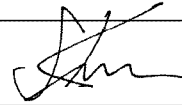

BIOGRAPHICAL SKETCH

10-July-2020

NAME: Szilárd Kiss, MD

eRA COMMONS USER NAME (credential, e.g., agency login): SZKISS

POSITION TITLE: Associate Dean, Clinical Compliance; Associate Professor, Ophthalmology; Vice Chair, Research; Vice Chair Compliance; Chief, Retina Service

EDUCATION/TRAINING

INSTITUTION AND LOCATION	DEGREE (if applicable)	Completion Date MM/YYYY	FIELD OF STUDY
Columbia College, Columbia University, New York, NY	B.A.	06/1997	Biology
Columbia University College of Physicians & Surgeons, New York, NY	M.D.	06/2002	Medicine
St. Luke's Roosevelt Hospital, Columbia University College of Physicians & Surgeons, New York, NY		06/2003	Internal Medicine Internship
Massachusetts Eye & Ear Infirmary, Harvard Medical School, Boston, MA		06/2006	Ophthalmology Residency
Massachusetts Eye & Ear Infirmary, Harvard Medical School, Boston, MA		07/2008	Surgical Vitreo-Retina Fellowship

A. Personal Statement

I received an undergraduate degree with honors from Columbia College, medical school training at Columbia University Vagelos College of Physicians & Surgeons and completed an ophthalmology residency and surgical vitreoretinal fellowship at Harvard Medical School and the Massachusetts Eye & Ear Infirmary, where I was selected by the faculty to serve as the Chief Retina Fellow. My research career started as an undergraduate at Columbia College where, in conjunction with the National Aeronautics and Space Administration (NASA) and the Department of Defense, I evaluated the implications of microgravity on early developmental patterning with scientific experiments launched on the space shuttle Discovery (STS-70) and the space shuttle Columbia (STS-78). I am currently the Associate Dean of Clinical Compliance, Chair of the General Faculty Council, Vice Chair of Research, Vice Chair of Compliance, Chief of the Retina Service, Director of Teleophthalmology, and Associate Professor of Ophthalmology at Weill Cornell Medical College. Currently, my clinical and translational research efforts focus on four broad areas: ocular gene and cellular therapy, novel therapeutic targets for ocular neovascularization, complex vitreoretinal surgical techniques, and retinal imaging. I have participated as a principal investigator in over three-dozen prospective clinical trials and laboratory investigations. I have authored over 270 scientific publications, given nearly 250 invited lectureships worldwide, and serve on the Editorial Board and as a scientific reviewer to a number of major journals. In addition to my scientific efforts, I have garnered a reputation as a world renowned medical and surgical vitreoretinal specialist; my clinical practice draws patients from all regions of the world. For my academic and clinical work, I have won numerous academic and scientific awards including the Schepens Eye Research Institute Joint Clinical Research Center Pilot Project Grant, the Heed Ophthalmic Foundation Fellowship Award, the Ronald G. Michels Foundation Fellowship Award, the Paul Kayser International Fellowship Award, American Society of Retina Specialists Rhett Buckler Award, and the Research to Prevent Blindness Physician-Scientist Award. For my contributions to ophthalmology, I have received the Honor and Senior Honor Awards from the American Society of Retina Specialists and the Honor Award from the American Academy of Ophthalmology. I was also among a select group of retina specialists worldwide (and the youngest) to be elected by his peers as a Charter Member of the *Retina Hall of Fame*. I have also been named to several regional, national and international Top Doctors lists, including *The Ophthalmologist Power List Top 40 Under 40 Ophthalmologist Worldwide*, *OSN Retina 150 Leading Innovators in Surgical and Medical Retina*, *Castle Connolly's Top Regional Doctors*, and *New York Super Doctors*.

B. Positions and Honors

Academic Appointments

2008 – 2013	Assistant Professor of Ophthalmology, Weill Cornell Medical College.
2008 – 2013	Assistant Attending, New York Presbyterian Hospital/Weill Cornell Medical Center.
2009 – 2020	Director of Compliance, Weill Cornell Department of Ophthalmology.
2010 – 2020	Director of Clinical Research, Weill Cornell Department of Ophthalmology.
2013 – Present	Associate Professor of Ophthalmology, Weill Cornell Medical College.
2013 – Present	Associate Attending, New York Presbyterian Hospital/Weill Cornell Medical Center.
2015 – Present	Associate Attending Surgeon, Memorial Hospital for Cancer & Allied Diseases.
2015 – Present	Division Chief, Retina Service, Weill Cornell Department of Ophthalmology.
2017 – Present	Director, Tele-Ophthalmology, Weill Cornell Department of Ophthalmology.
2019 – Present	Associate Dean, Clinical Compliance, Weill Cornell Medical College.
2020 – Present	Vice Chair, Compliance, Weill Cornell Department of Ophthalmology.
2020 – Present	Vice Chair, Research, Weill Cornell Department of Ophthalmology.

