

Images

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Gene Therapy Restores Sight

Premier
Global Education

World's First
3-D Printed Eye



Bascom Palmer Eye Institute's mission is to enhance the quality of life by improving sight, preventing blindness, and advancing ophthalmic knowledge through compassionate patient care and innovative vision research.

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Dear Friends and Colleagues:

Gene therapy is one of the new frontiers of vision treatment. By injecting normal genes into a patient's eyes it is now possible to correct inherited blinding diseases that were previously incurable.

Last March, a 9-year-old boy was treated successfully with a recently FDA-approved form of gene therapy at Bascom Palmer. He had been diagnosed at age 2 with Leber congenital amaurosis, a blinding disease caused by a genetic mutation, and had steadily lost most of his vision. Within days of his treatment, his sight was restored and he is now busy exploring his world.

Patients with glaucoma, macular disease, diabetic retinopathy and other sight-stealing conditions can also look forward to advances in treatment, as scientists and clinicians team up to share their knowledge and experience.

Today, it takes a deep commitment to scientific research, supported by public and private funding, to advance the frontiers of medicine. It also requires a collaborative approach involving the multidisciplinary resources of academic medical centers like the University of Miami Miller School of Medicine, as well as leaders in ophthalmology around the world.

Our scientists and clinicians are leading a national study on the most effective surgical treatments for medically uncontrolled glaucoma. Other Bascom Palmer researchers are developing imaging techniques to diagnose keratoconus, a bulging of the cornea, at an early stage and reduce the risk of vision loss. Our Naples center was recently accepted into the Diabetic Retinopathy Clinical Research Network to facilitate nationwide clinical research for diabetic retinopathy and other retinal diseases. Also this year, we will open the Lois Pope Center for Retinal & Macular Degeneration Research at our Palm Beach Gardens campus, which will be the most comprehensive retina clinical research facility in the country. Additionally, the sponsored research enterprise at Bascom Palmer has been continuously growing from \$3.8 million in 2004 to \$16.1 million in 2018.

Whether introducing new therapies for our patients, deploying new imaging technology, conducting leading-edge research or addressing escalating healthcare costs, we are committed to excellence in every aspect of our operations. Thanks to the dedication of our clinician-scientists and 1,200 team members, we have gained the respect of the U.S. and international ophthalmology community, as evidenced by our continued #1 in ophthalmology rankings by *U.S. News & World Report* and *Ophthalmology Times*.

On behalf of the patients we help each day, I thank you for your continued support and for helping make all of our good work possible.



Eduardo C. Alfonso, M.D.
Kathleen and Stanley J. Glaser Chair in Ophthalmology
Director, Bascom Palmer Eye Institute



Leading-Edge Strategies for Treating Inherited Blinding Conditions

New Breakthroughs in Gene Therapy



Nine-year-old
Creed Pettit
with
Dr. Audina
Berrocal

Creed Pettit, Mathew Pray and Julio Adorno Nieves are among a select group of Bascom Palmer Eye Institute patients benefiting from a remarkable advance in treating incurable blinding conditions. After receiving leading-edge gene therapy for inherited eye disorders, each patient's vision improved dramatically.

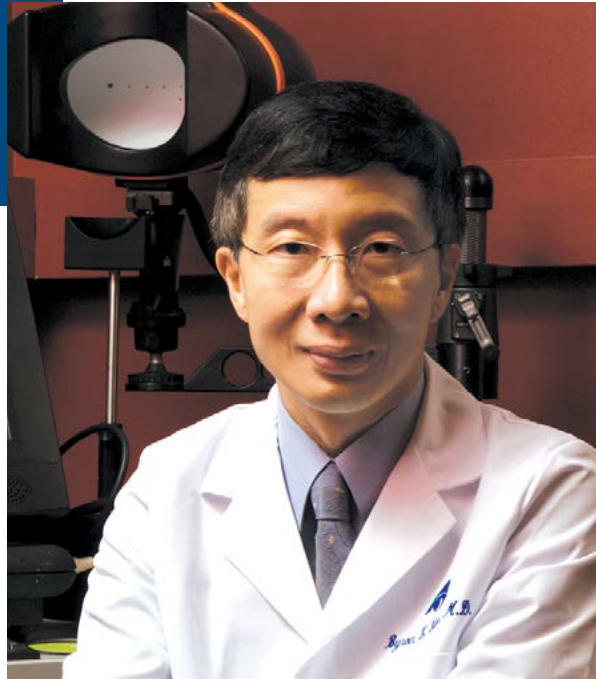
"I could see a rainbow for the first time," said Creed, a 9-year-old from Mount Dora, Florida, who was legally blind from Leber congenital amaurosis (LCA) before receiving treatment last spring. "I can read now without a super-bright light and even read things written in pencil." LCA is an inherited retinal disease that causes severe visual impairment in infancy or early childhood.

For more than a decade, Bascom Palmer's clinicians and scientists have been in the forefront of gene therapy, contributing to research studies and leading clinical trials to stabilize or restore vision in adult and pediatric patients. Today, the Institute has one of the largest gene therapy programs in the nation with additional clinical trials and studies coming soon. "Gene therapy is a viable option to restore sight for people with inherited eye diseases," said Byron Lam, M.D., professor of ophthalmology and holder of the Robert Z. and Nancy J. Greene Chair in Ophthalmology. "It is important that patients are seen by a clinician who can diagnose inherited eye

"I could see a rainbow for the first time" – Creed Pettit

“Gene therapy is a viable option to restore sight for people with inherited eye diseases.”

– Byron Lam, M.D.



Dr. Byron Lam

disorders. Genetic testing and careful evaluation are necessary to determine if these new therapies are appropriate for them.”

How gene therapy works

Scientific researchers have identified more than 250 genes that play a role in inherited retinal diseases. Drawing on that knowledge, biomedical companies have focused on developing clinical treatments for a handful of those genes linked to rare blinding conditions, including achromatopsia, choroideremia, Leber congenital amaurosis, Leber hereditary optic neuropathy, X-linked retinoschisis, Stargardt macular dystrophy and X-linked retinitis pigmentosa.

In gene therapy, a tiny dose of adeno-associated virus (AAV) is used as a transmission vector to carry functional new genes into the retina. Once delivered, the new genes use the body’s own cellular mechanisms to produce functional proteins with a therapeutic impact on the retinal cells.

Every step of the process has to be carefully managed for patient safety and maximum efficacy of the treatment, according to John Guy, M.D., professor of ophthalmology and the Rodgers Research Chair in Ophthalmology. “We work as a team in these complex cases,” he said.

The multidisciplinary support for gene therapy includes the research pharmacy of the Sylvester Comprehensive Cancer Center of the University of Miami Miller School of Medicine, which stores the therapeutic vectors at -80 degrees Fahrenheit and

delivers them to the operating room just in time for the procedures.

“We spend a lot of time planning cases, beginning with a comprehensive study of the patient’s retinas,” said Janet L. Davis, M.D., professor of ophthalmology and holder of the Leach Chair in Ophthalmology. Advanced imaging technology, including optical coherence tomography (OCT) and fundus autofluorescence is used to determine if a patient is a suitable candidate.

Next, the surgical team carefully maps the patient’s retina to determine precisely where to apply the gene-changing vector. For patient safety, only one eye is treated at a time. “We have only one opportunity to get it right, because there may be an inflammatory reaction afterwards,” said Davis, adding that it takes courage for patients to participate in these clinical trials. “We are inspired by our patients, who often come from long distances for treatment, and strive to provide them with support throughout the process.”

During the gene therapy procedure for inherited retinal diseases, a space under the retina in the peripheral region of the macula (the central vision area of the retina) is created. The fluid with the gene therapy vector is injected and spread to the targeted



Dr. Ninel Gregori

area of the retina while watching the macula with an imaging device to avoid potential complications. Ninel Gregori, M.D., associate professor of clinical ophthalmology, typically works with Davis on gene therapy surgeries on adult patients, while Audina M. Berrocal, M.D., a pediatric retinal surgeon and professor of clinical ophthalmology, usually operates on children.

“In 2016, during the first gene therapy trial at Bascom Palmer, we integrated OCT imaging into the surgery so the surgeons could watch the injection in real time and ensure the medication was going to the proper place while avoiding complications,” said Gregori. “We published this new technique for injecting the gene therapy in order to share our method with other surgeons.”

A decade of progress

In the past decade, Bascom Palmer has built an extensive gene therapy program that includes ophthalmologists, genetic counselors and research scientists studying various forms of inherited eye diseases.

Dr. Janet Davis

Initially, Lam and Davis took part in a Johnson & Johnson-sponsored study using human umbilical stem cells to treat Stargardt macular dystrophy, a rare genetic disease. “We were trained in the special surgical procedures for administering subretinal injections,” said Davis. “Since then, we have continued to refine our techniques to benefit our patients.”

“Subsequently, a philanthropic donation to Bascom Palmer funded our first gene therapy trial,” said Lam. “That was for a phase II trial for choroideremia, and it opened the door for further studies.”

Since 2007, Davis and Gregori have performed approximately 40 gene therapy injections under the macula in patient eyes. Furthermore, the Institute’s physicians have contributed to multiple research studies involving gene therapy. For instance, Guy has been involved in several clinical trials to treat Leber hereditary optic neuropathy (LHON), which is typically caused by a mutation



“For my six-month appointment with Dr. Guy, I was able to fly from Tampa by myself, take a cab to Bascom Palmer and return home. It is truly a miracle.”

– Mathew Pray

that impairs a mitochondrial gene called ND4. That mutation leads to the loss of the retinal ganglion cells, which carry visual signals through the optic nerve to the brain.

In 2015, Mathew Pray was one of five Bascom Palmer patients in the trial who received one injection of a specially designed virus carrying normal DNA to replace the genetic damage causing LHON. Prior to the injection, he was unable to drive or read a computer screen. “Since the injection, I noticed a big difference in my ability to see color and contrast right away, and my vision continues to improve,” said Pray. “For my six-month appointment with Dr. Guy, I was able to fly from Tampa by myself, take a cab to Bascom Palmer and return home. It is truly a miracle.”

More recently, Lam, Davis and Gregori have been involved in an international clinical gene therapy trial for choroideremia (CHM), a rare inherited disorder that causes progressive vision loss, ultimately leading to complete blindness. The disease is caused by a genetic defect of the X chromosome. While females are carriers of the disease, typically males suffer the full effects of complete blindness. “The early results from these clinical trials have been very positive and may soon offer individuals a first-ever treatment for CHM,” said Lam.

Since the FDA approval of voretigene (Luxturna) in December 2017, Davis and Gregori have used their same surgical technique involving intraoperative OCT to treat six eyes of three adult patients with RPE65 Leber congenital amaurosis.

“We are a great team, and we all contribute to each other’s development,” said Davis. “Going



Dr. John Guy

forward, we plan to expand our training program and teach ophthalmologists around the world to do these complex surgical procedures.”

