Columbia University Medical Center

Viewpoint

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

SPRING/SUMMER 2010

State-of-the-Art Care:

Flanzer Center Opening Unites Ophthalmology Services

The state-of-the-art Gloria and Louis Flanzer Vision Care Center opened with a ribbon-cutting ceremony on Thursday, April 8. Guests at the ceremony included senior officials from the Medical Center and NewYork-Presbyterian Hospital administration, donors to the facility and the department, and people involved in the development, design, and construction of the space, including representatives from the landlord, the Resnick family, the architectural firm, Integrated Design Group, the contractor, Aragon Construction, and Columbia University Facility Management. They had the opportunity to tour the new, 8,000 square foot facility, which occupies the entire second floor of 880 Third Avenue, with the entrance on 53rd Street.

L to R: Stanley Chang, M.D., Robert L. Burch III, Lee Goldman, M.D., Stephen J. Corwin, M.D.

The spacious, light-filled new center features 14 exam rooms, two diagnostic rooms and a treatment room, all equipped with the latest in diagnostic and treatment technologies. Among these is the Pentacam, an advanced eye imaging tool that provides a comprehensive and sophisticated assessment of the optical status of the eye, using wave front analysis and ray tracing technologies.

Columbia's several ophthalmology practices, previously scattered in several locations around midtown, have

▶ *continued on page 5*

INSIDE

Clinical Insight:

Sculpting New Vision

The last issue of *Viewpoint* told the stories of three visual artists whose vision was saved by Columbia's Department of Ophthalmology.
Here are the stories of three other artists, all sculptors, who have been Columbia patients.

Robin Antar, a sculptor living in Brooklyn, relies on Columbia to safeguard the vision in her only functioning eye. Blind in her right eye since birth, Antar says she didn't even recognize her condition until, as a budding artist in her teens, she sculpted only one side of an abstract face. Today, carving fluid, lifelike objects from the raw material of hard stone, she captures and recreates a striking variety of everyday items from American pop culture. Whether the item is a blue-jean jacket, a tube of popular toothpaste, a bag of M&Ms, or a No. 2 pencil, she describes the work as "art mirroring life."

Antar had bad experiences with eye doctors until she found Stanley Chang, M.D. "I was on a plane coming home from Las Vegas," she says, "and people were talking about laser surgery. I asked, 'Who's the best doctor on the East Coast?' and three people said, 'Dr. Stanley Chang.' Now I go to him every year, and the last time I saw him, the vision in my good eye was 20/22." Recalling one incident—an eye injury she suffered doing weight training—she says Dr. Chang saw her immediately and diagnosed a vitreous pull. She notes, "He's available for emergencies, and when I'm concerned, he takes me seriously. He understands the patient's fears."

Lower Manhattan Classic, 2007 by Judith Shea.

Judith Shea, also a sculptor, lives in Manhattan. Her widely acclaimed work in textiles, bronze and wood is exhibited at the Metropolitan Museum of Art, the Whitney, the Museum of Modern Art, and other major museums around the country. Shea was about to work on a project in California when she realized something was terribly wrong with her right eye. "I was watching TV, looking at a speaker on a news show, and the

▶ *continued on page 2*

View from the Chair

Dear Friends,

After facing some of the most challenging economic times in many decades, the summer of 2010 is looking more optimistic for New York and for the nation as a whole. In keeping with these positive times, this issue of *Viewpoint* includes a look at the new Gloria and Louis Flanzer Vision Care Center, which opened with a ribbon-cutting ceremony on April 8 and began serving patients on April 12.

Charles Manley

This state-of-the-art Center, which occupies the entire second floor of 880 Third Avenue, represents our commitment to provide our patients with the latest in eye care services in a convenient and comfortable setting.

That vision and commitment to our patients are also embodied in our unique genetics program, led by pioneering researcher Rando Allikmets, Ph.D., which is the subject of an in-depth feature on page 6. Meanwhile, our clinical spotlight takes the reader on a tour of the Institute's retinal service, where renowned surgeons including Gaetano Barile, M.D. and William Schiff, M.D.—whom I am proud to have had as my own students early on in their careers—are now full professors managing patients referred by other retinal specialists for complex vitreoretinal surgeries.

