

CURRICULUM VITAE

Dr. DEBASIS NAYAK

Assistant Professor, (Stage-I)
Department of Wildlife and Biodiversity Conservation,
MSCB University, Baripada
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Indian National

Born on 12th February 1988

Male, Married

Objective:

My Bioresources and Traditional Knowledge Laboratory, in Dept. of Wildlife and Biodiversity Conservation, MSCB University is focused on undertaking interdisciplinary research work, integrating nanotechnology with biological sciences to address challenges in healthcare, sustainability, and biodiversity.

Education:

2022-present: Assistant Professor, (Stage-I), Department of Wildlife and Biodiversity Conservation, MSCBU, Baripada (*Odisha Public Service Commission*)

2016- 2022: Lecturer and Head, Department of Zoology, Seemanta Mahavidyalaya, Jharpokharia, Mayurbhanj, Odisha, India (*State Selection Board, Odisha-SSB-2016*)

2012-2018: PhD, At Department of Life science, National Institute of Technology, Rourkela, Odisha, India.

Title of the thesis: Ethosomal nano-carriers encapsulating novel green synthesized AgNPs and sericin protein as potential therapeutics against skin carcinoma

2010-2012: M.Sc. Life sciences, At Department of Life science, National Institute of Technology, Rourkela.

2007-2010: B.Sc. Zoology (honors), At Government (Auto) college, Rourkela.

2005-2007: +2 Science, CHSE Odisha, At BJB (Junior) College, Bhubaneswar

SCHOLARSHIP AND AWARDS

Qualified GATE (Graduate Aptitude Test in Engineering) in Life sciences for Junior Research Fellowship, held by Department of Higher Education, Ministry of Human Resource Development, Government of India in March 2012.

REASEARCH PUBLICATIONS IN PEER-REVIEWD JOURNALS

1. Panda, Jibanjyoti, Pinku Chandra Nath, Awdhesh Kumar Mishra, Sarvesh Rustagi, **Debasis Nayak**, Renald Blundell, and Yugal Kishore Mohanta. "Mushroom: an emerging source for next generation meat analogues." *Frontiers in Nutrition* 12 (2025): 1638121.
[Impact factor: 5.1]
2. **Debasis Nayak**, Susmita Rana, Nitesh Kumar Hansdah, Arati Ho, and Bibhu Prasad Panda. "Investigating the role of edible insects on tribal health and their application for sustainable development in Odisha, India." *Discover Sustainability* 6, no. 1 (2025): 707.
[Impact factor: 3.0]
3. Soren, Minati, Sambit Kumar Mishra, Awdhesh Kumar Mishra, Pradipta Ranjan Rauta, Jibanjyoti Panda, Sarvesh Rustagi, Seydur Rahman, Yugal Kishore Mohanta, and **Debasis Nayak**. "Assessment of toxicity profile of Mollusca hemolymph: Insight into its potential biocompatibility and anti-biofilm efficacy." *Kuwait Journal of Science* 52, no. 4 (2025): 100455.
[Impact factor: 1.1]
4. Rhetso, Vivono, Awdhesh Kumar Mishra, Pinku Chandra Nath, Jibanjyoti Panda, **Debasis Nayak**, Bibhu Prasad Panda, Sarvesh Rustagi, Satya Kumar Avula, Seydur Rahman, and Yugal Kishore Mohanta. "Exploring edible insects as a potential source of food-nutraceuticals: a sustainable approach." *Food Biophysics* 20, no. 3 (2025): 93.
[Impact factor: 3.2]
5. Panda, Jibanjyoti, Amilia Nongbet, Satya Kumar Avula, **Debasis Nayak**, Sarvesh Rustagi, Bibhu Prasad Panda, and Yugal Kishore Mohanta. "Macro-fungi mediated nanoparticles for sustainable agriculture: recent advancement and future strategies." *Discover Sustainability* 6, no. 1 (2025): 375.
[Impact factor: 3.0]
6. Mohanta, Yugal Kishore, Kunal Biswas, Awdhesh Kumar Mishra, Biswajit Patra, Bishwambhar Mishra, Jibanjyoti Panda, Satya Kumar Avula, Rajender S. Varma, Bibhu Prasad Panda, and **Debasis Nayak**. "Amelioration of gold nanoparticles mediated through Ocimum oil extracts induces reactive oxygen species and mitochondrial instability against MCF-7 breast carcinoma." *RSC advances* 14, no. 38 (2024): 27816-27830.
[Impact factor: 3.9]
7. **Debasis Nayak**, Awdhesh Kumar Mishra, Sasmita Malla, Umakanta Swain, Kalpana Panigrahi, Jibanjyoti Panda, Sarvesh Rustagi, Pradipta Ranjan Rauta, and Yugal Kishore Mohanta. "Eco-Friendly Mycogenic Synthesis of Iron Oxide Nanoparticles Using *Volvariella volvacea* and Unveiling its Potential as Antibiofilm and Anticancer Agents." *Journal of Solid State Science and Technology* 13, no. 8 (2024): 087003.
[Impact factor: 1.8]
8. Bhuyan, Tamanna, Yugal Kishore Mohanta, Kaustuvmani Patowary, Surjendu Maity, **Debasis Nayak**, Kangkan Deka, K. Meenakshi Sundaram, Saravanan Muthupandian, and

