



Faculty Spotlight:

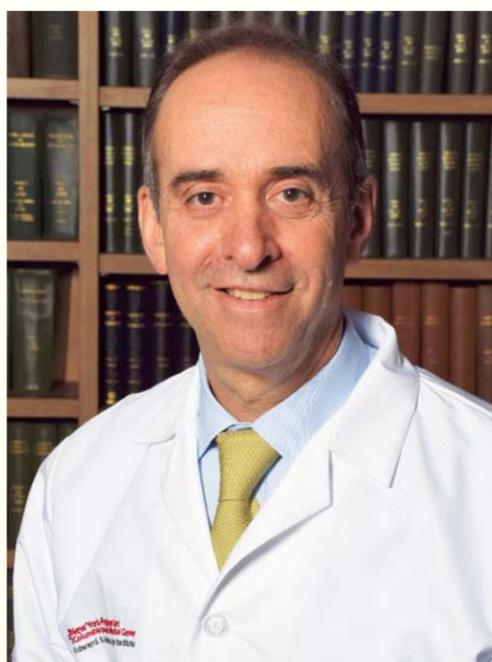
Jeffrey Liebmann, M.D.: On Columbia and Collaboration

A nationally renowned glaucoma specialist,

Jeffrey Liebmann, M.D. joined the Department of Ophthalmology in January as the Shirlee and Bernard Brown Professor of Ophthalmology. He is also the Department Vice-Chair and the Director of Glaucoma Services.

For Dr. Liebmann, deciding to pursue a career in medicine felt instinctive even from a young age. He was curious about science, nature, and biology, and medicine seemed the obvious path to follow. However, treating patients was not enough; Dr. Liebmann wanted to be a bridge between patient care and the basic biomedical research pursued in academic medical environments.

This translational approach to medicine – taking discoveries and treatments “from bench to bedside,” or from the laboratory to the patient – is the cornerstone of his approach. He is pleased to be working alongside faculty members at Columbia Ophthalmology, where this translational approach guides clinical and research initiatives.



Jeffrey Liebmann, M.D.

“Having access to Columbia’s clinical and research faculty just down the hall means that we can work together to improve

translational ophthalmic medicine, especially for potentially blinding diseases like glaucoma,” he remarks. “I have already started new projects with colleagues C. Gustavo De Moraes, M.D., M.P.H., Dana Blumberg, M.D., M.P.H., Lama Al-Aswad, M.D., Gülgün Tezel, M.D., and G.A. Cioffi, M.D.”

Dr. Liebmann has spent his career developing clinical research partnerships, working with specialists from the University of Iowa, the Singapore National Eye Center, Washington University in St. Louis, Northwestern University, New York University, and Harvard University. These academic collaborations have been instrumental in shaping his approach to medicine. His research initiatives utilize a multicenter, longitudinal – or long-term –

approach. As Director of Glaucoma Services, he intends to create a multidisciplinary

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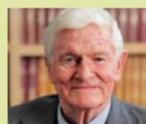
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Gloria Milstein Flanzer



J. Dukes Wooters, Jr.



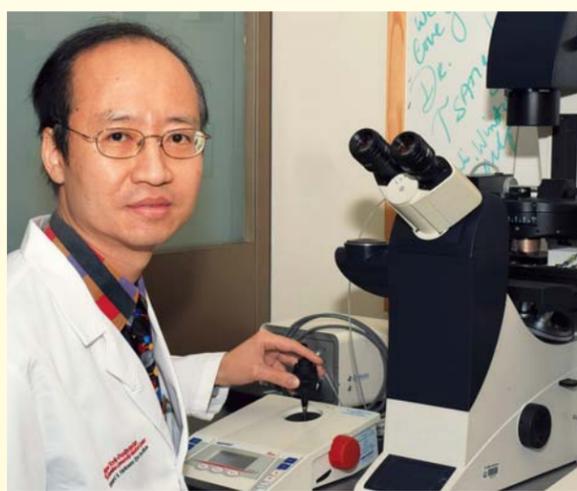
Taking Disease “Personally”: Columbia University’s Precision Medicine Initiative

Anyone who has been to a doctor’s office knows that sitting in the waiting room before an appointment can be anxiety-inducing. We worry about the imminent diagnosis for what is ailing us, and fear we might hear words such as “incurable,” “degenerative,” or “irreversible.” We anticipate the possible range of conditions or diseases we may have, and the treatments we may have to undergo in search of a cure.

A new, personalized approach to medical treatment called “precision medicine” may change our way of thinking about disease and treatment options. Precision medicine suggests that the cure to a disease is not a generic, “one-size-fits-all” model, but rather, differs from person to person. The cure exists at the most basic, molecular level of your body: your genes. Precision medicine determines each individual’s “genetic profile” – his or her entire

DNA code – and uses that data to identify the best course of treatment.

Since President Obama announced the launch of the Precision Medicine Initiative at the National Institutes of Health (NIH) during his 2015 State of the Union Address, there has been an overwhelming public response. Hundreds of articles have been published about the seemingly endless possibilities of precision medicine. A simple Google search of the phrase “precision medicine” yields over 83,200,000 results. Several large academic, research, and medical institutions around the country have started their own precision medicine initiatives. There seems to be a general consensus among the public that we are on the brink of something new, a revolution in medical treatment that may change the face of medicine as we know it.



Stephen Tsang, M.D., Ph.D.

Harnessing the power of genomic science, the NIH hopes to pioneer new ways of detecting human diseases and advancing “pharmacogenomics,” or the science of prescribing “the right drug for the right patient at the right dose.” Scientists at the NIH imagine genomic science radically altering our approach to disease treatment and management.

While Columbia University may not have been the first institution to call attention to genomic science, it has been at the forefront of the precision medicine movement for many years. To develop the university’s focus on genomic medicine further, Columbia University President Lee Bollinger recently announced the formation of a university-wide task force on precision medicine. This task force aims to develop research into genomics and disease

management as well as the cultural, legal, and political implications of this humanistic medicine.

The coalition will be comprised of approximately 40 members of the Columbia University community, including: the Trustees; the Columbia University Medical Center Board of Advisors; numerous faculty members;

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Dear Friends,

The *Viewpoint* often highlights a particular theme, and our theme this issue is change. We have undergone several important changes at Columbia Ophthalmology over the last few months and I am pleased to update you on those changes. We have welcomed new faculty members, enlarged our residency program, and embarked on promising research initiatives. As advances in ophthalmological science continue to transform the field, we must also adapt in order to maintain our standards of excellence in vision care and research.

