



BIOSYNTH[®]

Epitope Mapping

CLIPS[™] Conformational Mapping

Single-residue Resolution

Peptide Lead Identification and Optimization

**Full Antibodies, Fragments, Nanobodies, and
Tagged Proteins**

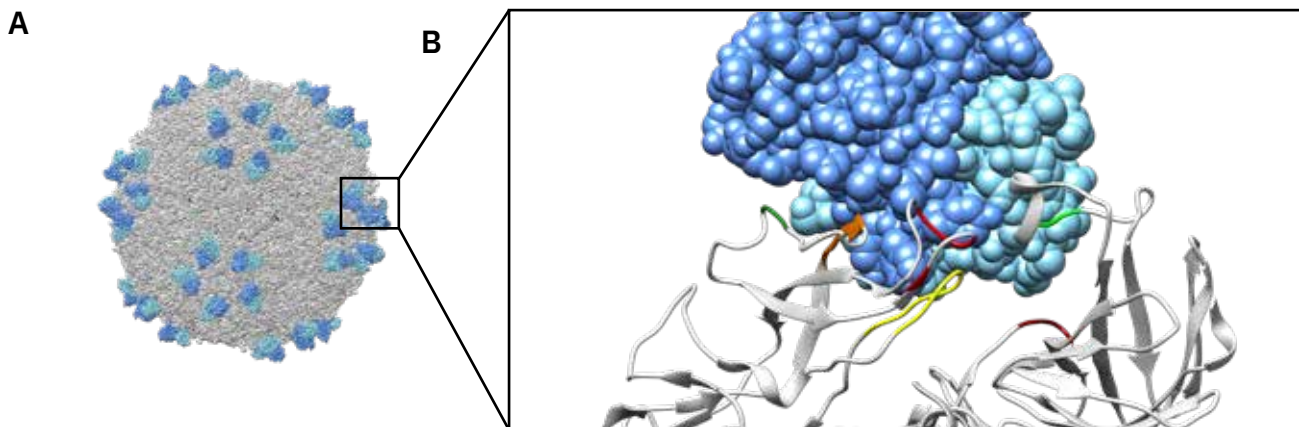
IP Protection, FDA/EMA Approval

Securing Life Sciences Supply Chains

Epitope Mapping: Instrumental in Therapeutic Antibody and Diagnostic Assay Development

Epitope mapping is a pioneering technology that allows for the identification of the structure and sequence of an epitope. It enables:

- Comparison of antibodies with a similar epitope
- Different antibodies to be classified into separate binding bins
- Essential amino acid positions within an epitope to be identified
- Understanding of the amino acid requirements in cross-species or multi-strain reactivity



Anti-viral immune responses can raise specific antibodies against the foreign antigen. Such antibodies can be developed into specific reagents for blocking viral infections. (A) EM structure showing monoclonal antibody Fab fragments binding to the ZIKA virion (Long et al., 2019; pdb: 6MID). Heavy and light chains are colored in dark and light blue, respectively. (B) Close-up of the interaction between the Fab and the virion proteins illustrates a complex discontinuous epitope. Such information can be highly valuable for patents and further vaccine development.

At Biosynth, we provide a peptide-based epitope mapping service, which was invented by the founders of Pepscan, now part of Biosynth, more than 35 years ago. Our epitope mapping platform uses a solid support with a proprietary hydrogel matrix. Peptide sequences are directly synthesized on this matrix at a high density using robust Fmoc peptide synthesis. This results in highly sensitive arrays and reliable detection of even the weakest binding signals, making the platform suitable not only for epitope mapping but also for mapping other protein-protein interactions. The reusability of the arrays permits screening of a series of antibodies or sera on a single array, making peptide epitope mapping a cost-effective option for best candidate selection, antibody characterization, antibody profiling and further development.

