Cognition and Medical Image Perception Think Tank

Speaker Bios

George Birdsong, M.D., is a practicing cytopathologist, with 30 years of experience and interests in clinical informatics, digital imaging, and image analysis.

Ann Carrigan, Ph.D., is a postdoctoral researcher at Macquarie University and a medical sonographer. She received her Ph.D. in cognitive science from Macquarie University in 2018. Her research interests lie in medical perception, specifically applied visual search, attentional processes, diagnostic error, and the trajectory from competence to expertise. Her Ph.D. focused on expertise in the visual search of medical and nonmedical images, and she investigated the type of information available in early visual processing. Since earning her Ph.D., she has applied this work to the context of human factors, especially with regard to the novice/expert distinction. Dr. Carrigan is currently working on projects exploring individual differences in diagnostic performance with cardiac sonographers, anatomical pathologists, and radiologists, both generalists and mammographers. She is collaborating on an international project investigating volumetric search in radiology (Williams, Rich & Drew). She recently received internal funding to commence the following projects: (1) visual search dynamics and image complexity in radiology—this project involves eye tracking radiologists and then applying fractal geometry analysis to this data to train artificial intelligence systems (Nalepka & De Ieva) and (2) identifying contributions from multiple memory systems to diagnosis based on medical images (Crossley & Rich). Dr. Carrigan is a highly motivated researcher in the field of medical perception and contributes widely to both the Macquarie University and broader communities. She contributes to the online resource "Pink Hope" by providing commentary about such issues as breast density awareness and discussing current research findings. She continues her clinical work in radiology to maintain her skills and identify research opportunities.

Peter Choyke, M.D., is Chief of the Molecular Imaging Program at the National Cancer Institute. He is trained as a radiologist and has conducted research in the molecular imaging and image-guided therapy of cancer. Recently, he has applied artificial intelligence to the diagnosis of prostate cancer on magnetic resonance imaging and positron emission tomography, as well as histopathology slides. His laboratory also has developed a new treatment for cancer, known as photoimmunotherapy, which is now in Phase 3 trials.

Trafton Drew, Ph.D., is an assistant professor at the University of Utah. His research focuses on understanding the real-world ramifications and underlying neural mechanisms of visual attention. He studies radiologists' behavior to understand why errors are sometimes made, with the goal of using what we know about attention to help reduce the number of errors committed. Dr. Drew also studies the neural mechanisms that underlie our ability to represent information using electroencephalograph. The capacity of visual attention is limited, and his laboratory uses a variety of methods to study the ramifications of this fact on behavior in a variety of settings.

Miguel Eckstein, Ph.D., is a Professor of Psychological and Brain Sciences and an affiliate faculty in Electrical and Computer Engineering at the University of California, Santa Barbara (UCSB). He earned a bachelor's degree in physics and psychology at UC Berkeley and a doctoral degree in cognitive psychology at UCLA. He then worked at the Department of Medical Physics and Imaging, Cedars-Sinai Medical Center, and at the NASA Ames Research Center before moving to UCSB. He received the Optical Society of America Young Investigator Award, Cedars Sinai Young Investigator Award, the National Science Foundation CAREER Award, the National Academy of Sciences Troland Award, and a Guggenheim Fellowship. He has served as the chair of the Vision Technical Group of the Optical Society of America Meeting; chair of the Human Performance, Image Perception, and Technology Assessment conference of the SPIE Medical Imaging Annual Meeting; Vision Editor of the *Journal of the Optical Society of America A*; the board of directors of the Vision Sciences Society; the board of editors of the *Journal of Vision*; and as a member of National Institutes of Health study section panels on Mechanisms of Sensory, Perceptual, and Cognitive Processes and Biomedical Imaging Technology. He has published more than 170 articles in journals/conferences spanning a wide range of disciplines, including vision science, medical imaging, cognitive psychology, computer vision, and neuroscience.