Hemen Sarma. "Therapeutic potential of lipopeptide biosurfactant-fabricated copper oxide nanoparticles: Mechanistic insight into their biocompatibility using zebra fish." *Current Research in Biotechnology* 7 (2024): 100227. [Impact factor: 3.6]

9. Sharifi-Rad, Majid, Yugal Kishore Mohanta, Pawel Pohl, **Debasis Nayak**, and Mohammed Messaoudi. "Facile phytosynthesis of gold nanoparticles using *Nepeta bodeana* Bunge: Evaluation of its therapeutics and potential catalytic activities." *Journal of Photochemistry and Photobiology A: Chemistry* 446 (2024): 115150. [Impact factor: 4.1]
10. Rana, Susmita, Asmita Sen, Sasmita Malla, Muskan Rai, Priyanka Dash, Bismita Nayak, and **Debasis Nayak**. "Utilization of Probiotic Bacteria *Enterococcus lactis* for Biogenic Synthesis of Hemocompatible AgNPs." *Geomicrobiology Journal* (2023): 1-9. [Impact factor: 2.2]
11. Yugal Kishore Mohanta, **Debasis Nayak**, Awdhesh Kumar Mishra ,Ishani Chakrabartty ,Manjit Kumar Ray,Tapan Kumar Mohanta,Kumananda Tayung ,Rajapandian Rajaganesh,Murugan Vasanthakumaran ,Saravanan Muthupandian ,Kadarkarai Murugan ,Gouridutta Sharma ,Hans-Uwe Dahms (2022). "Green Synthesis of Endolichenic Fungi Functionalized Silver Nanoparticles: The Role in Antimicrobial, Anti-Cancer, and Mosquitocidal Activities " *Int. J. Mol. Sci.* **2022**, 23(18), 10626 [Impact factor: 4.9]
12. Mohanta, Yugal Kishore, Awdhesh Kumar Mishra, **Debasis Nayak**, Biswajit Patra, Amra Bratovicic, Satya Kumar Avula, Tapan Kumar Mohanta, Kadarkarai Murugan, and Muthupandian Saravanan. (2022)"Exploring Dose-Dependent Cytotoxicity Profile of *Gracilaria edulis*-Mediated Green Synthesized Silver Nanoparticles against MDA-MB-231 Breast Carcinoma." *Oxidative Medicine and Cellular Longevity* 2022. [Impact factor: 7.3 (Cited by 2)]
13. **Debasis Nayak**, Neethi Chandra Thathapudi, Sarbani Ashe, and Bismita Nayak (2021) "Bioengineered ethosomes encapsulating AgNPs and Tasar silk sericin proteins for Non melanoma skin carcinoma (NMSC) as an alternative therapeutics". **International Journal of Pharmaceutics** 596 page 120625. [Impact factor: 6.51 (Cited by 5)]
14. Sarbani Ashe, Sashikant Behera, Priyanka Dash, **Debasis Nayak**, Bismita Nayak. (2020) "Gelatin carrageenan sericin hydrogel composites improves cell viability of cryopreserved SaOS-2 cells". **International Journal of Biological Macromolecules** (2020) 154 page-606-620. [Impact factor: 6.95 (Cited by 10)]
15. Mohanta, Yugal Kishore, **Debasis Nayak**, Kunal Biswas, Sameer Kumar Singdevsachan, Elsayed Fathi Abd_Allah, Abeer Hashem, Abdulaziz A Alqarawi, Dhananjay Yadav, and Tapan Kumar Mohanta. **2018**. "Silver Nanoparticles Synthesized Using Wild Mushroom Show Potential Antimicrobial Activities against Food Borne Pathogens." **Molecules** 23 (3): 655. (*Equal contribution*) [Impact factor: 4.92 (Cited by 76)]
16. **Nayak, Debasis**, Sarbani Ashe, Pradipta Ranjan Rauta, and Bismita Nayak. **2017**. "Assessment of Antioxidant, Antimicrobial and Anti-Osteosarcoma Potential of Four

