

# Akanksha Khandelwal, PhD

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## **SUMMARY**

Biomedical researcher, specialized in cancer biology with nine publications. Also, have five years of undergraduate and postgraduate teaching experience with good communication and interpersonal skills.

## **EDUCATION**

- PhD in Biochemistry and Microbial Sciences** 2020  
*“Identification of differentially expressed circulating microRNAs as candidate molecules for lung cancer detection”*  
Central University of Punjab, Bathinda, Punjab
- Master of Science in Biotechnology** 2010  
Integral University, Lucknow, U.P.
- Bachelor of Science (Biotechnology Major)** 2008  
Mahatma Jyotiba Phule Rohilkhand University, Bareilly, U.P.

## **POSITIONS TAKEN**

- Post-Doctoral Fellow** March 16, 2021- November 26, 2021  
*Indian Institute of Science Education and Research, Pune, Maharashtra*  
DBT-Centre of Excellence Project
- Worked on epigenetic regulation of microRNAs in colorectal cancer.
  - Hands-on training for handling mouse for *in vivo* experiments.
  - Performed lab duties time to time as assigned.
  - Presented and discussed important research articles during lab meetings.

- Scientist-B** November 09, 2020 - February 28, 2021  
*ICMR-Regional Medical Research Centre, Gorakhpur, U.P.*  
Specific to COVID-19 Testing Laboratory, ICMR-RMRC
- Supervision of COVID-19 staff, according to the standard operating protocols for testing.
  - Streamlined the safety measures and protocol for test samples receiving, sorting and pooling for RNA extraction and qRT-PCR test till results entry on the online portal.
  - Performed real-time PCR of the samples and results interpretation to identify COVID-19 positive samples.
  - Optimized different kits for proper discrimination of COVID-19 positive samples.
  - Supervising proper sorting, labeling and storage of COVID-19 positive samples for future use in research.

- Project Associate** October 15, 2020 - November 03, 2020  
*CSIR-National Botanical Research Institute, Lucknow, U.P.*  
CSIR funded project, “Testing for COVID-19”
- Learned to work in the BSL-2 laboratory.
  - Performed RNA extraction, qRT-PCR and results interpretation for COVID-19.

## Senior Research Fellow

January - June, 2019

*Central University of Punjab, Bathinda, Punjab*

ICMR funded, "Identification of circulating microRNAs as potential non-invasive Biomarkers for early detection and elucidating their roles in pathogenesis and treatment of lung cancer"

- Drafted report to get Ethics Committee approval (Institute and Hospital) for research on human samples.
- Expression profiling of dysregulated circulating miRNAs through NGS and their validation via qRT-PCR and data analysis in Non-small cell lung cancer (NSCLC) and healthy control plasma samples.
- Circulating miR-590-5p and miR-320a validation for lung cancer pathogenesis through *in vitro* assays using mammalian cell culture, western blot, flowcytometry and immunohistochemistry.
- Published research work in peer-reviewed good impact factor journals and developed scientific writing, data presentation, editing, formatting and written communication skills.
- Managed lab and inventory, project funding and report submissions; developed communication, presentation skills and work independently as well as in a team.

## Senior Research Fellow

November, 2015 - December, 2016

*Central University of Punjab, Bathinda, Punjab*

DST-Ramanujan Fellow project

- Managed project resources, fundings and its report submissions.
- Executed project related experiments.

## Research Scholar and Teaching Assistant

July, 2013 - August, 2015

*Jaypee University of Information Technology, Wagnaghat, Solan, H.P.*

- Assisted in obtaining Ethics Committee approval (Institute and Hospital) to work with human samples.
- Clinical samples collection from Regional Cancer Center, Indira Gandhi Medical College, Shimla, H.P.
- Circulating microRNAs differential expression in multiple cancers through qRT-PCR and data analysis.
- Differential protein profiling of clinical plasma samples.
- Maintained stocks of plasma, circulating miRNAs, proteins and DNA isolated from clinical blood samples.
- Maintained lab records and worked as Lab Manager.
- Independently handled all the lab duties.
- Completed PhD course work and qualified university comprehensive exam, PhD pre-requisite.
- Presentation skills in the form of journal clubs and progress seminars.
- Tutorial classes for B.Tech Biotechnology students.
- Prepared Laboratory Manuals, conducted Laboratory classes and assisted in preparing exam results for B.Tech and M.Tech Biotechnology students.
- Assisted in supervising B.Tech and M.Tech Biotechnology project students.

