COLUMBIA | COLUMBIA UNIVERSITY IRVING MEDICAL CENTER

Viewpoint

A publication of
The Edward S. Harkness Eye Institute
and The Department of Ophthalmology in the
Vagelos College of Physicians and Surgeons

SPRING/SUMMER 2024

Royce Chen, MD, to Lead New Educational Division as Vice Chair of Education

Royce Chen, MD, has been named the inaugural Jean Sheng Associate Professor of Ophthalmology at CUIMC and the Vice Chair of Education in the Department of Ophthalmology, a new position in which he will lead the development of all educational programs within the Department. This historic investment in the Department of Ophthalmology's educational mission was made possible by the generosity of philanthropist Jean Sheng, a long-time supporter of the Department and a member of our Board of Advisors.

L. to R.: Royce Chen, MD, G.A. (Jack) Cioffi, MD, and Jean Sheng

"As a former human resources executive with several Fortune 500 companies, my experience has been that successful companies that consistently attract the best talent share certain attributes. They offer outstanding training programs and ongoing opportunities for professional development," says Ms. Sheng. "I believe that establishing an endowed Vice Chair of Education professorship will serve to keep those same dynamics in focus at Columbia's Department of Ophthalmology. The endowment recognizes the expanding breadth of the Department's educational programs with a position designed to enhance their effectiveness. It also institutionalizes, via permanent funding, the Department's commitment to the highest standards in training and a culture of excellence."

"Having a vice chair of education and a distinct educational division in the Department for the first time stresses the value that we place on educating future generations of clinicians, researchers, teachers, and leaders in ophthalmology," says Dr. Chen. As director of the Department's ophthalmology residency since 2017, he has led the redesign of the educational curriculum, enhanced surgical training for residents, and revamped the residency clinic, resulting in Columbia's recent recognition as the top ophthalmology residency program in New York City by Doximity. He also introduced an integrated internship program in July 2021, designed an innovative wellness curriculum focused on fostering resident well-being, and launched a new

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INSIDE

James Auran, MD

James Auran, MD Heads Initiative on Eye Care in Federal Disaster Response

James Auran, MD, Professor of Ophthalmology at the Harkness Eye Institute, is spearheading a federal initiative to establish a disaster eye care response plan as a priority in national disaster planning, under the auspices of the Department of Health and Human Services Administration for Strategic Preparedness and Response (ASPR). As the first President (and now Executive Vice President) of the American Society of Ophthalmic Trauma (ASOT), Dr. Auran reached out to ASPR to offer ASOT's expertise in disaster eye care after learning of a significant need for such resources.

"Every major disaster, from hurricanes to explosions to earthquakes, typically involves a great deal of eye trauma among both victims and first responders," Dr. Auran says. "However, in a two-day ASPR online seminar on disaster planning leadership held in January 2024, we heard nothing about the eye, and further inquiry revealed that no specific organization took point on eye care during disasters."

Dr. Auran reached out to ASPR to offer ASOT's assistance. "We told them that we were interested in developing a more comprehensive and thorough approach to eye disaster care, and they immediately wanted to meet with us," he says. In March 2024, he and other representatives from

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VIEW FROM THE CHAIR

Dear Friends,

At the turn of the 20th century, few people saw doctors on a regular basis, and hospitals were places where only the poor went for care. Medical schools, isolated from those hospitals, offered fledgling doctors little in the way of practical experience, and most new graduates could boast many hours in the lecture hall, but minimal time participating in the treatment of actual patients. (Imagine being the first patient of a brand-new medical graduate in those days!)

As any student of Columbia history knows, it was philanthropist Edward S. Harkness who conceived the idea of uniting a major hospital with a prominent medical school, building an institution of health care and medical knowledge such as the world had never seen before—called an academic medical center. In one place, Mr. Harkness imagined physicians in practice would teach students, researchers would carry out new studies, and all the disciplines of health care would share a home and a purpose.

In 1928, five years before the opening of the Eye Institute that would bear his name, Edward Harkness attended the opening ceremonies of the new Columbia-Presbyterian Hospital. From that day to this, the educational mission has formed the beating heart of the modern academic medical center, and nowhere is that more true than at Columbia and within the Department of Ophthalmology. This issue of *Viewpoint* spotlights a major investment in advancing our educational mission, thanks to the vision and dedication of one of our distinguished supporters, Jean Sheng. An endowment from Ms. Sheng has allowed the Department to create a division of education, led by Royce Chen, MD, in the new role of Vice Chair of Education. Dr. Chen is now developing a comprehensive strategic plan for the educational mission in the Department of Ophthalmology, aimed at driving us to greater educational excellence across the continuum from precollege through medical school, residency and fellowship, and faculty continuing education and leadership.

In this issue, we turn the spotlight on one of our most modest, but most highly accomplished scientific faculty members, Stephen Tsang, MD, PhD, whose pioneering achievements in ocular genetics and gene surgery are expected to transform vision science and vision care in the near future.

In an exciting new partnership with federal disaster relief officials, Professor of Ophthalmology James Auran, MD, is leading an initiative of the Society for Ophthalmic Trauma, of which he is a co-founder, to develop programs, educational materials, and a volunteer corps specifically focused on eye trauma care during disasters. None of this would have happened without Dr. Auran's drive and determination to improve the treatment of ocular trauma.

I am pleased to announce that two of our esteemed faculty members, Lisa Park, MD, and Lora Dagi Glass, MD, have been appointed to head divisions within the Department. Dr. Park leads a newly created Division of General Ophthalmology, while Dr. Glass now directs the Division of Ophthalmic Plastic and Reconstructive Surgery.

Please also join us in welcoming to our faculty neuro-ophthalmologist Meital Ben Dov, MD, whose unique path to this important subspecialty included two years of service as a military paramedic caring for members of elite Israeli intelligence units, prior to her medical training.

We take a moment in this issue to look back at the more than 80-year history of the Department's internationally renowned Basic Science in Ophthalmology course, created by Dr. George Smelser in 1941.

Finally, I am saddened to share the news of the passing of two of the Department's most dedicated supporters. Philanthropist Shirley Brown, who with her late husband Bernard Brown served on our Board of Advisors for many years and endowed several of our most important programs, passed away on April 2, 2024 at the age of 93. Former Secretary of State Henry Kissinger, also a longtime member of our Board of Advisors, died on November 29, 2023 at the age of 100.

None of our achievements would be possible without our dedicated community of patrons and friends. Please know that we are always grateful for your continued support of our mission to understand, prevent, and treat vision disorders through leading-edge research, educational excellence, and clinical care that is second to none.

Sincerely,

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

James Auran, MD Heads Initiative on Eye Care in Federal Disaster Response

Continued from page 1

ASOT, as well as officials from the American Academy of Ophthalmology (AAO), the head ophthalmologist from the US Army, and the ophthalmology liaison from the American College of Surgeons met with a team of federal government disaster planners. "They were extremely receptive, and we have been invited to work on a broad array of national initiatives."

These initiatives will include:

– Developing a list of needed ophthalmic medications, instruments, and equipment to add to the National Strategic Stockpile and ASPR list of Recommend Disaster-Related Hospital Supplies;

– Creating a set of ophthalmology-related presentations for ASPR's weekly "national grand rounds" speaker series on disaster topics, including subjects such as open globe management, orbital compartment syndrome, and chemical burn;

– Writing a "disaster eye care strategic plan" component to ASPR's overall 2022-2026 federal disaster strategic plan;

– Establishing an organized ophthalmology and optometry volunteer group for the National Disaster Medical System (including trauma and critical care teams), the Medical Reserve Corps, and the National Emergency Telemedicine Network;

– Creating new and updated materials on ophthalmic trauma and disaster care for the ASPR and Centers for Disease Control and Prevention (CDC) web sites; and

– Reviewing and updating all of the existing disaster and trauma-related eye care guidelines for ASPR and the CDC.

Dr. Auran plans to apply for grants to fund these efforts. "For example, there is not one page on these government websites that does not need to be reviewed and updated," he says. "It's quite amazing that the need for eye care-specific disaster planning had not previously been addressed in any organized way, but it is exciting that there is so much enthusiasm now and the government is so receptive. Taking on such an important role in federal disaster planning is an extraordinary legacy for Columbia to establish, and I am grateful for the firm support of Dr. Cioffi, Department Chair, in making it possible."

