

Navjot Kaur, PhD scholar

navjot@iisc.ac.in, kaur19.navjot@gmail.com, skype id: nkaur19, +91-9041360424

Linkedin Profile: <https://in.linkedin.com/in/navjotkauriisc>

SUMMARY

- Isothermal DNA amplification specialist with 4 years of experience in developing and optimizing loop-mediated isothermal amplification (LAMP) assays
- Designing, fabricating, and optimizing paper-based diagnostic tools for detection of different molecules like DNA, glucose, proteins
- Developed a diagnostic tool for tuberculosis and tested on clinical samples
- Developed lateral flow assays for target-specific DNA detection
- Independently trained 4 interns on various projects till now
- Avid science and research communicator

RESEARCH EXPERIENCE

Indian institute of Science (IISc), Bangalore, Doctoral researcher **2016-present**
Department of Chemical Engineering, Laboratory of Prof. Bhushan J. Toley

- Designed and fabricated a paper-and-plastic based DNA detection tool along with a fluorescence imaging box for tuberculosis diagnosis
- Tested 30 clinical patient samples on the device
- Developed a stoichiometric and pseudo kinetic model to enhance existing understanding of reaction pathways and types of DNA structures generated in LAMP
- Designed and optimized a LAMP assay for *rpoB* gene of *Mycobacterium tuberculosis*
- Independently designed a storage study to evaluate changes in protein affinity, fluid imbibition, and wicking rates of paper membranes used in lateral flow assays
- Developing a study to assess impact of excipients and storage conditions on dry storage of LAMP reagents, especially the DNA extension polymerase

Panjab University, Chandigarh, Undergraduate researcher **2012-2015**
Dr. S.S.B.U.I.C.E.T, Laboratory of Prof. R. K. Wanchoo

- Studied flow and thermal properties of nanofluids experimentally
- Correlations proposed to co-relate friction factors with nanofluid concentration

EMPLOYMENT

Process Engineer, Fluor, New Delhi office **2015-2016**
Worked on “KNPC New Refinery Project” in the Sulfur block in a team of 16 members

EDUCATION

Indian institute of Science (IISc), Bangalore **Ongoing**
PhD, Chemical Engineering, CGPA: 9/10

Dr. S.S.B.U.I.C.E.T, Panjab University, Chandigarh **2011-2015**
B.E. Chemical Engineering, CGPA: 9.539/10
Gold medallist for the 2015 batch of Chemical Engineering
Recipient of Prime Minister’s Scholarship for under graduation

AISSE, XII standard, 92.8% **2010-2011**

SSE, X standard, 97% **2008-2009**

TECHNICAL SKILLS

Molecular biology: qPCR, LAMP, molecular beacons, DNA detection probes, lyophilization of DNA amplification mix, developing enzyme activity assays

Bioengineering: Designing and fabricating diagnostic tools, lateral flow assays, cell phone imaging for signal readout, paper-based microfluidics

Data Analysis and software: R, MATLAB, AutoCAD, beginner level Python

Written and oral communication: Peer-reviewed manuscripts, written grants with PI, written popular science and research stories, awarded for oral presentations

In-depth understanding of interdisciplinary approaches: Academically trained as a chemical engineer and transitioning into also being a molecular biologist provided insights into interdisciplinary research strategies, improved grasping power to understand scientific principles of different research fields and work with researchers from diverse backgrounds

PUBLICATIONS AND CONFERENCES

- Flash poster presentation in the ‘First DNA Nanotechnology India Virtual Symposium’ on 5th September 2020.
- “A stoichiometric and pseudo kinetic model of loop-mediated isothermal amplification”, accepted for publication in Journal of Computational and Structural Biology on 23rd August 2020.
- “A modular paper-and-plastic device for tuberculosis nucleic acid amplification testing in limited resource settings”, Nature Scientific Reports, 2019, *Sci Rep* 9, 15367.
- “Paper Stacks for Uniform Rehydration of Dried Reagents in Paper Microfluidic Devices”, Nature Scientific Reports, 2019, *Sci Rep* 9, 1575.
- Poster presentation at ‘Molecular-Med Tri-Con’ in San Francisco, USA in March 2019.
- “Paper-based nucleic acid amplification tests for point-of-care diagnostics”, *Analyst*, 2018, 143, 2213-2234.
- “Multidimensional Paper Networks: A New Generation of Low-Cost Pump-Free Microfluidic Devices”, *Journal of the Indian Institute of Science*, (2018) 98:103-136.
- Represented India at the ‘United Nations Winter Youth Assembly 2018’ held at the United Nations headquarters in New York, USA from 10th to 14th February 2018.

AWARDS AND ACHIEVEMENTS

- Attended ‘AWSAR Popular Science Writing’ webinar organized by Department of Science and Technology (DST), Government of India and Vigyan Prasar on 27th July 2020.
- Second prize for oral presentation at Microfluidics and Lab-on-a-Chip conference organized by SelecBio in September 2019
- First prize for oral presentation in department symposium in May 2019
- Second prize for three minutes technology pitch at Falling Walls Lab India in March 2019, organized by DWIH, New Delhi (https://www.youtube.com/watch?v=1RMV_qz1ZIE)
- News stories covering my research were featured on diagnosticsworldnews.com and many national newspapers and science blogs in 2019
- Popular Science article featured on Quartz India website (<https://qz.com/author/navjot-kaur/>)
- AWSAR Award 2018: Popular science story ranked 15th among top 100 stories from India
- Attended three-day workshop on Science Journalism by British Council and MHRD, India in November 2019
- Awarded for poster presentation in department symposium in 2018
- All India rank 64 in GATE 2016 in Chemical Engineering

- Awarded two gold medals by Panjab University for my academic performance in mathematics and chemistry

INTERESTS

Practicing yoga, reading books, maintaining my travel scrapbook, science communication and creating videos for our family YouTube channel.

PERSONAL DOSSIER

DOB: 19th August 1993

Alternate contact number: 9216311017