Major Committee Assignments

2008 – Present	Residency Selection Committee, Weill Cornell Ophthalmology
2008 – Present	Surgical Retina Fellowship Selection Committee, Weill Cornell Ophthalmology
2009 – Present	Member, Billing Compliance Oversight Committee, Weill Cornell Medical College
2010 – 2011	Financial Management Faculty Advisory Group, Weill Cornell Medical College
2011 – 2012	Member, Research Computing Advisory Council, Weill Cornell Medical College
2017 – 2019	Secretary, General Faculty Council, Weill Cornell Medical College
2012 – Present	Member, Institutional Review Board, Weill Cornell Medical College
2012 – Present	Elected Member, General Faculty Council, Weill Cornell Medical College Chair, Clinical Affairs Committee (2015 – 2016)
2013 – Present	Member, Weill Cornell Web Governance Committee
2014 – Present	Member, Physician Organization Financial Planning Committee
2015 – Present	Member, Weill Cornell CQI Curriculum Review Committee
2018 – Present	Elected Member, Physician Organization Policy Board, Weill Cornell Medical College
2019 – Present	Elected Chair, General Faculty Council

Journal Ad Hoc Reviewer

New England Journal of Medicine, Nature Biotechnology, Ophthalmology, Retina, Digital Journal of Ophthalmology, Eye, Retinal Cases & Brief Reports, Clinical Ophthalmology, British Journal of Ophthalmology, JAMA Ophthalmology, Survey of Ophthalmology, Investigative Ophthalmology & Visual Science, PLOS One, Aesthetic Plastic Surgery, Expert Review of Ophthalmology, Journal of VitreoRetinal Diseases

Grant Ad Hoc Reviewer

2010-2015	Michael J. Fox Foundation for Parkinson's Research
2012	University of California, Tobacco-Related Disease Research Program, Disease Mechanisms Study Section
2013-present	Member, Diabetic Retinopathy Clinical Research Network (DRCR.net), Protocol Development Committee
2017 – Present	Member, Diabetes Control and Complications Trial (DCCT)/Epidemiology of Diabetes Interventions and Complications (EDIC) Ophthalmology Working Group and Writing Committee

Editorial Boards

Ophthalmic Surgery, Lasers, and Imaging; Retina; Advanced Ocular Care; Retina Today New Retina MD; Journal of VitreoRetinal Disorders (Deputy Editor)

Professional Memberships

American Academy of Ophthalmology, American Society of Retina Specialists, Club Jules Gonin (elected member), Macula Society (elected member), Retina Society (elected member), Association for Research in Vision and

Ophthalmology, Pan-American Association of Ophthalmology, Society of Heed Fellows, Manhattan Retina Club, Vitrectomy-Buckle Society, The New York Clinical Society, The Ophthalmic Laser Surgical Society, Retina CONNECT

Honors and Awards

2000	American Heart Association Student Scholarship in Cerebrovascular Disease
2000	Merck/AFAR Research Scholarship in Geriatric Pharmacology
2000	New York Academy of Medicine Glorney-Raisbeck Medical Student Scholarship in Cardiovascular Research
2000	Dr. Alfred Steiner/Columbia University College of Physicians and Surgeons Dean's Award for Outstanding Medical Student Research
2006 & 2007	The Heed Ophthalmic Foundation Fellow Award
2007	New England Ophthalmological Society Sanford D. Hecht Award for Outstanding Research
2007	Ronald G. Michels Foundation Fellowship Award
2008	Pan American Association of Ophthalmology Paul Kayser International Scholar Award
2009	American Society of Retina Specialists Rhett Buckler Award, Retina Congress Film Festival
2003	Honor Award, American Society of Retina Specialists
2014	Honor Award, American Academy of Ophthalmology
2015	The Ophthalmologist Power List <i>Top 40 Under 40</i> Ophthalmologist Worldwide
2016	Senior Honor Award, American Society of Retina Specialists
2016	OSN Retina 150 Leading Innovators in Surgical and Medical Retina
2017	Elected, Charter Member, <i>Retina Hall of Fame</i>