Rising Talent revisits two remarkable young faculty members whom we met in our last issue, Leejee Suh, M.D. and Bryan Winn, M.D., and takes a closer look at the work they are doing—Dr. Suh in corneal transplantation without sutures and Dr. Winn in oculoplastics. And in our *Visionaries and Luminaries* section, we travel across the Atlantic to attend the Rank Prize ceremony, which honored Francis L'Esperance, Jr., M.D. and Stephen Trokel, M.D. for their irreplaceable contributions to the field of laser eye surgery.

We also return to the subject of vision and art with this issue. In the last edition of *Viewpoint*, we told the stories of visual artists who were able to continue to pursue their passions thanks to care they received at Columbia; in this issue, we profile talented sculptors who have similarly had their vision spared after being treated here.

Standing in the new Flanzer Center, with some of our generous benefactors, faculty members and medical school leadership, underscored for me once again the singular importance of the work we do here, how much we have achieved together, and how fortunate we are to have such a team of committed people within Columbia and beyond who help to make it all possible. Thank you for being part of that shared vision.

With all best wishes,

Stanley Chang, M.D.
K.K. Tse and Ku Teh Ying Professor
Edward S. Harkness Professor
Chairman, Department of Ophthalmology

Sculpting New Vision

continued from page 1

person's face was missing," she recalls. "Within 24 hours, I put out the word to three or four different people, and they all came back recommending Dr. Chang."

Dr. Chang diagnosed a macular hole and said they needed to schedule surgery as soon as possible. "But the project I was working on in California had been in the works for two years," Shea says. "So he told me to get the project done and come right back. In agreeing to briefly postpone the surgery, he was sensitive to the fact that I'm an artist and that it's my livelihood. He's a caring and considerate person."

Soda Can by Robin Antar.

Shea calls the restoration of her sight in a two-hour surgical procedure "a miracle," and considers herself extremely lucky to have been treated at Columbia. "The whole experience was very frightening and I'm very grateful," she says. "I've always had tremendous admiration and respect for good doctors and what they can do."

In fact, when Shea's friend Betty Woodman suffered an apparent hemorrhage in her right eye, Shea contacted Dr. Chang—even though Woodman was a long way from Manhattan. A resident of both New York and Florence, who spends six months a year in each city, Woodman is an internationally recognized sculptor—a ceramicist whose exuberantly colorful work is lauded and shown throughout the world and was featured in a 2006 retrospective at the Met.

Robin Antar

Woodman was at her home and studio in Italy when she spoke to Dr. Chang, and he knew exactly where she could get the expert care she needed. He referred her to one of his former students, Tomasso Rossi, M.D., now an eye surgeon in Rome. Dr. Rossi diagnosed macular degeneration and prescribed injections of Lucentis, which inhibits the growth of the abnormal blood vessels associated with the blinding disease. Since then, Woodman has been closely monitored and treated by Dr. Rossi during her six months in Italy, and by Dr. Chang when she's in New York.

"My eyesight has remained stable since the original damage, and I'm able to continue working as an artist," she reports. "I think perhaps my work has evolved to accommodate the changes in my vision, and the monthly visits to Rome have inspired a whole new body of work."

Indeed, the centerpiece of her latest show in Florence is a wall fountain 90 feet long, titled "A Visit to Rome." Perhaps Woodman will be similarly inspired by her regular visits to her ophthalmologist in Washington Heights. ■

Judith Shea

Nana Watanabe

Clinical Spotlight:

Retinal Service: Where the Complex is Routine

In 2009, a middle-aged woman from upstate New York walked into the Edward S. Harkness Eye Institute. Like many people with diabetes, she has retinal disease and is visually handicapped. She had lost vision in one of her eyes due to aggressive diabetic retinopathy, and multiple operations in her local community had not been able to save the eye. Now, she was facing a horrible prospect: the loss of the vision in her other eye to the same diabetic eye disease that had claimed the first.

Her doctor had referred her to the Eye Institute because of its reputation as a program that can handle the more complex and difficult retinal surgery cases. Stanley Chang, M.D., Professor and Chair of Ophthalmology and Director of the Institute, is a pioneer in the field of vitreoretinal surgery for complex retinal detachment due to diabetic retinopathy and various other disorders. Because of his leadership and guidance, the Columbia vitreoretinal surgeons have become some of the top experts for these challenging conditions.

