

CURRICULUM VITAE

The Johns Hopkins University School of Medicine

Allen Eghrari, MD, MPH

DEMOGRAPHIC AND PERSONAL INFORMATION

Current Appointments

2013-present Attending Physician, Johns Hopkins Hospital

2014-present Assistant Professor of Ophthalmology, Johns Hopkins University School of Medicine

Personal Data

Allen Eghrari, MD
Wilmer Eye Institute
1800 Orleans Street
Woods 375
Baltimore, Maryland 21287
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Education and Training

2004 BS, Psychology, University of Illinois at Urbana-Champaign, minor in Chemistry
2004 BA, Economics, University of Illinois at Urbana-Champaign (225 credit hours, 14 A+ grades)
2009 Dean's Predoctoral Research Fellowship. Primary Mentor: John Gottsch, MD
2009 MD, Johns Hopkins University School of Medicine
2010 Internship, Saint Francis Hospital, Evanston, Illinois
2013 Ophthalmology Residency, Wilmer Eye Institute at Johns Hopkins Hospital
2014 Cornea and Anterior Segment Fellowship, Wilmer Eye Institute at Johns Hopkins Hospital
2018 MPH, Johns Hopkins Bloomberg School of Public Health

Professional Experience

7/2013 - pres. Attending Physician, Department of Ophthalmology at Johns Hopkins

7/2014 - pres. Assistant Professor, Department of Ophthalmology at Johns Hopkins

PUBLICATIONS:

Hypothesis-based Research Studies:

1. Lee JK, **Eghrari AO**, Desai NR, Stark WJ, Gottsch JD. Presoaking donor corneas reduces graft detachment rates in Descemet Stripping Endothelial Keratoplasty. *Am J Ophthalmol*. 2009 Mar;147(3):439-441.e2.
2. Lee JS, Desai NR, Schmidt GW, Jun AS, Schein OD, Stark WJ, **Eghrari AO**, Gottsch JD. Secondary angle closure caused by air migrating behind the pupil in Descemet stripping endothelial keratoplasty. *Cornea*. 2009 Jul;28(6):652-6.
3. Riazuddin SA, **Eghrari AO**, Al-Saif A, Davey L, Meadows DN, Katsanis N, Gottsch JD. Linkage of a mild late-onset phenotype of Fuchs corneal dystrophy to a novel locus at 5q33.1-q35.2. *Invest Ophthalmol Vis Sci*. 2009 Dec;50(12):5667-71.
4. Meadows DN,* **Eghrari AO**,* Riazuddin SA, Emmert DG, Katsanis N, Gottsch JD. Progression of Fuchs corneal dystrophy in a family linked to the FCD1 locus. *Invest Ophthalmol Vis Sci*. 2009 Dec;50(12):5662-6. Epub 2009 Jul 15. (*Equal contributors)
5. Bang S, Edell E, **Eghrari AO**, Gottsch JD. Treatment with voriconazole in 3 eyes with resistant Acanthamoeba keratitis. *Am J Ophthalmol*. 2010 Jan;149(1):66-9. Epub 2009 Oct 28.
6. Riazuddin SA, Zaghoul NA, Al-Saif A, Davey L, Diplas BH, Meadows DN, **Eghrari AO**, Minear MA, Li YJ, Klintworth GK, Afshari N, Gregory SG, Gottsch JD, Katsanis N. Missense mutations in TCF8 cause late-onset Fuchs corneal dystrophy and interact with FCD4 on chromosome 9p. *Am J Hum Genet*. 2010 Jan;86(1):45-53.