First in U.S.

A Puerto Rican patient with X-linked retinitis pigmentosa (XLRP) is hoping to save his vision after an innovative gene therapy procedure at Bascom Palmer. On August 23, Julio Adorno Nieves, 23, became the first U.S. patient to receive new genes for his inherited, blinding condition in a worldwide Nightstar Therapeutics clinical trial.

“My vision has been getting worse over time, and I’ve had a lot of difficulty seeing at night,” said Nieves at a check-up one week after his surgery. “I’m still in recovery, but I’m hoping to see a change soon, thanks to Bascom Palmer’s fantastic professional team.”

Lam said XLRP is most commonly caused by a mutation on the RPGR gene on the X chromosome, which causes blindness in about 1 in 15,000 men. Women are usually less affected because they have two X chromosomes, but they can pass the mutation on to their children.

“Introducing a functional copy of the RPGR gene using an engineered viral vector can correct the underlying cause and induce a long-lasting therapeutic effect,” said Lam, the principal investigator



From left, seated, Dr. Janet Davis, Julio Adorno Nieves, Santa Nieves and Jorge Adorno Giusti. From left, standing, Dr. Audina Berrocal, Dr. Ninel Gregori and Dr. Byron Lam

in the phase I/II Nightstar clinical trial focusing on the safety and dosage of the treatment.

Davis and Gregori delivered the new genes to Nieves' left eye in a 99-minute procedure. The surgery was observed by Robert MacLaren, M.D., a professor of ophthalmology at the University of Oxford in the United Kingdom, who developed the gene-replacement therapy.

"Julio's surgery went very well, and we were able to cover the entire central area of the retina where he still had some limited vision," said Davis.

Nieves was the 16th patient worldwide to participate in the Nightstar trial.

"We put a lot of planning into this ground-breaking surgery and are proud that Bascom Palmer Eye Institute was the first U.S. site for this clinical trial," said Gregori. "Our patient and his family were waiting for this for many years."

The patient's parents — Santa Nieves and Jorge Adorno Giusti, both pharmacists from Bayamon, Puerto Rico — are hoping the experimental treatment will help their other two sons, Jorge, 25, and Juan, 21, who also have XLRP.

"About 30 members of my family have this genetic disorder and many of the men are legally blind," said Santa Nieves. "Before we decided to have children, I consulted with several specialists and had genetic testing done. They assured me at that time that I was not a carrier of the disease, so I expected to have healthy children."

But when her children started walking, she noticed they were bumping into the edges of doors, an early symptom of the loss of peripheral vision due to retinitis pigmentosa (RP).



“After 15 years of waiting, my dream has come true. Miracles happen, and great people make them possible.”

– Santa Nieves

“We used my sister’s and dad’s office to examine as many of the family members as we could,” said Audina Berrocal. “It was an amazing collaborative project.”

Through the years, the Bascom Palmer physicians stayed in close touch with the family, and when Lam was asked to participate in the Nightstar gene therapy trial, he thought immediately of the Nieves family. “With gene therapy, some patients will have their central vision improve, while others may not,” Lam said. “Hopefully, as Julio’s central vision improves, his night vision will get better as well.”

Meanwhile, Julio Nieves, now a computer scientist, urges other men with XLRP to keep learning about the disease and seek out new treatments. “I hope that my two brothers can also be treated,” he said. To help raise awareness, Santa Nieves established the Retinitis Pigmentosa Foundation of Puerto Rico, a nonprofit organization to educate families, provide support to patients, and inform them about the latest advances. With guidance from Bascom Palmer, the Foundation plans to create a central database for RP patients on the island.

After Julio’s surgery, Santa Nieves expressed her “unconditional thanks” to Lam and the entire Bascom Palmer team. “After 15 years of waiting, my dream has come true,” she said. “Miracles happen, and great people make them possible.” ■

“However, they were not diagnosed with RP until 2002 when they were 7, 9 and 11 years old,” she said. “They told us our children were destined to lose their sight irreparably.”

A doctor in Bayamon urged Santa Nieves to contact Bascom Palmer, which has deep ties to Puerto Rico’s ophthalmology community. Jose A. Berrocal, M.D., the first fellow to train at Bascom Palmer in 1964, became the island’s first retina specialist. His eldest daughter, Maria, joined him in private practice, while his youngest, Audina, joined the Bascom Palmer faculty.

Responding to Santa Nieves’ request, Audina Berrocal tested Santa Nieves’ sons. Once it was determined they had XLRP, they were referred to Dr. Lam at Bascom Palmer in Miami for genetic testing. In 2003, Lam and Berrocal led a Bascom Palmer medical team that tested more than 100 members of Santa Nieves’ family in Puerto Rico.

To schedule an appointment with a Bascom Palmer specialist, please call 1-888-845-0002 or visit bascompalmer.org.

World-Class Medical Education

Every year, vision specialists from around the world travel to South Florida to learn from Bascom Palmer's renowned clinicians and researchers.

Students considering a career in ophthalmology or physicians continuing training through ophthalmology residencies and fellowships also receive a warm welcome from the Institute's faculty.

Now, Bascom Palmer has solidified its commitment to training the next generation of clinicians and researchers with the creation of the Global Center for Ophthalmic Education.

"Providing outstanding patient care, advancing our understanding of ocular diseases through research, and medical education are the three aspects of our mission of service," said Steven J. Gedde, M.D., professor of ophthalmology and holder of the John G. Clarkson Chair in Ophthalmology. Gedde, vice chair for education and the residency program director at Bascom Palmer, added "We want our medical students, residents and fellows, as well as ophthalmologists around the world, to be well prepared to deliver outstanding patient care in their communities."

Launching a new education center

The Institute's new center is dedicated to advancing ophthalmic knowledge and sharing the latest scientific and clinical findings with the worldwide ophthalmic community, according to Maria Serrano-Brosco, executive director.

"We are continuing Bascom Palmer's tradition of leadership in ophthalmic education," she said. "We organize international partnerships, collaborate with ophthalmic societies and institutions around the world, and produce professional lectures and educational events here in South Florida."

The new center encompasses all aspects of ophthalmic education, from medical students at the University of Miami Miller School of Medicine



Generation of Leaders in Ophthalmology

to in-person, video and online programs for ophthalmologists in South Florida, the Caribbean, Latin America, the Middle East, Europe, Asia, Africa and Australia.

“Our programs have a common theme – advancing ophthalmic knowledge globally,” said Serrano-Brosco. “Many of our offerings have been available for years, but the center allows us to focus on them more closely as a team.”

To house the new education center, a major modernization of the Mary and Edward Norton Library of Ophthalmology at Bascom Palmer is now in the planning stages. The library experienced considerable flooding damage during Hurricane Irma, and the necessary renovations provided an ideal opportunity to transform it into a library of the 21st century. “We are creating a new space that encourages collaboration and communication among our faculty members, residents and fellows, said Gedde. “It will become the epicenter of the educational mission for our Institute.”

Training residents and fellows

For more than 55 years, Bascom Palmer has made residency and fellowship training one of its highest priorities. The Institute’s residency training program is ranked as the best in the nation by *Ophthalmology Times*, an industry periodical, and has also been ranked #1 by Doximity.com, the largest online physician network, multiple times. “Our fellowship training programs are also considered among the best in the country,” added Gedde. “We have approximately 35 fellows train each year at the Institute, in addition to 21 residents.”

Every year, Bascom Palmer’s faculty face the painstaking task of selecting a handful of residents and fellows from the hundreds of well-qualified applicants. “We receive more than 500 applications for seven residency positions each year,” said Gedde. “That allows us to bring the best and the brightest into our training program.”

One example of “home-grown talent” is current co-chief resident Ashley Crane, M.D., who earned her bachelor’s and medical degrees from the University of Miami, before entering Bascom Palmer’s ophthalmology residency program.

“For me, being accepted as a resident at Bascom Palmer was a dream come true,” she said. “It’s been wonderful to be part of a group of highly motivated and wonderfully qualified peers. It’s like joining the worldwide Bascom Palmer family.”



This year is particularly special for Crane as she and co-chief resident Kimberly Tran, M.D., prepare to go into vitreoretinal surgery. “This is the first year that Bascom Palmer has had two female chief residents,” she said. “That marks another milestone for the Institute.”

Bascom Palmer 2018-2019 chief residents Dr. Ashley Crane and Dr. Kimberly Tran

During the first year of the residency training at Bascom Palmer, residents learn the basic techniques of diagnosis and medical management of a variety of eye diseases. The second year is dedicated to in-depth exposure to ophthalmic subspecialties: retina, corneal and external diseases, glaucoma, neuro-ophthalmology, pediatric ophthalmology and oculoplastics, as well as an introduction to intraocular surgery. Within the final year of the program, residents assume full responsibility for the medical and surgical care of patients, learning about all types of eye diseases as they receive further subspecialty training.

Bascom Palmer is in the forefront of using simulation training to help residents develop a step-by-step understanding of surgical procedures. Also included in the second-year training is spending 10-20 hours on a surgical simulator at the Miami Veterans Medical Center, as part of the Institute’s team approach to caring for the nation’s veterans.

“This training is part of a systematic training protocol that includes classroom sessions on modern cataract extraction techniques and vitreoretinal surgical procedures,” said Ninel Gregori, M.D., associate professor of clinical ophthalmology and chief of eye care at the Miami Veterans Medical Center. “After implementing our simulator training,



Dr. Chris Alabiad

we found that the complication rate decreased for our patients,” she said, “Furthermore, our residents found the training worthwhile and recommended it be continued.”

Educating medical students

Medical students at the Miller School usually get their first clinical exposure to patients with vision disorders at Bascom Palmer, which serves as the department of ophthalmology for the school.

Kara M. Cavuoto, M.D., associate professor of clinical ophthalmology, who completed an ophthalmology residency and a fellowship in pediatric ophthalmology and adult strabismus at Bascom Palmer, directs the ophthalmology rotations and elective classes for the Miller School students at Bascom Palmer and at the Miami Veteran’s Medical Center.

“Our medical student programs run for two to four weeks and include an option of ‘shadowing’ Bascom Palmer’s physicians for an additional two weeks in a clinical or operating room setting,” Cavuoto said. “We also offer a rotation in ocular pathology – an option that is available at only a handful of academic institutions.”

Surgical simulation is also provided for medical students taking the ophthalmology elective. They spend half a day in the HelpMeSee surgical simulation program at the University’s Gordon Center for Research in Medical Education with instruction from voluntary assistant professor of ophthalmology,

Daniel E. Hutter, M.D. “That allows them to do hands-on ophthalmic surgery in a virtual setting, giving them practice before actually operating on the eye,” Cavuoto said.

Several years ago, Chris R. Alabiad, M.D., associate professor of clinical ophthalmology and assistant dean for student affairs at the Miller School, developed a “flipped classroom” one-week course for second-year medical students. “A medical education fellow and I created 60 short videos for students to watch,” he said. “This allows them to come to the classroom ready to discuss clinical cases. It’s a very cool and innovate way to teach.”

