Focus on Myopia – Pathogenesis and Rising Incidence

Committee

K. Davina Frick

Co-Chair

K. Davina Frick is a health economist and professor at the Johns Hopkins Carey Business School who began her career at and maintains joint appointments in the Johns Hopkins Bloomberg School of Public Health. She also holds a joint appointment in the Department of Ophthalmology at the Johns Hopkins School of Medicine. She has done substantial work on the burden of blindness and the cost-effectiveness of various interventions aimed at preventing blindness. She participated in organizing and delivering a Health Economics and Outcomes Research on-demand workshop for the Association for Research in Vision and Ophthalmology and has presented her work at the ARVO annual meeting, the World Health Organization, and the European Society for International Ophthalmology. Her research and teaching extend beyond only vision and eye issues and cost-effectiveness as she has worked in women’s health, oncology, and a variety of nursing areas as well as teaching about the United States healthcare system, about economics more generally, and about values-based business leadership. She received her Ph.D. in economics and health services organization and policy from the University of Michigan.

Terri L. Young

Co-Chair

Terri L. Young is the Peter A. Duehr Professor and chairwoman of the Department of Ophthalmology and Visual Sciences at the University of Wisconsin-Madison (UW). She has secondary UW appointments in the Departments of Pediatrics and Medical Genetics. She is a pediatric ophthalmologist and clinician-scientist with expertise in ophthalmic genetics and genomics in the areas of refractive errors -particularly myopia, ocular development, and childhood glaucoma. She has authored almost 230 peer-reviewed scientific publications and multiple book chapters, articles, and reviews. She has multiple service years to the National Eye Institute as a member of its Board of Scientific Counselors and multiple permanent member study sections. She has served in multiple leadership roles for the Association for Research in Vision and Ophthalmology (ARVO) and was appointed a Gold Fellow in 2015. After serving on the ARVO Foundation Board, she now serves as an elected member of the ARVO Board of Trustees. She also serves on the Board of Trustees of the Wisconsin Council of the Blind and Visually Disabled; the journal editorial boards of Experimental Eye Research and Investigative Ophthalmology and Visual Science; as associate editor of the Journal of the American Association of Pediatric Ophthalmology and Strabismus; and Board of Directors for the Heed Ophthalmic Foundation. Additionally, she served on the Board of Trustees of the Association of University Professors in Ophthalmology and was an Industry Consultant for Aerpio Pharmaceuticals, Inc. She received her M.B.A. from Duke University and M.D. from Harvard Medical School.

Afua O. Asare

Member

Afua O. Asare is a research assistant professor in the Department of Ophthalmology & Visual Sciences at the University of Utah. Previously, she managed a community-based vision screening research program for children at the Ivey Eye Institute in London, Canada. Her research seeks to facilitate the early identification of uncorrected refractive errors in young children through the development and implementation of evidence-based health interventions using a health equity lens. Current and previous relevant research and expertise has focused on determining the disparities in, and socioeconomic and system-level barriers to accessing vision care services for children and underserved populations. She has also studied the cost-effectiveness and feasibility of population health interventions to detect children with uncorrected refractive errors. She sits on three national committees with Prevent Blindness; the Advisory Committee and The Children’s Vision Equity Alliance in the National Center for Children’s Vision and Eye Health, and the Vision Health Equity and Communications Task Force in the Center for Vision and Population Health. She was awarded the Harvard Presidential Tuition Scholarship (2010) from Harvard University, The Ross C. Purse Doctoral Fellowship (2018) from the Canadian National Institute of the Blind and two Ezell Fellowship from the American Academy of Optometry (2019, 2020). She received her O.D. from Kwame Nkrumah University of Science and Technology and her Ph.D. from the University of Toronto.