The Department recently recruited Jeffrey Liebmann, M.D., a renowned glaucoma specialist who will be serving as Department Vice-Chair and Director of Glaucoma Services. During his career, he has made invaluable contributions to knowledge about the pathogenesis of glaucoma, glaucomatous neurodegeneration, and neuroprotection. I am delighted that he has joined Columbia Ophthalmology and I look forward to working with him as we continue to broaden the scope of glaucoma services we offer.



Under the direction of C. Gustavo De Moraes, M.D., M.P.H., our Clinical Trials Unit is engaged in several major studies that we hope will increase our knowledge about the origins of glaucoma. These studies will observe the damage glaucoma causes to the macula, investigate predispositions to glaucoma in certain racial populations, and attempt to identify biomarkers to uncover the disease's genetic basis.

Through the hard work of our Residency Program Director Bryan Winn, M.D. and Associate Director Royce Chen, M.D., we have enlarged the annual incoming cohort of residents. Effective July 1, we will accept four residents instead of three into each new cohort and every incoming resident will complete a three-month rotation at Harlem Hospital as part of a newly established partnership between our ophthalmology departments.

Our talented clinicians and scientists also received awards in recognition of their accomplishments and grants to enable their cutting-edge research. Stanley Chang, M.D. was honored by the ARVO Foundation for his exceptional contributions to vision research and care, while Yao Li, M.D., Ronald Silverman, Ph.D., Gülgün Tezel, M.D., Stephen Tsang, M.D., Ph.D., and Xin Zhang, Ph.D. all received grants to support their research.

On a congratulatory note, John T. Flynn, M.D. has retired after a remarkable career that spanned 55 years in pediatric ophthalmology. We also welcome back his son, Thomas E. Flynn, M.D., a seasoned uveitis specialist, who treats patients in the Flanzer Eye Center.

Finally, I am also deeply saddened to note the passing of two of our most generous benefactors and Board members, Gloria Milstein Flanzer and J. Dukes Wooters, Jr. Mrs. Flanzer and Mr. Wooters offered invaluable support and insight throughout their tenure on the Board. They will be sorely missed.

We have had a very productive couple of months at Columbia Ophthalmology and we will continue developing our clinical and research efforts throughout the year. Please enjoy this issue of *Viewpoint*, as we share not only the significant changes we have made, but also the amazing progress that our faculty and staff continue to make. As always, we greatly appreciate your dedication to our work fighting vision diseases and disorders, and we value your generous support for our clinical, research, and educational efforts to advance ophthalmic medicine.

Sincerely,

A handwritten signature in blue ink that reads "Jack Cioffi". The signature is fluid and cursive.

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

Taking Disease "Personally"

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David Goldstein, Ph.D., the Director of the newly established Institute for Genomic Medicine at Columbia University Medical Center; and Lee Goldman, M.D., Chief Executive, Executive Vice President and Dean of the Faculties of Health Sciences and Medicine at the College of Physicians and Surgeons. "Human genomics is creating breathtaking new opportunities to understand the biology of disease and to provide more effective and more targeted therapies," states Dr. Goldstein.

This multidisciplinary coalition will partner with NewYork-Presbyterian Hospital, the New York Genome Center, the New York Structural Biology Center, and the New York State Foundation for Stem Cell Research (NYSTEM) to form one of the most expansive initiatives within the precision medicine movement yet.

But what do genomic science and precision medicine have to do with ophthalmology and vision diseases?

The answer: everything. Stephen Tsang, M.D., Ph.D., the Laszlo T. Bito Associate Professor in the Departments of Ophthalmology and Pathology & Cell Biology, is one of several faculty members whose research attempts to answer that question on a daily basis. Scientists such as Dr. Tsang are exploring pathways into the genetic origins of disease in

innovative and unprecedented ways. Using "induced pluripotent stem cells" (or "iPS cells"), Dr. Tsang is enhancing ophthalmic research into inherited and degenerative retinal diseases.

iPS cells are the functional equivalent of embryonic stem (ES) cells; once they are "reprogrammed," iPS cells can develop into any type of cell and help to regenerate cells throughout the body. They provide a similar range of genetic diversity as ES cells and can demonstrate how gene mutations impact cellular development. They are also crucial in facilitating the testing of pharmaceutical drugs.

iPS cells are skin cells that are culled from individual patients. To collect iPS cells from patients, Dr. Tsang simply obtains a 2mm skin sample. In order to change the skin cells into iPS cells, he must "reprogram" the skin cells into "pluripotent" cells, or cells that are not fixed in terms of their developmental possibilities. The process requires manipulating the cell's specific properties to ensure its transplantation will help regenerate cells anywhere it is used within the body.

Reprogramming the iPS cells allows Dr. Tsang to minimize the chance of cell rejection after transplantation. He remarks, "This is not a transplant in the traditional sense, in which an organ comes from another donor. You are not in danger of rejecting the donor cells; they are your own cells, taken from your body." He continues, "All we have done is reprogram your cells in a way that provides the missing link that may cure whatever is ailing you."

In one experiment, Dr. Tsang obtained iPS cells from two patients, each with retinitis pigmentosa (RP), a form of inherited blindness that affects 1.5 million people worldwide. RP has multiple genetic sources, but one of the gene mutations associated with the disease has an unknown function. Dr. Tsang studied this particular gene – known as "membrane frizzled-related protein" (MFRP) – and investigated the defects it creates in cells. To reverse these flaws, he collected iPS cells, made copies of them, and delivered the copies via gene therapy. In doing so, he managed to interfere with the process of gene mutation and discovered that the specific defects that MFRP triggers can actually be reversed. This finding was a major step forward in the treatment of vision diseases such as glaucoma, macular degeneration, retinal detachment, and retinopathy of prematurity. Patients suffering from these diseases could potentially benefit from the ability to regenerate ocular cells and tissues from iPS cells.

Dr. Tsang states that using iPS cells is like "having a patient-in-a-dish." The culture dish is a more cost-effective and controlled space in which he can conduct experiments to test the success of gene therapy. The alternative, conducting these initial experiments *in vivo*, or in live patients, is expensive and often unreliable.