Alabiad now teaches the class with Carol L. Karp, M.D., professor of ophthalmology and holder of the Richard K. Forster Chair in Ophthalmology. He also partners with Cavuoto to counsel and mentor fourth-year medical students seeking a residency in ophthalmology.

“We review the students’ statements, conduct mock interviews and encourage them to connect with patients, staff and faculty who can help them move ahead with their medical careers,” he said. “It’s very rewarding to watch them be accepted at Bascom Palmer or other excellent residency programs across the country.”

Another component of the Institute’s graduate training is an innovative Master of Science in Vision Science and Investigative Ophthalmology (MVSIO) program. The first of its kind in the world, MVSIO offers comprehensive training in ophthalmic translational research, problem-based learning, management and a skill set available only at Bascom Palmer,



Dr. Kara Cavuoto

Inter-American
Course
in Clinical
Ophthalmology
(Curso) 2018



as it prepares students for a Ph.D. program in vision science and investigative ophthalmology. Led by Bascom Palmer's faculty members and supported by leading-edge technology, the program was conceived and is directed by Sanjoy K. Bhattacharya, Ph.D., professor of ophthalmology. The MVSIO program currently has five students, including three international scholars. Three other students graduated in May 2018.

Global medical education

Bascom Palmer maintains strong ties with South Florida's clinical and research community, offering a year-round series of educational programs that include weekly Grand Rounds, as well as a Distinguished Lecture Series and Frontiers in Vision Science lectures.

The Institute also reaches out to vision specialists around the world. One example is the Institute's Inter-American Course in Clinical Ophthalmology (Curso) for practicing ophthalmologists in Latin America and the Caribbean. Now in its 40th year, Curso recently brought more than 800 ophthalmologists from over 30 countries to Miami for sessions presented with simultaneous English-Spanish translation.

"Great things happen when you bring ophthalmologists together," said Serrano-Brosco. "Along with learning from the presentations and lectures, these clinicians and researchers interact with each other, discuss their cases, and look at research opportunities to network with each other."

Juan F. Batlle, M.D. (resident and chief resident, 1985) actively participates in teaching at Curso. "Bascom Palmer's founders dedicated their lives to ophthalmology with a passion and left us with a legacy to pursue excellence in patient care, teach ophthalmology and conduct research that opened our minds to a new era of technology and opportunity," Batlle said. "We owe Dr. Edward W.D. Norton, (Bascom Palmer's founding chair), an eternal debt of gratitude and hold him and the Institute as examples of what can be done to make this world a better place for those with visual impairments."

In addition to fostering peer-to-peer relationships throughout the Western Hemisphere, Bascom Palmer partners with ophthalmology societies in North Africa, the Middle East, Europe and other locations to produce webinars, online programs and other educational offerings. "Our goal is to make it easier and more convenient for ophthalmologists to learn about the latest advances in their vision specialties," said Serrano-Brosco.

Along with continuing medical education courses, the Global Center hosts a robust clinical observer program. Last year, 60 observers, including 45 international participants, spent one to three months shadowing Bascom Palmer clinicians, learning skills to take back to their own countries.

The Institute also welcomes research observers who spend several months learning from professionals at Bascom Palmer's Evelyn F. and William L. McKnight Research Center. This year, the Institute will host about 50 research scholars, a number that has grown dramatically from only 16 in 2009. Another 25 professionals and students have participated in the research trainee program.

A worldwide alumni association

Looking ahead, Gedde says the Global Center for Ophthalmic Education will play an increasingly important role in connecting students, residents and fellows with Bascom Palmer's 1,176-member global alumni association.

Currently, the Institute's alumni are serving their communities in 41 countries around the world, including more than 45 graduates who have become ophthalmology department chairs at medical schools and teaching hospitals.

"Our new global center will coordinate our outreach initiatives as we enhance our educational programs," said Gedde. "By investing in communications technology, as well as traditional lectures and conferences, we will continue to fulfill our mission of advancing medical knowledge throughout the world." ■



Maria Serrano-Brosco and Dr. Juan Batlle





“ The last prosthesis from Dr. Tse really hit it out of the park. It’s very comfortable, fits well and looks good on me. I can’t say enough good things about Dr. Tse. ”

— Rick Arkush

Seeing is Believing

World's First Prosthetic 3-D Eye is Latest Breakthrough for Bascom Palmer



A comfortable and attractive prosthetic

Dedicated to his patients' appearance and comfort and psychological well-being, as well as their medical care, Tse has spent years trying to find an alternative to the time-consuming and costly process of fabricating a prosthetic for the orbital socket.

"My objective is to convert prosthesis fabrication to a low-cost, non-contact process that is adaptable to a remote setting," said Tse, professor of ophthalmology and holder of the Dr. Nasser Ibrahim Al-Rashid Chair in Ophthalmic Plastic, Orbital Surgery and Oncology.

Tse's breakthrough came when he realized that digital scans of the patient's healthy eye could be "flipped" and merged with images of the empty socket. This composite is then sent to a 3-D printer to create a prosthetic eyeball and socket from plastic materials – a brand-new process in the field of ophthalmology.

"I was watching a National Geographic special about the space shuttle on TV," he said. "One of the astronauts had lost a wrench in space, and the ground crew was able to scan a similar wrench and transmit the data to reproduce it with a 3-D printer in the shuttle. I said to myself, 'We can do that for patients across the world who need a prosthesis.'"

Now in the experimental stage, the realistic prosthesis gives patients a positive alternative to wearing an eye patch, or as Kenyatta had done, combing her long hair over the socket. Instead, the patient can insert the customized prosthesis, which consists of a hard plastic eyeball and soft supporting sponge-like material. Eyeglasses with broad rims conceal the edges for a more natural appearance.

Cancer survivor Rick Arkush, a marketing professional at Smith Research in Deerfield, Illinois, wore an eye patch for 12 years rather than wear an uncomfortable prosthetic. In 2005, he was diagnosed with adenoid cystic carcinoma (AdCC) of the lachrymal gland. Tse and his team imple-

When she was 7 years old, Kenyatta English was diagnosed with a rare orbital tumor. Four years later, David T. Tse, M.D., a Bascom Palmer specialist in orbital cancers and reconstructive surgery, was able to remove the tumor and save Kenyatta's life. But in the process, he had to excise the eyeball and surrounding orbital tissues, leaving her with an empty socket.

After years of research and development, Tse was able to help Kenyatta with a first-of-a-kind highly realistic orbital prosthesis. Using an advanced digital scanning and 3-D printing process in the Nasser Al-Rashid Orbital Vision Research Center at Bascom Palmer Eye Institute, Tse and his colleagues have developed an innovative approach that could help millions of other patients around the world who have undergone this extensive surgical procedure called exenteration.

"I love Dr. Tse," said English, who is now 25 and lives in Palm Beach County. "My new prosthetic is very realistic and comfortable to wear. I am so thankful for his work and the support I've received through the years from Bascom Palmer."

mented a novel treatment protocol developed at Bascom Palmer to destroy the tumor and save his life. “After the cancer removal, I had six rounds of chemotherapy and radiation and stayed in touch with Dr. Tse,” Arkush said.

Earlier this year, Arkush flew to Miami and tried an initial version of the new 3-D printed prosthesis. Two “fitting” modifications were made using the digital data, so he did not have to travel again to Bascom Palmer. “The last prosthesis from Dr. Tse really hit it out of the park,” Arkush said. “It’s very comfortable, fits well and looks good on me. I can’t say enough good things about Dr. Tse. I’m still here 13 years after my cancer diagnosis, and now I can wear the new prosthesis instead of a patch.”

A challenge facing patients

To develop the new prosthesis, Tse worked closely with University of Miami biomedical engineers Landon Grace and Mauro Fittipaldi, and ophthalmology researchers using new equipment within the laboratories of the Nasser Al-Rashid research center funded by philanthropic donations.

“It’s been a team effort every step of the way,” said Daniel Pelaez, Ph.D., research assistant professor of ophthalmology and biomedical engineering and scientific director of the Nasser Al-Rashid Orbital

Vision Research Center. “Through the R&D stage, we have been able to automate many of the scanning and production steps, accelerating the process while improving the comfort and fit of the prostheses.”

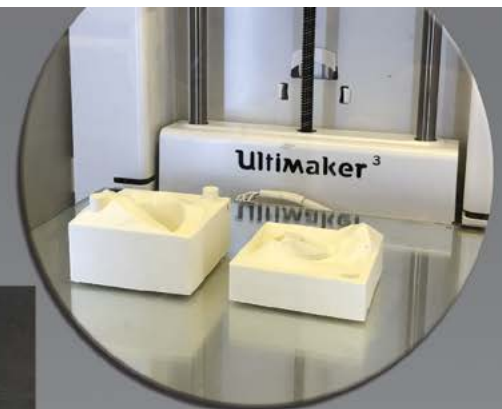
The new 3-D prosthetic eye is designed to address the major challenges facing patients who have undergone exenteration. Losing an eyeball and orbital tissues can lead to chronic depression and social isolation. Access to orbital prostheses is limited by proximity to a trained prosthetist and there are only a limited number of these specialists around the world, primarily in developed countries. Cost is also a factor, as orbital prosthesis fabrication is a time-intensive process that typically costs \$6,000 to \$15,000 for each eye. Furthermore, a typical orbital prosthesis can be uncomfortable if poorly fitted. Skin oil or dirt can build up on the surface to discolor it. Curled edges are frequent complaints leading to nonuse.

Children needing a prosthetic eye may need to have it fabricated every few years as they grow. “Sometimes the first prosthesis is donated by a charitable organization,” said Pelaez. “But once it wears out, many patients are unable to afford a replacement. At other times, they find the prosthesis is too uncomfortable to wear or doesn’t match their skin tone, so it looks artificial.”

Multiple scans are taken of the patient’s facial features including the shape of the socket and normal contours of the eye to generate a 3-D digital file of their facial anatomy.



A digital colorimeter is used to register the RGB values for the patient’s skin tone, and a silicone color palette is generated.



A 3-D mold is printed out of acrylonitrile butadiene styrene polymer using the information from the digital 3-D scan file for the contour of the socket (back part of the mold) and eye (front part of the mold).

A biomedical breakthrough

Now, Tse, Pelaez and their team members are excited about the potential for changing the traditional process for the better. “We can create these prostheses faster, better and cheaper – and we’re just getting started,” said Pelaez.

At the Bascom Palmer research center, Pelaez and his team first use a portable 3-D laser scanner to capture images of the patient’s healthy eye and orbit. The device can do 800 scans per second, so the process takes about 10 minutes per eye.

“Because the scanner is handheld, it would be possible to capture digital information from patients anywhere in the world,” said Tse. However, the scanner cannot “look” under an eyelid, so this process is not suited for patients who have undergone enucleation, a less extensive surgical procedure that leaves the orbital tissues intact.