Anna Fernandez, Ph.D., has more than 16 years of experience in providing scientific IT management and subject matter expertise in medical imaging, informatics, biorepository management, and data analytic platforms. She currently supports efforts as a contractor (Booz Allen) for the National Cancer Institute (NCI), Division of Cancer Control and Population Sciences, Surveillance Research Program to assess processes and technologies used for acquiring pathology and radiology reports and images for cancer surveillance. At Booz Allen, she supported NCI and the National Heart, Lung, and Blood Institute, as well as other National Institutes of Health Institutes and Centers, in informatics-related efforts involving pathology, imaging, clinical data, data warehousing, and natural language-processing/machine learning algorithms. She also works with nonprofits, including the American College of Radiology. She previously worked as a researcher and project leader at Philips Research North America in the areas of oncology and cardiac diagnostic imaging and interventional

radiology, translating research into Philips Medical imaging product solutions. Dr. Fernandez has a B.S. in electrical engineering from the University of Maryland at College Park and an M.S. and Ph.D. from Duke University in biomedical engineering (medical imaging).

Brandon Gallas, Ph.D., provides mathematical, statistical, and modeling expertise to the evaluation of medical imaging devices at the U.S. Food and Drug Administration (FDA). His main areas of research are in the design and statistical analysis of reader studies (https://github.com/DIDSR/iMRMC/releases, https://cran.r-project.org/web/packages/iMRMC/index.html), image quality, computer-aided diagnosis, and imaging physics. He began working on whole slide imaging devices as part of his regulatory responsibilities at the FDA in 2009. He turned his research efforts in this direction and has been investigating the design, execution, and analysis of feature studies to compare pathologist performance and reproducibility using whole slide imaging devices and the microscope. These studies are enabled by eeDAP, an evaluation environment that registers the digital images to the glass slides (https://github.com/DIDSR/eeDAP/releases). Dr. Gallas also is an organizer of a working group focused on the evaluation of whole slide imaging technical and pathologist performance (https://nciphub.org/groups/wsi_working_group). Before working at the FDA, he was in Dr. Harrison Barrett's radiology research group at the University of Arizona earning his Ph.D. degree in applied mathematics from the Graduate Interdisciplinary Program.

Maryellen Giger, Ph.D., is the A.N. Pritzker Professor of Radiology, Committee on Medical Physics, and the College at the University of Chicago. She is also the Vice-Chair of Radiology (Basic Science Research). For more than 30 years, she has conducted research on computer-aided diagnosis—including computer vision, machine learning, and deep learning—in the areas of breast cancer, lung cancer, prostate cancer, lupus, and bone diseases. Her research in computational image-based analyses of breast cancer for risk assessment, diagnosis, prognosis, and response to therapy has yielded various translated components, and she is now using these image-based phenotypes (i.e., these "virtual biopsies") in imaging genomics association studies for discovery. During her career, she has served on various NIH, U.S. Department of Defense, and other funding agencies' study sections, and she currently is a member of the National Institute of Biomedical Imaging and Bioengineering Advisory Council of NIH. She is a former president of the American Association of Physicists in Medicine (AAPM) and of SPIE. She is a member of the National Academy of Engineering (NAE) and was awarded the William D. Coolidge Gold Medal from the American Association of Physicists in Medicine. She is a Fellow of AAPM, the American Institute for Medical and Biological Engineering, SPIE, SBMR, and IEEE, a recipient of the EMBS Academic Career Achievement Award, and is a current Hagler Institute Fellow at Texas A&M University. In 2013, Giger was named by the International Congress on Medical Physics as one of the 50 medical physicists with the most impact on the field in the last 50 years. In 2018, she received the iBIO iCON Innovator award.

Stephen Hewitt, M.D., Ph.D., is a Captain in the U.S. Public Health Service and serves as a Medical Officer within the Laboratory of Pathology, Center for Cancer Research, National Cancer Institute (NCI), at the National Institutes of Health in Bethesda, Maryland, where he is head of the Experimental Pathology Laboratory. Dr. Hewitt received his bachelor's degree in philosophy from the Johns Hopkins University in 1988; his Ph.D. in genetics from The University of Texas, Graduate School of Biomedical Sciences; and his M.D. at The University of Texas Medical School at Houston. He performed his residency in anatomic pathology within the Laboratory of

Pathology at the NCI. Dr Hewitt serves as a consultant to the Hematology and Pathology Devices Panel, Center for Devices and Radiological Health, U.S. Food and Drug Administration. He is chair of the Subcommittee on Immunohistochemical Assays for the Clinical Laboratory Standards Institute, as well as Editor-in-Chief of the *Journal of Histochemistry and Cytochemistry* and Associate Editor of *The FASEB Journal*.

