

Debjit Ghosh, PhD

debjitg9@gmail.com | +91-8582941296 | Kolkata, India

ORCID ID: orcid.org/0000-0002-6545-9141 | LinkedIn: linkedin.com/in/debjit-ghosh-phd-32b894218

PROFESSIONAL SUMMARY

A passionate and motivated research professional with a demonstrated history of working in the field of Chemistry. A scientific thinker who is highly organized, analytical, detail-oriented, enjoys solving problems, and works well in teams. Author of several scientific research papers published in high-impact peer-reviewed journals.

TECHNICAL EXPERTISE

- **Research and Development:** Herbal and nutraceutical formulation development, pre-formulation; standardization and optimization of Herbal, Ayurvedic, and Polyherbal dosage forms; phytochemical extraction, analysis, and isolation; New Product Development (NPD), organic synthesis, scale up, and technology transfer
- **Drug Delivery:** Sustained/immediate release, bioavailability enhancement (nanoparticles, microspheres); Experience with botanical extracts, oils, vitamins, minerals, antioxidants, peptides, polymers, UV filters
- **Stability Studies and Product Characterisation:** Accelerated or real-time stability, degradation studies, packaging compatibility, shelf-life prediction, particle size, moisture analysis, impurity profiling, viscosity and rheology, assay of bioactive markers, safety testing, microscopy (SEM, TEM)
- **Chromatographic and Spectroscopic Techniques:** Column Chromatography, HPLC, TLC, HPTLC, GC-MS, LC-MS, UV-Vis, AAS, MS, IR, and NMR Spectroscopy; method development and validation as per ICH guidelines
- **Pharmacological and Toxicological Investigations:** *In-vitro* bioassays using cell lines, *In-vivo* studies using animals (pre-clinical studies) following OECD guidelines, microbiological and biochemical analysis
- **Design of Experiments (DoE) and Data Analysis:** Statistical analysis using GraphPad InStat, GraphPad Prism, MATLAB, Chem Sketch, ImageJ, Origin, MS Office applications
- **Scientific Writing and Documentation:** Literature review, manuscript preparation, editorial communications, publications, medical writing, peer review, patent analysis, and technical document preparation
- **Safety standard maintenance and Regulatory knowledge:** Equipment calibration, safety compliance, regulatory guidelines (cGMP, GLP, OECD, ICH, FDA, BIS, ISO, FSSAI, and AYUSH), regulatory writing and documentation

WORK EXPERIENCE

Research and Innovation Manager

Nanosafe Solutions Pvt. Ltd. | New Delhi, India | February 2025 – September 2025

(A material science-based technological start-up in collaboration with IIT Delhi)

- Executed research, formulation, and process development involving polymers, active ingredients, excipients, and surfactant systems covering synthesis, characterization, optimization, and scale-up for commercialization.
- Designed and optimized formulations with a focus on functionality, stability, cost-effectiveness, and regulatory compliance. Conducted analytical characterization using advanced instrumentation and ensured robust data interpretation, documentation, and reporting.
- Conducted comprehensive literature reviews, patent landscaping, and prepared technical (TDS, MSDS) and regulatory documents. Cross-functional collaboration with other departments to ensure smooth scale-up, product quality, safety, and compliance with global standards.

Research Scientist

MGL Group | Rajkot, Gujarat, India | April 2022 – January 2025

- Worked for a new R&D department in collaboration with Dr. Maulik Dhandha (Dermatologist, Pacific Skin Institute, USA) to develop a novel sunscreen formulation for long-lasting protection.
- Performed extensive literature review, patent landscape analysis, and prepared a detailed report and presentation that summarizes findings and analysis of research.
- Successfully prepared and published 2 case studies and 1 research article. Written grants by collaborating with scientific writers. Discussed research articles and also peer-reviewed preprints for Research Hub Foundation.

- Designed experiments, Prepared SOPs, and reviewed reports for the experimentation of developing delayed-release microspheres in collaboration with cross-functional teams.
- Conducted laboratory work independently at Jadavpur University, Kolkata (under the Association of Food Scientists and Technologists India [AFSTI], Calcutta Chapter) for developing herbal sunscreen formulations.
- Communicated and managed external institutions, CROs, and technology development companies to ensure smooth R&D process execution.

EDUCATION

Ph.D. Chemistry (Full Time)

GITAM Institute of Science, GITAM (Deemed to be University), Visakhapatnam

Relevant coursework: Advanced Topics in Organic Chemistry, Separation Techniques, Presentation | **2014-2020**

M.Sc. Pharmaceutical Chemistry

Dolphin (P.G) Institute of Biomedical and Natural Science, Dehradun (Affiliated to HNB Garhwal Central University)

Result: First division (81.03%) | **2011-2013**

B.Sc. Biotechnology (with CBZ)

Dolphin (P.G) Institute of Biomedical and Natural Science, Dehradun (Affiliated to HNB Garhwal Central University)

Result: First division (68.04%) | **2008-2011**

DOCTORAL RESEARCH EXPERIENCE

Doctoral Research Scholar (Full Time)

GITAM (Deemed to be University), Visakhapatnam, Andhra Pradesh, India | **2014-2020**

Thesis title: Pharmacognostical standardization, phytochemical isolation and ascertainment of pharmacological activities of a rare mangrove *Aegialitis rotundifolia* Roxb., leaves in the management of wound injuries.