CLINICAL SPOTLIGHT

The Eye is the Window to the Brain: Neuro-Ophthalmologist Meital Ben Dov, MD, Joins Clinical Faculty

"Many people don't know what neuro-ophthalmology is; it's truly a fascinating field of medicine that combines two complex fields, neurology and ophthalmology," says Meital Ben Dov, MD, Assistant Professor of Neuro-Ophthalmology (in Ophthalmology), who joined the faculty in August of 2023. Dr. Ben Dov offers expertise in diagnosing and managing neurologic and systemic disorders that affect how the brain perceives and interprets visual signals.

"I often encounter patients who complain that their sight has been compromised, yet they've been assured that everything is fine with their vision," she says. "As a neuro-ophthalmologist, my role is to make the right connections. I take a long and detailed history, conduct thorough examinations, and often order brain and orbital imaging to better understand any abnormalities in the visual system. A neurologist or neuro-ophthalmologist always asks, 'Where is the lesion?' If you know where the lesion should be, you will find it. We're detectives, and you just need to know where to look."

The "medicine bug," as Dr. Ben Dov likes to call it, captured her from an early age. Born and raised in Israel, she undertook a unique journey at the age of 18 when she fulfilled her mandatory military service. For two years, Dr. Ben Dov served as a military paramedic in one of the elite intelligence units. "I treated soldiers with many complex diseases," she recalls. "We had outstanding physicians from various specialties working in that clinic, and I learned so much from each of them." This experience further fueled her determination to pursue a career in medicine.

After graduating from medical school, she elected to pursue a residency in neurology. "I loved the challenging cases, being on call for emergencies like stroke and meningitis, and especially engaging in conversations with the patients," she says. "I think that history taking is the basis for understanding the most complex diseases." It was only after several years of medical training and experience, however, that Dr. Ben Dov discovered her passion for neuro-ophthalmology.

One patient in particular helped to shape her choice of subspecialty. "This person had a specific form of eye movement disorder, and no one knew what might have caused it until they called in the neuro-ophthalmologist," she says. "The subspecialist was able to diagnose the patient almost immediately; he had a rare type of cancer that created autoantibodies directed toward the brain, causing the eye movement problem, a disorder called opsoclonus myoclonus. I always tell my patients that the eye is the window to the brain. An abnormality in eye movements, in the visual field, or in the optic nerve can give you so much valuable information and help with diagnosis. "

After completing her neurology residency, she began her first fellowship at Tel Aviv Medical Center and started a basic science research project on ischemia (poor blood circulation) of the retina. "We used an organotypic model from a mouse retina which imitated the natural environment and enabled us to learn in the lab how the retina behaves in certain conditions, then we transplanted stem cells and studied their effects," she says. "The study was small, but it was something I will always treasure, and I hope in the future will bring exciting new developments to that field."

Next, Dr. Ben Dov decided to pursue a neuro-ophthalmology fellowship in the United States, working under the guidance of Jeffrey Odel, MD, Professor of Ophthalmology. "Dr. Odel, who is the director of the program at Columbia, taught me and guided me through an amazing year," she says. "In medicine, it is priceless to be mentored by a brilliant person like him and to be in a great facility like Columbia. It doesn't happen for everyone." After completion of the fellowship, she was then offered a faculty position at Columbia.

Dr. Ben Dov divides her time between the main Eye Institute at 168th Street on Mondays and Wednesdays, including Wednesday mornings in the resident clinic; Tuesdays and Thursdays at the Robert Burch Family Eye Center on West 64th Street; and Fridays at the Gloria and Louis Flanzer Vision Care Center on Third Avenue and 53rd Street.

She recalls the confounding case of a patient with severe facial and eye pain on the left side, for whom an initial MRI revealed nothing suspicious. "After I had followed him for a while, one day he called me and said he had woken up not seeing very well through the left eye," she says. "I told him to come over immediately, and it was clear upon examination that he had developed acute optic neuropathy."

Dr. Ben Dov sent the patient for an urgent orbit-dedicated MRI, and this time the scan showed a lesion compressing the optic nerve, which turned out to be an aneurysm. "It was jeopardizing not only his vision but his life," she says. "He underwent surgery shortly thereafter and recovered very well. When one of our residents came to check on him, the patient told him that we had saved his life. The resident said, 'I didn't know eye doctors could save lives!' This is what makes neuro-ophthalmology so special, this connection between the eye and the brain."

Meital Ben Dov, MD

Sometimes the outcomes of neuro-ophthalmology cases can be emotionally challenging. "I had one patient who complained she couldn't read. A detailed exam revealed that although her vision was 20/20, she really struggled when reading a text," Dr. Ben Dov says. A series of higher cortical function tests led Dr. Ben Dov to suspect a type of dementia called posterior cortical atrophy. After a prolonged workup, she confirmed the diagnosis.

In addition to her clinical work, Dr. Ben Dov has several ongoing research initiatives, including one focused on non-arteritic anterior ischemic optic neuropathy (NAION), a cause of optic nerve injury. "We have learned that people with NAION are divided into two groups, one that is stable from the moment of presentation and will stay stable or improve with time, and another that is unstable and can deteriorate," she says. "We have been doing a retrospective study to try to understand why there are these two different presentations, and what causes the worsening. Right now, there is no treatment for this entity, and any finding in that field is important."

Balancing their professional lives with family time, Dr. Ben Dov and her husband, who also practices at CUIMC as a pediatric ENT surgeon, cherish their moments together with their three young children. "Our favorite activity is exploring the US National Parks, as we have a shared love for hiking," she says. "Last summer, we explored Yosemite, and this summer, we're excitedly planning a trip to Acadia in Maine. Being foodies, my husband and I also enjoy indulging in the city's diverse culinary scene." Dr. Ben Dov emphasizes the importance of their children's school, which has fostered a welcoming community for their family in New York City.

VIEWPOINT

Editor-in-Chief
Jane E. Heffner

Writing
Gina Shaw

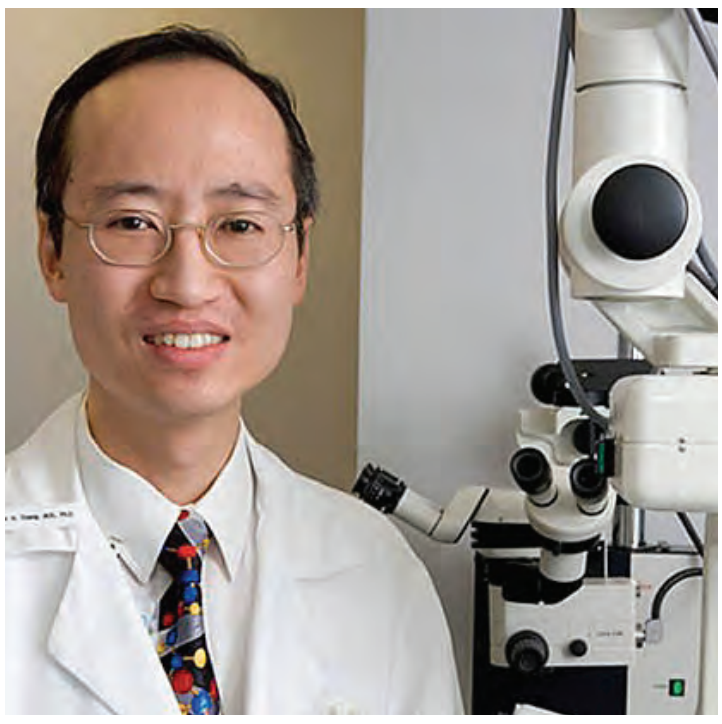
Graphic Design
David Sakla

Photography
Noelle Pensec

The Gene Surgery Pioneer: Stephen Tsang, MD, PhD

"You can do translational genomics here that cannot be done anyplace else in the world." That is how Stephen Tsang, MD, PhD, Laszlo Z. Bito Professor of Ophthalmology and Professor of Pathology & Cell Biology, sums up the reason he has spent the vast majority of his storied career in ophthalmology, genetics, and genome engineering at Columbia.

Today, Dr. Tsang is world-renowned as the first to apply genome editing tool CRISPR to repair a mutation that causes retinitis pigmentosa (RP) in human stem cells, the first to identify a novel cause of achromatopsia (an autosomal recessive condition involving color blindness and poor visual acuity), and the leader of multiple FDA trials for gene therapies, including *PDE6A*, RAB geranylgeranyl transferase, *RPGR, CNGB3, CNGA3* and *ABCA4* retinopathies.