Todd Horowitz, Ph.D., is a cognitive psychologist, with a B.S. from Michigan State University (1990) and a Ph.D. from the University of California, Berkeley (1995). From 1995 to 2012, he worked at Brigham and Women's Hospital and Harvard Medical School before moving to the National Cancer Institute, where he is now a Program Director in the Division Cancer Control and Population Sciences. He has published more than 70 peer-reviewed research papers on visual perception and attention, including basic research and applications to the study of Parkinson's Disease, autism, driving, and airport baggage screening. Currently, he is working to engage cognitive psychologists and vision scientists with problems in cancer control, such as improving medical image interpretation, studying the cognitive effects of cancer and cancer treatments, and improving the effectiveness of visual health communications.

Yuhong Jiang, Ph.D., received her Ph.D. in psychology from Yale University in 2000. She was on the Faculty of Arts and Sciences at Harvard University before joining the University of Minnesota in 2007, where she is now a tenured professor in the Department of Psychology. Dr. Jiang's research focuses on understanding the brain and psychological mechanisms of perception, attention, and memory. She is a recipient of the Presidential Early Career Awards for Scientists and Engineers. She has authored more than 100 publications. Her recent work focuses on perceptual and attentional learning of cancer images.

Bonnie Kudrick, M.S., holds a master's degree in psychology with emphasis in Human Factors and has had 14 years of progressive experience in Human Factors. As a subject-matter expert, she provides support for policy, guidance, and oversight of new programs to define the human element into systems acquisition process. She brings with her direct experience in all facets of experimental design aimed at optimizing human performance, knowledge, and experience in the fundamental theories, concepts, and current-state-of-the art research, as well as technology development in the broad areas of human systems integration (HSI), psychology, human factors engineering and technology, and cognitive science, including but not limited to human decision-making, HSI engineering design, intelligent systems, training, performance support, human-computer interaction, user needs analyses, and HSI modeling and simulation with the goal of optimizing human performance. Ms. Kudrick has extensive experience in the development of Concept of Operations and Operational Requirements documentation for passenger, checked baggage, and cargo screening programs at the Department of Homeland Security, Transportation Security Administration.

Susana Martinez-Conde, Ph.D., is a Professor of Ophthalmology, Neurology, and Physiology/Pharmacology at the State University of New York Downstate Medical Center, where her research program bridges perceptual, oculomotor, and cognitive neuroscience. She previously directed laboratories at the Barrow Neurological Institute in Phoenix and at University College London in the United Kingdom. She received her postdoctoral training from Nobel Laureate Dr. David Hubel at Harvard Medical School, where she later was an Instructor in neurobiology. Dr. Martinez-Conde received the Empire Innovator Award from the State of New York. Her work with Parkinsonian patients was honored with the EyeTrack Award, a global science prize given annually to a single cutting-edge publication in eye movement research. Dr. Martinez-Conde has received various other distinctions, including the 100 Spaniards Prize. She complements her award-winning research with science communication, education, and public outreach. She is the 2014 recipient of the Science Educator Award given by the Society for Neuroscience to an outstanding neuroscientist who has made significant contributions to educating the public. Dr. Martinez-Conde's research has been featured in *The New York Times*, *The New Yorker*, *The Wall Street Journal*, *Wired*, *The Times* (London), and other publications, as well as on radio and TV shows, including *NOVA: ScienceNow*, *CBS Sunday Morning*, NPR's *Science Friday*, and PRI's *The World*. She works with international science museums, foundations, and nonprofit organizations to promote neuroscience education and communication. Her international bestselling book *Sleights of Mind* was published in 21 languages. Her new book, *Champions of Illusion*, was published by *Scientific American*/Farrar, Straus and Giroux.