- Conducted a comprehensive Pharmacognostical study using microscopy, physicochemical analysis, and toxic contaminants determination (Atomic Absorption Spectroscopy (AAS) and Microbiological Analysis).
- Successfully isolated 3 pure compounds, which were characterized using UV-Vis, MS, IR, and NMR Spectroscopy. Performed detailed analytical studies of extracts using HPTLC, HPLC, GC-MS, and LC-Q-TOF-MS.
- Formulated and developed a topical ointment containing plant extract for evaluating the *in vivo* wound healing properties. Stability studies of the ointment were conducted in accordance with the ICH guidelines.
- Conducted a comprehensive Toxicological study and *in vivo* wound healing activities on Wistar albino rats following the OECD guidelines. *In vitro* studies on cell lines (Human Dermal Fibroblast) were also performed.
- Conducted antimicrobial and antioxidant evaluations, including standard *in vitro* and *in vivo* assays, alongside biochemical analyses to support the pharmacological characterization of the plant extract.
- Prepared manuscripts and successfully published 15 scientific papers. Also assisted a few graduate students on their projects, as well as attended a few conferences.

RESEARCH ACHIEVEMENTS

- **Total publications:** 18 (As main author – 6 | Scopus – 10)
- **Scopus Database:** h-index – 7 | 170 Citations by 160 documents
- **Google Scholar:** Citations – 317 | h-index – 10 | i10-index – 11
- **Publication (Highest Impact Factor):** Journal of Pharmaceutical Analysis (**JCR Impact Factor – 8.9**)

SKILLS

- **Soft Skills:** Work collaboratively or independently, critical thinking and problem solving, planning and organizing, leadership and communication, innovation and creativity
- **Computer Skills:** Microsoft Office (MS Word, MS Excel, MS PowerPoint), Google Office Applications, Adobe Acrobat, Adobe Photoshop, Adobe Illustrator
- **Language Skills:** English (Professional), Hindi (Professional), Bengali (Native)

CONFERENCES AND TRAINING

Job Oriented Patent Analyst Training (JOPAT) (Remote)

Indian Institute of Patent and Trademark (IIPPTA), Delhi, India | **December 2024 – Present**

IP Awake: One-day IP awareness program for academia

Office of Intellectual Property, Government of India, in association with GITAM (Deemed to be University) and APTDC, Confederation of Indian Industry, Hyderabad | **2018**

Two-day workshop on “Role of Intellectual Property Rights in Biotechnology Industries”

Dolphin (P.G) Institute of Biomedical and Natural Science, Dehradun, in association with Indian Institute of Patent and Trademark (IIPPTA), Delhi | **2013**

One-week Hands-On-Training on “Microbiological Techniques and Applications in Pharma Industry”

Department of Microbiology, Dolphin (P.G) Institute of Biomedical and Natural Science, Dehradun, Uttarakhand, in collaboration with Drug Manufacturers Association of Uttarakhand | **2012**

CERTIFICATE COURSES

Overview: Total certificate courses completed: **14 (6 relevant courses highlighted below)**

Drug Development Product Management Specialization (Certified)

University of California, San Diego, USA, Coursera platform | **2022**

The specialization includes 3 courses: -

- **Drug Discovery**
Selecting a drug discovery target to filing an initial new drug application.
- **Drug Development**
The intricacy of drug development from Phase 0 to Phase 3 clinical trials and filing a new drug application.
- **Drug Commercialization**
Understanding of the complexities in launching new pharmaceutical products and ensuring sales success.

Writing in the Sciences (Certified with Honors)

Stanford Online, Stanford University, Stanford, California, USA, Coursera platform | **2022**

- Gained knowledge about the techniques of good writing, peer review, grant writing, ethical issues in scientific publications, and writing for general audiences.

Thinking Critically: Interpreting Randomized Clinical Trial (Certified)

Stanford Online, Stanford University School of Medicine, California, USA, EdX platform | **2022**

- Developed skills by learning about the concepts of randomization and blinding in reducing bias and to develop strategies to critically appraise randomized clinical trials and determine if results are valid.

Certificate Course in Pharmaceutical Quality Assurance (Certified)

Ateos Foundation of Science Education and Research (AFSER), Pune, India, Udemy Inc. | **2022**

- Gained knowledge on QA Basics, Quality by Design (QbD) and TQMS, Validation, Inspection and Documentation, Quality Systems, and Role in Audits, Return and Recall of Pharmaceutical Products.

