases. "We are really focusing now on how the microbiome affects orbital and periocular inflammatory diseases, such as thyroid eye disease and orbital pseudotumor," Dr. Winn says. (Orbital pseudotumors are benign inflammatory masses, often of unknown etiology, that cause pain, swelling, and eye protrusion, and potentially double vision or vision loss.) "The microbiome may open the way to novel treatments for inflammatory diseases that involve the eye and the orbit. Rather than giving potentially toxic treatments like chemotherapy, we may be able to use diet, supplementation, or even something as novel as fecal transplant to restore the normal diversity of bacteria in the gut and reverse, or at least mitigate the inflammatory process."

Dr. Winn is launching a study comparing the microbiomes of three sets of individuals: people with Graves' disease and thyroid eye disease; those with Graves' but without thyroid eye disease; and a healthy control group. He theorizes that the more severe the disease becomes, and the more it involves the orbit, the more derangement and loss of diversity will be found in the microbiome. "If we find that, the next step would be to try novel treatments to restore the balance of gut bacteria," he explains.

The Oculoplastics Division also focuses on disorders of the lacrimal gland, which produces the watery component of tears, and on the nasolacrimal system, which serves as a conduit for tears to flow from the eye to the nasal cavity (see Research Spotlight, above). Recently, Dr. Winn identified a common, but previously unrecognized, cause of tearing – punctal congestion due to a reaction to certain eye drops commonly used to treat eye infections and conjunctivitis. "Over the past couple of years we began noticing a number of patients all presenting with tearing and the same story. They all had a history of being put on a steroid drop or steroid/antibiotic combination drop to treat an eye infection," he says. "When the infection cleared, the patient still had tearing after discontinuing the eye drops—so drops were re-initiated. Often these patients would see several ophthalmologists, being treated with a number of different drops before coming to see me."

Dr. Winn realized that the patients were having a reaction to a component of the drop itself - but because of an anti-inflammatory component, the reaction was masked until the drop was discontinued.



Michael Kazim, MD

"The only intervention that would quiet the inflammation was putting the patient back on the drop. Unfortunately, this perpetuated the reaction," he says. "Only by taking them off the drop for an extended period of time did the tearing finally improve. It was really tough convincing people

that they needed to stop taking all of the drops in order to help the tearing. Even harder than that was letting them know that they would likely continue to tear for a number of weeks before improving."

In Dr. Winn's study, all of the patients with this condition ultimately improved after discontinuing the steroid and steroid/antibiotic drops, usually after 6-12 weeks. Many of the patients had been tearing for over a year before seeing Dr. Winn. He presented his findings at Columbia's Precision Ophthalmology™ meeting in December (see page 4).

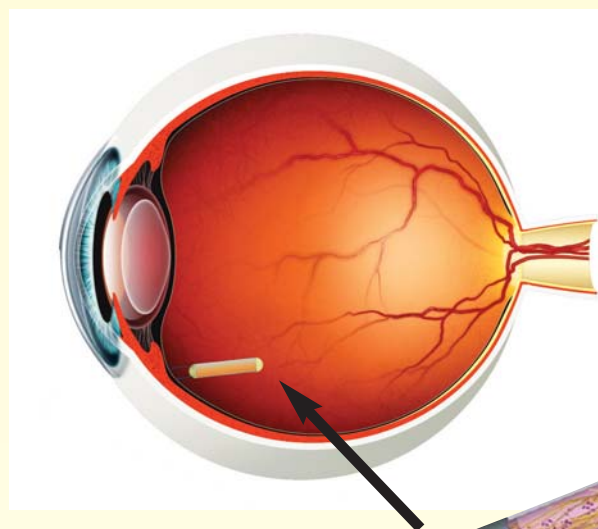
Columbia to Test New Cell-Based Therapy for Glaucoma

Traditional treatments for glaucoma, the number one cause of irreversible vision loss worldwide, have focused on lessening the damage caused by increased intraocular pressure (IOP). But new avenues of investigation aim to combat glaucoma through cell-based therapies that are designed to protect the optic nerve from damage, while at the same time stimulating the growth and activity of new optic nerve cells.

Columbia's Department of Ophthalmology has been selected as the second investigative site in a new Phase II clinical trial of one such innovative cell therapy for glaucoma. Developed by the Rhode Island-based pharmaceutical company Neurotech, NT-501 Encapsulated Cell Therapy (ECT) is a surgical implant of encapsulated human fibroblast cells that have been genetically modified to secrete therapeutic doses of ciliary neurotrophic factor (CNTF).