Stephen Mitroff, Ph.D., is a Professor in the Department of Psychology at The George Washington University (GW). He received his undergraduate degree in cognitive science from UC Berkeley, and a master's degree and Ph.D. in cognitive psychology from Harvard University. He completed 3 years of postdoctoral research focused on adult visual cognition and infant cognitive development at Yale University prior to spending 10 years in the Department of Psychology and Neuroscience at Duke University. He joined GW in 2015. Dr. Mitroff has received research funding from the National Institutes of Health, National Science Foundation, U.S. Department of Homeland Security, Transportation Security Administration (TSA), Institute for Homeland Security Solutions, Army Research Office, Defense Advanced Research Projects Agency (DARPA), and Nike, Inc. Dr. Mitroff's research examines the nature of visual cognition, including mechanisms of visual memory, perception, and attention. His current primary focus is individual differences to reveal how some people can outperform others, how to quickly identify the best performers, and then how to train those individuals to make them even better. Dr. Mitroff's laboratory explores the topic of visual search and how target items are found among distractors. He works with a variety of groups to inform both academic theory and real-world questions. For example, he examines visual search performance in expert populations (e.g., TSA officers, radiologists) and with big data obtained from a smartphone app. Dr. Mitroff also looks to inform the nature of professional visual search as the Chief Science Officer for Kedlin Screening International.

Linda Nebeling, Ph.D., M.P.H., is the Deputy Associate Director of the Behavioral Research Program (BRP), in the Division of Cancer Control and Population Sciences, National Cancer Institute (NCI). She is a member of the National Institutes of Health's (NIH) Obesity Research Task Force Senior Leadership and the NIH Nutrition Research Task Force. She has served as the Scientific Program Director for the Transdisciplinary Research in Energetics and Cancer Centers initiatives; Principal Investigator for NCI's Family Life, Activity, Sun, Health and Eating (FLASHE) study; as well as Branch Chief of the Health Behaviors Research Branch, Acting Associate Director of BRP, and Public Health Nutritionist in NCI's National 5-A-Day for Better Health Program. Her research interests are in transdisciplinary science, energy balance, obesity and cancer, and the relationship between dietary behaviors and the risk of cancer. Dr. Nebeling pioneered research on the effects of a ketogenic diet on tumor glucose metabolism in children with brain cancer while at Case Western Reserve University. She has co-authored numerous peer-reviewed publications and is a reviewer for many professional journals.

Anil Parwani, M.D., Ph.D., is a Professor of Pathology at The Ohio State University and serves as the Vice Chair and Director of Anatomic Pathology. Dr. Parwani also is the Director of Pathology Informatics and Director of the Digital Pathology Shared Resource at The James Cancer Hospital. His research is focused on diagnostic and prognostic markers in bladder and prostate cancer and on the molecular classification of renal cell carcinoma. Dr. Parwani has expertise in the area of Anatomic Pathology Informatics, including designing quality assurance tools, bio banking informatics, clinical and research data integration, applications of whole slide imaging, digital imaging, telepathology, image analysis, and lab automation. Dr. Parwani has authored more than 250 peer-reviewed articles in major scientific journals and several books and book chapters. He is the Editor-in-chief of *Diagnostic Pathology* and one of the editors of the *Journal of Pathology Informatics.*

Joel Saltz, M.D., Ph.D., is a boarded Clinical Pathologist trained at Johns Hopkins Medical School. He holds an M.D.-Ph.D. in computer science from Duke University. He is the founding chair of Biomedical Informatics departments at Stony Brook University, Emory University, and The Ohio State University, and is the Director of the newly formed Institute for Engineering Driven Medicine at Stony Brook University. Dr. Saltz is a fellow of the American College of Medical Informatics and the Cherith Chair of Biomedical Informatics.
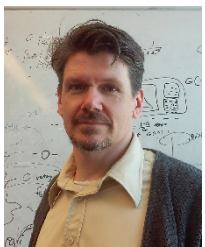
Frank Samuelson, Ph.D., joined the Office of Science and Engineering Laboratories at the U.S. Food and Drug Administration (FDA) as a research physicist. In this capacity he performs research in artificial learning machines, device performance evaluation, diagnostic statistical methods, and human perceptual performance. He also consults on the evaluation of medical and software devices submitted to the FDA for approval.

