

# Ashique Al Hoque, MSc., PhD

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## Google Scholar ID:

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ResearchGate ID: <https://www.researchgate.net/profile/Ashique-Hoque-2/research>

## RESEARCH INTERESTS

- **Nanomedicine & Targeted Cancer Therapy** – Development of advanced ligand-functionalized nanocarriers for site-specific drug and gene delivery in oncology (HCC, prostate, lung, AML, colorectal cancers) with enhanced therapeutic efficacy in preclinical models.
- **Biomaterials & Tissue Engineering** – Design and fabrication of polymer-based biomaterials, scaffolds, and nanocomposites for tissue regeneration, wound healing, and regenerative medicine applications.
- **Polymer & Organic Synthesis** – Rational design, synthesis, and comprehensive physicochemical characterization of functional polymers and small organic molecules for biomedical and nanomedicine applications.
- **Gene & Oligonucleotide Therapeutics** – Development of polymer-mediated gene delivery systems and antisense oligonucleotide (ASO) platforms for targeted gene silencing in cancer and genetic disorders.
- **Preclinical Validation of Nanotherapeutics & Biomaterials** – Extensive in vitro and in vivo evaluation (xenograft, orthotopic, and disease models) to assess therapeutic efficacy, biocompatibility, and safety profiles.
- **Computational Drug & Biomaterial Design** – Integration of molecular modeling, docking, bioinformatics, and ADME/Toxicity predictions for rational optimization of nanomedicines and tissue-engineering constructs.

## RESEARCH EXPERIENCE

Role/Position	Year	Department & Institute	Area of Research
Postdoctoral Fellow	December 2025- Till Date	School of Medical Science & Technology, IIT Kharagpur	Biomaterials, Tissue Engineering, Cancer Theranostics
Senior Research Fellow	March 2019-July 2024	Jadavpur University, Kolkata, India	Cancer therapeutics, Targeted drug delivery, Nanomedicine for Cancer research
Visiting Research Fellow	March 2022- August 2022	North Dakota State University, USA	Polymer Chemistry, Nanoparticles research, Gene transfection, Cancer research
Junior Research Fellow	March 2017- March 2019	Jadavpur University, Kolkata, India	Cancer therapeutics, Targeted drug delivery, Nanomedicine for Cancer research
Project Intern (MS-Project)	January 2015- June 2015	Jadavpur University, Kolkata, India	Transdermal drug delivery

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## EDUCATION

2017-2024

**Ph.D. in Science (Cancer Biology and Nanoformulated anticancer drug delivery)**- Under the Supervision of Prof. (Dr.) Biswajit Mukherjee, Professor and Former Head of the Department (HOD), Department of Pharmaceutical Technology, Jadavpur University, Kolkata, India.

2013-2015

**Master of Science (M.Sc.) in Medicinal Chemistry with 82.21% Marks** from Aliah University, Kolkata, India.

2010 - 2013

**Bachelor of Science (B.Sc.) in Chemistry with 75.50% Marks** from Aliah University, Kolkata, India.

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## RESEARCH/ TECHNICAL SKILLS

Polymer synthesis, Nanoparticles and nanoliposomes synthesis, Hydrogels & Transdermal patches development, Cell culture involved experiments, Fluorescence-activated cell sorting, Fluorescence and Confocal Microscopy, Field Emission Scanning Electron Microscopy, Transmission Electron Microscopy, Agarose Gel electrophoresis, SDS-PAGE, Ultracentrifuge, FTIR, Nuclear magnetic resonance spectroscopy (NMR), Dynamic Light Scattering, and some other techniques related to my research area.

**Animal handling:** Extensive experience with animal model development: Prostate cancer model (mice), colorectal cancer model (mice, rat), Lung cancer model (rat, mice), Hepatocellular cancer model (mice, rat), blood and various organ collection, drug treatment to the animals. Post injection mice/rats euthanization and tissue collections to perform histopathology, immunohistochemistry etc. In vivo pharmacokinetics analysis and gamma scintigraphy imaging/PET-CT using radiolabeled nanoparticles.

**Data analysis skills:** Opus from Bruker alpha for FTIR analysis, MestreNova for NMR spectroscopic analysis, WSxM for scanning probe microscopy, Graph pad Prism, Origin, ImageJ, Gimp, Adobe Illustrator, Biorender, BD accuri C6 Plus, Biovia Discovery Studio, AutoDock 4.2, AutoDock Vina, Pymol.

