

SHINE *the* LIGHT

Summer 2019

In this Issue

Story	Pg
Refining cataract surgery	1
Message from the chair	3
Helping macular degeneration patients adapt	4
A new view of the world at 81	5
Lobel family cause	6
Thank you to our donors	6
Saving sight and a baseball career	7

RESEARCH UPDATE

Big data: Refining cataract surgery

Cataract surgery has a tremendous success rate: 98% in the United States. But because it is also one of the most frequently performed surgeries, even incremental improvements in the procedure can have a major impact.

About 3 million Americans undergo cataract surgery each year; if the success rate could be nudged upward to 98.5%, for example, that would mean 150,000 additional successes every year. What if even successful surgeries could be made more precise and deliver greater visual acuity?

That's why Darren Knight, MD, an ophthalmology resident at the UCI Health Gavin Herbert Eye Institute (GHEI), has been using big data to examine whether regular biometric eye measurements with optical coherence imaging (OCT) before cataract surgery could



Dr. Darren Knight

continued on page 2

improve outcomes by providing more detailed information. There is far more work to be done before that question can be answered, Knight said, but the findings so far look promising.

Knight presented his research at the 2018 national meeting of the Association for Research in Vision and Ophthalmology (ARVO) in Honolulu, at the 2018 national meeting of the American Academy of Ophthalmology in San Francisco and the 2019 meeting of the American Society of Cataract and Refractive Surgery in San Diego. His study also is under consideration by a peer-reviewed journal.

For his research, Knight obtained access to a database containing records of more than 11,000 relatively young and healthy British patients whose eyes had been measured with OCT before undergoing refractive lens exchange, a vision-correction procedure that is like cataract surgery except performed on a clear lens rather than a cloudy one. Close to a third of those patients had their eyes measured after surgery as well.

"In research terms, that's an incredible number of patients to be able to draw data from," Knight said. "This is kind of a gold mine, this data sitting there, waiting to be explored."

Knight is particularly interested in OCT measurements of central macular thickness of the retina. That's why

it also was important that only about 2% of patients in the database had diabetes, which can cause macular edema and become a confounding factor in precise eye measurement.

The question for Knight was whether the ability to do biometric measurements might help ophthalmologists pick the optimal lens for patients. OCT scans are not routinely ordered by doctors now, but they could become more commonplace if the data shows that it leads to improved outcomes.

"We were able to see that there is a relationship between central macular thickness and a few of the factors that are often measured before cataract surgery," he said. Though that relationship is not yet defined, it appears to be connected to visual acuity after surgery and data doctors use to determine which lens should be used for cataract surgery.

It's too early to make any claims that all or most cataract patients should undergo OCT before surgery, Knight said, but additional research could continue leading researchers in that direction.

"There's early data showing that if we included the macular thickness into our preoperative planning, we might be able to be a little more accurate in choosing our lenses," he said. "Lens choice is the most important factor in the surgery's outcome."

MESSAGE FROM THE CHAIR

Over the past year, I've had the privilege of telling you about some marvelous firsts at the UCI Health Gavin Herbert Eye Institute (GHEI). We've opened new avenues of research, hired exciting new staff, dramatically increased the endowment of the Irving Leopold Chair, which was created for our Center for Translational Vision Research, and we began offering new services, such as low-vision care, that you'll be reading about in this newsletter.

It's a thrill to be able to tell you about GHEI's growth in our ability to attract research grants, which will allow us to break new ground in understanding ailments of the eye and forging promising new treatments. In fact, it appears that this year, GHEI may be among the nation's top 10 departments of Ophthalmology receiving National Institutes of Health (NIH) research dollars.

You have, of course, read about the hiring of world-renowned ocular pharmacologist Krzysztof Palczewski and his team of 25 researchers, who have greatly advanced scientific understanding of retinal diseases. With their arrival, this team alone brings more than \$8 million in research grants to GHEI. They have applied for nearly \$5 million more in research funds.

Many other GHEI faculty and staff have been funded for their important work. Lbahir BenMohamed's laboratory has close to \$1.5 million in current grants, with much

of that dedicated to finding a vaccine for ocular herpes. Andrew Browne has received a prestigious NIH K award for young researchers for his work on retinal organoids.

Among her various grants, M. Cristina Kenney received an NIH R01 to research the protective effects of humanin to rescue faulty mitochondria. Tibor Juhasz also recently received a new R01 grant for his work on femtosecond lasers for the treatment of glaucoma.