Traditionally Used Indian Medicinal Plants.” **Journal of Applied Biomedicine** 15 (2): 119–32. [Impact Factor: 1.68 (Cited by 18)]

17. **Nayak, Debasis**, Ankita Boxi, Sarbani Ashe, Neethi Chandra Thathapudi, and Bismita Nayak. 2017. “Stavudine Loaded Gelatin Liposomes for HIV Therapy: Preparation, Characterization and in Vitro Cytotoxic Evaluation.” **Materials Science and Engineering: C** 73: 406–16. [Impact factor: 4.7 (Cited by 39)]
18. **Nayak, Debasis**, Sarbani Ashe, Pradipta Ranjan Rauta, Manisha Kumari, and Bismita Nayak. 2016. “Bark Extract Mediated Green Synthesis of Silver Nanoparticles: Evaluation of Antimicrobial Activity and Antiproliferative Response against Osteosarcoma.” **Materials Science and Engineering: C** 58: 44–52. [Impact factor: 4.7 (Cited by 398)]
19. **Nayak, Debasis**, Manisha Kumari, Sripathi Rajachandar, Sarbani Ashe, Neethi Chandra Thathapudi, and Bismita Nayak. 2016. “Biofilm Impeding AgNPs Target Skin Carcinoma by Inducing Mitochondrial Membrane Depolarization Mediated through ROS Production.” **ACS Applied Materials & Interfaces**. 8 (42), 28538-28553. [Impact factor: 10.38 (Cited by 38)]
20. **Nayak, Debasis**, Aliva Prity Minz, Sarbani Ashe, Pradipta Ranjan Rauta, Manisha Kumari, Pankaj Chopra, and Bismita Nayak. 2016. “Synergistic Combination of Antioxidants, Silver Nanoparticles and Chitosan in a Nanoparticle Based Formulation: Characterization and Cytotoxic Effect on MCF-7 Breast Cancer Cell Lines.” **Journal of Colloid and Interface Science** 470: 142–52. [Impact factor: 9.96 (Cited by 80)]
21. Padhi, Jyostna Rani, **Debasis Nayak**, Arpita Nanda, Pradipta Ranjan Rauta, Sarbani Ashe, and Bismita Nayak. 2016. “Development of Highly Biocompatible Gelatin & I-Carrageenan Based Composite Hydrogels: In Depth Physiochemical Analysis for Biomedical Applications.” **Carbohydrate Polymers** 153: 292–301. (*Equal contribution*) [Impact factor: 9.38 (Cited by 32)]
22. Ashe, Sarbani, **Debasis Nayak**, Manisha Kumari, and Bismita Nayak. 2016. “Ameliorating Effects of Green Synthesized Silver Nanoparticles on Glycated End Product Induced Reactive Oxygen Species Production and Cellular Toxicity in Osteogenic Saos-2 Cells.” **ACS Applied Materials & Interfaces** 8 (44): 30005–16. [Impact factor: 10.38 (Cited by 11)]
23. Chopra, Pankaj, **Debasis Nayak**, Arpita Nanda, Sarbani Ashe, Pradipta Ranjan Rauta, and Bismita Nayak. 2016. “Fabrication of Poly(Vinyl Alcohol)-Carrageenan Scaffolds for Cryopreservation: Effect of Composition on Cell Viability.” **Carbohydrate Polymers**. 147, 509-516. (*Equal contribution*) [Impact factor: 9.38 (Cited by 34)]

