

RICHARD J. COTE, MD, FRCPath, FCAP

Richard J. Cote, MD, FRCPath, FCAP is the Edward Mallinckrodt Professor, Chair and Professor of the Department of Pathology and Immunology at Washington University in St. Louis School of Medicine, and the Pathologist in Chief at Barnes Jewish Hospital.

Dr. Cote earned degrees in chemistry and biology at the University of California at Irvine and his medical degree from the University of Chicago - Pritzker School of Medicine. He completed his residency at New York Hospital - Cornell University Medical College. His training included fellowships in pathology at Memorial Sloan-Kettering Cancer Center, Human Tumor Immunology at Memorial Sloan-Kettering Cancer Center in the lab of Lloyd Old and in Molecular Pathology at New York University School of Medicine in the lab of Angel Pellicer. Dr. Cote began his career at the University of Southern California Keck School of Medicine, rising to Professor in departments of Pathology and Urology and Director in the Genitourinary Cancer Program, Laboratory of Immunology and Molecular Pathology and USC Biomedical Nanoscience Initiative. In 2009, he became the Joseph R. Coulter Jr. Chair of the Department of Pathology and Professor of Biochemistry and Molecular Biology. He is founding Director of the Dr. John T. Macdonald Foundation Biomedical Nanotechnology Institute at the University of Miami.

At Washington University in St. Louis, Dr. Cote has continued to build the Department of Pathology and Immunology in scientific discovery, clinical innovation and education. Under his leadership, the department has recruited outstanding scientists, and has created two new centers, the Brain Immunology and Glial (BIG) Center, which focuses on research of brain immunology and aging, and the Vaccine Center. He and his colleagues are leading a transition from traditional methods of delivering pathology services to the adoption and creation of advanced tools, in particular digital pathology, that will allow the expansion of Washington University expertise providing unprecedented access to expert pathologists and services.

Cote is internationally recognized as one of the founders of the field of Liquid Biopsy (LB), known for advancing technologies, clinical trials, and fundamental discovery. His over three decades of contribution include fundamental work developing highly sensitive assays to detect occult tumor cells in bone marrow and lymph nodes, their clinical importance in patient management, the special molecular phenotypes of circulating tumor cells, and the role of circulating cells of the tumor microenvironment. His discoveries have led to some of the largest clinical trials in breast, lung and prostate cancer, demonstrating the importance of detecting occult dissemination of cancer.

He has a special interest in developing tools that can allow advances in research and clinical care and has over 20 patents for cancer related and nanoscale technologies. He and his colleagues across universities have developed nanoscale technologies for cancer diagnostic applications, including bionanosensors for the detection of serum tumor markers; technologies for the capture, characterization and propagation of CTC; and advanced methods of microscopy and imaging. Most recently he and his colleagues at Wash U and CalTech have applied AI to digital microscopy, demonstrating in a potentially ground breaking study that AI analysis of digital histologic images of primary early stage lung cancer can predict precisely which tumors will go on to form metastasis, a feat not possible for human pathologists. His team is now dissecting how AI learns and is exploring ways to circumvent the as yet unsolved barriers inhibiting the general application of AI on digital histologic images, which is the subject of his talk today.

Dr. Cote is the recipient (PI or co-PI) of over \$190 million in research support and is the author of over 300 publications, including several standard textbooks in both his research and clinical areas of expertise. His awards include the 2013 Distinguished Alumnus of the Year by the School of Physical Sciences at the University of California, Irvine, election to the Association of American Physicians in 2010, recipient of the Miami Chamber of Commerce Bio-Medical Healthcare Heroes Award and Society for Personalized Nano-Medicine Excellence Service Award. In 2021 Dr. Cote was elected to the National Academy of Inventors.

Dr. Cote is the founder of several technology-based companies, including Impath, Inc., Clariant, Filtini, Sensitini and Circulogix. Impath, one of the first companies to bring esoteric testing for cancer analysis to the market, was founded in 1988 and underwent an IPO in 1996. Dr. Cote later founded Clariant, which brought high tech diagnostic capabilities to practicing pathologists and oncologists and was acquired by GE in 2009. Dr Cote has been an advisor to numerous biotech and biopharmaceutical companies, including Genentech, Roche, Lilly, Neoprobe, Johnson and Johnson Ortho Pharmaceuticals, Abbott/Vysis, GoPath, Illumina, GRAIL and SimonMed.