## Faculty, Biotechnology

August, 2010 - June, 2013

*Khandelwal College of Management Science and Technology, Bareilly, U.P.*

- Mentored and taught B.Sc. Biotechnology curriculum and their lesson planning.
- Laid foundation for starting Biotechnology Lab and its Curriculum development.
- Evaluated internal and external practical exams.
- Counseled undergraduate students for their future prospects.
- Organized seminars, cultural events and educational trips for the students.

## Research Assistant

May, 2011 – August, 2011

*ICMR-National Institute of Malaria Research, Dwarka, New Delhi, Delhi*

ICMR-funded, "Genetic diversity and population structure of *Anopheles minimus* in Northeastern India"

- Plasmodium DNA isolation from infected patients' dried blood spots and maintained their stocks.
- Nested PCR for Plasmodium species confirmation and designed primer for the *P.vivax* vaccine candidate region.

- Literature review and weekly journal club paper presentations.
- Processed PCR products for Sanger sequencing, sequence alignment to find SNPs.
- Gained experience to work independently and in a team.

## Research Trainee

January, 2010 - April, 2010

*ICAR-Indian Veterinary Research Institute, Bareilly, U.P.*

Master's Project, "Cloning and characterization of Ubiquitin Cross-Reactive Protein (UCRP) in *Capra hircus*"

- Exposure of research and learned various molecular biology techniques.
- Conducted gene cloning experiments as a result UCRP gene sequences were submitted for 3 goat breeds.
- Learned to work in a team as well as independently.

## **PUBLICATIONS and SUBMISSIONS**

[Cumulative IF: 44.758, Citations: 282, h-index: 07, i10-index: 06]

1. Barwal T. S., Singh N., Sharma U., Bazala S., Rani M., Behera A., Kumawat R. K., Kumar P., Uttam V., **Khandelwal A.**, Barwal J., Jain M., Jain A. (2022). miR-590-5p: A double-edged sword in the oncogenesis process. *Cancer Treatment and Research Communications*, 32, 100593. [IF: 1.571, Citations: NA]
2. Sharma U., Barwal T. S., **Khandelwal A.**, Rana M. K., Rana A. P. S., Singh K., Jain A. (2022). Circulating Long Non-Coding RNAs LINC00324 and LOC100507053 as Potential Liquid Biopsy Markers for Esophageal Squamous Cell Carcinoma: A Pilot Study. *Frontiers in Oncology*, 12, 823953. [IF: 5.738, Citations: 03]
3. **Khandelwal, A.**, Seam, R. K., Gupta, M., Rana, M. K., Vasquez, K. M., & Jain, A. (2021). Circulating miR-320a Functions as a Tumor Suppressor by Targeting the AKT3 Signaling Pathway in Non-Small Cell Lung Cancer. *Frontiers in Oncology*, 11, 645475. [IF: 5.738, Citations: 11]
4. Sharma, U., Barwal, T. S., **Khandelwal, A.**, Rana, M. K., Singh, A. P., Vasquez, K. M., & Jain, A. (2021). LncRNA ZFAS1 Inhibits Triple-Negative Breast Cancer by Targeting STAT3. *Biochimie*, 182, 99-107. [IF: 4.372, Citations: 15]
5. Thakur, S., Mayank, Sarkar, B., Ansari, A. J., **Khandelwal, A.**, Arya, A., Poduri, R., & Joshi, G. (2021). Exploring the magic bullets to identify Achilles' heel in SARS-CoV-2: Delving deeper into the sea of possible therapeutic options in Covid-19 disease: An Update. *Food and Chemical Toxicology*, 147, 111887. [IF: 5.572, Citations: 08].
6. **Khandelwal, A.**, Seam, R. K., Gupta, M., Rana, M. K., Prakash, H., Vasquez, K. M., & Jain, A. (2020). Circulating microRNA-590-5p functions as a liquid biopsy marker in non-small cell lung cancer. *Cancer Science*, 111(3), 826-839. [IF: 6.518, Citations: 40]
7. Tamang, S., Acharya, V., Roy, D., Sharma, R., Aryaa, A., Sharma, U., **Khandelwal, A.**, Prakash, H., Vasquez, K. M., Jain, A. (2019). SNHG12: An LncRNA as a Potential Therapeutic Target and Biomarker for Human Cancer. *Frontiers in Oncology*, 9, 901. [IF: 5.738, Citations: 85]
8. **Khandelwal, A.**, Malhotra, A., Jain, M., Vasquez, K. M., & Jain, A. (2017). The emerging role of long non-coding RNA in gallbladder cancer pathogenesis. *Biochimie*, 132, 152-160. [IF: 4.372, Citations: 32]
9. **Khandelwal, A.**, Bacolla, A., Vasquez, K. M., & Jain, A. (2015). Long non-coding RNA: A new paradigm for lung cancer. *Molecular Carcinogenesis*, 54(11), 1235-1251. [IF: 5.139, Citations: 88]
10. **Gene sequences submitted** to NCBI for *Capra hircus* Ubiquitin Cross-reactive Protein, accession Nos. HQ329184.1, HQ329185.1 and HQ329186.1.