Steven Seltzer, M.D., was the Chairman of the Department of Radiology at Brigham and Women's Hospital (BWH) and the Philip H. Cook Professor of Radiology at Harvard Medical School from 1997 through 2016. He has now transitioned to the position of BWH Radiology Chair, Emeritus, and the Distinguished Cook Professor. Dr. Seltzer received his baccalaureate and medical degrees from the University of Pennsylvania. He did his Radiology Residency at the Peter Bent Brigham Hospital from 1976 to 1980 and joined the Brigham faculty immediately afterward. His clinical interests are in the field of abdominal imaging, particularly advanced applications of helical computed tomography. His research interests are in the arena of perception and psychophysics, focusing on improving our understanding of how radiologists detect, locate, and classify abnormalities on diagnostic images. He has published more than 100 peer-reviewed research manuscripts on these topics. Dr. Seltzer has been involved in projects aimed at improving the quality, safety, productivity, and cost-effectiveness of radiology services for more than 2 decades. He has served as a Visiting Scholar in health care policy at The Brookings Institution in Washington, D.C. Active in many radiological organizations, Dr. Seltzer is a Past President of the Association of University Radiologists (AUR) and was awarded the AUR's Gold Medal in 2004 and the Radiological Society of North America's Gold Medal in 2015. He also serves as Past President of the Academy for Radiology Research, Past President of the Society of Chairs of Academic Radiology Departments, and current President of the Coalition for Imaging and Bioengineering Research.

Behrouz Shabestari, Ph.D., is the Acting Director of the Division of Health Informatics Technologies and Program Director for Optical Imaging and Spectroscopy at the National Institute of Biomedical Imaging and Bioengineering (NIBIB). He also serves also as the Program Director for X-ray, Electron, Ion Beam, and Computed Tomography (CT). Dr. Shabestari joined the NIBIB in 2015, after 12 years as a Scientific Review Officer at the National Institutes of Health Center for Scientific Review's Surgical Sciences, Biomedical Imaging, and Bioengineering Integrated Review Group. There, he was responsible for the review of applications in the development of methods for a wide variety of medical imaging modalities and bioengineering, including single-photon emission CT, positron-emission tomography, magnetic resonance imaging/magnetic resonance spectroscopy, ultrasound, CT, photonics, image-guided surgery, computer-aided detection, image recognition algorithms, and hybrid approaches. He was involved in a broad range of application mechanisms, such as R03s, conventional R21s and special R21/R33s, R01s, Small Business Innovation Research and Small Business Technology Transfer, Bioengineering Research Partnerships, S10s, and P41 National Resource Center applications. Dr. Shabestari has an extensive experience in the area of industrial and medical imaging. Dr. Shabestari served as the Director of the Advanced Imaging Group for Edison Industrial Systems Center (EISC) in Toledo, Ohio, from 1988 to 1999. In 1999, Dr. Shabestari established AvantGarde Technology, LLC (AGT), a small business engineering and consulting firm in Toledo, Ohio. While at EISC and AGT, Dr. Shabestari completed more than 90 imaging projects funded by industry directed toward improving quality and reducing costs. His projects included a multidisciplinary grant from the National Institute of Standards and Technology Advanced Technology Program, a technology action fund for the Ohio Department of Development, and a technology development grant from American Display Consortium. Dr. Shabestari also has served as a full-time Associate Professor of Computer Engineering and Program Director at the College of Engineering at the University of Toledo.

