

EDUCATION

World Glaucoma Week 2018

AEVR Congressional Briefing Focuses on Customizing Glaucoma Treatments



Featured speaker Alex Huang, MD, PhD (University of California Los Angeles/Doheny Eye Institute)

On March 6, AEVR held its *World Glaucoma Week 2018* Congressional Briefing, co-hosted by all major glaucoma societies and research organizations (see box right). Entitled *Toward Customized Glaucoma Care*, the event featured NEI-funded clinician-scientist Alex Huang, MD, PhD, who is an Assistant Professor in Ophthalmology at the University of California Los Angeles, which is affiliated with the Doheny Eye Institute. Dr. Huang is a glaucoma specialist and advanced cataract surgeon who supports all current and minimally invasive glaucoma surgical procedures and applies his clinical experience to research better outcomes for patients. He has received a Career Development Award from Briefing co-sponsor Research to Prevent Blindness.

Referring to himself as “plumber in a white coat,” Dr. Huang used graphics of a sink and drain to explain how the aqueous humor, a clear fluid that

“The combination of new technologies to map fluid flow and image the eye’s structures can now open a path to a new generation of individualized and precision glaucoma surgery for the individual patient,” – Dr. Huang

nourishes tissues, flows in and out of the anterior chamber of the eye, which is the space between the cornea and iris. Aqueous humor flows out of the anterior chamber through the open angle where the cornea meets the iris. The open angle consists of two routes: the trabecular pathway consisting of a spongy layer called the trabecular meshwork, and the uveoscleral pathway, through the ciliary muscle that controls the eye’s focusing mechanism.

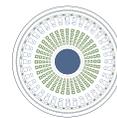
He explained that in glaucoma’s most common form—primary open angle glaucoma (POAG)—nerve damage results from high IOP, which occurs when the fluid drains inadequately. NEI-funded research has resulted in various pressure-reducing drug regimens, including two new therapies recently approved by the Food and Drug Administration (FDA) that specifically act on the trabecular meshwork. NEI’s *Ocular*

Hypertension Treatment Study (OHTS) found that, although pressure-reducing eye drops delayed disease onset, there are often issues with patient compliance with their drug regimen. Glaucoma is also treated through traditional and now Minimally Invasive Glaucoma Surgeries (MIGS), primarily to the trabecular meshwork. These include FDA-approved tools that either ablate or bypass the trabecular meshwork to facilitate fluid flow. Newer options can also access the uveoscleral outflow pathway.

Dr. Huang explained that by using aqueous angiography—which is real-time imaging of aqueous humor outflow in patients—he has determined that each eye’s fluid pathway is unique, including each eye in the same individual. By mapping this fluid flow, he can unveil the native outflow pathways of each eye, where fluid will preferentially flow or not flow, too. By coupling real-time aqueous angiography with real-time Optical Coherence Tomography (OCT), which is minimally invasive three-dimensional imaging of the structures of the eye, functional action of flow can be linked to structural correlates of flow, and he hopes that by combining these synergistic concepts surgery can be precisely placed in optimal areas for best IOP-lowering outcome.

“The combination of new technologies to map fluid flow and image the eye’s structures can now open a path to a new generation of individualized and precision glaucoma surgery for the individual patient,” said Dr. Huang.

In addition to his work on glaucoma, Dr. Huang also studies visual alterations in space through research funded by the National Aeronautics and Space Administration (NASA) regarding countermeasures to ocular changes that American astronauts undergo in the International Space Station.



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Glaucoma, the second leading cause of blindness that affects more than 60 million individuals worldwide, is a neurological disease affecting the optic nerve and causing loss of peripheral vision—and ultimately blindness. It affects more than 2.7 million Americans over age 40, with that number estimated to more than double by year 2050. It includes both diagnosed and undiagnosed cases, as often individuals are unaware they have the disease until vision is lost. Certain characteristics such as age, ethnicity, high blood pressure, high intraocular pressure (IOP), and optic nerve appearance are associated with disease development. Groups at highest risk include African Americans over age 40, individuals over age 60, and those with a family history of the disease.

About World Glaucoma Week 2018

The first *World Glaucoma Day* was held on March 6, 2008, and the United States House of Representatives passed H.R. 981, which recognized the event and supported the NEI’s efforts to research the causes of and treatments for glaucoma. Since 2010, the day has expanded into a week of educational events held worldwide, with all major glaucoma professional societies and research organizations co-sponsoring AEVR’s 2018 event, including:

- Research to Prevent Blindness
- American Glaucoma Society
- Association for Research in Vision and Ophthalmology
- Glaucoma Research Foundation
- Optometric Glaucoma Society

In addition to speaking at the Briefing, Dr. Huang also visited his Congressional delegation in NAEVR-hosted visits.



Dr. Huang with Congresswoman Judy Chu (D-CA), who participated in an interactive, half-hour conversation about various vision issues



Dr. Huang with Lizbeth Alvarez, office of Sen. Kamela Harris (D-CA)