This is just a partial list, with at least 25 more grant proposals pending. Whether it's Henry Klassen finding success with progenitor cells to treat retinitis pigmentosa or James V. Jester researching the possible roles of botanicals in eye health, our goal of bench-to-bedside eye care starts in the laboratory, where GHEI's top-notch scientists are bringing in crucial research funding at a level never seen before in our department.

Truly, it is an exciting time here at GHEI, as we expand our research efforts in order to bring new cures and treatments for ocular diseases to our patients and the world.



Baruch D. Kuppermann, MD, PhD

*Chair, Department of Ophthalmology
Director, Gavin Herbert Eye Institute*

Faculty members

Cataracts, Cornea, External Disease and Refractive Surgery

Marjan Farid, MD
Vice Chair, Ophthalmology Faculty
Sumit (Sam) Garg, MD
Vice Chair, Clinical Ophthalmology
Sanjay Kedhar, MD
Matthew Wade, MD

Cataracts and Glaucoma

Richard Hill, MD
Ken Y. Lin, MD, PhD
Sameh Mosaed, MD

Comprehensive Ophthalmology

Kavita K. Rao, MD

Low Vision

Rebecca L. Kammer, OD, PhD

Neuro-ophthalmology

Robert Wade Crow, MD

Oculoplastics

Jeremiah Tao, MD

Ophthalmic Pathology

Donald S. Minckler, MD

Optometry

Joseph Bui, OD
Timothy Scott Liegler, OD
Kailey A. Marshall, OD
Linda Shi, OD
Poonam Varsani, OD

Pediatric Ophthalmology

Charlotte Gore, MD
Robert W. Lingua, MD
Mohammad Riaz, MD
Jennifer L. Simpson, MD

Retina and Vitreous

Andrew Browne, MD, PhD
Baruch D. Kuppermann, MD, PhD
Chair, Department of Ophthalmology
Stephanie Y. Lu, MD
Mitul C. Mehta, MD
Mohammad Riaz, MD

Uveitis

Sanjay Kedhar, MD

Research

Andrew Browne, MD, PhD
Lbahir BenMohamed, PhD
James V. Jester, PhD
Tibor Juhasz, PhD
M. Cristina Kenney, MD, PhD
Timothy Kern, PhD
Henry J. Klassen, MD, PhD
Baruch D. Kuppermann, MD, PhD
Anthony B. Nesburn, MD
Vice Chair, Research
Krzysztof Palczewski, PhD
Eric Pearlman, PhD
Jing Yang, PhD

Helping macular degeneration patients adapt



Dr. Rebecca Kammer

While research is underway to cure and prevent eye diseases such as macular degeneration and retinitis pigmentosa, UCI Health optometrist Rebecca L. Kammer works with low-vision patients to help them see the best they can.

Kammer, who previously was in private practice, opened the first low vision service at UCI Health Gavin Herbert Eye Institute (GHEI) in November, seeing patients each Friday. She's also a researcher who works with jCyte, a company created to commercialize treatments based on GHEI research employing regenerative medicine to treat retinitis pigmentosa.

In her low-vision practice, Kammer relies on a combination of very precise diagnoses, instruction in adaptive living strategies and both conventional and cutting-edge treatments that allow her patients to carry on with their usual daily activities. Referral to rehabilitation specialists, such as occupational therapists, to help people make adjustments in their lives, is another important part of the process.

Most of Kammer's patients come to her with a diagnosis of macular degeneration.

To help them, she said it's not enough to know a patient has 20/60 vision, for example. Some patients with macular degeneration may have sight in the middle of their field of vision and good peripheral vision, but are unable to see in a ring between the two. These patients may drop a pill and see it at first then lose sight of it if they don't understand where their blind spot is.

"For people with the doughnut blind spot, lighting makes a big difference as well as maybe a little bit of magnification," Kammer said. "We would also advise them to create a dark-surface area for taking their medication so that with the contrast, a pill will be easier to spot."

Other patients may have lost vision in the center of their field of vision. They benefit most from magnification assistance.

This can range from prescribing magnifying glasses to implanting miniature telescopes. Patients with other vision problems may need special lighting or help to filter light that bothers their eyes.

One problem for patients is that such adaptive equipment is not covered by insurance, so Kammer may help them locate lower-cost items.