David Berson

Member

David Berson is a professor and past chair in the Department of Neuroscience at Brown University. His research concerns the structural and functional organization of the mammalian retina. A particular focus has been the intrinsically photosensitive retinal ganglion cells (ipRGCs), a special class of retinal output neuron that responds directly to light, as rods and cones do. These neurons encode information about light intensity and exert wide-ranging effects in the retina and brain. They may contribute to the reduced risk of myopia among those spending more time outdoors. He is a fellow of the AAAS and a recipient of the Friedenwald Award from ARVO. He received his Ph.D. in neuroanatomy from Massachusetts Institute of Technology. After postdoctoral stints at Brown and at the Schepens Eye Research Institute, he joined the Brown faculty in 1985, where he remained for his whole career.

Richard T. Born

Member

Richard T. Born is a professor of neurobiology at Harvard Medical School and former director of the Harvard PhD program in neuroscience. He was a postdoctoral fellow in the Hubel/Livingstone lab, undertook a second postdoc with William Newsome at Stanford and then returned to HMS in 1995 as an Assistant Professor in the Department of Neurobiology. He has remained at HMS ever since with the exception of a year-long sabbatical in 2005 at the CNRS in Toulouse, France. He became a full professor in 2006 and director of the PhD program in neuroscience in 2009. His scientific work has been recognized with fellowships from the Klingenstein, Whitehall, Kirsch and Lefler Foundations and the Jesse L. Sigelman Award for Innovation and Excellence. In 2014, he received the Harvard Division of Medical Sciences Award for Exceptional Leadership in Graduate Education in recognition of his efforts to promote quantitative literacy. His laboratory studies cortical visual processing in nonhuman primates, with a particular focus on the computational role of cortico-cortical feedback. He received his M.D. from Harvard Medical School.

Jing Chen

Member

Jing Chen is an assistant professor of human factors and human-computer interaction in the Department of Psychological Sciences at Rice University. She has conducted research on the fundamental principles of human performance and decision-making, and their application to solving human-automation interaction problems in application domains such as autonomous driving, cybersecurity, and healthcare. With a keen interest in understanding the perceptual and cognitive processes of individuals with disabilities, particularly those with visual impairments, she is passionate about designing systems and environments that meet their specific needs. She is a recipient of the Earl Alluisi Award for Early Career Achievement from the American Psychological Association, the Rising Star Award from the Association for Psychological Science, and the George E. Briggs Dissertation Award from the American Psychological Association. She is a Fellow of the Psychonomic Society. She received a M.S. in industrial engineering and her Ph.D. in psychology from Purdue University.

Jeremy A. Guggenheim

Member

Jeremy A. Guggenheim is a professor in the School of Optometry & Vision Sciences, Cardiff University, United Kingdom. He was formerly an associate professor and associate head in the School of Optometry, Hong Kong Polytechnic University, Hong Kong. His research addresses the causes of nearsightedness (myopia), applying methods from a range of disciplines, including genetics, epidemiology and animal studies. He is a member of the international myopia genetics Consortium for Refractive Error and Myopia (CREAM), the UK Biobank Eye and Vision Consortium, and the International Myopia Institute. He serves on the editorial boards of the academic journals Investigative Ophthalmology & Visual Science (IOVS) (associate editor), Ophthalmic & Physiological Optics (OPO) and Translational Vision Science & Technology (TVST), and on the Scientific Advisory Board of the Fight for Sight (UK) charity. In 2013, he was awarded the Biennial Arthur Bennett Prize for Outstanding Research Anywhere in the World, by the United Kingdom College of Optometrists. He received his Ph.D. in ocular physiology from Cardiff University.