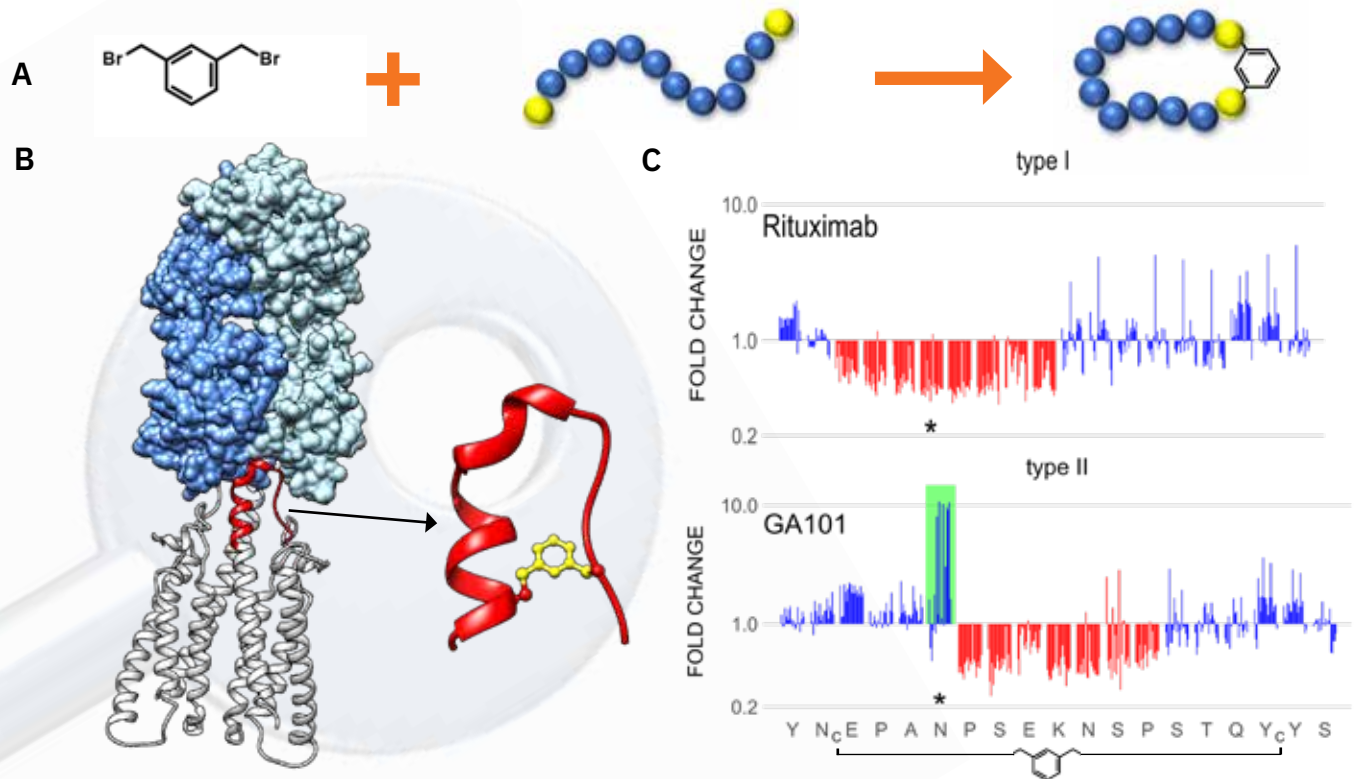
Biosynth's Peptide Based Epitope Mapping Platform

- Specific binding site information for FDA/EMA approval of novel antibodies
- Protects intellectual property (IP) or creates freedom to operate (FTO)
- Supplies detailed information for selection of lead antibodies
- Identifies and optimizes peptide leads for protein-protein interactions

For more information visit our website at www.biosynth.com/biologics/epitope-mapping

CLIPS™ Epitope Mapping

Biosynth's epitope mapping technology has been perfected by including conformational peptides, to broaden its applications, and deliver unparalleled sensitivity for epitope mapping of all sample types, even tagged proteins. Our technology can successfully identify the binding site of a given antibody or protein to its target by creating 3D structured CLIPS™ peptides to mimic the conformational elements of the target protein. Our team generates microarrays with overlapping linear and structurally constrained CLIPS™ peptides. An applied sample can then specifically bind either linear or conformational peptides, as they may be present in the epitope.

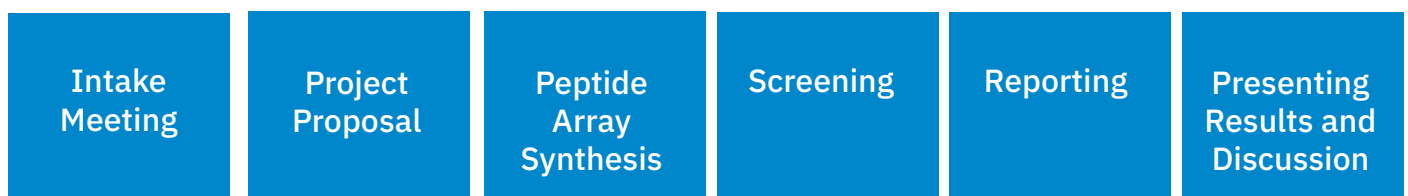


(A) The CLIPS™ scaffold can react with naturally present or introduced cysteines in a linear peptide to form a conformational peptide. (B) Structural information showing the conformational epitope of GA101 (Obinutuzumab) in complex with CD20 (Kumar et al., 2020). (C) Our CLIPS™ epitope mapping platform identified the key conformational epitopes for type I and type II anti-CD20 antibodies well before this structural evidence (Niederfellner et al., 2011). Residues in the epitope were individually replaced with other natural amino acids. Each bar represents the binding of a mutant peptide relative to the native. Key residues do not tolerate substitutions, e.g., N171(*) for Rituximab. In contrast, many substitutions in N171 could even improve binding for GA101, illustrating the potential of the platform also in peptide lead optimization.

Key Benefits

- Broad Applicability – linear, conformational, discontinuous, and complex multimeric protein epitopes
- Target Diversity – soluble targets, exodomains, membrane proteins, viruses
- Sample Diversity – antisera, polyclonal Abs, purified mAbs, nanobodies, tagged proteins or complexes
- Due to high sensitivity of our platform even the weakest interactions can be characterized
- Reusable Arrays – dozens of samples on a single array, cost-effective and direct comparison of Abs

Our scientists manage epitope mapping according to the below workflow



5-12 Weeks



Global Reach



Global locations

Switzerland	India
United Kingdom	South Korea
Ireland	Japan
Slovakia	Austria
United States	Netherlands
China	Germany

About Biosynth

Securing Life Sciences Supply Chains - where Chemistry meets Biology, Products meet Services and Innovation meets Quality, Biosynth is at the Edge of Innovation. With an unrivaled research product portfolio of over a million products and end to end manufacturing services, we are science led and customer focused to solve problems, taking pride in delivering products and projects that others cannot. Our expertise and capability runs across Complex Chemicals, Peptides and Key Biologics all from one trusted partner.

Contact us

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