Basic Analytical Chemistry (Certified)

UTokyoX, University of Tokyo, Tokyo, Japan, EdX platform | **2021**

- Acquired knowledge of basic tools of Analytical Methods, Electrochemical and Spectrochemical Analysis, Spectrophotometry, and Analytical Separations.
- Virtual hands-on experiences (Laboratory techniques): Gravimetric Analysis, SDS-PAGE.

Biochemistry: Biomolecules, Methods, and Mechanisms (Course Completed)

MITx-7.05x, Massachusetts Institute of Technology (MIT), Cambridge, USA, EdX platform | **2021**

- Learned about buffers and amino acids, protein structure and purification, Enzymes, Signal Transduction, molecular modeling with PyMOL, and MATLAB.
- Virtual hands-on experiences (Laboratory techniques): SDS-PAGE, Western Blotting, X-Ray Crystallography, Protein purification using Column Chromatography, Affinity Chromatography.

LIST OF PUBLICATIONS

Overview: Total publications: **18 (12 relevant publications highlighted below)**

Research Articles

- **Ghosh D**, Dhandha MM. Investigation of Sun Protection Factor (SPF) of Raspberry Seed Oil, Niacinamide and Zinc Oxide in combination for their possible use in a sunscreen formulation. *Skin.* 2024; 8(5): 1807-1814.
- **Ghosh D**, Mondal S, Ramakrishna K. A topical ointment formulation containing leaves extract of *Aegialitis rotundifolia* Roxb., accelerates excision, incision and burn wound healing in rats. *Wound Medicine.* 2019; 26: 100168.
- **Ghosh D**, Mondal S, Ramakrishna K. Phytochemical properties of a rare mangrove *Aegialitis rotundifolia* Roxb., leaves extract and its influence on human dermal fibroblast cell migration using wound scratch model. *National Journal of Physiology, Pharmacy and Pharmacology.* 2019; 9: 335-342.
- **Ghosh D**, Mondal S, Ramakrishna K. Pharmacobotanical, physicochemical and phytochemical characterisation of a rare salt-secreting mangrove *Aegialitis rotundifolia* Roxb., (Plumbaginaceae) leaves: A comprehensive Pharmacognostical study. *South African Journal of Botany.* 2017; 113: 212–229. **[JCR Impact Factor – 2.7]**
- Mondal S, **Ghosh D**, Ganapaty S, Chekuboyina SVG, Samal M. Hepatoprotective activity of *Macrothelypteris torresiana* (Gaudich.) aerial parts against CCl₄-induced hepatotoxicity in rodents and analysis of polyphenolic compounds by HPTLC. *Journal of Pharmaceutical Analysis.* 2017; 7: 181–189. **[JCR Impact Factor – 8.9]**
- Mondal S, **Ghosh D**, Sagar N, Ganapaty S. Evaluation of Antioxidant, Toxicological and wound healing Properties of *Hibiscus rosa-sinensis* L. (Malvaceae) ethanolic leaves extract on different Experimental animal models. *Indian Journal of Pharmaceutical Education and Research.* 2016; 50(4): 620-637. **[JCR Impact Factor - 0.8]**
- Mondal S, Reddy N, **Ghosh D**, Ganapaty S. Development and validation of RP-HPLC and UV spectrophotometric methods for the quantification of Capecitabine. *International Journal of Pharmacy and Pharmaceutical Sciences.* 2016; 8(5):279-287.
- Mondal S, **Ghosh D**, Ganapaty S, Sushrutha M. Preliminary phytochemical analysis and evaluation of hair growth stimulating potential of ethanol extract from *Eclipta alba* L. (Asteraceae) leaves in Wistar albino rats. *Asian Journal of Pharmacy and Pharmacology.* 2016; 2(5): 121-127.

Review Article

- Mondal S, **Ghosh D**, Ramakrishna K. A complete profile on Blind-Your-Eye mangrove *Excoecaria agallocha* L. (Euphorbiaceae) – Ethno-botany, Phytochemistry and Pharmacological aspects. *Pharmacognosy reviews.* 2016; 10: 123-138.

Book Chapter

- Biswas S, Bagchi D, **Ghosh D** (2022). The Effects of (Micro and Nano) Plastics on the Human Body: Nervous System, Respiratory System, Digestive System, Placental Barrier, Skin, and Excretory System. In Joo S.H., (Ed.). *Assessing the Effects of Emerging Plastics on the Environment and Public Health.* (pp. 148-171). Pennsylvania, USA. IGI Global Publishing.

Case Studies

- Dhandha MM, **Ghosh D**, Dekay J. Trichodysplasia Spinulosa in a 71-Year-Old Heart Transplant Recipient. *Dermatology Practical & Conceptual* 2023;13(3): e2023166. **[JCR Impact Factor – 2.3]**
- Dhandha MM, **Ghosh D**, Tyring S, Rady P. Atypical Human Papillomavirus infection with secondary Tinea in a middle-aged Caucasian male. *Skin.* 2023; 7(4): 927-931.

Dr. Debjit Ghosh