



FLORIDA LIONS  
**EYE BANK**  
— SINCE 1962 —  
*Restoring the Beauty of Sight*




BEAUTY  
OF SIGHT  
THE FLORIDA LIONS EYE  
BANK FOUNDATION

# Annual Report 2021

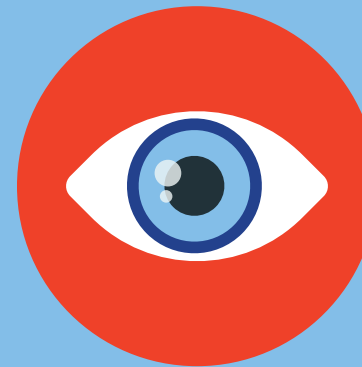


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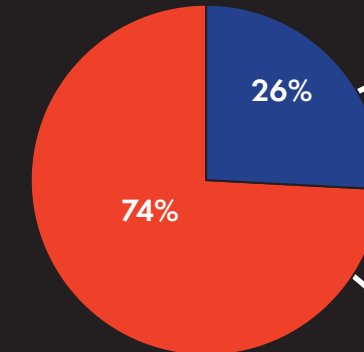
# Status Report 2020-2021

Total number of eye donors:



1,128

Eyes/ Corneas Recovered:



2,249

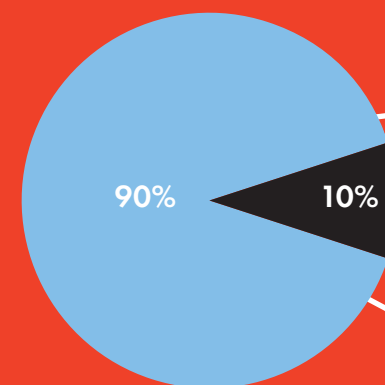


Research Use:  
594



Surgical Use:  
1,655

Total tissue provided for transplant:



840



Transplanted domestically:  
755



Transplanted internationally:  
85

Sclera & preserved corneas provided for surgery:



116

Ocular tissues distributed for research & education:

899



Pathology specimens studied:

4,589



Serum Tears & PRGF processed:

1,735





# Medical Director's Report

by Sander R. Dubovy, MD

As 2021 comes to an end we look back, it seems that the year was quite similar to, and an extension of, 2020. 2021 was a year in which the word "resilient" was best used to describe the staff of Florida Lions Eye Bank. Despite the challenges we faced, we continued our daily operations in our quest to provide the gift of sight for those in need. Clearly, these have been unique, trying times.

The year 2021 began in a manner similar to that in which the previous year ended. Florida Lions Eye Bank employees adapted to the "new normal" of using personal protective equipment, socially distancing, and Covid testing with symptom tracking. Like other organizations across the globe, Florida Lions Eye Bank implemented hybrid staffing, remote collaboration, and Zoom meetings. Eye bank staff worked tirelessly and patiently, adjusting to the constant challenges to the in the way in which we provided our services.

The Covid vaccination became available in early 2021 to all University of Miami employees, including eye bank staff. With it came the optimism that immunization would help control the spread of the virus. Fortunately, Florida Lions Eye Bank staff were vaccinated promptly, averting major health complications for employees and allowing us to meet the demand of providing our sight-saving services to those in need.

As the year progressed, routine corneal transplant surgeries increased in number, as many newly-vaccinated patients finally felt comfortable seeking medical attention and undergoing surgery. As a result, the number of corneas requested for transplant surgeries increased tremendously, and Florida Lions Eye Bank responded to these surging demands, providing tissue for surgeries in larger numbers than that of the immediate pre-Covid period. All cornea donors were tested for Covid-19 to assure that transplanted tissues were optically beneficial and medically safe for recipients.

Intermittent supply chain disruptions presented an obstacle to Florida Lions Eye Bank's normal operations. This led to many essential lab supplies— masks, gowns, cleaning solutions, antibiotics, and

more— being delayed or unavailable. Problems with global shipping and manufacturing were only one pandemic-related challenge; hardly a week went by without a change in protocol, concern for a new Covid variant, staff absence, or issues with obtaining materials needed for the procurement and examination of ocular tissues. Florida Lions Eye Bank handled these challenges with flexibility and experience so as to assure the smooth, continuous distribution of corneal and scleral tissues.

Serum Tears, Florida Lions Eye Bank's autologous serum eye drops program, successfully navigated numerous and unique challenges in 2021. Serum Tears are a biological therapy in which a patient's blood is drawn and processed to make individualized eye drops. Thousands of patients with persistent dry eye and other ocular surface disorders have benefited from Serum Tears since Florida Lions Eye Bank began the program in 2017. Many patients who use Serum Tears have severe symptoms that have not responded to other therapeutics, and as such, require Serum Tears to avoid eye pain and function normally.

