Scientific facilities available at the Babraham Institute

Mass Spectrometry

The Babraham Institute provides unique research facilities of national importance. These have been developed with significant investment from the BBSRC. The Mass Spectrometry Facility is equipped with a range of high resolution systems, which can be used for the identification, characterisation and quantitation of almost any type of biomolecule. We use mass spectrometry to identify the molecules involved in complex biological processes, characterise their structure and monitor how their abundance or structure may change during these processes, in order to gain insights into the underlying molecular mechanisms.

Areas of expertise

The Facility has expertise in all aspects of mass spectrometric analysis of biological molecules, particularly proteins, but also DNA/RNA, carbohydrates and small molecules. Much of our work is directed towards understanding the functions of specific proteins and epigenetic DNA modifications. We are also able to meet a wide range of analytical challenges, for example:

- Accurate mass measurement of an intact protein (<10ppm) or small molecule (<1ppm)
- Peptide mapping by LC-MS/MS
- Protein identification (and relative quantification) in:
  - » Purified samples (e.g. gel band)
  - » Moderately complex samples (e.g. immunoprecipitated protein complex)
  - » Highly complex samples (e.g. subcellular fraction or total cell lysate)
- Identification and localisation of protein post-translational modifications
- Development of quantitative LC-MS/MS assays for the analysis of specific proteins/small molecules in complex matrices
- Quantification of modified bases (e.g. 5-methylcytosine and 5-hydroxymethylcytosine) in DNA

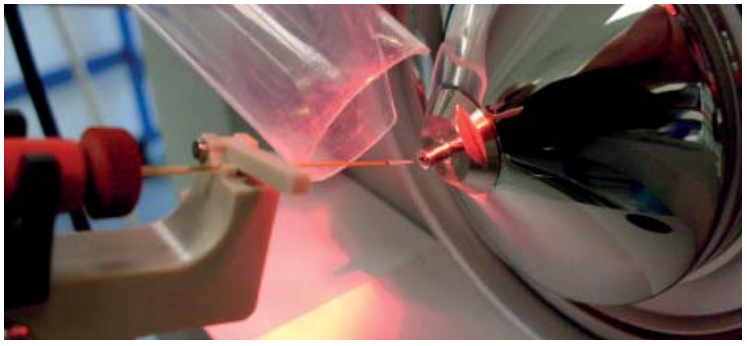
Equipment

The Facility is equipped with three state-of-the-art high resolution tandem mass spectrometers all with nano-electrospray ion-sources, as well as a high-resolution MALDI-TOF mass spectrometer. We have nanoLC systems which can be used with any of the tandem mass spectrometers for on-line LC-MS analyses.

- Thermo Scientific Orbitrap Velos Pro hybrid ion trap-Orbitrap mass spectrometer
- Thermo Scientific Q Exactive Plus hybrid quadrupole-Orbitrap mass spectrometer
- Thermo Scientific Q Exactive hybrid quadrupole-Orbitrap mass spectrometer
- AB Sciex Voyager DE-Pro MALDI mass spectrometer
- Dionex UltiMate™ 3000 RSLCnano Systems
- Proxeon nanoLC systems

Pricing

Prices for use of the Facility's services are available on request.



Babraham Institute Enterprise

To find out more: info@babrahamie.co.uk

www.babraham.ac.uk/science-services/mass-spectrometry

Babraham Institute

Scientific facilities available at the Babraham Institute

Bioinformatics
The Bioinformatics group have a wide range of experience covering virtually all aspects of modern bioinformatics and statistics in both academic and commercial settings.

Biological Chemistry
The Biological Chemistry Facility provides a research capability to solve biological problems through the use of chemical knowledge and synthetic chemistry skills.

Biological Support Unit
The Biological Support Unit (BSU) provides housing and care for rodents at a highly defined health status, offering the highest standards of welfare, excellence in husbandry and procedural technique to support both academic scientific research programmes and private companies.

Flow Cytometry
The Flow Cytometry Facility offers high quality service and state-of-the-art instrumentation to members of the Babraham Institute and external companies, including those based on the Babraham Research Campus.

Gene Targeting
The Babraham Gene Targeting Facility provides a complete service to generate novel genetically altered mouse strains for biopharmaceutical companies and academic institutes.

Imaging
The Imaging Facility provides supported access to state-of-the-art fluorescence imaging technologies and offers expertise in live and fixed cell imaging.

Lipidomics
The Babraham Lipidomics Facility has established a series of LC-MS/MS, GC-MS/MS and HR/AM direct infusion mass spectrometric methods to analyse 37 classes of neutral lipids, phospholipids and sphingolipids from various biomedical samples.

Mass Spectrometry
The Mass Spectrometry Facility is equipped with a range of high resolution systems, which can be used for the identification, characterisation and quantitation of almost any type of biomolecule.

Sequencing
The Next Generation Sequencing Facility provides library quality control and sequencing services for the Babraham Institute and external companies, offering a variety of sequencing solutions for different project sizes and a broad range of applications.