

Collaborate with the leading structural biology service for 3D structures of antibody-antigen interactions

3D structural insights into antibody-antigen interactions are a vital part of the discovery, development, and commercialization of new antibody therapeutics. New advances and technologies have made it possible to determine these structures more rapidly and cost effectively than ever before.

During drug discovery and development, 3D crystal structures can define epitopes, inform your mechanism of action studies, and provide support for your unique intellectual property claims. They can help strengthen your patents and support FDA extensions for your proprietary therapeutics.

Emerald BioStructures services include:

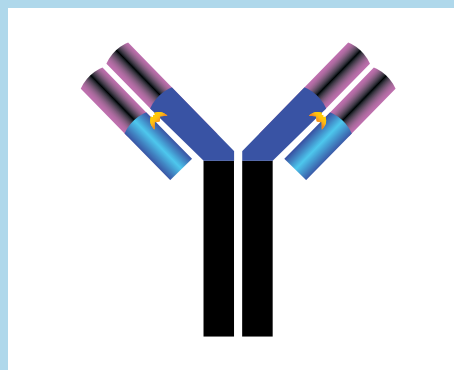
- Antibody-antigen co-crystal structures
- IgG purification and Fab preparation
- Single chain variable fragment (scFv) design, production, and structure determination
- Membrane protein target experience

Let us help accelerate the development of your antibody therapeutics.

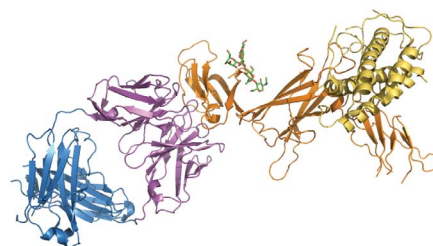
Elucidate epitopes

The epitope can be composed of multiple domains or residues not closely aligned in the primary sequence, making it difficult to define. The most unambiguous process for precisely defining the epitope is co-crystallizing the antibody with its antigen. These co-crystal structures immediately define the epitope and can be used to rationally alter and improve the binding interaction.

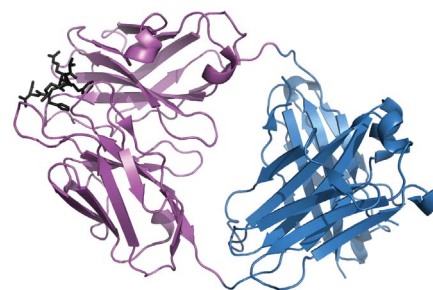
The result is a faster, more direct route to successful drug discovery. Emerald BioStructures has extensive experience in co-crystallizing proteins and provides rapid, cost effective services to our clients.



Antibody diagram showing Fv as purple; Fab as purple and blue; and Fc as black



Human IL-12 in complex with ustekinmab Fab (PDB ID: 3hmx)¹



Anti-amyloid Fab PFA1 complexed with a Gripl peptide fragment (PDB ID: 2r0z)^{2,3}

Intellectual property protection

3D structures of your antibody-antigen complex provide strong evidence that the interaction takes place. These data can be extremely valuable in supporting your intellectual property claims during the patent application process and beyond.

Accelerated by innovation

We can perform crystallization trials with your antibody and antigen. We can also leverage our experience in protein engineering, expression, and purification to engineer scFvs and purify Fabs. Our work is enhanced and accelerated by key technologies designed by our own scientists.



An effective, collaborative program

At Emerald we value close collaboration. Your success is our success.

- You are assigned a project manager trained in Project Management Institute (PMI) methodology as well as a technical expert in antibody-antigen interactions. You will have close, secure communication with, and open access to, your project manager throughout the collaboration.
- Your projects can be milestone driven which reduces your risk.
- Your intellectual property remains yours. We work with strict confidentiality. Our clients own all the data we generate. Our pricing is fair and our work is fast. We work hard for you and the results are yours in full.

Technologies innovated at Emerald

- The Gene Composer™ software for DNA sequence codon engineering and protein design allows us to progress from the original protein sequence to multiple permuted expression clones in a single design session, ideal for structure guided design of scFv constructs.^{4,5}
- The Protein Maker™ workstation performs high throughput, parallel protein purification. This technology can rapidly purify many different proteins in parallel or perform purification scouting, ideal for parallel affinity purification of numerous IgGs, Fabs, or scFvs.
- The MPCs Plug Maker™ is an award-winning microfluidic device that can produce diffraction-ready crystals in CrystalCards™ using only ~2-5 microliters of protein for ~800 x 20 nanoliter crystallization experiments, ideal for large-scale crystallization efforts with limited protein supplies.^{6,7}
 - Iodide Phasing has been documented by Emerald as a fast, powerful method to successfully solve crystal structures of biologics such as Fabs and scFvs.⁸

Contact Emerald today

To find out how our antibody-antigen services can help characterize your interaction, contact us today.



www.EmeraldBioStructures.com
sales@embios.com

References by Emerald BioStructures Scientists

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