

QUANTITATIVE IMAGING WORKSHOP XVII:

*Leveraging CT to Accelerate Detection of Lung
Cancer, COPD and Cardiovascular Disease*

October 28-30, 2020 | Virtual

Speaker Biographies



CAROLYN R. ("BO") ALDIGÉ

Founder and Steering Committee Member, Quantitative Imaging Workshop

Ms. Carolyn Aldigé is founder and CEO of the Prevent Cancer Foundation®, a national nonprofit organization she started in 1985 in memory of her father. The Prevent Cancer Foundation® is one of the nation's leading voluntary health organizations and the only US nonprofit organization focused solely on cancer prevention and early detection. Since 2004, Ms. Aldigé and the Prevent Cancer Foundation®—in cooperation with Foundation vice-chair and scientific director Dr. James Mulshine—have organized and hosted the Quantitative Imaging Workshop.

Ms. Aldigé has served on boards of directors/advisors of eight National Cancer Institute-designated Cancer Centers, including the top-ranked MD Anderson Cancer Center and Vanderbilt Ingram Cancer Center. She is a member of the boards of directors of Friends of Cancer Research and the Intercultural Cancer Council, the Council of Scientific Advisors of the American Association for Cancer Research, the Patient Advocate Advisory Board of Stand Up to Cancer, the External Advisory Board of the Thoracic Oncology Center at Mt. Sinai Medical Center and the Advisory Board of Project ECHO.

Her international work includes serving as chairman of the coalition Global Action for Cancer Patients, vice-chairman of the Global Lung Cancer Coalition, a member of the advisory board of the International Early Lung Cancer Action Program and a member of the board of directors of the International Society for Cancer Prevention.

A 1996 Washingtonian of the Year, Ms. Aldigé is the only individual to have won public service awards from the American Association for Cancer Research, the American Society of Clinical Oncology and the American Society of Preventive Oncology.

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NASSER K. ALTORKI, MD

Dr. Nasser Altorki is a professor of Cardiothoracic Surgery and the director of the Division of Thoracic Surgery at New York Presbyterian-Weill Cornell Medical Center. Following medical school in Cairo, Egypt, Dr. Altorki completed his residency in general surgery at the University of Chicago Hospital, where he subsequently completed a fellowship in Thoracic and Cardiovascular Surgery. Dr. Altorki is an internationally renowned thoracic surgeon with expertise in minimally invasive lung and esophageal surgery. His professional interests include lung cancer immunotherapy and prevention; esophageal diseases, such as gastroesophageal reflux and the etiology of esophageal motor disorders; the biology, staging and therapy for esophageal carcinoma; new clinical trials in cancer; mediastinal tumors; thymomas and clinical trials in lung and esophageal cancer. Dr. Altorki is a member of several medical societies that focus on thoracic and cardiac surgery, as well as cancer and gastro-esophageal research and disease prevention. He has published a number of journal articles, book chapters and manuscript reviews on these topics.

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CHRISTOPHER AMOS, PhD

Dr. Christopher Amos is a genetic epidemiologist and the director of the Institute for Clinical and Translational Research at Baylor College of Medicine, where he is also the associate director for quantitative science at the Dan L. Duncan Comprehensive Cancer Center. He is known for his research on the genetic basis of certain types of human cancer.

A recipient of the 2020 American Association for Cancer Research-American Cancer Society Award for Research Excellence in Cancer Epidemiology and Prevention, Dr. Amos has been instrumental in the development of novel methods for the analysis of quantitative traits for genetic analysis of complex diseases focusing on cancer etiology. He was the first author of a landmark paper in *Nature Genetics* that identified a region of robust linkage disequilibrium within 15q25 as a lung cancer susceptibility gene locus. He leads an international grant focusing on understanding gene-environment joint effects on lung cancer risk and biomarkers for early detection. Also, he is leading a Cancer Prevention Research Institute of Texas grant focusing on identifying predictors of relapse for early stage lung cancer.

Dr. Amos joined the Department of Epidemiology at the University of Texas MD Anderson Cancer Center in 1992, where he founded the Section of Computational and Genetic Epidemiology. In 2012, he was named the inaugural chair of the Department of Biomedical Data Science at the Geisel School of Medicine at Dartmouth College. He became director of the Institute for Clinical and Translational Research at Baylor College of Medicine in 2017. Dr. Amos earned his undergraduate degree in mathematics from Reed College and received his master of science degree and his PhD in biometry at the Louisiana State University Medical Center.

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SAMUEL ARMATO, PhD

Dr. Samuel Armato is an associate professor in the Department of Radiology at the University of Chicago and chair of the Committee on Medical Physics, where he is actively researching and developing new methods for computer-aided diagnosis, specifically for thoracic imaging.

Dr. Armato's research has focused on various medical areas, including lung cancer screening, specialized imaging tests such as dynamic contrast-enhanced computed tomography scans to determine treatment response in malignant pleural mesothelioma and computerized medical image analysis (including AI techniques). He served as the principal investigator for the National Cancer Institute-sponsored Lung Image Database Consortium project that spanned 10 years and has written or co-authored over 100 research articles that have been published in prestigious, peer-reviewed medical journals and books. Dr. Armato received his PhD in medical physics from the University of Chicago.

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RICARDO AVILA, MS

Steering Committee Member, Quantitative Imaging Workshop

Mr. Ricardo Avila is a computer scientist and CEO of Accumetra, LLC, a high-performance imaging services company focused on advancing the science of image-based decision making. Mr. Avila has extensive experience leading the development of health care applications in academic, government and commercial settings, including at Howard Hughes Medical Institute, GE Global Research, Kitware and the United States Department of Veterans Affairs. His main area of expertise is in the development of computer-aided detection algorithms for early lung cancer and the quantitative measurement of lung nodule size change over time. Throughout his career, he has contributed to several open science projects including major open source initiatives (VTK, ITK and OSEHRA) as well as Give-A-Scan, a patient donated and openly available CT scan database for accelerating lung cancer research. Mr. Avila received a master's degree in computer science from the State University of New York at Stony Brook, specializing in 3D biomedical imaging and visualization.

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MARY BARTON, MD, MPP

Dr. Mary Barton oversees the development, use and maintenance of techniques National Committee for Quality Assurance (NCQA) uses to evaluate health care quality. She ensures the scientific integrity of NCQA measurement and research. She also leads NCQA in winning and executing health care quality measurement contracts for federal and state governments.

Prior to NCQA, Dr. Barton worked for the Agency for Healthcare Research and Quality (AHRQ), where she was the scientific director of the US Preventive Services Task Force (USPSTF). She supported and provided oversight for the methodological, evidence review and recommendation-making work of the USPSTF. Before joining AHRQ, Dr. Barton was an assistant professor at Harvard Medical School, where she performed clinical epidemiology and health services research related to cancer screening and prevention in terms of access, test performance and outcomes.

Dr. Barton trained in primary care internal medicine at Brigham and Women's Hospital in Boston and completed a general medicine research fellowship at Harvard. She has a clinical interest in and has presented widely about the performance of the clinical breast examination, and she is a member of the American College of Physicians and the Society of General Internal Medicine.

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BARTOLOME CELLI, MD, FCCP

Dr. Bartolome Celli is one of the world's leading experts in the area of pulmonary medicine, with a particular emphasis on Chronic Obstructive Pulmonary Disease (COPD). He currently serves as professor of medicine at Harvard Medical School and director of the COPD Center at Brigham and Women's Hospital. Throughout his distinguished career, Dr. Celli has been a principal investigator or co-investigator of many groundbreaking research studies examining biomarkers in COPD, comparing the effectiveness of various respiratory therapies and examining the impact of specific drug regimens on COPD outcomes. Throughout the years, his research has been funded by the National Institutes of Health, various foundations and multiple industry partners. Among his innovative works are the development of two indices to improve COPD clinical care including the BODE index which helps evaluate mortality risk in COPD patients and the COTE index which measures COPD Co-morbidity severity.

Dr. Celli received his doctor of medicine from the Universidad Central de Venezuela in Caracas, Venezuela. He completed his residency in internal medicine at St. Vincent's Hospital in Worcester, MA and Boston City Hospital, followed by clinical and research fellowships in pulmonary medicine at Boston City Hospital, the Boston V.A. Medical Center and Boston University Medical Center. He has published over 400 peer-reviewed scientific papers and 425 abstracts and edited several books. Dr. Celli has been the chairman of the committee that established the American Thoracic Society and European Respiratory Society guidelines for the diagnosis and treatment of COPD. In addition, he is on the Scientific Committee of the Global Obstructive Lung Disease (GOLD) initiative and currently serves on the board of directors of GOLD. Although caring for patients provides unique pleasure, Dr. Celli's greatest achievement is to have personally helped mentor many young clinicians in medicine.

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MARCUS CHEN, MD

Dr. Marcus Chen is the director of Cardiothoracic Computed Tomography at the National Heart, Lung, and Blood Institute at the National Institutes of Health (NIH) located in Bethesda, Maryland. Dr. Chen is a graduate of the California Institute of Technology in Pasadena, California. He earned his MD degree at the University of Wisconsin at Madison and completed training in internal medicine, nuclear medicine, cardiology and computed tomography at the University of Colorado in Denver. After completing a magnetic resonance imaging fellowship, Dr. Chen has been on staff at the NIH since 2009.