Stephen Tsang, MD, PhD

But in 1989, when he came to Columbia shortly after graduating from Johns Hopkins University, the genome engineering revolution was in its infancy. Nevertheless, Dr. Tsang could see that the future of medicine lay in genetics, and he planned to seek that future at Columbia, where in 1981, Frank Costantini, PhD, Professor of Genetics and Development, had created the first transgenic mice via oocyte injection. "I wanted to do translational bench to bedside research in genetics, and while there were a lot of great institutions where you could do one or the other, there were very few where you could do both," he says. "At the time, there were only a handful of places in the world that could engineer embryonic stem cells to make knockout mice, and Columbia was one of those elite few."

After pursuing his medical education and doctoral training at Columbia through the NIH-National Institute of General Medical Sciences Medical Scientist Training Program (MSTP), Dr. Tsang completed his PhD thesis under the mentorship of Stephen P. Goff, PhD, now the Higgins Professor of Microbiology & Immunology and Biochemistry & Molecular Biophysics at Columbia. Dr. Goff and Elizabeth J. Robertson, PhD, (formerly at Columbia, now at Oxford), were the first to demonstrate that embryonic stem cells carrying engineered mutations could contribute to all parts of the adult mouse body, including the cells that eventually make up the gametes, allowing these mutations to be transmitted to the next generation.

"This finding paved the way for modern genetic engineering, and for the work I do today," says Dr. Tsang. In 1995, while still in the combined MD/PhD program, Dr. Tsang created the first mouse model for a recessive form of RP by applying genome engineering to stem cell technology—an accomplishment that ultimately led to the successful preclinical testing of novel gene therapies for a number of inherited vision disorders. In addition to Drs. Goff and Robertson, Dr. Tsang credits his early success to the mentorship and guidance of his thesis committee, including Dr. Costantini; William Blaner, PhD, Professor of Nutritional Medicine; Peter Gouras, MD, Professor of Ophthalmology; Carol A. Mason, PhD, Professor of Pathology & Cell Biology, Neuroscience and Ophthalmic Science (in Ophthalmology); and Virginia E. Papaioannou, PhD, Professor Emeritus of Genetics and Development.

Dr. Tsang completed his ophthalmology residency at the University of California-Los Angeles, and a retina fellowship at Moorfields Eye Hospital in London, before returning to Columbia in 2004. Since then, he has become one of the world's most eminent ophthalmic geneticists, with an array of achievements that have propelled the field forward.

In 2012, he coaxed human pluripotent stem cells, derived from the skin cells of a 53-year-old donor, to develop into retinal cells that were then able to improve the vision of mice with a genetic form of RP. Two years later, using induced pluripotent stem cells taken from skin cells from two patients with RP, he was able to link their disease to a specific mutation in a gene called *MFRP*, and then use a viral vector to deliver normal copies of that gene into the retinal cells and restore their function. In 2016, he and his team demonstrated that vision loss associated with another form of RP can be slowed dramatically by reprogramming the sugar metabolism of retinal photoreceptors in an *in vitro* model. They were able to repair the genetic mutation responsible for RP in induced pluripotent stem cells derived from a patient with the disease, improving the survival and function of affected rods and cones.

And in 2018, Dr. Tsang became amongst the first in the world to apply the CRISPR gene editing tool to a dominant genetic disorder, when he and his team developed a technique to restore retinal function in mice affected by RP. He dubbed the technique "genome surgery," because it cuts out the malfunctioning gene and replaces it with a normal one, making CRISPR more agile and able to treat patients regardless of their individual genetic profile. He describes this technique, along with other advances in clinical applications of CRISPR/Cas9 based technology, in one of his four books, *CRISPR Genome Surgery in Stem Cells and Disease Tissues*, published in 2021.

Dr. Tsang has also written and edited additional books on the uses of genome engineering in stem cells, including *Stem Cell Biology and Regenerative Medicine in Ophthalmology*, Humana 2012;

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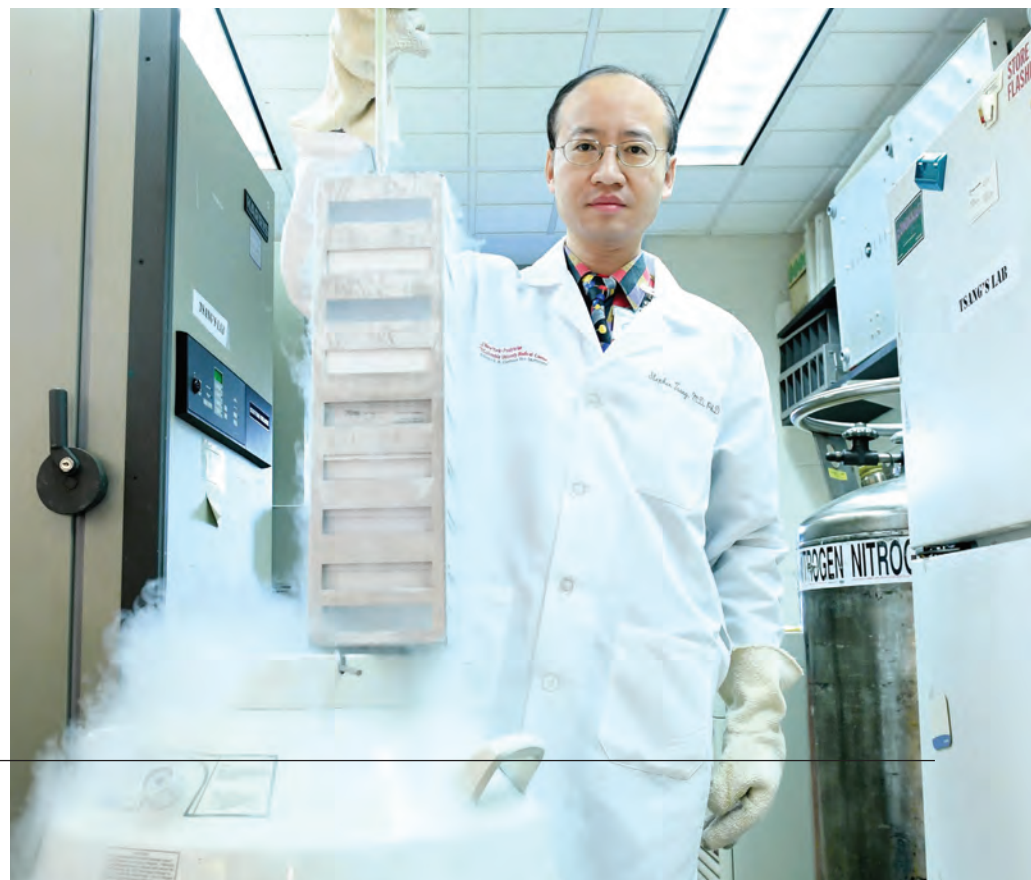


Stephen Tsang, MD, PhD

Awards and Honors

Katrina Armstrong, MD, Dean, Vagelos College of Physicians & Surgeons, (center), along with all ACE awardees, including G.A. (Jack) Cioffi, MD