Anthony N. Kuo

Member

Anthony N. Kuo is an associate professor in ophthalmology at the Duke University School of Medicine with a secondary appointment in biomedical engineering at Duke University. He is a clinician-scientist with both an active clinical practice as well as laboratory program. Clinically, he is a board-certified ophthalmologist with additional sub-specialty fellowship training in cornea and refractive surgery. His laboratory research focus is on development and translation of ophthalmic imaging technologies. This includes work to use a clinical ophthalmic imaging technique (optical coherence tomography [OCT]) to characterize the shape of the eye in myopia; eye shape studies in myopia have typically used MRI which is more burdensome logistically and financially. He has given talks internationally on imaging in myopia and published in this area. His laboratory work has been supported by research program grants from the National Institutes of Health (NIH). He is also a standing member on a NIH study section and has served on an American Academy of Ophthalmology (AAO) committee to assess ophthalmic technologies. He has been the recipient of an Achievement Award from the AAO, the Alcon Young Investigator's Award, and Research to Prevent Blindness's Physician-Scientist Award. He received his M.D. from Vanderbilt University.

Daphne Maurer

Member

Daphne Maurer is a Distinguished University Professor in the Department of Psychology, Neuroscience and Behaviour at McMaster University in Canada and a professor (status-only) in the Institute of Health Policy, Management and Evaluation of the University of Toronto. She has published over 200 peer-reviewed papers during her 50 years doing laboratory research on the development of vision in babies and children, including work on the effects of congenital cataracts after surgical removal. Since 2015 she has done extensive field studies on the methods and utility of screening the vision of kindergarten children in schools and advised the Ontario government on this topic. For her lifetime's work she received the Donald O. Hebb Distinguished Contribution Award of the Canadian Society for Brain, Behaviour and Cognitive Science. She is a Fellow of the Royal Society of Canada and of the Association for Psychological Science. She received a Ph.D. in child development from the University of Minnesota.

Tony Movshon

Member

J. Anthony Movshon (NAS) is University Professor and Silver Professor in the Center for Neural Science at New York University. In 1987, he became founding Director of NYU's Center for Neural Science. His lab studies vision and visual perception, using a multidisciplinary approach that combines biology, behavior and theory. His work explores the way that the neural networks in the brain compute and represent the form and motion of objects and scenes; the way that these networks contribute to perception and to the control of visually guided action; and the way that visual experience influences brain development in early life. Among his honors are the Young Investigator Award from the Society for Neuroscience, the Rank Prize in Optoelectronics, the António Champalimaud Vision Award, the Golden Brain Award from the Minerva Foundation, and the Karl Spencer Lashley Award from the American Philosophical Society. He is a Member of the National Academy of Sciences, and a Fellow of the American Academy of Arts and Sciences, of the American Association for the Advancement of Science, and of the Association for Psychological Science. He received his Ph.D. in experimental psychology from Cambridge University.

Donald Mutti

Member

Donald O. Mutti is the E.F. Wildermuth Foundation Professor in Optometry at The Ohio State University College of Optometry. His current research projects are the Bifocal Lenses In Nearsighted Kids (BLINK and BLINK2) studies, NEI-funded evaluations of childhood myopia progression with multifocal soft contact lenses. His began his research career in the contact lens industry with CooperVision Ophthalmic Products after which he entered academia to pursue studies of refractive error development. He was a co-investigator on the NEI-funded Collaborative Longitudinal Evaluation of Ethnicity and Refractive Error (CLEERE) study, a 21-year investigation of ocular component development and risk factors for myopia. He was also the Principal Investigator of the NEI-funded Berkeley Infant Biometry (BIBS) Study, an eight-year investigation of ocular component development and emmetropization in infancy. Additionally, Dr. Mutti reported receiving nonfinancial support from Bausch + Lomb during the conduct of the BLINK study. He also served as the Principal Investigator for a recent study with Lentechs LLC, which developed a multifocal contact lens for presbyopia. In 2017, he received research funding from Johnson & Johnson, and from July 2016 to August 2019, he served on the advisory board for Welch Allyn. His research accomplishments have been recognized with the Irvin M. and Beatrice Borish Award and the Glenn A. Fry Award from the American Optometric Foundation. He is a fellow of the American Academy of Optometry and a silver fellow of the Association for Research in Vision and Ophthalmology. He received his O.D. and his Ph.D. from the School of Optometry at the University of California, Berkeley.