C. Contributions to Science

Complete list of the 279 Peer-Reviewed Citations:

<https://www.ncbi.nlm.nih.gov/myncbi/szilard.kiss.I/bibliography/public/>

Scientific contributions:

1. For over 15 years, I have been working on the development of novel sustained delivery approaches, most notably gene therapy, for the long-term treatment of pathological ocular neovascularization associated with diabetic retinopathy, age-related macular degeneration and inherited retinal disorder. Several of the gene therapy vectors and surgical approaches that I was instrumental in developing and testing in preclinical primate and mouse models have entered and will continue to enter human clinical trials (ClinicalTrials.gov Identifiers – NCT03748784, NCT01024998, NCT03066258).
 - a) M Lukason, E Dufresne, H Rubin, P Pechan, Q Li, I Kim, S Kiss, C Flaxel, M Collins, J Miller, W Hauswirth, T MacLachlan, S Wadsworth, A Scaria. Inhibition of Choroidal Neovascularization in a Nonhuman Primate Model by Intravitreal Administration of an AAV2 Vector Expressing a Novel Anti-VEGF Molecule. *Mol Ther.* 2011 Feb;19(2):260-5.
 - b) Y Mao*, S Kiss*, J Boyer, N Hackett, J Qiu, A Carbone, J Mezey, S Kaminsky, D D'Amico and R Crystal. Persistent Suppression of Ocular Neovascularization with Intravitreal Administration of AAVrh.10 Coding for Bevacizumab. (*co-first authors) *Hum Gene Ther.* 2011 Dec;22(12):1525-35.
 - c) Seidman C, Kiss S. Gene therapy: the next frontier for treatment of acquired and inherited ocular disorders. *Retina Today.* 2015;10(7):69-71.
 - d) Grishanin R, Vuilleminot B, Sharma P, Keravala A, Greengard J, Gelfman C, Blumenkrantz M, Lawrence M, Hu W, Kiss S, Gasmil M. Preclinical Evaluation of ADVN-022, a Novel Gene Therapy Approach to Treating Wet Age-Related Macular Degeneration. *Mol Ther.* 2019 Jan 2;27(1):118-129.
2. I was among the first retina specialists to recognize and to characterize the clinical utility of ultra-widefield fundus photography, fluorescein angiography, indocyanine green angiography, and autofluorescence in the diagnosis and follow-up of a variety of retinal disorders. My work has resulted in 20 peer-reviewed publications, 2 book chapters and over 50 podium presentations detailing the clinical benefit of this technology. Our work in diabetic retinopathy was in part responsible for an ongoing prospective multicenter clinical trial (DRCR.net Protocol AA) that may result in a new classification system for diabetic retinopathy using ultra widefield imaging.
 - a) M Wessel, G Aaker, G Parlitsis, M Cho, DJ D'Amico, and S Kiss. Ultra-Widefield Angiography Improves The Detection And Classification Of Diabetic Retinopathy. *Retina.* 2012 Apr;32(4):785-91.