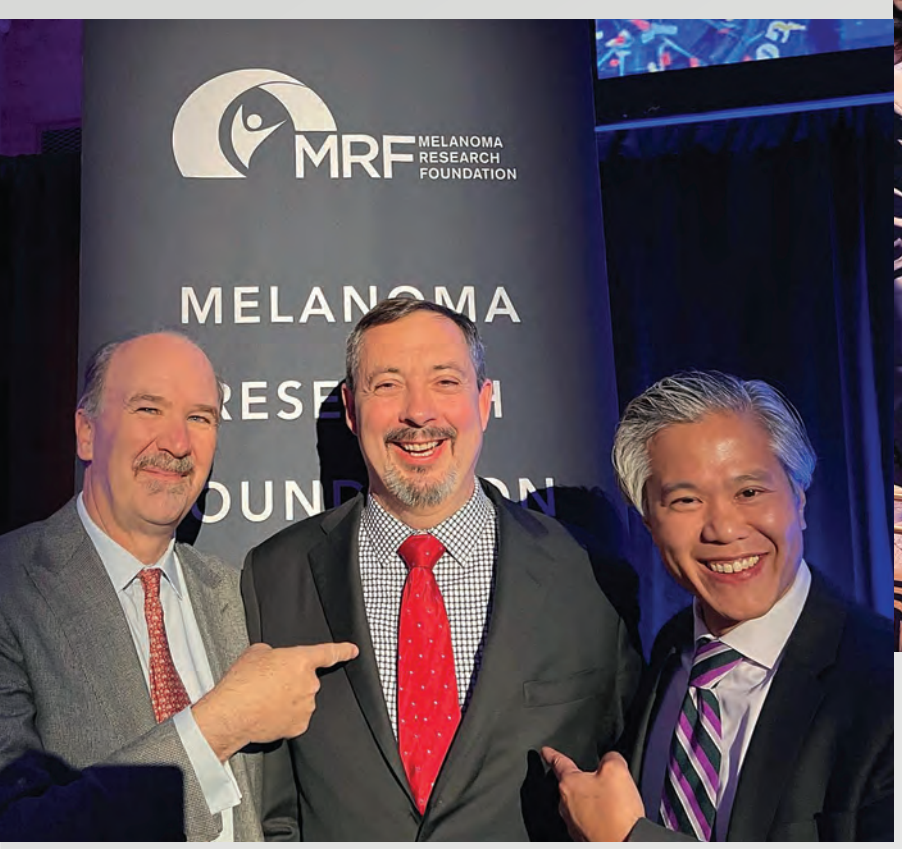
Stanley Chang, MD

G.A. (Jack) Cioffi, MD, Jean and Richard Deems Professor, Edward S. Harkness Professor and Chairman of the Department of Ophthalmology, was inducted into the Academy of Clinical Excellence (ACE) of the Vagelos College of Physicians & Surgeons on May 2, 2024, in recognition of his outstanding patient care. He is one of 25 Columbia physicians nominated and elected by their peers for this honor in 2024. All ACE inductees are full-time faculty who have served at Columbia for five or more years and exhibit exemplary patient care marked by evidence-based clinical science and deeply compassionate humanism.

Stanley Chang, MD, the K.K. Tse and Ku Ying Professor of Ophthalmology and the former Edward S. Harkness Professor and Chairman of the Department of Ophthalmology, has been selected for the Lifetime Achievement Award from the American Society of Retina Specialists' (ASRS) Retina Hall of Fame. In the organization's history, only five other leaders in the field have been selected for the Lifetime Achievement Award, which will be presented to Dr. Chang at the ASRS Annual Meeting in Stockholm in July 2024. Dr. Chang is a longtime member of the ASRS Retina Hall of Fame, an international organization recognizing the accomplishments of retina specialists across the globe, both past and present.

Brian Marr, MD, John W. Espy, MD Professor of Ophthalmology, was recognized with the CURE Ocular Melanoma Vision of Hope Award from the Melanoma Research Foundation (MRF) at its 21st Annual Gala in October 2022. "Dr. Marr was celebrated for his incredible care of uveal melanoma patients and his dedication to research that will help advance future treatments for patients and hope for their loved ones," noted a statement on the CURE Ocular Melanoma Instagram page.

L. to R.: Dmitry Bogomolny, PA, Richard Carvajal, MD, Lauren Yeager, MD, Brian Marr, MD, G.A. (Jack) Cioffi, MD, Royce Chen, MD, and Jeffrey Liebmann, MD



L. to R.: G.A. (Jack) Cioffi, MD, Brian Marr, MD, and Richard Carvajal, MD

By the Numbers:

A Decade of Excellence in Residency and Fellowship Training

Residency Applications

2014: **381** for 3 slots

2024: **649** for 4 slots

The Harkness Eye Institute offers highly sought-after residencies and fellowships for early career ophthalmologists. Ten years ago, the Department of Ophthalmology received 381 applications for three spots in our residency program. For the current match cycle, that number has risen to 649 applications for four spots.

Over the last six years, our residents and fellows have come to us from some of the most eminent medical schools in the country and around the world. Many of them then choose to pursue their specialties and subspecialties here at Columbia or with academic medical centers and private practices in New York state, often in the greater NYC metropolitan area, retaining their talents to benefit our nearby communities. Others go on to join eminent medical centers and leading private ophthalmology practices around the country and the world.

Where do our residents come from?

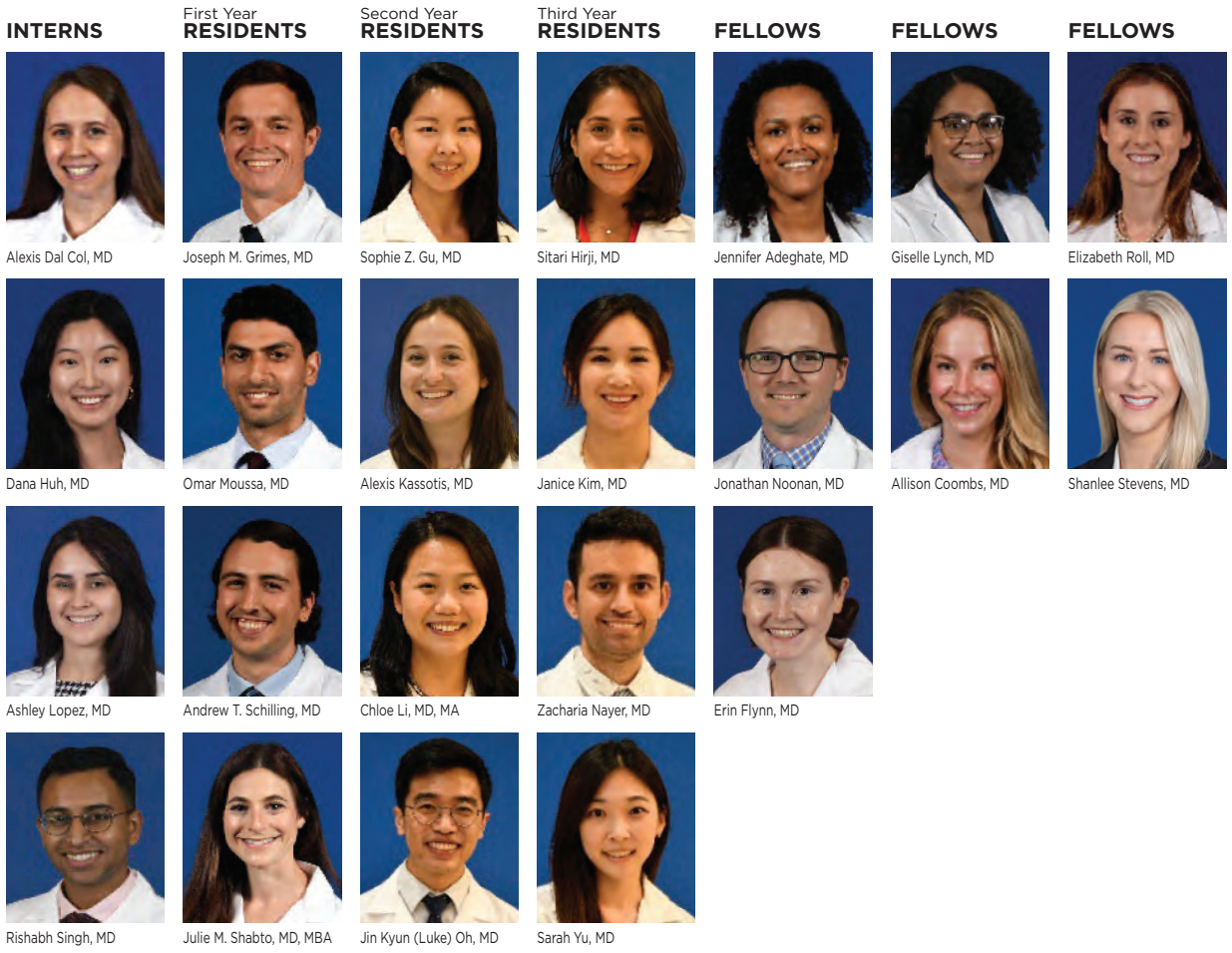
Columbia University Vagelos College of Physicians and Surgeons-10
Johns Hopkins University School of Medicine-5
Harvard Medical School-2
Yale School of Medicine-2
Icahn School of Medicine at Mount Sinai-1
SUNY Downstate College of Medicine-1
Georgetown University School of Medicine-1
George Washington University School of Medicine-1
Ponce School of Medicine Health and Sciences, Puerto Rico-1
Boston University School of Medicine-1
Emory University School of Medicine-1
University of Illinois College of Medicine-1
Florida State University College of Medicine-1
Rutgers-Robert Wood Johnson Medical School-1
Universidad Latina de Panama-1
Santa Casa de Misericórdia of Vitória, Brazil-1
Tanta University, Egypt-1

Where do they go?

