BIOGRAPHICAL SKETCH

Provide the following information for the Senior/key personnel and other significant contributors.
Follow this format for each person. DO NOT EXCEED FIVE PAGES.

NAME: Kim, Hyun Sue

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

POSITION TITLE: Heed Fellowship

EDUCATION/TRAINING *(Begin with baccalaureate or other initial professional education, such as nursing, include postdoctoral training and residency training if applicable. Add/delete rows as necessary.)*

INSTITUTION AND LOCATION	DEGREE (if applicable)	START DATE MM/YYYY	COMPLETION DATE MM/YYYY	FIELD OF STUDY
Northeastern University, Boston, Massachusetts	BS	09/2015	05/2019	Health Science
The London School of Hygiene and Tropical Medicine, London	MS	09/2019	12/2021	Epidemiology
Virginia Tech Carilion School of Medicine, Roanoke, Virginia	MD	07/2020	05/2024	Medicine
University of Wisconsin-Madison, Madison, Wisconsin	Resident	06/2024	present	Ophthalmology Residency

A. Personal Statement

My primary research during residency focuses on longitudinal analyses of retinal layer thickness using large-scale imaging databases to evaluate how systemic and ocular factors influence early structural changes in the retina. I am particularly interested in improving the interpretation of OCT-derived biomarkers across diverse populations, including the identification of early neurodegenerative changes preceding microvascular disease. This work has been supported by a travel grant from the Association for Research in Vision and Ophthalmology and presented at regional and national meetings. As a global ophthalmology resident, I also conduct research examining practice patterns, resource utilization, and disparities in access to surgical and diagnostic care across resource-limited settings. Prior to residency, my training in epidemiology at the London School of Hygiene and Tropical Medicine focused on infectious disease, implementation science, and population health. My dissertation evaluated a digital platform to improve partner notification for sexually transmitted infections, demonstrating increased engagement in rural and stigmatized populations and receiving recognition from the U.K. Cabinet Office. During the COVID-19 pandemic, I contributed to outbreak response efforts and evaluated the implementation of a monoclonal antibody infusion program in rural settings. I have also contributed to clinical and translational research in ophthalmology and infectious disease, including studies on candidemia screening practices in resource-limited settings, supported by a grant from the Infectious Diseases Society of America. Collectively, my work focuses on how systemic factors and access to care shape patterns of disease detection and outcomes across diverse populations. I plan to pursue fellowship training in retina and uveitis and to develop an academic career integrating clinical care, epidemiological research, and global ophthalmology.

B. Positions and Honors

Positions and Scientific Appointments

2026 - Heed Fellowship, The Heed Ophthalmic Foundation
2026 - Resident, Quality and Safety Committee, University of Wisconsin-Madison, Madison, WI
2025 - Reviewer, Journal of Public Health, Oxford University Press, Oxford

2025 -	Global Ophthalmology Representative, University of Wisconsin-Madison, Department of Ophthalmology and Visual Sciences, Madison, WI
2025 -	Wellness Committee, University of Wisconsin-Madison, Madison, WI
2021 - 2022	Vice President, Asian Pacific American Medical Student Association, Roanoke, VA
2020 - 2024	Honor Board; Elected Chair (2023), Virginia Tech Carilion School of Medicine, Roanoke, VA
2020 - 2024	Medical Volunteer, Virginia Medical Research Corps (MRC), Roanoke, VA
2019 -	Member, John Snow Society, London
2019 - 2021	Postgraduate Researcher, The London School of Hygiene and Tropical Medicine, London
2019 - 2021	Student Ambassador, The London School of Hygiene and Tropical Medicine, London
2018 - 2019	Research Assistant, Cardiff University, Centre for the Development & Evaluation of Complex Interventions for Public Health Improvement, Cardiff
2016 - 2019	Health Equity Intern, Northeastern University, Institute for Health Equity and Social Justice Research, Boston, MA
2015 - 2019	Founder and President, The Interrobang Poets, Boston, MA
2012 - 2017	Research Assistant, NYU Langone Health, Department of Gastroenterology, New York, NY

Honors

2015 - 2019	Dean's Scholarship, Northeastern University
2015 - 2019	Dean's List, Northeastern University
2026	Knights Templar Eye Foundation Travel Grant, Association for Research in Vision and Ophthalmology (ARVO)
2023	Grants for Emerging Researchers/Clinicians Mentorship Program (G.E.R.M.), Infectious Disease Society of America (IDSA)
2021	Charles J. Schleupner, MD Research Fellow, Virginia Tech Carilion School of Medicine
2021	Dean Scholarship, Virginia Tech Carilion School of Medicine
2020	VTCSOM Scholarship, Virginia Tech Carilion School of Medicine
2020	3rd Place Winner, One Health Case Competition, Virginia-Maryland College of Veterinary Medicine
2019	Boston Bouvé Honor Society (Top 5% of graduating class), Northeastern University
2019	1st Place Winner, Social Sciences, Business, and Law Award, Research, Innovation, Scholarship and Entrepreneurship (RISE)
2019	University Honors Program and graduation with Summa Cum Laude, Northeastern University
2019	Constance K. Greene Award (Superior level of clinical education, student teaching, and field experience), Northeastern University
2018	President Global Scholar, Northeastern University

