FUTURE VISION FORUM

presenting partners

USC Ginsburg Institute for Biomedical Therapeutics

FUTURE VISION FOUNDATION

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About the Forum & Foundation

The **Future Vision Forum** (Forum) is a program chartered under the Future Vision Foundation—an independent 501(c)3 non-profit organization. It will offer a unique opportunity for strategic leaders in research and development to interact as integrated faculty with distinguished, multidisciplinary experts in the field to anticipate and forecast the future of ophthalmology and vision research.

The Forum will hold annual member meetings **comprised of visionary leaders** in ophthalmology, visual science, and allied fields **to foster ideas and programs that accelerate the rate of innovation and discovery that improve the lives of people with eye disease and visual disability**.

Future Vision Foundation is a not-for profit organization. Its mission is to inspire innovative vision research and celebrate breakthrough vision advances through powerful documentaries of discovery, impact, and hope.

To learn about the Future Vision Foundation, who we are, our inspiration, our Board and all of the people who contribute to make these incredible films that celebrate and support vision research, visit www.futurevisionfound.org.

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Future Vision Forum Program

Monday, October 31

A.M.	8:00 – 9:00	**Continental Breakfast**
	9:00 – 9:10	**Welcome and Meeting Overview of Day 1** by Suber Huang, President/CEO Future Vision Foundation and Forum Co-Director and introduction of Mark Humayun, Director USC Ginsburg Institute, Future Vision Forum Co-Director
	9:10 – 9:25	**Basic Science Perspectives on Human-Centered Computing: Overview, Notable Achievements, Current Research** by Cyrus Shahabi with introduction by Mark Humayun, Director USC Ginsburg Institute, Future Vision Forum Co-Director
	9:25 – 10:40	**Session #1 – Basic Science: Human-Centered Computing (HCC)** moderated by Cyrus Shahabi and Suber Huang **Panel 1: HCC Theory and Practice** with Anastasios Nikolas Angelopoulos, Michael Pazzani, Leslie Saxon, Wei Wang **Panel 2: Strategies for Drug Development** with Daniela Ferarra, Steve Pakola, Sarah Reisman, Lukas Scheibler
	10:40 – 10:55	**Break**
	10:55 – 11:00	**USC Dr. Allen and Charlotte Ginsburg Institute for Biomedical Therapeutics Vision Research Award** with introduction by Mark Humayun, Director, USC Ginsburg Institute for Biomedical Therapeutics and presentation by Dr. Allen and Charlotte Ginsburg
	11:00 – 11:30	**USC Ginsburg Institute Vision Research Award Lecture – Artificial Intelligence, Data Science, and Ophthalmology: Where Are We Headed?** by Michael Chiang, Director, National Eye Institute, National Institutes of Health
	11:30 – 12:10	**Session #2 – Basic Science: HCC Opportunities and Challenges** moderated by Cyrus Shahabi and Suber Huang **Panel: Role of Computational Biology in Basic Science Research** with Jean Bennett, ME Hartnett, Peter Kuhn, Krzystof Palczewaski
P.M.	12:10 – 12:25	**USC Dr. Allen and Charlotte Ginsburg Institute for Biomedical Therapeutics Best Poster Award and Presentation** with presentation by Dr. Allen and Charlotte Ginsburg
	12:25 – 1:30	**Lunch Break**
	1:30 – 3:00	**Session #3 – HCC: Translational Research I** moderated by Michael Chiang and Suber Huang **Panel 1: Machine Learning and Artificial Intelligence for Ophthalomology & Healthcare** with Jayashree Kalapthy-Cramer, Yan Liu, Daniel Ting, Siamak Yousefi **Panel 2: Translational Research – Saving Sight** with Mark Humayun, Paek Lee, Michael Pazzani, Benjamin Xu
	3:00 – 3:15	**Break**
	3:15 – 4:45	**Session #4 – HCC: Translational Research II** moderated by Michael Chiang and Suber Huang **Panel 1: Integrating HCC** with Eliot Dow, Kristina Lerman, Kouros Nouri-Mahdavi, Namrata Saroj **Panel 2: Funding Translational Research** with Tony Gover, Sunny Virmani, Sophia Y. Wang, Qifa Zhou
	4:45 – 6:00	**Poster Session, Cocktail Reception, and Individual Photos** Exhibit and Cocktails in Atrium
	6:00 – 6:15	**Formal Group Photo** Location TBA
	6:15 – 6:30	**Walk** to Town & Gown Ballroom
	6:30 – 9:30	**Forum Banquet** at Town & Gown Ballroom

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Future Vision Forum Program

Tuesday, November 1

A.M.	8:00 – 9:00	**Continental Breakfast**
	9:00 – 9:05	**Welcome and Meeting Overview of Day 2** by Suber Huang
	9:05 – 9:55	**Session #5 – HCC: Programs, Current and Emerging Trends** moderated by Daniel Ting and Suber Huang **Panel 1: Emerging Digital Innovation in Healthcare** with Eliot Dow, David Huang, Jason Menzo, Stephen Odaibo
	9:55 – 10:10	**Break**
	10:10 – 11:00	**Panel 2: Translating Technology from Bench to Bedside: Tips and Challenges** with Anne Coleman, Sayoko Moroi, Scooter Plowman, Stephen Poor
	11:00 – 11:15	**Break**
	11:15 – 12:15	**Panel 3: Artificial Intelligence for Drug Discovery and Clinical Trials** with Daniela Ferrara, Jill Hopkins, Szilard Kiss, Namrata Saroj
P.M.	12:15 – 1:15	**Lunch Break**
	1:15 – 3:20	**Session #6 – Forum Takeaways, Recap, and Review*** moderated by Mark Humayan and Suber Huang **Forum Proceedings and Consensus Paper** with all faculty participants to discuss unmet needs, priorities, novel ideation, barriers to progress, and future trends **Overview** of the 2023 Future Vision Forum in Washington, DC
	3:20 – 3:30	**Closing Remarks, Meeting Adjourn**

**this closed-door session will not be broadcast*

Faculty Directory

Anastasios Nikolas Angelopoulos
University of California, Berkeley

Jean Bennett (Steering Committee)
University of Pennsylvania Perelman School of Medicine

Anne Coleman (Steering Committee)
UCLA, Stein Eye Institute

Michael Chiang
National Eye Institute

Eliot Dow
Byers Eye Institute

Daniela Ferrara
Genentech/Roche, Tufts University

Tony Gover
National Eye Institute

Mary Elizabeth Hartnett (Steering Committee)
John A. Moran Eye Center

Jill Hopkins
Novartis

David Huang
Oregon Health & Science University

Suber S. Huang (Co-chair)
Retina Center of Ohio

Mark S. Humayan (Co-chair)
USC Ginsburg Institute for Biomedical Therapeutics

Jayashree Kalpathy-Cramer
University of Colorado

Szilard Kiss (Steering Committee)
Stein Eye Institute

Peter Kuhn
University of Southern California

Paek Lee
National Institute of Health

Kristina Lerman
USC, Information Sciences Institute

Yan Liu
USC, Viterbi School of Engineering

Jason Menzo
Foundation Fighting Blindness

Sayoko E. Moroi
Ohio State University

Kouros Nouri-Mahdavi
Stein Eye Institute

Stephen Odaibo
Retina AI Health

Steve Pakola
Regenxbio

Krzysztof Palczewski
University of California, Irvine

Michael Pazzani
USC, Information Sciences Institute

Scooter Plowman
Verily Life Sciences

Stephen Poor
Norvartis Institutes for Biomedical Research

Sarah Reisman
CalTech

Namrata Saroj
All Eyes Consulting

Leslie Saxon
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Sunny Virmani
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Sophia Y. Wang
Stanford University

Wei Wang
University of California, Los Angeles

Benjamin Xu
Keck School of Medicine of USC, Roski Eye Institute

Siamak Yousefi
University of Tennessee Health Science Center

Qifa Zhou
USC, Viterbi School of Engineering

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Anastasios Nikolas Angelopoulos

University of California, Berkeley
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I am Anastasios Nikolas Angelopoulos, a rising fourth-year Ph.D. student at the University of California, Berkeley. I am privileged to be advised by Michael I. Jordan and Jitendra Malik. From 2016 to 2019, I was an electrical engineering student at Stanford University, advised by Gordon Wetzstein and Stephen P. Boyd.

I work on theoretical machine learning with applications in vision and healthcare. My goal is to apply modern statistical ideas to increase the robustness of black-box models like deep neural networks. I am motivated by medical diagnostics: statistical reliability will become paramount as computer vision and machine learning become ubiquitous in such high-risk settings. My other applied interests include computational imaging and ophthalmology.

