BIOGRAPHICAL SKETCH

NAME: Wang, Wilson X

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

POSITION TITLE: Heed Fellowship

EDUCATION/TRAINING

INSTITUTION AND LOCATION	DEGREE *(if applicable)*	Start Date MM/YYYY	Completion Date MM/YYYY	FIELD OF STUDY
Williams College, Williamstown, MA	B.A.	09/2014	06/2018	Chemistry
University of Cambridge, Cambridge, UK	MPhil	10/2018	09/2019	Biotechnology
Washington University in St. Louis, St. Louis, MO	MD	08/2020	05/2025	Medicine

A. Personal Statement

I am an ophthalmology resident at Barnes-Jewish Hospital/Washington University in St. Louis focused on the use of ophthalmic imaging to study systemic disease. My published work has helped demonstrate the value of multimodal retinal imaging as a window into neurologic and vascular pathology beyond the eye. To this end, I have led translational imaging studies in RVCL-S, multiple sclerosis, and pregnancy-related retinopathy using ultrawidefield imaging, ERG, fluorescein angiography, Goldmann visual fields, OCT, and OCT-A. These studies have shown how imaging-derived retinal metrics can characterize systemic disease and inform clinically meaningful questions at the interface of ophthalmology and medicine. My career goal is to bridge early biomarker and imaging discoveries with prospective clinical investigation, ultimately bringing new strategies for disease detection, monitoring, and treatment closer to patient care.

B. Positions, Scientific Appointments and Honors

2025–Present: Resident Physician, Department of Ophthalmology and Visual Sciences, WashU
2024–2025: MD+ Director of Biotechnology
2023–2024: Clinical Research Fellow (Apte Lab), Department of Ophthalmology and Visual Sciences, WashU
2023–2024: Nucleate Venture Fellow, Nucleate
2021–2024: Preclinical/Clinical Clerkship Mentor, WUSTL
2020–2022: Sling Health Project Leader – Opstomize, Sling Health

HONORS

2025: VRSF Foundation Research Award
2025: BJC Foundation Grant Award (PI: Wang) (10/01/2025 – 9/30/2026)
2025: Max and Evelyn Grand Prize, Department of Ophthalmology, WUSTL
2025: Robert Carter Medical School Award, WUSTL
2024: DeNardo Education and Research Foundation Grant, WUSTL
2023: Distinction in Patient Care, Research, and Communication, WUSTL
2020–2025: Distinguished Student Scholarship, WUSTL
2019: Biotechnology Degree with Commendation, University of Cambridge
2018: Phi Beta Kappa, Williams College
2018: Magna Cum Laude, Williams College
2016: Alumni Sponsored Grant Recipient, Williams College
2014–2018: Dean’s List, Williams College

C. Contributions to Science

Oculomics: Retinal biomarkers in systemic disease

In the Apte Lab, I have published numerous studies demonstrating the value of multimodal retinal imaging in systemic diseases with ocular manifestations. Over the past three years, I have led multiple projects with Dr. Rajendra Apte, including a Phase II RVCL-S clinical trial analysis published in the Journal of Clinical Investigation demonstrating how retinal imaging can be used to reflect central nervous system and vascular pathology as a clinical trial outpoint. I also conceptualized a retrospective OCT study of multiple sclerosis patients on S1P modulators, identifying its potential effects on the neurosensory retina. This work highlights my expertise in retinal imaging and work to support use of the eye as a window into systemic neurologic and vascular health, and has been a smooth transition to now leading a prospective clinical study of the use of OCT-A for preeclampsia with severe features.