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## HONORS AND AWARDS

- Awarded with the **best oral presentation** in the National seminar on “Advancing healthcare through Pharmaceutical and Biomedical Applications” held on 19<sup>th</sup> January, 2024 in Jadavpur University, Kolkata, India.
- Awarded with the **best poster** presentation in the 2 days National Conferences on Advanced Therapeutics For Life-threatening And Chronic Diseases Diseases held in the Department of Pharmaceutical Technology, JIS University, Kolkata.
- Achieved **3<sup>rd</sup> position** in poster presentation category in the “**3<sup>rd</sup> Pharmaceutical Technology ‘Indian Association of Pharmaceutical Scientists and Technologist’ (IAPST) International Conference 2019**” organized by Centurian University, Bhubaneswar from January 19-20, 2019.
- Achieved **Travel Grant Award from Jadavpur University to attend 24<sup>th</sup> International Conference on Cancer Research and Pharmacology** held during August 5-6, 2019 in Singapore.
- Selected as a **Visiting Faculty** for taking Pharmaceutical Chemistry Practical/Laboratory Classes of 2nd-semester 1st year Bachelor of Pharmacy Students in the Department of Pharmaceutical Technology, Jadavpur University, Kolkata in 2019.
- Achieved **Travel Grant Award** from Jadavpur University to attend **6th International Postgraduate**

**Conference on Pharmaceutical Sciences 2018 International Medical University, Kuala Lumpur, Malaysia 15 - 16 August 2018.**

- Achieved prestigious **DST Inspire Fellowship under the Department of Science and Technology, Government of India** in 2017.
- Achieved **1<sup>st</sup> rank in Master of Science in Chemistry** in the Department of Chemistry, Aliah University, Kolkata, India.
- Selected for Participation in the Academic and Interaction Sessions with **8 Nobel Laureates** and Eminent Scientists around the World during the 6<sup>th</sup> Science Conclave 2013. An MHRD-DST, Government of India Initiative at IIIT-A during December 08-14, 2013.
- Worked as a reviewer for the journal 'European Journal of Medicinal Chemistry', Elsevier Science.

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## TEACHING EXPERIENCE

- **Assistant Teacher at Saifee Hall Golden Jubilee English Public School (SGJEPS), Kolkata.**  
Worked as an assistant teacher of Chemistry during September 2025 to December 2025 (4 months). I taught the students of higher secondary level (Class 11 & 12).
- **Visiting Faculty at Department of Pharmaceutical Technology, Jadavpur University (2019)**  
Taught Pharmaceutical Chemistry laboratory classes' 2nd-semester 1st year Bachelor of Pharmacy (B.Pharm.) students in the Department of Pharmaceutical Technology, Jadavpur University, Kolkata in 2019.

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## SELECTED PUBLICATIONS

1. **Al Hoque, Ashique**, Debasmita Dutta, Brahamacharry Paul, Leena Kumari, Iman Ehsan, Moumita Dhara, Biswajit Mukherjee et al. " $\Delta$ PSap4# 5 surface-functionalized abiraterone-loaded nanoparticle successfully inhibits carcinogen-induced prostate cancer in mice: a mechanistic investigation." *Cancer Nanotechnology* 14, no. 1 (2023): 73.
2. **Al Hoque, Ashique**, Prakash Kannaboina, Yeabstega Abraham, Masfique Mehedi, Mukund P. Sibi, and Mohiuddin Quadir. "Furan-rich, biobased transfection agents as potential oligomeric candidates for intracellular plasmid DNA delivery." *RSC advances* 14, no. 44 (2024): 32637-32647.
3. Dutta, Debasmita<sup>#</sup>, **Ashique Al Hoque**<sup>#</sup>, Brahamacharry Paul, Shahnaz Begum, Uday Aditya Sarkar, and Biswajit Mukherjee. 2025. "Molecular Insights into the Antineoplastic Potential of Apigenin and Its Derivatives: Paving the Way for Nanotherapeutic Innovations." *Expert Opinion on Drug Delivery*, March, 1–20. doi:10.1080/17425247.2025.2477664. (**#Joint 1<sup>st</sup> author**)
4. Ray, Manisheeta, **Ashique Al Hoque**, Saptarshi Chatterjee, Sourav Adhikary, Samrat Paul, Biswajit Mukherjee, and Amitava Bhattacharya. "Clofarabine-loaded aptamer-conjugated biodegradable nanoparticle successfully targeted CD117 overexpressed HL60 cells and potentially induced apoptosis." *Heliyon* (2025).
5. Dutta, Debasmita, **Ashique Al Hoque**, Brahamacharry Paul, Jun Hyoung Park, Chinmay Chowdhury, Mohiuddin Quadir, Soumyabrata Banerjee et al. "EpCAM-targeted betulinic acid analogue nanotherapy improves therapeutic efficacy and induces anti-tumorigenic immune response in colorectal cancer tumor microenvironment." *Journal of Biomedical Science* 31, no. 1 (2024): 81.
6. Mukherjee, Alankar, Ramkrishna Sen, **Ashique Al Hoque**, Tapan Kumar Giri, and Biswajit Mukherjee. "H-ras-targeted genetic therapy remarkably surpassed docetaxel treatment in inhibiting chemically induced hepatic tumors in rats." *Life Sciences* 348 (2024): 122680.
7. Adhikary, Sourav, **Ashique Al Hoque**, Manisheeta Ray, Pritha Pal, Mahua Ghosh Chaudhuri, and Rajib Dey. "Tailored Transdermal Drug Delivery System for Pain Management: Development and

