Biological Mass Spectrometry Suite NUIG

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Equipment and expertise
Liquid Chromatography Mass Spectrometry (LC/MS) is now an essential central and enabling technology in much biological, medical and environmental research and is easily accessible to the local NUIG research community and to others from either industry or other educational/research institutes. Our state of the art mass spectrometers are electrospray/nanospray ionization enabled LC/MS/MS systems and are interfaced with both capillary and standard nanoflow HPLC chromatographic inlets. Brendan and Edel have over 26 combined years mass spectrometry experience behind them. Please contact us if you have any queries on services or are just looking for advice upfront of experiments.

Bruker ion trap

The Bruker HCT Ultra PTM discovery system ion trap is interfaced with a Dionex ultimate 3000 capillary/nanoflow HPLC. This high capacity ion trap features enhanced resolution, ultra-fast scanning, and an extended mass range to 3000 m/z and ETD capability. ETD significantly improves detection and assignment of labile post translational modifications. This very sensitive ion trap is configured for routine proteomics applications such as protein identification and also supports programmes investigating location sites for post translational modifications. A workhorse for biological applications – easy to use and robust.

Agilent triple quadrupole (QQQ)
Agilent quadrupole time of flight (QTOF) systems

The ultrasensitive Agilent 6460 QQQ tandem quadrupole system is interfaced with an Agilent 1200 capillary/nanoflow HPLC inlet. Used for robust, reliable, accurate and ultra-trace quantitation in complex matrices, this instrument currently supports programmes quantifying small bioactive metabolites, environmental analyses and targeted protein quantitation by multiple reaction monitoring mode. This is the instrument of choice for targeted quantitative analysis in biological and environmental applications.

Our Agilent 6510 QTOF system supports applications where high resolution and accurate mass are necessary. The system has an Agilent 1100 capillary/Nano flow inlet. The resolution is 13,000 at 2721 m/z and mass accuracy is sub 3 ppm in MS and sub 5 ppm in ms/ms mode after calibration. Used for proteomics and metabolomics applications or where highest quality data quality is essential. Slightly less sensitive than the ion trap but generates better quality more confident data. Both of these instruments are chip cube enabled for robust and reproducible nanoflow HPLC applications.
Mass spectrometry services routinely available
- Endocannabinoid quantitation - QQQ
- Eicosanoid quantitation - QQQ
- Fatty acid quantitation - QQQ
- Protein identification - QTOF
- Protein intact mass determination – QTOF
- Accurate mass of small molecules/peptides - QTOF

Mass spectrometry services available (some method development/optimisation may be required)
- Partial/complete denovo sequencing of peptides using Peaks software - QTOF
- N and O glycan profiling and characterization - QTOF
- Labile PTM analysis by ion trap ETD - ion trap
- Glycoproteomics - ion trap
- Targeted Protein quantitation by MRM - QQQ
- Other Targeted bioanalytical assays - QQQ

Selected Recent Publications


