

CBC SEMINAR ANNOUNCEMENT



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JANUS PNAs: Upgraded PNAs for Simultaneous Recognition of Two Complementary DNA/RNA Strands

DNA and RNA are naturally endowed with structural features for self-assembly through complementary base pairing, leading to a variety of structures ranging from hairpins, duplexes, triplexes to cruciform and tetraplexes etc. Several chemically modified analogues involving modification of sugar-phosphate backbone have been developed in context of antisense therapeutics. All these analogues can bind to complementary sequences via hydrogen bonding from bases, but only from one side of the backbone. Varieties of topological structures or objects (DNA nanotechnology and DNA origami) are created by engineering sequences to assume different shapes.

We have embarked on new types of Peptide Nucleic Acids (PNA) analogues that are endowed with backbones that can structurally accommodate nucleobases from its either face. Such designed PNAs, termed “Janus” PNAs have the potential to form programmable self-assemblies with complementary DNA, RNA, PNA and other DNA analogues. This presentation demonstrates our initial studies on the synthesis and complementation studies of Janus PNAs, biophysical characterization of ‘double’ duplexes generated from Janus PNA and cDNA and the synergistic effects on the thermal stability of each of the duplexes.

Date: 31st October 2019 (Thursday)
Time: 2.00pm to 3.30pm
Venue: Level 3 MAS Executive Classroom 1
Host: Associate Professor Roderick Bates