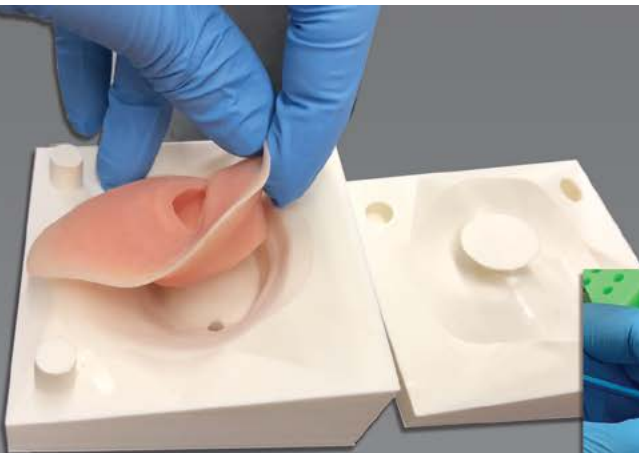
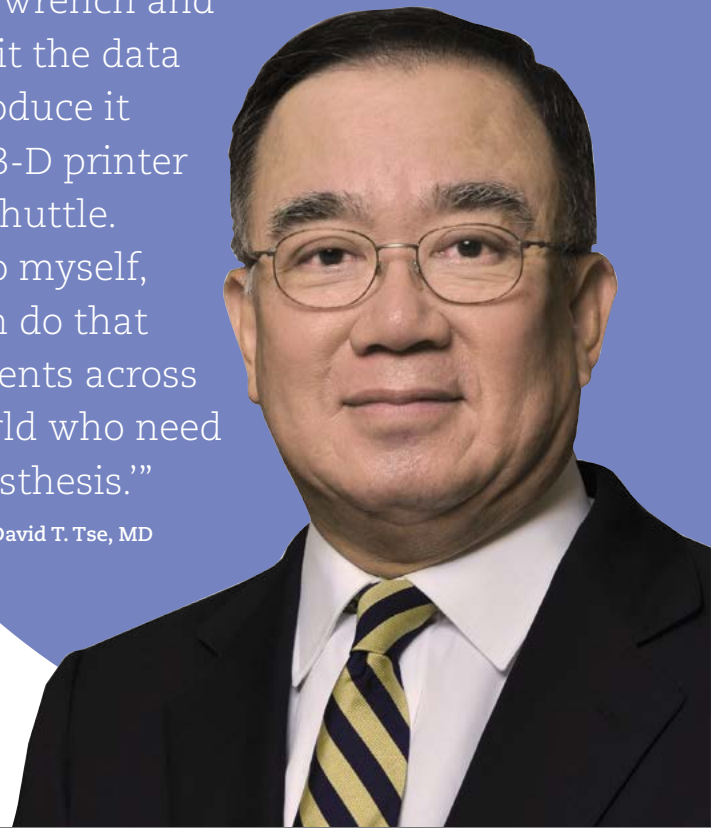
Next, a color meter is used to measure the patient’s skin tone and the color of the patient’s iris is also identified for a better match of the eyeball.

Then, a digital representation of the empty orbital region is constructed using a similar scanning process. Facial features are used to maintain the symmetry of the two eyes as mirrored data from the healthy eye is combined with the orbital defect scan. Finally, the 3-D surfaces are meshed to define the shape of the prosthesis.

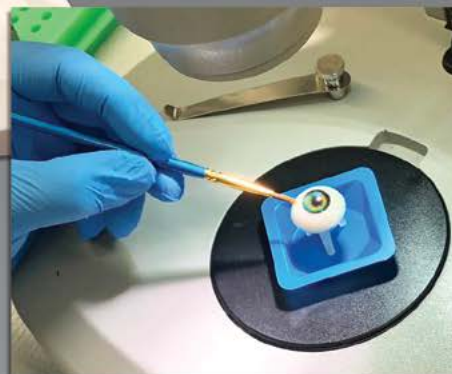
“ I was watching a National Geographic special about the space shuttle on TV. One of the astronauts had lost a wrench in space, and the ground crew was able to scan a similar wrench and transmit the data to reproduce it with a 3-D printer in the shuttle. I said to myself, ‘We can do that for patients across the world who need a prosthesis.’”

— David T. Tse, MD

Dr. David Tse



The mold is assembled and color-matched. Soft elastomer is injected to generate the prosthetic. Once cured, the elastomer prosthetic is removed from the mold.



Separately, the eyeball is cast out of acrylic resin with an iris imprint matching the patient’s iris color obtained from the digital scanning data.



Prosthetic and eyeball are then assembled prior to the finishing touches such as extrinsic coloration for skin surface details and texture and eyelash attachment.

“ We can create these prostheses faster, better and cheaper – and we’re just getting started.”

— Daniel Pelaez, Ph.D.



Dr. Daniel Pelaez

Meanwhile, the lab team mixes a biocompatible elastomer (liquid plastic) with colored particulates to match the patient’s skin tone, like mixing paint in a hardware store. Then, the digital information is sent to a 3-D printer that molds the elastomer into the right size and shape. Because the data is stored securely, it can be used to make multiple prostheses if necessary in the future.

After the polymer material cures overnight, a sealant is applied to the outside surface. However, the back remains soft and pliable for easy insertion and removal from the socket.



Olga Barroso

Finally, acrylic paints are used on the front of the prosthetic to create a realistic appearance. “That’s the artistic part,” said Pelaez. “It takes about an hour to hand paint the subtle details of each eye, and you need a steady hand.”

The result of this innovative biomedical process can be life changing. Just ask Olga Barroso, 52, a Miami resident who was treated by Tse six years ago. “Once I had recovered from the treatment, I still had to deal with the psychological effect,” she said. “My son and I would go to the park and other kids there would ask questions about my eye. It was very difficult for me.”

Last year, Barroso became Bascom Palmer’s first patient for the 3-D prosthetic eye. “It has made such a difference in how I feel about myself,” she said. “Now, I can put on sunglasses, go to the store and look just fine. Dr. Tse is doing an awesome job. I am very grateful that we have him here in South Florida.”

Looking ahead

Having demonstrated the effectiveness of this new process, Tse and his team hope to move into large-scale production, creating prostheses for patients around the world. “We have been able to reduce the turnaround time on each prosthesis in our laboratory to about three days,” said Pelaez. “Now, we would like

Save The Eye: A Thank You to Bascom Palmer

Dear Bascom Palmer,

I owe my life to the doctors who have given me the opportunity to fight this fight. In particular, Dr. David Tse – the doctor from Bascom Palmer Eye Institute who removed my eye.

I wear a patch over my left eye. For a long time, it was a reminder of what I had been through. Now, it's a reminder of what I can accomplish – and what I want my legacy to be.

Eleven years ago, my family and friends knew that something wasn't right. My left eye was drooping. If it wasn't for them forcing me to see a doctor, I wouldn't be here today.

I was diagnosed with a very rare form of cancer called lacrimal gland adenoid cystic carcinoma. I was lucky enough to become a patient of Dr. David Tse and Dr. Pasquale Benedetto at the University of Miami Miller School of Medicine in Miami, Florida. I was only the 14th patient they had encountered with this type of cancer, and was told that in order to survive, my eye would have to be removed. It was shocking.

The truth is ... I was really lost. But you learn that you have to make the best of what you're given. Losing the eye saved me from death. When I realized that – and it took me a long time to realize how blessed and fortunate I was – that's when it became part of my normal life. I got to live again. If I didn't have it removed, I would have been dead in about two years. There was no other option.

Earlier this year, Dr. Tse told me his dream is to make realistic and affordable prostheses through the use of a 3-D printer. This printer could be used all over the world for people who could not afford a prosthetic eye, or for people who don't have insurance to cover this type of expense.

I knew I had to thank him for saving my life, and I came up with the idea of "Save The Eye (STE)," which uses the three letters of his last name. Now, it's playing out – and it's how I envisioned it.

My dream is to get 50,000 people to give \$10 each to cover the cost of the printer and also the staff to operate it. I want my legacy to be to fulfill Dr. Tse's dream – which is now my dream – and help people all over the world who probably would never get this opportunity. That would mean so much to me.

I've learned that this is what it's all about; to give back, it feels so cool. It's the coolest thing I've ever experienced.

This is a labor of love for me. I'm truly blessed to still be around.

– Rick Arkush

If you would like to support the "Save The Eye Project," please contact the development office at (305) 326-6190 or visit bascompalmer.org/giving

to scale up the process using larger, industrial-scale equipment and develop portable units that could be deployed around the world."

Ideally, a local eye specialist in Latin America, Asia, Africa or the developed world could use a portable scanner or a mobile kiosk to capture a patient's digital facial data. Then, that information could be uploaded to Bascom Palmer to produce the prosthesis, which could then be shipped back directly to the patient almost anywhere in the world.

Meanwhile, Tse is already working on the next challenge: Devising an eyeball prosthesis for patients with an intact eyelid that could be programmed to move from side to side, and blink simultaneously with a patient's healthy eye. That might involve incorporating a computer chip and a light sensor into a special set of glasses.

"Through the years, orbital surgeons have improved our ability to remove malignant tumors affecting the eyeball and orbit," added Tse. "But many patients never feel whole after the procedure. The new digitally produced prosthesis is a giant step in the right direction to heal those psychological scars. If we could one day add the ability to blink and move the eyeball it would truly be transformative in improving our patients' quality of life. I'm confident that day will come." ■



Bascom Palmer Ranked #1 Again!



Bascom Palmer has once again been named the best ophthalmology program in the nation in two prestigious national rankings. For the 17th time, **U.S. News & World Report** ranked Bascom Palmer “Best in Ophthalmology” in its annual Best Hospitals edition.



BEST HOSPITALS FOR OPHTHALMOLOGY		
Rank	Hospital	Reputation (%)
1	Bascom Palmer Eye Institute, University of Miami, Miami	54.7
2	Wills Eye Hospital, Thomas Jefferson University, Philadelphia	50.3
3	Wilmer Eye Institute, Johns Hopkins Hospital, Baltimore	39.2
4	Mass. Eye and Ear Infirmary, Massachusetts Gen. Hosp., Boston	27.0
5	Stein and Doheny Eye Institutes, UCLA Medical Ctr., Los Angeles	22.6
6	Duke University Hospital, Durham	14.1
7	University of Iowa Hospitals and Clinics, Iowa City	13.2
8	Kellogg Eye Center, Michigan Medicine, Ann Arbor	8.9
9	Cole Eye Institute, Cleveland Clinic, Cleveland	8.1
10	UCSF Medical Center, San Francisco	7.7
11	New York Eye and Ear Infirmary of Mount Sinai, New York	6.8
12	USC Roski Eye Institute, Los Angeles	5.9

Ranked by U.S. News & World Report 2018-2019

Ophthalmology Times also ranked Bascom Palmer as the nation’s **#1 Overall Ophthalmology Program** in addition to naming Bascom Palmer **First in Clinical Care** and **First in Residency Program** in its Best Programs Survey. Bascom Palmer’s robust research program was ranked second in the nation after the Johns Hopkins Wilmer Eye Institute.