Dr. Chen is a blend between a clinician, imager and an engineer. Although clinically trained as a non-invasive cardiologist, Dr. Chen has redirected his expertise in reducing radiation for cardiac imaging towards the unmet needs of improving CT imaging of the lungs. Dr. Chen's clinical and research interests include radiation reduction, technical development of new imaging methods and machine learning/artificial intelligence. Dr. Chen has co-authored nearly 100 peer-reviewed papers and was selected as a finalist for the 2017 American Thoracic Society BEAR (Building Education to Advance Research) Cage competition and was a recipient of the 2019 American Thoracic Society Research Innovation and Translation Achievement Award.

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GERARD CRINER, MD, FACP, FACC

Dr. Gerard Criner is professor of medicine and chair of the Department of Thoracic Surgery and Medicine at Temple University Health System Lung Center. He earned his medical degree from Temple University School of Medicine in Philadelphia in 1979. Thereafter he completed his residency training at Temple University Hospital, serving as chief medical resident from 1982-83. Dr. Criner then completed a Pulmonary and Critical Care Medicine fellowship at Boston University School of Medicine. After spending two years at the Baltimore VA Medical Center as acting chief of Pulmonary and Critical Care Medicine, he returned to Temple University in the Department of Medicine, Division of Pulmonary and Critical Care Medicine. In 2015 he became the founding chair of the Department of Thoracic Medicine and Surgery.

Dr. Criner has extensive experience in conducting, designing and leading multicenter trials in capo for the past 25 years. He was the overall study principal investigator for Simvastatin for the Prevention of COPD Exacerbations (STATCOPE) an international clinical trial (US and Canada) with over 44 clinical sites. He was responsible for the study concept, design, creation of study time points and interventions, recruitment of clinical centers in the U.S. and Canada and led the closure of the study with involvement in data collection, data analysis, quality control and reporting of trial results. He has been involved in multiple NIH steering committees, ad hoc technical panels and capo work groups over the past 20 years. He has also developed several multicentered trials with industry that includes the use of lung coils (PneumRX), tissue glue (AERIS) and endobronchial valves to reduce hyperinflation in emphysema (LIBERATE, Pulmonx and EMPROVE, Spiration). gerard.criner@tuhs.temple.edu



PHILLIP A. DENNIS, MD, PhD

Dr. Phillip Dennis is vice president of Lung Cancer Strategy and Global Clinical Lead of Lung Cancer Immuno-Oncology for AstraZeneca. He was previously director of the Center of Excellence in Thoracic Oncology at Johns Hopkins and the director of the Sidney Kimmel Comprehensive Cancer Center at Johns Hopkins Bayview. Prior to these roles, he was a senior investigator at the US National Cancer Institute, where his research focused on the role of the PTEN/PI3K/Akt pathway in cancer and the development of therapies for cancers and those who live with PHTS. Since joining AstraZeneca in late 2014, Dr. Dennis has coordinated lung cancer strategy across the organization. In addition, he took on an additional role of global clinical leadership for several studies investigating durvalumab, an anti PD-L1 antibody, in non-small cell lung cancer (NSCLC) clinical trials. These trials included PACIFIC, which led to global regulatory approvals for durvalumab in stage III NSCLC. Dr. Dennis received both his medical doctorate and PhD from the New York University School of Medicine. He is an elected member of the American Society for Clinical Investigation.

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SEAN FAIN, PhD

Dr. Sean Fain is a professor of Medical Physics, Radiology and Biomedical Engineering and directs the Pulmonary and Metabolic Imaging Center in the Departments of Radiology and Medical Physics at the School of Medicine and Public Health, University of Wisconsin – Madison. His research develops quantitative imaging methods using magnetic resonance imaging (MRI) and CT. His research is highly translational, including leadership roles in multi-center imaging studies of asthma (Severe Asthma Research Program; The Great Lakes PrecISE Partnership), and industry collaborations (GE Healthcare, Xemed LLC, Polarean, Imbio LLC) to improve quantitative measures of lung disease. He is the physics chair of the of the CT Lung Density Biomarker Committee of the Quantitative Image Biomarkers Alliance (QIBA) and is working with the COPD Foundation on quantitative CT imaging biomarkers of airway remodeling and parenchymal density to improve phenotyping of obstructive lung disease.

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RAJA FLORES, MD

Dr. Raja Flores is a world-renowned thoracic surgeon known for his technical skill and life-long work on lung and esophageal cancer, mesothelioma and asbestos-related diseases. His research has produced over 250 publications and he is the principal investigator of a 4.8 million-dollar RO1 grant to study the effect of asbestos contamination in the town of Libby, Montana. He is currently investigating the health effects of mold exposure on New York City Housing Authority (NYCHA) tenants. He was educated at New York University, Einstein, Columbia and Harvard. He is professor and founding chairman of the Department of Thoracic Surgery at the Mount Sinai School of Medicine in New York City.

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LEE GAZOURIAN, MD

Dr. Lee Gazourian is director of Quantitative Analysis and co-director of research at the Lahey Hospital & Medical Center. His primary research interests are to apply quantitative Computer Tomography imaging technology to the lung cancer screening and COPD patient populations. He is currently the principle investigator of a multi-center study utilizing the lung cancer screening cohorts at Lahey Hospital & Medical Center, Mount Auburn Hospital, Boston Medical Center and Baystate Medical Center. To date over 16,000 patients have been screened with over 40,000 total CT scans performed. His research focuses on objective assessments of the pulmonary and extra pulmonary manifestations of disease both at baseline and longitudinally. His group is currently evaluating the association between both quantitative and qualitative metrics, of emphysema, interstitial lung disease, coronary artery calcification, pulmonary vascular disease and body composition with clinical outcomes including cancer, hospitalizations and quality metrics including COPD/ILD screening, cardiovascular risk stratification, immunizations and smoking cessation.

Dr. Gazourian received his medical doctorate from Boston University School of Medicine and his pulmonary and critical care training at the combined Harvard program.

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MARYELLEN L. GIGER, PhD

Dr. Maryellen Giger 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) and the former director of the CAMPEP-accredited Graduate Programs in Medical Physics/chair of the Committee on Medical Physics at the University. Dr. Giger also co-founded Quantitative Insights, Inc., whose product QuantX is the first FDA-cleared, machine-learning driven system to aid in cancer diagnosis. In 2019, QuantX was named one of TIME magazine's inventions of the year and is now being developed by Qlarity Imaging.

For over 30 years, Dr. Giger 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. Over her career, she has served on various National Institutes of Health (NIH) and other funding agencies' study sections and is now a member of the National Institute of Biomedical Imaging and Bioengineering (NIBIB) Advisory Council. 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 using these image-based phenotypes, i.e., these "virtual biopsies" in imaging genomics association studies for discovery. In addition, Dr. Giger is the principal investigator of the newly established Medical Imaging and Data Resource Center (MIDRC) funded by NIBIB to establish highly-curated open datasets of COVID-19 images and expedite machine learning methods for detection/diagnosis and assessing therapies.

Dr. Giger received her master's degree in physics from The University of Exeter and her doctoral degree in medical physics from the University of Chicago. She is a member of the National Academy of Engineering and a Fellow of the American Association of Physicists in Medicine (AAPM), American Institute for Medical and Biological Engineering, International Society of Optics and Photonics (SPIE), Society of Breast MRI, Institute of Electrical and Electronics Engineers and International Academy of Medical and Biological Engineering. She is a former president of the AAPM and was awarded their William D. Coolidge Gold Medal. Dr. Giger is also a former president of the SPIE and is the inaugural editor-in-chief of the SPIE Journal of Medical Imaging. In 2018, she received the iBIO iCON Innovator award. Dr. Giger has more than 200 peer-reviewed publications, has more than 30 patents and has mentored over 100 graduate students, residents, medical students and undergraduate students.

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GARTH GRAHAM, MD, MPH, FACP, FACC

Dr. Garth Graham is a leading authority on social determinants of health and health equity. As the vice president of Community Health for CVS Health, Dr. Graham leads the enterprise-wide community and social determinants of health (SDoH) strategy, working closely with CVS Health's many businesses, to ensure differentiated, measurable and scalable approaches to addressing community health in communities across the country. Additionally, he leads public health partnerships and cardiovascular initiatives for CVS Health. Dr. Graham joined CVS Health through the Aetna acquisition, where he was president of the Aetna Foundation since 2014.

A cardiologist and professor of medicine, Dr. Graham is passionate about the opportunity to improve local health through cross-sector collaboration. Dr. Graham previously served as Deputy Assistant Secretary at the US Department of Health and Human Services under both the Obama and Bush Administrations, where he also ran the Office of Minority Health. He directed the development of the federal government's first National Health Disparities Plan released under the Obama administration. Dr. Graham was also the assistant dean for health policy at the University of Florida School of Medicine, where he led several research initiatives looking at how to improve outcomes and readmission rates in cardiac patients in underserved populations. He contributes to several boards including the National Heart, Lung and Blood Institute Advisory Council, the Institute of Medicine Board on Population Health, Board of the National Quality Forum, the American Heart Association/American Stroke Association National Quality Oversight Committee, the American College of Cardiology/American Heart Association Task Force on Clinical Data Standards, the Harvard Medical School Diversity Fund (chair) and was named by the President to the US Federal Coordinating Council on Comparative Effectiveness Research many others.

