

## **Imaging Mass Spectrometry Interest Group Workshop Report 2023**

Workshop held Tuesday, June 6<sup>th</sup> 5:45-7:00 pm at the ASMS Annual Conference in Houston, TX.

### **Topic:**

Imaging MS: Isomer differentiation in Biological Imaging

### **Moderators:**

Ingela Lanekoff – Uppsala University; Uppsala, Sweden  
Boone Prentice – University of Florida; Florida, United states

### **Session Description and Goals:**

The differentiation of chemical isomers in mass spectrometry imaging can provide important information on biological processes. However, there are a number of limitations and challenges associated with separating and identifying isomers in conventional biological imaging workflows. A growing number of creative approaches and impressive methods have been reported recently, revealing new levels of chemical detail that provide novel insights into cellular biochemistry. Yet, the almost infinite number of isomeric compounds in biological systems suggests that additional efforts and tools are still required by the community. This workshop aims to discuss the current state of the field and the importance of defining the analyte with isomeric structural resolution. We also seek to highlight promising methods and paths forward that will increase the number of isomers that can be separated in mass spectrometry imaging.

### **Session Organization:**

The workshop session topic and inquiry to find interested junior speakers was sent to world-wide research leaders in the field. A lineup of speakers was curated from the responses to highlight an array of the topics within the session description. In the final format seven junior researchers each gave a 5 minute targeted presentation on the topic to show the diversity of strategies for MSI with isomer differentiation. The presentations were followed by a general discussion where the speakers served as a panel. The speakers were introduced by the moderators who also facilitated the discussion between the audience and the panel.

### **Speakers and Panelists:**

**Xiaomin Fan (Tsinghua University, China)**  
**Jesse Michael (University of Wollongong, Australia)**  
**Katerina Djambazova (Vanderbilt University, USA)**

**Sara Amer (Purdue University, USA)**  
**Melanie Campbell (University of Texas, USA)**  
**Tingting Yan (University of Florida, USA)**  
**Varun Sharma (Uppsala University, Sweden)**

**Discussion:**

The speakers gave short, on-time and informative presentations on the topic that together provided a nice overview for the following discussion. The talks were well-received and inspirational, as judged by the many and interesting questions during the panel discussion. During the panel discussion the audience showed high interest and contributed with many and diverse questions to the panel. The panel response were on-point and explanatory. Broadly, the differentiation of isomers in mass spectrometry imaging is an expanding area with lots of potential to grow.

Several speakers highlighted the need to differentiate isomers in biological samples and the required awareness in the community for the presence of isomeric species within mass channels. The majority of the isomers presented were phosphatidylcholine species, which provoked a discussion around the required sensitivity to identify isomers. Overall, the panel provided a good overview on this emerging topic and the audience was engaged and positive to the topic, material and the format.

**Participants:**

Room attendance was estimated at ~120 attendees.