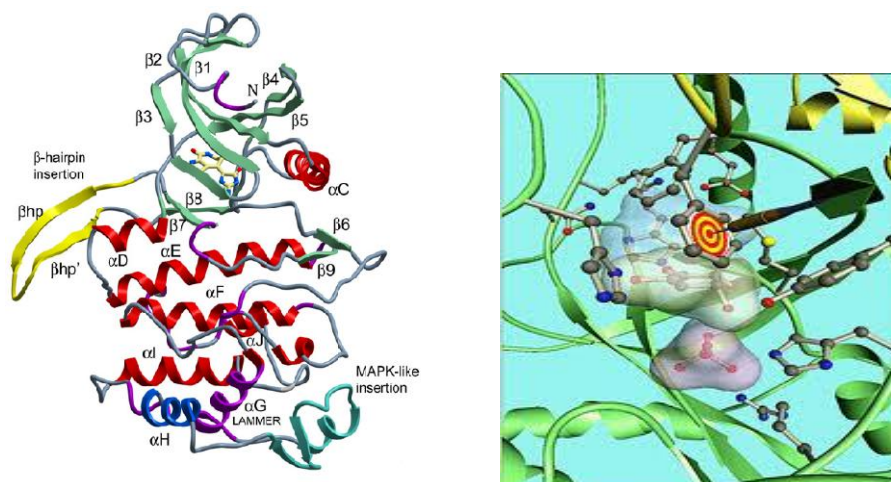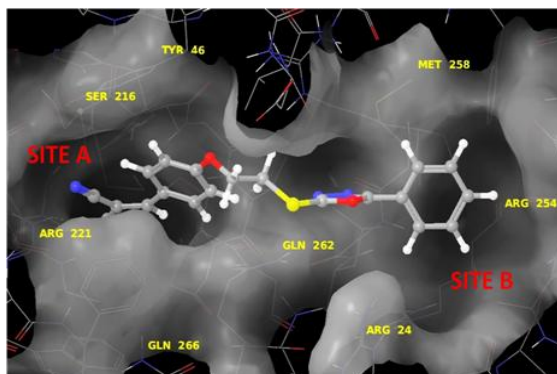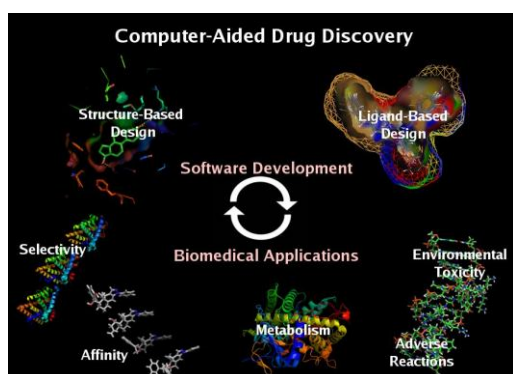**Research Area**

Drug design and Discovery

Our research group works on hot drug discovery areas such as cancer, neurodegenerative disorders (Alzheimer's diseases), diabetics, AIDS, etc through targeting different enzymes or proteins such as kinases (CLK, CHK, GSK, etc), apoptosis proteins, protein tyrosine phosphatase 1B, reverse transcriptase, etc.


Specific areas of research include: Computational methods encompassing rational, structure and analogue based drug design techniques, QSAR, drug target identification and lead optimisation; pharmacological evaluation of new chemical entities including small molecular weight bioactives of the targets. Different synthetic methodologies including microwave assisted synthesis, solid phase synthesis, one pot synthesis, etc techniques are applied for the drug synthesis.

Drug delivery system

The following research areas, in which the drug delivery group is performing research. Topical drug delivery system, Transdermal drug delivery system, Cancer drug targeting, Brain Targeting, Colon targeting, Buccal delivery (Medicated chewing gum), etc.
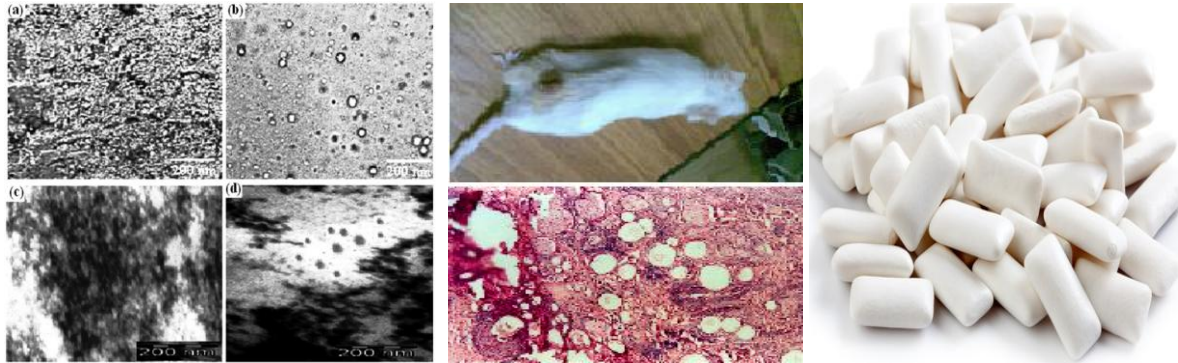
Targeting and delivering the drugs through different formulations include, flexible vesicular system, provesicular formulation (proliposomes and protransfersome), organogel, hydrogels (hydrogelators), colloidal semisolid formulations, nanoparticles, microsomes, liposomes, niosomes, nanospheres, medicated chewing gum, etc.
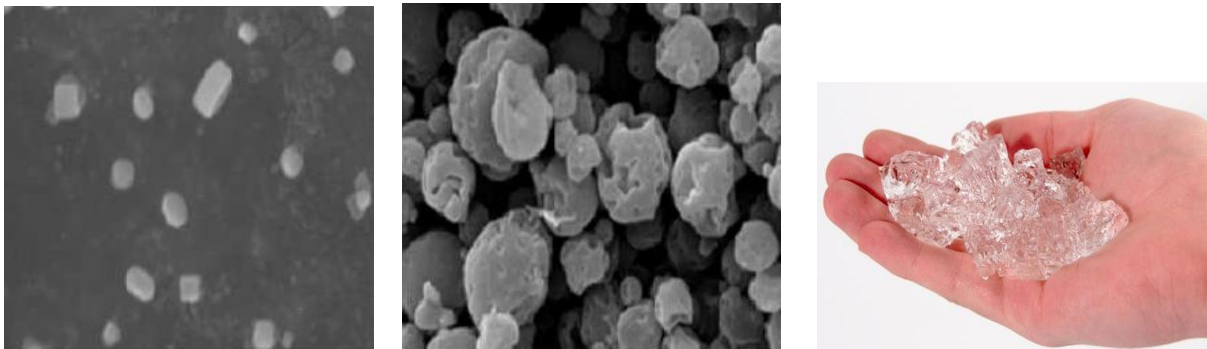
Analytical methods development and Bioanalysis:

This involves the development of analytical methods for drugs in formulations and body fluids using, UV, HPLC, UPLC, GC and LC-Mass. Bioavailability, plasma drug concentration and the presence of drugs in the tissues are also analysed through the developed techniques.

Protein and peptide self-assembly:

Design and construction of various secondary structural motifs, supramolecular architectures using non-coded amino acids, methylated amino acids and template molecules.

Xaa =

Xaa =

Peptide I

Peptide II

Ribbons from peptide II

Design of smart peptide based nanostructures as attractive candidates for Functional Materials

I₂ absorbed crystal

Dimeric subunit

Supramolecular double helical assembly