First identified in the 1970s, CNTF is known to be beneficial to neural axons in the optic nerve. In laboratory and animal models of glaucoma, it has been shown both to protect retinal ganglion cells and optic nerves from degenerating, and to regrow retinal ganglion cell axons down the optic nerve toward the brain.

No serious adverse events were reported in a recent Phase I trial of the ECT implant. The trial involved 60 patients with glaucoma, age-related macular degeneration, and retinitis pigmentosa, and was led



by Jeffrey L. Goldberg, MD, PhD, Professor and Chair of Ophthalmology at the Byers Eye Institute at Stanford University School of Medicine. Dr. Goldberg will be the principal investigator of the new Phase II study, which will assess the treatment's efficacy. Columbia Chair of Ophthalmology, G. A. (Jack) Cioffi, MD, will lead the second site Phase II trial.

"Columbia was chosen for this important trial thanks to the strength of our glaucoma program and our deep commitment to translational research," says Dr. Cioffi. Also enrolling patients and contributing to the



Assembly above
Finished package product below showing the NT-501 implant maintained within the primary package, seated within the secondary package

The NT-501 implant contains bioengineered cells which produce nerve growth factor to help support the health of the optic nerve

trial will be Department Vice Chair, Jeffrey Liebmann, MD, Shirlee and Bernard Brown Professor of Ophthalmology and Director of the Glaucoma Service, and glaucoma experts Lama

Al-Aswad, MD, MPH, Associate Professor of Ophthalmology, and Dana Blumberg, MD, MPH, Assistant Professor of Ophthalmology. Additional members of the investigative team include retinal specialists Royce Chen, MD, and Jason Horowitz, MD, both Assistant Professors of Ophthalmology, and Marzhan "Margo" Atakulova, MD, Clinical Research Coordinator.

A total of 60 patients will be enrolled in the randomized, double-blind [▶ continued on page 8](#)

Lora Glass, MD: A Third-Generation Physician

"I grew up with medicine in my blood," says Lora Glass, MD, "and respecting the ideals of taking care of people, the higher goal of putting someone else's needs before your own." Growing up in Atlanta as the daughter of two physicians—her father is a retired neurosurgeon and her mother still practices today as a pediatric ophthalmologist—Dr. Glass loved to hear stories of the grandmother who was her namesake. "She died before I was born, but she was still a big presence in my life," Dr. Glass says. "She had a family medicine practice in Queens, and my parents always told me stories about her."

From an early age, Dr. Glass frequently went to her mother's pediatric ophthalmology practice after school, and was fascinated by what she saw. Both her parents went on medical missions for Doctors Without Borders, and Dr. Glass was particularly affected by a child who came back to the United States for surgeries and treatment for severe vitamin deficiency conjunctivitis. "He had terrible scarring of the eye and eyelid, and my mom was very involved in his care," she says. "He was about eight years old, and I was only a couple of years older, so it really brought home to me how devastating ophthalmic conditions could be."

Although she was strongly influenced by the joy and satisfaction her parents took in their work, Dr. Glass kept an open mind about her own career choices. She majored in religion as an undergraduate at Harvard College and applied to the Humanities In Medicine Program at Mount Sinai School of Medicine (now the Icahn School of Medicine at Mount Sinai) during her sophomore year. "I have always enjoyed discussing philosophy, religion, art, and art history," she says, recalling her college experience. "The humanities program, which was relatively new at the time, gave me the freedom to delve into other topics in college with a guaranteed admission to medical school afterward."

It might seem unrelated, but studying things like pre-Colombian art and Western religions influences Dr. Glass' daily practice even now. "Religion and society and history and art—our belief systems all influence how we perceive our illness and how we come to terms with it over time."

As she completed clinical rotations in medical school, Dr. Glass enjoyed her experiences with surgery, obstetrics and gynecology, and family medicine—but ophthalmology always won out. "It had so many advantages as far as I was concerned. There are very few fields where you can see both children and adults, and I wouldn't want to focus on just one or the other. Ophthalmology also affords you the opportunity to operate as well as have a medical practice, both of which appealed to me," she says. Fascinated by fine detail—she learned to cross-stitch at the age of 10—Dr. Glass was also drawn in by the intricate nature of ophthalmic surgery.

