

Application of EPR spectroscopy for the study of RNA-ligand interactions

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Electron paramagnetic resonance (EPR) spectroscopy has been used extensively in the study of proteins and is currently emerging as a valuable tool to study the structure and function of RNA. We have conjugated nitroxide reporter groups to the 2'-position of RNA through a semi-flexible urea linker for our EPR studies. This has enabled us to study the interactions of small molecules, metal ions and peptides with the TAR RNA, which plays an important role in the life cycle of the HIV. This approach has, for example, been used to determine which amino acids in the Tat protein are important for binding to the TAR RNA. These studies have shown a strong correlation between structure and dynamics of RNA.