



Biotherapeutic Lab Services

CovalX offers a unique Contract Research Organization (CRO) service laboratory specializing in characterizing biotherapeutics by mass spectrometry. Our clients include many of the largest pharmaceutical companies and smaller biotech companies worldwide, taking benefits of our facilities in both Europe and the USA. CovalX scientists have the know-how and experience to understand your needs in the fields of protein analysis and antibody characterization.

Biotherapeutics and their interactions

The characterization of biotherapeutics and biotherapeutics interactions is a prerequisite to evaluate the potential of a new biotherapeutic under development. The use of mass spectrometry is essential to better understand, with high accuracy, the key properties of your proteins of interest:

Direct Biotherapeutic Analysis:

- Intact mass determination (Reduced and Deglycosylated)
- Peptide Mass Fingerprint (PMF, Sequence Verification)
- De Novo Sequencing
- Post-Translational Modifications (PTMs)
- Disulfide Mapping and free Sulfhydryls Analysis
- Glycans Characterization (Glycan Patterns, Glycosylation Sites)
- Conformational Characterization (HDX-MS)

Biotherapeutic Interaction Analysis:

- Epitope Mapping: Conformational and Linear (HDX-MS; XL-MS)
- Compound Binding Analysis (HDX-MS)
- Aggregation Analysis
- PEG and ADC Analysis (MS DAR Analysis)
- Intact Protein Complex Analysis
- Affinity Constant Determination (Kd) (SPR)

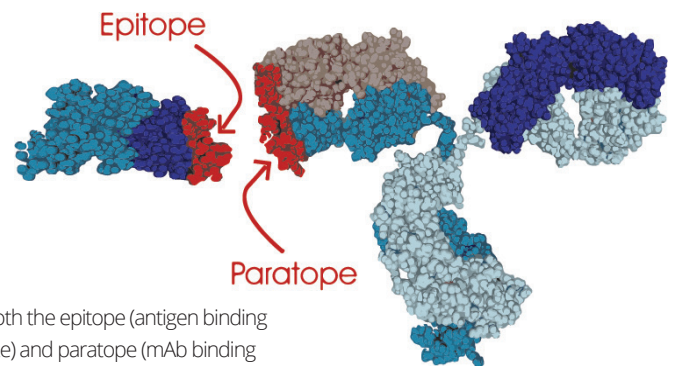
Epitope Mapping

With the growth of monoclonal antibody therapeutics, epitope mapping has become one of the key elements of drug development. This analysis allows the high-resolution characterization of the binding site between a drug candidate and its target. The understanding of the interaction site is useful to develop more potent drugs and to protect products with patents.

The binding sites can be linear or conformational, often including discontinuous binding regions. The CovalX analysis methods are specialized in detecting both linear and conformational binding sites on biotherapeutic compounds.

CovalX offers two techniques for conformational epitope mapping by mass spectrometry:

- Hydrogen Deuterium Exchange (HDX-MS)
- Crosslinking Mass Spectrometry (XL-MS)



Both the epitope (antigen binding site) and paratope (mAb binding site) can be determined using CovalX mapping techniques.

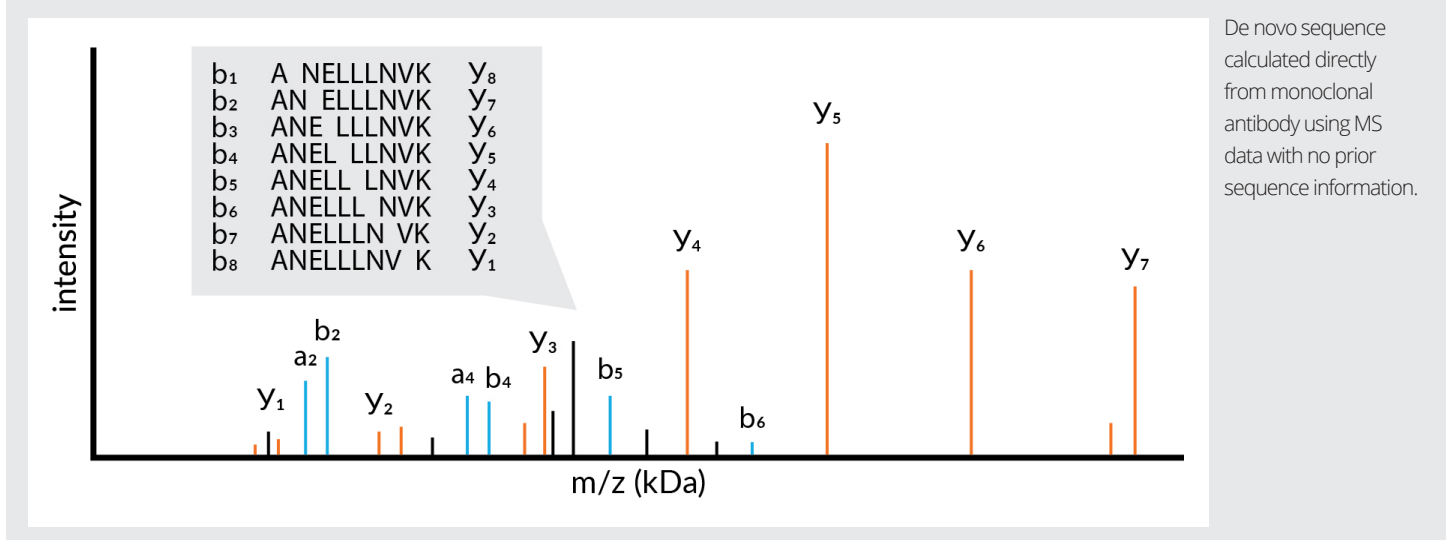
Why Choose CovalX Analytical Services?