1. **Wang W.X**., Rossmiller H., Getahun H., Santoki A., Perantie D.C., Naismith R.T. & Apte R.S., Retrospective OCT Analysis of S1P Modulator Fingolimod in Multiple Sclerosis, Ophthalmology Science (2025), doi:https://doi.org/10.1016/j.xops.2025.100893
2. **Wang WX**, Spiegelman D, Rao PK, Rhee R, Ford AL, Miner JJ, Apte RS. Crizanlizumab for retinal vasculopathy with cerebral leukoencephalopathy in a phase II clinical study. J Clin Invest. 2024 May 7;134(12):e180916. doi:10.1172/JCI180916. PMID: 38950286; PMCID: PMC11178534.
3. **Wang WX**, Shah A, Bruck B, Van Stavern G, Rao K, Apte R. Multimodal Structural and Functional Characterization of Retinal Vasculopathy and Cerebral Leukoencephalopathy. Ophthalmology Retina. 2024 Apr;8(4):331-339. doi: 10.1016/j.oret.2023.10.013. Epub 2023 Oct 28. PMID: 38752998.
4. Getahun H, Apte RS, **Wang WX**, Chen V, Gordon M, Huecker J, Atkinson JP, Kathryn Liszewski M, Fellah S, Astafiev SV, Miner JJ and Ford AL (2025) Longitudinal association of retinal morphology and white matter progression in retinal vasculopathy with cerebral leukoencephalopathy and systemic manifestations. Front. Neurol. 16:1724411. doi: 10.3389/fneur.2025.1724411
5. **Wang WX,** Clinically Actionable OCT-A Biomarkers: A Retinal Microangiopathy Index for Risk Stratification in Diabetic Retinopathy

Retinal Disease and Contributions to Clinical Care

My research has also focused on understanding retinal disease findings in clinical care as tools for meaningful decision-making. I have published on the management of proliferative diabetic retinopathy in pregnancy and published studies on proliferative vitreoretinopathy and submacular hemorrhage, two high-risk retinal conditions that require nuanced clinical and surgical judgment. Together, these contributions reflect my continued commitment to addressing vision-threatening disease not just through translational research but clinical practice.

1. **Wang WX**, Fine H, Apte R. Proliferative Diabetic Retinopathy in Pregnancy. Ophthalmic Surg Lasers Imaging Retina. 2024 Apr;55(4):194-196. doi: 10.3928/23258160-20240313-01. PMID: 38690963.
2. **Wang WX**, Xing M, Apte RS. Interventions for Proliferative Vitreoretinopathy. JAMA Ophthalmol. 2024 May 23. doi: 10.1001/jamaophthalmol.2024.1093. Epub ahead of print. PMID: 38780937.
3. **Wang WX**, Patel KG, Getahun H, Ramamurthy S, Chen H, Narayanan R, Apte RS. Pars plana vitrectomy with tissue plasminogen activator for traumatic submacular hemorrhage. Int J Ophthalmol. 2025 Sep 18;18(9):1797-1802. doi: 10.18240/ijo.2025.09.22. PMID: 40881453; PMCID: PMC12378688.

Clinical innovation and trial design

As a clinical research fellow, I also began developing and implementing early-phase clinical studies. Most notably, I led the protocol development for a Phase II clinical trial evaluating SGLT2 inhibitors for geographic atrophy, including the full IND submission that led to FDA approval in July 2025 and now leading efforts to recruit patients. In parallel, I have obtained IRB approval for a prospective study evaluating OCT-A imaging in preeclampsia, which I independently designed and now lead. Beyond clinical trials, I am also committed to translational research. During my MPhil in Biotechnology, I worked on developing drug delivery nanoparticles and at AstraZeneca to optimize cell line and mass spectrometry protocols, adding another dimension of translating scientific findings into therapeutic development. Through Sling Health, I led a team developing an image analysis algorithm for ostomy care, and as a Nucleate Venture Fellow, I was part of a team that

evaluated over 100 early-stage biotechnology across diverse fields, gaining experience in assessing, supporting, and advancing innovations with real-world clinical potential.