She found her way to oculoplastics through one of those random chances that, in the end, seems meant to be. While seeking a research mentor during her third year of medical school, Dr. Glass asked for advice from the school's research dean. The dean's aunt happened to have thyroid eye disease and was being treated by noted Columbia oculoplastics expert Michael Kazim, MD. "My dean loved Dr. Kazim, and recommended him highly," she says. "So I was very excited to be able to work with him as a medical student. The rest is history!"

Dr. Glass and her husband, an oncologist at Memorial Sloan-Kettering Cancer Center, live in Manhattan with their three-year-old son. "We're outdoorsy folks, and these days, playgrounds are my second home," she says. "I can tell you every playground within a five-block radius." When she's not pushing her son on the swings, she's introducing him to her passions for art and history at the American Museum of Natural History and the Metropolitan Museum of Art. She may already be nurturing her family's next generation of humanist physicians!



Lora Glass, MD

In Memoriam Herbert Irving

On October 3, 2016, Columbia University Medical Center (CUMC) and the Department of Ophthalmology lost a longtime, dear friend and one of its most important benefactors, Herbert Irving. The lifelong New Yorker and co-founder of the food services giant Sysco Corporation was 98 years old.

Over the course of 40+ years, Herbert Irving and his wife, Florence, provided more than \$300 million in support for facilities, research, clinical programs, and physician-scientists at all stages of their careers. The couple became CUMC's largest single benefactor, playing an essential role in shaping the state-of-the-art medical center that Columbia is today.

It is impossible to walk around the Medical Center campus - passing the Herbert Irving Pavilion, the Irving Cancer Research Center, and the Herbert Irving Comprehensive Cancer Center - without being reminded of the Irvings' devotion. In September 2016 the shared medical center in Washington Heights was renamed Columbia University Herbert and Florence Irving Medical Center and NewYork-Presbyterian/Columbia University Irving Medical Center.



Herbert Irving

Perhaps the most important of the Irvings' many gifts to the Department of Ophthalmology was the multi-million dollar donation that helped to create the state-of-the-art Florence and Herbert Irving Translational Vision Research Laboratory. This facility, located on the 4th floor of the Eye Institute research annex, was established in 2004. In addition, some of the Irving Scholars—of which there have been more than 100 promising young clinical investigators supported by three-year scholarships of \$60,000 per year—have specialized in ophthalmology. Most

recently, the Irvings endowed the Herbert and Florence Irving Professorship of Ophthalmology in the name of the Department's past Chair, Stanley Chang, MD.

“Honored by many groups for his immense philanthropy, Herb always had the final word and the best speech. His wise counsel, upbeat spirit, and keen sense of humor will be greatly missed,” wrote Dr. Chang and Chair of Ophthalmology G. A. (Jack) Cioffi, MD, in a tribute printed in the *New York Times*.

Last year, Herbert Irving called his support of CUMC and

NewYork Presbyterian Hospital one of the major accomplishments of his life. “This is a relationship that has endured for many years and been very important to us. We are honored to be associated in this way with these great institutions and the special people who make them what they are.”

Besides his wife, Mr. Irving is survived by three children and several grandchildren. ■

Columbia to Test New Cell-Based Therapy for Glaucoma

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trial, including 20 at Columbia, 20 at Stanford, and 20 at a third site in Texas. Ten patients at Columbia will receive the implant, while the other ten will receive a placebo procedure. Visual field testing at six months and twelve months post-surgery will be the primary measure of the implant's success. “If we can demonstrate that the patients who received the implants benefited from them, the patients in the placebo group will also be offered implants,” says Dr. Akatuloova.

There are strict eligibility criteria: patients must have open-angle glaucoma, no history of hepatic infection of the eye, and vision that is not worse than 20/2200. Patients will be selected based on the results of their optical coherence tomography (OCT) and visual field tests.

The ECT implant is placed through a small incision during a minor outpatient procedure which takes less than half an hour; patients can expect to return to their regular daily activities within one to two days. None of the patients in the Phase I trial required removal of the implant, but should complications arise, it can be easily removed.

“The possibility that we may be able to protect retinal ganglion cells, stimulate the growth of new cells, or both, in order to preserve and restore vision, is a very exciting one,” Dr. Cioffi says. “It represents a new frontier in the treatment of glaucoma, and quite possibly a number of other diseases that cause vision loss.” ■

Important Patient Care Information

Specialties: Cornea/External Ocular Disease
Glaucoma
Pediatric Ophthalmology and Strabismus
Refractive Surgery/LASIK
Vitreoretinal and Uveitis

For inquiries and appointments, please call 212.305.9535



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