7. McGlumphy EJ, Yeo WS, Riazuddin SA, Al-Saif A, Wang J, **Eghrari AO**, Meadows DN, Emmert DG, Katsanis N, Gottsch JD. Age-severity relationships in families linked to FCD2 with retroillumination photography. *Invest Ophthalmol Vis Sci*. 2010 Dec;51(12):6298-302. Epub 2010 Sep 1.
8. Riazuddin SA, Vithana EN, Seet LF, Liu Y, Al-Saif A, Koh LW, Heng YM, Aung T, Meadows DN, **Eghrari AO**, Gottsch JD, Katsanis N. Missense mutations in the sodium borate cotransporter SLC4A11 cause late-onset Fuchs corneal dystrophy. *Hum Mutat*. 2010 Nov;31(11):1261-8. Epub 2010 Oct 14.
9. Li YJ, Minear MA, Rimmler J, Zhao B, Balajonda E, Hauser MA, Allingham RR, **Eghrari AO**, Riazuddin SA, Katsanis N, Gottsch JD, Gregory SG, Klintworth GK, Afshari NA. Replication of TCF4 through association and linkage studies in late-onset Fuchs endothelial corneal dystrophy. *PLoS One*. 2011 Apr 20;6(4):e18044.
10. **Eghrari AO**, McGlumphy EJ, Iliff BW, Wang J, Emmert D, Riazuddin SA, Katsanis N, Gottsch JD. Prevalence and severity of Fuchs Corneal Dystrophy in Tangier Island. *Am J Ophthalmol*. 2012 Jun;153(6):1067-72.
11. Leyngold IM, Demetriades AM, D'Anna S, **Eghrari AO**, Emmert DG, Grant MP, Merbs SL. Intraglandular Injection of Botulinum Toxin A Reduces Tear Production in Rabbits. *Ophthalmic Plastic and Reconstructive Surgery*. 2013 Jan;29(1):21-4.
12. Vasanth S, **Eghrari AO**, Gapsis B, Wang J, Haller NF, Stark W, Katsanis N, Riazuddin SA, Gottsch JD. Expansion of CTG18.1 Trinucleotide Repeat in TCF4 is a Potent Driver of Fuchs Corneal Dystrophy. *Invest Ophthalmol Vis Sci*. 2015 Jul 1; 56(8):4531-6.
13. **Eghrari AO**, Garrett BS, Mumtaz AA, Edalati AE, Meadows DN, McGlumphy EJ, Iliff BW, Gottsch JD. Retroillumination photography analysis enhances clinical definition of severe Fuchs Corneal Dystrophy. *Cornea* 2015 Dec;34(12):1623-6.
14. **Eghrari AO**, Riazuddin SA, Gottsch JD. A distinct clinical phenotype of corneal dystrophy predicts the p.Leu450Trp substitution in COL8A2. *Cornea*. 2016 May;35(5):587-91.
15. **Eghrari AO**, Vasanth S, Vahedi F, Riazuddin SA, Gottsch JD. CTG18.1 Trinucleotide Repeat Expansion in TCF4 increases likelihood of transplantation in Fuchs Corneal Dystrophy. *Cornea* 2017 Jan;36(1):40-43.
16. **Eghrari AO**, Mumtaz AA, Garrett BS, Rezaii M, Akhavan MS, McGlumphy EJ, Gottsch JD. Automated retroillumination photography analysis for objective assessment of Fuchs Corneal Dystrophy. *Cornea*. 2017 Jan;36(1):44-47.
17. Irum B, Khan SY, Ali M, Kaul H, Kabir F, Rauf B, Fatima F, Nadeem R, Khan AO, Al Obaisi S, Naeem MA, Nasir IA, Khan SN, Husnain T, Riazuddin S, Akram J, **Eghrari AO**, Riazuddin SA. Mutation in LIM2 Is Responsible for Autosomal Recessive Congenital Cataracts. *PLoS One*. 2016 Nov 4;11(11):e0162620.
18. Irum B, Khan SY, Ali M, Daud M, Kabir F, Rauf B, Fatima F, Iqbal H, Khan AO, Al Obaisi S, Naeem MA, Nasir IA, Khan SN, Husnain T, Riazuddin S, Akram J, **Eghrari AO**, Riazuddin SA. A deletion at the CCNT2 locus is liable for autosomal recessive congenital cataracts. *Plos One* 2016 Dec 9;11(12):e0167562.
19. Annadanam A, Zhao J, Wang J, **Eghrari AO**. Effects of contrast sensitivity on color vision testing. *Neuro-ophthalmology*, 2017 May. <http://dx.doi.org/10.1080/01658107.2017.1295273>
20. Koo E, **Eghrari AO**, Meshkin RS, Shi W, DeMarco KG, Kurz AC. Factors affecting donor tissue unscrolling in DMEK. *Clin Ophthalmol*. 2017 Sep 1;11:1611-1615.
21. **Eghrari AO**, Vahedi S, Afshari N, Riazuddin SA, Gottsch JD. CTG18.1 Expansion in TCF4 among African-Americans with Fuchs Corneal Dystrophy. *Invest Ophthalmol Vis Sci*. 2017 Dec 1;58(14):6046-6049
22. **Eghrari AO**, Vasanth S, Gapsis BC, Bison H, Jurkunas U, Riazuddin SA, Gottsch JD. Identification of a Novel TCF4 Isoform in the Human Corneal Endothelium. *Cornea*. 2018 Jul;37(7):899-903.
23. Lohmeier J, Christy J, Chiang E, Barnes K, Cai S, Chen C, Subramanya A, Chaurasia A, Rosen A, Vora P, Durr NJ, Allen R **Eghrari AO**. Viability of Descemet membrane endothelial keratoplasty grafts folded in the eye bank. *Cornea*, 2018 Aug 7.
24. Ji Y, Hu K, Li C, Li P, Kijlstra A, **Eghrari AO**, Lei B, Du L, Wan W, Yang P. Outcome and prognostic factors of phacoemulsification cataract surgery in Vogt-Koyanagi-Harada uveitis. *Am J Ophthalmol*. 2018 Sep 5.
25. Reed NS, Deal JA, Betz JF, Huddle MG, Bailey BE, McGlumphy EJ, **Eghrari AO**, Riazuddin SA, Lin F, Gottsch JD. Pilot Study of Audiometric Patterns in Fuchs Corneal Dystrophy. *J Speech Lang Hear Res*. 2018 Oct 26;61(10):2604-2608.
26. Barnes K, Chiang E, Chen C, Lohmeier J, Christy J, Cai S, Subramanya A, Chaurasia A, Rosen A, Vora P, Durr NJ, Allen R, **Eghrari AO**. Comparison of tri-folded and scroll-based graft viability in preloaded Descemet Membrane Endothelial Keratoplasty. *Cornea*. 2018 Dec 13. (ePublication, in press)
27. Wallace ACD, Ross RD, Tawse K, Nyain RO, Kolleh-Gargu CC, Bishop RA, **Eghrari AO**. Factors Predicting Ophthalmic Follow-Up of Ebola Survivors in the PREVAIL III Longitudinal Eye Sub-Study in Monrovia, Liberia. *BMC Ophthalmology*, accepted for publication.

28. [Zhao J](#), [Fliotsos M](#), [Ighani M](#), [Eghrari AO](#). Comparison of a Smartphone Application with Ishihara Pseudoisochromatic Plate for Testing Colour Vision. *Neuro-Ophthalmology*, 2018.
29. Karakus S, [Ighani M](#), [Noparat P](#), Tofigh M, [Chiang E](#), [Barnes K](#), [Chen CY](#), Liu T, [Eghrari AO](#). Aspiration of tri-folded, endothelium-in grafts for Descemet Membrane Endothelial Keratoplasty. *Cornea*, accepted for publication.

Review Articles [RA]

1. [Eghrari AO](#), Daoud YJ, Gottsch JD. Cataract surgery in Fuchs corneal dystrophy. *Curr Opin Ophthalmol*. 2010 Jan;21(1):15-9.
2. [Eghrari AO](#), Gottsch JD. Fuchs' corneal dystrophy. *Expert Rev Ophthalmol*. 2010 Apr;5(2):147-159.
3. [Eghrari AO](#), Riazuddin SA, Gottsch JD. Overview of the Cornea: Structure, Function, and Development. *Prog Mol Biol Transl Sci*. 2015;134:7-23.
4. [Eghrari AO](#), Riazuddin SA, Gottsch JD. Fuchs Corneal Dystrophy. *Prog Mol Biol Transl Sci*. 2015;134:79-97

Editorials [ED]

1. Brady CJ, [Eghrari AO](#), Labrique AB. Smartphone-Based Visual Acuity Measurement for Screening and Clinical Assessment. *JAMA*. 2015 Dec;314(24):2682-3.

Methods and Techniques [MT]

1. [Eghrari AO](#), Rivers R, Alkharashi M, Rajaii F, Nyhan D, Sikder S. Cataract surgery in patients with left ventricular assist device support. *Journal of Cataract and Refractive Surgery*. 2014 Apr;40(4):675-8.
2. [Wang A](#), Christoff A, Guyton DL, Repka MX, [Rezaei M](#), [Eghrari AO](#). Google Glass Indirect Ophthalmoscopy. *Journal of Mobile Technology in Medicine*, 2015 Jan; 4(1):15-18.
3. [Vahedi M](#), Davis G, Coleman MJ, [Garrett B](#), [Eghrari AO](#). Smartphone-based video of Demodex folliculorum in biopsied human eyelash follicles. *Med Hypothesis Discov Innov Ophthalmol*. 2015;4(2):36-8.
4. [Eghrari AO](#), [Ahmad S](#), Ramulu P, Iliff NT, Akpek EK. The Use of a Conjunctival Flap to Improve Retention of Boston Type 1 Keratoprosthesis in Severe Ocular Surface Disease. *Ocul Immunol Inflamm*. 2016 Oct;24(5):555-60.
5. [Eghrari AO](#), [Wang A](#), Brady CJ. Google Cardboard Indirect Ophthalmoscopy. *Retina*. 2017 Aug;37(8):1617-1619.