Bascom Palmer’s residency program has also repeatedly received the #1 ranking in the nation by reputation from **Doximity.com**, an online physician network that evaluates and ranks residency programs. Under the leadership of Steven J. Gedde, M.D., the residency program is continually recognized as the premier training ground for young ophthalmologists. ■



Sheryl Stephenson, group editorial director, *Ophthalmology Times*, (center), presents Dr. Eduardo Alfonso (left) and Dr. Steven Gedde (right) the Best Overall Program award.

“Bascom Palmer Eye Institute provides unsurpassed expertise in all eye conditions, ranging from the routine to the rare. We are honored to be recognized by our colleagues around the nation for the work that we do every day to protect, preserve and restore vision.” – Eduardo C. Alfonso, M.D.

Power List 2018

World's 100 Most Influential People in Ophthalmology



Dr. Eduardo Alfonso



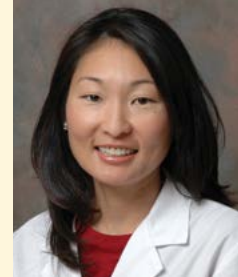
Dr. Harry Flynn, Jr.



Dr. Philip Rosenfeld



Dr. Richard Parrish, II



Dr. Sonia Yoo

Five Bascom Palmer Eye Institute faculty members are among those honored as the Top 100 most influential people in the world of ophthalmology. **EDUARDO C. ALFONSO, M.D., HARRY W. FLYNN, JR., M.D., PHILIP J. ROSENFELD, M.D., PH.D., RICHARD K. PARRISH, II, M.D., and SONIA YOO, M.D.,** were named to The Ophthalmologist Power List 2018.

The members of the Power List, which include physicians, vision scientists and business leaders, are selected from nominations received from throughout the world. "We are extremely gratified to be recognized among the world leaders in the field of ophthalmology," says Alfonso. "Bascom Palmer has a rich tradition of excellence that focuses on delivering exceptional patient care and groundbreaking vision research. We are also pleased that eight additional doctors on the Power List completed their training at Bascom Palmer – a reflection of our outstanding residency and fellowship programs."

Physician, surgeon, researcher and chairman of Bascom Palmer, Alfonso is known for his clinical expertise and research in eye diseases, corneal surgery, corneal transplantation and ocular microbiology. He was also named to the Power List in 2014 and 2016.

Rosenfeld, professor of ophthalmology and vitreoretinal specialist, has been a pioneer in the use of drugs to prevent blindness in neovascular (wet) age-related macular degeneration, a leading cause of vision loss among the elderly. The results of his work

have saved vision in millions and have become the standard of care for retina specialists throughout the world. This is the third time Rosenfeld was named to the Power List.

An internationally known retina specialist, Flynn is an expert in the field of diabetic retinopathy with special interests in vitreoretinal surgery. He has served as the president of the Vitreous Society and the Retina Society.

Parrish, a world-renowned glaucoma specialist, dedicated scientist and educator, is editor-in-chief of the *American Journal of Ophthalmology*. His research interests have focused on improving patient care through clinical trials in glaucoma.

Yoo, a professor of ophthalmology and expert in vision correction surgery, is recognized as one of the world's most skilled refractive and cataract surgeons, with exceptional experience and knowledge of the field.

Eight other doctors on the 2018 Power List trained at Bascom Palmer: Alan Bird, M.D., (fellow, 1969); Keith Barton, M.D., (fellow, 1996); Stanley Chang, M.D., (fellow, 1979); Peter Kaiser, M.D., (fellow, 1997); Robert Osher, M.D., (resident, fellow, 1981); Harry Quigley, M.D., (fellow, 1977); Kuldev Singh, M.D., (fellow, 1992); and Boris Stanzel, M.D., (research fellow, 2002).

In 2017, Ranya Habash, M.D., assistant professor of ophthalmology, was included in the Power List that featured ophthalmology's "Top 50 Rising Stars." ■

Awards and Honors

Sharing Expertise at AAO

Bascom Palmer regards education within the field of ophthalmology as one of its highest priorities. This year, 70 of Bascom Palmer's doctors and scientists presented 200 lectures, symposiums, courses, posters and papers during the 2018 American Academy of Ophthalmology's (AAO) annual meeting.

Congratulations to **PHILIP J. ROSENFELD, M.D., PH.D.**, for delivering the premier lecture in ophthalmology – The Edward Jackson Memorial Lecture - during the AAO Opening Session. The AAO praised Rosenfeld as exemplifying the science of ophthalmology through his use of innovative imaging techniques as well as his contribution to the understanding of the basic pathophysiology, diagnosis and treatment for age-related macular degeneration.

Bascom Palmer alumnus **STEVEN T. CHARLES, M.D.**, (resident, 1973) was named the 2018 Laureate award-ee. Charles, a distinguished retinal surgeon in Memphis, Tennessee, is known for developing many of the techniques and devices used by vitreoretinal surgeons around the world.

JANET L. DAVIS, M.D., described by AAO as an "ophthalmology luminary" delivered the C. Stephen and Francis Foster Lecture on Uveitis and Immunology, and also received a Secretariat award.

Congratulations to **AUDINA M. BERROCAL, M.D.**, professor of clinical ophthalmology, for receiving the Bernice Z. Brown Memorial Lecture Award at the Women in Ophthalmology annual symposium. Berrocal was recognized for her contributions within the field of ophthalmology and to the advancement of women in the profession.

Selected for her commitment and dedication to mentoring in medical student education. **KARA CAVUOTO, M.D.**, associate professor of clinical ophthalmology,



Dr. Philip Rosenfeld

Kudos to **CAMILA VENTURA, M.D.**, (research fellow, 2017) for receiving the Artemis Award that recognizes a young ophthalmologist who demonstrates caring and service to an exemplary degree.

Also at the AAO meeting, Bascom Palmer faculty members received these outstanding honors:

ANAT GALOR, M.D., **THOMAS E. JOHNSON, M.D.**, and **AUDINA BERROCAL, M.D.**, received Senior Achievement Awards; **KARA M. CAVUOTO, M.D.**, **WENDY LEE, M.D.**, and **VITTORIO PORCIATTI, D. SC.**, received Achievement Awards; **WILLIAM CULBERTSON, M.D.**, received the Lifetime Achievement Award from the International Society of Refractive Surgery, and **EDUARDO C. ALFONSO, M.D.**, received the Education Award from the Pan-American Ophthalmological Foundation.

was named as a "Rising Star" in *Vision Monday* magazine's Most Influential Women in Optical Awards.

PAUL PALMBERG, M.D., PH.D., professor of ophthalmology, received the 2018 Educator Award from the American Glaucoma Society. A member of the Bascom Palmer faculty since 1980 and esteemed clinical and surgical instructor, Palmberg also received the Robert Ritch Award for Innovation and Excellence in Glaucoma from the Glaucoma Foundation.

Doctors Shine in Florida

KRISHNA KISHOR, M.D., associate professor of clinical ophthalmology and outgoing president of the Florida Society of Ophthalmology (FSO) had the pleasure of presenting three Bascom Palmer physicians with prestigious awards at the FSO's annual meeting.



Recognized for his unlimited personal contribution to quality ophthalmic patient care, pediatric ophthalmologist **CRAIG MCKEOWN, M.D.**, received the Shaler Richardson, M.D. Service to Medicine Award.

Dr. Craig McKeown

The John R. Brayton, Jr. M.D. Leadership Award was presented to vitreoretinal specialist **STEPHEN G. SCHWARTZ, M.D., M.B.A.**, for his leadership and dedication to preserving the profession of ophthalmology.

ARINDEL MAHARAJ, M.D., PH.D., a glaucoma specialist and cataract surgeon, received the Michael R. Redmond, M.D., Outstanding Leadership Award. This award recognizes an ophthalmologist younger

than 40 years old who demonstrates leadership, service, competence and devotion to the high ethical and professional standards of the organization.

Dr. Arindel Maharaj and Dr. Krishna Kishor



Dr. J. William Harbour

J. WILLIAM HARBOUR, M.D., ocular oncologist and holder of the Mark J. Daily Chair in Ophthalmology, and **DANIEL PELAEZ, PH.D.**, research assistant professor of ophthalmology, have been awarded a \$250,000 grant by Alex's Lemonade Stand Foundation for their 2018

Innovation Grant application, "Molecular Landscape for Targeted Therapy in Retinoblastoma." Harbour and Pelaez anticipate their work could lead the way to the first targeted therapeutic strategy in retinoblastoma,



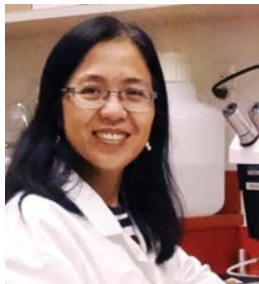
Dr. Alfonso Sabater meets with U.S. Representative **Ileana Ros-Lehtinen (R-FL)**. Prior to her retirement from Congress, **Ros-Lehtinen** was co-chair of the **Congressional Vision Caucus**, a bipartisan coalition of congressional members dedicated to strengthening and stimulating a national dialogue and policy on vision-related problems and disabilities.

ALFONSO L. SABATER, M.D., PH.D., assistant professor of clinical ophthalmology, was recently named an Emerging Vision Scientist by the National Alliance for Eye and Vision Research. Selected for his innovative vision research, Sabater was recognized for his work on regenerative medicine in corneal diseases. Emerging scientists visit members of Congress to thank them for their essential support of the National Institutes of Health and National Eye Institute. Sabater's work at Bascom Palmer is supported by the Beauty of Sight Foundation and the Florida Lions Eye Bank. He is also the recipient of the 2018 Eye Bank Association of America's Richard Lindstrom Research Grant for work related to corneal transplantation.

LUIS E. VAZQUEZ, M.D., PH.D., assistant professor of clinical ophthalmology, received a \$50,000 award from the Alcon Research Institute for his work on the modulation of ocular blood flow for treatment of glaucoma and other eye diseases.

the most common type of eye cancer in infants and children under the age of 6.

The Harbour Ocular Oncology Laboratory also received awards for their continuing research into uveal melanoma. An award of \$100,000 from A Cure in Sight will aid in establishing a methodology for screening variants of unknown significance in the disease. This specific methodology does not currently exist and will provide the foundation for future discoveries. A Helman Family-MRA Team Science Award from the Melanoma Research Alliance will also support the laboratory's work on metastatic uveal melanoma.



