

## Priyanka Singh, PhD

Senior Researcher (Independent Research Group)  
Department of Health Technology  
Experimental & Translational Immunology Section  
DTU Health, Technical University of Denmark

[prnksingh254@gmail.com](mailto:prnksingh254@gmail.com), +45-93511824  
[linkedin.com/in/priya4](https://www.linkedin.com/in/priya4)  
<https://orcid.org/0000-0001-7654-5339>  
Lyngby, Denmark

### Research Vision & Interests

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My research focuses on nanomedicine and sustainable materials for the treatment of cancer and infectious diseases. I lead an independent research team for developing therapeutic and diagnostic nanomaterials, evaluated in 2D systems, advanced 3D spheroid and organoid models, and *in vivo* platforms, with a strong emphasis on clinical relevance and translational potential.

### Education

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PhD in Biomedical Science, Kyung Hee University, South Korea	2016
Master's in Microbiology, CSJMU, India	2010
Bachelor's in Microbiology, Kachchh University, India	2008

### Career highlights

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Currently, I am a Senior Researcher and Group Leader at DTU Health and a Visiting Senior Researcher at BRIGHT, where my work focuses on translational immuno-nanotechnology and infection-driven disease models. Previously, at DTU Biosustain, I progressed from Postdoctoral Fellow to Senior Researcher and Co-PI, establishing an independent research profile in cancer & infection nanomedicine. I have secured and contributed to competitive funding from the Novo Nordisk Foundation, EU Marie Skłodowska-Curie ITN, DFF, NordForsk, Lundbeckfonden, and led nanomaterials-focused work packages in multidisciplinary consortia. My work includes 95 peer-reviewed publications with >10,412 citations, supervision of PhD, postdoctoral, and master's researchers, and academic leadership as Regional Coordinator for IEEE Women in Nanotechnology.

### Work Experience

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<b>Senior Researcher &amp; Group Leader</b>	March 2026-Present
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DTU Health Tech, Technical University of Denmark, DK

- Providing scientific leadership and supervising postdocs on nanoparticle-based immune cell “backpack” therapeutic platforms for cancer and chronic diseases under NNF project grant.
- Supervising postdoctoral research on gold nanoparticle-based biosensors for cancer detection under DFF project grant.
- Supervising visiting PhDs, Masters and postdocs under different programs at DTU Health.

<b>Visiting Senior Researcher &amp; CO-PI</b>	March 2026-Present
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Bio Research Institute for the Green Transition (BRIGHT), Technical University of Denmark, DK

- Co-supervising a PhDs under the EU PEST-BIN project on nanomaterial-enabled biofilm disruption.
- Co-supervising visiting PhD researchers on nanomaterials projects at BRIGHT.

<b>Senior Researcher &amp; CO-PI</b>	Jan & Feb 2026
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BRIGHT, Technical University of Denmark, DK

- Recipient of the Novo Nordisk Foundation Career Transition Grant, supporting the establishment of an independent line of research at DTU Health.
- Led MOF-based metallic nanoparticle projects targeting biofilm disruption and antimicrobial resistance.

<b>Senior Researcher &amp; CO-PI</b>	2023-2025
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The Novo Nordisk Foundation Center for Biosustainability, Technical University of Denmark, DK

- Lead independent research on nanomaterial based therapeutic and diagnostic platforms.
- Provide scientific leadership in EU funded collaborative projects.
- Supervised PhD, postdoctoral, and master's researchers.

<b>Researcher &amp; CO-PI</b>	2021-2023
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The Novo Nordisk Foundation Center for Biosustainability, Technical University of Denmark, DK

- Led a projects focused on green nanomaterials development for cancer and chronic diseases.
- Utilized 2D and 3D cancer models to evaluate nanotherapeutic efficacy.
- Supervised PhD students and postdocs under the NordForsk and Marie Curie-ITN grants.

#### Post-doctoral Fellow

2016-2020

The Novo Nordisk Foundation Center for Biosustainability, Technical University of Denmark, DK

- Established a nanoparticle laboratory in collaboration with DTU and international partners.
- Introduced green nanoparticles at DTU Biosustain for the first time, with a focus on sustainability and environmental impact.
- Achieved long-term nanoparticle stability with superior efficacy against AMR.