Case Reports [CR]

1. Wubben TJ, [Eghrari AO](#), McCoy AN, Ramsey DJ. Optic Atrophy in End-Stage Giant Axonal Neuropathy: A Case Report. *Neuro-Ophthalmology*. 2013 Oct;37(5):209-213.
2. [Eghrari AO](#), Gibas CG, Watkins T, [Vahedi S](#), Lee R, Houle E, Suarez MJ, Eberhart C, Sutton D, Wiederhold N, Sikder S, Zhang SX. First Human Case of Fungal Keratitis Caused by a Putatively Novel Species of Lophotrichus. *Journal of Clinical Microbiology*. 2015 Jun;53:3063-3067.
3. [Hessen MM](#), [Vahedi S](#), [Khoo CT](#), [Vakili G](#), [Eghrari AO](#). Clinical and genetic investigation of amantadine associated corneal edema. *Clin Ophthalmol*. 2018 Aug 6;12:1367-1371.

Book Chapters, Monographs [BC]

1. [Eghrari AO](#), Newman-Toker D. "Neurology." In *First Aid for the USMLE Step 2 CK*. 2009, 7th edition. Le, Bhushan, Bagga, editors. 279-318.
2. [Eghrari AO](#). "Epidemiology and Biostatistics." In *First Aid for the USMLE Step 2 CK*. 2009, 7th edition. Le, Bhushan, Bagga, editors. 131-144.
3. [Eghrari AO](#). "Ethics and Legal Issues." In *First Aid for the USMLE Step 2 CK*. 2009, 7th edition. Le, Bhushan, Bagga, editors. 145-150.
4. Contributing Author, *First Aid Q & A for the USMLE Step 1*. 2009, 2nd edition. Le, Bechis, editors.
5. [Eghrari AO](#). "Fuchs Corneal Dystrophy" (and 27 additional articles.) *Encyclopedia of Ophthalmology*. Ursula M. Schmidt-Erfurth, ed. 2014. Springer: in press.
6. [Eghrari AO](#), Riazuddin SA, Gottsch JD. "Cornea: Structure, Function and Development." In *Molecular Biology of Eye Disease*. Hejtmancik JF, ed. 2015, in press.
7. [Eghrari AO](#), Gottsch JD. "Fuchs Corneal Dystrophy." In *Molecular Biology of Eye Disease*. Hejtmancik JF, ed. 2015, in press.
8. [Eghrari AO](#), Gottsch JD. "Molecular Genetics of Corneal Diseases." In *Cornea*, 4e. Mannis and Holland, eds. 2016, submitted.
9. [Shan A](#), Bicket A, [Eghrari AO](#). "Ultrasonography of the Anterior Segment."

Media Releases or Interviews [MR]

JHMI/Local

1. “Allen Eghrari MD joins the medical faculty of the Johns Hopkins Wilmer Eye Institute.”
<http://www.baltimoresun.com/health/maryland-health/bal-ugc-photo-allen-eghrari-md-joins-the-medical-facult-2014-10-20-photo.html>
2. “Ebola Research efforts shift to improving survivors’ health.” Interview with Baltimore Sun.
<http://www.baltimoresun.com/health/maryland-health/bs-hs-ebola-survivors-20150710-story.html>
3. “Johns Hopkins team takes second in business plan competition with corneal surgery enhancement”
<https://hub.jhu.edu/2017/04/28/treyetech-team-values-ventures-business-competition/>

National

4. NEI Team in Liberia Investigates Ocular Effects Among Ebola Survivors. September 8, 2015.
https://nei.nih.gov/news/briefs/nei_team_in_liberia
5. “Ebola and Zika: what we know so far.” EyeNet. American Academy of Ophthalmology. May 2017.
<https://www.aao.org/eyenet/article/emerging-viral-infections?may-2017>. Cover story.



International

6. Ebola’s ghost: the mystery after the outbreak. February 25, 2016. Feature article in Wired UK.
<http://www.wired.co.uk/news/archive/2016-02/25/post-ebola-syndrome>



7. “PREVAIL, Partners Perform 40 Successful Cataract Eye Surgeries” Front page article in *Front Page Africa*.
<https://www.frontpageafricaonline.com/index.php/health/6538-prevail-partners-perform-40-successful-cataract-eye-surgeries>



PREVAIL VII Principal Investigator Rachel Bishop, MD, MPH, with Allen Eghrari, MD, observe cataract surgery by Benjamin Roberts, MD

Other Media (Videos, Websites, Blogs, Social Media, etc.) [OM]

Youtube videos:

1. Descemet Membrane Endothelial Keratoplasty:
https://www.youtube.com/watch?v=bY3o_6gp3jU
2. Dr. Allen Eghrari
<https://www.youtube.com/watch?v=Wlzxaz0SkOQ&t=2s>
3. Dr. Allen Eghrari: Trifolded DMEK with DescePro Forceps

<https://www.youtube.com/watch?v=qhXiA2oRbkg>

FUNDING

EXTRAMURAL Funding

Current

7/1/2018-6/30/2020 **Research to Prevent Blindness Sybil B. Harrington Special Scholar Award**
Sponsor: Research to Prevent Blindness
Role: Principal Investigator

Previous

9/1/2014-8/31/2018 **NIH K12 EY015025-10 Mentored Clinical Scientist Training Grant**
Title: Characterization of Fuchs Corneal Dystrophy in African-Americans
Sponsor: National Eye Institute
Principal Investigator, 80% effort: Allen Eghrari, MD/Harry Quigley, MD (K12)
Mentors: John Gottsch, MD and Alfred Sommer, MD

7/1/2014-7/1/2016,
2016-2017 (renewed)
2017-2018 (renewed) **NIH L30 EY024746 Clinical Scientist Loan Repayment Grant**
Title: Characterization of Fuchs Corneal Dystrophy in African-Americans
Sponsor: National Eye Institute
Principal Investigator: Allen Eghrari, MD

July 2016-2017 **American Society of Cataract and Refractive Surgeons Foundation Grant #125296**
Title: Cataract Surgical Outcomes in Ebola Virus Disease
Sponsor: American Society of Cataract and Refractive Surgery
Principal Investigator: Allen Eghrari, MD
03/15/2016-03/15/2017

July 2017-2018 **American Society of Cataract and Refractive Surgeons Foundation Grant**
Title: A novel DMEK insertion device
Sponsor: American Society of Cataract and Refractive Surgery
Principal Investigator: Aaron Wang, MD, PhD
Role: Co-Investigator
03/15/2016-03/15/2017

INTRAMURAL Funding

Current

None

Previous

October 2010 **A. Edward Maumenee Research Grant Award**
Title: Fuchs Corneal Dystrophy in Tangier Island
Role: Principal investigator

October 2012 **Fuchs Corneal Dystrophy Research Grant Award**
Title: Anatomic Variants in Fuchs Corneal Dystrophy
Role: Principal investigator

October 2013 **Wilmer Eye Institute Research Grant Award**
Title: Refractive Changes in Fuchs Dystrophy
Role: Principal investigator

April 2016- March 2018 **KKESH-WEI-05-11**
Title: Investigating Genetic Determinants of Anterior Segment Dysgenesis
Sponsor: King Khalid Eye Specialist Hospital (KKESH)
Principal Investigator: S. Amer Riazuddin, Ph.D.

