



**DECADE OF VISION**  
an initiative of the **2010-2020**  
Alliance For Eye And Vision Research

## **ALLIANCE FOR EYE AND VISION RESEARCH**

**In conjunction with:**

**Research to Prevent Blindness**

**American Macular Degeneration Foundation (AMDF)**

**Association for Research in Vision and Ophthalmology (ARVO)**

**Macular Degeneration Partnership**

*continues education about eye and vision research with a Briefing that begins the Sixth Annual Emerging Vision Scientists Day on Capitol Hill, recognizing International AMD Awareness Week 2020 and Healthy Aging Month*

### ***Artificial Intelligence in Retinal Diseases: Focus on Age-Related Macular Degeneration (AMD) and Diabetic Retinopathy (DR)***

**Wednesday, September 23, 2020**

**12 Noon - 1:15 pm Eastern**

**Featuring:**

**Speaker: Tiarnan D. Keenan, BM, BCh, PhD (National Eye Institute)**

**T.Y. Alvin Liu MD (Wilmer Eye Institute/Johns Hopkins University)**

**Jack Stewart, AMDF Patient Representative**

**R.S.V.P. to Dina Beaumont @ 202-407-8325 or [dinabeau@aol.com](mailto:dinabeau@aol.com)**

**Link to event at: <https://www.arvo.org/advocacy/NAEVR-virtual-events/>**

**AEVR, a 501(c)3 non-profit educational foundation, is pleased to host this widely attended global event, with streaming support from ARVO and event management support from Novartis.**

***Artificial Intelligence in Retinal Diseases: Focus on AMD and DR***  
**Recognizing International AMD Awareness Week 2020 and Healthy Aging Month**  
**September 23, 2020 12:00 Noon – 1:15 pm Eastern**  
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**What is the Burden of AMD?**

AMD is a leading cause of blindness and low vision in the United States and the developed world. It destroys central vision through proliferation of new blood vessels (“wet” AMD) or gradual breakdown of cells (“dry” AMD or geographic atrophy) in the light-sensitive retina. Vision loss from AMD makes it difficult to read, drive, and perform other everyday tasks, thereby affecting productivity, independence, and quality of life and adding significantly to the total US cost burden of eye disease, projected to reach \$717 billion by year 2050 when adjusted for inflation. The National Eye Institute (NEI) within the National Institutes of Health (NIH) estimates that 200,000 Americans each year develop advanced AMD.

**What Research Has Emerged To Treat the “Wet” and “Dry” Forms of AMD?**

As a result of federally funded and private sector research, the vision community has made tremendous strides in treating patients with “wet” AMD through the use of Food and Drug Administration (FDA)-approved anti-Vascular Endothelial Growth Factor (VEGF) therapies that stabilize vision loss and may improve lost vision. Although a treatment for “dry” AMD has proven elusive to-date, in late 2019 the NEI began a first-in-human clinical trial of an induced pluripotent stem cell (iPSC)-based therapy to treat geographic atrophy. The NEI, which has intramural research labs located in Bethesda, Maryland, and funds research grants to universities and institutions across the US, has made a significant investment in studying all forms (“wet” and “dry”) of AMD through genetics (identifying more than 50 independently associated common and rare gene variants), biological pathways, biomarkers, therapeutics, and diagnostics.

**How Can Artificial Intelligence Be Used to Better Diagnose and Treat AMD?**

Ophthalmology has taken the lead in AI, with the first autonomous AI system in use in any field of medicine approved by the FDA in 2018 for the automated detection of clinically significant Diabetic Retinopathy (DR, treated with the same FDA-approved anti-VEGF therapies as in “wet” AMD). AI has expanded into use for Retinopathy of Prematurity (ROP, a blinding eye condition in premature babies) and AMD, driven by advances in retinal imaging such as Optical Coherence Tomography (OCT, developed in part with NIH/NEI funding). However, AI is only as good as the “Big Data” that is used to develop it. In that regard, ophthalmology has again taken the lead, with the American Academy of Ophthalmology’s IRIS® Registry not only being the first national registry but the largest specialty-specific registry in any field of medicine, with information on more than 430 million visits from over 73 million patients to-date.

NEI clinician-scientist Dr. Tiarnan Keenan will address the use of “Big Data” and “Machine Learning” to develop AI systems to diagnose, monitor, and predict disease progression in AMD, while T.Y. Alvin Liu, MD will discuss the challenges in implementation of a fully automated AI system for DR screening within the Johns Hopkins Health System.

**About the Featured Speakers.....**

**Tiarnan D. Keenan, BM, BCh, PhD** serves as a Staff Clinician in Retinal Diseases in the Division of Epidemiology and Clinical Applications at the NEI. His current research is focused on the diagnosis, treatment, and prevention of AMD, including the application of AI and “Big Data” approaches.

**T.Y. Alvin Liu, MD** is an Assistant Professor of Ophthalmology at the Wilmer Eye Institute, Johns Hopkins University. He is a vitreoretinal surgeon whose research focuses on AI applications in automatic Optical Coherence Tomography (OCT) analysis and uveal melanoma prognostication. He is also involved in value-based medicine implementation as it relates to system-wide deployment of AI-assisted automatic Diabetic Retinopathy screening.

The Briefing begins AEVR’s *Sixth Annual Emerging Vision Scientists Day on Capitol Hill* activities, held virtually in 2020 and featuring videos from 22 early-stage vision investigators from across the nation about their research.

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