Evaluation of Clonidine Hydrochloride/Sodium Montmorillonite Composite Patch." *BioNanoScience* 14, no. 2 (2024): 1651-1664.

8. Adhikary, Sourav, **Ashique Al Hoque**, Manisheetta Ray, Swastik Paul, Akbar Hossain, Subrata Goswami, and Rajib Dey. "Investigation of paracetamol entrapped nanoporous silica nanoparticles in transdermal drug delivery system." *Applied Biochemistry and Biotechnology* 195, no. 8 (2023): 4712-4727.
9. Kumari, Leena, Iman Ehsan, Arunima Mondal, **Ashique Al Hoque**, Biswajit Mukherjee, Pritha Choudhury, Arunima Sengupta, Ramkrishna Sen, and Prasanta Ghosh. "Cetuximab-conjugated PLGA nanoparticles as a prospective targeting therapeutics for non-small cell lung cancer." *Journal of Drug Targeting* 31, no. 5 (2023): 521-536.
10. Wang, Ke, Raj Shankar Hazra, Qian Ma, Md Rakib Hasan Khan, **Ashique Al Hoque**, Long Jiang, Mohiuddin Quadir, Yuanming Zhang, Shudong Wang, and Guangting Han. "Robust biocompatible bacterial cellulose/silk nonwoven fabric/silk sericin sandwich membrane with strong UV-blocking and antioxidant properties." *Cellulose* 30, no. 6 (2023): 3973-3993.
11. Dhara, Moumita, **Ashique Al Hoque**, Ramkrishna Sen, Debasmita Dutta, Biswajit Mukherjee, Brahamachary Paul, and Soumik Laha. "Phosphorothioated amino-AS1411 aptamer functionalized stealth nanoliposome accelerates bio-therapeutic threshold of apigenin in neoplastic rat liver: a mechanistic approach." *Journal of Nanobiotechnology* 21, no. 1 (2023): 28.
12. Ehsan, Iman, Leena Kumari, Ramkrishna Sen, **Ashique Al Hoque**, Biswajit Mukherjee, Alankar Mukherjee, Prasanta Ghosh, and Sanchari Bhattacharya. "J591 functionalized paclitaxel-loaded PLGA nanoparticles successfully inhibited PSMA overexpressing LNCaP cells." *Journal of Drug Delivery Science and Technology* 75 (2022): 103689.
13. Badwaik, Hemant Ramachandra, **Ashique Al Hoque**, Leena Kumari, Kalyani Sakure, Madhuri Baghel, and Tapan Kumar Giri. "Moringa gum and its modified form as a potential green polymer used in biomedical field." *Carbohydrate polymers* 249 (2020): 116893.
14. Sepay, Nayim, Nadir Sepay, **Ashique Al Hoque**, Rina Mondal, Umesh Chandra Halder, and Mohd Muddassir. "In silico fight against novel coronavirus by finding chromone derivatives as inhibitor of coronavirus main proteases enzyme." *Structural Chemistry* 31 (2020): 1831-1840.

