Higher Order Protein Structure Elucidation by HDX-MS

The Orbitrap Based Workflow Solution

The Thermo Scientific™ HDX Workflow comprises a H/D-X PAL™ Hydrogen Deuterium Exchange sampler system (LEAP Technologies) and Thermo Scientific™ UltiMate™ 3000 UHPLC system, coupled online with the Thermo Scientific™ Orbitrap™ Platform of mass spectrometers. The system is fully automated and controlled by Chronos Software™ (LEAP Technologies) fully integrated with Thermo Scientific™ Xcalibur™ software.
Sample handling
- H/D-X PAL autosampler with single head with syringe exchange
- Standalone pepsin column chamber to enhance peptide coverage
- Closed chamber for stable temperatures for all vials
- Flexible 3 valve configuration in the cooling chamber allowing efficient sample cleanup
- Chronos software with full editing capabilities for method customization and full integration of Xcalibur software.

LC pump
- Thermo Scientific™ Dionex™ UltiMate™ NCS-3500RS Binary Rapid Separation micro flow pump
- Ternary loading pump with flexible flow rate and solvent selection
- Fully editable LC conditions throughout the experiment

Mass spectrometer
- High resolution and accurate mass necessary for specificity with short chromatographic runs required to prevent back exchange and to allow precise measurement of deuterium incorporation.
- High quality Orbitrap DDA spectra in conjunction with Thermo Scientific™ BioPharma Finder™ Software ensures confident and rapid identification of all peptides
- Ultimate precision with ETD fragmentation to allow localization of deuterium exchange to the amino acid level
- The HDX-MS platform can be applied to run HDX and any other application

Data analysis
- BioPharma Finder: one software solution for peptide identification, PTM analysis and HDX data analysis.
- HD Examiner: a complete software solution for top-down and bottom-up HDX data analysis.