

Cornea Service



The Cornea Service of the Doheny Eye Centers consists of six highly trained physicians -- Drs. Smith, Irvine, Song, Huang, Memarzadeh and Yiu -- whose unique but overlapping clinical interests provide the Cornea Service with a rich array of diagnostic acumen, and surgical expertise. Their combined years and breadth of experience allow them to offer in-depth consultation and second opinions for ophthalmologists and patients throughout the western United States.

The Doheny Cornea Service utilizes the most modern technology to seek solutions to clinical dilemmas. Surgical options for corneal disease now include endothelial and anterior lamellar transplants, as well as the more traditional penetrating keratoplasty. The recent acquisition of a Femtosecond laser expands the possibilities for better keratoplasty outcomes. Intralase enhanced keratoplasty (IEK) promises to advance the standards for surgical outcomes by improving and customizing trephination of both host and donor corneas to improve healing and decrease astigmatism. Furthermore, ongoing clinical trials are looking at enhanced outcomes for corneal implantation, anterior segment disorder diagnosis, and post refractive surgery IOL calculation reliability.

Whatever the question - whether it is infectious diseases, refractive surgery, degenerative conditions, or post-op complications - our specialists draw upon their extensive resources, collaborations, and experience to better serve our community physicians and patients.



**Doheny Eye
Centers**

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Doctors of USC



John Irvine, MD

Dr. Irvine earned his medical degree from the Keck School of Medicine of USC. He completed both his residency and a fellowship in Cornea and External diseases at the Massachusetts Eye and Ear Infirmary, Harvard University. He is Director of Continuing Medical Education for the Doheny Eye Institute, Associate Medical Director of the Doheny Eye and Tissue Bank, and a past-President of the Los Angeles Society of Ophthalmology.

Dr. Irvine has been named in Woodward and White's "Best Doctors in America," and has been included in Los Angeles magazine's list of the best ophthalmologists in Los Angeles. He has also served as a volunteer for Orbis International, which strives to improve vision care in countries all over the world. His clinical interests include cornea and external disease, complications of cataract surgery, and tumors of the ocular surface.



Ronald Smith, MD

Dr. Smith graduated in 1967 from Johns Hopkins University School of Medicine in Maryland. After completing his residency at the Wilmer Eye Institute, he completed a fellowship in Uveitis, Cornea and External Disease at the Proctor Foundation at the University of California, San Francisco.

Currently he serves as Professor and Chair of the USC Department of Ophthalmology, which he joined in 1975. He maintains his long-standing clinical and research interest in external eye disease, cornea and uveitis.



Samuel Yiu, MD, PhD

Dr. Yiu received a bachelor's degree in Chemistry, a master's in Applied Biometry, and a doctorate in Physiology & Biophysics from USC. He received his medical degree from the University of Alberta and completed his residency in ophthalmology at Dalhousie University in Canada. His postdoctoral fellowship in Cornea/External Diseases and Refractive Surgery was completed at the Doheny Eye Institute/USC.

Dr. Yiu's interests in dry eye conditions and dysfunctional tear film pathophysiology are the cornerstones for the ocular surface surgical procedures he performs, including limbal stem cell transplant and amniotic membrane grafting techniques from which many patients benefit.

Doheny's mission:

"to further the conservation, improvement and restoration of human eyesight"

(Carrie Estelle Doheny – 1947)



Jonathan Song, MD

Upon completion of his undergraduate studies at Cal Tech, Dr. Song earned a medical degree from the University of California San Francisco and completed his residency at the Doheny Eye Institute/USC where he also served as chief resident.

After completing fellowships in Pediatric Ophthalmology at Childrens Hospital Los Angeles (CHLA) and Cornea/Refractive Surgery at the Doheny Eye Institute, Dr. Song joined the faculty at the Keck School of Medicine of USC in 1999 as director of the Cornea and Refractive Surgery Center at CHLA, where he focuses on pediatric anterior segment disorders, including cataracts, corneal disorders, and glaucoma. His adult practice at Doheny is focused on corneal and external diseases and refractive surgery.



David Huang, MD, PhD

Dr. Huang earned his medical degree from Harvard Medical School. He completed his ophthalmology residency training at the Doheny Eye Institute/USC and fellowship training in Corneal Diseases and Refractive Surgery at Emory University. He also earned a PhD in Medical Engineering and Medical Physics from the Massachusetts Institute of Technology where he was a co-inventor of optical coherence tomography (OCT), a high-resolution cross-sectional imaging technology that is now indispensable in the diagnosis of eye diseases.

Dr. Huang is the Director of the Doheny Laser Vision Center.