Because many patients need to adapt their home and habits for optimal vision gains, Kammer also coordinates care with community professionals to create sustained rehabilitation plans. In other words, patients are as responsible for improving their situation as their doctor is, and in some cases more. That's not always easy.

"This is all about the change process," Kammer said. "Change means they actually have to work at it."

A new view of the world at 81

Lavon DeGraw is ready to hit the trail again. She's been everywhere — Yellowstone National Park, the South American region of Patagonia. Recently she planned a spring trip to the Grand Canyon with her husband. This time she'd be bringing some new equipment: a knee replacement and 20/20 vision.

DeGraw, 81, was amazed and thrilled last fall when her cataract surgery, performed by Dr. Sumit "Sam" Garg, medical director of the UCI Health Gavin Herbert Eye Institute (GHEI), resulted in vision that any 20-year-old would be happy to have.

Before visiting Garg for help with her worsening vision, DeGraw had never been told she had dry eyes. She had reached the point where she avoided reading anything in print because the letters were too small; at least she could magnify the text on a computer screens.

"Now I can read a menu; I can read the newspaper without glasses," she said. "I keep thinking, 'Can this be real?'"

Every step of the way, things were done right, she said, including by surgical staff members, who were friendly but also precise, making sure they had every detail down correctly.

"I'm a former legal administrator, and I can be very critical," DeGraw admitted.

When she was concerned about some blurriness after the surgery on her second eye, a team member contacted her right away to explain this was normal and would pass soon.

Then in January, DeGraw had knee replacement surgery, which also worked out wonderfully, she said. She's driving again – and without blurry vision. She expects to see every beautiful detail on her hikes.

Still, nothing is perfect. She has one complaint.

"Before I had the surgery, I didn't have wrinkles," DeGraw said, chuckling. "Now I do."



Lavon DeGraw and husband

Macular degeneration research: a Lobel family cause



The Lobel brothers

Ruth and Seymour Lobel moved to Newport Beach from Montreal, Canada in the late 1970s. Seymour, who became a U.S. citizen, established a thriving business that is now run by his four sons, Gary, Harvey, David and Murray.

Today, the family remains close and all still live in Orange County with their own families.

But several years ago, Seymour was diagnosed with macular degeneration that has since left him legally blind despite the best efforts of specialists at UCI Health Gavin Herbert Eye Institute (GHEI) to slow its progression.

Ruth Lobel now has the disease. The four sons, Gary, Harvey, David and Murray had their eyes checked and only one shows early sign of the eye disease. The other three are not considered at high risk of developing it.

As the Lobel family was going through this trying time, Ruth talked with her family about making vision research at UCI one of the family's charitable causes. This is how the Lobels, acting together as a family, became regular donors to GHEI, Murray Lobel said.

"If we couldn't help my father, then maybe we could help others," he said. "We hope our family contribution to the institute will help bring about the eventual solution to this disease that affects so many."

Thank you to our donors

Gifts of \$25,000 and above received since July 1, 2018, to the general fund of the Gavin Herbert Eye Institute:

Carol & Budge Collins

Helen and Jacob Shaham
Charitable Foundation

Gifts of \$50,000 and above received since July 2018 to the Roger F. Steinert, MD Endowed Chair:

Anne Brownstein

Gifts of \$50,000 and above received since July 2018 to the Irving H. Leopold, MD Endowed Professorship:

Josephine Herbert Gleis Foundation

Gifts of \$25,000 and above received since July 1, 2018, for research:

Allergan Foundation

Lisa & David Lobel

American Glaucoma Society

Murray, Clayton & Dakota Lobel

Anonymous

Nancy & Harvey Lobel

ARVO

Geneva M. Matlock, MD

Janet & John Cauffman

Research to Prevent Blindness

Edith and Roy Carver

Retina Research Foundation

Discovery Eye Foundation

Sightlife/CorneaGen

Ninetta & Gavin Herbert

Polly & Mike Smith

Julie & Gary Lobel

Legacy Gifts of \$100,000 and above since July 1, 2018:

