DOTTORATO DI RICERCA IN BIOTECNOLOGIE CICLO 32°

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Struttura presso cui si intende svolgere la Tesi di Dottorato: Dipartimento di Farmacia, Università degli Studi di Napoli Federico.

DNA G-Quadruplexes: from nucleic acids involved in gene control expression to highly ordered supramolecular structures

Background

G-Quadruplexes are secondary structures of DNA characterized by a core of stacked planar arrangements of four guanines held together by Hoogsteen's hydrogen bonds, known as G-tetrads. Factors that contribute to the wide polymorphism of G-Quadruplexes are the length and the base composition of the loops (when present), as well as the nature of the cations used to stabilize the quadruple helix structure.

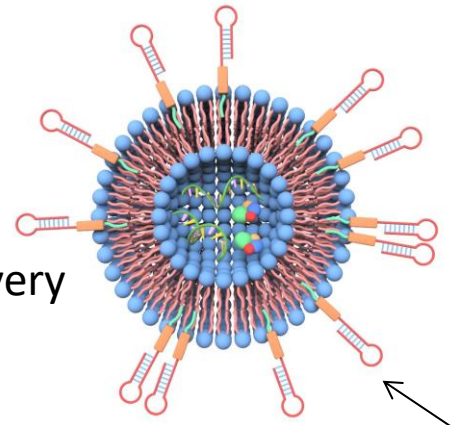
G-rich DNA sequences and G-quadruplex structures have drawn the attention of researchers in ***medicinal chemistry*** and more recently in ***supramolecular chemistry*** and ***nanotechnology*** .

Objectives

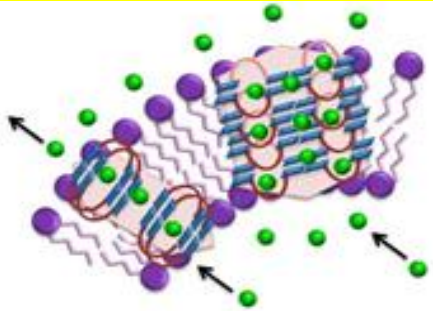
Objective 1. Supramolecular structures from G-Quadruplex Motifs.

Objective 2. Peptide Nucleic Acids (PNAs) as probes for the control of gene expression in G-rich sequences.

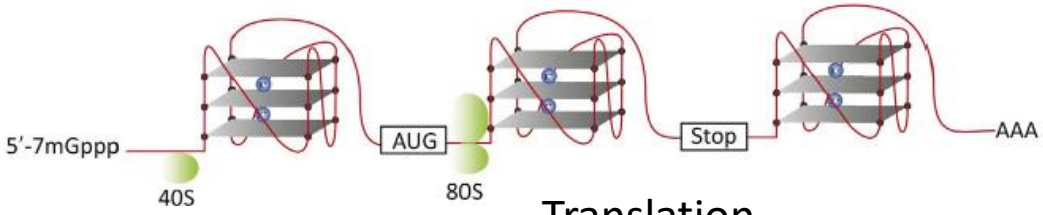
1. DNA G-Quadruplexes are involved in several Biological processes and in studies/application in nanotechnologies