Farnaz Memarzadeh, MD

Dr. Memarzadeh graduated from the University of Pittsburgh School of Medicine and completed her residency in ophthalmology at University of California, Irvine. She completed two fellowships: one in Cornea/External Disease and Refractive Surgery and the other in Glaucoma, both at the Doheny Eye Institute/USC.

Her practice focuses on the surgical treatment of combined corneal disease and glaucoma, as well as on cataract and refractive surgery. She is actively involved in the teaching of cataract and glaucoma surgery to the USC ophthalmology residents and fellows.

DOHENY's Vision is to become a premier vision research, education, and tertiary patient care eye institute through the discovery of new knowledge, innovative eye care, and the education of the leaders of ophthalmology and vision science. The Doheny Eye Institute is a not-for-profit charitable enterprise dedicated to the conservation, improvement, and restoration of human eyesight. Doheny is guided by three objectives: to increase knowledge of the human eye and diseases through research, to apply this increased knowledge to patient care, and to transmit this knowledge through education, training and community service.

Guiding the Treatment of Anterior Eye Disease with Optical Coherence Tomography (AED-OCT)

Sponsored by the National Institutes of Health (NIH) and Optovue, Inc.

The applications of optical coherence tomography (OCT) for anterior segment diseases have evolved with improved instrument performance. We are using a new generation of anterior segment OCT systems that has sufficient speed to reliably map the cornea and anterior segment in three dimensions. We believe the enhanced performance will enable OCT to guide laser treatment and intraocular lens (IOL) power selection.

Contacts:

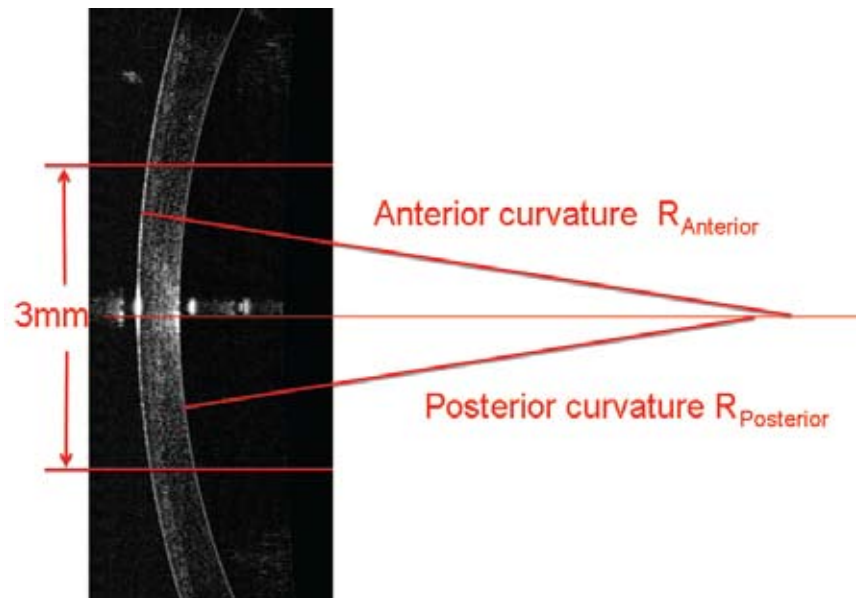
Study Coordinator: Sylvia Ramos, COA, CCRP, 323-442-6383 or sramos@doheny.org
Co-Principal Investigators: David Huang, MD, PhD; Samuel Yiu, MD, PhD

Cataract Surgery IOL Power Calculation after Laser Vision Correction

Cataract extraction with IOL implantation is the most common eye surgery. The power of the IOL is selected using formulae that are primarily based on 2 measurements: axial eye length and corneal power. These formulae work well in normal eyes. However, they can lead to biased and unpredictable refractive results in cataract patients who have had previous laser vision correction (LVC), such as LASIK and PRK. With a large number of patients undergoing refractive surgery every year, the problem is becoming more severe.

The main problem with post-LVC IOL calculation is that the anterior and posterior corneal curvatures are no longer linked. Thus conventional keratometry, which only measures the anterior surface, is no longer adequate. Since OCT can separately measure the anterior and posterior surfaces, we believe it may be the basis of a better IOL calculation formula and may provide a straightforward approach to post-LVC IOL calculation.

We are soliciting referral of cataract patients who had previous uncomplicated LVC (without enhancement) for the OCT-based IOL



power calculation study. Participants will undergo corneal OCT, IOL-Master, topography, and RGP over-refraction at the Doheny Eye Institute (DEI) prior to surgery. The surgery will be performed by the referring doctor. The referring doctor must provide historical data (peri-LVC keratometry and refraction) and will receive IOL calculations (but will not receive OCT output until it is validated). The participant must again return to DEI one month after cataract surgery for OCT and other measurements.

