

Students' Annual Webinar

Chemoselective bio-orthogonal chemistry of proteins

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Designing novel Hydrophilic dimeric staplers to stabilise protein structure: Peptidomimetic drugs have recently gained a huge interest to disrupt disease related Protein-Protein Interactions (PPI). Mostly, intracellular PPI has been targeted using highly hydrophobic macro-cycles which can penetrate the cell membrane. But the extracellular PPI have remained relatively unexplored, where using hydrophobic macro-cycles creates lots of problem. Herein, I will talk about novel Hydrophilic staplers which I have developed to target extracellular PPI. I will discuss about its application in stabilising protein secondary structure and its extrapolation to protein tertiary structure as well.

Developing a new ligation method to join unprotected peptides in solution: Chemoselective ligation of unprotected peptide segments in solution to chemically synthesise a protein molecule is a challenge because of the presence of a diverse nature of functional groups on peptides/proteins. The renowned Native Chemical Ligation (NCL) method requires Cysteine to be present in appropriate locations to be able to ligate unprotected peptide segments. But many proteins lack Cysteine. Towards this end, I will discuss about the development of a new ligation methodology which can ligate peptide segments at any amino acid junction, using nucleophilic catalysis as a chemical tool.

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5:00 PM