

NMR in Biopharmaceutical Industry

Nuclear magnetic resonance (NMR) technology can be used as a conventional structural analysis method to determine the solution structure and dynamics of biological macromolecules and their complexes. It can also be widely used as a standard test method to study the interaction of biomacromolecules with biomacromolecules and biomacromolecules with small molecule ligands.

Drug protein structure analysis



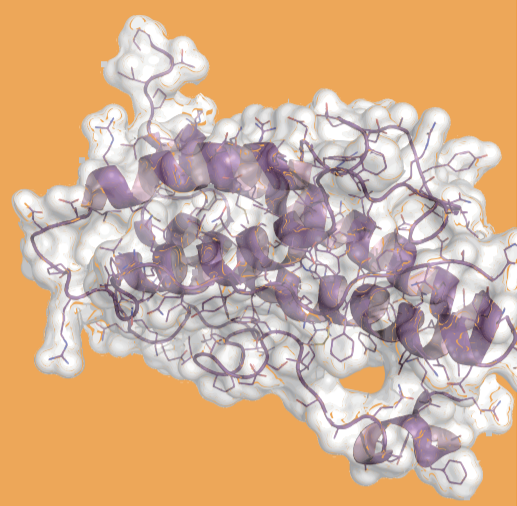
Drug discovery

DRUG PROTEIN STRUCTURE ANALYSIS

Determine the spatial structure of the target protein

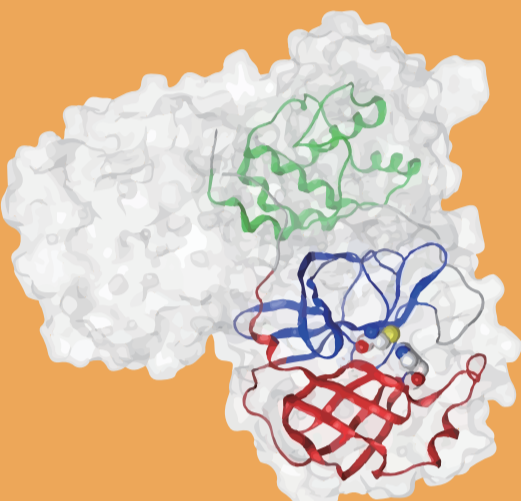
The spatial structure of the target protein is determined by multi-dimensional heteronuclear NMR.

The advantages of NMR: a. single crystal of target protein is not required; b. determine the structure of the target protein in a solution close to physiological conditions; c. can study the dynamic process of target protein in ps-ms time scale.



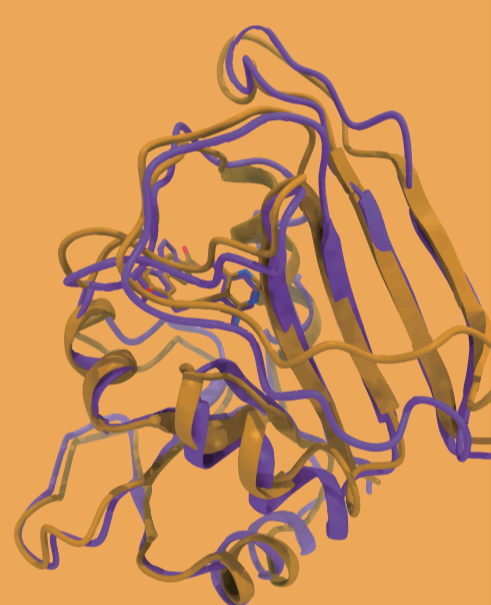
Study the dynamics of target proteins

Intramolecular motion, flexibility and rigidity of target protein are the key factors affecting biological processes such as target protein folding, molecular recognition, binding or releasing drug molecules. NMR technology can obtain rich kinetic information such as intra-protein motion and conformation exchange in solutions close to physiological conditions. In addition, it can characterize a wide range of time scales related to the movement process.