Role: co-Investigator

System Innovation or Quality Improvement Intramural Funding

October 2013

BMore Visible

Sponsor: Social Innovation Laboratory Incubator, Johns Hopkins

\$1000

Co-lead, 10%. Established financially sustainable neighborhood-based network in East Baltimore for neighbors to assist other neighbors in obtaining affordable eye care and access to glasses.

CLINICAL ACTIVITIES

Clinical Focus

Cornea and anterior segment surgeon with clinical focus on endothelial keratoplasty and complex cataract surgery. Special interest in Ebola-associated eye disease. Collaborated with NIH and Liberia Ministry of Health to develop clinical facilities in West Africa with advanced diagnostic and therapeutic capability to address eye problems among Ebola survivors. Collaborating with surgeons and engineers to develop medical devices facilitating cornea transplantation.

Certification

Medical, other state/government licensure

2013-pres. Maryland Board of Physicians, D0076029

2015-pres. Liberia Medical Council

Boards, other specialty certification

1/2013 **Endo Optiks** Endocyclophotocoagulation Certification, Sarasota, FL, January 2013

8/2013 **VISX** Certification, Johns Hopkins at Greenspring, August 2013

3/2014 **STAAR Visian Implantable Collamer Lens** Certification, March 2014

6/2016 **American Board of Ophthalmology**

Clinical (Service) Responsibilities

7/2013-7/2014 Cornea and Anterior Segment Fellowship, Wilmer Eye Institute
-Advanced Specialty Training Program Attending and Fellow

11/2013-pres. Attending Physician, Wilmer Eye Institute at Bel Air

3/2014-7/2014 Ophthalmology Consultant, Emergency Department at Johns Hopkins, 4hrs/week

7/2014-pres. Assistant Professor, Cornea and Anterior Segment Service, Wilmer Eye Institute

6/2015-pres. Co-Chief Ophthalmologist, PREVAIL III Clinic, Monrovia, Liberia

Clinical Program Building / Leadership

2015-pres. Established clinical space for diagnosis and treatment of Ebola-associated eye disease, with advanced imaging capability, including slit-lamp biomicroscopy, ultrasound biomicroscopy and spectral domain optical coherence tomography.

Clinical Demonstration Activities

July 2015 Interpretation of Optical Coherence Tomography, lessons given to ophthalmologists at JFK Hospital, Monrovia, Liberia

Oct 15, 2016 Descemet Membrane Endothelial Keratoplasty (DMEK) – faculty at transplant course at American Academy of Ophthalmology organized by Tissue Banks International.

Development of national or internationally recognized clinical standard of care documents:

August 2015 Co-authored eye section of clinical standard of care document produced by WHO for management of Ebola-associated sequelae:
(http://apps.who.int/iris/bitstream/10665/204235/1/WHO_EVD_OHE_PED_16.1_eng.pdf).

EDUCATIONAL ACTIVITIES

Teaching

Classroom instruction

JHMI/Regional

1. July 2, 2014 "Red Eye." Lecture delivered to Wilmer Eye Institute Residency Program
2. July 23, 2014 "Ocular Biometry." Lecture delivered to Wilmer Eye Institute Residency Program
3. Aug. 2, 2014 "Nuclear Disassembly." Lecture delivered at Wilmer Wet Lab Course
4. Aug. 28, 2014 "Developmental and Metabolic Corneal Disorders." Lecture delivered to Wilmer Eye Institute Residency Program
5. Oct. 16, 2014 "Techniques in Corneal Surgery." Lecture delivered to Wilmer Eye Institute Residency Program.
6. Feb. 10, 2015 "Ultrathin Descemet stripping automated endothelial keratoplasty." Journal Club Faculty leader for fellows and residents.
7. July 2, 2015 "Red Eye: Common Ophthalmic Emergencies." Lecture delivered to Wilmer Eye Institute Residency Program
8. Sep. 17, 2015 "Ebola and the Eyes." Lecture delivered to Wilmer Eye Institute to Bel Air All-Staff meeting.
9. Dec. 2015 "Ocular Biometry." Lecture delivered to Wilmer Eye Institute Residency Program.
10. May 2016 "Emerging Infectious Diseases: Global Blindness Symposium." Lecture for first-year medical students at Johns Hopkins University School of Medicine.
11. July 7, 2016 "Red Eye." Lecture delivered to Wilmer Eye Institute Residency Program
12. Sep 8, 2016 "Ocular Biometry." Lecture delivered to Wilmer Eye Institute Residency Program.
13. November 8, 2016 "Ebola and Zika: Emerging Infectious Diseases." Epidemiology of Eye Disease Course Lecture, Johns Hopkins Bloomberg School of Public Health. Audience: Students at School of Public Health.
14. May 24, 2017 "Emerging Infectious Diseases: Global Blindness Symposium." Lecture for first-year medical students at Johns Hopkins University School of Medicine.
15. October 31, 2017 "Ebola and Zika: Emerging Infectious Diseases." Epidemiology of Eye Disease Course Lecture, Johns Hopkins Bloomberg School of Public Health. Audience: Students at School of Public Health.
16. January 25, 2018 "Fuchs Dystrophy and Corneal Transplantation." Lecture delivered to Wilmer Eye Institute Residency Program.
17. May 17, 2018 "Cornea Transplantation." Lecture delivered to 30 Wilmer Eye Institute nursing staff meeting.
18. December 20, 2018 "Ebola and Zika: Emerging Infectious Diseases." Epidemiology of Eye Disease Course Lecture, Johns Hopkins Bloomberg School of Public Health. Audience: Students at School of Public Health.

National

1. April 4, 2016 "Sustainability in the setting of Ebola Eye Disease." Lecture delivered to Fogarty course on Global Health. Bethesda, Maryland, United States.

International

1. February 1, 2017 "Anatomy of a Paper." Lecture delivered to Scientific Writing Workshop, Monrovia, Liberia
2. February 2, 2017 "The Publication Process." Lecture delivered to Scientific Writing Workshop, Monrovia, Liberia

Clinical instruction

JHMI/Regional

1. July 2014-pres. Resident Cataract Surgery. Supervision of 15 resident cataract surgeries per month.
2. July 22, 2014 Cornea Fellow Wet Lab. Hands-on training of cornea fellows in cornea transplantation techniques.
3. Nov. 16, 2014 CME faculty, learner level: Ophthalmologists. Endothelial Keratoplasty laboratory course. Johns Hopkins Cornea and Cataract Practicum. Baltimore, Maryland, USA.
4. October 5, 2016 "DMEK: State of the Art." Talk on recent innovations in corneal transplantation. Learner level: Cornea specialists and tissue bank executives. Baltimore, Maryland, USA.