C. Contribution to Science

1. My early work focused on applying mixed methods research to understand how social and structural factors shape health outcomes among adolescents and vulnerable populations. At Cardiff University, mentored by Dr. G.J. Melendez-Torres, I conducted public health research to evaluate complex, school-based interventions across Wales aimed at improving adolescent well-being in under-resourced communities, addressing intimate partner violence, mental health, and support for youth in the care system—areas where outcomes are driven as much by context as by intervention design. I performed statistical and network meta-analyses using Stata and qualitative coding and thematic synthesis using NVivo. I contributed to systematic reviews and realist-informed evidence synthesis, a theory-driven approach examining how and why interventions work, for whom, and under what

circumstances. Our work identified how contextual factors, including school environment, social norms, and implementation, shape intervention effectiveness and demonstrated the prevalence of adolescent relationship violence, the value of co-produced school-based interventions, and the bidirectional relationship between maternal mental health and child behavioral outcomes. I also conducted fieldwork across secondary schools throughout Wales, engaging directly with students and educators to inform intervention design. A key finding was that variability in outcomes reflected differences in context and implementation rather than intrinsic intervention efficacy, underscoring the importance of evaluating interventions as dynamic processes embedded within complex systems. This work resulted in multiple peer-reviewed publications and received first place at the Research, Innovation, Scholarship, and Entrepreneurship Conference, the largest student-focused research conference in the United States.

a. Lowthian E, Bedston S, Kristensen SM, Akbari A, Fry R, Huxley K, Johnson R, Kim HS, Owen RK, Taylor C, Griffiths L. Maternal Mental Health and Children's Problem Behaviours: A Bi-directional Relationship?. Res Child Adolesc Psychopathol. 2023 Nov;51(11):1611-1626. PubMed Central PMCID: PMC10628040.
b. Young H, Long SJ, Melendez-Torres GJ, Kim HS, Hewitt G, Murphy S, Moore GF. Dating and relationship violence victimization and perpetration among 11-16 year olds in Wales: a cross-sectional analysis of the School Health Research Network (SHRN) survey. J Public Health (Oxf). 2021 Apr 12;43(1):111-122. PubMed Central PMCID: PMC8042367.
c. Reed H, Couturiaux D, Davis M, Edwards A, Janes E, Kim HS, Melendez-Torres GJ, Murphy S, Rotevatn TA, Smith J, Evans R. Co-production as an Emerging Methodology for Developing School-Based Health Interventions with Students Aged 11-16: Systematic Review of Intervention Types, Theories and Processes and Thematic Synthesis of Stakeholders' Experiences. Prev Sci. 2021 May;22(4):475-491. PubMed Central PMCID: PMC8060205.

2. During my master’s training in epidemiology at the London School of Hygiene and Tropical Medicine, I conducted a secondary data analysis evaluating a digital partner notification (PN) platform for sexually transmitted infections in England. PN is a cornerstone of disease control but is often limited by stigma, incomplete follow-up, and variability in implementation. Working with Professor Simon Cousens (LSHTM), Professor Oona Campbell (LSHTM), and Dr. Anatole Menon-Johansson (MIT, Guy's and St Thomas' NHS Foundation Trust), I was involved from the initial project development through analysis and interpretation, leading data management and computational statistical analysis using Stata and R. I analyzed large, multi-site datasets from SXT Health and Public Health England, applying multilevel mixed-effects logistic regression models to evaluate factors associated with successful partner contact and testing. Models accounted for clustering at the patient level and were adjusted for demographic covariates including age, gender, ethnicity, and sexuality, with likelihood ratio testing guiding model selection and model refinement. This work demonstrated that digital PN improved partner engagement compared to standard approaches and identified disparities in partner testing outcomes across demographic groups. These key findings highlight that while digital tools enhance scalability, their effectiveness remains shaped by structural and behavioral factors that influence engagement with care. These results also contribute to ongoing efforts to optimize PN strategies and emphasize the importance of designing public health interventions that are responsive to populations historically less well served by traditional systems. The work was recognized with an award from the U.K. Cabinet Office.
3. During the COVID-19 pandemic, I contributed to health systems research and outbreak response in a rural setting, focusing on implementation and access to emerging therapeutics. Working with Dr. Anthony Baffoe-Bonnie (Former Chair, Infectious Diseases, Carilion Clinic), I developed return-to-work testing algorithms for healthcare workers aligned with evolving public health guidance and conducted qualitative stakeholder interviews with clinicians, administrators, and public health officials to evaluate rapid implementation of a monoclonal antibody infusion program. Using thematic analysis in NVivo, I identified key barriers to deployment, including logistical constraints, workforce limitations, and disparities in patient access, highlighting gaps between therapeutic availability and real-world utilization. Building on this work, I examined screening practices for ocular involvement in patients with

candidemia in resource-limited settings with constrained access to ophthalmologic care. Using Stata, I analyzed patient outcomes and practice patterns with mixed-effects logistic regressions and evaluated spatial determinants of care using ArcGIS. Findings demonstrated that access to ophthalmologic evaluation is inconsistent and influenced by structural factors rather than standardized clinical criteria. This work resulted in peer-reviewed publications and presentations, including at the Infectious Diseases Society of America (IDSA) Annual Meeting, and was supported by a competitive grant from the IDSA and multiple institutional grants from the Virginia Tech Carilion School of Medicine. Collectively, this work reflects my interest in translational research and the development of resource-sensitive care models to improve access and delivery in underserved settings.