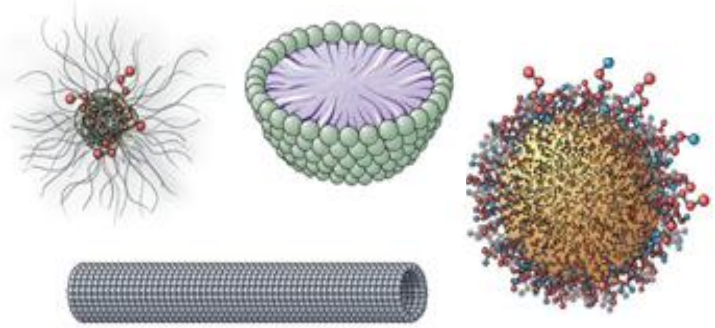
Drug Delivery



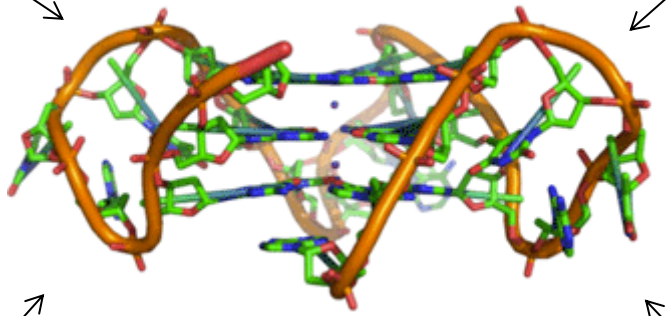
Ion Channel

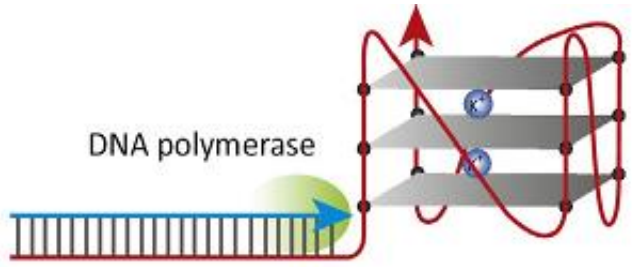


Translation

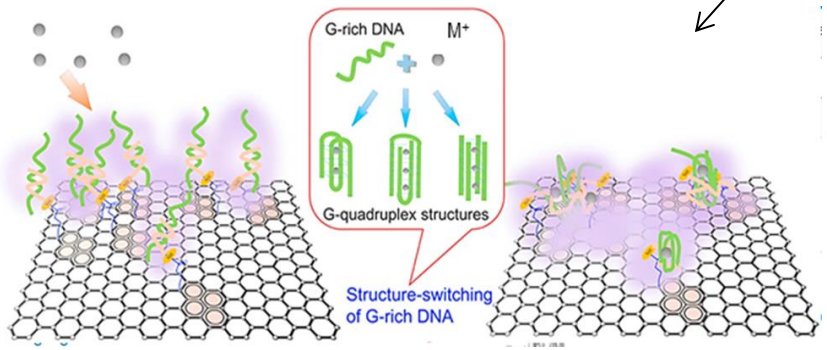


Nanotechnology

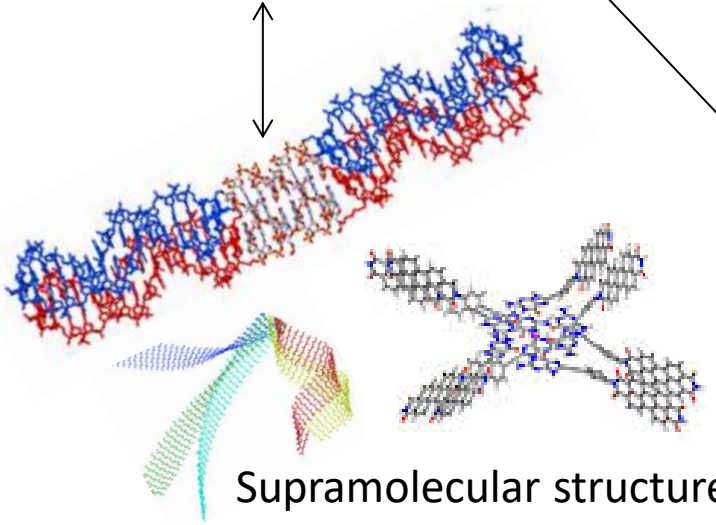




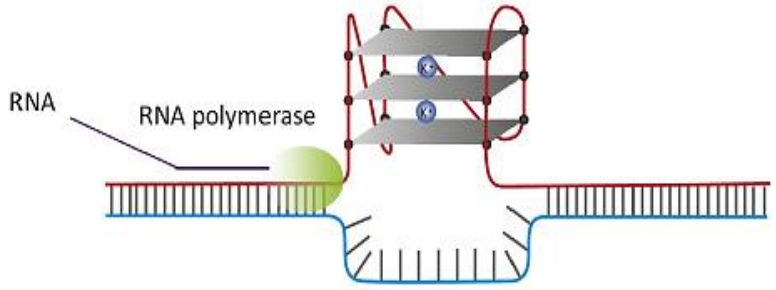
Replication



Molecular electronic