Fortunately, Florida Lions Eye Bank staff provided consistent, uninterrupted Serum Tears services throughout the pandemic. Our phlebotomists were able to continue visiting patient's homes to draw the blood necessary to produce Serum Tears, as all patients were screened for Covid symptoms to ensure their safety. Just as the demand for corneal tissue increased, the number of patients utilizing Serum Tears grew throughout the pandemic. Florida Lions Eye Bank was able to meet the needs of Serum Tears

users requiring our services.

The ocular pathology laboratory saw an increase in the volume of tissues submitted for evaluation as the number, and complexity, of surgeries increased throughout the year. Staffing was continually monitored so as to provide these critical services to patients at Bascom Palmer Eye Institute, throughout Florida, and to doctors and patients throughout the United States and Latin America. Like Florida Lions Eye Bank's other operations, supply chain challenges, staffing issues and social distancing were addressed so that there would be no interruption in these diagnostically critical, tertiary care services.

The ocular pathology laboratory serves as a center of education for Bascom Palmer Eye Institute residents, fellows,

and University of Miami medical students. So as not to compromise the education of these doctors-in-training, pragmatic measures were instituted to allow for their continued education. These included virtual microscopy sessions, wherein a camera was placed on the microscope and images were transmitted via Zoom, and virtual grand rounds. Additionally, plexiglass barriers were installed on the multiheaded microscope so that Bascom Palmer Eye Institute physicians could view specimens without compromising social distancing protocols. Ocular pathology faculty were able to teach residents and fellows throughout the country and internationally through virtual lectures. The ability to interact via computer meetings and lectures has been one of the positive developments to come from the Covid-19 pandemic.

While addressing the everyday challenges of providing a wide array of services to patients, surgeons, and greater community, Florida Lions Eye Bank administration and Board of Directors have continued to look to the future. As the need for more working space at the eye bank has increased, it has become clear that more square footage will be needed to deliver the services requested at increased volumes we are seeing. In response to this need, a plot of land was purchased several blocks from Bascom Palmer Eye Institute to serve as the new site for Florida Lions Eye Bank. Ideally situated at 7<sup>th</sup> Avenue and 18<sup>th</sup> Street, the land is located across the street from a future University of Miami Miller School of Medicine educational building and the headquarters of Life Alliance Organ Procurement Agency, one of our partners in donation and transplantation. Florida Lions Eye bank leadership and board are to be lauded for their quick action in procuring this strategically-located land that is well suited to meet Florida Lions Eye Bank's operational needs. The lot has been razed and we have embarked on the design of and fundraising for the new home of the Florida Lions Eye Bank. I urge you all to get involved in this exciting project through fundraising, education and dissemination of the news. This is a tremendously exciting project that will assure Florida Lions Eye bank has adequate facilities to provide the variety of sight-saving services that continue to grow in both size and scope.

Finally, I would like to take this opportunity to thank the Florida Lions Eye Bank staff, administration and board members for their tireless efforts as we continue work to provide the gift of sight to those in need. While this has been a challenging year for all of us, we are grateful to have expanded our services in the face of adversity brought by the pandemic. We look forward to a wonderful future as we embark upon the construction of a new home for Florida Lions Eye Bank.



Top right: The site of Florida Lions Eye Bank's new facility. The lot has now been razed and is ready for construction!

Above: Current and past staff of Florida Lions Eye Bank and the Ocular Pathology Laboratory. From left to right: Jorge A. Pena, Cynthia Maza, Elina Hackworth, Mellissa Pottinger, Tori Motino, Concetta Trigilia, Katrina Llanes, Elizabeth Fout, Maria Lopez, William Buras, Vivian Lopez, Mara Budnetz, Carmen Oriá, and Sander R. Dubovy, MD.

# President's Report

by Kenneth Engstrom, PDG

The fiscal year began as the previous one ended, in the midst of the COVID-19 pandemic. To provide continuity and a sense of stability to our operations, the Florida Lions Eye Bank Board of Directors were asked to serve a second term, a first for our organization. Our hard working and dedicated staff continued to provide critical services to our community, including the recovery, processing, and distribution of corneal and scleral tissue for transplantation and research and the processing of Serum Tears. This work was performed while exercising the necessary precautions to ensure staff safety, and the safety of our patients and recipients. Mask wearing, social distancing, and board meetings via Zoom became the norm as we navigated new obstacles while focusing on our mission to *Restore the Beauty of Sight*.

Despite the added challenges that COVID-19 provided, Florida Lions Eye Bank saw growth and advancement the areas of research, innovation, and collaboration. In the area of research, much of the organization's efforts were focused on the COVID-19 virus where, under Dr. Dubovy's leadership, we studied the impact of the virus on ocular tissue. Meanwhile, our innovation efforts resulted in the submission of two patents on novel medical devices, a dual-chamber corneal storage container and a specialized DMEK injector. We have continued work on these devices; we hope that once they are ready for distribution, they will help improve both eye banking and corneal transplantation. Finally, during the 2020-2021 year, we continued to work with eye banks across the country as we collaborate on projects and share best practices that enhance our services and improve patient outcomes.

