

# Ankit Kumar

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## EDUCATION

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**Indian Institute of Technology (IIT) Roorkee**  
**Bachelor of Technology, Engineering Physics** **2016 – 2020**

- Graduated with First Division (81.2%)

**École Polytechnique Fédérale de Lausanne (EPFL), Switzerland**  
**Bachelors' Thesis, School of Life Sciences** **May – Dec 2019**

## RESEARCH & WORK EXPERIENCE

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**Research Intern** **May – Dec 2019**  
*Global Health Institute, EPFL. Mentor: Prof. John McKinney*

- Developed a 3D-bioprinted lung-on-chip platform to investigate cytokine signaling in respiratory infections.
- Investigated host-pathogen interaction dynamics of Mycobacterium abscessus (MABS) infection in macrophages using live time-lapse microscopy.
- Discovered the role of Smooth MABS morphotype in triggering the release of macrophage extracellular traps.

**Undergrad Researcher** **Dec 2016 – Present**  
*Physics Department, IIT Roorkee. Mentor: Prof. Soumitra Satapathi*

- Founded the first Lab-on-Chip Systems research group in IIT Roorkee.
- Developed a 3D printed microfluidic on-chip cytotoxicity assay.
- Mentored 5+ undergraduate students for 3 different projects.

**Undergrad Researcher** **June 2018 – Present**  
*Biotechnology Department, IIT Roorkee. Mentor: Prof. Partha Roy*

- Leading the development of a circulating tumor cell liquid biopsy platform using magnetophoresis and microfluidic flow-focusing for tunable capture efficiency.
- Initiated the development of a tumor-on-chip model.

**Co-Founder and CTO** **Aug 2017 – Jan 2019**  
*LabX Scientific Pvt. Ltd., TIDES IIT Roorkee*

- Co-founded the personalized nano-fabrication startup.
- Lead the development of a Smart Spin-Coater equipped with real-time film thickness control.
- Presented at more than 5 elevator pitches and startup pitch-presentations.

## LEADERSHIP & TEACHING

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### Joint Secretary and Co-Convenor

May 2018 – Jul 2020

*Tinkering Lab, IIT Roorkee*

- Supervised IIT Roorkee's additive manufacturing facilities.
- Conducted 3D printing and advanced prototyping workshops for 200+ students.
- Supervised the development of lab's online equipment booking platform.

### Mentor

2018 – 2019

*Student Mentorship Program (SMP), IIT Roorkee*

- Provided mentorship to 5 first-year undergraduate students in the Department of Physics during 20+ mentoring sessions.

## PATENT APPLICATIONS & PRESENTATIONS

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- **Kumar, A**, Satapathi, S & Indian Institute of Technology Roorkee 2018, "3D Printed Peristaltic Pump with Automated Gear Assembly Fabrication", IN 201811031020. (Patent publication can be accessed at <https://ipindiaservices.gov.in/publicsearch>).
- **Kumar, A**, Das, N, Roy, P, Satapathi, S & Indian Institute of Technology Roorkee 2019, "Cell Cytotoxicity Assay Device and Method of Manufacturing", IN 201911036596.
- **Kumar, A**, Nath, P, Das, N, Satapathi, S, Roy, P, "A Versatile 3D Printed Layer Sandwiching Approach with Integrated Sensing for POC Diagnostics" [Poster], MRS Virtual Spring/Fall Meeting & Exhibit 2020 (virtual; 2020, planned).

## AWARDS & GRANTS

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Best B. Tech Project Award, IIT Roorkee

Nov 2020

McKinney Lab Funding (Covered stay at EPFL, Switzerland)

May - Dec 2019

IIT Roorkee Alumni Travel Award

Apr 2019

Indian Association of Physics Teachers Award

Jan 2016

## ONLINE COURSES AND CERTIFICATION *(Certificates are hyperlinked)*

Introductory Human Physiology by Duke University, Introduction to the Biology of Cancer by Johns Hopkins University (with Honors), Finding Hidden Messages in DNA (Bioinformatics-I) by UCSD, Generative Design for Additive Manufacturing by Autodesk, LabVIEW Core-1 Certification

## SKILLS

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**Hardware/ Wet Lab:** Cell Culture (BSL2/P2), 3D Printing, Bioprinting, AFM (beginner), Confocal Microscopy, Arduino, Electronics, IOT

**Software/ Dry Lab:** C++, MATLAB, ImageJ Macro, COMSOL, Autodesk Fusion 360, Simulink, NI Multisim, GraphPad Prism

## LANGUAGES

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English ●●●●  
Hindi ●●●●

French ●○○○

## MEMBERSHIPS

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**MRS:** Materials Research Society

**AACR:** American Association for Cancer Research

**ASCO:** American Society of Clinical Oncology

**ESMO:** European Society for Medical Oncology

## REFERENCES

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### **Prof. John McKinney**

Full Professor, School of  
Life Sciences. EPFL,  
Switzerland

[john.mckinney@epfl.ch](mailto:john.mckinney@epfl.ch)

### **Prof. Soumitra Satapathi**

Associate Professor, Department  
of Physics, Indian Institute of  
Technology Roorkee.

[soumitra.satapathi@ph.iitr.ac.in](mailto:soumitra.satapathi@ph.iitr.ac.in)

### **Prof. Partha Roy**

Professor, Department of  
Biotech., Indian Institute of  
Technology Roorkee.

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