



## PhD Project

### Project Details

Project Title	Aptamer based microfluidic devices
Project Summary	<p>Aptamers are short oligonucleotides having a definite 3D structure mimicking a ligand, which can be modeled as Antibody analog using SELEX enrichment process. They are nowadays routinely been used for RAT assays for COVID19 and other proteinic antigen biosensing due to their excellent environmental stability and lower cost as compared to antibodies.</p> <p>In this research, we aim to develop novel aptamers for proteinic analytes of clinical and biopharmaceutical significance and then create microfluidic chips for automated analysis of target analytes while either maintaining the chip in point-of-care form factor or integrate it with a bioreactor for online monitoring of biopharmaceutical. The research is highly interdisciplinary and would require candidate to be familiar with biochemistry and some expertise is required in microfabrication and photolithography. Knowledge of Biosensors is a must.</p>

### PhD Supervisors

Role	Faculty	Academic Unit in IITD	Email ID
Supervisor 1	Prof. Sandeep K. Jha	CBME, CBT	sandeepkjha@gmail.com
Supervisor 2	Prof. Anurag S. Rathore	CHE, CBT	Anurag.Singh.Rathore@chemical.iitd.ac.in

### Project requirements (Student qualifications, experience required, etc)

- Background in Biochemistry/Biotechnology/Material science or engineering with good knowledge in Chemistry/Physics/Electrical Engineering
- Candidate shall be trained in microfabrication and photolithography, electronic circuit board fabrication and biosensing
- Valid NET/GATE/qualification in national level exam as per IIT Delhi selection criteria for JRF

### Source of funding (IRD/FITT Project details, if any)

UGC/CSIR/DBT etc. fellowship OR MHRD institute fellowship for outstanding candidate

### Role of Faculty Members involved:

Prof. Sandeep Jha's group shall be involved in microfabrication, sensor characterization and instrumentation.

Prof. Anurag S. Rathore's group shall be involved in bioproduction, integration of sensor with bioreactor and validation of data.