Dr. Graham has been featured in media outlets including *Fortune*, *USA Today*, *The Hill*, *The Chicago Tribune*, *Essence*, *U.S. News & World Report*, *Quartz* and *Ebony*. Dr. Graham holds a medical degree from Yale School of Medicine, an MPH from Yale School of Public Health and a bachelor of science degree in biology from Florida International University. He completed clinical training at Massachusetts General Hospital and Johns Hopkins where he trained in cardiology and interventional cardiology. He holds three board certifications including internal medicine, cardiology and interventional cardiology.

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HANNAH GREEN, MPH

Ms. Hannah Green is the national director of health policy for the American Lung Association (ALA). She oversees the ALA's policy work on access to care for lung disease patients, particularly in Medicaid and state marketplaces, and is the American Lung Association's expert on lung cancer policy and other lung health and healthcare system policies. Ms. Green also directs the ALA's State Lung Cancer Screening Coverage Project, which focuses on improving coverage and utilization of lung cancer screening among patients at high risk for lung cancer, with an emphasis on patients in state Medicaid programs. Ms. Green received her bachelor of arts degree in Government from Smith College and her master's in public health degree from the Johns Hopkins University Bloomberg School of Public Health.

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MEILAN HAN, MD, MS

Dr. MeiLan Han is a professor of medicine in the Division of Pulmonary and Critical Care at the University of Michigan. Dr. Han received her medical degree from the University of Washington in Seattle, WA. She completed her residency in Internal Medicine and fellowship in Pulmonary and Critical Care Medicine at the University of Michigan. Dr. Han has also completed a master's degree program in Biostatistics and Clinical Study Design at the University of Michigan School of Public Health.

Dr. Han is co-chair of the University of Michigan COPD Quality Improvement Committee and co-authored the University of Michigan COPD Guidelines. Dr. Han's research has focused on defining phenotypes in COPD using imaging. She is a lead investigator for several NIH-sponsored COPD studies. She also serves on the scientific advisory committees for both the COPD Foundation and American Lung Association and serves as a spokesperson for the American Lung Association. She is currently an associate editor for the American Journal of Respiratory and Critical Care Medicine and serves on the editorial boards for Thorax, Lancet Respiratory Medicine and Journal of the COPD Foundation. She is also a member of the Global Obstructive Lung Disease scientific committee which is charged with developing an internationally-recognized consensus statement on COPD diagnosis and management.

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CLAUDIA I. HENSCHKE, PhD, MD

Dr. Claudia Henschke is a pioneer and leading expert in diagnostic radiology with more than 25 years of clinical and research experience with low-dose CT screening and she has led the implementation of numerous cities, state, national and international lung screening programs.

Since the start, in 1992, of the Early Lung Cancer Action Project (ELCAP) Dr. Henschke has worked on advancing the CT screening research of early lung disease, with a particular focus on lung cancer. ELCAP soon grew into an international program (I-ELCAP), and now she leads a collaborative and international group of distinguished physicians and scientists whose 75 institutions have, to date, screened over 79,000 people in 10 countries around the world for I-ELCAP.

In addition, the success of the I-ELCAP program led to another multi-national study, The Initiative for Early Lung Cancer Research on Treatment (IELCART), implemented in 2016 to assess the efficacy of various early lung cancer treatments.

Prior to joining the Icahn School of Medicine at Mount Sinai in 2010, Dr. Henschke was a faculty member at the Harvard Medical School and the Weill Cornell Medical College. She has authored over 400 peer-reviewed publications, two books, many scientific presentations and has trained over 80 physician researchers. Dr. Henschke was awarded her PhD from the University of Georgia, her MD from Howard University and she received a BA and MS from Southern Methodist University.

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ROY S. HERBST, MD, PhD

Dr. Roy Herbst is Ensign Professor of Medicine, professor of Pharmacology, chief of Medical Oncology, and associate director for Translational Research at Yale School of Medicine, Yale Cancer Center and Smilow Cancer Hospital at Yale-New Haven Health System.

He is a pioneer in the field of thoracic oncology, having led development and investigation of therapies targeting EGFR and VEGF signaling pathways now part of the standard of care for lung cancer patients whose cancers harbor relevant genetic mutations. His leadership in targeted therapeutics resulted in a American Society of Clinical Oncology (ASCO) plenary talk this year and publication of results of the third-generation EGFR-inhibitor osimertinib for the treatment of resected EGFR-mutant NSCLC in the *New England Journal of Medicine*. He has made equally critical contributions to the use of immunotherapy in oncology. He and his Yale colleagues were among the first to describe the PD-1/PD-L1 pathway and to offer trials of PD-L1 inhibitors atezolizumab and pembrolizumab.

His ground-breaking work in the area of trial design and execution (i.e., BATTLE, BATTLE 2) paved the way for the larger cooperative, multi-drug, biomarker-based clinical trial Lung-MAP, for which he serves as national principal investigator. Dr. Herbst leads one of five lung cancer-focused National Cancer Institute SPORE grants, which investigates novel immune based therapies, new methods to combat treatment resistance, and understanding mechanisms of brain metastasis, among other research.

Dr. Herbst is a Fellow of the American Society of Clinical Oncology and a member of the American Association of Cancer Research (AACR), where he chairs the Tobacco Task Force and serves as an elected member of its Board of Directors. In 2020, Dr. Herbst was awarded the AACR Distinguished Public Service Award for Exceptional Leadership in Cancer Science Policy. For his lifetime achievement in thoracic cancer research, he was awarded the 2016 Paul A. Bunn, Jr. Scientific Award by the International Association for the Study of Lung Cancer (IASLC) and, in 2019, he was elected North America Member of the IASLC Board of Directors.

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FRED R. HIRSCH, MD, PhD

Dr. Fred R. Hirsch is executive director at the Center for Thoracic Oncology in The Tisch Cancer Institute at Mount Sinai (TCI) and the Joe Lowe and Louis Price professor of Medicine (Hematology and Medical Oncology) at the Icahn School of Medicine at Mount Sinai. He is also associate director of Biomarker Discovery for TCI.

Before joining Mount Sinai, he was a professor of Medicine and Pathology at the University of Colorado for 18 years and chief executive officer of the International Association for the Study of Lung Cancer (IASLC) for five years. Dr. Hirsch's career in lung cancer research spans more than 25 years and includes translational research, targeted therapies and early detection of lung cancer. His research has helped identify and validate prognostic markers for lung cancer outcomes and biomarkers for personalized lung cancer therapies that illustrate how these therapies work and who is most likely to benefit from them

Dr. Hirsch has received a number of awards and honors, including the IASLC Mary Matthews Award for Translational Research in Lung Cancer in 2007; the Japanese Lung Cancer Society Merit Award in 2010; the Addario Foundation Lecture Award in 2015; and the Wuan Ki Hong Lectureship Award in 2019. The CURE Media Group / MJH Life Sciences honored Dr. Hirsch as the inaugural "Lung Cancer Hero 2020." Dr. Hirsch received both his Doctor of Medicine and PhD degrees from the University of Copenhagen. He has contributed to more than 400 publications in peer-reviewed journals.

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TIMOR KADIR, DPhil, MEng (United Kingdom)

Dr. Timor Kadir is the chief science and technology officer for Optellum – a company of award-winning machine learning, medical device and clinical experts who met at University of Oxford's world-renowned computer vision laboratory and who work closely with global leading clinicians and authors of lung cancer guidelines in the USA, EU and the UK.

Since graduation with a DPhil (PhD) in Computer Vision from Oxford University, Dr. Kadir has accumulated over 18 years in artificial intelligence and machine learning applied to medical devices and software applications. He has extensive experience in technology development, product strategy and intellectual property management as well as commercialization and business development. Dr. Kadir has held key roles at Motorola, Siemens Healthcare and Mirada Medical and has published over 70 peer-reviewed papers and filed over 30 patents.

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ELLA KAZEROONI, MD, MS

Dr. Ella Kazerooni's work in lung cancer screening research, coverage and implementation is extensive. She serves as the vice chair of the NCCN Lung Cancer Screening panel, served as the inaugural chair of the American College of Radiology (ACR) Lung-RADS committee and chairs the ACR's Lung Cancer Screening Registry (LCSR) and worked towards the ACR Designated Lung Cancer Screening program under the CT accreditation program. These efforts are focused on bringing quality lung cancer screening to high risk individuals and reduce the mortality from the #1 cancer killer. Most recently, Dr. Kazerooni was named the inaugural chair of the American Cancer Society's National Lung Cancer Roundtable. With a master's degree in Clinical Research Design & Statistical Analysis, Dr. Kazerooni's research focuses on the development and evaluation of advanced imaging technologies applied to the heart and lungs, including lung cancer screening, coronary artery and aortic disease, pulmonary embolism and diffuse lung diseases. Her work in clinical and translational research earned her the University of Michigan Medical School's prestigious Clinical and Health Services Researcher of the Year award.