However, the process of generating new cells from iPS cells has not yet been perfected. Often, iPS cells fall short of their intended effect, becoming unresponsive

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Clinical Spotlight: Enhancing the “Winn”ing Residency Program at Columbia Ophthalmology

When Bryan Winn, M.D. became Director of the Residency Program in the Department of Ophthalmology, he had two objectives.

First, he wanted to enlarge the program, expanding its clinical outreach and enabling the residents to gain experience beyond Columbia Ophthalmology’s tertiary care centers. Second, he wanted to modernize the curriculum, ensuring the program’s approach to resident education remained rigorous and innovative.

He recently achieved his first goal, increasing the cohort size for the three-year residency program. Receiving authorization from the Accreditation Council for Graduate Medical Education (ACGME) involved several years of planning, due to strict national guidelines regulating the expansion of residency programs. In

November 2014, the ACGME approved the change, and beginning July 1, 2015, Columbia Ophthalmology will support four residents in each incoming cohort

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VIEWPOINT

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Harlem Hospital, Columbia Ophthalmology is currently conducting a national search for a candidate who will serve as Chief of Ophthalmology at Harlem Hospital as well as a faculty member at Columbia Ophthalmology. The search committee is seeking a dedicated leader who shares Columbia’s vision for the future of its residency program and the overall health of the greater Harlem community.

The residency program also provides a rotating residency in pediatric ophthalmology to the Stephen Ross Pediatric Ophthalmology and Otolaryngology Center at the Morgan Stanley Children’s Hospital.

The residents perform these rotations with Steven Brooks, M.D., the Anne S.



Left to right: Royce Chen, M.D. and Jason Horowitz, M.D.

instead of three, eventually increasing the total number of residents to 12.

With a larger cohort, the residency program will provide greater clinical outreach within the community. Each of the four incoming residents will serve a three-month rotation at Harlem Hospital, treating patients from the disadvantaged communities of

Central Harlem, East Harlem, Inwood, and Washington Heights. Since Harlem Hospital’s patient base is largely underinsured or uninsured, Dr. Winn believes the rotation will offer residents the opportunity “to serve the underserved” and care for some of New York City’s more vulnerable patients within a public, inner-city hospital environment.

Harlem Hospital also offers numerous advantages to the residency training program, as it is both a teaching hospital and a trauma center. By exposing the residents to a wider range of ophthalmic diseases and traumatic ocular injuries, this residency rotation will help to broaden their clinical horizons. In conjunction with



Left to right: G.A. Cioffi, M.D. and Bryan Winn, M.D.

Cohen Professor and Chief of Pediatric Ophthalmology, and Lauren Yeager, M.D., Assistant Professor and the Peter J. Sharp Pediatric Ophthalmology Scholar. Drs. Brooks and Yeager enjoy working with the residents and

providing them with an immersive experience in pediatric ophthalmology. The pediatric rotation aims to enhance the interpersonal skills and empathy of the residents, allowing them the opportunity to develop their bedside manner among very different age populations, from adults to young children.

In collaboration with Royce Chen, M.D., the residency program’s Associate Director, Dr. Winn has also introduced a more modernized curriculum. Three years ago, the Department initiated a two-day, off-site weekend retreat as an annual event. The aim of the retreat is to cultivate a sense of respect for patients and the medical

profession, as well as to develop well-rounded and skilled individuals. At the retreat, the residents participate in leadership workshops, communication seminars, professional development programs, and exercises that highlight mindfulness and meditation. At this year’s Resident Retreat, one of the focuses was revising the Department’s approach to the resident curriculum. The residents were able to provide feedback about various aspects

of the program, taking a more active and engaged role in shaping the substance of the program. This feedback helps guide faculty members as they consider the program’s curriculum and philosophy.

Jason Horowitz, M.D., the Medical Director of the Resident Clinic, and G.A. Cioffi, M.D., the Department Chair, along with many other faculty members, have also



Residents: Front row (left to right): Stacy Scofield, M.D.; Larissa Habib, M.D.; Albert Hazan, M.D.; James Lin, M.D. Back row (left to right): Brad Kligman, M.D.; Kathleen Oktavec, M.D.; Greg Stein, M.D.; Megan Ridley-Lane, M.D.; Dov Sebwow, M.D.

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C. Gustavo De Moraes, M.D., M.P.H.: Fighting Glaucoma in the Laboratory

When G.A. Cioffi, M.D. became Chairman of the Department of Ophthalmology in 2012, he recognized a major opportunity: the development of a robust Clinical Trials Unit. A clinical trials unit is an indispensable component of the “bench-to-bedside” approach to patient care practiced by top-tier clinical research institutions.

According to the World Health Organization (WHO), clinical trials are research-based studies that involve either individual participants or groups of participants aimed at investigating a particular health concern. They can be focused on any number of issues: surgical procedures, pharmaceuticals, behavioral treatments, or the use of new technologies. After evaluating the findings of a clinical trial, doctors translate that information into actual solutions for patients.

Clinical trials units tend to stage their studies in three separate phases. Phase I involves prescribing certain doses or therapies to healthy patients to ensure the safety of the treatment under evaluation. Phase II investigates any benefits that may emerge from the treatment’s usage and seeks proof that it could be effective. In Phase III, the researchers engage in formal experimentation of the drug or therapy, testing it alongside a control – or a “placebo” – to determine whether the treatment will work. Comparing the effects of each “treatment,” researchers then assess whether there is compelling evidence that the treatment will be successful.

Recognizing the imminent need for a unit to conduct these trials, Dr. Cioffi started considering who the best candidate for the position might be. He knew he would need an exceptional clinician-scientist to direct and oversee clinical trials. Recalling a promising and gifted young researcher with whom he had previously worked – C. Gustavo De Moraes, M.D., M.P.H. – Dr. Cioffi approached him about the position. According to Dr. Cioffi, “Dr. De Moraes is the rare combination of a brilliant intellect, a skilled scientist, a gifted writer, and a compassionate physician. These traits combine to make him a great addition to the Department and a valuable colleague for our entire faculty.” In February 2014, Dr. De Moraes joined the faculty of the Department of Ophthalmology at Columbia University Medical Center as the Director of Clinical Trials and Associate Professor of Ophthalmology.