References:

1. A gentle introduction to conformal prediction and distribution-free uncertainty quantification
   AN Angelopoulos, S Bates - arXiv preprint arXiv:2107.07511, 2021 - arxiv.org
2. Conformal risk control
   AN Angelopoulos, S Bates, A Fisch, L Lei... - arXiv preprint arXiv ..., 2022 - arxiv.org
3. Image-to-image regression with distribution-free uncertainty quantification and applications in imaging
   AN Angelopoulos, AP Kohli, S Bates... - International ..., 2022 - proceedings.mlr.press
4. Learn then test: Calibrating predictive algorithms to achieve risk control
   AN Angelopoulos, S Bates, EJ Candès... - arXiv preprint arXiv ..., 2021 - arxiv.org

Topics of interest:

Theoretical machine learning, computer vision, conformal prediction, healthcare

Jean Bennett

University of Pennsylvania Perelman School of Medicine
Professor Emerita
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Jean Bennett is a gene therapy expert recognized for her translational work on inherited retinal degenerations. She is known particularly for being the scientific leader of a team that translated the reversal of blindness in animal models to demonstrate efficacy and safety in children and adults. This led to the first FDA-approved gene therapy product for a genetic disease. Bennett received her Ph.D. in Zoology/Cell and Developmental Biology from the University of California, Berkeley, and her M.D. from Harvard Medical School. She completed fellowships at the University of California, San Francisco, Yale University, and Johns Hopkins University School of Medicine. Dr. Bennett joined the faculty at the University of Pennsylvania School of Medicine in 1992, where she was a professor of Ophthalmology and Cell and Developmental Biology until July 2021, when she became the F.M. Kirby Emeritus Professor of Ophthalmology. She continues to Co-direct the Center for Advanced Retinal and Ocular Therapeutics (CAROT) at UPenn while simultaneously further developing gene therapy applications in conjunction with private foundations and biotechnology companies. She has been active in the American Society for Cell and Gene Therapy, a non-profit patient-oriented foundation, and is a member of the National Academy of Sciences, the National Academy of Medicine, and the American Academy of Arts and Sciences.

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3. Amado, D, Mingozzi, F, Hui, D, Bennicelli, JL, Wei, Z, Chen, Y, Bote, E, Grant, RL, Golden, JA, Narfstrom, K, Syed, NA, Orlin, SE, High, KA, Maguire, AM, Bennett, J, Safety and efficacy of subretinal readministration of a viral vector in large animals to treat congenital blindness., Sci Transl Med 2, 21ra16, (2010) PMID:20374996
4. Ashtari, M, Cyckowski, LL, Monroe, JF, Marshall, KA, Chung, DC, Auricchio, A, Simonelli, F, Leroy, BP, Maguire, AM, Shindler, KS, Bennett, J, The human visual cortex responds to gene therapy-mediated recovery of retinal function after prolonged sensory deprivation, J Clin Invest, 121(6):2160-8 (2011) PMID 21606598.
5. Nikonov S, Aravand P, Lyubarsky A, Nikonov R, Luo AJ, Wei Z, Maguire AM, Phelps NT, Shpylchak I, Willett K, Aleman TS, Huckfeldt RM, Ramachandran PS, Bennett J. Restoration of Vision and Retinal Responses After Adeno-Associated Virus–Mediated Optogenetic Therapy in Blind Dogs Transl Vis Sci Technol. 2022 May 2;11(5):24. doi: 10.1167/tvst.11.5.24. PubMed PMID: 35604672

Topics of interest:

Gene therapy, animal models, retinal degeneration, clinical trial outcome measures, optogenetic therapy, Adeno-associated Virus (AAV), cell transplantation

Michael Chiang

National Eye Institute Director
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Michael F. Chiang is the Director of the National Eye Institute at the National Institutes of Health in Bethesda, Maryland. By background, he is a pediatric ophthalmologist and is also board-certified in clinical informatics. His research focuses on the interface of biomedical informatics and clinical ophthalmology in areas such as retinopathy of prematurity (ROP), telehealth, artificial intelligence, electronic health records, data science, and genotype-phenotype correlation. He is an Adjunct Investigator at the National Library of Medicine, and his group has published over 250 peer-reviewed papers and developed an assistive artificial intelligence system for ROP that received Breakthrough Status from the U.S. FDA.

Dr. Chiang began at NIH in November 2020. He serves as Co-Chair of a trans-NIH working group for high-value data asset sustainability, Chair of a trans-NIH clinical trials infrastructure working group, Co-Chair of a trans-NIH medical imaging working group, Co-Chair of the NIH AIM-AHEAD advisory committee, and Co-Chair of the NIH Common Fund Bridge2AI program. He is a member of the NIH Scientific Data Council. Before coming to NIH, he received a BS in Electrical Engineering and Biology from Stanford University, an M.D. from Harvard Medical School and the Harvard-MIT Division of Health Sciences and Technology, and an M.A. in Biomedical Informatics from Columbia University. He completed residency and pediatric ophthalmology fellowship training at the Johns Hopkins Wilmer Eye Institute. Between 2001-2010, he worked at Columbia University, where he was Anne S. Cohen's Associate Professor of Ophthalmology & Biomedical Informatics and director of the introductory graduate student course in biomedical informatics. From 2010 – 2020, he worked at Oregon Health & Science University (OHSU), where he was Knowles Professor of Ophthalmology & Medical Informatics and Clinical Epidemiology and Associate Director of the Casey Eye Institute.

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1. Brown JM, Campbell JP, Beers A, Chang K, Ostmo S, Chan RVP, Dy J, Erdogmus D, Ioannidis S, Kalpathy-Cramer J, Chiang MF. Automated Diagnosis of Plus Disease in Retinopathy of Prematurity Using Deep Convolutional Neural Networks. JAMA Ophthalmol 2018;136:803-10. [This is the original description of the AI system that received FDA breakthrough status for plus disease diagnosis in ROP.]
2. Chiang MF, Sommer A, Rich WL, Lum F, Parke DW. The 2016 American Academy of Ophthalmology IRIS ® Registry (Intelligent Research in Sight) Database: Characteristics and Methods. Ophthalmol 2018;125:1143-8. [This is the original description of data extraction in the American Academy of Ophthalmology IRIS Registry.]
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4. Shortliffe EH, Cimino JJ, Chiang MF, editors. Biomedical informatics: computer applications in health care and biomedicine, 5th edition. New York: Springer; 2021. [This is considered the leading introductory textbook in biomedical informatics.]
5. Chiang MF, Tumminia SJ. The 2021 National Eye Institute Strategic Plan: Eliminating Vision Loss and Improving Quality of Life. Ophthalmol 2022; 129(1):12-14. [This is a description of the new National Eye Institute Strategic Plan.]

Topics of interest:

AI, telehealth

Anne Coleman

UCLA Stein Eye Institute
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Dr. Coleman is the Chair and Executive Medical Director of the Department of Ophthalmology at the David Geffen School of Medicine (DGSOM), Director of the UCLA Stein Eye Institute and Affiliation Chair of the Doheny Eye Institute, and Professor of Epidemiology at the UCLA Jonathan and Karin Fielding School of Public Health.

Dr. Coleman has been actively involved in national outreach programs in ophthalmology. She was elected to the National Academy of Science, Engineering, and Medicine in 2016, was a member of the National Academy of Medicine (formerly Institute of Medicine) Committee on Public Health Approaches to Reduce Vision and Promote Eye Health, and Chair of the National Eye Institute National Eye Health Educational Program. She is the former president of the American Academy of Ophthalmology (AAO), American Ophthalmological Society, Women in Ophthalmology, and Los Angeles Society of Ophthalmology. She is a recipient of the AAO Life Achievement Award and Secretariat Award and gave the prestigious LXXII Edward Jackson Memorial Lecture at the AAO Annual Meeting in 2015. She is the only AAO president to have also given the Jackson Memorial Lecture and be honored as a member of the National Academy of Medicine. She is a former member of the St. John of Jerusalem Eye Hospital Group Board of Trustees, the Helen Keller International Board of Trustees, and the U.S. Food and Drug Administration Ophthalmic Devices Panel.

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1. Wang KM, Tseng VL, Liu X, Pan D, Yu F, Baker R, Mondino BJ, Coleman AL. Association Between Geographic Distribution of Eye Care Clinicians and Visual Impairment in California. [Epub ahead of print] JAMA Ophthalmol. 2022 May 5;e221001. PMID: 35511131. doi: 10.1001/jamaophthalmol.2022.1001.
2. Tseng VL, Topouzis F, Yu F, Keskini C, Pappas T, Founti P, Anastasopoulos E, Harris A, Wilson MR, Coleman AL. Association Between Dietary Salt Intake and Open Angle Glaucoma in the Thessaloniki Eye Study. [Epub ahead of print] J Glaucoma. 2022 Apr 27. PMID: 35474047doi: 10.1097/IJG.0000000000002044.
3. Coleman AL. How Big Data Informs Us About Cataract Surgery: The LXXII Edward Jackson Memorial Lecture. [online first: Oct 21, 2015]. Am J Ophthalmol. Dec 2015; 160(6), 1091-1103. PMID: 26432566. doi:10.1016/j.ajo.2015.09.028.

Topics of interest:

Health disparities, glaucoma, epidemiology

Eliot Dow

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Eliot Dow was born and raised in Ohio. He attended Ohio State University, where he developed an interest in science and medicine. This led him to earn an M.D. at Cornell University and a Ph.D. at The Rockefeller University, studying sensory nervous system development with Jim Hudspeth. During his time in the M.D./Ph.D. program, he was also a visiting scientist and later post-doctoral researcher with Moritz Helmstaedter at the Max Planck Institute for Brain Research, working on human-in-the-loop machine learning for large neuroscience data sets. He completed an ophthalmology residency at the Stein Eye Institute of UCLA. While in residency, he studied the application of machine learning to ophthalmology as an honorary research fellow at Moorfields Eye Hospital with Pearse Keane and undertook informatics training at UCLA. He joined the Byers Eye Institute as the 2021 – 2022 Stanford Ophthalmic Innovation Fellow. With this experience, he hopes to integrate human-centered data science and machine learning into ophthalmology to improve patient outcomes and provider satisfaction.

