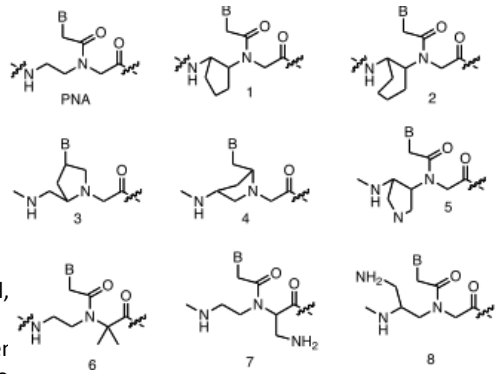
NANYANG TECHNOLOGICAL UNIVERSITY

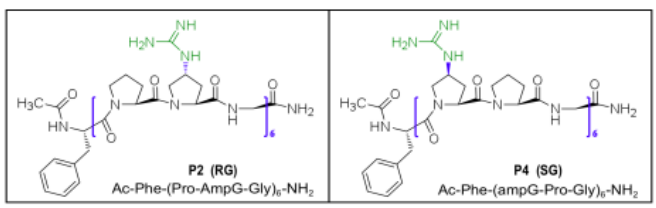
CBC SEMINAR ANNOUNCEMENT

Professor Krishna N Ganesh
Director, Indian Institute of Science Education and Research

Cationic peptides and peptide nucleic acids: Probing their entry into cells

Peptide nucleic acids (PNA) are a class of non-ionic DNA mimics, in which the sugar-phosphate backbone is replaced by ethylenediamine-glycine backbone. They bind complementary DNA or RNA with high affinity and selectivity and hence promised to be potential therapeutic agents. However they have serious drawbacks in terms of their aqueous solubility and cell penetration ability. Their equal affinity for iso-sequential DNA / RNA also decreases their target specificity by half. In order to overcome these drawbacks, we have designed, synthesized and evaluated several PNA analogues (1-8) which are conformationally constrained, chiral and cationic. The structural variations include those having rings in backbone such as pyrrolidine, cyclopentyl and cyclohexyl moieties which are also chiral, incorporation of cationic groups to make them more soluble in water, acyclic PNA analogues such as those incorporating isoaminobutyric acid units, cationic aminomethyler side chains etc. We have recently labeled some of these with fluorescence groups to examine their cell membrane permeability properties. This lecture presents a comparison of the biophysical properties such as their differential complementation with iso-sequential DNA / RNA, selectivity in binding parallel and antiparrallel sequences and their cell permeation studies. We have recently designed cationic collagen peptides carrying guanidine function which have shown efficient cell penetration, localization in cytoplasm and efficient cell transfection properties.





Date:	**14th May 2012 (Monday)**
Time:	**11:00am – 12:30pm**
Venue:	**NTU SPMS CBC Building Level 2, Conference Room**
Host:	**Asst Professor Chen Gang**