A highly regarded ophthalmologist and researcher, he has published over 90 papers in medical journals, authored seven book chapters, and served on the World Glaucoma Association Committee. He is the recipient of awards from the American Glaucoma Society, the American Academy of Ophthalmology, the Pan-American Association of Ophthalmology, the World Glaucoma Association, and the World Glaucoma Congress.

Born and raised in Brazil, Dr. De Moraes received his M.D. from the University of Sao Paulo School of Medicine. He served as Chief Resident during his ophthalmology residency at the university and

70 million individuals suffering from glaucoma worldwide, the overall social and economic burdens that accompany the disease can prove catastrophic in terms of public well-being.



C. Gustavo De Moraes, M.D., M.P.H.

The second factor strikes a more personal chord: While Dr. De Moraes was in medical school, his father was diagnosed with glaucoma. His father, a gastric surgeon, stopped performing surgeries as a result of the severe vision loss he suffered. The diagnosis had a great impact on the young medical student. He explains, “By the time I started my residency, my father had lost 90% of the vision in one eye. His diagnosis led me to specialize in glaucoma.”

Motivated by these two factors, Dr. De Moraes is currently overseeing three NIH-sponsored clinical trials on glaucoma. In the first trial, “Structural and Functional Progression of Glaucomatous Damage to the Macula,” he is investigating the damage glaucoma causes to the macula (an oval-shaped area of the retina) and exploring innovative approaches for treating it. The retina is the part of the eye responsible for producing vision by initializing visual signals between the eye and the brain via the optic nerve. The macula, located at the center of the retina, refines sight in the central field of vision. While the most common form of glaucoma – open angle glaucoma – gradually narrows the peripheral visual field resulting in “tunnel vision,” glaucomatous damage to the macula degrades the central visual field, making activities like reading and driving extremely difficult.

The point at which the macula may become damaged and how this progression occurs have not yet been determined. Working closely with Don Hood, Ph.D., Professor of Psychology and Ophthalmology at CUMC, Dr. De Moraes will attempt to fill this gap in knowledge by studying the structure and function of the macula, an innovative approach he conceived upon his arrival here. For this study, he will use optical coherence tomography (OCT) to visually “map” the structural aspects of the macula of his test subjects. In order to test functionality, he will perform visual field tests to measure the strength of the subjects’ central and peripheral fields of vision and to indicate any vision loss. Using these two separate tests, he intends to uncover ways of detecting the disease in its early stages and monitoring its progression more effectively.

The second clinical study entitled “African Descent and Glaucoma Evaluation Study” (or “ADAGES”) is a multicenter study in collaboration with the University of California-San Diego and the University of Alabama-Birmingham. The ADAGES project was recently brought to CUMC by Jeffrey Liebmann, M.D., and reunites Drs. Liebmann and De Moraes, who have worked together on several clinical trials. In this trial, Dr. De Moraes is aiding investigators in identifying differences in the onset of glaucoma in

remained there to pursue glaucoma and retina fellowship training. In 2008, he relocated to the United States to undertake a glaucoma research fellowship at the New York Eye and Ear Infirmary where he was later named Chief of Glaucoma Research. He was appointed Assistant Professor of Ophthalmology at NYU Langone Medical Center in 2009, advancing to Associate Professor of Ophthalmology. After joining the CUMC faculty, he also completed a Master of Public Health degree – with an emphasis on Biostatistics – at Columbia University’s Mailman School of Public Health.

Growing up in a developing country, Dr. De Moraes has what one might refer to as a “global perspective” on glaucoma. As a volunteer with the United Nations, he provided free screenings for glaucoma, cataracts, and refractive errors in several developing countries, where access to quality eye care is often limited. He is currently working with international ophthalmology and glaucoma associations to advance global knowledge about the disease.

His interest in glaucoma emerged as the result of two factors. The first was an awareness of the global impact of glaucoma. In developing countries, one family member with glaucoma can produce significant financial burdens for a family. With over

Honors and Awards

Dean's Precision Medicine Fellowship

Yao Li, M.D., a postdoctoral research scientist who conducts research under Stephen Tsang, M.D., Ph.D., recently received the Dean's Precision Medicine Fellowship from the Irving Institute for Clinical and Translational Research at Columbia University Medical Center. The two-year fellowship will support Dr. Li's research from January 1, 2015 through December 31, 2016. Dr. Li must attend weekly conferences to enhance her knowledge of genetic research and precision medicine initiatives. The funding will underwrite her current project concerning gene repair in patient-specific induced pluripotent stem (iPS) cells and transgenic mouse models. In this study, she will attempt to fix a retinal gene mutation on iPS cells *in vitro*, and if successful, apply it on an animal model *in vivo*.

Stanley Chang, M.D. honored by ARVO Foundation

On May 2, 2015, Stanley Chang, M.D. was honored at this year's Association for Research in Vision and Ophthalmology (ARVO) Foundation and the Dowling Society's Gala Awards Ceremony and Dinner. ARVO recognized Dr. Chang as a member who has made significant contributions to vision research and who demonstrates dedication to the ARVO Foundation mission. ARVO seeks to promote scientific interactions and exchange among scientists and clinicians, to foster translational research through the laboratory and clinical practice, to further vision research for the prevention of blindness, and to reduce the occurrence of vision diseases worldwide.

National Institutes for Health (NIH)/National Eye Institute (NEI) Funding Update

Several faculty members at Columbia Ophthalmology received grants for their research from the NIH/NEI. We now rank 8th in the nation in NEI funding after receiving more than \$2 million in grants over the past year. Among those faculty members who received grants are:

Xin Zhang, Ph.D. was awarded an NEI grant for his research project entitled "Signaling Mechanisms of Lens Development." For this project, he will investigate how the development of the lens relates to the development of different vision disorders. He aims to advance research on the genetic basis of eye diseases and to discover treatments for eye-related genetic birth defects.

Gülgün Tezel, M.D. received an NEI grant that will underwrite her project entitled "Oxidative Stress in Neurodegeneration and Neuroprotection in Glaucoma." In this study, she will explore the role of oxidation-related stress in optic nerve damage and will consider the use of antioxidant treatment to protect optic nerve cells.

Dr. Tezel was also awarded the Shaffer Grant through the Glaucoma Research Foundation. This grant will enable her to pursue research into molecular markers for glaucoma in her study entitled "Molecular Biomarkers of Glaucoma." By identifying such molecules, she aims to introduce new clinical tests for the early diagnosis of glaucoma and to discover more effective modalities for the disease's management.

