



Project Proposal for Ph.D.

Project Details	
Project Title	Theranostic systems for misfolded proteins in neurodegenerative diseases
Project Summary (Minimum 500 and maximum 2000 characters)	The accumulation of misfolded proteins in the brain is responsible for a number of neurodegenerative disorders such as Parkinson's disease, Alzheimer's disease, and other disorders causing neuronal damage and cognitive decline. Theranostic systems for the management of misfolded proteins in neurodegenerative diseases are promising are promising at both diagnosing and treating these devastating conditions. Systems would be developed that could early detect and diagnose the accumulation before the clinical symptoms. Natural and laboratory synthesized ligands would explored for the targeted detection using molecular imaging techniques. To enhance the efficacy, multimeric approach would be tested. Inhibitors to prevent misfolding or aggregation would also be designed. Development of drug delivery systems to facilitate the targeted delivery of therapeutic agents to the affected regions would be carried out. Both organic and inorganic nanoparticle-based drug delivery systems would be used to carry drugs across the blood-brain barrier and release them specifically at sites of protein aggregation. This would minimize off-target effects and enhances the therapeutic efficacy. Real time monitoring of the treatment response would be carried out using in vitro and in vivo experiments.

Ph.D. Supervisors			
Role	Name of Faculty	Academic Unit in IITD/Institute/University	Email ID (Official)
Supervisor 1	Dr Anupama Datta	Institute of Nuclear Medicine and Allied Sciences	anupama.inmas@gov.in
Supervisor 2	Dr. Shashank Deep	Indian Institute of Technology Delhi	sdeep@chemistry.iitd.ac.in

Project requirements (Student qualifications, experience required, etc) *The candidate will be shortlisted based on common shortlisting criteria decided by ScRC (SIRe)
MSc in Chemistry/Biochemistry/Biotechnology

Source of fellowship/funding (CSIR/UGC/DBT/ICMR/ICAR/NEET-PG/DST-INSPIRE/IRD/FITT Project details, if any)

Candidate with his/her own fellowship /institute assistantship

Role of Faculty Members involved:

Supervisor-1	Synthesis of therapeutic ligands and theranostic system, blood-brain barrier studies
Supervisor-2	Kinetics of aggregation, cell based aggregation experiment