



# Rinki Verma

M.Pharma, Ph.D.

Gupta Lab  
Pharmaceutical Sciences, College of Pharmacy & Health Sciences, St. John's University.

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Expertise in developing biocompatible polymeric nanocarriers, fluorescent-based nanoparticles, and drug loading and encapsulation for diagnosing and treating Breast cancer, lung cancer, and Alzheimer's disease rat & mice models.

## Experience & Education

During my postdoc, I am researching Hemophilia A disease using a mice model.

During my Ph.D., I specialized in various techniques such as ionic gelation and chemical routes. I applied these techniques to synthesize a wide range of polymeric and metallic nanoparticles. Furthermore, I encapsulated them with anti-cancer drugs to treat triple-negative breast cancer in rat models. The triple-negative tumor in rats was induced using chemical carcinogens (DMBA & NMU). In collaboration, actively participated in research on lung cancer and Alzheimer's disease using mouse models.

**Postdoc:** Department of Pediatrics, School of Medicine, Stanford; **PI:** Dr. Glaivy Batsuli.

### Doctor of Philosophy

School of Biomedical Engineering, Indian Institute of Technology-(BHU), Varanasi, India.

**Ph.D. Thesis:** Formulation and evaluation of methotrexate-loaded polymeric nanoparticles for breast cancer treatment.

**Thesis Submitted:** - 19<sup>th</sup> July 2023

**Ph.D. Supervisor:** Dr. Manoj Kumar.

**B.Pharma & M.Pharma Integrated Dual Degree:** Department of Pharmaceutical Engineering & Technology IIT (BHU), Varanasi, India.

**Master Thesis:** Preparation and Characterization of Cocrystals of Valsartan for Enhanced Bioavailability in Hypertensive Rats.

**M. Pharma Supervisor:** Prof. Sanjay Singh.

## Academic Achievements

Work as a member of the Hospitality Team in a Seminar on Emerging Trends in Pharmaceutical Research & All India Pharma Student's Conclave, Sprit 13 IIT(BHU), Varanasi  
Gold medal in Spardha 2014 (All India Game & Sports Festival) IIT(BHU), Varanasi

Presented a model on G-Protein Coupled Receptor on the Institute Day in IIT BHU at the Department of Pharmaceutics, 2016.

## Skill Set

**Lab Expertise:** Animal handling:

a) **Rat:** Induced breast cancer using carcinogens and stem cells.

b) **Mice:** Induction of lung cancer using carcinogens.

**Alzheimer's disease mice model:** Memory impairment was induced in mice by scopolamine.

- Histology of tissue.
- Inflammatory biomarker (ELISA kit)
- Biochemistry (Liver and Kidney function test).
- Basic knowledge in Cell culture, cellular uptake, MTT, cell live and dead assay.
- Microbial cell culture, Bacterial staining, MIC, and MBC.

**Hands-on Equipment:**

Fluorescence Spectrometers, FTIR, and UV-VIS. Flow cytometer, HPLC, in-vivo optical imager (IVIS in-vivo imaging), Biochemical analyzer, Microscopy (Fluorescence and confocal), Tensiometer, Sonicator Ultracentrifuge, Microplate reader, Particle size, Zeta potential analyzer and flow cytometry.

**Software Tools:**

Basic knowledge of software like Design Expert, Minitab (design of experiment), Origin, ImageJ, DD solver, Kinetica, and Prism.