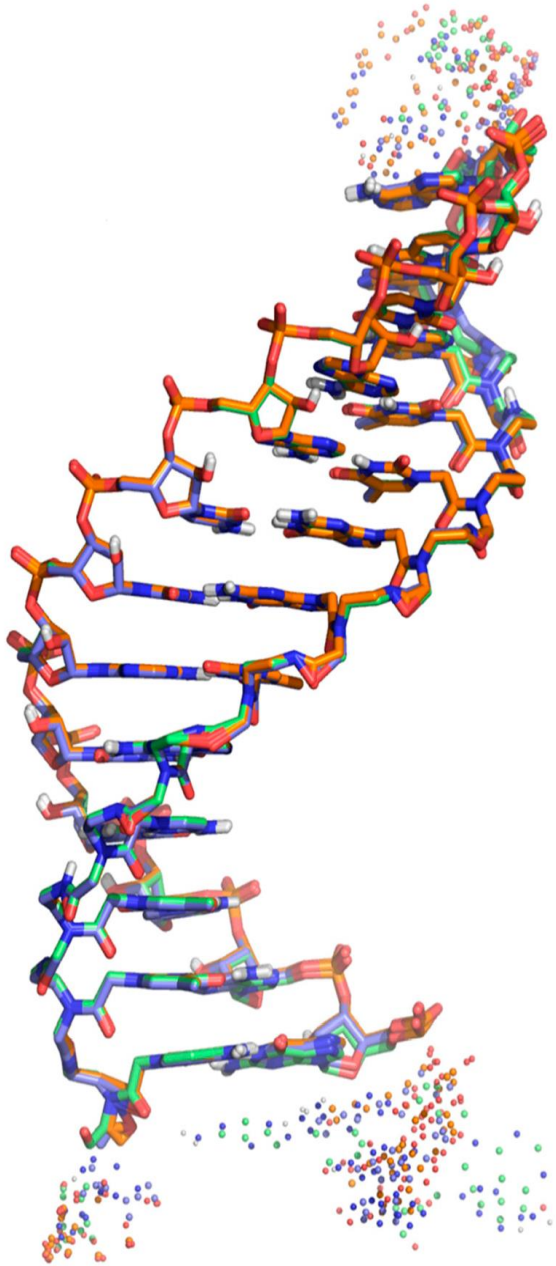


Supramolecular structures

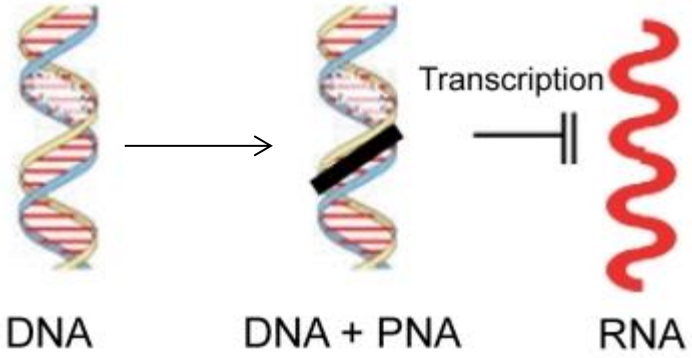


Transcription

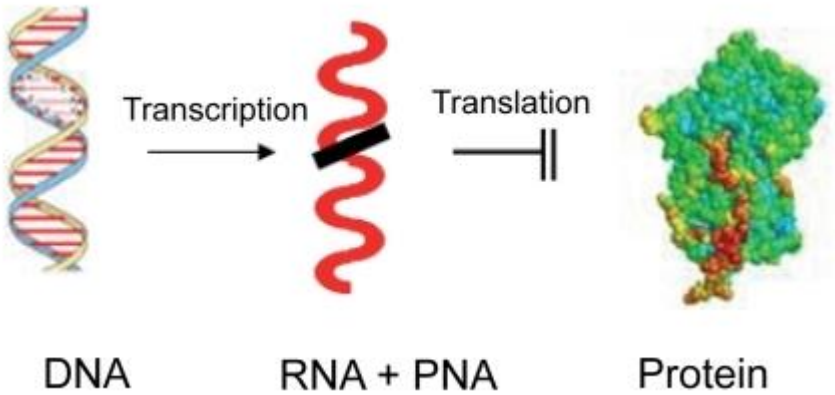
2. PNA strands to control the gene expression. - Structural studies on the hybrids and biological effects -



Anti-gene strategy



Anti-sense strategy



Anti-miR strategy