Ronald H. Silverman, Ph.D. is the recipient of an NEI grant that applies the use of high resolution ultrasound imaging technology in glaucoma patients. The project, entitled "Ultrasound Perfusion Imaging in Glaucoma," adapts a recently developed ultrasound technology called "coherent plane wave imaging." This technology will enable Dr. Silverman to take pictures of the eye's anatomy and the rate of blood flow in the vessels supplying the eye. Using this approach, he hopes to develop safe and effective methods of imaging the eye while minimizing ultrasound exposure intensity for patients.

Stephen Tsang, M.D., Ph.D. received an NEI grant for a project entitled "Gene Silencing and Gene Editing in Phototransduction." This research explores the role of "gene silencing" (the "turning off" of a gene) and "gene editing" (the "altering" of a gene) during phototransduction, the process by which light is converted into electrical signals, producing vision. By exploring how gene silencing and gene editing – or turning genes "on" and "off" – impacts this process, he intends to advance knowledge about the effects gene mutations have on vision diseases.

Dr. Tsang is also the recipient of a grant from the National Institute on Aging for a project entitled "Evaluating Age-Related Macular Degeneration in Human Stem Cells." Dr. Tsang will conduct the study in partnership with scientists from the University of Iowa. He and his colleagues will apply stem cell and gene editing technologies in an attempt to identify the root causes of age-related macular degeneration (AMD) and develop new therapies for its treatment.

Columbia Ophthalmology at the American Glaucoma Society Conference

The 25th Annual Meeting of the American Glaucoma Society was held in Coronado, California from February 26 – March 1, 2015. At the meeting, Columbia Ophthalmology had the largest number of scientific presentations of any department in the country. Our representatives were participants as moderators and presenters throughout the conference. Columbia fellows Alex Theventhiran, M.D. and Elana Rosenberg, M.D. were among the researchers presenting their work. Jeffrey Liebmann, M.D., Director of Glaucoma Services, delivered a lecture on eye pressure and its relation to glaucoma. C. Gustavo De Moraes, M.D., M.P.H., Director of Clinical Trials, presented two talks, co-authored a third, and led a roundtable discussion. Overall, Columbia Ophthalmology was one of the most active groups at the meeting, contributing to many rich discussions.

iCura Vision and Columbia Technology Joint Venture

iCura Vision and Columbia University have partnered with the NIH to create a potential treatment for dry age-related macular degeneration (AMD). Dry AMD refers to the gradual loss of sight within the central field of vision due to the build-up of deposits in the retina. While there are no FDA-approved treatments for dry AMD, iCura Vision has developed a clinical candidate for trials. This candidate, called ICR-14967, was discovered through groundbreaking research studies conducted at Columbia University.

When administered, ICR-14967 decreases the amount of retinol – or Vitamin A – sent to the eye. Retinol causes lipofuscin (yellow-pigmented deposits) to fuse with vitamin A, and this fusion results in the buildup of deposits in the retina. By blocking retinol from entering the eye, ICR-14967 ensures that these deposits do not collect. iCura Vision will be seeking partnerships for the continued development of ICR-14967.

populations of African and European descent. In the first phase, each of the participants undergoes vision testing, optic nerve evaluation, and documentation of any other risk factors for developing the disease.

The preliminary findings from the study suggest a higher prevalence of risk factors in populations of African descent. These risk factors include thinner corneas, a greater risk for developing diabetes, higher blood pressure, and lower visual field test scores. Evaluating these "baseline" differences between the groups, the researchers will attempt to identify which factors might be the strongest indicators for developing glaucoma and assess how the disease impacts each racial group differently.

The third study entitled "Genetic Basis of Glaucoma in African Americans," is an extension of ADAGES and will explore the genetic basis of glaucoma. The investigators will collect blood and saliva samples and compare that genetic data with the results from the earlier phases of the trial. In doing so, they will attempt to pinpoint specific genetic traits or "biomarkers" that could help to facilitate genetic diagnostic testing and enable more individualized treatments for patients.

"We are very excited to see where these important investigations will lead us, and we are very fortunate to have a person like Dr. De Moraes to help get us there," commented Dr. Cioffi. While Dr. De Moraes is focused on overseeing the clinical trials unit, he noted that the most rewarding moments of his career are when he helps one of his patients. "Nothing can replace the sense of fulfillment I feel when a patient gives me a hug or a handshake and says, 'Thank you very much, doctor.'" ■

Taking Disease "Personally"

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or failing to mature as quickly as expected. Some researchers have proposed that it might take longer for iPS cells to mature in a dish rather than in the human body because the body is its own distinct system with specific signaling pathways and cues that stimulate cell growth. While it may take researchers years to find ways to accelerate the growth of iPS cells, these discoveries are remarkable breakthroughs that represent precision medicine's potential to eliminate human diseases.

Precision medicine is no longer the science of the future; it is the science of today. It allows us to imagine a world in which glaucoma, cancer, heart disease, Alzheimer's, or HIV/AIDS may no longer exist. However, reaching that point will require the close collaboration of scientists, government agencies, research institutions, philanthropists, and individual patients.

The progress scientists have made thus far is promising, but the next step is "capitalizing on these opportunities" and providing the collaborative support to potentially eliminate human diseases in the future, Dr. Goldstein states.

One thing, though, is certain: precision medicine proves that the cures to the diseases afflicting humanity have been living within us all along. We just need to unlock the remaining secrets of the human genome. ■

Faculty Spotlight:

“Keeping Up with the Flynnns”: Legacies of Compassionate Care

John T. Flynn, M.D. believes in the power of words. He is a man who helped create the modern language of pediatric ophthalmology and believes that to treat patients, you have to start simply: by listening to their stories. These stories emerge through a mixture of words, mannerisms, and codes that he must decipher. When he unravels these riddles, he can form a more complete understanding of what is ailing his patients.

“You really have to look at your patients and let them tell their stories,” he insists. “Medical knowledge does not come from a piece of handheld technology. It comes from observing patients, watching them closely, and listening to what they have to say.” Dr. Flynn has been listening to his patients for decades and has cherished every minute of it. “The last 55 years have been the most gratifying ones of my life,” he notes.