#### Post-doctoral Fellow

April 2016-July 2016

Kyung Hee University | Suwon, South Korea

- Led the project "Designing nanoparticles, nanoconjugates, and nanocarriers for ginsenosides delivery," improving solubility by 100%. Enhanced stability and delivery of ginsenosides, increasing pharmacological efficiency.
- Supervised 6 PhD and 4 master's students, resulting in great theses and multiple high-impact publications.

#### Microbiologist

2010-2012

Central Salt and Marine Chemicals Research Institute | CSIR | India

Project: Fermentative production of  $\epsilon$ -polylysine by utilizing the byproduct of biodiesel, extensive characterization, and antimicrobial application.

#### Grants

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##### Main Applicant

- ERC Starting Grant, DFF Sapere Aude, NNF Hallas-Møller (applied / under review)
- **Novo Nordisk Foundation Career Transition Grant**, (~540 k€), DK, 2026-2028
- **Independent research Fund (DFF), Research Project 1**, (430 k€), DK, 2025-2028
- **Lundbeckfonden Post Doc Fellowship** (322 K€), DK, 2019-2023
- **Lundbeckfonden travel grant**, DKK 25,000, DK, July 2018
- **Otto Mønstedts travel grant**, DKK 7500, DK, July 2018
- **Marie Curie Fellowship, H.C. Ørsted Postdoc-Cofund**, (147K€), 2016-2018

##### Co-applicant

- **EU Marie Curie ITN Grant**, (4.15 M€), DK, 2025-2028
- **NordForsk Grant (1.45 M€)**, DK, 2021-2023
- **EU Marie Curie-ITN Grant (4.15 M€)**, DK, 2021-2024

#### Awards & Recognition

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- Women Researcher Award-Pharmacology, conferred by Academic Excellence 2025
- Most cited paper award-Nanobiotechnology Awards, conferred by ScienceFather 2024
- Ranked in the Top 2% of scientists in the world, for 3 years by Stanford University, USA 2020-22
- Award for scientific publication, 750 € -Twice by KHU, South Korea Feb & Aug 2015
- Indian Air Force Higher Education Award: Recognized for academic excellence, India Jan 2014
- President scholarship for pursuing PhD, South Korea Sep 2013
- Highest Academic Achievement Award in Master's Program, India June 2010

#### Leadership & Academic Service

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- Regional coordinator, IEEE Nanotechnology Council-Women in Nanotechnology 2025-Present
- Editor / Guest Editor for Elsevier, Springer, MDPI, Frontiers 2017-Present
- Reviewer for 20+ peer-reviewed journals, including Adv. Healthcare Materials, Biomaterial Advances, etc. 2013-Present
- Social media educator (LinkedIn) – Mentor on scholarships and study-abroad paths 2015-Present

#### Professional Development (Certifications)

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- Certified PhD Supervisor, **Technical University of Denmark**, 2025
- The Wider Context of Nanotechnology, **Oxford University**, UK, 2025
- Lean Six Sigma Green & Yellow Belt, The Knowledge Academy, UK, 2022
- Teaching & Learning Certification, **Technical University of Denmark**, DK, 2022
- Microsoft Project Masterclass, The Knowledge Academy, UK, 2022

- Physiological characterization, solubilization, & solid form screening for drug, **UW-Madison**, USA, 2022
- HMX Pro: Pharmacology & Drug Delivery, **Harvard Medical School**, USA, 2021
- Biologics: Big Molecules Big Challenges, **UW-Madison**, USA, 2021
- Overview of the-Drug Development Process, various aspects of CMC, **UW-Madison**, USA, 2022
- Practical strategies for-Developing preclinical & phase 1 oral drug formulations, **UW-Madison**, USA, 2021
- Transformational Leadership Program (Leading Women), **Copenhagen Business School**, DK, 2020

## Recent Invited Talks & Conference Presentations

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- **Scheduled Keynote Speaker** - Virtual International Conference on Advances in Nanotechnology and Biotechnology (V-ICANB 2026), Feb 3-4, 2026
- **Consortium Meeting Chair** - EU Marie Curie ITN Grant, BUG-ID-MSCA-2024-DN-01, leading consortium meetings and discussions (2025-2028)
- **Invited Speaker** - IEEE Nanotechnology Materials and Devices Conference, IEEE-NMDC; Oct 2025
- **Invited Speaker** - International Microbiology Day, ITM Vocational University, Sep 17, 2025