- b) Klufas MA, Yannuzzi NA, Pang CE, Srinivas S, Sadda SR, Freund KB, Kiss S. Feasibility and clinical utility of ultra-widefield indocyanine green angiography. *Retina*. 2015; 35(3):508-20.
 - c) Aiello LP, Odia I, Glassman AR, Melia M, Jampol LM, Bressler NM, Kiss S, Silva PS, Wykoff CC, Sun JK; Diabetic Retinopathy Clinical Research Network. Comparison of Early Treatment Diabetic Retinopathy Study Standard 7-Field Imaging With Ultrawide-Field Imaging for Determining Severity of Diabetic Retinopathy. *JAMA Ophthalmol*. 2018 Oct 18.
 - d) Choudhry N, Duker JS, Freund KB, Kiss S, Querques G, Rosen R, Sarraf D, Souied EH, Stanga PE, Staurengi G, Sadda SR. Classification and Guidelines for Widefield Imaging: Recommendations From the International Widefield Imaging Study Group. *Ophthalmol Retina*. 2019 Oct;3(10):843-849.
3. I was among the first retina specialists to examine the ‘*real-world*’ utilization and ‘*real-world*’ visual outcomes of pharmacotherapies for a variety of retinal disorders including age-related macular degeneration, retinal vein occlusion and diabetic retinopathy. Although we set our patients’ expectations based on the results of prospective clinical trials, our work showed that outside of those trials, patients are followed and treated much less frequently and, as a result, their visual outcomes may not match that of the clinical trials. This work has resulted in 8 peer-reviewed publications and nearly 30 podium presentations.
- a) Kiss S, Liu Y, Brown J, Holekamp NM, Almony A, Campbell J, Kowalski JW. Clinical monitoring of patients with age-related macular degeneration treated with intravitreal bevacizumab or ranibizumab. *Ophthalmic surgery, lasers & imaging retina*. 2014; 45(4):285-91.
 - b) Holekamp NM, Campbell J, Almony A, Ingraham H, Marks S, Chandwani H, Cole AL, Kiss S. Vision Outcomes Following Anti-Vascular Endothelial Growth Factor Treatment of Diabetic Macular Edema in Clinical Practice. *Am J Ophthalmol*. 2018 Jul;191:83-91.
 - c) Kiss S, Dugel PU, Khanani AM, Broder MS, Chang E, Sun GH, Turpcu A. Endophthalmitis rates among patients receiving intravitreal anti-VEGF injections: a USA claims analysis. *Clin Ophthalmol*. 2018 Aug 30;12:1625-1635.
 - d) Kiss S, Campbell J, Almony A, Shih V, Serbin M, LaPrise A, Wykoff C. Management and Outcomes for Neovascular Age-Related Macular Degeneration: Analysis of United States Electronic Health Records. *Ophthalmology*. 2020 Feb 28;S0161-6420(20)30192-5.
4. I was the first to systematically describe and characterize of the ocular manifestations, the progression of retinal degeneration, and the response to gene therapy in patients with late infantile neuronal ceroid lipofuscinosis (LINCL, Batten disease). In the setting of prospective NIH funded phase 2 clinical trials here at Weill Cornell (ClinicalTrials.gov Identifiers: NCT01035424, NCT01414985 and NCT01161576), I developed and validated a five step Weill Cornell LINCL Ophthalmic Severity Scale (PMID: 24015292). I showed that the ophthalmic signs of LINCL correlate closely with the degree of neurological dysfunction and advancing age in these patients. This work has now been presented at nearly a dozen national and international ophthalmic and neurodegenerative conferences and has been included in an upcoming publication on management strategies for CLN2 disease. I am now working with several collaborators to use my classification system for the betterment of patient diagnosis, follow-up and, potentially, treatment directed specifically at the eye.
- a) A Orlin, D Sondhi, MT Witmer, MM Wessel, JG Mezey, SM Kaminsky, NR Hackett, K Yohay, B Kosofsky, MM Souweidane, MG Kaplitt, DJ D’Amico, RG Crystal, S Kiss. Spectrum of Ocular Manifestations in CLN2-associated Batten (Jansky-Bielschowsky) Disease Correlate with Advancing Age and Deteriorating Neurological Function. *PLoS One*. 2013 Aug 28;8(8):e73128.
 - b) Invited Presenter and Discussant, Best Practices in the Management and Care of Patients with CLN2 Disease Expert Meeting, Pousada de Cascais, Portugal, June 29 – July 1, 2015.
 - c) RE Williams, HR Adams, M Blohm, JL Cohen-Pfeffer, E Reyes, J Denecke, K Drago, C Fairhurst, M Frazier, N Guelbert, S Kiss, A Kofler, J Lawson, L Lehwald, MA Leung, S Mikhailova, JW Mink, M Nickel, R Shediak, K Sims, N Specchio, M Topcu, IV Löbbbecke, A West, B Zernikow, A Schulz. Management strategies for CLN2 disease. *Pediatr Neurol*. 2017 Apr;69:102-112.
 - d) Kovacs KD, Patel S, Orlin A, Kim K, Van Everen S, Conner T, Sondhi D, Kaminsky SM, D’Amico DJ, Crystal RG, Kiss S. Symmetric Age Association of Retinal Degeneration in Patients with CLN2-Associated Batten Disease. *Ophthalmol Retina*. 2020 Jan 22;S2468-6530(20)30024-5.
5. Harvesting the power of the immune system has revolutionized the treatment of numerous malignancies. Working with my collaborators at Memorial-Sloan Kettering Cancer Center, I was the first to development cell based/immune therapy for the treatment of infectious posterior uveitis, including multidrug resistant CMV retinitis. It is the first

such application for any ocular disorder and has resulted in the filing of a patent (US20170128565A1). Prospective international clinical trials that also include ophthalmic manifestations of CMV are ongoing (ClinicalTrials.gov Identifiers – NCT02136797, NCT01646645)