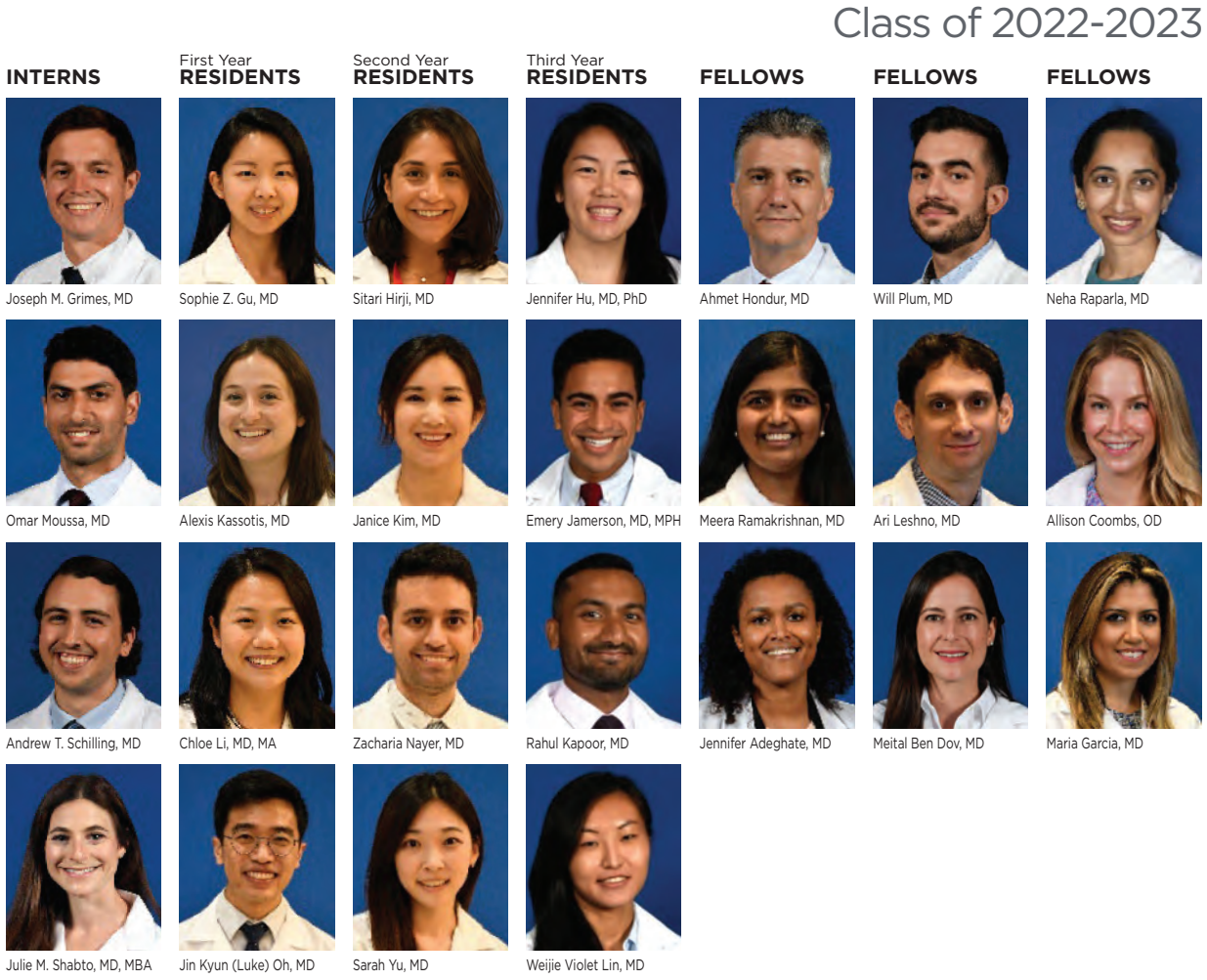
Our residents go on to fellowship training and/or clinical, research and teaching positions at an equally impressive array of institutions.

Harvard Medical School/Massachusetts Eye and Ear-5
Columbia University Vagelos College of Physicians and Surgeons-2
Wilmer Eye Institute, Johns Hopkins University-2
Wills Eye Hospital, Thomas Jefferson University-1
Ophthalmic Consultants of Boston-1
The Cleveland Clinic Cole Eye Institute-1
Illinois Eye and Ear Infirmary-1
University of Colorado-
Kellogg Eye Center, University of Michigan-1
McGill University-1
Bascom Palmer Eye Institute-1
Storm Eye Institute at the Medical University of South Carolina-1

Class of 2023-2024



Class of 2022-2023



Where do our fellows come from?

Montefiore Medical Center/Albert Einstein College of Medicine, New York-5
George Washington University, Washington, DC-3
Columbia University Vagelos College of Physicians and Surgeons-2
Mayo Clinic-2
Tel Aviv Medical Center, Israel-2
New York Eye and Ear Infirmary of Mt. Sinai-1
NYU Langone Medical Center-1
Bascom Palmer Eye Institute, University of Miami-1
Harvard University-1
Tufts Medical Center-1
Yale University-1
Vanderbilt University-1
University of Illinois, Chicago-1
Rutgers New Jersey Medical School-1
Washington University, St. Louis-1
University of Texas Southwestern-1
University of Pennsylvania, Scheie Eye Institute-1
Eye and Ear Hospital of Pittsburgh-1
Ohio State University-1
Shiley Eye Institute at the University of California, San Diego-1
University of Cincinnati/Cincinnati Eye Institute-1
Nassau University Medical Center, New York-1
SUNY Downstate, New York-1
Royal Victorian Eye and Ear Hospital, Australia-1
Western University, Ontario, Canada-1
Sheba Medical Center, Israel-1
Gazi University, Turkey-1

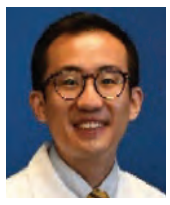
Where do they go?

Columbia University Vagelos College of Physicians and Surgeons-3
NYU Langone Medical Center-2
Weill Cornell Medicine-1
Mayo Clinic-1
New England Eye Center/Tufts University, Boston, MA-1
University of Illinois, Chicago, IL-1
Saratoga Ophthalmology, Upstate NY-1
Retina-Vitreous Surgeons of Central New York-1
Advanced Eye Care, NYC-1
New York Vision Group, NYC-1
The Bronx Eye Center, NYC-1
BronxCare Health System, NYC-1
Sight MD, NYC-1
NYC Health and Hospitals-1
Scarsdale Eye Associates, NY-1
Atlantic Eye, NJ-1
Metro Eye Care, NJ-1
Scott Eye Care, NJ-1
OOMC, NJ-1
Eye Physicians of Virginia-1
Dulles Eye Associates, Virginia-1
Delray Eye Associates, Florida-1
Mid-Florida Cataract and Laser Institute-1
Georgia Retina-1
Retina Consultants Medical Group, California-1
Keio University, Tokyo, Japan-1
Sheba Medical Center/Tel Aviv University, Israel-1
Gazi University, Turkey-1

