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NMR in biology and few examples of its applications

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Nuclear Magnetic Resonance (NMR) spectroscopy is a powerful technique used in structural biology to investigate the structure, dynamics, and interactions of biomolecules such as proteins, nucleic acids, and carbohydrates.

Here are a few examples of NMR applications that I have experienced in structural biology:

1. Protein structure determination: NMR is used to determine the three-dimensional structure of proteins in solution and in solid, which is critical for understanding their function. NMR can provide information on protein conformation, dynamics, and interactions with ligands, and can help identify potential drug targets.
2. Ligand binding studies: NMR can be used to study the binding of small molecule ligands to proteins, providing information on the binding site, binding affinity, and the structural changes that occur upon binding.
3. Dynamics studies: NMR can provide information on the dynamics of proteins and nucleic acids in solution, including their conformational changes, folding and unfolding, and interactions with other molecules.
4. Metabolomics: NMR can be used to identify and quantify metabolites in biological samples, providing information on metabolic pathways and disease biomarkers.
5. Paramagnetic: NMR is a powerful technique for studying the properties of paramagnetic molecules in biological samples, providing insights into the structure, function, and dynamics of biomolecules such as metalloproteins and protein-protein interactions

Overall, NMR spectroscopy is a versatile tool for biology that can provide valuable insights into the structure and function of biological molecules.