Although his pioneering work in pediatric ophthalmology may have been based in part on “storytelling,” his patients’ stories did not

emerge in ways one would expect. Dr. Flynn worked primarily with infants suffering from retinopathy of prematurity (ROP), a blinding condition that is common among prematurely born or low birth weight infants. The condition must be diagnosed and treated as early as possible to avoid any loss of vision (for more information on ROP, please refer to the Fall 2014/Winter 2015 issue of *Viewpoint*). Given the fragile state of premature infants, Dr. Flynn had to “listen” to these patients in a number of innovative and imaginative ways. “Even the tiniest of patients have stories to tell if you know how to listen,” he remarks.

Dr. Flynn’s groundbreaking work began around 1967, in a small, under-equipped nursery in Miami’s Jackson Memorial Hospital. He and a team of young doctors had a struggling premature infant who needed immediate treatment. They decided to proceed by injecting fluorescein dye into the baby’s eyes. Fluorescein, a yellow-green dye, allows doctors to visualize the delicate blood vessels inside the eye, helping to diagnose vision diseases and disorders. While the use of fluorescein staining is now standard in ROP screening around the world, until that moment the procedure had never been performed.

Nervous but determined, Dr. Flynn and his colleagues took the infant into the nursery and inserted a scalp vein, which carried the fluorescein into the child’s eye. Dr. Flynn recalls, “We got an old camera, brought in an ophthalmic photographer, made a guess as to the dosage, and injected the dye. We didn’t know what would happen.” But what happened next amazed the young clinicians. “When the dye hit the eye, we saw it spread throughout the blood vessels, illuminating

parts of the eye that had never before been viewed on camera,” Dr. Flynn recounts. After the child reacted positively, the doctors administered another dose. Using this new method of visualizing the eye, they were able to determine the correct course of treatment and save the infant’s sight.

More recently, Dr. Flynn served as the principal investigator in a study entitled “Early Treatment for Retinopathy of Prematurity” (ETROP), which evaluated different screening methods for early intervention in infants born with ROP. In this clinical trial, Dr. Flynn and his research team observed two groups of test subjects, each with a different level of risk for developing ROP: Type 1 infants were at high risk, while Type 2 infants were at moderate risk. Dr. Flynn and his colleagues concluded that early treatment had improved the vision and retinal health of the Type 1 test subjects, but not the Type 2 subjects. These findings enabled them to predict which infants were

more likely to benefit from early screening and intervention, advancing knowledge about diagnostic testing and treatment for ROP.

Dr. Flynn’s reason for entering the field of pediatric ophthalmology is straightforward and uncomplicated: “I love kids,” he says. “Kids, in contrast to adults, like to get things over with. Once they turn a corner, they want to be done with a disease.” But with such a fondness for working with children, why would he choose to work primarily with premature infants? According to Dr. Flynn, “The most innocent children are the premature infants. They arrive in a state where they really have to scratch with their fingernails just to hold on to life. I’m a simple man and that is very impressive to me.”

His dedication to his patients has also had a lasting effect on his colleagues. Lauren Yeager, M.D., the Peter J. Sharp Scholar in Pediatric Ophthalmology, comments that working with Dr. Flynn has been an honor and that he has profoundly influenced her clinical practice. Jason Horowitz, M.D. notes that Dr. Flynn has the keen ability to synthesize laboratory and

clinical data in a way that is truly inspirational. “His diagnostic acumen is nothing short of amazing,” he adds.

His colleagues not only respect Dr. Flynn for his clinical and research efforts, but also for his intellectual curiosity, eloquence, and kindhearted nature. Steven Brooks, M.D., the

Anne S. Cohen Professor and Director of Pediatric Ophthalmology, states, “Dr. Flynn has always had a humble and impassioned approach to his work. His kind words and insights over the years have meant a great deal to me.” G.A. Cioffi, Chairman of the Department of Ophthalmology, says, “Dr. John Flynn was an unassuming, brilliant, and seasoned pediatric ophthalmologist who will be missed by many of his colleagues.”

Dr. Flynn completed his undergraduate studies at the University of Notre Dame, graduating *magna cum laude*. He received his medical degree from Northwestern University Medical School and later became Professor of Ophthalmology at the University of Miami School of Medicine. He has held appointments at the Bascom Palmer Eye Institute, the Anne Bates Leach Eye Hospital, and Jackson Memorial Hospital. Dr. Flynn left Miami in 2000, and shortly thereafter, joined the Department of Ophthalmology as the Anne S. Cohen Professor and Director of Pediatric Ophthalmology. He remained a faculty member here until his retirement a few months ago.

So how will he be spending his retirement? “Two words describe my retirement – snow and ice,” he jokes. “I’ll be upstate at Lake George, shoveling snow and chipping ice.” With the warm weather now, he plans to join a hiking club and spend time taking

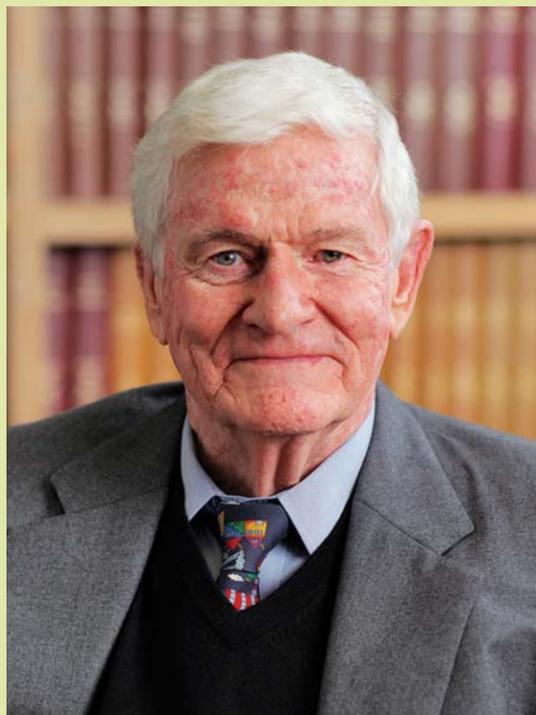
walks with his beloved dogs, his two Shih Tzus. An avid fan of the University of Notre Dame’s football team, he will also continue to watch and attend games regularly, as he has always done.