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## INTERNATIONAL AND NATIONAL CONFERENCES & WORKSHOPS ATTENDED

- **Oral presentation** in the National seminar on "Advancing healthcare through Pharmaceutical and Biomedical Applications" held on 19<sup>th</sup> January, 2024 in Jadavpur University, Kolkata, India.
- **Poster presentation** 2 days National Conferences on Advanced Therapeutics For Life-threatening And Chronic Diseases Diseases held on 19-20 September 2023 in the Department of Pharmaceutical Technology, JIS University, Kolkata, India.
- **Oral presentation** at 4<sup>th</sup> International Conference on "Emerging fields of research in Biotechnology and Biomedicine" held on 16<sup>th</sup> November 2022 in Jadavpur University, Kolkata, India.
- **Oral presentation** at 24<sup>th</sup> International Conference on Cancer Research and Pharmacology held during August 5-6, 2019 in Singapore.
- **Poster presentation** at 3<sup>rd</sup> Pharm Tech IAPST International Conference 2019 on Molecular Mechanism of Diseases and Novel Therapeutic Approaches at Centurion University, Bhubaneswar from January 19-20, 2019.
- **Poster presentation** at National Conference on 'Recent Advances in Chemistry 2019' Department of Chemistry, NIT Meghalaya.

- **Oral Presentation** at 6th International Postgraduate Conference on Pharmaceutical Sciences 2018 at International Medical University, Kuala Lumpur, Malaysia 15 - 16 August 2018.
  - **Poster presentation** at the national seminar on “Pharmacy & Healthcare: Traditional Knowledge to Modern Techniques” held on 14th September 2018, at Jadavpur University, Kolkata.
  - **Poster presentation** at ICMR sponsored national seminar on “Quality Control and standardization of Ethnopharmaceuticals in the present era”, held on 4-5th, March 2018 at School of Pharmacy and Life Sciences, CUTM, Bhubaneswar.
  - **Poster Presentation** at “Research Conclave 2017” held in Indian Institute of Technology, Guwahati from 15<sup>th</sup> March to 20<sup>th</sup> March 2017.
  - **National Workshop** on “Revisiting Intellectual Property Rights in the Context of Recent Developments in Science & Technology” at Jadavpur University, Kolkata in October 2016.
  - **Poster presentation** at National Seminar on “Current Perspective on Nanotechnology for Drug Delivery” held in College of Pharmaceutical Sciences, Puri, India on 19th February 2016.
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## REFERENCES

1. **Prof. Santanu Dhara**, Professor, School of Medical Science and Technology, Indian Institute of Technology Kharagpur, West Bengal 721302, India. Email: [sdhara@smst.iitkgp.ac.in](mailto:sdhara@smst.iitkgp.ac.in) , Phone: +91-9434701616
2. **Prof. (Dr.) Biswajit Mukherjee**, Professor & Former Head of the Department, Department of Pharmaceutical Technology, Jadavpur University, Kolkata-700032, India. Email: [biswajit.mukherjee@jadavpuruniversity.in](mailto:biswajit.mukherjee@jadavpuruniversity.in) / [biswajit55@yahoo.com](mailto:biswajit55@yahoo.com), Phone: +91-8420824897.
3. **Dr. Mohiuddin Quadir**, Associate Professor, Department of Coatings and Polymeric Materials, North Dakota State University, 1735 NDSU Research Park Drive, Fargo, ND 58102, USA. Email: [mohiuddin.quadir@ndsu.edu](mailto:mohiuddin.quadir@ndsu.edu) , Phone: +1-6174603586
4. **Prof. (Dr.) Amalesh Samanta**, Head of the Department, Department of Pharmaceutical Technology, Jadavpur University Kolkata-700032, India. Email: [amalesh.samanta@jadavpuruniversity.in](mailto:amalesh.samanta@jadavpuruniversity.in) Phone: +91- 9432315461
5. **Dr. Probir Kumar Ojha**, Associate Professor, Department of Pharmaceutical Technology, Jadavpur University, Kolkata-700032, India. Email: [probirojha@yahoo.co.in](mailto:probirojha@yahoo.co.in) , Phone- +91-8777677004/9903492417
6. **Dr. Md. Hedayetullah Mir**, Associate Professor, Department of Chemistry, Aliah University, Kolkata-700156, India. Email : [chmmir@gmail.com](mailto:chmmir@gmail.com)