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1. Dow ER, Yung M, Tsui E. Immune Checkpoint Inhibitor-associated Uveitis: Review of Treatments and Outcomes. Ocul Immunol Inflamm. 2021 Jan 2;29(1):203-211. doi: 10.1080/09273948.2020.1781902. Epub 2020 Aug 20. PMID: 32815757.
2. Dow ER, Hou K, Ransome S, Abbassi S, Tsui E. Posterior Uveitis Associated with Cemiplimab. Ocul Immunol Inflamm. 2022 Jul;30(5):1211-1213. doi: 10.1080/09273948.2021.1872649. Epub 2021 Apr 1. PMID: 33793370.
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Topics of interest:

Sensory nervous system, integrating human centered data science and machine learning

Daniela Ferrara

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Daniela Ferrara M.D., Ph.D., FASRS is an ophthalmologist retina specialist with 25 years of experience in clinical research and clinical practice. Dr. Ferrara currently serves as principal medical director of Ophthalmology at Genentech/Roche. She has vast experience in the design, conduct, and interpretation of clinical trials to develop new therapies for visually threatening retinal diseases. She is now the Ophthalmology lead for the Personalized Healthcare program at Genentech, working with multidisciplinary teams to develop a pipeline of artificial intelligence-based tools to inform key decisions in drug development and patient care. Dr. Ferrara is an Assistant Professor of Ophthalmology at Tufts University School of Medicine, where her major research interests include multimodal imaging of the retina and choroid; with a special focus on new technologies in optical coherence tomography for degenerative, vascular, and dystrophic diseases, including reading center activities and initiatives on digital innovation. Dr. Ferrara has authored numerous peer-reviewed publications, and book chapters, serves on the editorial boards for several ophthalmology journals, and is an active member of various ophthalmological and scientific societies, including the Association for Research in Vision and Ophthalmology (ARVO), American Academy of Ophthalmology (AAO), American Society of Retina Specialists (ASRS), and the Brazilian Retina & Vitreous Society (BRAVS). Daniela Ferrara is also passionate about empowering underrepresented minorities in the medical field, aiming to improve opportunities for physicians and patients. She supports multiple initiatives on diversity, equity, inclusion, and accessibility for better clinical research and clinical practice.

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1. Ferrara D, Newton E, Lee AY. Artificial intelligence-based predictions in neovascular age-related macular degeneration. Current Opinion in Ophthalmology. 2021. 32(5):389-396
2. Anegondi N, Gao SS, Steffen V, Spaide RF, Sadda SR, Holz FG, Rabe C, Honigberg L, Newton EM, Clucery J, Kawczynski MG, Bengtsson T, Ferrara D, Yang T. Deep learning to predict geographic atrophy area and growth rate from multimodal imaging. Ophthalmology Retina. 2022. S2468-6530(22)00426-2. doi: 10.1016/j.oret.2022.08.018
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Topics of interest:

Medical retina, retinal imaging, imaging reading center, AI, clinical research, clinical trials, drug development, age-related macular degeneration, retinal dystrophies, retina, choroid

Tony Gover

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Dr. Gover is a Program Director in the Division of Extramural Science Programs at the National Eye Institute (NEI). His responsibility of oversight includes NEI's Biotechnology and Engineering Program, Translational Research Program (R24), and Small Business Program for the anterior eye segment. Prior to serving as a Program Director for NEI, Dr. Gover served as the Acting Director and Civilian Deputy Director for the Clinical and Rehabilitative Medicine Research Program (CRMRP) at the United States Army Medical Research and Development Command (USAMRDC). At CRMRP, Dr. Gover oversaw Army, Defense Health Program, and Congressional Special Interest funds directed toward developing innovative clinical and rehabilitative medicine solutions. The research program focused on investigating strategies to repair catastrophic wounds, improve pain management, maximize return to duty rates and improve the overall quality of life for Service Members who sustained traumatic injuries. Dr. Gover was the scientific lead for USAMRDC's Horus Vision Restoration Project with the goal of developing cortical brain-machine interfaces to restore vision for our injured Service Members and Veterans.

Dr. Gover received his Ph.D. in Neuroscience from the University of Maryland Baltimore. His academic career focused on understanding the physiology of sensory afferent neurons and how that physiology changed as a result of physical damage or as a result of neuroinflammation.

Topics of interest:

Neuroscience, bioengineering and technology, product development, translational research

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Mary Elizabeth (ME) Hartnett

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Mary Elizabeth Hartnett, M.D., holds the Calvin S. and JeNeal N. Hatch Presidential Endowed Chair in Ophthalmology and Visual Sciences and is a Distinguished Professor at the University of Utah. She is an adjunct professor at the University of Utah Departmens of Neurobiology and Pediatrics. Dr. Hartnett is the founder and director of Pediatric Retina at the John A. Moran Eye Center and principal investigator of the Retinal Angiogenesis Laboratory. Her textbook, Pediatric Retina—in its third edition—is widely considered the best textbook in the field. Her NIH-funded has studied the mechanisms of hemostasis and pathologic angiogenesis in age-related macular degeneration (AMD) and retinopathy of prematurity (ROP). Her research demonstrated proof of concept of an angiogenic signaling pathway, which explains both normal vascular development and inhibition of extraretinal neovascularization.

Dr. Hartnett has received numerous awards, including the ARVO Weisenfeld Award, the highest award for clinician-scientists and is an ARVO Gold Fellow. She received the 2019 Paul Kayser/Retina Research Foundation Global Award, the Macula Society's 2016 Paul Henkind Award and its 2019 Arnall Patz Medal, the Paul Kayser/RRF Global Award from the PanAmerica Society, and the 2021 Suzanne Veronneau-Troutman Award, the most prestigious award from Women in Ophthalmology. In 2022, she was one of six at the University of Utah to receive a distinguished research award for Pediatrics and Ophthalmology.

Dr. Hartnett's has published 227 articles in peer-reviewed journals, over 40 book chapters, and serves on numerous editorial boards. Her long list of professional leadership includes serving as the ARVO chair of the Publications Committee, Leadership Development Program, chair of the research advisory committees for The Macula Society and the Jack McGovern Coats Disease Foundation.

References:

1. Mechanisms and Management of Retinopathy of Prematurity by M. Elizabeth Hartnett, M.D., and John S. Penn, Ph.D.
2. Ad hoc reviewer for Survey of Ophthalmology (2005 to present)
3. Activation of Rap1 inhibits NADPH oxidase-dependent ROS generation in retinal pigment epithelium and reduces choroidal neovascularization by Haibo Wang, Yanchao Jiang, Dallas Shi, Lawrence A. Quilliam, Magdalena Chrzanowska-Wodnicka, Erika S. Wittchen, Dean Y. Li, and M. Elizabeth Hartnett
4. Gene therapy knockdown of VEGFR2 in retinal endothelial cells to treat retinopathy by Aaron B Simmons, Colin A Bretz, Haibo Wang, Eric Kunz, Kassem Hajj, Carson Kennedy, Zhihong Yang, Thipparat Suwanmanee, Tal Kafri, and M. Elizabeth Hartnett
5. Discovering Mechanisms in the Changing and Diverse Pathology of Retinopathy of Prematurity: The Weisenfeld Award Lecture by M. Elizabeth Hartnett, M.D.

Topics of interest:

Studying diseases of the retina and choroid that are associated with abnormal angiogenesis and macular degeneration and mesenchymal transition

Jill Hopkins

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VP Global Drug Development Ophthalmology
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Jill is an ophthalmologist and retinal specialist with a career spanning three decades in Ophthalmology. She has 20 years of experience in clinical medicine and academic research and over 12 years of industry experience in all stages of research development. Jill received her medical degree from McMaster University Medical School and completed her ophthalmology residency at the University of Toronto in Canada. Jill has fellowships in Medical Retina from Moorfields Hospital/University College London and Visual Electrophysiology from the University of Toronto and the University of Ottawa Canada. Jill spent over 15 years in clinical and academic practice, treating patients of all ages across the full spectrum of retinal diseases. She specialized in HIV-related eye disease in London and Toronto, holding cross-division appointments in Ophthalmology and Infectious Disease. She also sub-specialized in inherited retinal disorders, and her clinical and academic research included treatments for hereditary retinal degenerations working on the Argus retinal prosthesis and the CNTF trials for retinitis pigmentosa and geographic atrophy while in practice in Los Angeles. She was an Assistant Professor of Ophthalmology at the Keck School of Medicine at the University of Southern California and held appointments at Children's Hospital Los Angeles and the University of Toronto Department of Ophthalmology and Visual Sciences. Jill recently took on the role of SVP and Global Head of Ophthalmology Development at Novartis, leading a portfolio of drug, device, and digital development. Prior to that, she was Global Head of Personalized Healthcare in Ophthalmology at Roche-Genentech, leading a program focusing on the clinical application of data, artificial intelligence, and digital technologies to produce meaningful impact on patient care and outcomes in eye disease. In over a decade at Roche-Genentech she conducted research in age-related macular degeneration and diabetic eye disease, including long-acting delivery to the eye with the Port Delivery System. She spent time in early research at Unity Biotechnology as Vice President of Ophthalmology and has led large global cross-functional teams in a variety of stages of research. Originally from Canada, she currently lives in San Francisco, California, with her husband and three children.