- **Expertise:** In the industry for over 15 years. CovalX is focused on biotherapeutics and complex interactions.
- **Latest Equipment:** CovalX uses only the latest instrumentation and software.
- **Quality Work:** Advanced intact screening of proteins and complexes helps provide the most reliable rate of success.
- **Affordable:** Competitive cost compared with other technologies.

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De Novo Sequencing:

De novo sequencing is the process of determining the amino acid sequence of a protein with no prior sequence knowledge available. Our analysis uses special algorithms to analyze the fragment ions detected in the mass spectrometer to interpret and assign the sequences of the protein. De novo sequencing is often used for biotherapeutics development, bio-similar antibody characterization, or resolving ambiguity from gene sequencing of the monoclonal antibody.

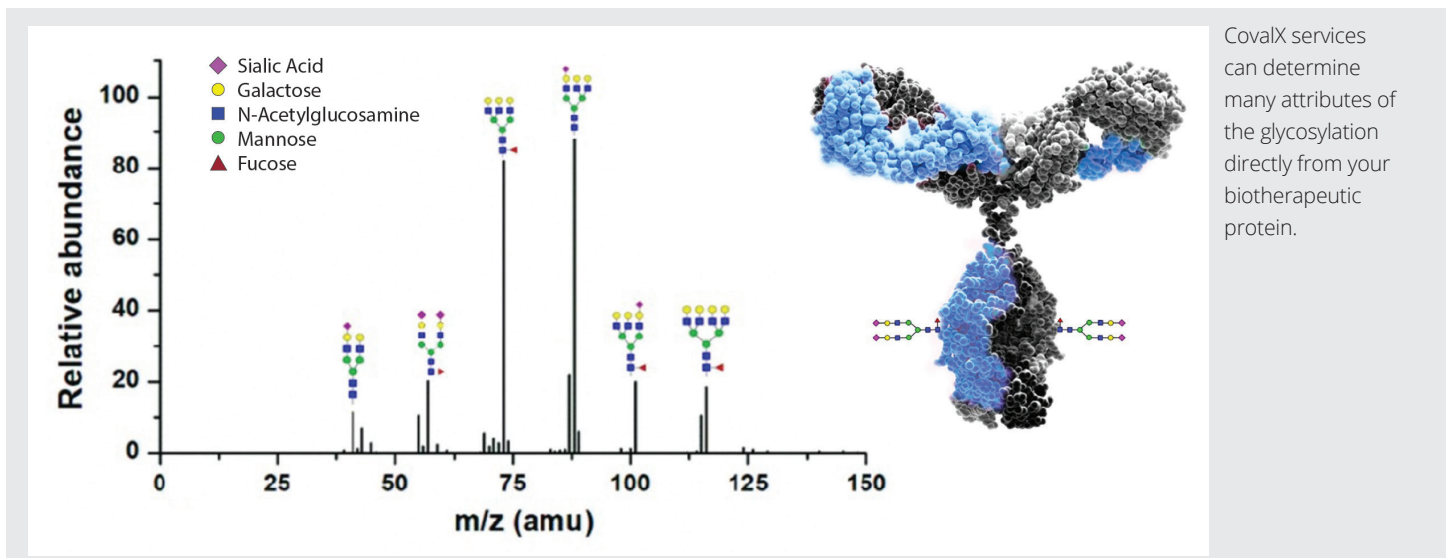


Glycan Characterization

Glycosylation is the attachment of carbohydrates or sugars to the protein backbone. To meet regulatory demands, manufacturers must carefully characterize the glycosylation of their proteins and subsequent changes in the activity of the pharmaceutical product. Full glycoprotein analysis provides information on the primary structure of the oligosaccharides as well any changes in individual glycosylation sites.

Our Glycosylation Analysis Services Include:

- Monosaccharide Composition Analysis
- Neutral and Amino Monosaccharide Analysis
- Sialic Acid Analysis
- Oligosaccharide Population Analysis
- N-glycan/O-glycans Analysis
- Linkage Analysis



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