- a. Gupta MP, Coombs P, Prockop SE, Hasan AA, Doubrovina E, O'Reilly RJ, Cohen SH, Park SS, Kiss S. Treatment of cytomegalovirus retinitis with cytomegalovirus-specific T-lymphocyte infusion. *Ophthalmic surgery, lasers & imaging retina*. 2015; 46(1):80-2.
 - b. A Orlin, J Nadelmann, MP Gupta, S Patel, DJ D'Amico, RVP Chan, A Artis, S Kiss. Cytomegalovirus Retinitis Outcomes in HIV and non-HIV Patients at a Tertiary Care Center. *Journal of VitreoRetinal Diseases*, 1(1), 57-64.
 - c. AD Port, A Orlin, S Kiss, S Patel, DJ D'Amico, MP Gupta. Cytomegalovirus retinitis: an update on current practice. *J Ocul Pharmacol Ther*. 2017 May;33(4):224-234.
 - d. Gupta MP, Patel S, Orlin A, Marlow E, Chee RI, Nadelmann J, Chan RVP, D'Amico DJ, Kiss S. Spectral Domain Optical Coherence Tomography Findings in Macula-Involving Cytomegalovirus Retinitis. *Retina*. 2018;38(5):1000-1010.
6. For over a decade, I have been developing novel surgical techniques and instrumentation for innovative approaches to complex vitreoretinal pathologies. I was one of the first to recognize the advantages for small-gauge vitrectomy over the conventional sutured techniques. I then established a sutureless approach to retina surgery with permanent keratoprosthesis, a procedure which is now the standard in the field. More recently, I've been developing surgical tools, techniques and virtual-reality training modules for the delivery of gene therapy vectors to ocular structures.
- a. Kiss S, Vavvas D. 25-gauge Transconjunctival Sutureless Pars Plana Vitrectomy for the Removal of Retained Lens Fragments and Intraocular Foreign Bodies *Retina*. 2008 Oct;28(9):1346-51.
 - b. Kiss S, Vavvas D. Open Ophthalmol J. Intraoperative Switch to a Temporal Surgical Approach in 23- And 25-gauge Microcannula-Based Sutureless Transconjunctival Vitrectomy. 2010 May 31;4:12-4.
 - c. Kiang L, Sippel KC, Starr CE, Ciralsky J, Rosenblatt MI, Radcliffe NM, D'Amico DJ, Kiss S. Vitreoretinal Surgery in the Setting of Permanent Keratoprosthesis. *Arch Ophthalmol*. 2012 Apr;130(4):487-92.
 - d. Klufas MA, Yannuzzi NA, D'Amico DJ, Kiss S. Vitreoretinal Aspects of Permanent Keratoprosthesis. *Surv Ophthalmol*. 2015 May-Jun;60(3):216-28.
7. For the past three years, I have been working with collaborators on the development of artificial neural networks for the diagnosis of diabetic retinopathy. Using ultra widefield retinal imaging combined with some of the latest artificial intelligence technology, we have developed an algorithm to diagnosis and to classify diabetic retinopathy (with an underlying a training set of over 40,000 diabetic retinopathy images which were professionally graded by two independent reading centers). We are now validating this algorithm with an additional 20,000 images as well as on 'real-world' images obtained in the tele-ophthalmology program that I lead at Weill Cornell.

D. Research Support

Completed Research Support (within past 3 years)

U10 EY014231

NEI/NIH

03/01/2014 – 12/31/2018

Diabetic Retinopathy Clinical Research Network

The DRCR.net is dedicated to support multicenter clinical research of diabetic retinopathy, macular edema and associated conditions through a collaborative network utilizing specialized infrastructure resources that include a Coordination Center and Network Chair's office. The Network's primary goal is to identify, create, conduct, analyze and report high quality clinical trial protocols that lead to a better understanding of diabetic retinopathy, advance its treatment, and improve the lives of individuals with diabetes. Role: co-investigator

W81XWH-14-1-0507 (Hajjar, KA)

United States Department of Defense

10/01/2014-09/30/2017

Annexin A2 in Proliferative Vitreoretinopathy

Our overall objective is to address the hypothesis that expression of ANXA2 in macrophages and/or retinal pigmented epithelial cells is critical to the development of the PVR response. Role: co-investigator

RPB Physician-Scientist Award (Kiss) Research to Prevent Blindness

06/01/2013 – 05/31/2018

Gene Therapy for the Treatment of Age-Related Macular Degeneration

The goal is to develop a gene therapy with bevacizumab that would result in sustained intraocular expression at levels sufficient for long-term suppression of vascular leakage and inhibition of neovascularization in AMD following a single intravitreal injection

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