"We treat severely injured eyes, eyes with advanced diabetic retinopathy, retinal detachment operations that have failed. In fact, many of these patients have had two, three, or sometimes four operations elsewhere," says William Schiff, M.D., Professor of Clinical Ophthalmology. "Initial management for routine retinal detachment is successful only about 90% of the time, so the need to repair a recurrent or persistent problem is not uncommon."

Every year in the United States, some 25,000 patients are treated for retinal detachment, while 65,000 patients with diabetes develop proliferative diabetic retinopathy, the most sight-threatening stage of their disease. In many cases—like the woman from upstate—patients may face the loss of vision in their remaining functioning eye.

"Retinal detachment can be a bilateral condition," says Dr. Schiff. "People who are predisposed in one eye may be predisposed in the other, such as with diabetic retinal detachment. Often patients who have had poor outcomes in one eye and are essentially blind in that eye can develop advanced disease in the other eye. Those are among the more challenging cases, and it is really essential that they go well. Following a successful operation, the patients may not have perfect vision, but often they can maintain the ability to ambulate and to manage independently."

So what gives Dr. Schiff and his colleagues, who include Gaetano Barile, M.D., Professor of Clinical Ophthalmology and Lawrence Glaubinger Scholar in Retinal Research, the ability to tackle cases that might daunt other retinal surgeons? It is a confluence of factors, they say, but it primarily comes down to experience.

"Retinal surgery is not necessarily complex. But if complications occur during these surgeries, we have managed so many eyes that have had complicated pathologies—hundreds of complex cases per year—that we have become much more comfortable with these difficult cases," says Dr. Schiff. "And our comfort level in the complex means that we handle the straightforward quite well."

Dr. Barile is quick to point out that "it is not just our names on the case" that make the difference for a patient with end-stage diabetic retinopathy or complex retinal detachment. "These cases require good assisting," he says. "We are privileged to be working at an academic medical center like Columbia where we have good fellows and a great team. The complex cases that take longer end up with better outcomes here for these reasons as well."

Charles Manley

William Schiff, M.D.

Charles Manley

Gaetano Barile, M.D.

But the retinal surgery experts still are not satisfied. "There are many cases where we can fix the eye anatomically, but the vision remains suboptimal," says Dr. Barile. "We can put things together in the eye as well as anyone; the problem lies with how much physiological function we are able to restore. For example, as we perform these second and third operations on recurrent retinal detachments, we are able to fix the anatomy, but we would like to have better functional outcomes in some cases."

Columbia has played a big part in innovations that drive retinal surgery toward that goal. For example, Drs. Barile and Schiff point to the revolutionary surgery performed last year by Lucian Del Priore, M.D., Ph.D., Professor of Clinical Ophthalmology and Robert L. Burch III Scholar (see *Viewpoint*, Fall 2009/Winter 2010), which involved the implant of an experimental artificial retina. This procedure allowed a woman with retinitis pigmentosa to see light and make out figures for the first time in 20 years. "That was probably the most revolutionary surgical procedure that has taken place here in the last decade," says Dr. Barile. "We want to see that kind of innovation continue."

For the woman from upstate New York, the surgical results that the vitreoretinal specialists are getting now are impressive enough. Several months ago, she returned for a follow-up visit—and was able to take the train to the City on her own. "She is seeing now, she is able to get around, and she is happy," says Dr. Schiff. "Those are the most gratifying cases—when patients can return to their normal activities of daily life." ■

L'Esperance, Trokel Receive Rank Prize

On February 8, 2010, two pioneering faculty members from Columbia's Department of Ophthalmology were honored with the 2010 Rank Prize for Optoelectronics. Francis L'Esperance, Jr., M.D. and Stephen Trokel, M.D., both Professors of Clinical Ophthalmology, joined several other leaders in the field of laser eye surgery at a lavish Ceremony held at the Royal College of Physicians in London, England.

The event was attended by a number of members of the British peerage, and presided over by Lord Selborne, KBE, FRS, the chairman of the Rank Prize Funds' Board of Trustees. "All the gentry were there," says Dr. L'Esperance. "We met scores of lords and ladies and other dignitaries. It was very impressive!"