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1. Khanani AM, Callanan D, Dreyer R, Chen S, Howard JG, Hopkins JJ, Lin CY, Lorenz-Candlin M, Makadia S, Patel S, Tam T, Gune S; of the Ladder Investigators. End-of-Study Results for the Ladder Phase 2 Trial of the Port Delivery System with Ranibizumab for Neovascular Age-Related Macular Degeneration. Ophthalmol Retina. 2021 Aug;5(8):775-787. doi: 10.1016/j.oret.2020.11.004. Epub 2020 Nov 18. PMID: 33217618.
2. Hopkins, J. Keane, Pearse A. Balaskas, Konstantinos. Delivering personalized medicine in retinal care: from artificial intelligence algorithms to clinical application. Current Opinion in Ophthalmology: September 2020 - Volume 31 - Issue 5 - p 329-336 doi: 10.1097
3. Michael G. Kawczynski; Thomas Bengtsson; Jian Dai; J. Jill Hopkins; Simon S. Gao; Jeffrey R. Willis. Development of Deep Learning Models to Predict Best-Corrected Visual Acuity from Optical Coherence Tomography. Translational Vision Science & Technology September 2020, Vol.9, 51. doi:https://doi.org/10.1167/tvst.9.2.51
4. Sadda SR, Tuomi LL, Ding B, Fung AE, Hopkins JJ. Macular Atrophy in the HARBOR Study for Neovascular Age-Related Macular Degeneration. Ophthalmol. 2018 Feb 21. pii: S0161-6420 (17) 32773-2.

Topics of interest:

Retinal disease, gene therapy, application of AI technologies to clinical research and patient care

David Huang

Oregon Health & Science University
Peterson Professor of Ophthalmology and Professor of Biomedical Engineering
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Dr. David Huang earned B.S. and M.S. degrees in electrical engineering from MIT, and M.D./Ph.D. from the joint Harvard-MIT Health Sciences and Technology Program. He received ophthalmology residency training at the Doheny Eye Institute/University of Southern California and fellowship training in cornea and refractive surgery at Emory University.

Dr. Huang is currently the Associate Director and Director of Research of Casey Eye Institute and the Peterson Professor of Ophthalmology and Professor of Biomedical Engineering at the Oregon Health & Science University. Dr. Huang leads the Center for Ophthalmic Optics and Lasers (www.COOLLab.net), which comprises six faculty members. He has a clinical practice in cornea and refractive surgery.

Dr. Huang is known for his innovations in applying laser and optical technology to eye diseases. Dr. Huang is a co-inventor of optical coherence tomography (OCT), a commonly used ophthalmic imaging technology with 30 million procedures performed annually worldwide. His seminal article on OCT, published in Science in 1991, has been cited more than 17,000 times. He has published more than 300 peer-reviewed articles with over 55,000 citations and 38 US patents. Dr. Huang has received the Champalimaud Vision Award, the Friedenwald Award from the Association for Research in Vision & Ophthalmology, the Russ Prize from the National Academy of Engineering, and the Visionary Award from the Greenberg Prize to End Blindness. He is a co-founder of Gobiquity, maker of the GoCheck Kids app that has screened more than 5 million preschool children for amblyopia risk factors.

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Topics of interest:

Optical coherence tomography, OCT angiography

Suber S. Huang

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Dr. Suber Huang is an inspiring leader, educator, and researcher who works with ophthalmologists and vision scientists worldwide. He is the founding President of the Future Vision Foundation and the Future Vision Forum, the first meeting to bring elite basic, translational, and clinical vision scientists together to collaboratively discuss cutting-edge concepts in eye research. As Executive Director for the Future Vision Foundation, his films have garnered national recognition, including the National Short Film Award and the ASRS Rhett Buckler Award. He is the Director of the Retina Center of Ohio and a voluntary assistant professor at the University of Miami Bascom Palmer Eye Institute. He is the founding Editor-in-Chief of the ASRS Retina Atlas and the Retina Image Bank, the world's most utilized, comprehensive, open-access multimedia platform for retina, amassing over 3 million page views from over 180 countries since its inception. He is a founding officer of Retina Global. Former leadership positions include President of the ASRS, Chair of the National Eye Health Education Program/NEI, AAO Vice-Chair of Federal Affairs and Chair of the Research, Regulatory, and External Scientific Affairs Committee, APVRS Leadership development program, and Director of the Retina Diseases Image Analysis Reading Center, Director of the Visual Sciences Coordinating Center, and Vice-Chair/Philip and Elizabeth Searle Professor CWRU. He has numerous publications and ongoing clinical trials to develop gene and stem cell therapy, cortical vision prosthesis, therapy for onchocerciasis, and immunomodulatory research in diabetes and AMD. Recent honors include election to the Retina Hall of Fame, APAO Jose Rizal Medal, Johns Hopkins School of Medicine–Wilmer Eye Institute Distinguished Alumnus award, inaugural President's Award from the Vitreo-Retinal Society of India, ICOP Donald Gass Award, ASRS Packo Award for extraordinary service, and the 2022 Vision Research Advocate Award by the Fight for Sight Foundation.

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Topics of interest:

Computational biology, gene therapy, AI for advanced diagnosis and telemedicine, retina surgery, collaborative research

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Mark S. Humayan

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Mark S. Humayan, M.D., Ph.D., is the Cornelius J. Pings Chair in Biomedical Sciences, Professor of Ophthalmology, Biomedical Engineering, and Integrative Anatomical Sciences, Director of the USC Ginsburg Institute for Biomedical Therapeutics, and Co-Director of the USC Roski Eye Institute.

Dr. Humayun is an internationally recognized pioneer in vision restoration. He assembled a team of multidisciplinary experts to develop the first FDA-approved artificial retina, Argus II, for sight restoration. He has more than 140 issued patents and over 300 peer reviewed publications. He has a Google Scholar H Index of 101.

Dr. Humayun is a member of the U.S. National Academies of Medicine, Engineering, and Inventors. He is a Fellow of the American Association for the Advancement of Science (AAAS), Institute of Electrical and Electronics Engineers (IEEE), American Society of Retinal Specialists (ASRS), and Association for Research in Vision and Ophthalmology (ARVO).

For his extraordinary contributions, he was awarded the United States' highest technological achievement, the 2015 National Medal of Technology and Innovation, by President Obama. He is the recipient of the 2018 IEEE Biomedical Engineering Award, the 2020 IEEE Medal for Innovations in Healthcare Technology, and the Charles Schepens award by the American Academy of Ophthalmology in 2021. Dr. Humayun was named top 1% of ophthalmologists by the U.S. News & World Report.

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Topics of interest:

Retina prosthesis, micro drug pump for longer term intraocular drug delivery, synthetic substrate for the growth and implantation of polarized stem cell-derived RPE

Jayashree Kalpathy-Cramer

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Jayashree Kalpathy-Cramer is the Chief of the newly formed Division of Artificial Medical Intelligence in the Department of Ophthalmology at the University of Colorado Anschutz Medical Campus. Previously she was an Associate Professor of Radiology at Harvard Medical School and a Co-Director of the QTIM lab and the Center for Machine Learning at the Martinos Center. An electrical engineer by training, she worked in the semiconductor industry for several years. After returning to academia, she is now focused on the applications of machine learning and modeling in healthcare. Her research interests include medical image analysis, machine learning, and artificial intelligence for applications in radiology, oncology, and ophthalmology. The work in her lab spans the spectrum from novel algorithm development to clinical deployment. She is passionate about the potential that these techniques have to improve access to healthcare in the US and worldwide. Dr. Kalpathy-Cramer has authored over 200 peer-reviewed publications, has written over a dozen book chapters, and is an inventor on a dozen patents.

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3. Federated Learning for Multicenter Collaboration in Ophthalmology: Improving Classification Performance in Retinopathy of Prematurity Lu C, Hanif A, Singh P, Chang K, Coyner AS, Brown JM, Ostmo S, Chan RVP, Rubin D, Chiang MF, Campbell JP, Kalpathy-Cramer J; Imaging and Informatics in Retinopathy of Prematurity Consortium Members of the Imaging and Informatics in Retinopathy of Prematurity research consortium are as follows. Ophthalmol Retina. 2022 Aug;6(8):657-663. doi: 10.1016/j.oret.2022.02.015. Epub 2022 Mar 14. PMID: 35296449.

