



Application of imaging, subcellular and single cell proteomics to dementia research

Hybrid meeting

16 September 2022, 9:30 – 17:00

We welcome you to join us in Dundee for the 2022 UK DRI proteomics symposium which will showcase the applications of mass-spectrometry imaging, subcellular and single cell proteomics to research into neurodegenerative disease and create collaborations in dementia research. This symposium is funded by the UK DRI but is open to everybody with no registration fees.

There are discounts to travel and accommodation available, please use the links and discount codes available on our website <https://www.conventiondundeeandangus.co.uk/attending/conferences/uk-dri-proteomics-workshop-2022>

Interpreting biological information in the context of position or location in a tissue or cell can reveal vital information to interpret the complexities of neurodegenerative disorders. Spatial techniques to map the metabolome, transcriptome and lipid content of tissues and cellular neighbourhoods are producing datasets which provide insights into degenerative conditions including Alzheimer's disease and Parkinson's disease. To achieve similar aims in the proteome we can apply a set of tools based on mass spectrometry to accurately map the full range of proteins in a tissue or cell. This symposium will present work from a panel of researchers at the leading edge of the application of mass-spectrometry imaging, subcellular and single cell proteomics to study neurodegenerative disease.

Objectives:

- **Bring together** UK DRI scientists interested in mass-spectrometry imaging, subcellular and single cell proteomics with specialist experts in the field.
- **Share information** on cutting edge techniques and the opportunities they present to the ongoing research programmes in the UK DRI.
- **Discuss** how these applications could specifically be applied to the work of UK DRI scientists.
- **Informally scope partnerships for future collaborations** and announce small-grant seed funding to support work with the Proteomics platform or one of the symposium speakers.

Hybrid symposium format:

The symposium will be held in person at Discovery point in Dundee, a city with a world-leading reputation for Mass Spectrometry. For in person attendees there will be refreshments and lunch provided followed by a drinks reception aboard the RRS Discovery. We would encourage you to attend if you can but will also provide a virtual stream of the conference through Zoom. There is a maximum capacity of 150 people so please book your places early.

Founding funders:



Programme

UK DRI Proteomics Symposium, 16th September 2022, Discovery Point, Dundee	
09:30 – 09:45	Welcome, housekeeping <i>Blanca Diaz-Castro and Beth Geary, Symposium Co-chairs</i> Introduction to the day: The potential of proteomics to advance dementia research <i>Bart de Strooper, UK DRI Director</i>
Morning Session: 9:45 – 12:30 – Mass-spec imaging and single-cell proteomics	
09:45 – 10:15	Corelative imaging using MSI, STED Super Res and EM in the brain <i>Thu Ngoc Nhu Phan, Gothenburg</i>
10:15 – 10:45	Application of MSI <i>Speaker TBC</i>
10:45 – 11:00	Break
11:00 – 11:30	Mass-spec imaging and machine learning to uncover perturbations induced by experimental parkinsonism <i>Per Andren, Uppsala</i>
11:30 – 12:00	Single-cell proteomics to study ALS in patient samples <i>Roman Fischer, Oxford</i>
12:00 – 12:30	Single-cell proteomics with Scope2 / macrophage heterogeneity work <i>Edward Emmot, Liverpool</i>
12:30 – 13:15	Lunch
Afternoon Session: 13:15 – 17:00 – Spatial proteomics and imaging mass cytometry	
13:15 – 14:00	Spatial proteomics with LOPIT and others <i>Kathryn Lilley, Cambridge</i>
14:00 – 14:30	Cellular Tomography (whole-cell crosslinking mass spectrometry + cellular cryo-EM + integrative modelling) <i>Juri Rappsilber, Edinburgh</i>
14:30 – 15:00	Chemico-genetic discovery of astrocytic control of inhibition in vivo using biotinylation-based vicinity labelling and mass spectrometry <i>Scott Soderling, Duke</i>
15:00 – 15:30	Imaging Mass Cytometry <i>Jo Jackson from MAP team at Imperial</i>
15:30 – 15:45	Break
15:45 – 16:45	Flash talks from UK DRI researchers working with mass-spectrometry based proteomics <i>Speakers TBC</i>
16:45 – 17:00	Small Grant Funding Announcement and Symposium Close <i>Symposium co-Chairs</i>
17:00 -	Drinks reception aboard the RRS Discovery