a. Kim H, Baffoe-Bonnie A. 1344. Stakeholders' Perspectives of the Establishment of SARS-CoV-2 Monoclonal Antibody Infusion Centers in Rural Southwestern Virginia: A Qualitative Analysis with Realist Interview Approach. Open Forum Infectious Diseases. 2023 October 13. DOI: 10.1093/ofid/ofad500.1181
b. Kim H, Baffoe-Bonnie A. 822. Is the Juice Worth the Squeeze: Ophthalmologist Examination for All Hospitalized Patients with Candidemia in a Rural Community. Open Forum Infectious Diseases. 2023 October 12. DOI: 10.1093/ofid/ofad500.867
c. Baffoe-Bonnie A, Swann MC, Kim HS. When Should Healthcare Workers With Coronavirus Disease 2019 (COVID-19) Return to Work? An Analysis of Follow-up Antigen Test Results After a Positive COVID Test. Open Forum Infect Dis. 2023 Mar;10(3):ofad114. PubMed Central PMCID: PMC10034753.
d. Kim HS, Torres JL, Baffoe-Bonnie A. Time to Reconsider Hepatitis A Vaccination in Food Handlers: Are We Seeing More Outbreaks and Severe Disease?. Open Forum Infect Dis. 2022 Jul;9(7):ofac185. PubMed Central PMCID: PMC9253892.

4. My work in global ophthalmology examines how structural constraints shape access to surgical care and visual outcomes. Working with Dr. Cat Burkat (UW-Madison), I investigated international practice patterns in globe removal procedures and orbital implant utilization to characterize how infrastructure and resource limitations influence clinical decision-making and postoperative outcomes. We designed and implemented a cross-sectional international survey of ophthalmologists, distributed through global professional networks, to assess implant availability, surgical approaches, access to ocularists, and perceived barriers to care. This was complemented by a targeted literature review evaluating global trends in implant use and material selection. Quantitative survey data were analyzed using descriptive statistics, and open-ended responses underwent qualitative thematic coding to identify recurrent drivers of surgical decision-making and care delivery. The findings demonstrated substantial regional variation. In higher-resource settings, orbital implant placement and conformer use were routine, whereas in resource-limited settings, inconsistent access to implants, ocularists, and longitudinal follow-up significantly constrained surgical options. Cost, supply chain limitations, and workforce shortages frequently superseded clinical preference, with downstream implications for socket contracture and access to prosthetic rehabilitation. These results underscore the need for context-specific, resource-adapted strategies to mitigate disparities in oculoplastic surgical care and improve long-term functional outcomes. This work was presented at the UW Global Health Symposium and accepted for presentation at the Global Ophthalmology Summit, and supported multiple funded medical student research projects. I am also developing a book chapter examining the global economics of botulinum toxin and dermal fillers and their broader societal implications.
5. My current research focuses on understanding longitudinal changes in retinal layer thickness using large-scale, population-based datasets. While optical coherence tomography (OCT) is widely used clinically, interpretation of retinal layer measurements over time remains limited by an incomplete understanding of how systemic and ocular factors influence these measurements. Working with Dr. Roomasa Channa (UW-Madison), I led data analysis using Stata and R, performing my own statistical coding for general linear mixed models to evaluate associations between systemic and ocular factors, including intraocular pressure, blood pressure, and surgical interventions, and annualized changes in retinal layer thickness, adjusting for total retinal thickness and relevant covariates. This work demonstrated that longitudinal changes in retinal thickness reflect both disease processes and

external influences. Notably, cataract surgery was associated with measurable increases in retinal thickness, and systemic factors such as glycemic control and intraocular pressure were associated with subtle changes in outer retinal layers, underscoring that OCT-derived metrics cannot be interpreted in isolation from the clinical context. These findings support the use of retinal imaging as a noninvasive biomarker for ocular and systemic disease and inform the development of more robust imaging-based endpoints for clinical and epidemiologic research. This work has been presented at national meetings, including the Vit-Buckle Society Annual Meeting and Association for Research in Vision and Ophthalmology (ARVO) Annual Meeting, and was recognized with a competitive travel grant from ARVO.

D. Scholastic Performance

Scholastic Performance

YEAR	COURSE TITLE	GRADE
	NORTHEASTERN UNIVERSITY	
2019	Health Sciences	Summa Cum Laude, GPA 3.95
	THE LONDON SCHOOL OF HYGIENE AND TROPICAL MEDICINE	
	VIRGINIA TECH CARILION SCHOOL OF MEDICINE	