Since its inception nearly 60 years ago, Florida Lions Eye Bank has been located within the Bascom Palmer Eye Institute. The close relationship with this world-renowned eye hospital and its faculty has allowed Florida Lions Eye



Bank to thrive. However, increased demand for corneal processing and dramatic growth in patients requiring Serum Tears in our community, coupled with growth in the areas of research and innovation, compelled the Board of Directors to consider expanding our facilities outside of the hospital. In the heart of the pandemic, a lot became available not far from our current home and I am very pleased to report that during this fiscal year, Florida Lions Eye Bank purchased a property just two and a half blocks from the hospital with the intention of building a state-of-the-art facility to serve as Florida Lions Eye Bank's new home.

Shortly after purchase, we initiated demolition of the small structure sitting on the property and began preparing the site for construction. We are now looking forward to working with architects to develop plans for a state-of-the-art facility that will allow Florida Lions Eye Bank to continue serving our community as technology continues to evolve and techniques continue to improve. To that end, we encourage our patients, Lions, physicians, and the supporters in our community to be a part of this project. Our Foundation, Beauty of Sight, has started plans for a capital campaign that will help raise the funds needed to build an advanced and innovative facility that will allow our organization to forge into the future.

Finally, as I complete my second term as President of this incredible organization, I would like to thank the Florida Lions Eye Bank staff for their dedication and hard work, particularly during this difficult time. Their commitment to the mission of our organization is what continues to drive us forward. Likewise, I would like to thank the Florida Lions Eye Bank and Beauty of Sight Foundation board members for the many hours that they have spent ensuring that our organization is able to function at the highest level. As Helen Keller once said, "Alone we can do so little, together we can do so much."

## Florida Lions Eye Bank Board of Directors 2020-2021

President: Lion Kenneth Engstrom, PDG

Vice Presidents:

District L: Lion Bobby Wright, PDG  
District I: Lion Judy Galm, PDG  
District O: Lion Helene Thompson, CC  
District N: Lion Geoff Wade, ID

Secretary: Lion James Campbell, 2<sup>nd</sup> VDG

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Lion Robert Gentilini  
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Immediate Past President: Lion Norma Callahan, PDG



## Beauty of Sight Foundation Board of Directors 2020-2021

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Lion Elizabeth Dawson, PDP  
Jorge Reynardus

Immediate Past President: Lion Juan Tejera, PCC





# Corneal Transplant Recipient Profile: Carlos' Story

Dr. Carlos Archilla-Cady, MD, MBA, is a Pediatric Anesthesiologist at the Nemours Children's Health, Orlando with a decades-long career in medicine, medical research, and healthcare leadership. He developed vision problems beginning in his early 30s, when he was diagnosed with a rare form of inflammatory glaucoma. Complications of glaucoma led to a series of corneal transplants, which took place at Bascom Palmer Eye Institute with tissue provided by Florida Lions Eye Bank. Carlos' experience in turn, shaped his passion to continue advocating for children's and healthcare rights, disability inclusion, eye, organ, and tissue donation awareness, and space exploration.

Born and raised in Puerto Rico, Carlos studied medicine at the University of Puerto Rico, School of Medicine. He completed his Internship in Pediatrics in Orlando then he served as the General Medical Officer and Flight Surgeon aboard the USS Theodore Roosevelt, aircraft carrier in the United States Navy. After his military service, Carlos went on to complete his medical residency and fellowship at the prestigious Johns Hopkins University specializing in Anesthesiology, Critical Care Medicine, and Pediatric Anesthesiology. He returned to Florida over 20 years ago as a highly qualified anesthesiologist; for the next decade, he practiced at several hospitals in Central and South Florida. In 2010, he began teaching medical students at Florida State University and University of Central Florida Colleges of Medicine. He joined the staff at Nemours Children's Health, a children's hospital in Orlando, in 2012. He has since held numerous leadership positions at Nemours and is loved by his patients and their families.

Dr. Archilla-Cady's distinguished career is especially impressive considering the struggles he endured with his eye health. In 2000, while living and working in South Florida, Carlos experienced a sudden episode of vision loss. "I was driving home from work, and everything went white. It was a total loss of vision," he recalled. Luckily, Carlos was able to pull his car

over safely. Within about 20 minutes, his vision cleared enough that he was able to drive home. As a physician, he knew that this sudden vision loss required urgent medical attention, so he immediately returned to the hospital where he worked to see an ophthalmologist. "I got the famous 'hmm,' as he was examining me. This is never a good sign," said Carlos. The doctor observed that Carlos' eye pressure was dangerously high. Normal intraocular pressure, or IOP, is 12-22 mm Hg; Carlos' IOP measured in the 50s, indicative of glaucoma. Although glaucoma is rare in young adults, Carlos' diagnosis was evident, but the underlying cause was unknown. Uncontrolled glaucoma can cause irreversible optic nerve damage due to high IOP. To prevent this, Carlos immediately started using multiple eyedrops several times a day.