Topics of interest:

Machine learning and artificial intelligence, retinopathy of prematurity, bias and fairness

Szilard Kiss

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Szilard Kiss is the Bob and Dolores Hope - Robert M. Ellsworth, M.D. Distinguished Associate Professor in Ophthalmology, Associate Dean of Clinical Compliance, Chair of the Graduate Faculty Council, Chief of the Retina Service, Vice-Chair of Clinical Research, Vice-Chair of Compliance, and Director of Teleophthalmology at Weill Cornell Medical College in New York City. Szilard received his undergraduate and medical degree from Columbia University, ophthalmology residency, and vitreoretinal fellowship at Harvard Medical School/Massachusetts Eye & Ear Infirmary and was selected Chief Retina Fellow. As an undergraduate at Columbia College, he partnered with NASA and the Department of Defense to evaluate the implications of microgravity on early developmental patterning aboard the space shuttles Discovery and Columbia. His current 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. Szilard has been the PI in over three-dozen prospective clinical trials and laboratory investigations. He has authorship in over 330 scientific publications, has given nearly 300 invited lectureships worldwide, and serves on the Editorial Board and as a scientific reviewer to several major journals. He is a world-renowned medical and surgical vitreoretinal specialist. His honors include 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, the American Society of Retina Specialists Rhett Buckler Award, and the Research to Prevent Blindness Physician-Scientist Award. Dr. Kiss has received the ASRS Honor and Senior Honor awards and the AAO Honor Award. He is a Charter Member of the Retina Hall of Fame. His regional, national, and international honors include Top Doctors, The Ophthalmologist Power List Top 40 Under 40 Ophthalmologist Worldwide, Castle Connolly's Top Doctors, and New York Super Doctors.

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Topics of interest:

Gene therapy. ultra-widefield imaging, "real world" utilization and outcomes

Peter Kuhn

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Peter Kuhn, Ph.D., is Professor at USC and holds chairs as the Dean's Professor of Biological Sciences, Professor of Medicine, Urology, Aerospace & Mechanical Engineering, and Biomedical Engineering. He is the Director of the USC Michelson Convergent Science Institute in Cancer (CSI-Cancer) and the deputy director of the Convergent Science Virtual Cancer Center. He holds a chair as an Honorary Professor of Cancer Science at the University of Manchester in the United Kingdom.

He is a scientist, educator, and entrepreneur with a career-long commitment to personalized medicine and individualized cancer patient care. He is focused on the redesign of cancer care. The first product from technology developed by Dr. Kuhn became available for prostate cancer care in June 2016. Dr. Kuhn's strategy is to advance our understanding of the human body to improve the human condition for those affected by cancer. His research is shedding new light on how cancer spreads through the body and evolves over time. This new science will lead to a personalized care strategy that is biologically informed and clinically actionable. Dr. Kuhn has published over 300 peer-reviewed manuscripts, and his work has been cited over 22 thousand times. His research has resulted in the creation of multiple companies, including Epic Sciences and Cansera to translate the science into cancer care.

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Topics of interest:

Precision oncology, liquid biopsy, digital health, health performance

Paek Lee

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Dr. Lee came to the National Eye Institute in 2020 to serve as Program Director for the Small Business SBIR/STTR program. He also oversees Bioengineering and Technology projects in NEI's RETINA program. His responsibilities include coordinating NEI's effort to have human ocular tissue resources accessible to NEI-supported extramural researchers through NIH Human Tissue and Organ Research Resource (HTORR) program. From 2003 to 2020, he served as Scientific Review Officer at the Center for Scientific Review (CSR), managing various study sections, including the Vision and Low Vision Technologies Small Business [ETTN-12] panel and the Molecular Neurogenetics [MNG] study section. During his tenure at CSR, Dr. Lee also served as a Referral Officer for the Division of Receipt and Referral (DRR) until his transfer to NEI. He has a Ph.D. in Neuroscience from Kent State University and his prior research focus was on understanding the roles that immune-derived molecules and myelin-associated glycoprotein play in neurodegenerative conditions.

Topics of interest:

Retinal imaging, retinal prosthetics, optogenetic, artificial intelligence, machine learning

Kristina Lerman

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Kristina Lerman is a Principal Scientist at the Information Sciences Institute and holds a joint appointment as a Research Professor in the USC Viterbi School of Engineering's Computer Science Department. Her research focuses on applying network- and machine-learning-based methods to solve problems in social computing.

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Topics of interest:

Artificial intelligence fairness

Yan Liu

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Yan Liu is a Professor in the Computer Science Department and the Director of Machine Learning Center at the University of Southern California. She was a Research Staff Member at IBM Research from 2006 – 2010. She received her Ph.D. degree from Carnegie Mellon University. Her research interest is machine learning and its applications to health care, sustainability, and social network analysis. She has received several awards, including the ACM Distinguished Member, NSF CAREER Award, Okawa Foundation Research Award, New Voices of Academies of Science, Engineering, and Medicine, Biocom Catalyst Award Winner, and ACM Dissertation Award Honorable Mention.

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3. Interpretable deep models for ICU outcome prediction. Z Che, S Purushotham, R Khemani, Y Liu. AMIA Annual Symposium Proceedings 2016, 371, 2016.

Topics of interest:

Machine learning

Jason Menzo

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Jason Menzo serves as the Chief Executive Officer for the Foundation Fighting Blindness, the world's leading organization searching for treatments and cures of blinding retinal degenerative diseases. The Foundation has raised over $856 million since its inception and is currently funding more than 90 research projects globally. Jason also serves on the management team for the Retinal Degeneration Fund (RD Fund), the venture arm of the Foundation. The RD Fund has nearly $100 million under management and has made investments in 10 portfolio companies to date, all aimed at fueling startup companies in the retinal degeneration space.

Prior to joining the Foundation, Jason was a co-founder and Business Unit Head of Sun Ophthalmic. As one of four founding members, he built and led the commercial team, launching the business into the well-known entity it is today.

Prior to his role with Sun Ophthalmic, he was a founding member of the US business for Nicox SA, where he led the commercial launches of several ophthalmic brands and helped the business successfully exit by acquisition (Valeant Pharmaceuticals, 2014). He has previously held positions of increasing responsibility with Bausch + Lomb, Inspire Pharmaceuticals, and Bayer Healthcare.

Jason also serves on the Board of Directors for Retina International, the leading global umbrella organization for patient-led charities and foundations. He has also served as a member for the Global Council of Advisors and Advocates for Sightlife, a global non-profit seeking to end corneal blindness.

Jason is a devoted husband to his wife, Leanne, and a loving father to his son Gabe and two daughters, Clara and Addie. Jason and Leanne are very active in the autism advocacy and research community.

Topics of interest:

Clinical trial endpoints for rare ophthalmic diseases, new/alternate funding sources for translational research

Sayoko Moroi

Ohio State University
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Sayoko Moroi, M.D., Ph.D., is a board-certified and glaucoma fellowship-trained ophthalmologist. She is a clinician-scientist and has served as principal investigator, multi-principal investigator, and co-investigator of NIH/NEI grants, NSF grants, foundation grants, and industry-sponsored FDA glaucoma trials. After serving 25 years at the University of Michigan, she returned to her alma mater, The Ohio State University (OSU), to serve as chair in January 2020 for the Department of Ophthalmology and Visual Sciences. She has a diverse research portfolio of genetics, glaucoma, complex cataracts, precision medicine for eye health, technology, and vision enhancement, tissue biomechanics, ultrasound imaging, vision health and relationships with mobility and cognitive function, and women's health. She is committed to mentoring and sponsoring individuals at all levels of training and workforce positions. Under her leadership, the department launched several new education initiatives, including a 12-week technician training program, medical student and pathway learners OSLER (.e., Ophthalmology Student Learning Enrichment and Research) program, and virtual ophthalmology electives during the COVID pandemic. She is committed to addressing, overcoming, and decreasing disparities for women and underrepresented minorities. Dr. Moroi expanded her educational journey on implicit bias and is a certified facilitator through OSU Wexner Medical Center Diversity Council. Together with the outstanding faculty, staff, learners, and collaborators, our department aspires to restore, preserve, and enhance vision to improve lives for ALL.

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Topics of interest:

Learning and implementing machine learning, deep learning to eye care and ocular imaging to improve health outcome

Kouros Nouri-Mahdavi

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Dr. Nouri-Mahdavi has an active clinical practice with a focus on medical and surgical management of adult glaucoma and complex cataract surgery. Dr. Nouri-Mahdavi's research focuses on functional and structural measurements for optimizing the diagnosis of glaucoma or its progression, with a strong interest in advanced glaucoma, the use of machine learning approaches in glaucoma diagnostics and the study of surgical outcomes in glaucoma. He has been the recipient of many awards, including the American Academy of Ophthalmology's Secretariat and Achievement Awards, the American Glaucoma Society's MAPS Grant Award, and Early and Mid-Career Clinician Scientist Awards, the Gerald Oppenheimer Family Foundation Center for Prevention of Eye Disease Award, and NIH K23 and R01 awards. He has been the co-recipient of the UCLA Innovation Awards in 2018 and 2019 for translational research projects. His research is currently funded by an NIH R01 award to optimize the detection of glaucoma progression in eyes with advanced glaucoma.

Dr. Nouri-Mahdavi is a clinician-scientist who continues to teach and publish extensively. He frequently lectures at national and international meetings. He is currently the Vice-Chair of the AGS Annual Meeting Committee and serves on the Editorial Boards of the Journal of Glaucoma, International Glaucoma Review, and Journal of Ophthalmic and Vision Research.