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LISA LACARRUBBA, MD

Dr. Lisa LaCarrubba is medical director for Clinical Reengineering at Horizon Blue Cross Blue Shield New Jersey, where she is responsible for creating and implementing value-based programs designed to enhance population health outcomes. Her team supports value-based partners with clinical transformation education and support. Previously she served as Northeast regional medical director of Humana Senior Products and as senior medical director of AmeriHealth New Jersey. Dr. LaCarrubba's experience includes quality, wellness and case and utilization management. She is a board-certified family physician who practiced at North Country Health Systems, serving as chair of the Pharmacy and Therapeutics Committee, president of the Medical Staff, medical director of the Derby Green Long Term Care Facility and was a member of the Board Quality, Maternal Child Health and Ethics Committees. Dr. LaCarrubba is a member of the American Association for Physician Leadership the, American Academy of Family Physicians and co-chairs the New Jersey Immunization Network.

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**STEPHEN LAM, MD, FRCP**

Dr. Stephen Lam is professor of medicine at the University of British Columbia (BC), distinguished scientist, the Leon Judah Blackmore chair in lung cancer research and MDS-Rix endowed director of translation lung cancer research at the BC Cancer Research Center. He also chairs the Pan-Canadian Lung Cancer Screening Network. Dr. Lam's research focuses on early detection of lung cancer. He was the recipient of the International Association for the Study of Lung Cancer (IASLC) Joseph Cullen Award for life-time scientific achievements in lung cancer prevention research. Dr. Lam received his medical training at the University of Toronto. He joined the University of British Columbia Faculty of Medicine in 1979 and BC Cancer in 1984.

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**CURTIS P. LANGLOTZ, MD, PhD**

Dr. Curtis Langlotz is professor of Radiology and Biomedical Informatics and director of the Center for Artificial Intelligence in Medicine and Imaging (AIMI Center) at Stanford University, which conducts interdisciplinary machine learning research that optimizes how clinical images are used to promote health. He is also responsible for the computer technology that supports the Stanford Radiology practice.

As a graduate student in computer science, Dr. Langlotz was a member of the team that implemented the first AI system in clinical practice. He has led many national and international efforts to improve radiology, including the RadLex™ terminology standard, the RadLex™ Playbook of radiology exam codes, the RSNA report template library and a national COVID-19 imaging repository. He has published over 100 scholarly articles and is author of the 2015 book "The Radiology Report: A Guide to Thoughtful Communication for Radiologists and Other Medical Professionals."

Raised in St. Paul, Minnesota, Dr. Langlotz received his undergraduate degree in Human Biology, master's in computer science, MD in Medicine and PhD in Medical Information Science, all from Stanford University. He currently serves on the board of directors of the Radiological Society of North America (RSNA) as Liaison for Information Technology. He has founded three healthcare information technology companies, most recently Montage Healthcare Solutions, which was acquired by Nuance Communications in 2016.

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**CHRISTOPHER S. LATHAN, MD, MS, MPH**

Dr. Christopher Lathan is the faculty director for Cancer Care Equity at Dana Farber Cancer Institute, the medical director of Dana-Farber at St. Elizabeth's Medical Center, associate medical director of the Dana Farber Cancer Institute Network and an assistant professor of Medicine at Harvard Medical School. Dr. Lathan attended medical school at Tufts University School of Medicine and completed his postdoctoral training in internal medicine, medical oncology and cancer outcomes research at Boston Medical Center and the Dana-Farber/Harvard Cancer Center. Dr. Lathan also holds a master's degree in public health from the Harvard School of Public Health, and a master of science degree in Cellular and Molecular Biology from the University of Massachusetts.

Dr. Lathan's primary research interests are centered on the effects of race, class and access to care on cancer outcomes, including racial disparities in lung cancer treatment, differences in somatic mutations across racial groups, perceptions of genetic testing by race and social class, population differences in targetable mutations in non-small cell lung cancer and factors influencing willingness to participate in bio-banking among black men with and at-risk for prostate cancer. He is a board member of the National African American Cancer Coalition and the Medical and Scientific Advisory Board for the Lung Cancer Alliance. He is a past board member of the Conquer Cancer Coalition, and Boston Healthcare for the Homeless. Dr. Lathan also serves on the Health Disparities, Cancer Education and Scientific Review committees for the American Society of Clinical Oncology and the Minorities in Cancer Research Council for the American Association for Cancer Research.

Dr. Lathan aims to bridge the gap between research efforts in disparities and the realities of patient care by developing interventions to increase access to high-level quality care, developed in part through a high level of community engagement. He is the founding faculty director of the Cancer Care Equity Program at the Dana-Farber Cancer Institute, and director of Dana-Farber Community Cancer Care at Whittier Street Health Center in Roxbury, MA, a clinical outreach program that aids in the diagnosis and treatment of cancer for patients at a Federally Qualified Health Center, and integrates all three arms of clinical cancer care: prevention, diagnosis/treatment and survivorship. This effort also provides an opportunity to improve clinical trial accrual among vulnerable populations.

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NATASHA B. LEIGHL, MMSc, MD

Dr. Natasha Leighl leads the Thoracic Medical Oncology Group at the Princess Margaret Cancer Centre, and is professor in the Department of Medicine and adjunct professor in the Institute of Health Policy, Management and Evaluation at the University of Toronto. She holds the OSI Pharmaceuticals Foundation Chair in Cancer New Drug Development through the Princess Margaret Cancer Foundation. She has published nearly 300 peer-reviewed papers, has held (as principal or co-investigator) over \$600 million in peer-reviewed grant funding and has mentored many oncology trainees that have gone on to leadership roles in oncology around the world. Recently, Dr. Leighl was awarded the American Society of Clinical Oncology Excellence in Teaching Award (2019).

After receiving her MD from the University of Toronto, Dr. Leighl completed residencies in internal medicine at the University of Calgary and in medical oncology at the University of Toronto. She subsequently completed a fellowship in Thoracic Oncology with Dr. Frances Shepherd at the Princess Margaret Hospital, a fellowship in Clinical Oncology with Professor Martin Tattersall at the University of Sydney, Australia and received her MMSc in Clinical Epidemiology at the University of Newcastle, Australia.

Dr Leighl's main interest is in developing new treatments in lung cancer and improving lung cancer diagnostics. She is involved in clinical studies of novel agents for the treatment of thoracic cancers, has led several international and cooperative group studies in lung cancer and has served as a member of the Lung Disease Site Group Executive of the Canadian Cancer Clinical Trials Group (CCTG). She was co-chair of the CCTG Committee on Economic Analysis, Congress Co-President of the 2018 World Conference in Lung Cancer, and serves on multiple committees including the American Society of Clinical Oncology (ASCO) Thoracic Guidelines Advisory Group, is co-section editor of *The Oncologist* and *Current Oncology*, an editorial board member of the *Journal of Thoracic Oncology*, *British Journal of Cancer* and is a member of the International Association for the Study of Lung Cancer (IASLC) Quality and Value Committee. Previously she served as web editor of the *Journal of Thoracic Oncology*, on the editorial board of the *Journal of Clinical Oncology*, the Royal College of Physicians & Surgeons of Canada Medical Oncology Examination Board and more. She served as president of Lung Cancer Canada from 2009 to 2016, serves on the scientific advisory board of the Lung Cancer Foundation of America and was recently elected to the board of directors of the Americas Health Foundation.

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BARRY MAKE, MD

Dr. Barry Make is co-director of the COPD Program and director, Pulmonary Rehabilitation, and Respiratory Care and chair of the Faculty Appointment, Promotion and Periodic Evaluation Committee at National Jewish Health. He is professor of medicine in the Division of Pulmonary Sciences and Critical Care Medicine at National Jewish Health and the University of Colorado School of Medicine.

Dr. Make's primary interest is clinical research on the management and outcomes of chronic obstructive pulmonary disease (COPD). Dr. Make also sees adult outpatients with COPD and related pulmonary disorders at National Jewish Health. He has been recognized as one of the Castle Connolly's Top Doctors in the US for the past 14 years and received the Sreedhar Nair Lifetime Achievement Award from the American Thoracic Society. He gave the Tom Petty Memorial Lecture and received the Tom Petty Home Respiratory Care Award from the American Association for Respiratory Care.

Dr. Make's publications include over 275 articles, book chapters and other materials. He has created audiovisual and educational materials for the professional community and patients. He regularly lectures internationally on Chronic Obstructive Pulmonary Disease.

In addition to clinical research and clinical practice, Dr. Make is an active member of the professional community. He is a Fellow of the American College of Chest Physicians, American College of Physicians and the American Association of Cardiovascular and Pulmonary Rehabilitation. He is a member of the American Thoracic Society, and the Colorado Trudeau Society. Dr. Make is currently an Investigator on several grants from the National Heart, Lung, and Blood Institute, the Department of Defense and the American Lung Association, including Genetic Epidemiology of COPD, Losartan Effects on Emphysema Progression, Intervention Study in Overweight Patients with COPD, Chronic Refractory Cough Cohort Study and Validating A Unique COPD Screening Tool In Primary Care. Dr. Make is editor of the *Chronic Obstructive Pulmonary Diseases: Journal of the COPD Foundation*.

Dr. Make received a BS (cum laude) in Science from Pennsylvania State University and a MD from Jefferson Medical College. He was an intern in Medicine at Thomas Jefferson University Hospital, and a resident in Internal Medicine at the University of Michigan Medical Center. Dr. Make completed fellowships in Pulmonary Medicine at the Boston University and University of West Virginia Medical Centers.