As Dr. John Flynn departs, another Dr. Flynn arrives: his son, Thomas E. Flynn, M.D., a nationally renowned retina and uveitis expert. Dr. Flynn rejoined Columbia Ophthalmology in December as a part-time Assistant Professor of Clinical Ophthalmology. He divides his time between New York City and Maine, where he is the chief physician at Ellsworth Uveitis and Retina Care, as well as an ophthalmologist and surgeon at Maine Coast Memorial Hospital and Eastern Maine Medical Center.

Among Dr. Flynn’s ophthalmic specialties are uveitis and ocular immunology. Uveitis, a disease

characterized by an inflammation of the uvea, affects the structures in the center of the eye, including the iris, ciliary body, and choroid. Uveitis results from a failure of the eye’s central immune system to balance the level of CD4 T-cells, white blood cells that aid in the eye’s immune response to infection or disease. Corticosteroids and topical solutions are commonly used to treat uveitis and help to restore T-cell counts to normal levels. If left untreated, however, the disease may result in serious complications, such as cataracts, glaucoma, macular edema, and permanent vision loss.

Due to his work on uveitis and ocular immunology, Dr. Flynn was uniquely positioned to make inroads into research and treatment for the HIV/AIDS community in the 1990s. As an ophthalmologist at the Special Care Program for AIDS in Yonkers, NY,



John T. Flynn, M.D.



Thomas E. Flynn, M.D.

Dr. Flynn treated many patients for HIV/AIDS-related vision diseases, such as uveitis and cytomegalovirus (CMV) retinitis. CMV retinitis is a retinal inflammation that can result in blurred vision, eye pain, photosensitivity, and irreparable damage to the retina, including blindness, if early treatment is not initiated. HIV/AIDS patients are particularly susceptible to uveitis and CMV retinitis because of their extremely low T-cell counts. Since HIV attacks the CD4 T-cells that protect the eye against infection, one of the essential components of the eye's immune system is then compromised in these patients.

Dr. Flynn's other clinical research interests include vitreoretinal disease, vascular retinitis, and retinal vein occlusion. He is currently the principal investigator in five separate clinical trials. In each study, Dr. Flynn will evaluate how placebos impact patients with different forms of uveitis, such as anterior, posterior, and panuveitis.

After graduating with an A.B. in Biology from Harvard University, Dr. Flynn received his M.S. in Physiology from Georgetown University and his M.D. from George Washington University Medical School. He completed residencies in ophthalmology at New York Hospital-Weill Cornell Medical Center and Memorial Sloan Kettering Cancer Center. Later, he pursued fellowship training in uveitis and ocular immunology at the Wilmer Eye Institute of Johns Hopkins Hospital and in vitreoretinal diseases at New York Hospital-Weill Cornell Medical Center.

The Flynnns have made lasting contributions to ophthalmic medicine. Dr. John Flynn was instrumental in developing diagnostic and surgical procedures that helped premature infants not only survive, but thrive. Dr. Thomas Flynn spent several years treating HIV/AIDS patients, who are frequently stigmatized, both medically and socially. While the Flynnns may have very different ophthalmic specialties, they do have one thing in common: legacies of compassionate care for some of medicine's more vulnerable patients. ■

Enhancing the "Winn"ing Residency Program

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helped guarantee the program's continual improvement. Dr. Horowitz spends a considerable amount of time with the residents, teaching them clinical skills. Dr. Winn characterizes his teaching style as accessible, supportive, and constructive. "He has the ability to teach the residents without ever making them feel belittled or underappreciated," Dr. Winn comments. Jokingly, he adds, the residents can often be heard repeating the acronym "WWJD," or "What Would Jason Do."

Dr. Winn credits Dr. Cioffi's willingness to support a more modernized and resident-specific approach as a key factor in the program's success. "Dr. Cioffi granted us the latitude to implement important modifications to the residency program. In doing so, he has ensured our residents will continue to receive the best possible clinical training at Columbia," he says.

With the modernized curriculum and the program's broadened clinical outreach, Columbia Ophthalmology's residency program will continue to rank among the best programs in the nation. These programmatic enhancements will guarantee that Columbia continues to attract and train the next generation of leaders in ophthalmology. ■

John T. Flynn, M.D. Honored at Grand Rounds Lecture Series

On March 5, 2015, faculty members and friends gathered to honor the career of John T. Flynn, M.D. Introducing Dr. Flynn was Michael Chiang, M.D., the Knowles Professor of Ophthalmology & Medical Informatics and Clinical Epidemiology at Oregon Health & Science University since 2010. In 2001, Dr. Chiang was recruited by Dr. Flynn to the Department of Ophthalmology at Columbia University Medical Center, and was appointed the Herbert Irving Assistant Professor from 2001-2004. In 2004, he received his M.A. in Biomedical Informatics from Columbia University and became Associate Professor in the Departments of Ophthalmology and Biomedical Informatics. In his last year at Columbia, he served as the Anne S. Cohen Associate Professor of Pediatric Ophthalmology.

Returning to CUMC to honor Dr. Flynn as both a mentor and a colleague, Dr. Chiang delivered the Grand Rounds Lecture that afternoon entitled "Lessons about Mentoring and Working in the Academic Medical Center." During his talk, he praised Dr. Flynn for his clinical and research skills, his surgical innovation and prowess, and his eloquence and congeniality. Dr. Chiang emphasized Dr. Flynn's influence on his own clinical practice and research, and acknowledged the wealth of knowledge he gained while working alongside Dr. Flynn.

Dr. Chiang also highlighted Dr. Flynn's eagerness to engage with guest speakers at lectures, noting that he was always asking questions and enabling dialogues. Humbly, Dr. Flynn later commented, "He was right; I was always asking questions at events. But as I listened to a former colleague speak about my career, I was speechless for the first time." Immediately following the lecture in the Gloria and Louis Flanzer Amphitheatre, a cocktail reception was held at The Faculty Club in Dr. Flynn's honor. ■

Jeffrey Liebmann, M.D.: On Columbia and Collaboration

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team from across the medical center to further explore innovative approaches to diagnosing and treating glaucoma.

His primary areas of research include the pathogenesis of glaucoma, glaucomatous progression and neurodegeneration, ocular imaging technologies, and neuroprotection. In particular, Dr. Liebmann is interested in using advanced modalities of ocular imaging technology to study the progression of glaucoma and its resulting damage. During his 25-year career, he has been an advocate and pioneer of these imaging technologies. Using optical coherence tomography (OCT) and high resolution ultrasonography, he has captured precise and three-dimensional images of traditionally hard-to-see ocular anatomy. He helped enable the "mapping" of the eye's "microarchitectures," including the thin layers of the retina, retinal nerve fiber layers, and instances of optic nerve damage that were previously difficult to visualize.