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Topics of interest:

Glaucoma: diagnostics, AI, surgical outcomes, new technology

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Dr. Stephen G. Odaibo is a Retina specialist, Mathematician, Computer Scientist, Full-Stack AI Engineer, and Google Cloud Certified Professional Cloud Security Engineer. He is the first Ophthalmologist in the world to ever hold advanced degrees in both Mathematics and Computer Science. In 2017 UAB College of Arts & Sciences awarded Dr. Odaibo its highest honor: The Distinguished Alumni Achievement Award. In 2005, he won the Barrie Hurwitz Award for Excellence in Clinical Neurology at Duke University School of Medicine, where he topped the class in Neurology and in Pediatrics. In 2021, Dr. Odaibo was awarded a U.S. Patent for inventing an AI system to automatically diagnose eye diseases from images. He is the author of the book "Quantum Mechanics and the MRI Machine'' (2012) and "The Form of Finite Groups: A Course on Finite Group Theory" (2016).

Dr. Odaibo obtained a B.S. in Math (UAB, 2001), an M.S. in Math (UAB, 2002), an M.S. in Computer Science (Duke, 2009), and a Doctor of Medicine—M.D. (Duke, 2010). From 2004 to 2006, Dr. Odaibo was in the lab studying GPCRs with Dr. Robert J. Lefkowitz, the 2012 Nobel Laureate in Chemistry. Dr. Odaibo completed his Internship in Internal Medicine at Duke University Hospital in 2011, his Residency in Ophthalmology at Howard University Hospital in 2014, and his Fellowship in Medical Retina at the Univ. of Michigan in 2015. He chaired the 2019 "Artificial Intelligence & Tech in Medicine" Symposium at the NMA and co-chaired the 2022 Medical Device Software Development Summit.

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Topics of interest:

Machine learning, medical device software

Steve Pakola

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Drug development leader with over 25 years of biopharmaceutical experience, including over 20 years as a Chief Medical Officer. Leadership roles in Preclinical/Clinical Development, Clinical Operations, Drug Safety, Regulatory, Biometrics and Medical Affairs. Development experience across small molecules and biologics, including gene therapy, and across multiple therapeutic areas (Ophthalmology [Retina, Glaucoma, Ocular Surface Disease], CNS, Oncology, Cardiovascular, Rare Diseases). Lead inventor and program leader for Jetrea® program since its inception in 2002 through to BLA and MAA submissions in 2012 (1st product approved for vitreomacular adhesion including macular hole in US, Europe, and ROW). The team responsible for the design and execution of the largest gene therapy clinical development program ever conducted (RGX-314 for treatment of wet AMD).

Topics of interest:

Retina drug development, gene therapy

Krzysztof Palczewski

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Krzysztof Palczewski is a biochemical pharmacologist and molecular biologist known particularly for seminal multidisciplinary scientific contributions to the biology and chemistry of vertebrate vision and therapy of retinal diseases. His laboratory is best known for solving the structures of different forms of rhodopsin, a prototype for G protein-coupled receptors that comprise the largest and most diverse family of human drug targets and other important proteins of the visual system. Moreover, his team developed high-resolution imaging with two-photon excitation that impacted non-invasive in vivo monitoring of real-time visual function. Palczewski, a US citizen, was born in Poland. He achieved M.S. (chemistry) degrees at the University of Wroclaw, and a Ph.D. (biochemistry) from the Technical University of Wroclaw, Poland. He rose through the faculty ranks in Ophthalmology and Pharmacology at the University of Washington, Seattle, before serving as Chair of Pharmacology at Case Western Reserve University, Cleveland, OH. Currently, he is a Donald Bren Professor and Irving H. Leopold Professor of Ophthalmology at the University of California, Irvine, serving as Director of the Center for Translational Vision Research. He has received numerous prestigious international awards and is a member of both the National Academy of Sciences and the National Academy of Medicine.

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5. Two-photon imaging of the mammalian retina with ultrafast pulsing laser. Palczewska G, Stremplewski P, Suh S, Alexander N, Salom D, Dong Z, Ruminski D, Choi EH, Sears AE, Kern TS, Wojtkowski M, Palczewski K.JCI Insight. 2018 Sep 6;3(17):e121555. doi: 10.1172/jci.insight.121555. eCollection 2018 Sep 6.PMID: 30185665 Free PMC article.

Topics of interest:

In a new frontier, the Palczewski lab is advancing the therapeutic potential of genome editing for the treatment of inherited retinal diseases and, by extension, other inherited blinding diseases. Thus, a combination of approaches in chemistry, cell biology, structural biology, and genetics are focused on improving our understanding of the visual processes as a prelude to development of novel therapeutic strategies aimed at preserving visual function.

Michael Pazzani

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Michael Pazzani is a Principal Scientist and Director for the AI Research for Health Center at the Information Sciences Institute at the University of Southern California. His current research interest includes diagnosis and risk-stratification for glaucoma from fundus photography and OCT with collaborators at USC and UCSD.

Dr. Pazzani was the Vice Chancellor for Research at the University of California, Riverside, where he was also a professor of computer science with additional appointments in statistics and psychology. From 2006 – 2012, he was the Vice President for Research and Economic Development at Rutgers, the State University of New Jersey, where he was also a Distinguished Professor of Computer Science. Prior to his appointment at Rutgers, Dr. Pazzani was the Director of the Information and Intelligent Systems Division at the National Science Foundation. He also served as a member of the Board of Regents of the National Library of Medicine at the National Institutes of Health from 2003- 2005. Dr. Pazzani started his career as an assistant, associate, and full professor of Information and Computer Science at the University of California, Irvine.

Dr. Pazzani has published over 150 papers on machine learning, explainable artificial intelligence, knowledge discovery from databases, personalization, internet search, and recommendation systems. He serves on the Editorial Board of Machine Learning. He is a Fellow of the Association for the Advancement of Artificial Intelligence. His collaborations in AI and Health have included projects in radiology, ophthalmology, neurology, cardiology, and HIV.

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Topics of interest:

Explainable artificial intelligence, machine learning, deep learning, computer vision, glaucoma

Scooter Plowman

Verily Life Sciences
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Dr. Scooter Plowman is a physician leading clinical science strategy and development for Medical Devices at Verily Life Sciences. He has an M.D., M.B.A., and MHSA from the University of Kansas. He also graduated from Oxford University with an MSc in Diagnostic Imaging and has bachelor's degrees in Neuroscience, Geography, and Latin American Studies from BYU. His clinical residency training in radiology was at Mayo Clinic and Intermountain Healthcare, with fellowship training in Health System Design & Innovation at Stanford, where he still serves on the affiliate faculty. Before Verily, Scooter was the Head of Digital Medicine at Amgen, responsible for digital endpoint development, and has held leadership roles in medical affairs and clinical development. He lives with his wife and six children in Southern California and enjoys hiking, college football, and racquet sports.

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Topics of interest:

Artifical intelligence, SaMD, RPM (remote patient monitoring), and HaH (hospital at home)

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Stephen Poor

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UK-trained ophthalmologist and physician-scientist with 20 years of drug discovery experience, 17 years at Novartis. Current role, Leadership team member of the Novartis Ophthalmology research group, responsible for providing scientific input and assessment of strategic fit of external companies and technologies with Business Development and Licensing team. Central role in recent acquisitions and deals (Gyroscope, Arctos & Dopavision). Team member supporting the development of FI gene therapy for geographic atrophy and the next generation of programs. Previously led the Novartis retinal pharmacology contributing to 9 programs entering clinical trials in geographic atrophy, nAMD, iAMD, DME, and IRD. Management board and functional endpoints work package team member of Macustar industry-academic natural history of iAMD.

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1. Repeatability and Discriminatory Power of Chart-Based Visual Function Tests in Individuals With Age-Related Macular Degeneration: A MACUSTAR Study Report. Dunbar HMP, Behning C, Abdirahman A, Higgins BE, Binns AM, Terheyden JH, Zakaria N, Poor S, Finger RP, Leal S, Holz FG, Schmid M, Crabb DP, Rubin GS, Luhmann UFO; MACUSTAR Consortium.JAMA Ophthalmol. 2022 Aug 1;140(8):780-789. doi: 10.1001/jamaophthalmol.2022.2113.PMID: 35737401. Free PMC article.
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4. Disease-specific assessment of Vision Impairment in Low Luminance in age-related macular degeneration - a MACUSTAR study report. Terheyden JH, Pondorfer SG, Behning C, Berger M, Carlton J, Rowen D, Bouchet C, Poor S, Luhmann UFO, Leal S, Holz FG, Butt T, Brazier JE, Finger RP; MACUSTAR consortium.Br J Ophthalmol. 2022 Mar 30:bjophthalmol-2021-320848. doi: 10.1136/bjophthalmol-2021-320848. Online ahead of print.PMID: 35354561. Free article.
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Topics of interest:

Development and approval of therapies for macular degeneration, including novel endpoints (functional, endpoints predicting risk of progression, endpoints defining progression events) interactions with regulators and payers

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Sarah Reisman was born and raised in Bar Harbor, Maine. She attended Connecticut College in New London, CT, where she developed a passion for organic synthesis working in the laboratory of Professor Timo Ovaska, and graduated with honors in 2001. In the fall of that year, Sarah enrolled in graduate studies at Yale University and joined the research group of Prof. John Wood. She earned her Ph.D. in chemistry in 2006; her thesis detailed the total synthesis of the natural product welwitindolinone A isonitrile. For her postdoctoral work, Sarah pursued studies in the field of asymmetric catalysis as an NIH fellow, working with Professor Eric Jacobsen at Harvard University.