National

1. October 15, 2016 "Descemet Membrane Endothelial Keratoplasty (DMEK)." Course faculty, learner level: Ophthalmologists. DMEK training course, real-time surgery on cadaver eyes. American Academy of Ophthalmology Annual Meeting, Tissue Banks International Booth #2102. Chicago, Illinois.

2. May 6, 2017 “Descemet Membrane Endothelial Keratoplasty.” Talk and live surgical training session delivered by invitation of Keralink at American Society of Cataract and Refractive Surgeons Annual Meeting in Los Angeles, California. Audience: Ophthalmologists nationally.
3. November 11, 2017 “Descemet Membrane Endothelial Keratoplasty (DMEK).” Course faculty, learner level: Ophthalmologists. DMEK training course, real-time surgery on cadaver eyes. American Academy of Ophthalmology Annual Meeting, Keralink International. New Orleans, Louisiana.
4. November 12, 2017 “Descemet Membrane Endothelial Keratoplasty (DMEK).” Course faculty, learner level: Ophthalmologists. DMEK training course, real-time surgery on cadaver eyes. American Academy of Ophthalmology Annual Meeting. New Orleans, Louisiana.

International

1. September 2018 Taught phacoemulsification techniques in Addis Ababa, Ethiopia
2. October 2018 Taught Descemet stripping endothelial keratoplasty at Khmer Soviet Friendship Hospital, Phnom Penh, Cambodia

CME instruction

JHMI/Regional

1. June 2011 *Speaker, learner level: ophthalmologists.* “Prevalence, Severity, and Genetics of Fuchs Corneal Dystrophy in Tangier Island.” Wilmer Residents Association Annual Clinical Meeting, Baltimore, Maryland.
2. June 2012 *Speaker, learner level: ophthalmologists.* “Application of Next Generation Sequencing to Unravel the Genetic Basis of Fuchs Corneal Dystrophy on Tangier Island.” Wilmer Residents Association Annual Clinical Meeting, Baltimore, Maryland, June 2012.
3. June 2013 *Speaker, learner level: ophthalmologists.* “New anatomic phenotypes in Fuchs Corneal Dystrophy.” Wilmer Residents Association Annual Clinical Meeting, June 2013.
4. June 2014 *Speaker, learner level: ophthalmologists.* “Refractive Changes in Fuchs Corneal Dystrophy.” WRA Annual Clinical Meeting, Baltimore, Maryland, USA.
5. October 23, 2014 *Speaker, learner level: optometrists/ ophthalmologists.* “Implantable Collamer Lens: Indications and Outcomes.” Wilmer Eye Institute at Bel Air Community Education Series.
6. October 14, 2015 *Speaker, learner level: optometrists/ ophthalmologists.* “Smartphone imaging in ophthalmology.” Wilmer Eye Institute at Bel Air Community Education Series.
7. December 15, 2016 *Speaker, learner level: optometrists/ ophthalmologists.* “Ebola and the Eye.” Wilmer Eye Institute Friday Afternoon Research Meeting.
8. January 24, 2017 *Speaker, learner level: optometrists/ ophthalmologists.* “DMEK/DSEK: advances in partial-thickness corneal transplantation.” Wilmer Eye Institute at Bel Air Community Education Series.
9. June 5, 2018 *Speaker, learner level: optometrists/ ophthalmologists.* “Refractive goals in eyes with Fuchs dystrophy.” Wilmer Eye Institute at Bel Air Community Education Series.

National

- May 1, 2016 *Speaker, learner level: ophthalmologists.* Diagnostic, medical and surgical capacity building in the setting of Ebola-associated eye disease. ARVO Annual conference. Seattle.
- May 6, 2017 *Speaker, learner level: ophthalmologists.* Anterior Segment Laser Surgery in Ebola-Associated Eye Disease. ASCRS Annual Meeting, Los Angeles, California.
- November 6, 2017 *Speaker, learner level: tropical health specialists.* Viral persistence and long-term ophthalmology outcomes in Ebola Virus Disease. ASTMH Annual Meeting. Baltimore, MD, USA.

Workshops /seminars

National

1. October 16, 2016 Discussion, learner level: Ophthalmologists. “Meet the Experts: Ebola and Zika viruses.” Invited by American Academy of Ophthalmology. American Academy of Ophthalmology Annual Meeting. Chicago, Illinois, USA.

International

1. January 14, 2016 Speaker, learner level: Researchers and Ministry of Health officials. Update on Ebola-associated eye disease. 12th and Russell offices, Monrovia, Liberia.
2. January 15, 2016 Speaker, learner level: Eye technicians of Liberia. Update on Ebola-associated eye disease. JFK Hospital, Monrovia, Liberia.

3. January 30, 2017 Speaker and Coach, learner level: physicians and nurses in Liberia. Technical Writing Workshop. Monrovia, Liberia

Mentoring

Pre-doctoral Advisees /Mentees

- 1. Brian Garrett, MD**
Dalhousie University, Canada, Summer 2014 predoctoral research fellowship. Contributed to development of automated retroillumination photography analyses (Garrett et al., ARVO Meeting 2015)
- 2. Aisha Mumtaz, MD**
George Washington University, Summer 2014 predoctoral research fellowship. Contributed to development of automated retroillumination photography analyses. Matched into Ophthalmology.
- 3. Simon Ghofrani, BS**
Research assistant for development of mobile devices with expertise in 3D-printed designs
Presented research on Google Cardboard Ophthalmoscopy (Ghofrani et al., ARVO Meeting 2015)
- 4. Sina Vahedi, MD**
Predoctoral clinical research fellow. Particular interest in investigating infectious diseases of the eye, contributed entries to *Encyclopedia of Ophthalmology* and article on fungal keratitis (Eghrari et al., *JCM* 2015). Presented on use of smartphone technology for visual screening in Ebola-associated eye disease (Vahedi et al., ARVO Meeting 2016). Matched into ophthalmology, 2017. Won ARVO Travel Grant, May 2017.
- 5. Mahsa Rezaei, MD**
June to December 2014. Contributed to development of Google Glass Indirect Ophthalmoscopy (Wang et al., *JMTM* 2014). Accepted to residency, University of California Irvine.
- 6. Farnoosh Vahedi, BS**
Predoctoral clinical research assistant. Won Best Poster Award at American Academy of Ophthalmology 2016.
- 7. Alan Shan, BS**
Medical student at the Johns Hopkins University School of Medicine. Carried out a project analyzing cataract surgeries in which he explored the effect of various instruments and devices on timing in cataract surgery, and presented his research at the ARVO Annual Meeting. He presented on automated vehicle user interfaces at the Connected and Automated Vehicles Working Group Meeting in Glen Burnie, MD on May 1, 2018 to approximately 75 government and industry leaders who are planning for development of automated vehicle adoption.
- 8. Anvesh Annadanam, BS**
Anvesh is a medical student at the Johns Hopkins University School of Medicine. He carried out a project testing color vision, for which he received an award for most outstanding oral presentation by a student at the North American Neuro-Ophthalmology Society Annual Meeting. Lead author on paper in *Neuroophthalmology*.
- 9. Gelareh Vakili, BS**
Undergraduate research assistant. Co-authored research into amantadine-associated corneal edema. Graduated from University of Maryland Baltimore County (B.S.), 2018.
- 10. Mina Akhavan, BS**
Undergraduate research assistant. Co-authored research on retroillumination photography analysis. Graduated from University of Maryland College Park, 2017.
- 11. Michael Fliotsos, BS**
Michael is a medical student at the Johns Hopkins University School of Medicine. He carried out a project testing smartphone imaging of the cornea, for which he was awarded a Travel Grant by the Association for Research in Vision and Ophthalmology for the Annual Meeting in Hawaii in May 2018.
- 12. Ryan Meshkin, BS**
Ryan is a medical student now at Harvard Medical School. Co-authored studies of Descemet Membrane Endothelial Keratoplasty, particularly on the effects of temperature and fluid media on scroll width.