The goal of the study is to develop an OCT-based IOL formula and compare its accuracy with formulae based on historical data and RGP over-refraction.

Corneal Mapping in the Diagnosis and Management of Corneal Diseases (AED-OCT)

We have developed methods to map corneal thickness, curvature and topography using high-speed OCT. Although Placido ring-based topography and slit-scanning tomography could also perform these functions, they are not reliable in the presence of irregular surfaces and opacities. The high resolution of OCT allows reliable corneal mapping even in these pathological cases. We are conducting a clinical study at the Doheny Eye Institute to investigate the use of OCT to guide the diagnosis and treatment of corneal diseases. The applications of interest include:

- Keratoconus and forme fruste keratoconus diagnosis
- Planning of excimer laser phototherapeutic keratectomy (PTK) for corneal irregularity and opacities (scars and dystrophies)
- Lamellar keratoplasty and penetrating keratoplasty

Tear Meniscus Measurement in Dry Eye (AED-OCT)

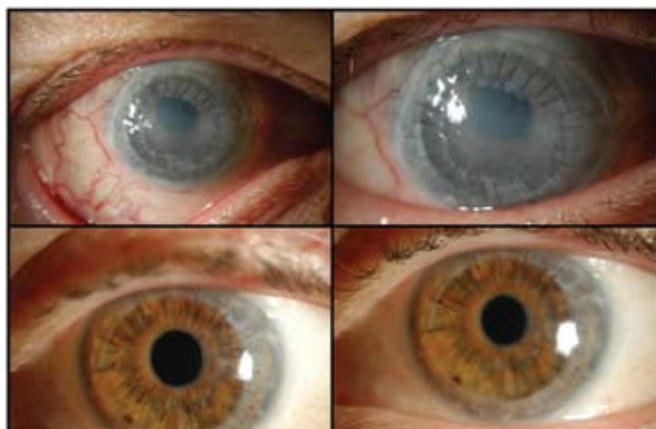
An additional arm of the AED-OCT study will evaluate the measurement of the inferior tear meniscus cross-sectional area, using high-speed OCT. The study will evaluate whether the meniscus measurements are useful in assessing dry eye severity and treatment efficacy. The participants will be evaluated clinically, complete a questionnaire, and be measured with OCT. Participants will be evaluated again after receiving the treatment selected by the treating physician (punctal plug, artificial tear, and/or medications).

Cyclosporine A and Transplant Graft Survival

Sponsored by LuxBiosciences

While endothelial keratoplasty has improved the overall outcomes of corneal surgery for endothelial dysfunction, rates of penetrating keratoplasty failure from allograft rejection remain problematic in high risk patients. Previous clinical trials have failed to demonstrate significant improvement with donor-host tissue matching. However, topical cyclosporine has been used with variable success in non-controlled studies.

The Doheny Cornea Service has received IRB approval for a clinical trial evaluating the use and efficacy of LX201, a novel sustained-release silicone implant containing a 30% cyclosporine agent. Intended for surgical epi-scleral placement in the eye, it is available for patients who are either at high risk for or have already suffered an episode of rejection, and it provides sustained release of this immunosuppression agent for these high risk corneas.



Contacts:

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Principal Investigator: Samuel Yiu, MD, PhD



Doheny Eye Centers

A Division of Doheny Eye Medical Group, Inc.

For the convenience of our referring physicians and patients, the Doheny Eye Centers provide services at six locations in Southern California.

Arcadia

622 W. Duarte Road, Suite 101
Arcadia, CA 91007
626 446 2122

Los Angeles

USC Health Sciences Campus
1450 San Pablo Street
Los Angeles, CA 90033
323 442 6335

Orange

2617 E. Chapman Avenue, Suite 301
Orange, CA 92869
714 628 2966

Pasadena

10 Congress Street, Suite 300
Pasadena, CA 91105
626 395 0778

Rancho Mirage

40-055 Bob Hope Drive, Suite J
Rancho Mirage, CA 92272
760 320 2133

Riverside

4440 Brockton Avenue, Suite 330
Riverside, CA 92501
951 788 1231

Doheny Laser Vision Center

USC Health Sciences Campus
1450 San Pablo Street
Los Angeles, CA 90033
323 442 6377

CORNEAL DIAGNOSTIC RESOURCES

- Orbscan
- Corneal Topography
- Wavefront Analysis
- Hi-Speed OCT Analysis
- Confocal Microscopy
- Specular Microscopy
- Ultrasonic Biometric Analysis (UBM)



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