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ANITA MCGLOTHLIN

Steering Committee Member, Quantitative Imaging Workshop

Ms. Anita McGlothlin joined the GO₂ Foundation for Lung Cancer in 2018 as the director of Economics and Health Policy. Founded by patients and survivors, it is their mission to save, extend and improve the lives of those vulnerable, at-risk and diagnosed with lung cancer. Within this role, Ms. McGlothlin advances lung cancer screening and care through health policy, regulatory and coverage and reimbursement efforts.

Ms. McGlothlin works closely with Patient and Outreach Services and Science and Research programs to advance the Foundation's mission through the development and implementation of health policies. With over 20 years of experience in economics and health policy and having led low-dose CT lung cancer screening national coverage efforts with radiology in her prior role, Ms. McGlothlin has a unique interest in reducing patient access barriers and increasing the lung cancer screening and survival rates.

With a focus in public policy, Ms. McGlothlin continues her work in lung cancer patient advocacy by serving on the National Lung Cancer Roundtable (NLCRT) Policy Action Task Group, and formerly served as their vice-chair.

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SURESH K. MUKHERJI, MD, MBA, FACR

Dr. Suresh Mukherji received his undergraduate degree from Duke University (1983) and MD degree from Georgetown University (1987). After finishing his Radiology residency at the Brigham and Women's Hospital, Harvard Medical School (1992), he completed a 2-year Neuroradiology Fellow, with emphasis on head and neck imaging, at the University of Florida in 1994. His academic positions include being director of Head & Neck Radiology at University of North Carolina, division director of Neuroradiology at University of Michigan and chair of Radiology at Michigan State University.

Dr. Mukherji is a recognized authority in Head & Neck and Neuroradiology. His primary scientific interests have focused on investigating emerging metabolic and physiologic imaging techniques to evaluate head and neck cancer and to differentiate recurrent tumors from post-therapeutic changes. These technologies include imaging with fluorodeoxyglucose analogues imaged with prototype Single Photon Emission Computed Tomography, Gamma Cameras, standard PET and CT-PET. Other metabolic and physiologic imaging techniques he has investigated include Thallium-201, magnetic resonance spectroscopy, CT perfusion and CT spectral imaging. He has been the principal investigator and co-investigator on numerous NIH and society grants and has authored over 400 scientific manuscripts and book chapters. Dr. Mukherji is a devoted educator and has been an invited speaker on over 400 occasions. He has written or edited 13 textbooks and is the consulting editor for both Neuroimaging Clinics and Magnetic Resonance Clinics of North America.

Dr. Mukherji has extensive administrative experience including receiving his master of Business Administration from the University of Michigan in 2013. He is very active in a variety of socioeconomic and health care policy initiatives at the local, state and national levels. His administrative experience includes being a member of the board of directors of the University of Michigan Faculty Group Practice, Neuroradiology Division Director, Radiology Department Chair, chief medical officer and vice chair & chair of the Certificate of Need Commission for the state of Michigan.

Dr. Mukherji is a member of the Medical Directors Advisory Council (MDAC) of the National Alliance of Health Care Purchasers Coalition which is a purchaser-led organization with a national and regional structure dedicated to driving health and healthcare value across the country. Coalition members represent more than 12,000 employers and purchasers and 45 million Americans, spending \$300 billion annually on healthcare. His role on the MDAC to develop an organizational strategy for the National Alliance of Health Care Purchasers Coalition to define quality and optimize the health care spend devoted to imaging.

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JAMES L. MULSHINE, MD

Founder and Steering Committee Chair, Quantitative Imaging Workshop

Dr. James Mulshine is a professor at Rush University where he has served as associate provost and vice president for research as well as acting dean of the Graduate College. Prior to joining Rush University in 2005, Dr. Mulshine was at the National Cancer Institute (NCI) for 25 years, where he was on the research faculty. Internationally recognized as an expert on lung cancer, Dr. Mulshine’s research concentrates on application of quantitative CT to enable robust, efficient early lung cancer detection. Beginning in 2003, Dr. Mulshine—in cooperation with the Prevent Cancer Foundation®—established the Quantitative Imaging Workshop. He has been awarded 12 patents and has more than 330 scientific and medical publications. Dr. Mulshine is on numerous editorial boards, as well as national and international scientific and foundation advisory boards, including serving as vice chairman and scientific director of the Prevent Cancer Foundation®. He has received numerous national and international recognition awards related to the impact of his research efforts on early cancer management most recently including the Aeschylus Award from the Bonnie J. Addario Foundation.

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NANCY OBUCHOWSKI, PhD

Dr. Nancy Obuchowski joined the Cleveland Clinic in 1991 where she works on the assessment of diagnostic and screening tests/visual aids and quantitative imaging biomarkers. She serves on the steering committee of the Quantitative Imaging Biomarker Alliance and is a member of the DSMC of ECOG-ACRIN. Dr. Obuchowski was co-director of the Clinical Trials Methodology workshop for imagers for three years, lead editor for the American College of Radiology on a series of research articles for imagers and co-director of the metrology initiative for imaging biomarkers. She has written three books and authored or co-authored over 200 peer-reviewed publications, including methodologic papers on efficient multi-reader study designs, endpoints for screening tests, biases in diagnostic and screening test studies, analysis of correlated clustered proportions and ROC areas, tests for interchangeability, performance metrics for imaging biomarkers and techniques for ROC sample size calculation. She is a Fellow of the American Statistical Association.

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ROBERT OCHS, PhD

Dr. Robert Ochs is the deputy office director for Radiological Health in the Office of In Vitro Diagnostics and Radiological Health within the US Food and Drug Administration, Center for Devices and Radiological Health. Dr. Ochs received his PhD in Biomedical Physics from the University of California, Los Angeles. He manages divisions that implement the Mammography Quality Standards Act, regulate manufactures of radiological medical devices, and regulate radiation emitting electronic products. He actively engages with experts to discuss policies that will protect and promote public health while advancing the safety and effectiveness of medical devices.

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MATTHIJS OUDKERK, PhD, MD, MSc

Dr. Matthijs Oudkerk is professor of radiology at the University of Groningen, chief scientific officer of the Institute for Diagnostic Accuracy (iDNA) and the principal investigator for radiology of the NELSON lung cancer detection study.

Founder and past president of the European Society of Cardiac Radiology and former chairman of radiology departments of DDHK Erasmus MC Rotterdam and University Medical Center Groningen, Dr. Oudkerk has a broad insight into new imaging modalities, algorithms and strategies. He is ranked as one the most influential researchers in Radiology in Europe (2019). For his research work he received prestigious grants such as ERC advanced grant, Royal Academy of Sciences of the Netherlands (KNAW) and Ministry of Science and Technology of China, among others. Dr. Oudkerk is lead investigator of the NELSON lung cancer detection study, the ROBINSCA study for coronary disease detection, NELCIN B3 study in China focusing on Lung cancer, coronary artery disease and pulmonary disease in one imaging test. Many of the current and new guidelines are derived from his original work.

Dr. Oudkerk was invited as a member of the medical advisory board of Siemens AG, Germany for development of the first continuous rotating spiral CT. He has an influential vision on the future of imaging and health care, which has been rewarded with international awards and invitations to lecture. He is a member of numerous other boards of directors and has published more than 555 peer-reviewed articles and, in 2018, was senior editor of the Journal of Radiology. Dr. Oudkerk received his PhD in medicine, medical doctorate and master’s degree in medicine from the University of Leiden, The Netherlands.

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MARY PASQUINELLI, DNP, APRN, FNP-BC

Dr. Mary Pasquinelli is a nurse practitioner specializing in lung cancer, lung cancer screening and pulmonary nodule management at the University of Illinois Hospital and Health Science System in Chicago (UI Health). She holds a doctorate of nurse practice, a master of science degree with a Family Nurse Practitioner specialty, a bachelor's degree in Psychology and has over 30 years of oncology nursing experience. Dr. Pasquinelli developed and initiated the Lung Cancer Screening Program, improved navigation of newly diagnosed lung cancer patients into treatment and provides clinical care to patients with lung cancer throughout their care continuum. Her career focus has been on socioeconomically disadvantaged populations in Chicago and works to decrease barriers to care and health disparities to improve clinical outcomes. She regularly speaks on such topics of lung cancer and lung cancer screening at the state, national and international level. Dr. Pasquinelli serves as principal investigator or co-investigator on several grants and research protocols and has several publications. She is also an active member with the National Lung Cancer Roundtable (NLCRT) Policy Task Force and the International Association for the Study of Lung Cancer (IASLC) Early Detection and Screening Committee.

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HARVEY PASS, MD

Dr. Harvey Pass is the Stephen E. Banner Professor of Thoracic Oncology, division chief of General Thoracic Surgery and vice chair for research in the Department of Cardiothoracic Surgery at NYU Langone Medical Center. Dr. Pass has been the director of Thoracic Oncology Programs at the National Cancer Institute, Karmanos Cancer Institute and New York University Langone Medical Center. He has been continuously funded by the US Department of Defense, National Cancer Institute and the Centers for Disease Control and Prevention among others since 1998 for the discovery and validation of blood-based diagnostic and prognostic biomarkers. Dr. Pass has been author/co-author for over 630 peer-reviewed publications and 11 books. Dr. Pass has been the recipient of the National Institutes of Health Directors Award, the Wagner Medallion for contributions to the study of mesothelioma, the Pioneer Award from the Mesothelioma Foundation, the Landon Award for Team Science from the American Association for Cancer Research and the Merit Award from the International Association for the Study of Lung Cancer.