Class of 2021-2022

FELLOWS


Dvir Koenigstein, MD


Johnny Li, MD


Victoria North, MD


Joseph Kristan, MD


Meera Ramakrishnan, MD


Ari Leshno, MD


Maria Garcia, MD


Daniel Oh, MD

Class of 2020-2021

First Year RESIDENTS


Jennifer Hu, MD, PhD


Emery Jamerson, MD, MPH

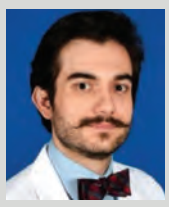

Rahul Kapoor, MD


Weijie Violet Lin, MD

Second Year RESIDENTS

David Doobin, MD, PhD


Rabia Karani, MD, MPH


William Plum, MD


Ives A. Valenzuela, MD

Third Year RESIDENTS


Joah Aliancy, MD


Maryam Ghiassi, MD, MHS


Brian Krawitz, MD


Tavish Nanda, MD

FELLOWS


Aliaa Abdelhakim, MD, PhD


Daniel Oh, MD


Vlad Diaconita, MD

FELLOWS


Gabriel Rand, MD


Van Ann Tran, MD


Victoria North, MD

FELLOWS


Sejal Patel, MD

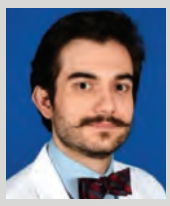

Jessica Scott, MD, MS

Class of 2019-2020

First Year RESIDENTS


David Doobin, MD, PhD


Rabia Karani, MD, MPH


William Plum, MD


Ives A. Valenzuela, MD

Second Year RESIDENTS


Joah Aliancy, MD


Maryam Ghiassi, MD, MHS


Brian Krawitz, MD

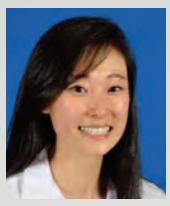

Tavish Nanda, MD

Third Year RESIDENTS


Carolina Adams, MD


Marlene Wang, MD


Portia Sirinek, MD


Michelle Maeng, MD

FELLOWS


Aliaa Abdelhakim, MD, PhD


Mark Breazzano, MD, PhD


Vlad Diaconita, MD

FELLOWS

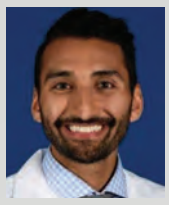

Sabine Khan, MD


Sylvia Casas De Leon, MD


Andrea Tooley, MD

FELLOWS


Van Ann Tran, MD


Salman Dar, MD

Class of 2018-2019

First Year RESIDENTS


Joah Aliancy, MD

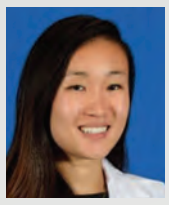

Maryam Ghiassi, MD, MHS


Brian Krawitz, MD


Tavish Nanda, MD

Second Year RESIDENTS


Carolina Adams, MD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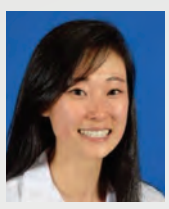
Portia Sirinek, MD


Michelle Maeng, MD

Third Year RESIDENTS


Aliaa Abdelhakim, MD, PhD


Thalmon R. Campagnoli, MD


Dan Gong, MD


Sanjai Jalaj, MD

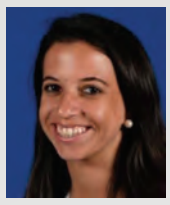
FELLOWS


Syed Amal Hussnain, MD


Mark Breazzano, MD, PhD


Norimitsu Ban, MD

FELLOWS


Julia Schneider, MD


Spencer T. Langevin, MD


Benjamin Whigham, MD

FELLOWS


Poonam Misra, MD


Andrea Tooley, MD


Kyle J. Godfrey, MD

FACULTY SPOTLIGHT

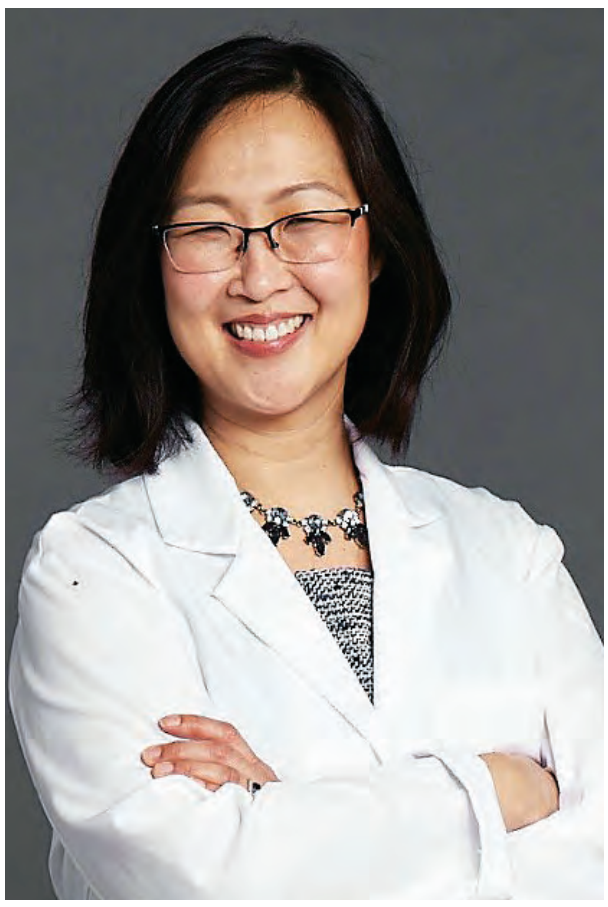
A Welcoming Front Door:
Lisa Park, MD, to Lead New Division of Comprehensive Ophthalmology

Lisa Park, MD, Associate Professor of Ophthalmology, has been named Director of the Division of Comprehensive Ophthalmology and Eye Care at Columbia University Irving Medical Center. This newly established division consists of both ophthalmologists and optometrists who provide comprehensive eye care. In addition to Dr. Park, division members include noted LASIK pioneer Stephen Trokel, MD, Professor of Ophthalmology; James Auran, MD, Professor of Ophthalmology and founding member of the American Society of Ophthalmic Trauma, (see page 1); and optometrists Sharon Keh, OD, Rebecca Rojas, OD, Daniel Diamond, OD and Alicia Jones, OD.

Dr. Park joined the Columbia faculty in 2017. She earned her undergraduate degree from Harvard College and received her MD from Yale School of Medicine, followed by residency training at NYU Langone and a fellowship at Manhattan Eye, Ear & Throat Hospital in complex anterior segment and refractive surgery. Prior to arriving at Columbia, Dr. Park spent 11 years as a member of the faculty at NYU Langone, where she served as Associate Residency Program Director and Chief of Ophthalmology at Bellevue Hospital.

"We are the front door to the department," she says. "Patients come to us with a wide range of eye symptoms, and our objective is to evaluate and distinguish amongst myriad reasons why a patient cannot see well, whether it be a simple refractive error which can be addressed with glasses or a subtle strabismus that has gone undetected. We monitor patients with genetic conditions such as Marfan Syndrome and patients on high-risk medications. We evaluate patients with vascular events or brain tumors which can impact a person's ability to see. We are often the first to diagnose a patient with glaucoma or macular degeneration, and work in concert with our subspecialty colleagues to provide care needed to preserve sight."

Dr. Park is widely respected for her work in improving sustainable eye care in underserved regions of East Africa, primarily Ethiopia and Tanzania. She leads a specialized training program, teaching modern surgical techniques to ophthalmic surgeons in the developing world.



Lisa Park, MD

"In the United States, cataract surgery is the most common outpatient procedure performed, and with advances in surgical techniques, it has become very routine. The cataract patient will undergo a relatively short surgery, go home and typically see well the next day," she says. "In the rest of the developing world, that is not the case. Surgical techniques are more than 50 years behind those we use at Columbia, and millions of people are blind from this condition that can be cured with an outpatient surgery."

Dr. Park is currently serving as Board Chair for Vision USA, an international non-governmental organization dedicated to addressing reversible causes of blindness. "Our unique ability is that we can set up an operating room for phacoemulsification within a day. I have been teaching surgery in Ethiopia, for nearly 10 years, and in that time, we have introduced modern surgery to nearly 25% of the ophthalmologists in this country and seen great strides toward improving standards of eye health."

In resource-limited countries, she says, vision may fall lower on a long list of competing healthcare priorities, such as infectious diseases and maternal/fetal health issues. "However, blindness contributes to the cycle of poverty, and its impact is exponential, because of the caregivers needed to care for a blind person. It is usually a family member who is unable to complete their education or participate in the workforce, and when we restore sight with cataract surgery, the entire family celebrates. Healthcare systems around the world need to make curing reversible blindness a top priority."

As Director of the Division of Comprehensive Ophthalmology and Eye Care, Dr. Park stresses the importance of regular vision screening and care. "Good vision health care involves more than just getting a pair of glasses," she says. "The American Academy of Ophthalmology recommends that before age 40, everyone should have a complete dilated eye exam by a medical doctor at least once every five to 10 years, even if they do not need glasses. Between ages 40 and 55, those visits should increase to every three or four years, and after age 55, everyone should be seeing an ophthalmologist regularly, at least every other year. There are certain diseases of the eye that can occur as people age, many of which are preventable. If we intervene early, we can address them before they cause permanent vision damage."

The Gene Surgery Pioneer:

Continued from page 4

Precision Medicine, CRISPR, and Genome Engineering: Moving from Association to Biology and Therapeutics, Springer Cham 2017; *Atlas of Inherited Retinal Diseases*, Springer Cham 2018; and *Retinitis Pigmentosa (Methods in Molecular Biology 2560)*, Humana 2023. Dr. Tsang credits the enthusiasm, encouragement and creative thinking of patients for driving many of these achievements. "They encourage us not to follow the standard NIH low-risk, low-payoff research path, where you take small steps because you know they'll get results," he says. "They ask me, 'What could you do if you had unlimited resources? What approaches would you take if research were only limited by your imagination?' They push me to think about the next frontier."