Machelle T. Pardue

Member

Machelle T. Pardue is a professor and Vice Chair of Research in the Department of Ophthalmology at Emory University and a senior research career scientist at the Atlanta VA Healthcare System. She is elucidating the retinal mechanisms of myopia by leveraging the power of mouse models. Her lab has investigated the contributions of several retinal pathways and retinal signaling molecules in myopic eye growth using transgenic mouse models. She has been named a Gold Fellow for the Association for Research in Vision and Ophthalmology (FARVO) and a Fellow of the American Institute of Medical and Biological Engineers (FAIMBE). She received her Ph.D. in vision science and biology at the University of Waterloo. Her post-doctorate training was in visual electrophysiology at Loyola School of Medicine and Hines VA Hospital in Chicago.

Ramkumar Sabesan

Member

Ramkumar Sabesan is an associate research professor and Director of Basic and Translational Science at the University of Washington (UW), Department of Ophthalmology. He holds adjunct appointments in the departments of UW Bioengineering and of Biological Structure and is a member of the Graduate program in Neuroscience and University of Washington Institute for Neuroengineering. The Sabesan lab studies functional mechanisms by which retinal photoreceptors and their ensuing visual pathways mediate the most fundamental aspects of vision. This is enabled by the ability of ophthalmic adaptive optics to provide in vivo cellular scale access to the visual system for physiological and psychophysical assays. He has received several awards including the Burroughs Wellcome Fund Careers at the Scientific Interfaces Award, Research to Prevent Blindness Career Development Award, Alcon Research Institute Young Investigator Award, and being named a Kavli fellow by the National Academy of Sciences. He earned his Ph.D. in optics at the Institute of Optics and Center for Visual Science at the University of Rochester. He did a postdoctoral fellowship at the School of Optometry at University of California, Berkeley before joining UW as faculty.

Jody A. Summers

Member

Jody Ann Summers is a professor and Vice Chair of Research in the Department of Cell Biology at the University of Oklahoma Health Sciences Center. After completing a post-doctoral fellowship at the University of Pittsburgh, she obtained her first NIH R01 grant in 1992 entitled, “Regulation of Scleral Growth and Remodeling in Myopia” which she still holds today. The primary objective of her research is to understand, at the molecular level, the mechanism by which the visual environment controls the postnatal growth of the eye. Her research was initiated when little was known about the molecular composition of the sclera and the role of the sclera in regulating eye size and the development of myopia. Since then, she has clearly demonstrated in several animal models that the sclera is a dynamic tissue, capable of rapidly altering its molecular composition in response to changes in the visual environment to regulate ocular size and refraction. Based on these studies, she has directed her research toward identification of intraocular growth regulators as targets for the potential treatment and prevention of myopia. She received her Ph.D. in anatomy and cell biology from the University of North Dakota.

Katherine K. Weise

Member

Katherine K. Weise is a professor of optometry at the University of Alabama at Birmingham (UAB). She has been seeing patients, teaching optometry students, and conducting multi-center clinical trials there since 1995. After studying the safety and tolerability of pirenzepine in the late 90’s, she became co-investigator for the Correction of Myopia Evaluation Trial at UAB. She co-chairs the Myopia Treatment Study 1 for the Pediatric Eye Disease Investigator Group (PEDIG) and was lead co-author of the main outcome paper on low-dose atropine. In addition to NIH-funded trials, Dr. Weise investigates in two industry-sponsored myopia studies: MiSight post-approval study and CHAPERONE study of micro-dose dispensing of low-dose atropine. She earned the 2019 UAB President’s Award for Excellence in Teaching, and the 2019 Hero for Sight Award to honor individuals whose impact on children’s eyecare in the state of Alabama has been both lasting and profound. She will serve as Co-Chair for PEDIG from 2024-2028. She received her O.D. from the Illinois College of Optometry.