Lalitha Shankar, M.D., Ph.D., is at the Cancer Imaging Program at the National Cancer Institute (NCI). Since joining NCI in 2002, she has served as an Advisor to the Associate Director of the Division of Cancer Treatment and Diagnosis and currently is the Acting Chief of the Clinical Trials Branch in the Cancer Imaging Program. The Clinical Trials Branch oversees all aspects of trials evaluating imaging and image-guided interventions from the Phase 0–Phase III trials. The branch activities include such programs as The American College of Radiology Imaging Network (ACRIN), the imaging cooperative group, the Phase I and II Clinical Trials Contract, provision of imaging expertise for ongoing trials of cancer therapeutics sponsored by NCI, trial-related informatics, and the development of guidelines for all trial activities under the Cancer Imaging Program. Her research interests involve the role of both functional and molecular imaging in the diagnosis and treatment of cancer, as well as evaluating the performance characteristics of imaging modalities for optimal use in the management of the cancer patient. Her work involves establishment of and monitoring of clinical trials to evaluate imaging tracers and techniques, which aim to improve the prevention, diagnosis and treatment of cancer.
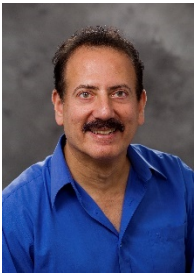
Eliot Siegel, M.D., is a Professor and Vice Chair of Radiology at the University of Maryland School of Medicine and Chief of Radiology and Nuclear Medicine for the Veterans Affairs (VA) Maryland Healthcare System. He has adjunct appointments as Professor of Bioengineering and Professor of Computer Science at the University of Maryland undergraduate campuses. Under his guidance, the Baltimore VA became the first filmless health care enterprise in the world. He has written more than 300 articles/book chapters about PACS (picture archiving and communication system) and digital imaging, and he has edited numerous books on the topic, including *Filmless Radiology* and *Security Issues in the Digital Medical Enterprise*. Dr. Siegel has won numerous awards at the University of Maryland, including medical school mentor of the year. He has been named as overall Radiology Researcher of the Year and Educator of the year. Dr. Siegel has also been selected by the editorial board of *Medical Imaging* as one of the top radiologists in the United States on multiple occasions. He worked at the NCI, where he created the National Cancer Imaging Archive, AIM (Annotation and Imaging Markup), and other initiatives. He was symposium chairman for the SPIE Medical Imaging Meeting, served as chair of Publications for the Society of Imaging Informatics in Medicine (SIIM), and is a fellow of the American College of Radiology and SIIM. He served as chairman of the Radiological Society of North America Medical Imaging Resource Committee. Dr. Siegel also worked with the IBM "Jeopardy" team. His areas of interest and responsibility at both the local and national levels include digital imaging and PACS, telemedicine, the electronic medical record, and informatics and artificial intelligence in medicine.

Melissa Trevino, Ph.D., is a Cancer Research Training Award Postdoctoral Fellow in the Basic Biobehavioral and Psychological Sciences Branch at the National Cancer Institute (NCI). Dr. Trevino earned a master's degree in psychology and a Ph.D. in cognitive neuroscience, with a specialization in visual cognition, from the University of Houston. Dr. Trevino's work has focused on visual memories and visual attention in typically developing adults and children. Her dissertation investigated the relationship between visual working memory and visual selective attention in survivors of pediatric cancer by implementing basic visual cognition measures in order to fully comprehend the nature of cognitive processes among survivors. At NCI, Dr. Trevino is working to bridge the gap between basic cognitive science and clinical neuropsychology to advance cognitive measures used to assess cancer patients and survivors. Her work also focuses on applying

basic visual perception and cognition principles to investigate and identify properties that foster early perceptual processing of the radiologic search process.

Jennifer Trueblood, Ph.D., is an Associate Professor of Psychology at Vanderbilt University. Her research takes a joint experimental and computational modeling approach to studying human judgment, decision-making, and reasoning. She is interested in understanding (1) how people make decisions when faced with multiple alternatives; (2) how dynamically changing information affects decision processes; (3) how people reason about complex causal events; and (4) how different perspectives, contexts, and frames can lead to interference effects in decision-making and memory. To address these questions, she develops probabilistic and dynamic models that can explain behavior and uses hierarchical Bayesian methods for data analysis and model-based inference. Her research is currently supported by a CAREER award from the National Science Foundation and by the Alfred P. Sloan Foundation. She is currently on the editorial boards of the *Journal of Mathematical Psychology* and *Decision*. She is also a past president of the Society for Mathematical Psychology.