The Rank Prize honors achievement in two diverse fields that were both of interest to the late Lord Rank: animal husbandry and nutrition, and optoelectronics. This year's optoelectronics prize focused on the application of excimer laser surgery to refractive correction of the cornea.

Each of the five optical pioneers recognized with the Rank Prize received an award of 15,000 GBP.

It all started about 20 years ago, when IBM acquired an excimer laser. James Wynne and Rangaswamy Srinivasan, two scientists at the IBM labs in Westchester County, New York, discovered—by placing their own fingernails in front of the laser—that unlike ruby, thermal, and other argon lasers, the excimer laser photoablated tissue without leaving residual charring, scar tissue, or pain.

Working with another scientist at IBM, Samuel Blum, they investigated further and found that the laser made clean, precise cuts that would be ideal for delicate surgeries. Building on these discoveries, in 1983, Dr. Trokel developed photorefractive keratotomy (PRK), the predecessor to today's LASIK corrective eye surgery, and in early 1987, Dr. L'Esperance began the first FDA-approved trial of corneal surgery using PRK.

"I was a laser enthusiast, working on all kinds of lasers like the argon and the krypton. It was a pretty exciting time," recalls Dr. L'Esperance.

"I'm still looking for challenging and wonderful things to do with lasers. The early days of the excimer laser are one of those rare times when physicists and chemists—the physical scientists—worked closely together with the medical scientists. The Rank Prize this year honored that continuum of science."

"My research here at the Eye Institute in the early 1980's created the scientific underpinnings of modern laser refractive surgery," says Dr. Trokel. "But there were many people who worked hard to develop this technology into a safe and reliable clinical instrumentation. It is a great honor to receive the Rank Prize which I believe also recognizes the many people who contributed to the development and maturation of this technology."

L to R: Rando Allikmets, Ph.D. with Michael Dean, Ph.D., who introduced him.

FFB Honors Allikmets

At its 2010 New York Dining in the Dark event, held on January 28, the Foundation Fighting Blindness (FFB) presented the Visionary Award to Rando Allikmets, Ph.D., William and Donna Acquavella Professor of Ophthalmic Science (in Ophthalmology and Pathology and Cell Biology) and Director of the Molecular Genetics Laboratory at the Edward S. Harkness Eye Institute.

The Foundation Fighting Blindness is the world's largest non-governmental source of research funding for retinal degenerative diseases, such as macular degeneration and retinitis pigmentosa. The Foundation's Dining in the Dark event offers a "rare and unique sensory awareness experience that will take guests on a journey of taste, sound, and touch... all in the dark. Created in Germany, Dining in the Dark is a one-of-a-kind concept that has been enjoyed by many people across Europe in cities such as Paris, Berlin, and Vienna." The event first came to the United States in 2005.

Nearly 300 guests attended the awards dinner, held at the Plaza Hotel. Following the presentation program, guests were served by visually-impaired volunteers and ate in total darkness for 30 minutes—illuminated not even by the glow of their cell phones.

Dr. Allikmets responded with modesty to the news of his award. "It was a little bit of a surprise, actually!" he says. "I'm not sure I'm a visionary. I'm just a scientist who works on things that I think are important, so I was honored to be chosen. The whole dining in the dark event is a very interesting concept. It gives those of us who *can* see a good perspective on what it's like when you can't see much at all. This is an important experience when you do the work that we do." ■

L to R: Tiia Falk, Joanna Merriam, M.D., Ph.D., Peter Gouras, M.D., John Merriam, M.D., Lyubov Petrukhin, Konstantin Petrukhin, Ph.D., Rando Allikmets, Ph.D., members of the department's research team and guests.

Above: Ian Taylor, NBE, MP.

Left, L to R:
Francis L'Esperance, Jr., M.D.,
Ian Taylor, NBE, MP,
Stephen Trokel, M.D.,
The Earl of Selborne.

