MassTech @ ASMS 2022 Breakfast workshops

Please visit us at 70th ASMS Conference on Mass Spectrometry and Allied Topics. Stop by at booth #603 to see MTE-30, AP-MALDI, SunChrom SunCollect system.

We are happy to invite you to our breakfast workshops on Tuesday June 7th, 2022 at Room 200A, Minneapolis Convention Center.

Tuesday, June 7, 7-7:15 am

Presenter: Prof. Enrico Davoli, Coordinator, Mass Spectrometry Research Center for Health and Environment, Head, Mass Spectrometry Laboratory, Environmental Health Sciences Department, Istituto di Ricerche Farmacologiche Mario Negri IRCCS, Via Mario Negri 2, 20156 Milano, Italy

Title: Pseudo-resistance in cancer. New insights with AP-MALDI MSI.

Abstract: Resistance to chemotherapy is a challenging clinical problem in the treatment of solid tumors. The molecular mechanisms underlying this phenomenon are several and not completely elucidated. One important factor, often neglected or underestimated, is related to the influence of tumor microenvironment on drug pharmacokinetics. The reasons for low delivery in tumor tissue are mainly due to the altered tumor microenvironment, characterized by abnormal vasculature, reactive desmoplastic stroma, increased interstitial fluid pressure, solid stress, hypoxia, and inflammation. In fact, there is little attention to the concentration of drugs in the blood while we know that drugs given orally are subjected to absorption, distribution, binding to proteins and elimination inducing a large variability among different subjects. The heterogeneous drug distribution leading to low drug concentration in different areas of the tumor can contribute further to the appearance of this kind of resistance. In this field, mass spectrometry imaging (MSI) shows the capability to implement the information provided by traditional methods and to go deeper in drug distribution studies. MSI can be applied to visualize potentially every tissue component localizing the molecule of interest. Exploiting this potentiality, MSI can co-localize endogenous compounds (such as metabolites, particular tissue structure, or biomarkers) with the drugs. Heterogeneous spatial distribution of drugs in solid tumours represents a situation of pseudo-chemoresistance, because tumour cells grow not because they are resistant but because they have never been in contact with the drug.

Tuesday, June 7, 7:15-7:30 am

Presenter: Prof. Jace Jones, Associate Director of the Mass Spectrometry Center, Department of Pharmaceutical Sciences, University of Maryland School of Pharmacy

Title: The use of AP-MALDI for structural insight into viral envelope lipids and other biomedical applications.

Abstract: There is an unmet need to develop analytical strategies that not only characterize the lipid composition of the viral envelope but also do so on a time scale that would allow for high-throughput analysis. We will discuss the use of atmospheric pressure (AP) matrix-assisted laser desorption/ionization (MALDI) mass spectrometry to profile lipid extracts rapidly and confidently from enveloped viruses. The use of AP-MALDI reduced the dependency of using a dedicated MALDI mass spectrometer and thus increased MALDI accessibility to leverage existing laboratory infrastructure. Importantly, this allows us to interface the AP-MALDI source to a mass spectrometer with desired analytical features (e.g., high-resolution, MS/MS, and/or ion mobility), and provides the convenience of readily switching between AP-MALDI and ESI sources. The developed workflow included the structural characterization of lipids and detection of unique lipid profiles from Influenza A and SARS-CoV-2 virions. In addition, we will highlight the advantages AP-MALDI provides for lipid analysis in general across a diverse set of biological matrices and its applicability to mass spectrometry imaging.

Tuesday, June 7, 7:30-7:45 am

Presenter: Dr. Patrick Feddick, Naval Air Warfare Center Weapons Division

Title: Navy Applications of Portable Mass Spectrometry

Abstract: There are a number of completed and on-going projects at the Naval Air Warfare Center Weapons Division that rely on field portable mass spectrometers. Recent published projects performed on the MTE 50 and the transition to current work on the new MTE 30 will be discussed. Projects span soil sampling for trace contaminants to on-line reaction monitoring.

Q&A and Networking: 7:45-8:15 am

Hope to see you at Minnesota!