Post-doctoral Advisees /Mentees

Research/Clinical Advisees:

- 1. Aaron Wang, MD, PhD**
Together, we have worked on mobile imaging and surgical devices, including techniques for Google Glass Indirect Ophthalmoscopy (Wang et al., *JMTM* 2014) and Google Cardboard Indirect Ophthalmoscopy (Eghrari et al., *Retina* 2017). Dr. Wang was awarded the Mitchell Prize (2015) for best resident research project at the Wilmer Eye Institute for a mobile imaging device, the Heed Fellowship (2015) as one of the top ophthalmology

fellows in the United States (2015), and the ASCRS Foundation Research Grant Award (2017) for a device to facilitate Descemet Membrane Endothelial Keratoplasty.

2. **Mithaq Vahedi, MD**

We have worked together since Dr. Vahedi's residency in emergency medicine. Together we studied and published an article regarding the clinical utility of smartphone-based video of light microscopy of biopsied organisms (Vahedi et al., *Med Hypo Disc Innov Ophth*, 2015), and worked on a smartphone application to test for non-organic vision loss. He subsequently matched into ophthalmology in 2016 and started residency at William Beaumont in Michigan in July 2017.

3. **Cindy X. Cai, MD**

Developed test-retest reliability study of specular microscopy of corneal endothelium (Cai et al, ARVO 2016)

4. **Daliya Dzaber, MD**

Daliya is serving as a clinical research fellow, focusing on imaging in Fuchs dystrophy.

We have trained the following Cornea fellows in the clinic and operating room:

1. Paul Houghtaling, MD (Walter Reed Military Hospital)
2. Puneet Panda, MD (Private practice)
3. Katherine Chen, MD (Private practice, California)
4. Stephen Cross, MD (Private practice)
5. Katelyn Earls, MD (Department of Ophthalmology, William Beaumont Army Medical Center)
6. Farhan Merali, MD (Assistant Professor, Dept of Ophthalmology, Johns Hopkins)
7. Uri Soiberman, MD (Assistant Professor, Dept of Ophthalmology, Johns Hopkins)
8. Susan Huang, MD (Private practice, California)
9. William Grover, MD (Charlottesville, VA)
10. Kathleen Octavec, MD (Private practice, Florida)
11. Sezen Karakus, MD (Fellow, Johns Hopkins)
12. Jae Young You, MD (Providence, RI)
13. Olivia Dryjski, MD (Assistant Professor, Georgetown Univ.)
14. Tiffany Liu, MD (Assistant Professor, Department of Ophthalmology, Johns Hopkins)
15. Swarupa Kancherla, MD (Private practice, North Carolina)
16. Daniel Sareszky, MD (Private practice, Montgomery County, Maryland)

RESEARCH ACTIVITIES

Research Focus

2014- present Ebola-associated eye disease: clinical characterization, treatment and capacity building

Ebola Virus Disease is a devastating illness with high morbidity and mortality. A majority of survivors complain of eye problems, demonstrating pathology that may appear in any segment of the eye. As co-lead of the eye substudy of NIH PREVAIL III (Partnership for Research on Ebola Virus in Liberia), which has enrolled several thousand Ebola survivors and close contacts, our research focuses on defining Ebola-associated eye disease and characterizing the spectrum of pathology through a combination of clinical examination and imaging. Additionally, we are exploring capacity building efforts for future eye care in Liberia and a collaborative approach to research.

2013-present Smartphone and mobile ocular imaging in resource-limited settings

Imaging is an essential component of ophthalmic examination, but cost and portability both limit diagnostic capacity in resource-limited settings. Our team has focused on developing mobile tools for anterior segment and retinal imaging that can be utilized in diverse settings.

2007-present Characterization of the Fuchs Dystrophy phenotype

Fuchs dystrophy is a common hereditary condition that represents the leading indication for corneal transplantation in the United States. The microscopic scale of its lesions and subtlety of its initial findings historically prevented adequate quantitative description of its severity and appearance. We have developed a technique, retroillumination photography analysis (RPA), that summates individual lesions and analyzes their distribution. We have applied this method to identify unique rates of progression associated with varying genotypes, and automated RPA to maximize clinical applicability. We

are exploring population differences in the Fuchs dystrophy phenotype, and redefinition of severity levels for clinical research.

Inventions, Patents, Copyrights

Provisional Patent:

Device for facilitating Descemet Membrane Endothelial Keratoplasty

SYSTEM INNOVATION AND QUALITY IMPROVEMENT ACTIVITIES

System Innovation Focus

My work to date in system innovation focuses on facilitating access to care in resource-limited settings, both in East Baltimore and in West Africa.

- Research in East Baltimore has shown that eye care is accessed at low rates even when facilitated free of charge. Together with neighbors in East Baltimore, we are exploring neighborhood-level, grassroots initiatives that promote active participation in eye care by facilitating transportation from neighbors and decentralizing eyewear purchases to the local level.
- Eye care in Ebola-affected countries is limited by fewness of ophthalmologists. Together with Dr. Rachel Bishop of the National Eye Institute and Dr. Robin Ross, we are exploring the ability of non-ophthalmic personnel to contribute to diagnostic and therapeutic capacity in Liberia.

