Today's plenary is an award lecture by Richard M. Caprioli of Vanderbilt University. Caprioli is the recipient of the 2019 ABRF Annual Award. The ABRF Award recognizes those pioneers responsible for development of these powerful new tools that serve as the foundation of the modern biological research enterprise. Dr. Caprioli has had a pivotal role in the development of matrix-assisted laser desorption ionization (MALDI) imaging mass spectrometry and its application to molecular mapping of tissues in biology and medicine.

In MALDI imaging mass spectrometry, molecular measurements can be made directly from tissues, adding significantly to the information that can be obtained from these specimens. Caprioli's work on this technique has made significant contributions to the study of proteins, lipids, metabolites, and pharmaceutical compounds. Since the publication of his seminal 1997 paper (1) showing the power of MALDI imaging mass spectrometry for tissue analysis, Caprioli has pioneered advancements in sample preparation, instrumentation, and informatics approaches that have considerably advanced the technology and made it accessible to hundreds of laboratories worldwide.

The impact of his work is evident in the numerous commercial platforms that use this technology. Approximately 2,500 papers have been published to date on the subject of MALDI imaging mass spectrometry. Now, Imaging mass Spectrometry uses many instrument platforms, different ionization and visualization tools, and has spread across many research areas.

Richard M. Caprioli is the Stanford Moore Chair in Biochemistry and Director of the Mass Spectrometry Research Center at Vanderbilt University School of Medicine. He is also currently Professor in the Departments of Chemistry, Medicine and Pharmacology at Vanderbilt University. Dr. Caprioli received his B.S. in 1965 from Columbia University in New York, N.Y., his Ph.D. in 1969 in Biochemistry, also at Columbia University with Professor David Rittenberg. He did a one-year postdoctoral fellowship at Purdue University with Professor John H. Beynon. In 1970, he was appointed as Assistant Professor of Biochemistry at Purdue. In 1975, Dr. Caprioli moved to the University of Texas Medical School in Houston where he was Professor of Biochemistry and Molecular Biology and Director of the Analytical Chemistry Center until his move to Nashville in early 1998.

(1) Caprioli, R.M., Farmer, T.B., and Gile, J. (1997). Molecular Imaging of Biological Samples: Localization of Peptides and Proteins Using MALDI-TOF MS. Analytical Chemistry 69, 4751–4760.