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DANIEL G. PETEREIT, MD

Dr. Daniel Petereit is a radiation oncologist in Rapid City, SD, and is the principal investigator for the Walking Forward (WF) Cancer Disparity Program, which has been funded by the National Cancer Institute (NCI) since 2002. The goal of the program is to lower cancer mortality rates for Northern Plains American Indians (AIs) through patient navigation, clinical trial access, and identification of barriers to early detection and successful treatment. Published critical outcomes include establishment of trust within tribal communities, identification of barriers to cancer screenings, creation of research infrastructure, clinical-trial enrollment of 4,500 AIs (the highest in the nation) and higher completion-of-treatment and patient-satisfaction rates for patients undergoing cancer therapies. Walking Forward recently completed an RCT testing multiple interventions for smoking cessation. In 2018, a lung cancer screening program for high risk smokers was initiated to increase the utilization of LDCTs. A palliative care project was recently initiated on the reservations to address the lack of palliative care. Dr. Petereit has received national recognition for his expertise in brachytherapy, cancer disparities and clinical trials. He has had leadership roles for the American Board of Radiology (ABR), the American Society for Radiation Oncology (ASTRO) and is the past president and current chair of the American Brachytherapy Society (ABS). He is leading a national ABS initiative, 300 in 10, where the goal is to train 30 competent brachytherapists per year over the next 10 years through a multifaceted approach. He has published over 115 articles in peer reviewed journals and has received 15 million dollars in research funding.

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NICHOLAS PETRICK, PhD

Dr. Nicholas Petrick is deputy director for the Division of Imaging, Diagnostics and Software Reliability at the Center for Devices and Radiological Health, US Food and Drug Administration (FDA) and is a member of the FDA Senior Biomedical Research Service. The Division of Imaging, Diagnostics and Software Reliability Division conducts regulatory research in medical imaging physics and image analysis techniques to optimizing medical image interpretation. Dr. Petrick received his PhD from the University of Michigan in Electrical Engineering-Systems and is a Fellow of the Americana Institute of Medical and Biomedical Engineering and the International Society for Optics and Photonics (SPIE). His current research focuses on quantitative imaging, medical machine learning and the development of robust assessment methods for a range of medical imaging hardware systems and medical machine learning tools.

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BRUCE PYENSON, FSA, MAAA **Steering Committee Member, Quantitative Imaging Workshop**

Mr. Bruce Pyenson is principal and consulting actuary at Milliman, Inc., in New York. In his more than 30 years at Milliman, he has consulted to almost every sector of healthcare, including accountable care organizations (ACOs), employers, advocacy groups, insurers and the biotechnology industry. Many of his projects involve integrating analytics from financial, clinical, and operational models.

In recent years, client projects have included the cost-benefit of lung cancer screening, the cost advantage of CT colonography, the impact of changes in Exchange benefit design, marginal cost analyses using risk adjustment methodologies, feasibility analyses for ACOs, restructuring of disease management processes and actuarial cost/benefit evaluations for pharmaceutical manufacturers.

Mr. Pyenson is a Fellow of the Society of Actuaries and a member of the American Academy of Actuaries. He is a commissioner on MedPAC, the Medicare Payment Advisory Commission, which advises Congress. Bruce is adjunct clinical associate professor of New York University's College of Global Public Health and a member of the Institute for Healthcare Delivery Science at the Mount Sinai Health System. He serves on the Board of the International Early Lung Cancer Action Program. He was on the board of the Health Project (Koop Awards) from 2010–2016.

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ANTHONY P. REEVES, PhD

Dr. Anthony Reeves is a professor in the School of Electrical and Computer Engineering and director of the Vision and Image Analysis Lab (VIA) at Cornell University. He also holds an adjunct faculty position in the Department of Radiology at the Icahn School of Medicine at Mount Sinai, New York City. His research program is on computer methods for analyzing and making quantitative measurement on digital images with a primary focus on biomedical applications. Collaboration with the Early Lung Cancer Action Program (ELCAP) has resulted in computer methods for the detection and analysis of pulmonary nodules in low-dose CT images and the development of the web-based image-management system, SIMBA, which facilitates clinical studies, observer studies and algorithm research. This work has been extended to the automated computer-aided diagnosis of diseases within the chest. Other ongoing collaborative projects for the VIA Lab are related to multidimensional image analysis including fuel droplet combustion measurement, sphere tracking in microgravity, hip dysplasia in a canine model and analysis of single cells from optical CT 3D microscope images. Dr. Reeves has participated in the National Cancer Institute's Lung Image Database Consortium (LIDC), and the Radiological Society of North America (RSNA) Quantitative Image Biomarkers Alliance (QIBA); his research program has received support from the National Institutes of Health, National Science Foundation and National Aeronautics and Space Administration (NASA).

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ALBERT A. RIZZO, MD, FCCP, FACP, FAASM
Steering Committee Member, Quantitative Imaging Workshop

Dr. Albert Rizzo, as chief medical officer for the American Lung Association, is the organization's senior medical authority. Dr. Rizzo has long been a key medical advisor to the Lung Association, a member of the Lung Cancer Expert Medical Advisory Panel and a leading media spokesperson. In his role as chief medical officer, Dr. Rizzo plays a key role in multiple areas of our mission, including the Lung Association's Lung HelpLine, research, and the Awards and Grants program as well as advocacy, communications, development and health promotions. Dr. Rizzo is responsible for ensuring that the Lung Association is always using the best science and medicine to formulate and deliver on our mission.

Dr. Rizzo is a member of Christiana Care Pulmonary Associates at the Christiana Care Health System in Newark, Delaware. He is board certified in internal medicine, pulmonary, critical care and sleep medicine and is a clinical assistant professor of medicine at Thomas Jefferson University Medical School in Philadelphia where he obtained his medical degree and completed his residency in internal medicine.

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MARY SALVATORE, MD, MBA

Dr. Mary Salvatore is an associate professor of Radiology at Columbia University Medical Center in New York City. She specializes in thoracic radiology with a specific focus in interstitial lung diseases and patterns of fibrosis on CT. She is a passionate teacher and has spoken throughout the country on the early and correct diagnosis of idiopathic pulmonary fibrosis (IPF). Dr. Salvatore is actively involved in research, retrospectively reviewing well established CTs of usual interstitial pneumonia (UIP) and looking at earlier exams to determine earliest CT manifestations of disease. She has written a text on CT interpretation for non-radiologists. Her ultimate goal is to affect as many people in as positive a way as possible through education and positive attitude.

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RAÚL SAN JOSÉ ESTÉPAR, PhD
Steering Committee Member, Quantitative Imaging Workshop

Dr. Raúl San José Estépar is co-director of the Applied Chest Imaging Laboratory at Brigham and Women's Hospital and associate professor of Radiology at Harvard Medical School. His laboratory focuses on novel computational imaging applications for image-based biomarker discovery to empower epidemiological and genetic studies and provide novel surrogate targets for drug discovery and clinical trial development. His group supports the image analytics of multiple federal and industry sponsored investigations serving as imaging core for COPDGene, the Framingham Heart Study Pulmonary Research Center, the CARDIA Lung Study and, more recently, the American Lung Association (ALA) Lung Health Cohort. Dr. San José Estépar is the original developer and chief architect of the Chest Imaging Platform, an open-source software platform for CT-based lung phenotyping. His research has made significant contributions to the quantitative study of pulmonary vascular remodeling and the subtyping and modeling of parenchymal lung injury. His current research interests are focused on artificial intelligence approaches to enable multiscale integration of imaging and molecular information using deep learning, synthetic lung functional imaging from single energy CT and image-based outcomes prediction models in chronic lung diseases.

Dr. San José Estépar received his PhD in Telecommunications Engineering from the University of Valladolid, Spain, where he specialized in signal processing applied to medical image analysis and conducted his post-doc in the Surgical Planning Laboratory, Brigham and Women's Hospital. He has been faculty at Harvard Medical School since 2006. He has co-authored over 200 peer-reviewed manuscripts, and he is currently the principal investigator of several National Institutes of Health awards and industry-sponsored studies. He is a member of the Fleischner Society, and he is actively involved in disseminating quantitative approaches for better healthcare delivery. He has been on the steering committee for the Quantitative Imaging Workshop since 2015. Dr. San José Estépar is also the founder and scientific advisor of Quantitative Imaging Solutions, a healthcare technology company that translates image-based AI solutions and modeling to detect and predict lung diseases.

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HEIDI SCHMIDT, MD

Dr. Heidi Schmidt is professor of Radiology at the University of Toronto, and the department head and program medical director of the Joint Department of Medical Imaging (JDMI) at the University Health Network, Sinai Health and Women's College Hospital.

She trained in Germany, where she graduated from medical school in 1988, and finished her residency as a diagnostic radiologist in 1993. Following a research fellowship at the University of California, San Francisco (UCSF) in 1994, Dr. Schmidt was on faculty of the Department of Radiology at UCSF until she moved to Toronto in 2002. Since then, Dr. Schmidt is a staff radiologist in the Cardiothoracic Division in the JDMI.