Despite his international reputation and unprecedented contributions to the field of ophthalmic genetics, Dr. Tsang is unfailingly modest. When asked about his own achievements, he will almost invariably turn the conversation either to the inspiration he receives from his patients, or the contributions

Lora Glass, MD, Named Director of Oculoplastic Division

Lora Glass, MD, Associate Professor of Ophthalmology, has been named Division Director of Ophthalmic Plastic and Reconstructive Surgery in the Department of Ophthalmology. A graduate of Harvard College and the Humanities and Medicine Program at the Icahn School of Medicine at Mount Sinai, Dr. Glass served as resident and chief resident at Columbia Ophthalmology and completed a fellowship in ophthalmic plastic and reconstructive surgery at Harvard/Massachusetts Eye and Ear Infirmary before returning to Columbia in 2016.

Lora Glass, MD

"Columbia Oculoplastics offers world-class care for eyelid, orbital and tearing conditions of every kind, ranging from congenital disorders to conditions of aging, trauma to oncology," she says. "The Department recently did an assessment of the types of procedures that all the different subspecialties perform, and oculoplastics had the greatest variety of procedures. I really enjoy working with people at all stages of their lives, with so many different pathologies. One day, I may be doing a reconstruction after Mohs surgery for skin cancer, and another, I will be working on a dermatologic condition surrounding the eye or caring for a patient with age-related eyelid concerns."

Because of its international reputation in so many different areas of medicine, Columbia is particularly well suited to provide outstanding oculoplastic care. "Oculoplastics sits at the intersection of a wide variety of medical specialties," Dr. Glass says. "Here at Columbia, we have expert counterparts to work with in all of these different specialties and subspecialties, including rheumatology, dermatology, oncology, radiology, ENT, neurology, pediatrics, infectious disease, and so many others. We have close professional relationships and an essential level of trust, and all of that works to the benefit of our patients."

The Division is pursuing a number of research projects, including two clinical trials involving medications for the treatment of thyroid eye disease. "This disorder ranges from mild to severe, and can be quite disfiguring," says Dr. Glass, who serves as a site primary investigator for the two trials.

Dr. Glass also mentors medical students and residents on a variety of research projects involving conditions including thyroid eye disease, orbital fractures, education, and allergic dermatitis affecting the eyelid. "One of our current long-term research projects is a photo atlas of eyelids of infants in the NICU," she says. "We are compiling a series of standardized eyelid photographs, and then will analyze how the eyelids change over time as the premature infant develops, to better understand the development of the eyelid." Dr. Glass is grateful for patient partnerships in research support.

Most oculoplastic care is currently provided at the main Columbia Medical Center campus at 168th Street and at the East Side facility at 53rd Street, but Dr. Glass plans to expand to offer more services at each of the Department's major satellite sites, including the Upper West Side and in Westchester County. "We would like to provide clinical care closer to our patients' front doors, and perhaps even surgical and procedural care as the program expands," she says. To address current practice growth and future needs, Dr. Glass is recruiting another oculoplastic specialist within the next year.

Stephen Tsang, MD, PhD

of the young PhD students he now mentors. "Because of the Columbia Stem Cell Initiative, we attract an extraordinarily high caliber of graduate students," he says. "They bring in all the latest knowledge in biochemistry, cell biology and biomaterials, and I learn so much from them." As Drs. Goff and Mason once mentored him, Dr. Tsang is now guiding seven PhD students on their thesis research projects, all of which they hope to convert to Phase I/IIa FDA-regulated trials."

"One of the projects focuses on treating a rare autosomal dominant form of RP," he says. "The challenge with this disease is that there are 150 different spelling mistakes in the rhodopsin gene that can produce it. With conventional CRISPR techniques, we would have to go to the FDA 150 different times to get each gene surgery approved. But we have a potential strategy to chop out both the bad *and* the good version of the gene, and then replace both with a fully functional 'rescue' gene that will function no matter what the spelling mistake originally was in the bad gene. We call this strategy 'ablate and replace.' "

The other project aims to reset the clock on retinal cells–potentially treating many forms of RP–by rejuvenating the energy-producing glycolytic metabolome within the photoreceptors in the retina responsible for night vision, known as rods. "When they are young, retinal epithelial cells are energetic and turn sugar into energy, but when they age, they turn sugar into fat," Dr. Tsang says. The gradual loss of rods due to this energy starvation not only causes impaired night vision and peripheral vision, but their degeneration also produces a cascade of decline in the cones, the photoreceptors responsible for daylight color vision and visual acuity.

In a study published in March 2024 in *Cell Reports Medicine*, Dr. Tsang and biomedical engineering doctoral student Nicholas Nolan reported on the successful CRISPR editing of a gene called PHD to trigger a cascade of changes that ultimately rejuvenate rod glycolysis in a mouse model, delaying the progression of RP for about one month in the mice, equivalent to about 10 years in humans. "This approach is based on the discovery that mature stem cells can be reprogrammed to become pluripotent, which earned Sir John B. Gurdon, PhD, and Shinya Yamanaka, PhD, the 2012 Nobel Prize in Physiology or Medicine," explains Dr. Tsang.

The research faculty's recent move to new purpose-built space on the second floor of the Hammer Health Sciences Center has been fruitful for his work, Dr. Tsang says. "Being in Hammer has allowed us to establish new collaborations, as there are many more laboratories here working on genome engineering. We are engineering relatively small genomic repairs, but there are scientists in the building working on large genetic alterations, such as rewriting genomes and synthetic biology. They have been primarily doing this work in bacteria, and we can offer our expertise in preclinical mouse models and in patient-derived cells to help move it forward."

He believes that the key to his success can be summed up in three words: Patients, students, and mentors. "They provide us with the new ideas, the guidance, and the inspiration that help keep us excited about doing our work at the Harkness Eye Institute every day."

Royce Chen, MD, to Lead New Educational Division as Vice Chair of Education

Continued from page 1

partnership with Harlem Hospital resulting in a new teaching site and increased residency capacity.

"I was thrilled to learn that Dr. Royce Chen had been selected as the inaugural vice chair," says Ms. Sheng. "Royce is an intense, creative, and results-oriented individual. I believe he will bring rigor, excitement, intellectual stimulation, and progressive thinking to this role. His collaborative approach will encourage faculty to get involved across the board in projects ranging from strategic planning for postgraduate education to active faculty engagement in trainee research." Dr. Chen notes that over the past 15 years the Department of Ophthalmology has doubled in size and has become acknowledged as offering one of the strongest educational programs in the country. "How do we take the next step in an organization like that?" he asks. "We must be very thoughtful about our priorities and our goals and emphasize what is unique about our institution. Successful organizations don't evolve by accident. Creating this position and this division states very clearly that we are committed to building a truly outstanding ophthalmology educational program for the entire professional pipeline."

In his new role, Dr. Chen is developing a comprehensive strategic plan for education, with the core mission of positioning Columbia as a leading center for the advancement and dissemination of ophthalmic knowledge through the education of trainees, colleagues, and allied personnel. In service of that mission, the strategic plan stresses the key values of educational excellence, innovation, leadership, integrity, collegiality, and equity and accessibility.

"Our first goal is always educational excellence: to ensure that all of our educational programs, from residency through fellowship and continuing education for our faculty, are operating at the highest level," Dr. Chen says. "We are committed to doing that while staying on the innovative forefront of ophthalmology through technology and precision medicine. Because we have hired many more faculty over the last 10 years, we have a very deep bench of engaged educators for our trainees. Now, we want to ensure that we create the proper rotation experiences so that the trainees have the optimal exposure to all aspects of ophthalmology."

With that in mind, Dr. Chen has created an operational structure with designated education leads in every subspecialty, including glaucoma, cornea, and retina, separate from those subspecialties' division heads. "We work together to create the curricula, wet labs, lectures and rotations to maximize each individual subspecialty experience," he says.

He has also initiated efforts to standardize the fellowship programs, with shared evaluative processes and research standards. "Working with the fellowship directors, I am conducting a SWOT [Strengths, Weaknesses, Opportunities and Threats] analysis to identify shared goals, what we can do better, and what structural barriers we can eliminate," he says.

