

Structural biology of G-quadruplex nucleic acids: probing in vitro and in vivo interactions with ligands using NMR spectroscopy.



Gilmar SALGADO
CBMN, Bordeaux, FRANCE

Due to their capital role in tumor cell proliferation, DNA has been an important target for the development of cancer-related therapies. One of the major problems that arise when choosing DNA as a target is often related with the lack of selectivity for certain gene sequences and cell types, such as tumor cells. Recent strategies involve finding unique DNA structural motifs that present important differences in comparison to double helical DNA. G-quadruplexes structures fit perfectly in this category. One of the questions that we must currently pose is if the structures of G-quadruplexes, among other biomolecules, and their interaction with ligands with therapeutic interest, are sufficiently accurately determined or studied under *in vitro* conditions, or if the intricate nature of the cellular environment dictates pertinent modifications that need to be taken into account. At present time, and due to the existence of a very limit number of examples, we cannot answer such intriguing question. The quest to answer to this question will be evaluated by directly probing the conformation of G-quadruplex inside living cells using NMR spectroscopy.