## Language

English: First language

Hindi: Mother language

## Hobbies

Reading scientific literature, Traveling, Cooking

## Publication

1. **Rinki Verma**, and Manoj Kumar. "Development and Optimization of Methotrexate Encapsulated Polymeric Nanocarrier by Ionic Gelation Method and its Evaluations" *ChemistrySelect* 7.48 (2022): e202203698 (IF=2.3)  
<https://doi.org/10.1002/slct.202203698>
2. **Rinki Verma**, Varsha Rani, and Manoj Kumar. "In-vivo anticancer efficacy of self-targeted methotrexate-loaded polymeric nanoparticles in solid tumor-bearing rat." *International Immunopharmacology* 119 (2023): 110147 (IF=5.7)  
<https://doi.org/10.1016/j.intimp.2023.110147>
3. **Rinki Verma**, Virendra Singh, Biplob Koch, Manoj Kumar "Evaluation of Methotrexate Encapsulated Polymeric Nanocarrier for Breast Cancer Treatment." *Colloids and Surface B: Biointerface* 2023 (IF= 5.99)  
<https://doi.org/10.1016/j.colsurfb.2023.113308>
4. Varsha Rani, **Rinki Verma**, Krishan Kumar, Ruchi Chawla "Role of pro-inflammatory cytokines in Alzheimer's disease and neuroprotective effects of pegylated self-assembled nanoscaffolds." *Current Research in Pharmacology and Drug Discovery* (2023) (IF = 5.5)  
<https://doi.org/10.1016/j.crphar.2022.100149>
5. Rani Varsha, **Rinki Verma**, Krishan Kumar, and Ruchi Chawla. "pH-influenced self-assembled stealth nanoscaffolds encapsulating memantine for treatment of Alzheimer's disease." *Journal of Biosciences* 48, no. 3 (2023): 31 (IF= 2.7)  
<https://doi.org/10.1007/s12038-023-00343-5>.
6. Kumar K, **Verma R**, Manjit, Priya, Mishra M, Rani V, Chawla R. In Vivo Cancer Microenvironment Responsive Glycan Receptor-Targeted Nanoparticles for Gemcitabine Delivery to Benzo [a] pyrene-Induced Lung Cancer Model. *AAPS PharmSciTech*. 2023 Dec 19;25(1):2 (IF = 4).  
<https://doi.org/10.1208/s12249-023-02714-5>
7. Mohini Mishra, **Rinki Verma**, Sharma, Aditya, Krishan Kumar, Ruchi Chawla In-vivo evaluation of Gemcitabine and Epigallocatechin-3-gallate loaded solid lipid nanoparticles on B(a)P induced lung cancer model via intranasal route: A prognostic approach in the treatment of lung cancer submitted to *AAPS PharmSciTech* (under revision).
8. **Rinki Verma**, Devdutt Sharma, Manoj Kumar "Chitosan Functionalized Fluorescent CaCO<sub>3</sub> Nanocarrier Loaded with Methotrexate as Unique Theragnostic Tool for Triple Negative Breast Cancer" (Manuscript has been submitted to *Applied Materials & Interfaces*).
9. Varsha Rani, **Rinki Verma** and Ruchi Chawla, Biodistribution, Pharmacokinetic and pharmacodynamic effect of self-assembled nanoscaffolds in a neurodegenerative condition of Alzheimer's disease (Manuscript has been submitted to *International Journal of Biological Macromolecules*).
10. Anshuman Singh, **Rinki Verma**, Bhanu Pratap Singh, Amit Singh, Manoj Kumar, Process Optimization and Adsorption of Cr (VI) from Synthetic Water using Biochar Modified PVA-Chitosan Hydrogel Beads (writing the manuscript).

## Book Chapter

- Upadhyay P, Shukla R, Mishra SK, Dubey GP, **Verma R**, Purohit S. Medicinal Role of Phytomolecules in the Treatment and Management of Cancer (Chapter 15). *Phytochemistry, Volume 2: Pharmacognosy, Nanomedicine, and Phytochemicals* CRC press 2018. Hard ISBN no.9781771887601

## Patent

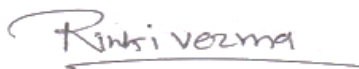
- A patent Application titled "A COMPOSITION FOR TREATING BREAST CANCER AND A METHOD FOR PREPARATION THEREOF" having Application No. 202311061352 was filed at the Indian Patent Office on 12 September 2023.

## Conferences and Workshops

- Poster presented on “Formulation & Evaluation of Intranasal Delivery of polymeric Nanoparticles of Frovatriptan succinate” at 68<sup>th</sup> Indian Pharmaceutical Congress, Andhra University, Vishakhapatnam in 2016.
- Attended a High-End Workshop ‘KARYASHALA’ on Flow Cytometry-Cell Death and Drug Discovery held online from October 17<sup>th</sup> to 23<sup>rd</sup>, 2021. Organized by the Department of Biotechnology, National Institute of Pharmaceutical Education and Research, S.A.S.Nagar
- Poster presented at SMST-2022, 4<sup>th</sup> International Conference by SIRMB, held at Indian Institute of Technology Bombay, from 13<sup>th</sup> to 15<sup>th</sup> October 2022.
- One-day workshop on Green and Sustainable Technologies Initiatives at IIT(BHU) on 26<sup>th</sup> November 2022.
- DST STUTI ICT a hands-on training on Flow Cytometry at the Department of Pharmaceutical Engineering and Technology IIT BHU, from 29/11/2022 to 05/12/2022.
- Online Course on Molecular Cloning 28<sup>th</sup> to 31<sup>st</sup> March 2023, Organized by Flowcytometry Solutions (P) Ltd, Jaipur, India.

## Declaration

I hereby declare that the information mentioned above is true to the best of my knowledge.

  
Rinki Verma