



Project Proposal for Ph.D.

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

Project Title	Development of a microfluidics platform for automation of in vitro diagnostics
Project Summary (Minimum 500 and maximum 2000 characters)	Join us in advancing in vitro diagnostic assays for resource-limited settings. We aim to revolutionize diagnostics by developing a micro/millifluidic platform integrating multiple functions on a single chip or cartridge. This includes liquid addition, size or affinity-based separation, and incorporating valves and pumps. Our focus is on streamlining sample-to-result processes, especially for urine or blood samples, to isolate protein, DNA, or cell biomarkers. This innovative approach promises affordability and efficiency, addressing current challenges of manual or costly automated machinery. If you're passionate about cutting-edge research in diagnostics, apply now to contribute to this transformative project.

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*	Prof. Ravikrishnan Elangovan	Department of Biochemical Engineering & Biotechnology	elangovan@dbeb.iitd.ac.in
Supervisor 2	Prof Vivekanandan Perumal	Kusuma School of Biological Science	vperumal@bioschool.iitd.ac.in

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

The prospective candidate for this Ph.D. position should ideally possess a background in **Mechanical/Electronics Engineering** and demonstrate a strong track record in various aspects:

Academics: A solid academic foundation in Biotechnology or related fields is a prerequisite. The successful candidate should have excelled in coursework related to molecular biology, genetics, and biotechnological techniques.

Research Experience: We seek candidates who have actively engaged in research activities, preferably in areas relevant to molecular diagnostics, infectious diseases, or biotechnology-driven innovations. Previous research experience will be highly valued.

Experience in Industry/Innovation: While academic research is essential, candidates with exposure to the industry or innovation sector will have a distinct advantage. Practical experience in translating research into tangible solutions or products is desirable.

If you are a driven and highly motivated individual with a passion for medical devices, a keen interest in addressing global health challenges, and a commitment to making a meaningful impact, we encourage you to apply. This Ph.D. opportunity offers a unique platform for research, innovation, and the advancement of scientific knowledge with real-world applications in in-vitro diagnostics.

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

Candidates with funding (JRF/SRF/part-time) will be preferred. Exceptional candidates will be offered fellowship from project.

Role of Faculty Members involved:

Supervisor-1	Dr. Ravikrishnan Elangovan Lab: Dr. Ravi will be mentoring student in development of automated LAB-ON-A-CHIP development.
--------------	---

Supervisor-2	Prof Vivekanandan Perumal will mentor student on the biological material and process for diagnostic application.

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.