24. **Navak, Debasis**, Sarbani Ashe, Pradipta Ranjan Rauta, and Bismita Nayak. **2015**. "Biosynthesis, Characterisation and Antimicrobial Activity of Silver Nanoparticles Using *Hibiscus Rosa-Sinensis* Petals Extracts." **Nanobiotechnology, IET** 9 (5): 288–93.

[Impact factor: 2.058 (Cited by 30)]

25. **Navak, Debasis**, Sonali Pradhan, Sarbani Ashe, Pradipta Ranjan Rauta, and Bismita Nayak. **2015**. "Biologically Synthesised Silver Nanoparticles from Three Diverse Family of Plant Extracts and Their Anticancer Activity against Epidermoid A431 Carcinoma." **Journal of Colloid and Interface Science** 457: 329–38.

[Impact factor: 9.96 (Cited by 172)]

26. Kumari, Manisha, **Debasis Nayak**, Sarbani Ashe, Neethi Chandra Thathapudi, and Bismita Nayak. **2016**. "Stability Study of OMP Encapsulated PLA-PLGA Microparticles in Simulated Body Fluid: A DLS Perspective." **Micro & Nano Letters** 11 (8): 446–49.

[Impact factor: 0.98]

27. Rauta, Pradipta Ranjan, Sarbani Ashe, **Debasis Nayak**, and Bismita Nayak. **2016**. "In Silico Identification of Outer Membrane Protein (Omp) and Subunit Vaccine Design against Pathogenic *Vibrio Cholerae*." **Computational Biology and Chemistry** 65: 61–68.

[Impact factor: 3.37 (Cited by 12)]

28. Rauta, Pradipta Ranjan, Niladri Mohan Das, **Debasis Nayak**, Sarbani Ashe, and Bismita Nayak. **2016**. "Enhanced Efficacy of Clindamycin Hydrochloride Encapsulated in PLA/PLGA Based Nanoparticle System for Oral Delivery." **IET Nanobiotechnology** 10 (4): 254–61.

[Impact factor: 2.058 (Cited by 13)]

29. Ashe, Sarbani, **Debasis Nayak**, Pradipta Ranjan Rauta, Gunjan Tiwari, and Bismita Nayak. **2015**. "Development of Liposome-Encapsulated Ketoconazole: Formulation, Characterisation and Evaluation of Pharmacological Therapeutic Efficacy." **Micro & Nano Letters** 10 (2): 126–29.

[Impact factor: 0.98 (Cited by 18)]

BOOK:

1. Panda, Jibanjyoti, **Debasis Nayak**, and Yugal Kishore Mohanta. "Exploration of Potential Termitomyces Species for their Health and Wellbeing: A Review." *Research and Innovations in Industrial and Marine Biotechnology: A Circular Economy 2024* (2026): 228-233.
2. Tamboli, Qudsiya Y., Debashree Debasmita, Muhammad Umair, Ibraheem Bushnak, Jibanjyoti Panda, **Debasis Nayak**, and Yugal Kishore Mohanta. "Nanomedicines for neurological disorders: Recent advances." *Nanomedicine and Nutrigenomics* (2026): 143-168.