The Reisman Laboratory conducts research in the field of natural product synthesis, with an emphasis on the development of new synthetic methods that facilitate the construction of complex molecules.

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4. Gnaim, Samer;Bauer, Adriano et al. (2022) Cobalt-electrocatalytic HAT for functionalization of unsaturated C–C bonds

Topics of interest:

Synthetic organic chemistry, natural product total synthesis, asymmetric catalysis

Namrata Saroj

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Namrata Saroj, O.D., is an independent consultant with over 20 years of experience focusing on developing new drugs and technologies for advancing ophthalmic care. Prior to this, she led Ophthalmology Medical Affairs as an Executive Director at Regeneron Pharmaceuticals, Inc supporting the commercialization of EYLEA and was involved in strategic planning and activities supporting new ophthalmology products in development. Prior to joining Regeneron, Namrata held positions at Genentech in a field-based Medical Affairs function supporting Lucentis. She started her career as a Research Associate at the Manhattan Eye, Ear & Throat Hospital, focusing on clinical trials in retinal diseases. Namrata has successfully supported multiple investigator-initiated studies and research collaborations, as well as co-authored multiple publications in the management of retinal diseases. Namrata earned her Doctor of Optometry from the University of California at Berkeley. She holds a Bachelor of Science in Optometry from the University of California and a Bachelor of Arts in Biochemistry from Whittier College.

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Topics of interest:

Management of retinal disease, including therapeutic advances, optimizing treatment paradigms, translational medicine, real world evidence

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Leslie Saxon, M.D., is the executive director of the USC Center for Body Computing (CBC), a world-renowned interventional cardiologist, a professor of medicine (clinical scholar), and an author of more than 200 peer-reviewed research publications.

Dr. Saxon is an innovator and leader in wireless diagnostics, implantable computing devices, and human-performance wearables. As the founder and leader of the CBC, Dr. Saxon and her team collaborate with USC schools, including medicine, engineering, business, and cinematic arts, to accelerate the future of fully integrated health and human performance. She has active research with programs involving connected sensors and software with elite human performers, including military groups, professional and collegiate athletes, and patients. Her work is dedicated to providing users with continuous and protected information and actionable insights to improve and optimize their health and human performance status. Dr. Saxon's work has been dedicated to using technology in a positive way to revolutionize human performance and medical diagnostics and treatments from traditional "sick care" to "lifecare."

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Topics of interest:

Digital health and human performance, body-worn sensors software, continuous measures user insights and engagement

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Dr. Scheibler joined Apellis in April 2018 as executive vice president for research and translational medicine. In this role, he is responsible for creating and managing all preclinical research projects and advancing them into clinical development to establish proof of concept. Dr. Scheibler is an R&D professional with in-depth experience in drug development. He most recently was head of R&D at Acucela (a Seattle-based startup) and had a 13-year career in research and development, business development, and clinical development at Novartis. He holds a Ph.D. from the University of Lausanne, Switzerland, and had postdoctoral training at Harvard Medical School.

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2. Discovery of APL-1030, a Novel, High-Affinity Nanofitin Inhibitor of C3-Mediated Complement Activation. (Biomolecules. 2022 Mar 11;12(3):432. doi: 10.3390/biom12030432) .

Topics of interest:

Retinal diseases

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Cyrus Shahabi is a Professor of Computer Science, Electrical & Computer Engineering and Spatial Sciences; Helen N. and Emmett H. Jones Professor of Engineering; and the director of the Integrated Media Systems Center (IMSC) at USC Viterbi School of Engineering. He was also the chair of the Computer Science Department at USC from 2017 to 2022. He was co-founder of two USC spin-offs, Geosemble Technologies and Tallygo, which both were acquired, in July 2012 and March 2019, respectively. He received his B.S. in Computer Engineering from Sharif University of Technology and his M.S. and Ph.D. in Computer Science from the University of Southern California. He authored two books and more than three hundred research papers in databases, GIS and multimedia with 14 US Patents. He was an Associate Editor of IEEE Transactions on Parallel and Distributed Systems, IEEE Transactions on Knowledge and Data Engineering and VLDB Journal. He is currently on the editorial board of the ACM Transactions on Spatial Algorithms and Systems and ACM Computers in Entertainment. Dr. Shahabi is a recipient of the ACM Distinguished Scientist award, U.S. Presidential Early Career Awards for Scientists and Engineers (PECASE), and the NSF CAREER award. He is a fellow of National Academy of Inventors (NAI) and IEEE.

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Topics of interest:

Data science, AI, machine learning, precision medicine, medical data analysis, location privacy

Daniel Ting

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Dr. Daniel Ting is a vitreo-retinal surgeon working in the Singapore National Eye Center, and the tenured-track Associate Professor with Duke-NUS Medical School, Director of Singapore Health Service (SingHealth) AI Program, and the Head of AI and Digital Innovation at Singapore Eye Research Institute (SERI). He was a Fulbright Scholar at the Johns Hopkins School of Medicine investigating AI and big data in medicine. His research focuses on AI and digital health-related applications for eye and retinal diseases that span across machine learning, deep learning, privacy-preserving technology such as blockchain technology, federated machine learning, generative adversarial network, satellite technology (4G and 5G), conversational AI chatbot using natural language processing and cybersecurity. Dr. Ting has 200 peer-reviewed publications in high-impact journals, including NEJM, Lancet, Nature Medicine, Nature Biomedical Engineering, Lancet Digital Health, Nature Digital Medicine, Ophthalmology, and others. His Nature Medicine COVID-19 article entitled "Using Digital Technologies in Precision Public Health: COVID-19 and Beyond"* has been cited over 1000 times with more than 100,000 views and referenced by the US Center for Disease Control and Prevention. Dr. Ting's leadership positions include the EXCO in the American Academy of Ophthalmology, Equator Network for AI guidelines—STARD-AI, QUADAS-AI, and DECIDE-AI—and he also chairs the AI and Digital Innovation Standing Committee for the Asia-Pacific Academy of Ophthalmology. He also serves on numerous prestigious editorial boards in top-tiered digital and medical journals. His honors include the Top 100 Ophthalmologists Power list (2022), Tatler Asia Gen T Award (2021), Singapore National Clinician Scientist Award (2021), Asia-Pacific Academy Ophthalmology (APAO) Nakajima Award (2021), Asia-Pacific Vitreo-Retinal Society (APVRS) Ian Constable Award (2021), MICCAI OMIA Prestigious Achievement Award (2020), ARVO Bert Glaser Award for Innovative Research in Retina (2020), USA Macula Society Evangelos Gragoudas Award (2019), APAO Young Ophthalmologist's Award (2018) and APTOS Young Innovator Award (2017). In 2021 and 2022, he is also ranked the world's most influential deep learning researcher across all domains (>55K researchers) in healthcare two years in a row for the past 10 years (2010 – 2021 and 2011 – 2022) by the ExpertScape, and the World's Top 2% Scientists by the Stanford University ranking in 2021 and 2022.

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3. Ting DSW*, Yong L, Burlina P, Xu X, Bressler N, Wong TY. AI for Medical Imaging Goes Deep. Nature Medicine. 2018; 24: 539-540. [IF: 53.4]
4. Xie Y, Nguyen QD, Hamzah H, Lim G, Bellemo V, Gunasekeran DV, Yip MYT, Qi Lee X, Hsu W, Li Lee M, Tan CS, Tym Wong H, Lamoureux EL, Tan GSW, Wong TY, Finkelstein EA, Ting DSW*. Artificial intelligence for teleophthalmology-based diabetic retinopathy screening in a national programme: an economic analysis modelling study. Lancet Digit Health. 2020 May;2(5):e240-e249 [IF: 24.5]

Topics of interest:

Machine learning, deep learning, privacy-preserving technology such as blockchain technology, federated machine learning and generative adversarial network, satellite technology, conversational AI chatbot using natural language processing and cybersecurity

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Sunny Virmani is a Product Manager at Google in the Health AI group leading the Ophthalmology and Dermatology teams. During his time at Google and Verily LifeSciences, he has focused on translating machine learning research into real clinical applications working with key opinion leaders and partners globally. His team's pioneering research in the field of diabetic retinopathy screening using machine learning has helped advance the technology in this field significantly. He frequently shares the lessons learned from their work in research, development, and deployment of automated Machine Learning algorithms at various global conferences and highly regarded courses at Harvard Medical School and Stanford. Previously, he held Product Management positions at Carl Zeiss Meditec, leading teams that built market-leading retinal imaging and diagnostic products with cutting-edge technology. This included devices like SD-OCT and widefield retinal cameras. Prior to that, he worked at Philips Healthcare in the field of Radiology, leading teams that built computer-aided detection algorithms and focused on several key advancements in the field of colorectal cancer screening using CT colonoscopy. By education, he is an engineer with a Master's degree in Biomedical Engineering.