Geneva M. Matlock, MD

Edette & Milo Price Trust

Elizabeth M. Davis Trust

20/20 Society gifts of \$2,500 and above received since July 2018

Esther & Jim Cavanaugh

Sandra & Ron Livingston

Christine & Roy Dormaier

Thomas Harold Nielsen

Sandy Fainbarg

Nancy & Larry A. Pasquali, MD

Susan A. Finney

Cheryll & Richard Ruszat

Romila & Sumit Garg, MD

Katy & Jack Schoellerman

Maralou & Jerry Harrington

Stephanie & Jeremiah Tao, MD

Arliss A. Hoskins

The Kuppermann Family

Pediatric Vision Program Gifts of \$10,000 and above since July 1, 2018

Children and Families

Lon V. Smith Foundation

Commission of Orange County

The Nicholas Endowment

J & J Vision

To make a donation, contact Janice Briggs, senior executive director of development, at 949-824-0091 or jbriggs@uci.edu.



Tommy Pham

Saving sight and a baseball career

One of the many attributes needed by a major-league baseball player is excellent vision. When Tommy Pham realized a decade ago that his ability to see what was happening on the field was falling short, it was both a threat to his eye health and his career.

Glasses didn't really improve his sight. Further examination revealed that Pham had keratoconus, a degenerative weakness in the structure of the cornea that causes it to thin and bulge. Eventually, the cornea's dome shape becomes more like a cone, distorting vision.

The problem often is diagnosed at just about the age Pham discovered he had it, in late teens or early adulthood.

With treatment, Pham has been able to thrive in his beloved sport. Now 31, he is an outfielder for the Tampa Bay Rays — and an ambassador for the National Keratoconus Foundation, an outreach program of the

UCI Health Gavin Herbert Eye Institute (GHEI).

In talks and on social media, he spreads word about the condition to educate the public.

As part of his treatment for keratoconus, Pham underwent a then-investigational treatment called crosslinking, in which the epithelium, or protective covering of the cornea, is temporarily removed.

The cornea is then saturated with riboflavin, a B complex vitamin, and exposed to ultraviolet light. This increases the number of "crosslinks" that give the cornea its structure. An FDA-approved version of this treatment is provided at GHEI.

Pham also wears specially designed contact lenses.

"Corneal crosslinking helped stabilize my keratoconus," he says. "The contacts I wear today have given me the opportunity to play baseball, a game I love."

UCI Health

850 Health Sciences Road
Irvine, CA 92697

NONPROFIT ORG
U.S. POSTAGE
PAID
Santa Ana, CA
Permit No. 1106

VISIT THE OPTICAL SHOP

For your convenience, we have extended our hours:

Monday–Thursday: 7:30 a.m.–6 p.m.

Friday: 7:30 a.m.–5 p.m.

Saturday: 7 a.m.–3 p.m.

Call 949-824-7690 to schedule your appointment now!

Proceeds from our optical shop go to fund sight saving research and to help students diagnosed with keratoconus pay for specialty lenses not covered by insurance.

Shine the Light is going green! Sign up at www.news.uci.edu to receive *Shine the Light* in your inbox instead of your mailbox!

EVENTS

Location for all events:

Gavin Herbert Eye Institute
850 Health Sciences Road; 3rd Floor, Irvine, 92697

RSVP info for all events:

RSVP.ghei@health.uci.edu | 949-824-7243

Community Lecture

Monday, September 16, 2019, 7 p.m.

Diabetes and its impact on your eyes

Minimizing vision loss in diabetics
Andrew Browne, MD, PhD

Personalized medicine

The “All of Us” program: Towards personalized medicine for diabetes and diseases
Steven Chessler, MD, PhD
“All of Us” program

Monday, November 4, 2019, 7 p.m.

Inflammation of the eye

Uveitis: What you and your rheumatologist should know about eye inflammation
Sanjay Kedhar, MD

Make an appointment

UCI Health Gavin Herbert Eye Institute

📍 University of California, Irvine
850 Health Sciences Road, Irvine, CA 92697
Appointments: 949-824-2020
Optical Shop: 949-824-7690

📍 UCI Medical Center
101 The City Drive South, Pavilion 2, Bldg. 30A
Orange, CA 92868
Appointments: 714-456-7183

Make a donation

To learn more about how you can support us, contact Janice Briggs, senior executive director of development, at 949-824-0091 or jbriggs@uci.edu

You can also make a donation at <http://connect.uci.edu/Gavin-Herbert-Eye-Institute>

Find us online

ucihealth.org/eye

www.uci.edu

facebook.com/gavinherberteyeinstitute