Medication controlled Carlos' glaucoma symptoms for several years, but in 2004, Carlos started losing vision in his right eye. He was referred to Richard K. Parrish II, MD, glaucoma specialist at Bascom Palmer Eye Institute, for surgical evaluation. Dr. Parrish recognized an urgent need for surgery and implanted an Ahmed valve in each of Carlos' eyes. The Ahmed valve is a tiny device that reduces IOP by allowing some of the fluid inside the eye to drain behind the eyelid. This reduces pressure on the optic nerve and can prevent further vision loss in glaucoma patients.

These procedures worked well, but in 2005, Carlos was once again rushed into emergency surgery at Bascom Palmer Eye Institute to treat high IOP. There, he met Stephen J. Gedde, MD, whom Carlos describes as "my guardian angel." Dr. Gedde recognized an unusual complication: fibrous tissue had grown over and impaired the function of Carlos' left Ahmed valve. A new valve was placed. It soon became evident that Carlos was experiencing an extremely rare type of glaucoma called Posner-Schlossman Syndrome, or PSS. This diagnosis, made by Dr. Gedde, explained the underlying reason for Carlos' early-onset glaucoma. PSS is typified by acute, recurrent attacks of elevated IOP accompanied by severe eye inflammation. "It was very difficult," recalled Carlos of that point in his life. "I had so much to lose."

*This page: Carlos at work.  
Opposite page: Carlos today.*

Carlos' vision remained stable until 2013, when it began to fade again. Although this episode of vision loss was more gradual, it was accompanied by new, troubling symptoms, including severe inflammation, swelling and redness. At Bascom Palmer, Dr. Gedde advised Carlos that his previous glaucoma surgeries had potentially damaged his corneas. He would need bilateral corneal transplants. Sonia H. Yoo, MD, one of the world's most skilled cornea surgeons, accepted Carlos as a patient knowing he was at high risk for rejection due to the inflammatory nature of PSS. Dr. Yoo performed Carlos' bilateral corneal transplant surgeries later that year with tissue provided by Florida Lions Eye Bank.

For the next five years, Carlos enjoyed good vision. During this time, his medical career flourished. He was appointed Chair of the Anesthesiology and Pain Management Department at Nemours and a member of its Senior Leadership Team. He expanded his role with the American and Florida Society of Anesthesiologists where he became a Key Congressional Delegate advancing public health policies in the US House of Representatives.

Unfortunately, in 2018, Carlos experienced irreversible rejection, leading to graft failure that compromised his vision. Rejection refers to an immunologic response of a transplant recipient to a donor cornea. Although uncommon among corneal transplant recipients, it is more likely in patients with a history of inflammatory disease. Dr. Yoo performed Carlos' second bilateral corneal transplants right away. These surgeries temporarily restored his vision, but after only 6 months, Carlos experienced rejection again, leading to vision loss. Carlos and his treatment team at Bascom Palmer were very worried. "You can imagine the emotional roller coaster of losing my vision over and over and not knowing whether I'd ever recover it," said Carlos. "Sometimes it felt like there was no hope. My family and faith supported me during these hard times."

In 2019, for the third time in his life, Carlos underwent bilateral corneal transplantation. Dr. Yoo knew that additional intervention was necessary to prevent graft rejection from recurring. Post-surgery, she immediately started him on systemic anti-rejection medication. This type of treatment is typical for

solid organ transplant recipients, but rare for corneal transplant recipients. The effects of the medication and the difficulty recovering from repeated eye surgeries meant that Carlos was forced to go on full disability in July of 2019. "In the time leading to the third set of transplants, my vision went down to zero," said Carlos. "All I could see was motion." This is unusual, but not always catastrophic; many patients who lose vision around the time of transplant go on to have good long-term outcomes. Nonetheless, complete vision loss can be disabling, and Carlos took time off from work to recover.

Carlos recovered at home for about 10 months as his vision gradually returned. During this difficult time, Carlos realized he needed a plan B in the event his vision permanently failed, and he could no longer practice medicine in a clinical capacity.



With years of hospital experience, he knew he'd be well suited for an administrative role. To improve his skill set, Carlos enrolled in business school, receiving a certificate from Wharton School of Business and another from Harvard Business School. In 2020 he began pursuing a Global Executive MBA from IESE Business School, one of the top business schools in the world. While enormously rewarding, attending school as a person with visual impairment

was challenging. "When I started business school, I needed special accommodations because of my vision," said Carlos. "I sat in the front and received materials in advance so I could magnify them on my computer and complete the reading. I couldn't see the blackboard or projected slides."

To Carlos' relief, his vision did gradually improve as he worked toward his MBA. Yet, his experience living with visual impairment led him to consider the importance of disability inclusion in various aspects of life, such as education, employment, and positions of leadership. "I understand how it feels to be hopeless, yet garner the strength to fight another day," recalled Carlos. "Overcoming disability gives people like me a unique strength, determination, adaptability, and empathy. Individuals with disabilities can bring these values to an organization and help it grow and be more customer centric." Carlos continued, "People with disabilities are in a constant state of innovation; we need to, just to function in a world that isn't made for us."