## **CONFERENCE PROCEEDINGS**

**Khandelwal, A.**, & Jain, A. (2018, February). Circulatory miRNAs as potential biomarkers for lung cancer. In *CANCER MEDICINE* (Vol. 7, pp. 11-11). 111 RIVER ST, HOBOKEN 07030-5774, NJ USA: WILEY.

## **RESEARCH SKILLS**

Ethics Approval • Clinical sample and data collection from hospital • RNA isolation (mRNA, microRNA and long non-coding RNA) • Quantitative Real-Time Polymerase Chain Reaction (qRT-PCR) and data analysis • Mammalian Cell Culture and *in vitro* cell-based assays • Cell Transformation and Transfection • PBMCs isolation • Genomic, and plasmid DNA isolation • Protein isolation • SDS-PAGE and Western Blot • Flow cytometry • Immunohistochemistry • Nested PCR • DNA sequencing • Primer designing • Gene Cloning • Restriction enzyme digestion • Mouse-handling for *in vivo* experiments • Scientific writing and editing • Lab management • Handling project fundings and their report submission • Communication skills.

**Computer Skills:** MS office 2010 • qRT-PCR data analysis • GraphPad Prism • Image J, NIH • Image Lab, Bio-Rad • Adobe Illustrator • miRBase • TargetScan • DIANA micro-T and other miRNA prediction and validation tools • KEGG pathway • String • Vector NTI, Invitrogen • Preliminary sequencing data analysis.

## **SCIENTIFIC MEETINGS**

- Presented Poster, 38<sup>th</sup> Annual Convention of Indian Association for Cancer Research, Chandigarh, March 1-3, 2019
- Awarded First prize for Poster presentation in the CME, Pathology Update, Advanced Cancer Institute, Bathinda Punjab, November 17, 2018
- National workshop on “*Cytokine analysis and phenotyping of B/T cells*” using Flow Cytometer Central University of Punjab, Bathinda for two days
- Presented Poster, 33<sup>rd</sup> Annual Convection of Indian Association for Cancer Research (IACR), Kollam, Kerala, February 13-15, 2014

## **ACHIEVEMENTS**

2020-21 Recognized by WILEY as a Top cited article for my research article, “Circulating microRNA-590-5p functions as a liquid biopsy marker in non-small cell lung cancer” in Cancer Science journal.

2018 Awarded First Prize for Poster Presentation at CME Pathology Update organized by Advanced Cancer Institute, Bathinda, India.

2014 Awarded travel grant for attending the IACR 33<sup>rd</sup> Annual Convention, Kerala, India.

2012 Common Eligibility Test for PhD for Uttar Pradesh state universities.

Life member of Indian Association for Cancer Research.

## **DECLARATION**

I hereby declare that the above-mentioned information is correct to my knowledge and bear the responsibility for the correctness of the same.

Akanksha Khandelwal