Alison Van Dyke, M.D., Ph.D., is dual trained in surgical pathology and cancer epidemiology. She completed her M.D./Ph.D. training at Wayne State University School of Medicine and the Karmanos Cancer Institute, followed by anatomic pathology residency training at Yale–New Haven Hospital and thoracic pathology fellowship training at the University of Pittsburgh Medical Center. After completing clinical training, Dr. Van Dyke was a Cancer Research Training Award postdoctoral research fellow in the Division of Cancer Epidemiology and Genetics at the National Cancer Institute (NCI). Currently, she serves as the Director of the Virtual Tissue Repository (VTR) Pilot Program being conducted by the Surveillance Research Program in the Division of Cancer Control and Population Sciences at the NCI. The goal of the future VTR is to connect researchers with deidentified, archival, diagnostic, formalin-fixed, paraffin-embedded tissue and clinical data on a population scale utilizing the Surveillance, Epidemiology, and End Results cancer registries, which will serve as "honest brokers." Dr. Van Dyke also has interests in aligning cancer registration data collection and reporting methods with clinicopathologic practice and in educating tumor registrars about pathology.
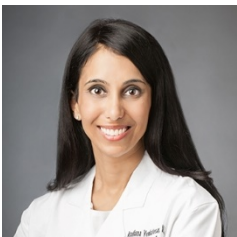
Aradhana Venkatesan, M.D., is a Tenure Track Associate Professor of Radiology and Director of Translational Research in the Section of Abdominal Imaging at The University of Texas MD Anderson Cancer Center. She earned her medical degree from the Harvard Medical School. She holds dual undergraduate degrees in biology and English literature from Swarthmore College. Her training includes two fellowships, in abdominal imaging and interventional radiology, and in musculoskeletal imaging and intervention, both from Massachusetts General Hospital (MGH). Dr. Venkatesan also completed her residency at MGH, where she served as Chief Resident. Dr. Venkatesan was a Staff Clinician and Investigator in the Radiology and Imaging Sciences Department and Center for Interventional Oncology at the National Institutes of Health (NIH) Clinical Center from 2007 to 2014. She served as a principal investigator on clinical trials pertaining to the use of magnetic resonance imaging-guided, high-intensity focused ultrasound, receiving the NIH Clinical Center Director's Award in 2010. She was an associate investigator on multiple NIH intramural clinical trials and led educational initiatives for the intramural NIH community, including the quarterly NIH

Clinical Center Clinicopathologic Grand Rounds. Her current research endeavors focus on the development of imaging biomarkers to enable risk stratification and surrogate endpoint use in the treatment of genitourinary and gynecologic malignancies. She maintains collaborative interests in the development of image-guided cancer therapies. Dr. Venkatesan is a Fellow in the Society of Interventional Radiology and a member of the American College of Radiology Council Steering Committee and the American Association for the Advancement of Science.

David Whitney, Ph.D., is a professor of Psychology and Neuroscience at the University of California (UC), Berkeley. He is also the director of UC Berkeley's Cognitive Science program and a member of the Vision Sciences Group. Dr. Whitney received his Ph.D. from Harvard University in 2001 and did postdoctoral work at the University of Western Ontario from 2001 to 2004. From 2004 to 2009, Dr. Whitney was assistant and associate professor at UC Davis and has been at UC Berkeley since 2009. Dr. Whitney's research investigates the perceptual, cognitive, and neural mechanisms that allow humans to perceptually localize, recognize, and interact with objects and crowds of objects in dynamic and cluttered scenes.

Jeremy Wolfe, Ph.D., is a Professor of Ophthalmology and Professor of Radiology at Harvard Medical School. He is Director of the Visual Attention Lab at Brigham and Women's Hospital. Dr. Wolfe received an A.B. in psychology in 1977 from Princeton University and his Ph.D. in psychology in 1981 from the Massachusetts Institute of Technology (MIT) under the supervision of Dr. Richard Held. His research focuses on visual search and visual attention, with a particular interest in socially important search tasks in such areas as medical image perception (e.g., cancer screening), security (e.g., baggage screening), and intelligence. Dr. Wolfe's Guided Search model is one of the leading theoretical approaches to the study of visual search. He has published more than 190 peer-reviewed articles (>30,000 citations, h-index=80 in Google Scholar). His laboratory has been funded since 1982 by the National Institutes of Health, National Science Foundation, Air Force Office of Scientific Research, Office of Naval Research, Army Research Office, U.S. Department of Homeland Security, and National Geospatial-Intelligence Agency; as well as by IBM, Google, Toshiba, and Hewlett-Packard. Dr. Wolfe taught Introductory Psychology and other courses for 25 years, mostly at MIT. He is Immediate Past President of the Federation of Associations in Behavioral and Brain Sciences and just finished his term as a member of the Board of the Vision Sciences Society. He is founding Editor-in-Chief of *Cognitive Research: Principles and Implications*. Dr. Wolfe has been President of the Eastern Psychological Association; Chair of the Psychonomic Society; and Editor of *Attention, Perception, and Psychophysics*.