After her recruitment to Toronto in 2002, her research focused on lung cancer screening using low-dose computed tomography, both as a site in the International Early Lung Cancer Action Program (I-ELCAP), as well as a site in the Pan-Canadian Early Lung Cancer Detection Study. Since 2017, Dr. Schmidt is the radiology quality lead of the High Risk Lung Cancer Screening Pilot at Cancer Care Ontario. For more than 10 years, from 2007-2018, Dr. Schmidt was the JDMI site director at Women's College Hospital. For six years, she was also the head of the chest section in JDMI, before she became head of the cardiothoracic division in March 2016. In February 2018, she was appointed as interim radiologist-in-chief.

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THE HONORABLE ALLYSON Y. SCHWARTZ

Congresswoman Allyson Y. Schwartz, president and chief executive officer of the Better Medicare Alliance, is a longtime public servant and nationally recognized leader on health care policy. A former member of the US House of Representatives from Pennsylvania, serving from 2005-2015, Congresswoman Schwartz was on both the powerful Ways and Means Committee and Budget Committee. In both capacities, she was a strong advocate for health care access, quality and affordability, including Medicare.

Today, under Congresswoman Schwartz's leadership, Better Medicare Alliance is the leading research and advocacy organization supporting Medicare Advantage. Better Medicare Alliance engages roughly 500,000 grassroots beneficiary advocates and nearly 150 Ally organizations in its mission to support and strengthen Medicare Advantage.

Prior to her work at Better Medicare Alliance and service in Congress, Congresswoman Schwartz worked as a health service executive. She was elected to the Pennsylvania State Senate in 1990 and served 14 years until her election to Congress.

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ELIOT SIEGEL, MD

Dr. Eliot Siegel is professor and vice chair of Research Information Systems at the University of Maryland School of Medicine, Department of Diagnostic Radiology, and chief of Radiology and Nuclear Medicine for the Veterans Affairs (VA) Maryland Healthcare System, both in Baltimore, MD. He is lead radiologist for the VA hospitals in Maryland, Washington, DC and West Virginia. He has adjunct appointments as professor of Bioengineering at the University of Maryland College Park and as professor of Computer Science at University of Maryland Baltimore County. 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. Dr. Siegel established the world's first filmless/digital radiology department at the Baltimore VA and has published over 300 papers and numerous book chapters and has over 1,000 presentations nationally and internationally.

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MARIO SILVA, MD, PhD

Dr. Mario Silva graduated in radiology at the University of Parma and completed a research fellowship in Cardio-Pulmonary Imaging at the Beth Israel Deaconess Medical Center in Boston, Harvard Medical School, Massachusetts. Dr. Silva is an active researcher in the field of thoracic imaging, including thoracic oncology. His main scientific interests are early diagnosis of lung cancer by screening and the evolving scenario of medical treatment of pulmonary malignancies. He has authored or co-authored over 50 peer-reviewed articles published in international scientific journals, numerous abstracts at international congresses and published book chapters on thoracic imaging. He is reviewer for various international scientific journals, he is the "Chest" section editor of the European Journal of Radiology, "Chest" associate editor of the British Journal of Radiology, and the "Diagnostic Imaging" section editor of the Tumori Journal. He is currently assistant professor at the University of Parma, Italy.

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ROBERT A. SMITH, PhD

Dr. Robert A. Smith is a cancer epidemiologist and senior vice president for Cancer Screening at the National Office of the American Cancer Society (ACS) in Atlanta, Georgia, where he also is director of the Center for Cancer Screening. At the ACS he leads the development of cancer screening guidelines, and special research and policy projects focused on cancer prevention and control, including being vice-chair of the National Colorectal Cancer Roundtable and principle investigator of the National Lung Cancer Roundtable. He also is adjunct professor of Epidemiology at the Rollins School of Public Health, Emory University School of Medicine. His primary research interests are cancer epidemiology, evaluation of cancer prevention and early detection programs and quality assurance in the delivery of health services. He is the author of over 350 peer-reviewed scientific articles, reports and book chapters, is a frequent lecturer on cancer screening issues and serves on many international and national government and professional advisory committees and working groups. In 2011 he received the Medal of Honor from the International Agency for Research on Cancer.

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GREGORY SORENSEN, MD

Dr. Gregory Sorensen is chief executive officer at DeepHealth, Inc., focused on using machine learning to bring the best doctor in the world to every patient. He also serves as executive chairman of IMRIS, on the supervisory board of Siemens Healthineers AG and on the boards of other private and public companies.

Dr. Sorensen is a board-certified neuroradiologist, and, from 2011 to 2015 served as president and chief executive officer of Siemens Healthcare North America, the world's largest provider of hospital infrastructure including active businesses in diagnostic imaging, in-vitro diagnostics and healthcare IT. Prior to Siemens, he was a full professor at Harvard Medical School with additional appointments at the Massachusetts Institute of Technology and Oxford University, and an accomplished physician-scientist, based at Massachusetts General Hospital. Dr. Sorensen's scientific career focused on developing new imaging methods to understand cancer of the brain, stroke and migraine; since moving to the business arena he has focused on organizational continuous improvement and transformation, high ethical and performance standards, and bringing innovative technologies and solutions to improve outcomes while lowering costs across a range of healthcare settings.

A sought-after speaker on both scientific and market-focused topics, he is also active in national and global policy making, including past service as a member of the Scientific Council of the National Institutes of Biomedical Imaging and Bioengineering, as chairman of the board of the Medical Imaging Technology Alliance, on the executive committee of National Electrical Manufacturers Association and on the board of directors of Research!America.

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RAJA SUBRAMANIAM, PhD

Dr. Raja Subramaniam is the chief of clinical physics in the Radiology Department at Mount Sinai Medical Center. He also holds the position of associate professor in Radiology Diagnostic, Molecular and Interventional Radiology at the Icahn School of Medicine at Mount Sinai.

Dr. Subramaniam received his PhD in Chemical Physics from the University of Maryland, College Park, and went on to do a postdoctoral fellowship in Medical Physics at Johns Hopkins University, School of Medicine. Before coming to Mount Sinai, he served as the director of radiation safety and chief physicist in the Radiology Department at the SUNY Downstate - Long Island College Hospital.

Dr. Subramaniam has over twenty years of experience in physics of radiologic imaging, nuclear medicine and radiation safety. He is board certified by the American Board of Radiology in Diagnostic Radiologic Physics, Medical Nuclear Physics and Therapeutic Radiologic Physics. He is a member of the American Association of Physicists in Medicine (AAPM) and the Radiological and Medical Physics Society of New York, Inc. (RAMPS). Dr. Subramaniam's clinical interest includes Computed Tomography, Mammography, MRI, Image Quality Optimization and teaching medical physics to Radiology residents.

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DANIEL C. SULLIVAN, MD
Steering Committee Member, Quantitative Imaging Workshop
James L. Mulshine Leadership Award 2020 Recipient

Dr. Daniel Sullivan is professor emeritus, Department of Radiology at Duke University Medical Center, and founder and chair of the Quantitative Imaging Biomarkers Alliance (QIBA). QIBA coordinates a wide range of national and international activities related to the evaluation and validation of quantitative imaging biomarkers for clinical research and practice. He completed radiology residency and nuclear medicine fellowship in 1977 at Yale-New Haven. Dr. Sullivan then held faculty appointments at Yale University Medical Center, Duke University Medical Center, and University of Pennsylvania Medical Center, before joining the National Cancer Institute (NCI) at the National Institutes of Health (NIH) in 1997. At NCI, from 1997 to 2007, Dr. Sullivan served as associate director in the Division of Cancer Treatment and Diagnosis and the head of the Cancer Imaging Program (CIP). His areas of clinical and research expertise are in nuclear medicine and oncologic imaging, focusing on improving the use of imaging as a biomarker in clinical trials and clinical practice.

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RONALD M. SUMMERS, MD, PhD

Dr. Ronald M. Summers is a tenured senior investigator and staff radiologist in the Radiology and Imaging Sciences Department at the NIH Clinical Center in Bethesda, MD. He is a Fellow of the Society of Abdominal Radiologists and of the American Institute for Medical and Biological Engineering. His awards include the Presidential Early Career Award for Scientists and Engineers, the NIH Director's Award and the NIH Clinical Center Director's Award. He is a member of the editorial boards of the *Journal of Medical Imaging, Radiology: Artificial Intelligence* and *Academic Radiology* and a past member of the editorial board of *Radiology*. He was co-chair of the 2018 and 2019 SPIE Medical Imaging conferences and program co-chair of the 2018 IEEE ISBI symposium. He has co-authored over 500 journal, review and conference proceedings articles and is a co-inventor on 14 patents.

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SWATEE SURVE, MBA, MSME
Keynote, Quantitative Imaging Workshop

Ms. Swatee Surve, founder & chief executive officer, launched Litesprite in 2013 with a group of industry professionals with a deep subject matter expertise in healthcare, data science and building mobile and gaming experiences that emotionally resonate with people. At Litesprite, Ms. Surve and her team demonstrate that this is the path to achieve sustainable patient engagement. Games meet people where they are and move them along at their own pace and journey.