Dr. Xiangrun Huang

Congratulations to **XIANGRUN HUANG, PH.D.**, research associate professor of ophthalmology, for receiving the 2018 Dr. Douglas H. Johnson Award for Glaucoma Research from the BrightFocus Foundation. The Foundation also awarded \$150,000 for Huang's re-

search on understanding the optical properties of the tissues of the eye, especially the retinal nerve fiber layer and translating basic knowledge into improvements in the clinical diagnosis of glaucoma.



Dr. Delia Cabrera Debuc

DELIA CABRERA DEBUC, PH.D., research associate professor of ophthalmology, received a \$120,000 award from the Alzheimers Association for her novel ocular screening approach to identify early biomarkers in Alzheimer's disease. She is developing an objective test using a low-cost approach to see the brain through the eye to identify the people at the greatest risk for cognitive impairment.

Congratulations to **TA CHEN PETER CHANG, M.D., RICHARD K. PARRISH, II, M.D., and ELIZABETH VANNER, PH.D.**, for being IRIS Registry - American Glaucoma Society Research Initiative Grant recipients, with an award of \$75,000. Vanner was also selected to receive a Research to Prevent Blindness/American of Ophthalmology Award (AAO) for IRIS Registry Research. The AAO's Intelligent Research in Sight (IRIS) Registry is the nation's first comprehensive eye disease clinical registry. Vanner, director of Bascom Palmer's biostatistics center, will lead the center's efforts to determine important glaucoma research questions.

Bascom Palmer is one of the first academic institutions to initiate the IRIS Registry. IRIS integrates with electronic health records and allows physicians and surgeons to share clinical data. Upon review of this huge body of information, ophthalmologists can compare their performance against benchmarks and ensure the best possible outcomes for their patients in the delivery of eye care.

BASCOM PALMER has received an award of \$175,000 from the Lighthouse Guild International to provide online courses and materials for comprehensive vision rehabilitation training for Bascom Palmer's ophthalmologists and ophthalmology residents. These courses will disseminate information about vision impairment and vision rehabilitation to help doctors identify patients in need of vision rehabilitation services.



Dr. Wei Li

The National Eye Institute has awarded **WEI LI, PH.D.**, research associate professor of ophthalmology, a 5-year, \$1,918,750 research grant entitled "A Diabetic Retinopathy-Associated Vascular Permeability Factor." Its successful implementation will reveal new molecular factors contributing to diabetic macular edema. The American Diabetes Association also awarded Li a basic science award in the amount of \$114,999 for his innovative research in developing a novel disease-selective therapy for

diabetic retinopathy, a complication of diabetes that affects the eyes and the leading cause of vision impairment and blindness among working-age adults.

MARCO RUGGERI, PH.D., research assistant professor of ophthalmology, received a 2-year, \$422,000 research grant (R21 award) from the National Institutes of Health, for a project entitled, "Intraoperative OCT-based wavefront aberrometer." The goal of the project is to develop new technology for the operating room that will guide surgeons by enabling measurements of the eye during surgery. Ruggeri also received a 2018 Wallace H. Coulter Foundation Grant for a project entitled "Algorithm for cataract surgery planning." The aim of the project is to facilitate and improve the selection of intraocular lenses in patients undergoing cataract surgery. The project team at the ophthalmic biophysics center includes **DRS. FABRICE MANN, JEAN-MARIE PAREL, FLORENCE CABOT and SONIA YOO.**

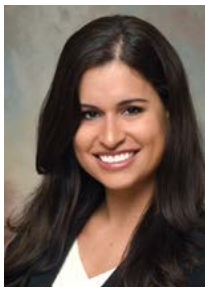


Dr. Marco Ruggeri

Welcome New Faculty

Bascom Palmer Eye Institute is pleased to announce the appointment of three new faculty members. With these physicians, the Institute has increased the size of its faculty to 73 physicians and 19 scientific investigators. This team of 92 is committed to continuing Bascom Palmer's 56-year history of advancing the practices of ophthalmology through innovations in therapeutics, diagnostics and vision research.

CARLA OSIGIAN PROBST, M.D., joins the faculty as an assistant professor of clinical ophthalmology. Osigian received her medical degree from the University of Panama School of Medicine prior



to completing a residency in ophthalmology at Hospital Santo Tomas (Panama). She then competed a two-year fellowship

in pediatric ophthalmology and adult strabismus at Bascom Palmer. Osigian's areas of expertise and research include pediatric eye disorders, complex strabismus in adults and children, and comprehensive ophthalmology. She is available for consultation at Bascom Palmer in Naples.

ALFONSO L. SABATER, M.D., PH.D., a corneal and external diseases specialist, joins Bascom Palmer as an assistant professor of ophthalmology. Sabater received his medical degree from



the University of Valencia (Spain) followed by a residency in ophthalmology as well as a doctoral degree in

cell therapy from the University of Navarra (Spain). Following his residency he completed a research program in ocular surface disorders as well as a clinical fellowship in cornea and external diseases at Bascom Palmer. His areas of expertise include ocular surface disorders, corneal transplants and cataract surgery. Sabater's research interests include stem therapy applications for corneal regeneration, ocular surface reconstruction and translational biological therapies for corneal and ocular surface diseases. Sabater is available for consultation at Bascom Palmer's locations in Miami, Palm Beach Gardens and Coral Gables.

MOHAMED SAYED, M.D., joins the faculty as assistant professor of clinical ophthalmology. His clinical expertise includes glaucoma, cataract and advanced anterior segment surgery, pediatric ophthalmology and strabismus. He first joined Bascom Palmer in 2013 as a research fellow. He then completed two clinical fellowships at Bascom Palmer: the first in pediatric ophthalmology and strabismus; the second in glaucoma. He is one of the few dual fellowship-trained ophthalmologists

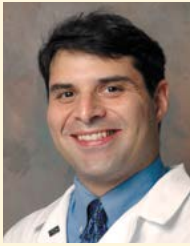


in these two subspecialties. Prior to his training at Bascom Palmer, Sayed received a medical degree from the University of

Alexandria (Egypt) and completed a residency in ophthalmology at the Joint Saudi Board of Ophthalmology Residency Program. A skilled cataract and anterior segment surgeon, he has fellowship certifications from the Royal College of Surgeons and the International Council of Ophthalmology in the United Kingdom, and certification by the Saudi Board of Ophthalmology. He is available for consultation on cataract and refractive disease, glaucoma, pediatric glaucoma, pediatric ophthalmology, and strabismus, at Bascom Palmer's locations in Naples, Plantation and Miami.

To schedule an appointment with a Bascom Palmer specialist, please call 1-888-845-0002 or visit bascompalmer.org.

Faculty Promotions



THOMAS ALBINI, M.D., is promoted to **Professor of Clinical Ophthalmology**. Albini specializes in vitreoretinal diseases and surgery, and uveitis. A *magna cum laude* graduate of Princeton University, he received his medical degree from Johns Hopkins University

School of Medicine. Prior to joining Bascom Palmer in 2006, he completed an ophthalmology residency, and uveitis and ocular pathology fellowship at Doheny Eye Institute at University of Southern California, and a vitreoretinal surgery fellowship at Cullen Eye Institute at Baylor College of Medicine. He sees patients in Miami, Plantation and Palm Beach Gardens.



KENDALL E. DONALDSON, M.D., M.S., is promoted to **Professor of Clinical Ophthalmology**.

Donaldson, the medical director of Bascom Palmer at Plantation, is a corneal and external diseases specialist with clinical expertise in cataracts and intraocular lens, LASIK and laser vision correction. She received bachelor of science and bachelor of arts degrees from the University of Maryland, Baltimore County. She then received a master of science degree *summa cum laude* from the University of Maryland, followed by a medical degree *magna cum laude* from the University of Maryland Baltimore School Of Medicine. Donaldson completed a residency in ophthalmology, followed by a corneal and external diseases fellowship at Bascom Palmer prior to joining the faculty in 2004.



NORMAN SCHATZ, M.D., is promoted to **Professor of Clinical Ophthalmology**. Schatz has been an esteemed member of the Bascom Palmer Eye Institute family for more than 50 years and has contributed to the Institute's excellence as physician and teacher.

He received a bachelor of science degree in chemistry and science from Dickinson College and a medical degree from Hahnemann Medical College. Following a residency in neurology at Jefferson Medical Center, he completed a fellowship in neuro-ophthalmology at Bascom Palmer. Schatz previously served as chair of the neuro-ophthalmology service at Wills Eye Hospital, and has served as voluntary professor of ophthalmology at Bascom Palmer since 1982. Although he has discontinued his outpatient clinics, his current focus is on the continued teaching of residents and fellows, and consulting on neuro-ophthalmic patients for the faculty.



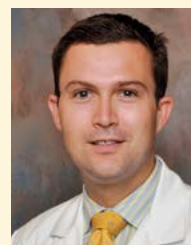
STEPHEN G. SCHWARTZ, M.D., M.B.A., is promoted to **Professor of Clinical Ophthalmology**. Schwartz is medical director of Bascom Palmer at Naples. He received a bachelor of science degree in biochemistry *cum laude* from Cornell University and a medical degree from New York

University School of Medicine, where he also completed a residency in ophthalmology. He then completed a fellowship on diseases and surgery of the retina and vitreous at Cullen Eye Institute at Baylor College of Medicine. Most recently, he received a master in business administration degree from the J. L. Kellogg School of Management at Northwestern University. Schwartz established Bascom Palmer's retina center in Naples when it opened in 2004. He currently sees patients in Naples and Palm Beach Gardens.



DARLENE MILLER, D. H. SC., M.P.H., C.I.C., scientific director of Bascom Palmer's ocular microbiology laboratory located within Bascom Palmer's Evelyn F. and William L. McKnight Vision Research Center, is promoted to **Research Professor of Ophthalmology**.

Miller received a bachelor of science in medical technology degree, master of arts in microbiology degree, and a master of public health degree from the University of Miami. She also holds a doctor of health science degree from Nova Southeastern University and a certificate in molecular diagnostics from Michigan State University. Certified by the American College of Microbiology, she joined Bascom Palmer in 1983, has been a member of the faculty since 2007.



GUILLERMO AMESCUA, M.D., is promoted to **Associate Professor of Clinical Ophthalmology**. Expert in corneal and external diseases, ocular surface disorders, uveitis, cataracts and high-risk corneal transplantation, Amescua joined the faculty in 2012. He received a

medical degree from the Ignacio A. Santos School of Medicine (Mexico) prior to completing a residency in ophthalmology at the University of Pittsburgh School of Medicine. He was an ocular immunology research scholar at the Cole Eye Institute of Cleveland Clinic. He then completed two fellowships at Bascom Palmer: cornea and refractive surgery, and ocular surface and uveitis. Dr. Amescua sees patients in Miami, Palm Beach Gardens and Plantation.