Promotions

Rando Allikmets, Ph.D.
promoted to Professor of Ophthalmic Science (in Ophthalmology and Pathology and Cell Biology) effective January 1, 2010

Richard E. Braunstein, M.D.
promoted to Professor of Clinical Ophthalmology effective April 1, 2010

Amilia Schrier, M.D.
promoted to Clinical Professor of Ophthalmology effective May 1, 2010

Flanzer Center Opening

continued from page 1

now been brought together under one roof in the new Center. This consolidation offers patients easy access to a wide range of general ophthalmologists and specialists, who focus on cornea, cataract, glaucoma, oculoplastics (rebuilding the eye following major trauma or tumors), and retina diagnosis and treatment.

A light lunch and refreshments were served for the ribbon-cutting event. At 1:30 pm, Stanley Chang, M.D., Department Chairman, opened the ceremony, noting that the new Center came about in direct response to the needs of patients, who had long requested a centralized midtown practice. He explained that even though the Hospital's real estate board gave approval for the project, it was seen as a fundraising long shot—until Mr. and Mrs. Flanzer, the Center's major benefactors, along with other contributors such as Robert Burch, stepped forward.

Lee Goldman, M.D., Executive Vice President for Health and Biomedical Sciences and Dean of the Faculties of Health Sciences and Medicine, praised the department's commitment to providing high-quality care for all patients. "We take care of some of the most vulnerable people in America. At the same time we take care of people who could see any doctor in the world. This extraordinary breadth of commitment, from the most vulnerable to the most able, is in part what makes us so special. The only way we can do that is because so many people are so generous."

Stephen J. Corwin, M.D., Executive Vice President and Chief Operating Officer, NewYork-Presbyterian Hospital, who represented Hospital President Herbert Pardes, M.D., gave the Department of Ophthalmology his highest praise, noting that his own eye care and that of his family are entrusted to its doctors. "They give the most outstanding, first-rate, and compassionate care," he said. "You can call Stanley and his faculty at two in the morning, and you know they will be there for you."

Unfortunately, the Center's primary benefactors, Mr. and Mrs. Flanzer, were unable to attend the event, but Robert L. Burch III, who contributed a major gift to the Center, spoke about the wonderful care he has personally received from Dr. Chang and his team.

The facility opened for business the following Monday, April 12. All clinicians will be seeing their patients there at least one day a week. (The facility at 60th Street is now closed.) Appointments can be made by calling the central number, 212-305-9535. ■

Top, L to R:
Bernard Brown, Shirlee Brown,
Jean Chang, Stanley Chang, M.D.

Above:
Stanley Chang, M.D. making the presentation, with Stephen J. Corwin, M.D. and Lee Goldman, M.D.

Left, L to R:
Stanley Chang, M.D.,
Helen Kimmel, Burton Resnick.

Science Insight:

Unscrambling the Puzzle of Genetic Eye Disease

If you were diagnosed with retinitis pigmentosa (RP), an inherited eye disease that leads to progressive loss of vision as the retina deteriorates, your ophthalmologist would probably suggest that you take a daily vitamin A supplement. In patients with the common form of RP, vitamin A helps to slow the relentless march of retinal degeneration.

But for some patients with certain forms of RP, taking extra vitamin A may actually accelerate their eye damage. "RP is a name for a group of diseases currently caused by 40 to 50 known genes, and probably at least the same number of unknown genes," explains Rando Allikmets, Ph.D., William and Donna Acquavella Professor of Ophthalmic Science (in Ophthalmology and Pathology and Cell Biology) and Director of the Molecular Genetics Laboratory at the Edward S. Harkness Eye Institute. "If the genetic mutation involves one protein, vitamin A may be helpful. If it involves another protein—one known as *ABCA4*, which we identified in 1997—vitamin A would actually be harmful. Those patients have plenty of vitamin A, and it is actually not removed properly. Clinically, the disease looks very much the same, but genetically, it is different."

Charles Manley

Rando Allikmets, Ph.D.

Understanding the genetics of eye disease is a critical mission of Dr. Allikmets' lab, and of the department. The eye genetics program has three overarching goals: to identify genes associated with eye disease, particularly retinal diseases; to develop new gene-based therapies for inherited eye disease; and to develop and refine precise genetic diagnostic methods for eye disease.

It is a complex task. The *ABCA4* gene, first cloned by Dr. Allikmets, is a large gene that can have many disease-causing mutations. "Close to 600 disease-causing mutations have been identified on *ABCA4* already, and that is fairly unusual," says Dr. Allikmets. "It is known as the 'Stargardt disease gene,' but it is also associated with many other eye diseases, including retinitis pigmentosa , cone-rod dystrophy, pattern dystrophy, and bulls eye macular degeneration. These diseases are caused, all or in part, by mutations in *ABCA4*."