3. Panda, Jibanjyoti, **Debasis Nayak**, Abdullah G. Al-Sehemi, Hussain D. Almalki, Kunal Biswas, and Yugal Kishore Mohanta. "Nanomaterials for tissue engineering and regenerative medicine." In *Nanomedicine and Nutrigenomics*, pp. 195-215. Academic Press, **2026**.
4. Hussain, Sameer, Qudsiya Y. Tamboli, Abdullah G. Al-Sehemi, **Debasis Nayak**, and Jibanjyoti Panda. "Mushroom-Based Sustainable Nanobiomaterials and Their Biomedical Application." In *Mushrooms in Sustainable Development*, pp. 92-106. CRC Press, **2025**.
5. Manowar, Sayeda Fauzia, **Debasis Nayak**, and Puspanjali Parida. "The Role of Metal Nanoparticles: A Sustainable Approach." (**2025**).
6. Panda, Jibanjyoti, Yugal Kishore Mohanta, Rashmi Rekha Baruah, Balaji Doolam, and **Debasis Nayak**. "Applications of sericin hybrid materials in pharmaceutical sectors." In *Science and Technology of Silkworm Sericin*, pp. 351-393. Elsevier, **2025**.
7. Panda, Jibanjyoti, Smita Behera, Abdullah G. Al-Sehemi, **Debasis Nayak**, Tamanna Bhuyan, and Yugal Kishore Mohanta. "Fungal derived nanocomposites: Recent advances in biomedical applications." *Fungal Macromolecule Applications in Life Sciences* (**2025**): 279-300.
8. Microbial Enzymes in Biomedical Applications for Microbial Enzymes and Metabolites for Health and Well-Being, Ramzan Ahmed, Manjit Kumar Ray, **Debasis Nayak**, Yugal Kishore Mohanta, CRC Press (Taylor and Francis Group). ISBN: 9781003369295, Year **2023**
9. **Debasis Nayak**, Yugal Kishore Mohanta, Pradipta Ranjan Rauta, Ishani Chakrabartty, and Muthupandian Saravanan. "Ethosomes for Dermal and Transdermal Drug Delivery Systems." In *Pharmaceutical Nanobiotechnology for Targeted Therapy*, pp. 313-336. Cham: Springer International Publishing, **2022**.
10. Arati Ho and **Debasis Nayak** "Applications of Indian Spices in Beverages" In *Medicinal Spices and Herbs from India*, ISBN: **9781774916940** (**2025**)
11. **Nanotechnology in Biology and Medicine: Research Advancements and Future Perspectives**; Edited by: Dr. Pradipta Ranjan Rauta, Dr. Yugal Kishor Mohanta and Dr. Debasis Nayak, CRC Press (Taylor and Francis Group), **ISBN 9780367200503; Year: 2019**
12. Nanomedicines: journey from ayurvedic bhasma to Nanoparticles" for Ethno-pharmacology Biodiversity and Conservation, Debasis Nayak, Bismita Nayak: **Chapter 10, Page no- 154-204 :Ethno-Pharmacology, Biodiversity and Conservation ISBN: 9788193249956 year: 2017**

PATENT

1. Bio-Nanoengineered Ethosomal Formulation Comprising Silk Sericin Proteins. Patent No. 568887, Date of Grant: 21/07/2025
2. Silk Nanogel Injector Device for Controlled and Targeted Drug Delivery. Design No.: 458923-001. Date of Issue: 28/08/2025