Ms. Surve is a leader who has developed and launched disruptive technology-based healthcare businesses for Microsoft, Nike, T-Mobile, Premera Blue Cross and Eastman Kodak. These commercialization projects led to several patents including Nike's first wearable technology patents. One of Puget Sound Business Journal's Innovators of the Year, she is recognized as an international healthcare leader by organizations such as the US State Department. Her essay on "Embracing the science of behavior change" will be included in Healthcare Information and Management Systems Society's (HIMSS) Medical Informatics 4th ed.

Ms. Surve has an MBA from the University of Chicago, an MSME in Biomechanics from Pennsylvania State University and a bachelor's degree in Bioengineering from the University of Illinois at Chicago. She has been featured in international, national and regional media outlets including Huffington Post, International Business Times, NPR's KUOW's Morning Edition, APM: Marketplace, VentureBeat, Kauffman Foundation and iMedicalapps.

In her role as a healthcare technologist, Ms. Surve observed that individual motivation, not technology, was the key to improving a person's health. Beginning her research in this area in 2011, she saw there were over 40 peer-reviewed research papers indicating that gaming could improve health outcomes – but there were no commercialization efforts. She felt an end-to-end system approach – an effective marriage of technology that strengthens the patient-clinician relationship – was the key to making transformative change.

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RAJWANTH VELUSWAMY, MD, MSCR

Dr. Rajwanth Veluswamy is an assistant professor of Medicine, Hematology and Medical Oncology, and a board-certified medical oncologist who specializes in the treatment of lung cancer and other thoracic malignancies. He completed both a clinical fellowship in Hematology and Medical Oncology and a General Medicine research fellowship at the Icahn School of Medicine at Mount Sinai. Prior to this, he completed residency in Internal Medicine at Methodist Dallas Medical Center and a research internship at MD Anderson Cancer Center in Houston. He earned his MD from the University of Szeged and a master of science degree in Clinical Research at Mount Sinai. Dr. Veluswamy is a translational researcher focused on studying predictive biomarkers and developing novel targeted and immunotherapy trials aimed at improving treatment outcomes in lung cancer patients. He is the recipient of an American Society of Clinical Oncology (ASCO) Young Investigator Award, Clinical and Translational Science Awards (CTSA) KLD Scholars Award and a Lung Cancer Research Foundation grant to support his research. He is principal investigator of several lung cancer trials, including investigator-initiated trials based on proteogenomic analyses used to identify novel therapeutic targets.
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ANDREW C. VON ESCHENBACH, MD

James L. Mulshine Leadership Award Presenter and 2019 Recipient

Dr. Andrew von Eschenbach is president of Samaritan Health Initiatives, Inc. He was formerly the director of the National Cancer Institute and Commissioner of the Food and Drug Administration. He served at the University of Texas M.D. Anderson Cancer Center as a physician, surgeon, oncologist and executive including chairman of the Department of Urologic Oncology and executive vice president and chief academic officer. An author of over 300 articles, Dr. von Eschenbach was named by Time magazine one of the “100 most influential people to shape the world,” and by Modern Healthcare as one of the “50 Most Powerful Physician Executives in Healthcare.”
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LAISHA WASHINGTON

Ms. Laisha Washington is a healthcare executive with over 15 years of quality and performance improvement, clinical quality measurement, audit and managed care operations experience. She is passionate about making a difference in the healthcare of individuals and populations. In her role at Healthfirst, the largest not-for-profit payer serving members in downstate New York, she has oversight of the Clinical Quality, Clinical Documentation & Coding and Health Information Exchange teams. These team are comprised of clinical, technical and coding professionals who develop and execute strategies and programs directed at members and providers. In this role, she delivers meaningful results in a provider-sponsored, value-based care environment while focusing on establishing health equity among the vulnerable populations served by Healthfirst.
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George Washko, MMSc, MD

Dr. George Washko is a physician at Brigham and Women’s Hospital (BWH). He is also an associate professor of medicine at Harvard Medical School.

He received his medical degree from Georgetown University School of Medicine. Dr. Washko then completed a residency in internal medicine at Beth Israel Deaconess Medical Center, followed by a fellowship in pulmonary and critical care medicine disease in the Harvard Combined Fellowship for Pulmonary and Critical Care Medicine. He is board certified in critical care medicine and pulmonary disease.

Dr. Washko is a National Institutes of Health-funded investigator in chronic obstructive pulmonary disease (COPD), specifically focusing his work in imaging and quantitative image analysis. He is also one of the co-primary investigators for the NHLBI-funded American Lung Association Lung Health Cohort (ALA-LHC). This study will enroll 4,000 millennials and ask them to undergo detailed characterization to understand the earliest manifestations of loss of lung health. Dr. Washko’s lab leads multiple investigator-initiated studies and serves as an analytics core for federal and industry sponsored national and international clinical investigations. The breadth of these collaborations has provided investigators in Dr. Washko’s lab the opportunity to identify and develop areas of interest that enable their transition to independence.

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IGNACIO I. WISTUBA, MD

Dr. Ignacio Wistuba is head ad interim of the Division of Pathology and Laboratory Medicine, professor and chair of the Department of Translational Molecular Pathology with joint appointment in the Department of Thoracic/Head and Neck Medical Oncology, and co-director of the Khalifa Institute of Personalized Cancer Institute at the University of Texas MD Anderson Cancer Center. He is also the director of the Thoracic Molecular Pathology Laboratory, director of the UT Lung Specialized Programs of Research Excellence (SPORE) Tissue Bank, director of the ECOG-ACRIN (Eastern Cooperative Oncology Group-American College of Radiology Imaging Network) Central Biorepository and Pathology Facility, pathologist for the SWOG Lung Cancer Committee and the Lung Cancer Mutation Consortium and co-director of the pre-CLIA Genomic Testing Developmental Laboratory. He is associate editor of *Annals of Oncology* and *Cancer Prevention Research*.

Dr. Wistuba's major research interest is the elucidation of the molecular abnormalities involved in the pathogenesis and progression of lung cancer and other solid tumors. He has co-authored over 650 papers in peer-reviewed journal and several book chapters. His research interests also include identifying new molecular targets, validating biomarkers for targeted therapy and immunotherapy, and identifying molecular markers associated with lung cancer and other solid tumors development, progression and metastasis development using annotated human specimens. He is principal investigator and co-principal investigator on several molecular pathology and biomarker projects supported by multi-investigators and multi-institutional grants, and research agreements, including MD Anderson National Cancer Institute (NCI) Cancer Center Support Grants Tissue Bank and Pathology Resource, Cancer Prevention and Research Institute of Texas Multi-Investigators Research Awards, two NCI-U24 grants supporting the ECOG-ACRIN Central Biorepository and Pathology Facility and the MD Anderson Center Immune Monitoring and Analysis Center (CIMAC).

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DAVID YANKELEVITZ, MD

Steering Committee Member, Quantitative Imaging Workshop

Dr. David Yankelevitz is a professor of Radiology and the director of the Lung Biopsy Service at the Icahn School of Medicine. He is a world-recognized expert on Fine Needle Aspirations (FNAs) of lung nodules and he has developed one of the largest biopsy practices in the United States.

Also, a researcher, Dr. Yankelevitz's main academic interest is in the evaluation of treatments for early-diagnosed lung cancer and he has been the co-principal investigator of the Initiative for Early Lung Cancer Research on Treatment (IELCART) since its inception in 2015. As part of that program, and in order to advance the diagnosis and treatment of lung cancer, one of his contributions was to develop the idea of evaluating lung nodule growth rates to create benchmark measurements that assess cancer risk. In addition to the IELCART research, Dr. Yankelevitz has, for the past 20 years, been a co-principal investigator of the International Early Lung Cancer Action Program (I-ELCAP) – a lung cancer screening study which, to date, has screened over 80,000 people in 10 countries around the world and he has been principal investigator on four National Cancer Institute (NCI) grants.

Dr. Yankelevitz has co-authored over 300 peer-reviewed articles and book chapters, and he has trained 40 research fellows in thoracic imaging. Prior to joining the faculty at Mount Sinai in 2010, he was a professor of radiology at Weill Cornell Medical College in New York City. Dr. Yankelevitz received his MD from SUNY Downstate Medical Center.

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JAVIER J. ZULUETA, MD, FCCP

Dr. Javier J. Zulueta is a world-renowned pulmonologist, associate professor and 20-year director of Pulmonary Medicine at the Clinica Universidad de Navarra, the teaching hospital of Spain's University of Navarra School of Medicine. He leads the longest ongoing lung cancer screening trial in Europe since 2000. The study is part of the International Early Lung Cancer Action Program (I-ELCAP) consortium, of which he has been a principal investigator since its inception in 2000. Dr. Zulueta's research interests include lung cancer screening and the relationship between lung cancer, COPD and emphysema.

Dr. Zulueta also recently served as chief medical officer of VisionGate. He is a Fellow of the American College of Chest Physicians and Member of the American Thoracic Society, American Respiratory Society, European Respiratory Society and Spanish Association of Pulmonary Medicine and Thoracic Surgery. He has authored more than 100 publications in peer-reviewed journals and has been an invited lecturer at more than 100 international conferences.

Dr. Zulueta received his medical doctorate from the Universidad Complutense in Madrid, Spain. His specialization in pulmonary and critical care medicine was earned at Tufts Medical Center, Tufts University School of Medicine in Boston.

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