For nearly 10 years Dr. Allikmets and his team at the Eye Institute have been working on diagnostic methods to conduct comprehensive screening for genetically-linked eye diseases. "There are genes and diseases where you can screen for one or two mutations, and you get the picture. But in this case, looking at only a few mutations will not give you much at all," Dr. Allikmets says. "So we have designed microarrays that contain all known mutations. We can screen a patient in one step with that array, and if a patient has any of the known mutations, we will find them."

That is an extraordinary achievement. For a disease such as retinitis pigmentosa (RP), there are mutations on at least 40 to 50 genes that can cause a similar disease picture—one that is clinically almost indistinguishable from "real" RP, but that may require a very different approach—such as minimizing vitamin A exposure.

"If screening one gene is a problem, screening 15, 20, or more is practically not doable with conventional methods," says Dr. Allikmets. "So using the same microarray technology, we took all the mutations from all the genes that can cause RP. We split the genes into dominant and recessive, and into x-linked groups. Then we designed chips that put all dominant RP genes on one chip, and all recessive RP genes on the other. We can now screen 17-20 genes for known mutations in one step."

Charles Manley

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

Thanks to an anonymous gift from a foundation, a new Eye Diagnostics Laboratory has been opened on the second floor of the Eye Institute, where genetic screening is made available to patients who come to the Eye Institute for care. For approximately one-third of Eye Institute patients who have degenerative eye disease, their disease-causing mutation can be identified.

"This is the only such program in the tri-state area supported by the National Institutes of Health (NIH)," says Stephen Tsang, M.D., Ph.D., Assistant Professor of Ophthalmology, Pathology and Cell Biology and Joel Hoffman Scholar. "All patients not only get genotyped here, but their information will also go into an international registry, part of the NIH's eyeGENE™ program. If any institution, anywhere around the world, is recruiting patients for a gene therapy trial, these patients will be contacted."

Thanks to this comprehensive genotyping, a graduate student in Columbia's genetics department, who is now studying at Carnegie-Mellon, was able to learn that she carries a mutated gene associated with dominant optic atrophy. Using her information, Chyuan-Sheng (Victor) Lin, Ph. D., Professor of Pathology and Cell Biology, working in the Bernard and Shirlee Brown Glaucoma Laboratory, generated a mouse model of the disease. "We are not able to offer any immediate treatment benefits to the patient, but once we can figure out how to treat the mice who carry the disease, we can improve our management of it in humans as well," says Dr. Tsang.

"Right now, we screen primarily for mutations on the *ABCA4* gene," says Dr. Allikmets. "We are starting to screen for Leber's congenital amaurosis, a rare inherited eye disease associated with severe vision loss that is caused by mutations on some 15 genes. One of those genes is now in clinical trials for gene therapy."

And that, of course, brings up the next key question: once you know that your vision loss is caused by a particular genetic mutation, what can you do with that information? Are there any specific treatments available?

At this time the answer is mostly no. The *RP65* trial is the first such trial of gene therapy for an eye disease; gene-based therapies for inherited eye diseases are still primarily in the research phase. But as with *RP65*, new treatment options are on the horizon—some of them being studied at the Eye Institute.

"Our Stargardt gene therapy project, which also includes Janet Sparrow, Ph.D., Anthony Donn Professor of Ophthalmic Science, and Peter Gouras, M.D., Professor of Ophthalmology, and is funded by the Foundation for Fighting Blindness and private donors, focuses on direct gene therapy in the mouse model, adding the normal gene to the eyes," says Dr. Allikmets. "We have had quite good success in the mouse model, and now in collaboration with Oxford Biomedica in Oxford, U.K., we expect clinical trials to begin later this year."

This progress underscores the importance of having proper genetic screening performed. "You cannot correct one genetic defect with another gene," says Dr. Allikmets. And for recessive eye diseases, gene therapy holds particular promise. "Since they are caused by the fact that you have both copies of the gene mutated, adding a normal gene should improve or cure the disease, depending on how far it has progressed."