KARA M. CAVUOTO, M.D., is promoted to **Associate Professor of Clinical Ophthalmology**. A specialist in pediatric ophthalmology, complex strabismus in adults and children, and pediatric amblyopia, Cavuoto joined the faculty in 2012. The director of medical student

education for Bascom Palmer and faculty council representative to the University of Miami Senate, she received a bachelor of science degree *cum laude*, and a doctor of medicine degree from the University of Miami. She also completed an ophthalmology residency and pediatric ophthalmology and strabismus fellowship at Bascom Palmer. She sees patients in Miami and Palm Beach Gardens.



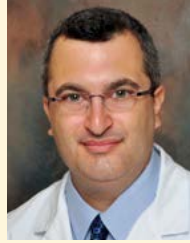
TA CHEN PETER CHANG, M.D., is promoted to **Associate Professor of Clinical Ophthalmology**. Chang, a pediatric ophthalmologist, received a bachelor of arts in neuroscience degree from Pomona College prior to receiving a doctor of medicine degree from Johns

Hopkins University School of Medicine. He then completed an ophthalmology residency at Stanford University Medical Center, a glaucoma fellowship at Bascom Palmer, and a fellowship in pediatric ophthalmology and strabismus at Vanderbilt Eye Institute. Chang joined the faculty in 2012, and sees patients in Miami.



JORGE FORTUN, M.D., is promoted to **Associate Professor of Clinical Ophthalmology**. Medical director of Bascom Palmer at Palm Beach Gardens, Fortun is a specialist in vitreoretinal diseases and surgery, diabetic retinopathy, retinal detachment and macular

degeneration. He received a bachelor of science degree in neuroscience *summa cum laude* from Vanderbilt University and a doctor of medicine degree from the University of Michigan Medical School. He then completed a residency in ophthalmology at Baylor College of Medicine and a fellowship in vitreoretinal diseases and surgery at Emory University School of Medicine. Fortun joined the faculty in 2010 and sees patients in Palm Beach Gardens and the Lennar Foundation in Coral Gables.



ZOHAR YEHOShUA, M.D., M.H.A., is promoted to **Associate Professor of Clinical Ophthalmology**. A macular degeneration, diabetic retinopathy and macular diseases expert, Yehoshua joined the faculty in 2011. He received a bachelor of medicine

in science degree and a medical degree from the Hebrew University of Jerusalem and Hadassah prior to receiving a master in health administration degree from Ben Gurion University (Israel). He completed a residency in ophthalmology at the Kaplan Medical Center of Hebrew University (Israel) prior to completing two fellowships at Bascom Palmer: one in medical retina, and the second in retinal diseases clinical research. He sees patients in Miami, Palm Beach Gardens and Plantation.



ANAT GALOR, M.D., M.S.P.H., is awarded tenure as **Associate Professor of Ophthalmology**. A cornea and external disease specialist, Galor holds a faculty appointment in the department of ophthalmology and a secondary appointment at the Miami Veterans

Administration Hospital where she sees patients at the Bruce W. Carter Department of Veterans Affairs Medical Center. She received both a bachelor of science in mechanical engineering degree and a bachelor of arts in biology degree from Carnegie Mellon University prior to receiving a doctor of medicine degree from Washington University School of Medicine. She completed a residency in ophthalmology at the Cole Eye Institute followed by a uveitis fellowship at Wilmer Eye Institute and a cornea and external diseases fellowship at Bascom Palmer. Most recently, she received a master of science in public health degree from the University of Miami. She joined the faculty in 2008.



DIMITRY V. IVANOV, PH.D., is promoted to **Research Associate Professor of Ophthalmology**. A researcher at Bascom Palmer's Evelyn F. and William L. McKnight Vision Research Center, he focuses on retinal degeneration, retinal development and regenerative medicine. Ivanov

received a master of science degree from the Moscow State Institute of Physics and Engineering, and a doctor of philosophy degree from the Vavilov Institute of General Genetics (Russia). He was a postdoctoral fellow at Bascom Palmer and joined the faculty as assistant scientist in 2007.

Lois Pope Makes Gala

When Eduardo C. Alfonso, M.D., welcomed the 220 guests gathered at The Breakers Palm Beach for the 2018 Evening of Vision Gala, he announced with great pleasure that Bascom Palmer had just received a \$12 million donation from distinguished philanthropist Lois Pope. The

transformative gift, made in memory of Pope's mother, will establish a home for collaborative, cutting-edge macular degeneration and retinal diseases research and will also create a clinical research endowment. The gift from Mrs. Pope is the largest single donation that Bascom Palmer has received in its 56-year history.

A few months before the gala,

Alfonso publicized that Bascom Palmer was embarking on a campaign to raise funds to outfit the world's premiere macular degeneration and retinal research center. As he announced the \$12 million gift, he said, "This center will change the landscape for how macular degeneration and retinal diseases will be diagnosed, treated, and hopefully eradicated. One donor, without hesitation, pledged to do this and honor her beloved mother who suffered from this terribly debilitating disease. With incredible gratitude, I share with you that this transformative center, will now be named the Lois Pope Center for Retinal & Macular Degeneration Research."



Lois Pope with Dr. Terrence O'Brien



Glisten



“I believe that now is the time we will cure macular degeneration, and I know how proud my mother is of this gift to Bascom Palmer on her behalf,” said Pope following a standing ovation. There was not a dry eye in the room when she looked up and concluded “Anastasia Berrodin... I love you Mother.”

Bascom Palmer celebrated the gala with its co-chairs, James R. Borynack and Adolfo Zaralegui of Findlay Galleries. Nancy and William Rollnick were the gala’s honorary chairs.

The evening also included Carol B. Bastek, D. Ed., receiving the inaugural Anne Bates Leach Award of Excellence. This award is named in honor of Leach, who contributed the lead gift in 1973 for construction of Bascom Palmer’s flagship eye hospital on the University of Miami Medical School campus. Bastek, a longtime supporter of Bascom Palmer, was married to the late James V. Bastek, M.D., whose sudden death in 1998 occurred shortly before their 25th wedding anniversary. James, an alumnus of Bascom Palmer, completed a fellowship in vitreoretinal diseases at the Institute in 1983.

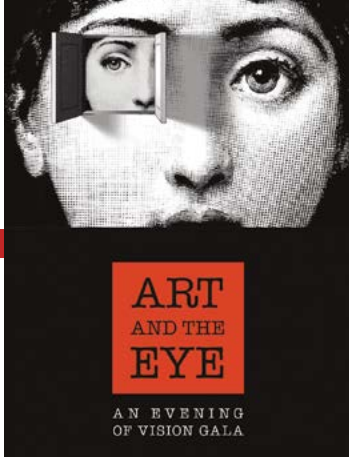
Bascom Palmer is grateful to Grand Gala Benefactors: James R. Borynack, Adolfo Zaralegui, Findlay Galleries; Grand Gala Patrons: Lois Pope, the McNulty Foundation, Christy and Earl Powell; Gala Patrons: Dr. Carol Bastek, Raysa and Alfonso Fanjul, Michele and Howard Kessler, Peggy and Dudley Moore, Angel Perez and Family, the Pietrafesa Family, Nancy and William Rollnick, and Suzi and Jack Welch.



James Borynack, Molly Alfonso, Dr. Eduardo Alfonso and Adolfo Zaralegui



Christine Finnegan and Dr. Carol Bastek



NAPLES EVENING OF VISION

Art and the Eye

Bascom Palmer's landmark eye center at Naples was home of the 3rd annual "Evening of Vision Gala – Art and the Eye." The gala and its auction raised more than \$650,000 to support care in all ophthalmic subspecialties in the Institute's patient care and surgical center in Naples.

"Much of Bascom Palmer's success is due to generous people who have made our legacy possible," said Eduardo C. Alfonso, M.D., at the 2018 event. "Two such people include the Gala chairs – Dr. Joseph and Jean Beauchamp. Joe was one of Bascom Palmer's earliest residents, having completed his training at the Institute in 1968. His decades-long dedication to vision and patient care in the Naples community is remarkable. Additionally, his 50-year commitment to Bascom Palmer is exceptionally meaningful to me and our 1,100 fellow alumni who spread the knowledge they learned at Bascom Palmer across the globe."

The event's Luminary Society Benefactor was Mary Spencer. Vision Society Benefactors were Dr. Joseph and Jean Beauchamp, and Hanna and Andrew Cummins. Evening of Vision Gold Patrons were Ellis and the late Robert Naegele, Dolly Bodick and Alan Korest, Penny and Robert Lauer, Usha and Monte Ahuja, and Betty and Marcelo Alvarez.



Alan Korest, Hanna and Andy Cummins, Jean and Dr. Joseph Beauchamp, Dr. Eduardo Alfonso



Usha and Monte Ahuja



Bruce and Cynthia Sherman





Artistic Vision

It is known that eye disease has influenced the work of famous painters. “Claude Monet developed severe cataracts which impaired his vision and almost prevented him from completing the famous water lilies cycle of paintings,” said Stephen G. Schwartz, M.D., M.B.A. “Similarly, Edgar Degas is believed to have developed a macular disease which seems to have affected his artistic style over the course of his life.” Monet and Degas were just two of the artists discussed at a donor appreciation reception held at the de la Cruz Collection in Miami. Hosted by Rosa and Carlos de la Cruz in their private, eponymous gallery of contemporary art located in Miami’s Design District, the evening featured private tours showcasing the extraordinary collection as well as a presentation by Schwartz on eye health and how it impacts the way we see.



Melanie and Dr. Stephen Schwartz, Ibett Yanez, David Schaecter, Rosa and Carlos de la Cruz



Audrey Ross and Dr. William Culbertson



Angela Whitman, Dr. Harry Flynn, Virginia Jacko



Dr. Eduardo Alfonso, Irma and Norman Braman



Sara O’Connell, Eileen Ortega, Molly Alfonso, Mehdi Alaoui



4 Your Eyes Only



Dr. Sara Wester

The Ritz-Carlton Beach Resort in Naples was the site of the inaugural “4 Your Eyes Only” medical forum. Sara T. Wester, M.D., shared the newest aesthetic and cosmetic treatments – including surgical and non-surgical facial re-juvenation. Key Private Bank was the event’s presenting sponsor.



An ophthalmic plastic and reconstructive surgeon, Wester knows that more than 13,000 people in the United States are blinded by preventable eye injuries every year. To help address the nationwide problem, Wester and Bascom Palmer launched a pilot program on Key Biscayne, Florida, to provide sports goggles with polycarbonate lenses to basketball players in the town’s youth league.

She took the opportunity at “4 Your Eyes Only” to announce that Bascom Palmer would also present sports goggles to the Boys & Girls Club of Collier County for their 5th grade basketball program. Wester hopes more adults, coaches and players recognize the need for protecting healthy eyes from potential injuries. “By demonstrating this safety program, we hope to raise awareness among athletes of all ages throughout Florida and beyond.”