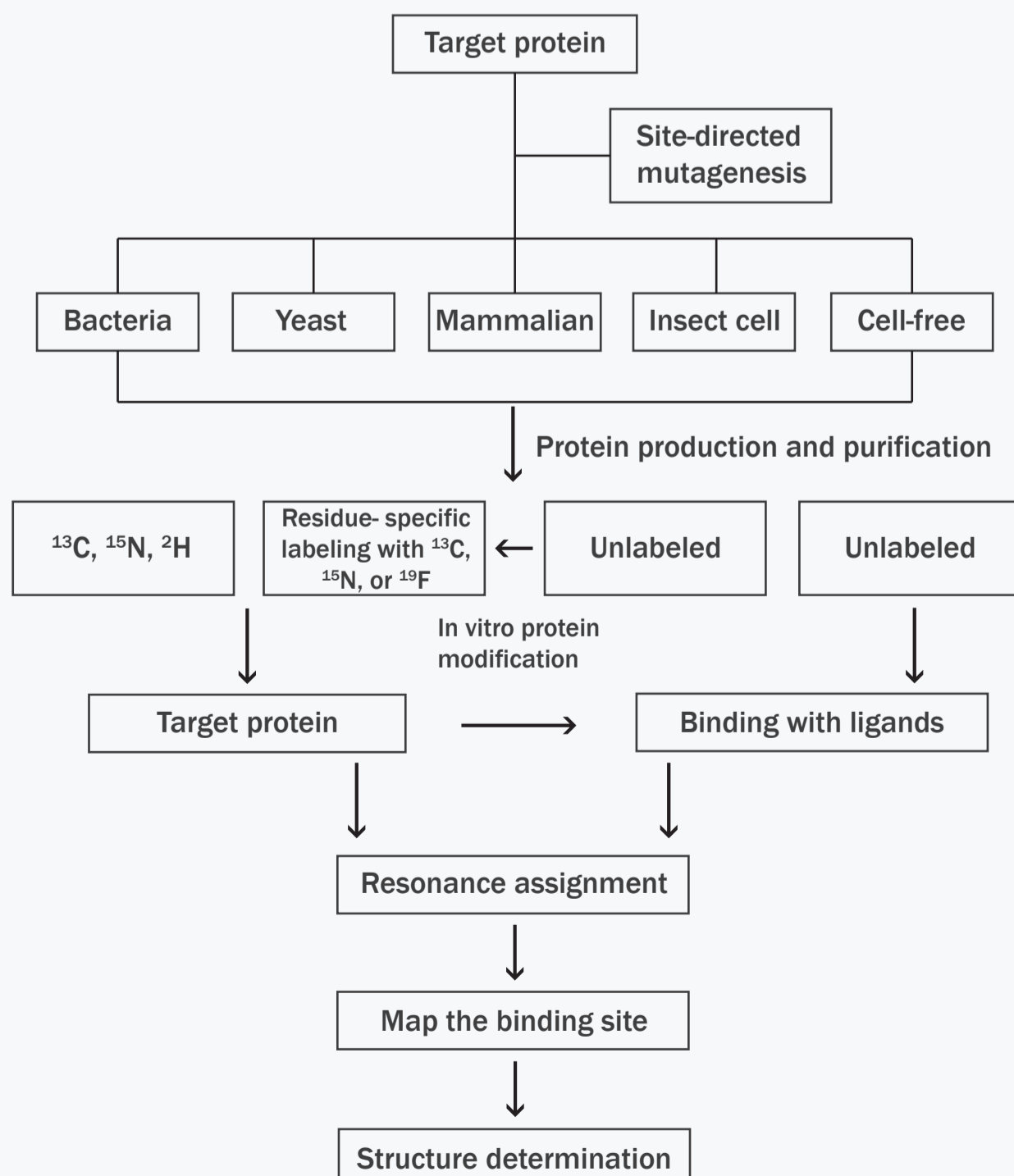
Study the interaction between the target protein and the drug molecule

NMR can study the interaction between target proteins and drug molecules in solution under close physiological conditions. NMR technology can provide the structural characteristics of the interaction (such as the binding site and the structural recombination caused by the binding), the strength of the binding and the interaction mechanism. It can also provide the complete spatial structure and kinetic information of the protein-drug molecular complex, as well as the kinetic process occurring at the binding site.



DRUG DISCOVERY

By combining nuclear magnetic resonance with mass spectrometry technology, structural and molecular weight information can be obtained to achieve time-sensitive target discovery. In the process of target-based drug discovery, NMR can play an important role in the early hit identification stage. With the target protein as the observation object, the lead compound fragments are screened by NMR technology, and structural modification, optimization and chemical connection are carried out. In the later stages of drug development, NMR can be used to detect target-inhibitor interactions to confirm protein-lead interactions in living cells.



Creative Proteomics' analytical scientists can provide pharmaceutical analysis for our customers using NMR spectroscopy. Our quick turnover, clear and concise written reports, and customized services guarantee will help customers solve analytical and technical problems.