Title of Project: DNA-drug interactions and charge transfer processes in DNA

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Short Description

Some organic molecules can bind to DNA and thus interfere with DNA replication, transcription and gene expression process, or even direct nucleic acid cleavage. These small molecules can thus act as therapeutic agents in cancer cure. These drug molecules can bind to DNA by different mechanisms. The optical properties of the drug molecules will display significant change upon the binding. These drug molecules can thus act as a very good structural probe for studying drug-DNA interactions and understanding the factors that affect the drug efficiency. We will use various optical spectroscopy and imaging methods, to study the interactions between the drug molecules and DNA of different conformations (single stranded, double stranded and quadruplex DNA). The chemistry of the DNA, such as charge transfer process in DNA will also be explored.

For more details about the research in our group, please visit http://staff.science.nus.edu.sg/~chmxqh/.