Promoting educational innovation has long been a priority for Dr. Chen. He led the integration of high-fidelity, haptic-based simulation training tools from HelpMeSee into the residency curriculum. These tools allow a trainee to feel the sensations of surgery on a real eye and develop muscle memory for dealing with actual tissues in surgery. "We are now working with HelpMeSee to create new training modules to address unmet areas of resident and fellow need, such as complications," he says. "Residents don't encounter many complications during training, yet complications create a lot of psychological stress when they happen and can change a patient's life. More experiences that help residents manage complications in a simulated environment may translate into better clinical performance."

In partnership with Kaveri Thakoor, PhD, Assistant Professor of Ophthalmic Science (in Ophthalmology) and Director of the Artificial Intelligence for Vision Science Laboratory, Dr. Chen is developing artificial intelligence algorithms aimed at accelerating the translation of ophthalmic information and knowledge to residents and fellows by analyzing how experts do what they do. "For example, we are using eye trackers to analyze how experts analyze clinical imaging data," he says. He will be teaching a course on this topic, "Eye Movement as a Window to Ophthalmic Diagnostic Decision-Making," at the 2024 annual meeting of the Association for Research in Vision and Ophthalmology in May.

Leadership education is another key priority in the new strategic plan. "A key distinction of our program is that we not only attract the best and brightest applicants and train them to become excellent physicians and surgeons, but we also prepare our graduates to become leaders here and in other programs around the country," Dr. Chen says. "Several years ago, we created an annual residency retreat at which we invite internal and external speakers to offer leadership training. For example, participants have learned about values-based leadership, negotiations, and public speaking from professors in the business school. Our goal is to prepare our residents and fellows to have a head start on assuming leadership roles when they graduate."

Beyond resident and fellow education, Dr. Chen plans to expand the Department's initiatives focused both on faculty development as educators, and on the early pipeline where investment and involvement can build interest in ophthalmology careers, during high school, college and medical school.

"The reality is that in most medical schools, none of the faculty have really been trained how to teach," he says. "Some people may naturally be good teachers, but most have to be taught that. One key aspect of this new educational division is to strategically determine how best to educate our educators. That is a work in progress, but, for example, we will be creating more regular grand rounds content focused on faculty development and overall pedagogical principles."

L. to R.: Jean Sheng, Royce Chen, MD, Katrina Armstrong, MD, Dean, Vagelos College of Physicians & Surgeons, and Kent Sheng

Dr. Chen also points out that one of the reasons ophthalmology has historically had a relatively low percentage of graduates from underrepresented minority communities is that outreach from the profession often comes too late in the educational process. "We are not reaching people early enough in their education," he says. "It is critically important to build programs that give high school students and college students exposure so that they can see these roles in their future. We currently have high school observers with us in clinic during the summer months, and I am always amazed by their curiosity and maturity. We need to expand those capabilities and opportunities."

Ms. Sheng notes that Columbia's program as a national and international leader in ophthalmology science and education is already well-known, with a reputation that has been burnished by the addition of multiple residencies and leading-edge fellowships over the past decade. "Meanwhile, as a premier research university, Columbia is preeminent in many science and technology related areas. These trends bode well for the Department's continued rise," she says. "The Department's creation of the Vice Chair of Education Professorship solidifies its commitment to marshal those resources, maintain educational excellence, and optimize its expanding programs. It furthers the Department's objectives to be the destination of choice for students of ophthalmology at all levels and those who would employ them."

MAKING HISTORY AT HARKNESS

This Viewpoint column will spotlight milestones in ophthalmic care that have taken place at Columbia, from the early "firsts" to the latest achievements.

The Basic Science Course in Ophthalmology

For more than 80 years, the Basic Science Course in Ophthalmology at Columbia has offered ophthalmology residents from around the world a unique, in-depth grounding in the foundation of ophthalmic science. Created in 1941 by George Smelser, PhD, Professor of Anatomy (in Ophthalmology), the four-week course educates graduate students and residents, as well as some attending physicians and midcareer faculty, with a combination of lectures and participatory wet labs.

"I would say that most of the important luminaries in ophthalmology today have either been a student or a faculty member in this course," says Stephen Tsang, MD, PhD, Laszlo Z. Bito Professor of Ophthalmology and Professor of Pathology & Cell Biology, who directed the course between 2006 and 2011. In addition to Columbia faculty, the course's lecturers have included National Academy of Sciences members Katherine High, PhD, currently a visiting professor at Rockefeller University, and Douglas Wallace, PhD, Professor of Pediatrics (Human Genetics) at the University of Pennsylvania Perelman School of Medicine. Alumni include Thomas Weingeist, MD, Chair Emeritus of Ophthalmology at the University of Iowa, Bradley Straatsma, MD, JD, the founding director of the Jules Stein Eye Institute at the University of California-Los Angeles, and many more.

Ronald Silverman, PhD

Developed by a committee of acclaimed scientists and surgeons, and featuring a faculty of more than 80 experts from Columbia and other institutions, the course examines the fundamentals of vision and emphasizes how these basic principles relate to patient care. It is updated annually to include the most recent scientific advances as well as any controversial developments in the field. Topics at the most recent course, held in January 2024, included instruction in optics, refraction, and retinoscopy; an introduction to microsurgery; an introduction to glaucoma surgery; a two-day workshop on dissection of the lid, lacrimal system and orbit; an oculoplastics workshop for fillers and facial rejuvenation; a hands-on imaging seminar including ultrasound, Pentacam and keratography; and a session on phacoemulsification.

2024 graduates of the Basic Science Course

"There are all kinds of programs to prepare ophthalmology residents for the OKAP [Ophthalmic Knowledge Assessment Program] and the boards, but this course is different, although it certainly can be useful for that kind of preparation," says current director Ronald Silverman, PhD, Professor of Ophthalmic Science (in Ophthalmology). "While there is a lot of clinical instruction involved, we focus on the science that forms the foundation of clinical ophthalmology."

Typically, between 40 and 50 students attend the course, more than 50% of them international, according to Dr. Silverman. "Some days they are in the classroom all day, but they also have the opportunity for a wide variety of laboratory experiences. There is a dissection workshop in which we provide cadaver heads for them to work with, and they are shown surgical procedures," he says. "For the phacoemulsification workshop, Alcon brings in half a dozen ultrasound machines and the students learn to work with those. We also have a daylong refraction workshop, and a glaucoma dry lab where they can gain experience with the tube shunts used to drain excess aqueous fluid and reduce intraocular pressure. Particularly for our European students, who don't get as many opportunities to do this hands-on work, these labs are a real draw."

The quality of the course continues to improve, says Dr. Silverman. "We don't really need to advertise it. Enrollment always fills up just by word of mouth. For residents and vision scientists who want a deep dive into the most recent scientific advances in ophthalmology, there is nothing else like it."

Students participating in a simulation exercise

IN MEMORIAM:

Henry Kissinger

Henry Kissinger

Former Secretary of State Henry Kissinger, who served on the Board of Advisors of Columbia Ophthalmology and supported our programs for more than two decades, passed away on November 29, 2023, at the age of 100. "We deeply mourn the loss of a good friend, remarkable public servant and statesman," says G.A. (Jack) Cioffi, MD, Jean and Richard Deems Professor, Edward S. Harkness Professor, and Chairman of the Department of Ophthalmology. "After an extraordinary career in academia and government, he successfully started his own consulting firm advising companies, governments and other groups for many more decades. We were honored to have known him, and we extend our deepest condolences to his wife Nancy and his family."

Shirley Brown

We are saddened to learn of the death of one of the Department's greatest friends, Shirley Brown, on Tuesday, April 2, 2024, at the age of 93, at her home in Palm Beach Gardens, Florida.

Mrs. Brown and her late husband, trucking icon and entrepreneur Bernard A. Brown, joined the Department of Ophthalmology Advisory Board of the Harkness Eye Institute in 2004, and remained devoted supporters of the Department for the rest of their lives. Through their foundation, the Browns endowed the Brown Glaucoma Laboratory, the Brown Glaucoma Professorship (currently held by Jeffrey Liebmann, MD, vice-chair of the Department), and the Brown Glaucoma Genetics Initiative, a continuum of investigative and therapeutic projects focused on the discovery of novel genes and genetic treatments for glaucoma. They were also well known for their generosity and vision in supporting many other local and national charitable organizations, particularly in health and education, with their time and philanthropy.

Shirley Brown

Mrs. Brown was preceded in death by her husband, who passed away in January 2021 at the age of 96. We send our deepest sympathies to the Browns' children, Anne Koons, Ike Brown, Sid Brown, and Jeff Brown, and extended family.

Viewpoint

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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