

Eduardo C. Alfonso, M.D., sees something big on the horizon for the millions of people blinded by corneal disease. Working alongside Jean-Marie Parel, Ph.D., on the development of an artificial cornea for the past several years, he believes the prototype may be ready for human testing in the next three years.

# Ophthalmologist Envisions a Bright Future for the Artificial Cornea Project

“The potential is what’s most exciting,” Eduardo Alfonso says. “Today, as many as eleven million people are blind as a result of corneal disease.

With an artificial cornea, they may regain sight.” Parel’s project, he says, has been in the works for well over 10 years, a timeframe that’s not unusual for the field of ophthalmology.

“What we do can’t be thought of in terms of a 100-yard dash,” Alfonso says. He likens progress in the field to a marathon—a trial of time, endurance and expertise that can yield exceptional results.

Alfonso includes medical director of Bascom Palmer’s Ocular Microbiology Laboratory among his titles of physician, surgeon, professor and researcher. His focus is on the cornea and corneal disease, a specialization that allows the Cuba native and holder of the Edward W. D. Norton Chair in Ophthalmology to draw on his long-held interest in neuroscience.

“The cornea is one part of the eye where many infections occur. It has a lot of the biology I am interested in.” He adds that surgery pertaining to the cornea has always piqued his interest.

In the laboratory, Alfonso studies cultures from patients with eye infections, developing data and determining the best course of treatment. Additionally, he conducts clinical research in conjunction with pharmaceutical companies to develop antibiotics to treat infections of the eye.

Dr. Alfonso completed his undergraduate degree at Yale College in New Haven, Connecticut. He earned his medical degree from the college’s esteemed medical school, and joined Bascom Palmer in 1981 as a resident. The program, he says, provided an excellent place to work and learn. He finds the opportunities at Bascom Palmer both intriguing and motivating. “Every day we see things we have never seen before,” he says. “We are always learning.”

In addition to his medical degree and residency program, Alfonso completed fellowships in corneal and external diseases, ophthalmic pathology, and research at the Massachusetts Eye & Ear Infirmary of Harvard Medical School. Dr. Alfonso was the recent recipient of the Guillermo Pico Award, which is presented annually to an outstanding academic leader, by the Puerto Rico Society of Ophthalmology and recently received the Senior Achievement Award from the American Academy of Ophthalmology in recognition of his contributions to the Academy.

Alfonso believes the many facets of ophthalmology practiced at Bascom Palmer offer a tremendous advantage for patients in that physicians and surgeons are able to be highly focused in distinct subspecialties of ophthalmology.

Over the years Alfonso says advances in information technology have provided an important boost to the field of ophthalmology. Electronics, and particularly the ability to instantaneously exchange information, have made treating patients, teaching students, learning and communicating with

colleagues a far more productive process.

While he is invigorated by new discoveries in ophthalmology, Alfonso always tries to put himself in his patient's shoes when arriving at treatment decisions. "You must always let it circulate in your mind that the person standing before you is you, and treat accordingly."

Alfonso and his wife, Molly, have two grown daughters and a son in middle school. Though his practice keeps him busy, he always makes time to enjoy the outdoors. "I love it here. I have Caribbean blood, and South Florida is perfect for that."

## CORNEAL TRANSPLANTS AND KERATOPROTHESIS

Six million people worldwide are blinded as a result of a corneal disease or disorder; by the year 2020 that number may reach 10 million. For many, vision may be restored with corneal transplants. The need for transplantable corneas far exceeds the availability. In addition to the limited supply of donor corneas, successful transplants depend upon appropriate harvesting and surgical techniques, delicate suturing, instrumentation and postoperative anti-

immunosuppressive drugs. In rural regions, and especially in third world countries, meeting all of the requirements for successful corneal transplants is next to impossible. Synthetic corneas will provide a bright, new outlook for overcoming current challenges.

For more than 12 years, Bascom Palmer Eye Institute's Ophthalmic Biophysics Center has collaborated with researchers throughout Europe and Japan to design and develop an affordable keratoprosthesis (artificial

cornea) to provide an alternative to donor tissue. The supra Descemetic keratoprosthesis (sD-KPro) is a medical grade prosthesis shaped to fit the human eye. The selected materials are biocompatible, which means the human body will not reject it, eliminating the need for expensive drug therapy to prevent tissue rejection. After years of research, development and refinement, clinical trials in the U.S. for the sD-KPro may begin during 2004.