1. **Wang WX**, Javaheri A, Apte RS, Clinical Trial Development: Efficacy of Dapagliflozin in the Progression of Geographic Atrophy secondary to Age-Related Macular Degeneration, EXPLORE Symposium, St. Louis, MO
2. **Wang WX**, Apte RS, Noninvasive Optical Coherence Tomography Angiography as a Predictive Tool for Development of Preeclampsia
3. **Wang WX**, Bao A, Suresh T, Kozina Y, Javitz T Opstomize: Bridging the gap between discharge and full knowledge about ostomy life
4. **Wang WX**, Traustason B, Prestel S, Zeng M, Identification, quantification, and reduction of aggregation in the production process of bi-specific monoclonal antibodies, AstraZeneca MedImmune Company Conference, Cambridge, UK
5. **Wang WX**, Synthesis and Functionalization of drug delivery nanoparticles UiO-66 using Cucurbit[n]urils (CB[n]), Department of Chemical Engineering & Biotechnology Symposium, Cambridge, UK

Complete list of publications:
https://www.ncbi.nlm.nih.gov/myncbi/wilson.wang.2/bibliography/public/

D. Scholastic Performance

YEAR	COURSE TITLE	GRADE
2020	Molecules to Society	CR
2020	Defense & Response to Injury	CR
2020	Circulation & Breathing	CR
2020	Clinical Immersion: Ambulatory/ED	CR
2020	Ins & Outs	CR
2020	Explore Immersion	CR
2021	Clinical Immersion: Inpatient	CR
2021	Clinical Immersion: Procedural	CR
2021	Metabolism & Reproduction	CR
2021	Scaffolding & Movement	CR
2021	Brain & Behavior	CR
2021	Phase 1 Capstone	CR
2021	Phase 1 Competency Course - Foundational Knowledge for Practice	CMP
2021	Phase 1 Competency Course - Patient Care	CMP
2021	Phase 1 Competency Course - Interpersonal & Comm Skills	CMP
2021	Phase 1 Competency Course - Professionalism	CMP
2021	Phase 1 Competency Course - Practice Based Learning & Improvmt	CMP
2022	Internal Medicine Clerkship - Patient Care	CMP
2022	Surgery Clerkship - Patient Care	CMP
2022	Obstetrics & Gynecology Clerkship - Patient Care	CMP
2022	Pediatrics Clerkship - Patient Care	CMP
2022	Psychiatry Clerkship - Patient Care	CMP
2022	Neurology Clerkship - Patient Care	CMP
2022	Phase 2 Competency Course - Foundational Knowledge for Practice	CMP
2022	Phase 2 Competency Course - Patient Care	CPD
2022	Phase 2 Competency Course - Interpersonal & Comm Skills	CPD
2022	Phase 2 Competency Course - Professionalism	CMP
2022	Phase 2 Competency Course - Systems Based Practice	CMP
2022	Phase 2 Competency Course - Practice Based Learning & Improvmt	CMP

YEAR	COURSE TITLE	GRADE
2023	Internal Medicine Advanced Clinical Rotation (ACR)	CR
2023	Ophthalmology (Clinical Elective)	CR
2023	Ophthalmology Advanced Clinical Rotation (ACR)	CR
2023-2024	Research Special Study	CR
2023	Comprehensive Clinical Exam	CR
2024	Clinical Mentoring (Non-Clinical Elective)	CR
2024	Emergency Medicine Advanced Clinical Rotation (ACR)	CR
2024	Clinical Nuclear Medicine (Clinical Elective)	CR
2024	Science, Medicine and Societal Effects of Pain (KISC)	CR
2024	Humanities in Medicine: Reflecting About Professional Identity (Non-Clinical Elective)	CR
2025	Phase 3 Capstone (Non-Clinical Elective)	CR
2025	Comprehensive Approach to Disability (KISC)	CR
2025	Phase 3 Competency Course - Foundational Knowledge for Practice	CMP
2025	Phase 3 Competency Course - Patient Care	CMP
2025	Phase 3 Competency Course - Interpersonal & Comm Skills	CMP
2025	Phase 3 Competency Course - Professionalism	CMP
2025	Phase 3 Competency Course - Systems Based Practice	CMP
2025	Phase 3 Competency Course - Practice Based Learning & Improvmt	CMP
2025	Extramural Elective	CR

Washington University School of Medicine courses in the Gateway Curriculum are graded CR (Credit), with competency outcomes recorded separately. CMP = Competent; CPD = Competent with Distinction.