



Project Proposal for Ph.D.

Project Details (The research problem must clearly indicate the need for an interdisciplinary approach)

Project Title	Machine Learning-Guided Design of Cancer Nanomedicine
Project Summary (Minimum 500 and maximum 2000 characters)	Over the past few decades, nanomedicine has evolved as a promising strategy for cancer therapy. Although a huge amount of <i>in vitro</i> and <i>in vivo</i> data has been generated by various researchers for developing cancer nanomedicine, only a few formulations have reached clinical trials. To accelerate the development of cancer nanomedicine, the objective of the proposed project is to develop machine learning models for rational design of nanomedicine formulations for cancer therapy. The performance of the developed models will also be tested/improved through physical experiments.

Ph.D. Supervisors*
(Supervisor 1 and Supervisor 2 cannot be from the same department of IITD)

Role	Name of Faculty	Academic Unit in IITD/Institute/University	Email ID (Official)
Supervisor 1*	Auhin Kumar Maparu	Biochemical Engineering and Biotechnology	auhin@dbeb.iitd.ac.in
Supervisor 2	Bhaskar Pratim Mukhoty	Yardi School of Artificial Intelligence	bpmukhoty@scai.iitd.ac.in

*Supervisor 1 must be from IIT, Delhi.
+All cells in this table are mandatory fields that need to be filled by faculty for consideration of proposal.
§The date of superannuation of supervisors should be at least three years from the date of registration of selected candidates.

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

- BE/BTech/ME/MTech in Computer Science and Engineering/ School of Artificial Intelligence/Chemical Engineering/Biomedical Engineering/Biochemical Engineering/Biotechnology
- Prior experience in AI/ML with an interest in biomedical research is desirable.

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

Full-time Institute Assistantship

Role of Faculty Members involved:	
Supervisor-1	Overall planning, data collection, fabrication of cancer nanomedicine formulations and <i>in vitro/in vivo</i> validation.
Supervisor-2	Development of machine learning models

Note :-

1. Approval from the respective DRC/CRC/ScRC of your Department/Centre/School will be required for using the "Full-time Institute Assistantship (Category-wise) (FIA)" for selecting the students in SIRe.
2. Declaration:- Faculty members, please ensure that you have at least 3 years of service left before superannuation along with adequate sitting space & lab facilities for the SIRe student.
3. PI/s are also encouraged to submit joint proposals with AIIMS, NII, JNU and institutes with which IITD has an existing MoU. If the Co-PI (Supervisor 2) is from outside IITD, kindly share his/her detailed CV.
4. If a research scholar is to be considered for selection under the project fellowship, then the project should have a minimum of two-year duration remaining.
5. A candidate applying with a valid JRF/INSPIRE/any national level fellowship should have at least two-year validity from the date of joining the Ph.D. program.
6. The third supervisor’s name (if required) can be added only after the formation of Student Research Committee (SRC) subject to a strong recommendation of SRC and subsequent approval from the competent authority.
7. If Institute fellowship is being sought, then DRC approval of the parent department of Supervisor 1 is required at the time of selection.