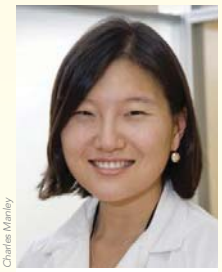
In the meantime, knowing precise genetic information about a patient's eye disease can mean major improvements in care—such as determining whether or not a patient should take vitamin A supplements or avoid excess vitamin A as much as possible. "A treatment may be around the corner," says Dr. Allikmets. "And even by just understanding your genetic mutation, you can help yourself by taking certain precautions. That knowledge is not a cure or a treatment, but it will have an impact." ■

Young Talent

A Closer Look

In the last issue of Viewpoint, our Rising Talent feature welcomed several outstanding new young faculty members. In this edition, we will take a closer look at the exciting work being done by two of these specialists.

The leading cause of traditional corneal transplantation in the United States is corneal swelling related to endothelial dysfunction—and it's an area of ophthalmology that fascinates Leejee Suh, M.D., Assistant Professor of Clinical Ophthalmology. "You can develop corneal swelling in many ways: from an underlying condition like Fuchs' dystrophy, trauma to endothelial cells from multiple surgeries, as well as from complications of cataract surgery or a very dense cataract," she explains.



Charles Manley

Leejee H. Suh, M.D.

Until recently, the common surgical approach to corneal transplantation was penetrating keratoplasty, in which the damaged cornea was removed and replaced with a full-thickness cornea transplant from an eye donor. This type of surgery was grueling for patients, involving a three- to four-month recovery time before sutures could be taken out, and as long as a year before they could recover somewhat functional vision. "There is also a lot of post-operative astigmatism or distortion – each suture causes this," says Dr. Suh. "It also creates a weaker eye. You are more prone to having a rupture of the eye after an injury if you have had a full transplant."

These drawbacks spurred the development of a new surgical approach to corneal transplantation, which Dr. Suh has brought to the Eye Institute from her fellowship and faculty stint at the University of Miami's Bascom Palmer Eye Institute. It is called DSAEK (Descemets Stripping Automated Endothelial Keratoplasty), and Dr. Suh is one of a few surgeons at Columbia currently providing the procedure.

Descemet's membrane is the basement membrane that lies between the corneal proper substance and its endothelial layer. In DSAEK, the surgeon strips off the membrane (along with the attached endothelium), and then inserts a graft containing a small fraction of the posterior cornea, the new membrane, and healthy endothelial cells from the donor eye. "We insert that graft in the eye, inject an air bubble under the graft to push it upward, and let it unfold and attach to the patient's own cornea," Dr. Suh says. "Once the healthy endothelial cells start pumping water out of the cornea, there is a 'Velcro' effect."

Patients must lay face up for a day after the procedure to allow the surface tension to bind the graft to the cornea, but after that, they can expect to get functional vision back within a month. "They also avoid problems with sutures in the eye and making the cornea weaker," Dr. Suh says. "We are using this procedure for patients who have corneal swelling related to many different conditions, such as glaucoma and multiple surgeries."

There are some contraindications: if patients have any scarring in other areas—for example, in the more anterior portion of the cornea or elsewhere beyond the endothelial cells—those patients will probably need the whole cornea removed and replaced. "But most patients with swelling will probably qualify," says Dr. Suh. She is now performing several DSAEK procedures each month.

Charles Manley

Bryan J. Winn, M.D.

In the new Oculoplastic Surgery Suite within the recently-opened Gloria and Louis Flanzer Vision Care Center at 880 Third Avenue (see page 1), Assistant Professor of Clinical Ophthalmology Bryan Winn, M.D. is rebuilding the essential structures surrounding and supporting the eye, such as eyelids and eye sockets, as well as treating the age-related changes around the eyes and eyelids.

In the aftermath of surgery for many dermatologic cancers, including squamous cell carcinoma and basal cell carcinoma, some patients are left with eyelids that are damaged or missing altogether. Working with Columbia's skin cancer specialists, such as Desiree Ratner, M.D. and Monica Halem, M.D., Dr. Winn must essentially rebuild entire eyelids, borrowing from neighboring structures, to create new eyelids that work and that look like you would expect an eyelid to look.

