Tata Institute of Fundamental Research
Survey No. 36/P, Gopanpally Village, Serilingampally, Ranga Reddy Dist., Hyderabad – 500 046

Seminar

Gut-specific peptide therapeutics

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Peptides have emerged as a therapeutically and commercially important drug class with the advantage of great specificity and potency as well as low toxicity. Peptides are furthermore invaluable research tools to investigate the physiological functions of receptors and the underlying mechanisms of diseases. Peptide research has innovated the treatment of numerous diseases, including diabetes, cancer, multiple sclerosis, gastrointestinal disorders, obesity, and pain, with>80 peptide therapeutics approved and >150 peptides in clinical trials.

A main limitation of peptides remains their intrinsic susceptibility to proteolytic degradation and lack of oral bioavailability. Nevertheless, several peptide families that exist are expressed and function in the gastrointestinal tract, arguably the most hostile environment for peptides. We are particularly interested in the structural makeup of these peptides to understand how they can function in such an environment and how we can take advantage of this knowledge to develop gut-specific peptide therapeutics. In this context, we investigate the intriguing trefoil factor family (TFF) that displays a rigid disulphide bond-stabilised multiloop structure reminiscent of a trefoil. They are important gut peptides mediating gastrointestinal protection and repair, with promising therapeutic potential for treating and preventing gastrointestinal disorders. Additionally, we systematically evaluated naturally occurring peptide scaffolds and medicinal chemistry approaches to identify new strategies and motifs for developing oral and gut-specific peptide therapeutics. This approach shows great promise for a new area of oral peptide drugs to better manage chronic gastrointestinal disorders and abdominal pain.

Tuesday, Feb 28th 2023

11:30 AM (Tea / Coffee 11.15 AM)

Auditorium, TIFR-H