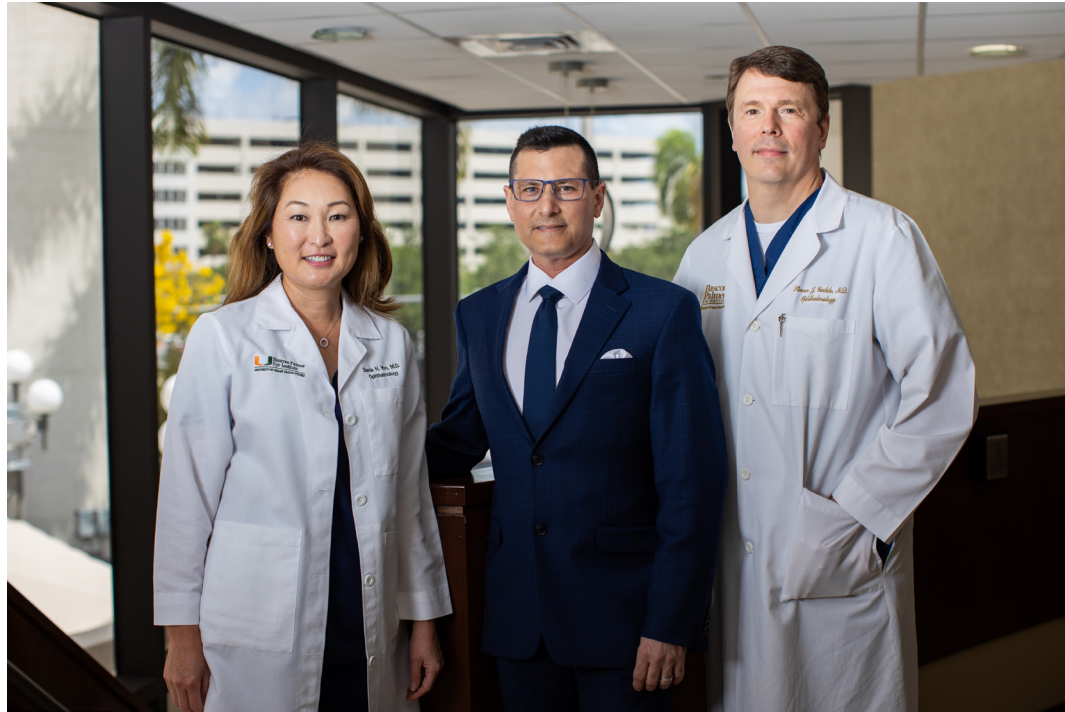
# Carlos' Story, continued

These skills, when applied to business, can be transformative." Carlos is especially interested in ensuring that people with all levels of visual impairment can access the modern digital world. "Most people with vision problems do not read braille; most of us are not completely blind, and we didn't lose our sight until adulthood," observes Carlos, "We should be able to use the internet the same way a sighted person can, but accommodations are not universally offered." Carlos' advocacy aims to address these inequities among the business community.

Carlos returned to work as an anesthesiologist in March 2020, right as Covid-19 was beginning its rise as a global pandemic.

"This was, ironically, a silver lining for me," said Carlos. "Because of the pandemic, the case volume for elective surgeries was down, which helped me reintegrate to my practice and focus my efforts on the medical needs posed by the pandemic." As the pandemic became more widespread, Carlos' work demands increased, and his successful corneal transplants allowed him to work at full capacity. "As anesthesiologists we are experts in airway management, a critical skill in the pandemic," said Carlos. He continued his advocacy and education while managing his role as an anesthesiologist.

Carlos' interest in disability inclusion led him to a new passion for space exploration. "My interest in space was sparked when I read a news article about a group of ambassadors living with disabilities who were invited on a zero-gravity flight," explained Carlos. "This was done to empower them, but also to gather information about how to make space travel more inclusive for disabled individuals. I thought, 'Space travel! This is something I'd like to do myself.'" In the process of learning about how he could become an astronaut, Carlos connected with what he described as "a fantastic community" of businesses and individuals committed to providing inclusive space travel for people with all levels of physical ability. "2021 was the year



that space travel went from a dream to something tangible," said Carlos. "It's essential that right from the beginning, we approach space travel as something anyone can do, including the 1 billion people in the world living with some type of disability."

The more he learned about space travel, the more certain Carlos was that his particular skill set, and experience would make him a valuable astronaut-in-training. As a physician and a person with a history of complex eye disease, Carlos believed that he could participate in gathering medical data that might improve future space endeavors. "I talked to Dr. Gedde before doing any space simulation training," Carlos said. "I asked him, 'Tell me honestly, am I crazy for wanting to try this?'" To Carlos' surprise, Dr. Gedde was very supportive, reviewing his knowledge of the visual effects that have been observed in astronauts. He agreed that Carlos' ideas for ophthalmological data collection would be valuable. "Bascom Palmer has treated and researched eye diseases in astronauts upon their return from space," said Carlos. "It has been observed that these patients suffer from optic nerve swelling and increased eye pressure. Potential explanations for these findings are being researched." In fact, astronauts who spend weeks or months in the International Space Station often experience dramatic reduction in visual acuity upon their return to Earth. "Healthy volunteers have gathered data on their eye health while in space, including IOP measurements, but no one with active eye disease had ever done so," said Carlos.