## Scientific Excellence

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- **Nanomedicine & biomaterials:** Sustainable nanomaterial for cancer therapy and antimicrobial applications.
- **Drug delivery system:** Nanoparticle based delivery platforms with controlled release and therapeutic validation.
- **Cancer nanomedicine expertise:** Experiments and techniques related with mechanism-driven evaluation of nanomedecines in 2D, 3D spheroid and organoid models, and *in vivo* studies.
- **Microbiology & antimicrobial Expertise:** Handling of pathogenic bacteria under biosafety conditions; antimicrobial susceptibility testing; biofilm formation and inhibition assays; time-kill kinetics, membrane integrity, and ROS assays; development of bacterial-nanomaterial interaction studies; screening for antimicrobial resistance mechanisms. BSL-2 laboratory & cancer research facility training – DTU Biosustain, Denmark; Kyung Hee University, South Korea
- **Biosensor development for cancer diagnosis:** Design of biosensors for early lung cancer detection, including assay development, nanomaterial functionalization, and translational validation.
- **Instrumentation expertise:** Nanomaterial characterization using electron microscopy (TEM, SEM), spectroscopy, particle size analysis, rheology, and flow cytometry, with bioanalytical support from HPLC, ICPMS, Mass spec, LCMS and microplate-based assays.
- **Research leadership & impact:** Independent group leadership, PhD supervision, and international collaboration, with leadership roles in EU Marie Curie ITN, NordForsk, and Lundbeckfonden funded projects.

## Collaborative Research Excellence

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- As a Senior Researcher at DTU Biosustain, I have led and contributed to collaborative initiatives under NordForsk and EU Marie Curie ITN projects, building a strong international research network. I have collaborated with leading scientists and clinical partners worldwide, including Ali Khademhosseini (TIBI, USA), Ivan Mijakovic (Chalmers University of Technology, Sweden), Hina Singh (University of California, Riverside, USA), Ameya Kirtane (University of Minnesota, USA), Kristoffer Staal Rohrberg (Region Hovedstaden, Denmark), Yogendra Kumar Mishra (SDU, Denmark), and Verónica Castro-Aceituno (City of Hope, USA), as well as with institutions such as the University of Copenhagen, Sejong University (South Korea), and Zhengzhou University (China), among others across Europe, Asia, and the USA.
- During my postdoctoral research in Denmark, I established strategic collaborations with industry partners including SINTEF (Norway), Dyson (UK), DFM, and Novonesis (Denmark). These collaborations led to ongoing research activities that form a foundation for my current translational nanomaterials research.
- Led collaborative research in an international laboratory at Kyung Hee University, South Korea, resulting in over 34 joint publications with PhD and master's students from diverse backgrounds.

## Supervision & Teaching Experience

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At DTU, I supervise and have supervised **10** researchers:

### Postdocs:

Two Postdoctoral Positions (approved; hiring), DTU Health, 2026-2029

- Postdoc 1: Independent Research Fund Denmark, Research Project 1,  
Project: Portable AI-integrated green gold nanoparticle biosensor for ultra-early, non-invasive lung cancer detection
- Postdoc 2: Novo Nordisk Foundation Career Transition Grant  
Project: Cargo-free swarm backpack nanotechnology to modulate the cancer-immune interface
- Dr. Abhayraj Joshi, NordForsk Grant, DTU Biosustain, 2019-2023

Project title: Translational anticancer mechanisms of green-silver nanoparticles in 3D and *in vivo* models

#### PhDs:

- PhD 1, EU Marie Skłodowska-Curie Doctoral Network (BUG-ID-MSCA-2024-DN-01; hiring active), DTU BRIGHT  
Project: Infection biomarker discovery in chronic wound models.
- PhD 2, EU Marie Skłodowska-Curie Doctoral Network (BUG-ID-MSCA-2024-DN-01; hiring active), DTU BRIGHT  
Project: Optimizing bioreceptor–graphene interactions for infection diagnostics.
- Mukil Madhusudanan, EU Marie Skłodowska-Curie ITN Grant (H2020-MSCA-ITN-2020), DTU Biosustain, 2021-2024  
Thesis title: Green synthesis of silver nanoparticles and their polymer composites for enhanced antimicrobial and anticancer applications.

#### Visiting PhDs:

- Kristian Nakić, University of Split, Croatia, DTU BRIGHT, April-June, 2026
- Jaume Sempere Torregrosa, Universitat Politècnica de València, Spain, DTU Biosustain, Sep-Dec 2025  
Project: Sustainable antimicrobial chitosan-silver nanocomposite films for infection-resistant surfaces.