CONFERENCES/WORKSHOPS ATTENDED

1. **Organized** PM-USHA Sponsored: Three-Day Workshop on Green Careers: Skill Development for Wildlife and Biodiversity Conservation”; Dept. of Wildlife and Biodiversity Conservation, Co-Convenor; **11th -13th February 2026**
2. **Organized** PM-USHA Sponsored: Two-Day Workshop on Safe Steps: ensuring women's safety, challenges and solutions in field-based research work”; Dept. of Wildlife and Biodiversity Conservation, Co-Convenor; **21st -22nd November 2025**
3. **Organized** National Seminar “Man-Nature and Wildlife Relationship in Protected Areas in the Context of Viksit Bharat” Dept. of Wildlife and Biodiversity Conservation, Organizing Secretary. **4th-5th May, 2025**
4. **Organized** National Level webinar on “Current Trends in Ecology and Evolutionary biology” held in Department of Zoology, Seemanta Mahavidyalaya, Jharpokharia, **16th December, 2020**
5. **Organized** National level webinar on “ Microbial Soldiers: The future of bioremediation” held in Department of Zoology, Seemanta Mahavidyalaya, Jharpokharia, **18th September, 2020**
6. Oral presentation at “Third International Conference on Nanotechnology for Biological and Biomedical Applications” (**Nano-Bio-Med 2015**) held at **IIT Bombay, 1st -4th December 2015**
7. Poster presented at International Conference “Conference on Frontiers in Biological Sciences [InCoFIBS-2]” held at **NIT Rourkela, Odisha India, 22nd - 24th January, 2015, Page No-154.**
8. Oral Poster presentation at “International conference on polymeric biomaterials, bioengineering and biondiagnostics” held at **IIT, Delhi, India, 27th-30th October, 2014, Page no-271.**
9. Poster presented at International conference on Nanoscience and Nanotechnology- Aligarh Nano IV International 2014- held at **Dept. of Applied Physics, Aligarh Muslim university, Aligarh 8th -10th March, 2014, Page No-70.**
10. Attended workshop on “Flow cytometry (with hands on sessions)” held at **Cytometry Solutions Pvt. Ltd, Kolkata, 21st – 22nd March, 2015.**
11. Attended Workshop on “Analytical techniques in Bio-informatics, biotechnology and computational chemistry” held at **Department of biotechnology and biomedical Engineering, National Institute of Technology, Rourkela, 11th – 12th August, 2012.**

RESEARCH PROJECT:

1. Assessment of nutritional and microbial quality of traditional rice beverage “handia” from Mayurbhanj district of Odisha. **OURIIP, seed funding, Govt of Odisha (Sanction letter 328/69/OSHEC dt. 25/06/2021). [Principal Investigator] (Completed).**
2. Assessment of Biodiversity and sustainable Bioresource utilization in selected forest patches in fringing areas of Similipal Biosphere Reserve, **Intramural Research Funding (7042/MSCBU-13013/5/2024-Research and Deve SEC-MSCB dt. 22.11.2024) [Co-PI] (Ongoing)**

M.Sc. Dissertation Thesis:

Sl. No	Name	Title	Year
1	Asmita Sen (16201N214019)	Investigating Bionano-fabrication of silver nanoparticles using wild mushrooms	2023
2	Sasmita Malla (16201N214008)	Screening of secondary metabolites, antioxidant and antimicrobial activity of wild mushrooms	2023
3	Muskan Rai (16201N214015)	Ethnobotanical study of traditional plants used for preparation of Handia in Mayurbhanj	2023
4	Minati Soren (16201N224010)	Investigating the Biochemical and therapeutic potential of the haemolymph isolated from Gastropods and bivalves	2024
5	Arpita Priyadarshini Mohapatra (P2622001)	Screening and isolation of bacteria from termite gut and their characteristics	
6	Chandra Sekhar Jena (P2622004)	Analysis of antioxidant, antimicrobial and biofilm forming activity of <i>Pomacea canaliculata</i> : The apple snail	2024
7	Debi Prasad Bindhani (P2622005)	Evaluation of antioxidant, antimicrobial and antibiofilm, activity of mucus extract of <i>Filopaludina bengalensis</i>	2024
8	Deepthi Manjori Patra (P2622006)	A study on the biochemical, antioxidant, antimicrobial and antibiofilm activity of Shells from <i>Pomacea canaliculata</i> and <i>Lamellidens marginalis</i>	2024
9	Itishree Priyadarshini Mohanta (P2622007)	Characterization and isolation of bacterial strains from Termitarium soil	2024
10	Priyashree Sahu (P2622010)	A comparative study on the biochemical and antimicrobial activity of two snail shells	2024
11	Sonali Hansda (P2622013)	Evaluation of biochemical and therapeutic potentials of common termites in Mayurbhanj	2024
12	Upasana Rout	Comprehensive study on phytochemical,	2025

	(16201N233011)	antioxidant and antibacterial evaluation of <i>Shorea robusta</i> bark, roots and resin	
13	Nikita Sahoo (16201N234012)	Exploring the bioactive potentials of <i>Syzygium cumini</i> (L.) Skeels fruit extracts	2025