Today, Carlos is scheduled to go to space with Space Perspectives on Flight 119, expected around 2026. He graduated from his Global Executive MBA program from IESE in March of 2022. He continues to work full time as a Pediatric Anesthesiologist at Nemours Children's Health, where, every day, he

"I wanted to be first person with active eye disease to document the physical effects and visual changes that I would experience in microgravity."

With Dr. Gedde's clearance, Carlos was finally ready to take the first steps toward becoming an astronaut. In early 2022, he completed microgravity training with NASA and participated in a space-simulation flight with Zero-G. Pictures from these experiences are shown on the front and back covers. "When I completed my NASA and Zero-G trainings, I found the experience healing and empowering. I used these opportunities to highlight the importance of inclusion for people in all stages of life, health, and ability, and to promote eye, organ, and tissue donation." After negotiation, Carlos was granted permission to perform an eye pressure measurement in zero gravity using a tonometer during his Zero-G flight. Carlos is believed to be the first person in history with active glaucoma to measure IOP in zero gravity, pictured below.



The results of this measurement indicated that microgravity has a rapid effect upon eye pressure. "My pressures were normal before the flight; I was not experiencing any symptoms of acute glaucoma. However, my intraocular pressures increased 31% in both eyes within seconds of entering zero gravity and returned to normal within a minute of leaving zero gravity". This observation may provide valuable insights as to how the human eye behaves in microgravity. Carlos has reported these findings to Dr. Gedde as part of his preparation for future space travel.

Today, Carlos is scheduled to go to space with Space Perspectives on Flight 119, expected around 2026. He graduated from his Global Executive MBA program from IESE in March of 2022. He continues to work full time as a Pediatric Anesthesiologist at Nemours Children's Health, where, every day, he

ensures the safety and comfort of children undergoing surgery. He remains dedicated to disability advocacy and the promotion of organ, eye, and tissue donation. Said Carlos, "I had a mission to advocate for disability inclusion. Disability inclusion is more than accessibility. It is full inclusion in all aspects of life, including employment, positions of leadership and yes, space travel. This is no longer an ideal, but an action we must commit to." Carlos also reflected upon the importance of eye, organ, and tissue donation, stating, "As a transplant recipient, I encourage eye, organ, and tissue donation and would like to thank all donors and their families for the gifts of life that have left a long-lasting legacy of love and hope."

Carlos currently enjoys 20/25 vision, a successful outcome that wouldn't have been possible without the dedicated medical care he received at Bascom Palmer Eye Institute. He is keenly aware, too, of the courageous acts of kindness that enabled each one of his transplants. "I am eternally grateful to my donors and their families," said Carlos. "They have given me a gift of not only sight, but life. I know that there is a special star shining high on the horizon tonight honoring them." For others experiencing vision loss or any disability, Carlos said, "When you feel that there is no hope, keep fighting, keep participating, and share your story. Your story will have the power to inspire others and by doing this, you can help create a future that is more just; a future that belongs to everyone."

Opposite: Carlos, center, with Dr. Yoo, left and Dr. Gedde, right, at Bascom Palmer Eye Institute.

Below: Carlos advocates for disability inclusion during NASA training.





# The Accommodation Imaging System: an Innovation Decades in the Making



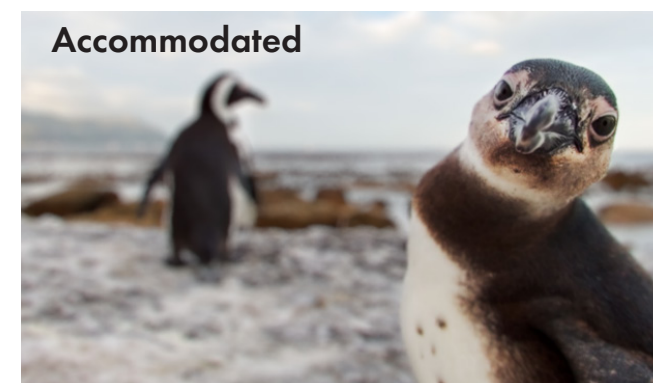
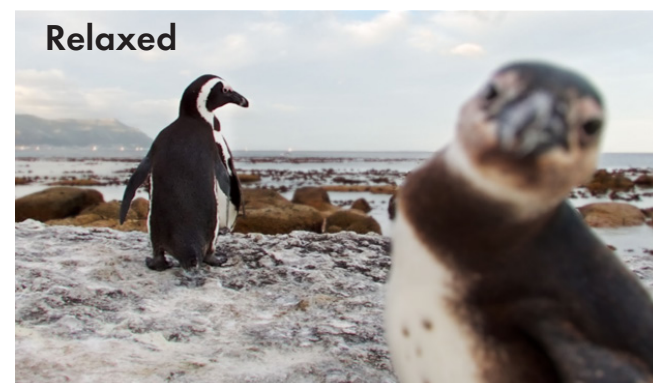
Heather Durkee, PhD, of Bascom Palmer Eye Institute's Ophthalmic Biophysics Center (OBC) has created an instrument that aims to revolutionize the way visual accommodation is measured. This instrument, provisionally named AIS, for Accommodation Imaging System, combines the functionality of two other ophthalmic devices into one cutting edge instrument. The AIS delivers imaging and biometric data, providing quantitative information about the eye that can be used to improve the outcomes of vision correction therapies. This project is part of a broad program established at the OBC with the long-term goal of developing and evaluating strategies to restore accommodation. In 2021, Dr. Durkee earned her PhD for the creation of the AIS, the culmination of years of research alongside her team at the OBC.

