Report on workshop convened by Lipid Mass Spectrometry and Lipidomics Interest Group

63[rd]ASMS 2015, St Louis

"The Big Fat Questions: The future for lipidomics in cell biology and clinical diagnostics?"

co-chairs:
Prof Stephen Blanksby (Queensland University of Technology)
A/Prof Christer Ejsing (University of Southern Denmark)

The original proposal for this workshop is stated below:

"Innovation in mass spectrometry has fueled the rapid expansion of lipidomics research over the last decade. Increasingly powerful instrumentation and accompanying software tools are now available to wide range of researchers around the world. This workshop will reflect on some of the big research questions in cell biology, biotechnology and clinical medicine and ask whether current mass spectrometry-based lipidomics can underpin future breakthroughs in these disciplines. The discussion will be led by a panel of experts who will opine on current impediments to development in their respective fields. Panellists will challenge participants to consider how lipid mass spectrometry can breakthrough such roadblocks and drive innovation in biochemical understanding, clinical diagnosis or novel therapeutics. Conceptual discussion will then be facilitated on whether currently available lipid mass spectrometry approaches can provide these answers or whether new technology is required."

The workshop was held on Wednesday June 3rd (5:45-7:00 pm in convention centre 274) and was attended by approximate 120 conference delegates.

Prof Stephen Blanksby facilitated the workshop and verbal discussions while **A/Prof Christer Ejsing** moderated an interactive online discussion using (poll everywhere interface, http://www.polleverywhere.com/). Of those participating in the online discussion (ca. 60), poll data indicated that their main interests in lipid mass spectrometry were from a perspective of method development (30%), structural identification (16%), clinical applications (28%) and lipid biochemistry (26%).

Prof Xianlin Han (Sanford Burnham) spoke briefly to the emerging challenges for lipid mass spectrometry in addressing the big challenges in lipid biochemistry. His contribution prompted the audience to consider the following questions:
- Can we understanding the role of lipids in systems biology?
- What can we understand about the lipid composition of subcellular organelles?
- Can we elucidate the compositional diversity of structural complexity of lipids?
- How can we track the dynamics of lipids in organisms and cells?
- Can lipidomics alone allow us to elucidate lipid metabolism?

Prof Ian Blair (University of Pennsylvania) spoke briefly to some of the emerging applications of lipidomics in clinical medicine. This prompted discussion on the following questions:
- Can lipids be used as robust diagnostics?
- When will physicians trust lipid-based diagnostics?

Dr John Bowden (National Institute of Standards and Technology) described an inter-laboratory comparison he is undertaking at NIST. The scope of the study was outlined and some of the preliminary data. This presentation prompted extensive discussion (which unfortunately had to be cut short dues to constraints of time). There was a strong desire indicated by the workshop participants that an update on this project would be a very useful contribution to future workshops. Other topics identified from this discussion were related to technologies and what would be required for the future evolution of the field included:

- More high performance platforms
- Greater documentation of performance and robustness of workflows
- Sharing of data
- Expanded databases
- MSMS spectral libraries
- Better tools for sub-cellular fractionation

A snapshot of the poll data for the question "What topics do you want discussed at ASMS 2016?" is provided below for the consideration of future workshop facilitators.

5. What topics do you want discussed/presented/addressed at the ASMS 2016?

When poll is active, respond at **PollEv.com/ff503**

Top

3	Update on NIST inter laboratory study
5	More discussion on data quality
2	Come to the ASMS Fall workshop
3	Longer workshop
1	Where is the future of the lipidomics ?
2	Beer at workshop

It is noted that beer was available!