As a medical field, ophthalmology appeals to Dr. Liebmann because it offers a glimpse into the future. He states, "Ophthalmology remains at the forefront of the development of new technologies, such as laser surgery, high resolution imaging, and minimally invasive surgery. These innovative diagnostic techniques and treatments have not yet been introduced within other fields of medicine."

He specializes in glaucoma because of the significant vision impairment the disease inflicts. It is the second leading cause of irreversible blindness in the United States, and worldwide, it affects over 70 million people. "Blindness is the most feared of all medical conditions," he believes. "Once glaucoma results in optic nerve damage, any loss of vision is permanent. Therefore, early detection is imperative."

Dr. Liebmann received his B.A. and M.D. from Boston University's Combined Six-Year Medical Education Program and completed a residency in ophthalmology at the SUNY Downstate Medical Center, serving as Chief Resident. He later pursued

glaucoma fellowship training at the New York Eye and Ear Infirmary. Prior to arriving at Columbia, he held appointments as Attending Surgeon at the New York Eye and Ear Infirmary, Clinical Professor of Ophthalmology at NYU School of Medicine, and Director of Glaucoma Services at NYU Langone Medical Center and the Manhattan Eye, Ear, and Throat Hospital.

He is the President of the World Glaucoma Association and past President of the American Glaucoma Society. He is also the recipient of several honors and awards, including the SUNY-Downstate Medical Center MVP Award, the Life Achievement Honor Award from the American Academy of Ophthalmology, the Excellence in Clinical Teaching Award at NYU School of Medicine, and the Senior Achievement Award from the American Academy of Ophthalmology.

A prolific researcher and writer, he has authored over 450 scientific publications and delivered over 220 guest lectures and 550 conference presentations. He has also instructed over 75 courses and trained 120 fellows. Dr. Cioffi, Chairman of the Department of Ophthalmology, comments, "We are fortunate to have recruited Dr. Liebmann and we look forward to working with him for many years to come. His arrival not only enhances our Glaucoma Division by complementing the expertise of our existing glaucoma faculty, but also strengthens our entire Department. I have often told friends and patients, 'If I had glaucoma, Dr. Liebmann would be my doctor.'"

Looking into the future, Dr. Liebmann sees Columbia Ophthalmology making significant contributions to vision research. His number one priority, however, is patient care. "Without question," he says, "the most fulfilling moments in my medical career occur on a daily basis during my interaction with patients. Many of my patients have told me that our efforts to end blindness gives them hope. Hearing that encourages me to work even harder to turn that hope into a reality." ■

In Memoriam

Columbia Mourns the Loss of Benefactor and Friend, Gloria Milstein Flanzer

Gloria Milstein Flanzer, a major benefactor of the Department of Ophthalmology and Columbia University Medical Center, died on March 9, 2015 at the age of 87. Her husband of 66 years, Louis Flanzer, predeceased her in 2013.



Gloria Milstein Flanzer

Mr. and Mrs. Flanzer donated generously to support initiatives in social services, education, and the arts, but they were especially committed to medical philanthropy. With their significant contributions, the Flanzers helped to create many of the state-of-the-art facilities at Columbia University Medical Center and NewYork-Presbyterian Hospital.

The Flanzers leave behind a long and special legacy of support for the Department of Ophthalmology. Their advocacy and generosity helped make transformative changes to the Department's patient care facilities.

The couple led a consortium of donors to help revitalize the Harkness Eye Institute's first floor vision care facilities, which led to the opening of the Flanzer Eye Center. The Center, located in the heart of Washington Heights, has continued to provide exceptional care in a modern, patient-friendly space.

In 2004, the Flanzers supported the refurbishment of the amphitheatre at the Harkness Eye Institute, which was then named in their honor. As a result of their generosity, in 2010 the Department opened the Gloria and Louis Flanzer Vision Care Center. Located at Third Avenue and 53rd Street on Manhattan's east

side, this facility provides comprehensive eye care and disease management across a range of ophthalmic diseases and disorders. The establishment of the Center allowed Columbia Ophthalmology to significantly expand its clinical outreach.

Mrs. Flanzer was a long standing member of the Department's Board of Advisors with 20 years of service. G.A. Cioffi, M.D., Chairman of the Department of Ophthalmology, commented on her

passing, noting, "While I only knew Mrs. Flanzer briefly, her legacy of giving to the Department demonstrates her generous nature."

Stanley Chang, M.D., who worked very closely with Mr. and Mrs. Flanzer during his tenure as Chairman, remarked, "Mrs. Flanzer was a kind woman who was always eager to help, whether by offering advice or funding new initiatives. She will be missed for her wise counsel and warm friendship." ■

J. Dukes Wooters, Jr.: Industrialist and Philanthropist

For over 15 years, J. Dukes Wooters, Jr., was an active member of the Department of Ophthalmology's Board of Advisors. He passed away on Wednesday, January 21, 2015 at the age of 97. He leaves behind his wife Kay, five daughters, and several grandchildren.

Mr. Wooters was President of the Eye Surgery Fund, Inc., a family foundation established in honor of Daniel Kirby, M.D., his father-in-law and a renowned ophthalmologist. Through this foundation, Mr. Wooters directed several substantial donations to Columbia Ophthalmology. He also contributed to charitable organizations around the world as part of his mission to sustain quality vision care initiatives.

G.A. Cioffi, M.D., Chairman of the Department, was saddened to hear of Mr. Wooters's passing. He recalled him as "a friend, who will be missed for his business

acumen, but most of all for his charitable work." He added, "He was a true humanitarian."

An enterprising businessman, Mr. Wooters founded Cotton Incorporated and under his leadership, the company helped revive the struggling cotton industry. As the Chief Executive Officer and Chairman, he was instrumental in creating the "Seal of Cotton," one of the most recognizable industrial brand insignias of the time.

Stanley Chang, M.D. commented, "Mr. Wooters's business savvy was one of the major benefits of having him on the Advisory Board. His contributions were always creative, insightful, and invaluable." He continued, "I will miss his enthusiasm and upbeat approach to life." ■



J. Dukes Wooters, Jr.

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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