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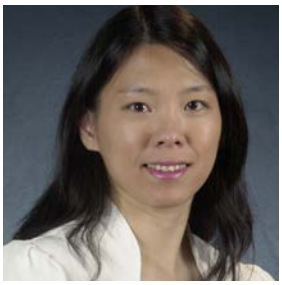
Topics of interest:

Data science, AI, machine learning, precision medicine, medical data analysis, location privacy



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Wei Wang is the Leonard Kleinrock Chair Professor in Computer Science and Computational Medicine at the University of California, Los Angeles and the director of the Scalable Analytics Institute (ScAi). She is also a member of the UCLA Jonsson Comprehensive Cancer Center, Institute for Quantitative and Computational Biology, and Bioinformatics Interdepartmental Graduate Program. She received her Ph.D. in Computer Science from the University of California, Los Angeles in Computer Science from the University of California, Los Angeles in 1999. She was a professor in Computer Science and a member of the Carolina Center for Genomic Sciences and Lineberger Comprehensive Cancer Center at the University of North Carolina at Chapel Hill from 2002 to 2012 and was a research staff member at the IBM T. J. Watson Research Center between 1999 and 2002. Dr. Wang's research interests include big data analytics, data mining, machine learning, natural language processing, bioinformatics and computational biology, and computational medicine. She has filed seven patents and has published one monograph and more than two hundred eighty research papers in international journals and major peer-reviewed conference proceedings, including multiple best paper awards.
Dr. Wang received the IBM Invention Achievement Awards in 2000 and 2001. She was the recipient of an NSF Faculty Early Career Development (CAREER) Award and was named a Microsoft Research New Faculty Fellow in 2005. She was honored with the 2007 Phillip and Ruth Hettleman Prize for Artistic and Scholarly Achievement. She was recognized with an IEEE ICDM Outstanding Service Award in 2012, an Okawa Foundation Research Award in 2013, and an ACM SIGKDD Service Award in 2016. Dr. Wang has been an associate editor of the IEEE Transactions on Knowledge and Data Engineering, IEEE Transactions on Big Data, ACM Transactions on Knowledge Discovery in Data, Journal of Knowledge and Information Systems, Data Mining and Knowledge Discovery, Journal of Computational Biology, IEEE/ACM Transactions on Computational Biology and Bioinformatics, International Journal of Knowledge Discovery in Bioinformatics, and an editorial board member of the International Journal of Data Mining and Bioinformatics and the Open Artificial Intelligence Journal. She serves on the organization and program committees of international conferences including ACM SIGMOD, ACM SIGKDD, ACM BCB, VLDB, ICDE, EDBT, ACM CIKM, IEEE ICDM, SIAM DM, SSDBM, ISMB, RECOMB, BIBM. She is the Chair of the ACM Special Interest Group on Knowledge Discovery in Data (SIGKDD). Dr. Wang is a fellow of ACM.

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Topics of interest:

Data science, AI, machine learning, precision medicine, medical data analysis, location privacy

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Benjamin Xu graduated from Yale University with a Bachelor of Science in Biomedical Engineering. He received my M.D. and Ph.D. from Columbia University as a member of the NIH-funded Medical Scientist Training Program. He completed my ophthalmology residency at the LAC+USC Medical Center/USC Roski Eye Institute and a glaucoma fellowship at the UCSD Shiley Eye Institute under the supervision of Dr. Robert N. Weinreb.

Xu joined the glaucoma faculty at the USC Roski Eye Institute in 2017 and now serve as Interim Chief of the Glaucoma Division. He is a clinician-scientist and conducts NIH-funded research to prevent vision loss and blindness in patients at risk for primary angle closure glaucoma (PACG), a common and particularly devastating form of glaucoma. His research focuses on studying the impact of PACG in the United States using epidemiological and electronic healthcare data. Xu's research group also develops new clinical methods to detect and care for patients at risk for PACG using artificial intelligence (AI) and anterior segment optical coherence tomography (AS-OCT), an advanced form of non-invasive ocular imaging. Finally, he develops biomedical devices and systems to detect and assess anatomical risk factors for glaucoma.

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Topics of interest:

Angle-closure glaucoma, anterior segment OCT, artificial intelligence, healthcare disparities, anatomical mechanisms, ocular biomechanics

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Dr. Wang is an ophthalmologist specializing in glaucoma and a clinician scientist in the Department of Ophthalmology at Stanford. She graduated magna cum laude from Harvard University with a degree in Biochemical Sciences. She went on to spend a year in Japan on a Fulbright Scholarship studying public health. She then attended medical school at the University of California, San Francisco, during which she also completed a research year and a yearlong Advanced Training in Clinical Research Certificate Program with the UCSF Department of Epidemiology and Biostatistics. She completed ophthalmology residency training at the University of Michigan Kellogg Eye Center, followed by a glaucoma fellowship and a Master's degree in Biomedical Informatics at Stanford. Her current research focuses on using and integrating a wide variety of big data sources spanning both structured and unstructured forms, including national datasets, insurance claims data, surgical video, and electronic health records, all to investigate and improve ophthalmic outcomes. Her work to develop artificial intelligence algorithms to predict ophthalmology patients' outcomes using natural language processing for electronic health records data is supported by a Research to Prevent Blindness Career Development Award and a K23 Career Development Award from the National Eye Institute.

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Topics of interest:

Artificial intelligence, electronic health records, deep learning, natural language processing, glaucoma, big data

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Siamak Yousefi is an Assistant Professor at the Department of Ophthalmology and Hamilton Eye Institute (HEI) of the University of Tennessee Health Science Center (UTHSC) in Memphis. He received his Ph.D. in Electrical Engineering from the University of Texas at Dallas in 2012 and completed two postdoctoral trainings at the University of California Los Angeles (UCLA) working on Brain-Computer Interface (BCI) and University of California San Diego (UCSD) working on computational ophthalmology. He is the director of the Data Mining and Machine Learning (DM2L) laboratory at UTHSC. He has published over 70 peer-reviewed articles, mostly in broad applications of Artificial Intelligence (AI) in vision and ophthalmology. He has been an invited guest speaker, moderator, or co-organizer of several AI-related ophthalmology venues, including ARVO, The Glaucoma Foundation (TGF), the Asia-Pacific Glaucoma Congress (APGC), and the American Academy of Optometry. He has been on numerous NIH panels and is on the editorial board of the TVST journal. Since 2018, he has received over $3.4M in funding support from NIH and other foundations to address vision-related challenges based on AI. Dr. Yousefi and his team have received numerous Travel Grant Awards from ARVO, the 2021 Roche Collaborative Research Fellowship Award from ARVO, the Best Paper Award from the Ophthalmic Medical Image Analysis (OMIA) Workshop of the 2021 MICCAI conference, and the 2019 Best Paper Award from the 29th Annual Congress of the Iranian Society of Ophthalmology. His lab develops machine learning models to detect different ocular conditions from imaging and visual field data.

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Topics of interest:

AI in vision and ophthalmology, glaucoma, forecasting, screening, diagnosing and prognosis of glaucoma, AMD, diabetic retinopathy

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Qifa Zhou received his Ph.D. degree from the Department of Electronic Materials and Engineering of Xi'an Jiaotong University, China, in 1993. He is currently a Professor in the Department of Ophthalmology at the USC Keck School of Medicine and the Department of Biomedical Engineering at the University of Southern California.

He is also one of the leading principal investigators at the NIH Resource Center on Medical Transducer Technology. Dr. Zhou has published more than 200 peer-reviewed articles in journals, including Nature Medicine, Scientific Reports, and Progress in Materials Science, and is a fellow of the International Society for Optics and Photonics (SPIE) and the American Institute for Medical and Biological Engineering (AIMBE).

He is a member of the Technical Program Committee of the IEEE International Ultrasonics Symposium and is an Associate Editor of the IEEE Transactions on Ultrasonics, Ferroelectrics, and Frequency Control. He was the co-author of a paper that received the best student paper competition award at the 2010 IEEE IUS conference and the best poster paper in photoacoustic plus ultrasound at the 2015 SPIE Photonics West Conference.

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Stanford Medicine 2025

Poster: Seeing What Patients See: Identifying Visual Acuity from Ophthalmology Clinical Notes Using Deep Learning and Natural Language Processing

Kyle Bolo, M.D., Ophthalmologist Resident
LAC + USC Ophthalmology

Poster: Automated Expert-Level Scleral Spur Detection and Quantitative Biometric Analysis on the ANTERION Anterior Segment OCT System

Angela Liu, Ph.D. Student
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Poster: Computational Modeling to Accelerate Targeted Intranasal Delivery to Reach Inaccessible Tissues for SARS-CoV-2 Prevention

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Poster: Computational Analyses of Ocular Gene Expression in Relations to Retinal Thicknesses in Retinitis Pigmentosa

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Poster: An Adversarial Deep Learning Approach to Measure the Biomechanical Properties of the Optic Nerve Head: Towards A Better Understanding of Glaucoma

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Poster: Automated Quantification of Retinal Degeneration in FAF Images

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Poster: Secure Federated Neuroimaging

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Poster: Generative-Adversarial-Learning-Based Biomarker Activation Map for Improving the Interpretability of Deep-Learning-Aided Diabetic Retinopathy Diagnosis

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