ORGANIZATIONAL ACTIVITIES

Institutional Administrative Appointments

2003-2004	Member by appointment, McKinley Health Center Student Advisory Board, Urbana, Illinois
2009-2010	Member by election, Transitional Year Medical Education Committee, St. Francis Hospital
2009-2010	Member by election, Graduate Medical Education Committee, St. Francis Hospital
2015-present	Member by election, Faculty Senate, Johns Hopkins University School of Medicine

Journal peer review activities

2013-	Reviewer, <i>Ophthalmology</i>
2013-	Reviewer, <i>Clinical Ophthalmology</i>
2013-	Reviewer, <i>Eye</i>
2014-	Reviewer, <i>BMC Ophthalmology</i>
2014-	Reviewer, <i>Ocular Immunology and Infection</i>
2014-	Reviewer, <i>Infection and Immunity</i>
2015-	Reviewer, <i>JAMA Ophthalmology</i>
2015-	Reviewer, <i>Metabolic Brain Disease</i>
2016-	Reviewer, <i>Journal of Cataract and Refractive Surgery</i>
2017-	Reviewer, <i>Cornea</i>
2017-	Reviewer, <i>British Journal of Ophthalmology</i>
2017-	Reviewer, <i>IOVS</i>

Advisory Committees, Review Groups/Study Sections

2014	Reviewer, King Khaled Eye Specialist Hospital/Wilmer Eye Institute Grants
2015-present	Johns Hopkins Social Innovation Lab Advisory Board Member
2017	USAID/PEER Liberia Grant Ad Hoc Reviewer, Invited

Professional Societies

2007-present	Member, Association for Research in Vision and Ophthalmology
2010-present	Member, American Academy of Ophthalmology
2013-present	Member, American Society of Cataract and Refractive Surgery

Conference Organizer

International

June 14, 2015	1st biannual <i>Liberia Eye Care Meeting</i> Sponsors: US Embassy and National Institutes of Health
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Role: Co-organizer and co-convener, with Rachel Bishop, MD
Single-day meeting of eye care stakeholders in Liberia: Ophthalmologists, optometrists, NGOs, Ministry of Health, Cataract nurses, Ebola survivor group representatives. Discussions were held regarding current state of eye care and future initiatives in country.

January 9, 2016 2nd biannual *Liberia Eye Care Meeting*
Sponsors: Liberia Ministry of Health and Social Welfare, National Institutes of Health
Role: Co-organizer and co-convener, with Rachel Bishop, MD
Single-day meeting of major eye care stakeholders in Liberia: ophthalmologists, optometrists, ophthalmic nurses, Ministry of Health, Ebola survivors, NGOs (e.g., Sight Savers, Medecins Sans Frontieres), CDC, WHO to discuss current and future eye care in country of Liberia.

Session Chair

JHMI/Regional

December 3, 2015 Chair, Cornea Case Section, Current Concepts in Ophthalmology, Baltimore, MD

International

May 1, 2016 Organizer/moderator/session chair. Diagnostic, medical and surgical capacity building in the setting of Ebola-associated eye disease. ARVO Annual Meeting. Seattle, USA.
January 30-Feb 4, 2017 Session Chair. Scientific Technical Writing Workshop, Monrovia, Liberia.
October 2018 Cornea Chief/Session Chair, talks and instructional course on cornea transplantation, National Eye Meeting, Khmer Soviet Friendship Hospital, Phnom Penh, Cambodia

RECOGNITION

Awards, Honors

Local/Regional

2001 **Howard Hughes Undergraduate Research Fellowship**
Research in memory and eye movements. Mentor: Dr. Neil Cohen, Beckman Institute

2001 **Chancellor's Scholar**
Awarded to top 1% of student body in academic achievement, Univ. of Illinois

2002 **Joshua L. Grafton Memorial Scholarship Award**
Awarded annually for leadership in campus community development, Univ. of Illinois

2003 **Howard Hughes International Scholar Undergraduate Research Fellowship**
Research in malaria immunology. Mentor: Dr. Louis Schofield, Walter and Eliza Hall Institute, Melbourne, Australia. Howard Hughes Medical Institute and Univ. of Illinois.

2003 **Chancellor's Award for Excellence in Public Engagement**
Awarded to a student annually for contribution to community development, Chancellor at Univ. of Illinois

2003 **Robert P. Larsen Award in Human Development**
Awarded to a student annually for contribution to student and organization development, Univ. of Illinois

2004 **Phi Beta Kappa, Univ. of Illinois**

2004 **Joseph Smith Award**
Awarded to a student annually for leadership in interracial communications, Univ. of Illinois

2004 **Senior 100 Award, Univ. of Illinois**
Top 1-2% senior class in academic accomplishment and leadership

2009 **Dean's Predoctoral Research Fellowship, Johns Hopkins University School of Medicine**
Investigation into genotype-phenotype correlations in Fuchs Corneal Dystrophy

2011 **Wilmer Eye Institute Mitchell Prize, 3rd place**
Annual recognition for outstanding resident research at the Wilmer Eye Institute

2012 **Wilmer Eye Institute Mitchell Prize, 1st place**
\$10,000 cash prize awarded to a single resident at the Wilmer Eye Institute for most outstanding research

2013 **Johns Hopkins Social Innovation Lab Winner, Johns Hopkins Carey School of Business**
Recognition for development of BMore Visible, a neighborhood-based initiative to improve access to eye care among population of urban East Baltimore

2013 **Concept Design Competition on Social Media, 2nd place**
Johns Hopkins University Global mHealth Initiative Concept Design Competition

2013 **Aliki Perroti Scholar, Cornea Division, Wilmer Eye Institute at Johns Hopkins**
Awarded to 1 out of 5 Cornea fellows at Wilmer Eye Institute for innovation and achievement

National

2014 **National Eye Institute Travel Grant, ARVO Annual Meeting**
Travel Grant awarded for oral/paper presentation at 2014 Annual Meeting, Orlando, Florida

2014 **National Institutes of Health Loan Repayment Award, National Institutes of Health**
Competitive award recognizes new promising clinician-scientists with research-intensive careers

2015 **Dean's Scholarship, Johns Hopkins Bloomberg School of Public Health**
Competitive, merit-based award supporting Master of Public Health degree

2016 **Fellow (by election), American Academy of Ophthalmology**

2018 **Research to Prevent Blindness Sybil B. Harrington Special Scholar Award**

International

2013 **Claes Dohlman Society Fellowship Award, Claes Dohlman Society, Mass. Eye and Ear Infirmary**
Awarded to a single new Cornea specialist worldwide for academic and clinical excellence

2016 **ARVO/Alcon Early Career Clinician-Scientist Award**
Awarded annually at ARVO meeting to five ophthalmologists globally, in first five years of career

Awards won by mentees during our work together:

2015 **Mitchell Prize, 1st place** – Aaron Wang, MD, PhD
Top prize for resident research at Wilmer Eye Institute

2016 **Heed Fellowship** – Aaron Wang, MD, PhD

2016 **Classy Award** – Farnoosh Vahedi

2016 **Best Poster Award, American Academy of Ophthalmology – Farnoosh Vahedi.** “Smartphone application for assessment of visual acuity with statistical confidence.” Senior author. American Academy of Ophthalmology Annual Meeting. Chicago, Illinois.

2016 **ARVO Travel Grant Award** – Sina Vahedi

2017 **Second Place, Values and Ventures Business Plan Competition (Treytech, Team Advisor/Mentor)**
Second of 51 teams in international business plan competition for ventures with humanitarian missions. “A unique annual competition for undergraduate students around the world to pitch plans for businesses, products or services that make a profit while also benefiting the environment, the community or a specific population.”