The AIS measures accommodation, which is the eye's dynamic ability to change focus between distant objects and nearby objects. When the eye is relaxed, it sees objects in the distance clearly and doesn't focus on objects in the foreground. When the eye accommodates, or focuses on a nearby object, the lens becomes rounder, increasing its optical power and seeing close objects clearly. Accommodation is made possible by the movement and coordination of tiny muscles and structures within the eye that change the shape of the crystalline lens. The two pictures of penguins shown here illustrate visual outcomes associated with the accommodation process. The top image shows what the eye sees when it's relaxed: it focuses on distant objects, and nearby objects blur. When the eye accommodates, or focuses on closer objects, those in the background blur, as shown in the bottom image.

As we age, our eyes lose this ability to accommodate and focus on nearby objects. This is called presbyopia. Presbyopia, or loss of the ability to see near, is a common age-related condition that results

from changes to the crystalline lens and its surrounding structures. Characterized by increased difficulty reading and focusing on nearby objects, it's the reason most of us require reading glasses as we age. Nearly every single person has some degree of presbyopia by age 50. While most people don't report severely diminished quality of life due to presbyopia, most agree that it's bothersome.

Because age-related vision changes are universally troubling, medical researchers all over the world have long been working on devices and procedures that will restore accommodation, reducing presbyopia and limiting the need for reading glasses. Some of this research has been underway for over 50 years: in 1970, OBC director and co-founder Jean-Marie Parel, PhD, discussed his interest in restoring accommodation with Edward W.D. Norton, MD, one of the founders of Bascom Palmer Eye Institute, leading to the eventual establishment of the OBC. In 1986, Drs. Norton and Parel published a paper describing a surgical technique that would replace the content of an older person's crystalline lens with a polymeric substitute, mimicking the properties of a younger person's crystalline lens and restoring its accommodation ability. Dr. Durkee's AIS builds upon this research and adds to the list of innovations to come from the OBC that restore, improve, measure, and better understand visual accommodation.



To date, there is no definitive way of reversing presbyopia, but treatments, such as prescription eye drops and specialized intraocular lenses placed during cataract surgery, are gradually being approved for use. As these solutions come to market, there will be a need to measure how effectively each one restores accommodation. The development of procedures to restore accommodation such as accommodative intraocular lens implants and lens refilling techniques has created a need for imaging tool that can objectively evaluate the clinical efficacy of these procedures. This is where Dr. Durkee's AIS comes in.

The AIS captures the biometry—the physical changes that happen to the eye during accommodation—in real time, as the subject views different objects at fixed distances. At the same time, the AIS also measures the optical output, or the degree to which the subject can effectively accommodate and see clearly. This optical output is described in diopters, a unit of measurement of the refractive power of the eye. The correlation of optical output in diopters with the biometry of the eye is a phenomenon that is poorly understood, as previous instruments have not captured both metrics at once. The AIS revolutionizes the way visual accommodation is assessed by pairing it with measurements of the eye's physical changes.

To use the AIS, a subject sits in front of it. The examiner provides the subject with an accommodation stimulus set at a certain number of diopters, or something to look at that requires a certain level of visual acuity to see clearly. While the subject looks at the stimulus, images of the interior structures of their eyes are recorded, and a refraction measurement is taken. The AIS measures how well the subject accommodates at a variety of diopters while capturing the eye's biometry.

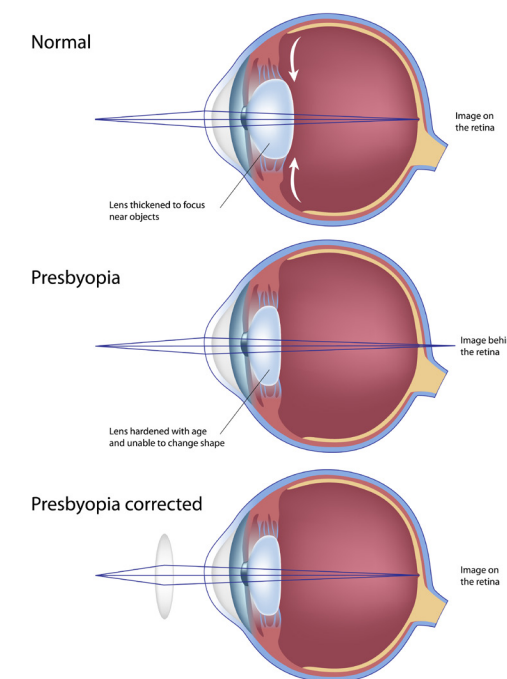


Thus, the AIS has a significant clinical application. As the FDA approves more accommodation restoration techniques, there will be a need to perform objective accommodation assessment, and to physiologically measure if these devices are working. The AIS simultaneously provides an image of the physiology and an objective measure of refraction and accommodation.