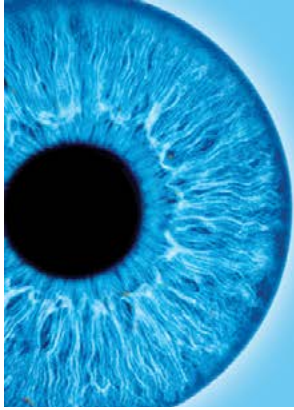


Save the Date:

Evening of Vision Gala –
Eye on the World
February 7, 2019
The Ritz-Carlton, Naples



Dr. Stephen Schwartz and Dr. Carla Osigian (standing in rear) join 5th graders at the Boys & Girls Club of Collier County, who wear their new sports goggles and support the “U.”



Bascom Palmer Tips for Kids



Eat lots of fresh fruits and vegetables, especially carrots and green leafy vegetables like spinach and broccoli so your eyes get strong and healthy.



Turn on the lights when it is getting dark – especially if you are reading.



Give your eyes a break when you are watching TV, playing on a phone, or on your computer. Every 20 minutes do some fun eye exercises: blink 10 times; roll your eyeballs in circles a few times, look to the right – look to the left – and then look at something far away.

Always carry pointed objects such as scissors or pencils with the sharp end pointing down.



Wear sports goggles if you are playing baseball, softball, soccer, basketball or racquet sports.



Don't rub!

If you feel something in your eye, don't rub it – it could make it worse or scratch your eyeball. Ask an adult to help you wash the object out of your eye.

Never look directly at the sun.



Wear sunglasses and hats on bright, sunny days.



Keep your eyes clean. Always wash your hands before you touch your eyes. Don't forget to wash your hands when you come into your house after you have been outside playing.



Never shoot or spray anything at others, especially toward someone's head.



Tell your teacher if you can't see the blackboard/whiteboard or if writing looks blurry.



Tell your Mom or Dad if your eyes hurt, if you can't see clearly, or if you have to hold your book close to your eyes to be able to read it.



These doctors represent the integrity and distinction of the entire faculty of Bascom Palmer Eye Institute

AWARDS OF DISTINCTION



Dr. William Culbertson and Dr. Sonia Yoo



Dr. Hilda Capó



Dr. David Greenfield

To schedule an appointment with a Bascom Palmer specialist, please call 1-888-845-0002 or visit bascompalmer.org.



BEST DOCTORS IN AMERICA 2017-18

VITREORETINAL DISEASES

Thomas A. Albin, M.D. (M, P, PBG)
Audina M. Berrocal, M.D. (M, C, N)
Janet L. Davis, M.D. (M, P, PBG, N)
Harry W. Flynn, Jr., M.D. (M)
Jorge A. Fortun, M.D. (PBG, C)
Ninel Z. Gregori, M.D. (VA)
Jaclyn L. Kovach, M.D. (N)
Philip J. Rosenfeld, M.D., Ph.D. (M, PBG)
William E. Smiddy, M.D. (N, M, P, PBG)

CORNEAL AND EXTERNAL DISEASES

Eduardo C. Alfonso, M.D. (M)
Richard M. Awdeh, M.D. (M)
William W. Culbertson, M.D. (M)
Kendall Donaldson, M.D. (P)
Richard K. Forster, M.D.
Carol L. Karp, M.D. (M)
Terrence P. O'Brien, M.D. (PBG)
Lana Srur, M.D. (M)
Sonia Yoo, M.D. (M)

GLAUCOMA

Steven J. Gedde, M.D. (M)
Alana Grajewski, M.D. (M, N)
David S. Greenfield, M.D. (PBG)
Elizabeth Hodapp, M.D. (M)
Richard K. Parrish II, M.D. (M, C)

NEURO-OPHTHALMOLOGY

Norman J. Schatz, M.D. (M)

OCULAR ONCOLOGY

J. William Harbour, M.D. (M, PBG)

OPHTHALMIC PLASTIC AND RECONSTRUCTIVE SURGERY

Thomas E. Johnson, M.D. (M)
Wendy W. Lee, M.D., M.S. (M)
David T. Tse, M.D. (M, N)

PEDIATRIC OPHTHALMOLOGY

Hilda Capó, M.D. (M)
Craig A. McKeown, M.D. (M)

ANESTHESIOLOGY

Steven I. Gayer, M.D. (M)



VITREORETINAL DISEASES

Thomas A. Albin, M.D. (M, P, PBG)
Audina M. Berrocal, M.D. (M, C, N)
Janet L. Davis, M.D. (M, P, PBG, N)
Sander R. Dubovy, M.D. (M)
Harry W. Flynn, Jr., M.D. (M)
Jaclyn L. Kovach, M.D. (N)
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Stephen G. Schwartz, M.D. (N)
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Kendall Donaldson, M.D. (P)
Anat Galor, M.D. (VA)
Carol L. Karp, M.D. (M)
Krishna S. Kishor, M.D. (PBG)
Sonia Yoo, M.D. (M)

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David S. Greenfield, M.D. (PBG)
Elizabeth Hodapp, M.D. (M)
Richard K. Parrish II, M.D. (M, C)

NEURO-OPHTHALMOLOGY

John R. Guy, M.D. (M)
Byron L. Lam, M.D. (M)

OCULAR ONCOLOGY

J. William Harbour, M.D. (M, PBG)

OPHTHALMIC PLASTIC AND RECONSTRUCTIVE SURGERY

Chrisfouad R. Alabiad, M.D. (M, VA)
Thomas E. Johnson, M.D. (M)
Wendy W. Lee, M.D., M.S. (M)
David T. Tse, M.D. (M, N)

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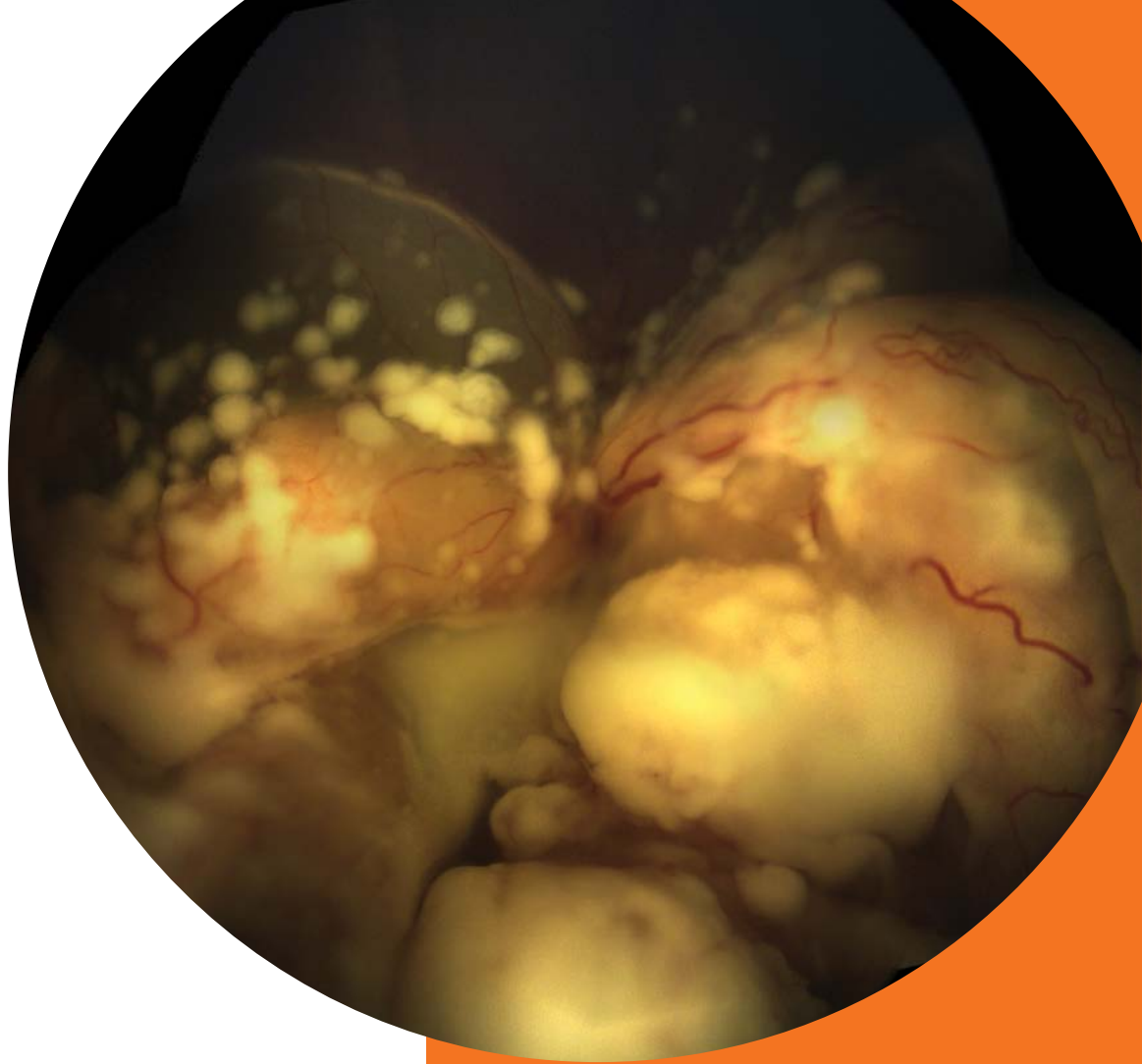
(M) Miami
(PBG) Palm Beach Gardens
(P) Plantation
(N) Naples
(C) Coral Gables/Lennar
(VA) Veterans Affairs

GETTING TO
THE TOP
TAKES FOCUS.

STAYING THERE
YEAR AFTER
YEAR REQUIRES
GREAT VISION.

Bascom Palmer ranked #1 again.

Many of the most important innovations that have transformed global ophthalmology have come from one place – the Bascom Palmer Eye Institute of the University of Miami Miller School of Medicine. In fact, *Ophthalmology Times* has once again ranked Bascom Palmer **First in Overall Programs, First in Clinical Care** and **First in Residency Programs**. Additionally, for the 17th time, Bascom Palmer is ranked **#1 in Ophthalmology** by *U.S. News & World Report*. While we are honored to be #1, it's our patients who really come out on top.



2018 Image of the Year
American Society of Retina Specialists

Photographer: Brenda Fallas
Bascom Palmer Eye Institute

Co-author: J. William Harbour, M.D.

Description: 2-year-old boy with stage D+
retinoblastoma of the right eye

Miami
Anne Bates Leach Eye Center
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Miami, Florida 33136
305-326-6000

Information 305-243-2020
Toll free in USA 800-329-7000

bascompalmer.org

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7101 Fairway Drive
Palm Beach Gardens
Florida 33418
561-515-1500

Naples
3880 Tamiami Trail North
Naples, Florida 34103
239-659-3937

Plantation
8100 SW 10 Street
Plantation, Florida 33324
954-465-2700

Coral Gables
The Lennar Foundation
Medical Center
5555 Ponce de Leon Blvd.
Coral Gables, Florida 33146
305-689-0416



It takes a team to tackle eye diseases. *page 2*