2017 **Best Student Platform Presentation** – Anvesh Annadanam, NANOS

2017 **ASCRS Foundation Research Grant Award** – Aaron Wang, MD, PhD

2017 **Third place, NIH National Institute of Biomedical Imaging and Bioengineering DEBUT competition (Treytech, Team Advisor/Mentor).** Third of 41 eligible entries in competition to debut prototypes of devices that advance technology and improve human health.

2017 **Spring Venturewell E-team Stage 1 grant (\$5000) - Treytech**
A novel device to facilitate cornea transplantation surgery

2017 **Fall Venturewell E-team Stage 2 grant (\$20,000) - Treytech**
A novel device to facilitate cornea transplantation surgery

2017 **O'Connor Fund (\$10,000) – Treytech**
A novel device to facilitate cornea transplantation surgery

2018 **MIT-Lemelson Student Prize** – Treytech – (first out of 190)

2018 **Carnegie Mellon University Venture Challenge – Second place (out of 70)– Treytech**

2018 **ARVO Travel Grant Award** – Michael Fliotsos

2018 **ASCRS Best Young Ophthalmologist Paper Presentation** –Sezen Karakus

Invited Talks

JHMI/Regional

1. November 16, 2013 “Primum Non Nocere.” Presented by invitation to Wilmer Cornea Meeting at American Academy of Ophthalmology Annual Meeting. New Orleans, Louisiana, USA
2. December 6, 2013 “Keratoglobus.” Presented by invitation of Dr. Walter Stark to Current Concepts in Ophthalmology. Baltimore, Maryland, USA.

3. December 4, 2014 “Updates in Pentacam Scheimpflug imaging.” Presented by invitation of Dr. Walter Stark to Current Concepts in Ophthalmology. Baltimore, Maryland, USA.
4. October 27, 2015 “Ocular Manifestations of the Ebola Virus.” Presented by invitation to American Society of Ophthalmic Registered Nurses, Chesapeake Division. Baltimore, MD, USA.
5. May 19, 2017 “Ebola and the Eye: Nurses at the Forefront.” Plenary talk presented by invitation to 34th Annual Wilmer Nurses Conference. Baltimore, MD, USA.
6. March 12, 2018 “Smartphones for the General Ophthalmologist.” Presented by invitation at Current Concepts, Vail, Colorado, USA.
7. March 12, 2018 “Update on Ebola and the Eye.” Presented by invitation at Current Concepts, Vail, Colorado.
8. March 13, 2018 “Refractive considerations in Fuchs Corneal Dystrophy.” Presented by invitation at Current Concepts, Vail, Colorado, USA.
9. March 13, 2018 “Introduction to DMEK inserters.” Wet lab course faculty. Presented by invitation at Current Concepts, Vail, Colorado, USA
10. May 1, 2018 “Automated vehicle user interfaces for drivers with mild visual impairment.” Presentation given by invitation to approximately 75 government and industry leaders in State of Maryland to the Maryland Department of Transportation’s Connected and Automated Vehicles Working Group

National

1. December 8, 2014 “Quantitative measure of progression in Fuchs Corneal Dystrophy.” Presented by invitation of Dr. Kalliopi Stasi to Novartis, Boston, MA.
2. October 2, 2015 “Ebola and the Eye.” Presented by invitation, National Eye Institute Grand Rounds.
3. June 11, 2016. “Ebola and the Eye.” Presented by invitation, Robert J. Netzel Lecture. 61st Annual Clinical Conference. Kresge Eye Institute, Detroit, Michigan, USA.
4. August 17, 2016 “Emerging Diseases in Ophthalmology: Ebola and Zika Viruses.” Presented by invitation to ophthalmologists nationally, American Academy of Ophthalmology Clinical Education Webinar.
5. October 14, 2016 “Ebola and the Eye.” Plenary talk presented by invitation, American Society of Ophthalmic Registered Nurses Annual Meeting, Chicago, Illinois.
6. October 15, 2016 “Descemet Membrane Endothelial Keratoplasty.” Talk and live surgical training session delivered by invitation of Tissue Banks International at American Academy of Ophthalmology Annual Meeting in Chicago, Illinois. Audience: Ophthalmologists nationally.
7. April 30, 2017 “Corneal transplantation: techniques and approaches.” Plenary keynote address by invitation at Eye Care for Animals Annual Meeting to veterinary ophthalmologists. Phoenix, Arizona.
8. May 6, 2017 “Descemet Membrane Endothelial Keratoplasty.” Talk and live surgical training session delivered by invitation of Keralink at American Society of Cataract and Refractive Surgeons Annual Meeting in Los Angeles, California. Audience: Ophthalmologists nationally.
9. September 22, 2017 “Descemet Membrane Endothelial Keratoplasty.” Live webinar talk given to 20 eye bank representatives across country about surgeon transition to DMEK. Delivered by invitation by Keralink.
10. September 29, 2018 “Ebola and the Eye” Audience: Ophthalmic Anesthesia Society Annual meeting, Chicago, IL
11. July 30, 2019 Cornea Transplantation in Animals. Veterinary Surgery annual meeting

International

1. June 30, 2015 “Update in Cataract and Keratoplasty.” Presented by invitation of Ophthalmic Society of Nigeria, at McCure Eye Hospital, Lagos, Nigeria.
2. August 4, 2015 “Ebola-associated eye disease.” Presented by invitation by World Health Organization to WHO Meeting on Survivors of Ebola Virus Disease: Clinical Care, Research and Biobanking. Freetown, Sierra Leone.
3. September 18, 2015 “Ophthalmic Manifestations of Ebola Virus Disease.” Presented by invitation by United Nations Special Envoy on Ebola to the Meeting of the Global Ebola Response Coalition.
4. February 2, 2016 “Anatomy of a Paper.” Presented by invitation of Partnership on Research on Ebola Virus Disease in Liberia (PREVAIL) at Liberia Scientific Writing Workshop. Monrovia, Liberia.
5. March 3, 2018 “Optimizing the DMEK scroll to facilitate insertion.” Presented by invitation, Fuchs VI Symposium, March 3, 2018. Audience: cornea surgeons. Philadelphia, PA.

6. October 1, 2018 “Cornea transplantation.” Phnom Penh, Cambodia National Eye Meeting. Audience: residents and country’s cornea surgeons. Chair, Cornea meeting session.
7. November 15, 2018 “Injected, tri-folded Descemet Membrane Endothelial Keratoplasty.” Turkish Ophthalmological Association Meeting, Antalya, Turkey.

OTHER PROFESSIONAL ACCOMPLISHMENTS

Humanitarian Activities

1. ***BMore Visible***

Worked with neighbors in East Baltimore to create financially sustainable local grassroots organization, *BMore Visible*, which facilitated over 80 pairs of glasses for individuals in East Baltimore and provides prescription glasses for Ebola survivors in Liberia.

2. **Surgical capacity building and teaching**

Taught and performed anterior segment surgery in Liberia, manually and with laser.

3. **Mentoring programs for middle schoolers**

Collaborating with neighbors and communities across Maryland to build mentoring programs for middle schoolers, through which participants build on their sense of justice and powers of expression to make a difference in their communities.