Dr. Durkee is originally from Bradenton, Florida. She has been a researcher at the Ophthalmic Biophysics center since 2011. She earned a combined bachelor's and master's degree from University of Miami in 2013. Her PhD, also from University of Miami, is in biomedical engineering. Dr. Durkee worked in collaboration with Drs. Jean-Marie Parel, Fabrice Manns, Marco Ruggeri, Siobhan Williams, Mariela Aguilar and Mr. Alex Gonzalez on the creation of the AIS. Florida Lions Eye Bank and Beauty of Sight Foundation are honored to support Dr. Durkee's innovation and other projects at the Ophthalmic Biophysics Center.

Left: The AIS.

Above right: A diagram of presbyopia. As we age, the lens stiffens, bringing the focal point behind the retina and causing blurry vision. When presbyopia is corrected with reading glasses, the lens can once again focus an image on the retina.



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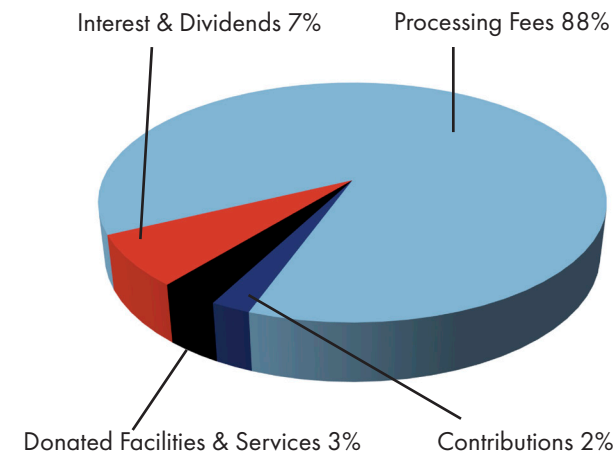
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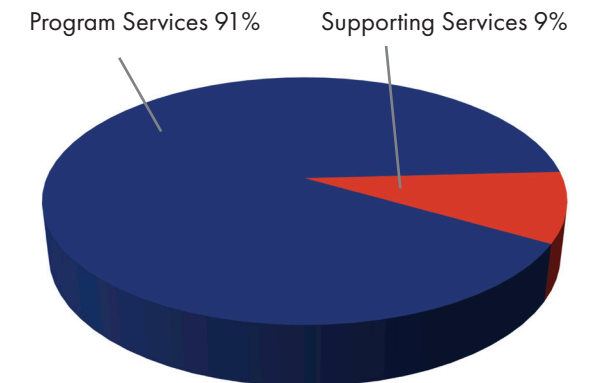
# Financial Report

	FY 2021	FY 2022
<b>Revenues &amp; Gains</b>		
<b>Program Service Fees</b>	\$3,431,245	\$3,078,438
<b>Contributions</b>		
<b>General Public</b>	\$24,434	\$16,807
<b>Bequests</b>	\$40,878	\$670
<b>Lions Clubs</b>	\$19,288	\$14,670
<b>Donated Facilities and Services</b>	\$125,955	\$125,767
<b>Interest &amp; Dividends</b>	\$270,315	\$401,522
<b>Investment Net Unrealized Gain (Loss)</b>	\$3,750,524	(\$690,938)
<b>Forgiveness of PPP loan payable</b>	\$424,985	-
<b>Total Revenues and Gains</b>	<b>\$8,087,624</b>	<b>\$2,946,936</b>
<b>Expenses</b>		
<b>Program Services</b>		
<b>Medical Services</b>	\$3,646,846	\$3,475,653
<b>Research Grants</b>	\$272,588	\$329,137
<b>Supporting Services</b>		
<b>Management and General</b>	\$317,663	\$306,677
<b>Development</b>	\$78,358	\$89,062
<b>Total Expenses</b>	<b>\$4,315,455</b>	<b>\$4,200,529</b>
<b>Change in Net Assets</b>	<b>\$3,772,169</b>	<b>(\$1,253,593)</b>

2020-2021 Revenue Sources



2020-2021 Expenses







*"Overcoming disability gives us a unique perspective in life and a unique strength; a sense of determination. Our vulnerability provides authenticity and empathy. We are all part of the universe and the stars that govern the nighttime sky. The sky is no longer the limit. We are only limited by our ability to dream big." -Carlos Archilla-Cady, MD, MBA*



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