#### Master & Special Course:

- Linnea Marika Damgaard Arum, DTU Biosustain & BRIGHT, Jan 2025-Feb 2026  
Thesis title: Mechanistic comparison of green- and chemically-synthesized silver nanoparticles against lung cancer cells.

#### Research Intern:

- Mugdha Bapat (MSc), CFB central grant, DTU Biosustain, Jun 2021-Jan 2022  
Project title: Mitochondrial depolarization–mediated anticancer effects of *Viridibacillus*-derived silver nanoparticles in lung cancer models

#### Bibliometrics

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Total International peer-reviewed journal articles: **95**

Highest Impact Factor Published: **41.4** | Highest cited paper: ~2109 citations (since 2016)

Last authorship: **9** | First authorship: **36** | Corresponding authorship: **27**

Citations: **10412** | H-index: **47** | i10 index **68** (source: [Google Scholar](#))

#### Selected Publications

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1. Balusamy SR, Justine E, [Singh P](#), Kim YJ\*, Lee S, Ranjan A, Sohn D, Mijavovic I, Rahimi S\*, Perumalsamy H\*. Single cell RNA sequencing reveals functional heterogeneity of neutrophils and macrophage subsets acting as a biomarker for chronic wounds in diabetic patients. Carbohydrate polymer. (IF: 12.5) (In press).
2. Zhang J, [Singh P](#), Chena X, Shi L, Cao Z, Rahimi S, Pandit S, Mijakovic I\*. Green silver nanoparticles as promising anticaries agents: antibacterial and transcriptomic Insights into planktonic and biofilm *Streptococcus mutans*. Materials Today bio. (IF: 10) (In press).
3. Madhusudanan M, Mijakovic I, [Singh P\\*](#). Biogenic vs. Chemical AgNPs: A comparison of antimicrobial potency and stability. Int. J. Mol. Sci., 27(1), 62, 2026. (IF: 4.3) [link](#)
4. [Singh P\\*](#), Joshi AS, Singh H, Mijakovic I\*. Medical importance and pharmacokinetics of gold nanoparticles in the human body. Molecular Cancer 24, 252, 2025. (IF: 41). [link](#)
5. [Singh P\\*](#), Mijakovic I\*. Strain-Specific *Bacillus subtilis*-Derived silver nanoparticles for effective antibacterial activity against multidrug-resistant pathogens: In vitro model. Int J Nanomedicine:20, 13055-13078, 2025. (IF: 8) [link](#)
6. Basak S, [Singh P](#), Weller A, Kadumudi FB, Kempen PJ, Mijakovic I, Dolatshahi-Pirouz A, Almdal K. Cost-effective and eco-friendly sprayable nanogels (ZC-CSNG) for multifunctional wound dressing applications. Chemical Engineering Journal 503, 1583121, 2025, (IF: 14) [link](#)
7. [Singh P\\*](#), Pandit S, Balusamy SR, Madhusudanan M, Singh H, Haseef HMA, Mijakovic I. Advanced Nanomaterials for Cancer Therapy: Gold, silver, and iron oxide nanoparticles in oncological applications. Adv. Healthcare Mater. 2403059, 2024, (IF: 10) [link](#)
8. Prabhu PP, Mohanty B, Lobo CL, Balusamy SR, Shetty A, Perumalsamy H, Manohar Y, Dubey A, Mijakovic I, [Singh P\\*](#). Harnessing the nutraceuticals in early-stage breast cancer: mechanisms, combinational therapy, and drug delivery. Journal of Nanobiotechnology 22: 574. 2024, (IF: 12.6) [link](#)
9. Abhayraj S. Joshi, Mugdha V. Bapat, [Singh P](#), Mijakovic I\*. *Viridibacillus* culture-derived silver nanoparticles exert potent anticancer action in 2D and 3D models of lung cancer via mitochondrial depolarization-mediated apoptosis. Materials Today, Bio, 25, 100997, 2024. (IF: 10.2) [link](#)
10. [Singh P](#), Kim YJ, Zhang D, Yang DC\*. Biological synthesis of nanoparticles from plants and microorganisms. Trends in Biotech, 34(7):588-599, 2016. (IF: 14.9) [link](#)