"On other parts of the body, it can be easier to just close the tissue after a skin cancer removal," he says. "But it is very important to make the eyelid fully functional for covering and keeping the eyeball itself lubricated and safe. To rebuild the stiffness of the eyelid, we will often borrow from the cartilage of the ear or the hard palate of the mouth," explains Dr. Winn. "The surgical techniques are very well tested, but they require meticulous attention to detail. Recreating normal lid function is the key to success."

This type of reconstructive surgery is done in conjunction with the excision of the tumor—usually within a day or two—so that the area does not dry out and become infected and painful. Function is often restored immediately, and the patient recovers sensation gradually over the course of the next few months. "There is always some bruising and swelling for a couple of weeks, but by about three months after surgery, it can be difficult to notice that something was done," Dr. Winn says.

Dr. Winn is also at the forefront of an effort to promote more minimally invasive procedures in aesthetic ophthalmology and oculoplastic surgery. "It is becoming more common to perform smaller aesthetic facial procedures, more often, to keep up with aging-related changes. I think this is a smart move, as opposed to doing significant surgeries involving multiple procedures to try to reverse 60 years of aging all at once."

While many of the surgical techniques involved in oculoplastic surgery have not changed much over the past several years, what *has* changed is the trend toward more minimally invasive procedures, such as Botox and dermal fillers. "Using fillers and Botox in a less traditional way, we can essentially perform a brow lift chemically," says Dr. Winn. "We can inject Botox just underneath the brow, and out to the side to give it a nice subtle lateral flair. Then we add filler into the brow for plumpness. This combination restores a youthful look and is one new alternative to the traditional brow lift."

These less invasive options may have to be repeated more often than more traditional surgical procedures, but such approaches have another advantage, according to Dr. Winn. They do not just address the descent of tissue that occurs with aging, but volume loss as well. "Aging does not only mean that tissues are sagging," he explains. "They are shrinking and losing the fat that normally just stayed underneath the skin and gave it that youthful appearance. That is why you see more hollows and wrinkles. We can counteract the forces of aging by refilling hollowed-out areas. It is a 3-D approach, as opposed to the old, two-dimensional paradigm, 'If it's sagging, lift it.' That understanding is a fairly new concept over the last couple of years in facial plastic surgery."

Most of these procedures have minimal "down time"—the time between surgery and when you look good enough to be seen in public. More invasive surgical procedures such as face lifting, blepharoplasty, and brow lifting carry with them an extended period of bruising and swelling. "With blepharoplasty or a brow lift, for example, people have a fair amount of bruising and swelling of the lids for the better part of two weeks. They have to take it easy with rest and cold compresses for the first couple of days, and then they can ease back to their regular activity over the next two weeks," Dr. Winn says. "For a busy person on the go, that is a lot. With minimally invasive procedures, you have down time that ranges from almost none at all for Botox, to a couple of days with dermal fillers."

Not all eyelid surgery is cosmetic, Dr. Winn is quick to stress. "At the Oculoplastic Surgery Suite we perform both aesthetic and functional procedures. You may notice that there is extra skin over the eyelids and you do not like the appearance—but it may also be interfering with your field of vision and causing the lid to droop. At that point, it becomes a medical condition," he says. "What we often do is treat both the functional and aesthetic components of these conditions. Insurance will often help with the functional aspect, which takes much of the economic burden away from the patient." ■

Preview

State-of-the-art Flanzer Vision Care Center Opens

The state-of-the-art Gloria and Louis Flanzer Vision Care Center *opened with a ribbon-cutting ceremony on Thursday, April 8. Story inside.*

L to R:
Stanley Chang, M.D.,
Michael Jaharis,
Dr. Henry Kissinger,
Lee Goldman, M.D.

Far right, L to R:
John Manice,
Jane Heffner,
Stanley Chang, M.D.

Lower right:
Stanley Chang, M.D.
with Robert L. Burch III.

New Vision for Artists

This issue tells the stories of three artists, all sculptors, *whose vision has been saved by Columbia doctors.*

Eli Ping Weinberg

Betty Woodman with her sculpture, *Roman Girls*, 2008.

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**

Viewpoint

Columbia University Medical Center

The Edward S. Harkness Eye Institute and
The Department of Ophthalmology
635 West 165th Street
New York, NY 10032-3797