Bismita Nayak, Ph.D.

Associate Professor & Head
Department of Life Science
National Institute of Technology Rourkela
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CURRENT POSITION: Associate Professor & Head, Department of Life Science, NIT Rourkela

ALMA MATTER — Duration

Post-Doctoral Experience/ Nehru Fulbright Postdoctoral Fellow **02/2014-09/2014**
Stanford School of Medicine, Department of Genetics
Dissertation Topic: Immunology and Nano biotechnology

Massachusetts Institute of Technology Cambridge, **09/2013-02/2014**
Department of Chemistry
Dissertation Topic: Viscosity measurements of DNA and Protein & Biophysical Characterization

Doctoral Degree, 8.75 CGPA **01/2003-12/2008**
Centre for Biomedical Engineering, Indian Institute of Technology Delhi & All India Institute of Medical Sciences, New Delhi
Dissertation Topic: Preparation and Immunological evaluation of biodegradable particle-based Rotavirus vaccine**.**

Master's Degree/ Microbiology, 73.2% **08/1999-01/2002**
Orissa University of Agriculture and Technology, PG Department of Microbiology, Bhubaneswar, Orissa, India
Dissertation Topic: Uptake of potassium by different plants with the use of Potash mobilizing bacteria (Fracturia aurantia), done at Regional Biofertilizer Development Centre, Bhubaneswar

Bachelor's Degree/ Zoology (Hons.), 68.08% **07/1996-07/1999**
Ravenshaw Autonomous University, Zoology with Hons., Botany and Chemistry

HONORS/AWARDS

- 2020: As the convener, successfully organized two days conference on online mode "National Conference on Present and Future of Drug Delivery Approaches and Molecular Medicine", from 19 -20 Nov 2020
- 2013: Completed **USIEF Fulbright Nehru Postdoctoral fellowship award for year 2013-2014** at **Stanford, School of Medicine.**
- 2013: Received FAST TRACK project entitled "**Outer membrane vesicle proteins targeted as new vaccine strategies for *Vibrio cholerae* through microparticulate delivery system** sponsored by Department of Science and Technology, Govt. of India.

- 2013: Travel support of $1,000 each by R&D systems to support immunology researchers by awarding ten travel grants to 15th International Congress of Immunology–ICI, Milan, Italy, held on August 22 – 27, 2013
- 2013: Invited Lecture on Advances in Molecular Medicine- Roles of plants and microbes providing an answer to present day diseases and health complications at Department of Life Science, Municipal College Rourkela, 769012, dated: 19 Feb 2013 during the occasion of Annual Life Science Seminar.
- 2013: As the convener, successfully organized two days workshop in "Advanced Techniques in Life Sciences – ATILS" at Department of Life Science NIT Rourkela from March 7-8, 2013.
- 2011: Session Chaired and Oral Presentation on "Formulation and Characterization of Chitosan coated encapsulated microparticles for vaccine development" at "International conference on Bioengineering and Biotechnology (ICBB 2011)" held on 28-30 November, 2011, at Venice, Italy.
- 2011: Invited Lecture on "Chitosan coated PLA/PLGA nanoparticles for delivery of drugs and therapeutic proteins" at International world conference on Nanomedicine and drug delivery, held at Kottayam, Kerala, 11 – 13th March, 2011.
- 2008: Travel support by GP Talwar Immunology Foundation for year 2008.
- 2008: Institute travel support from IIT Delhi for year 2008.
- 2006: **First prize** in poster presentation at International Conference on Design of Biomaterials (BIND-06) and XVII Annual meeting of SBAOI held in Indian Institute of Technology Kanpur, 8 – 11th Dec, 2006.
- 2007: **Appreciation award**. Selected for oral presentation at 33rd Indian Immunology Society conference held on 28 – 31st Jan 2007 at J.L.N. auditorium, AIIMS, New Delhi, one among 10 best papers presented.
- 2002: CSIR NET (JRF): Cleared twice in May 2002 and again in December 2002

RESEARCH PUBLICATIONS IN REVIEWED JOURNALS:

1. Dash, P., Pattnayak, S., Ghosh, S., Das, N. R., Bhakuni, P, Roy, S. Barman, Nayak, B. (2024) Bright and photostable MHA derived "luminous pearls" for multi-color bioimaging: An eco-sustainable cradle-to-gate approach guided by GRA coupled ANN, *Chemical Engineering Journal*, volume 496, 154068 **(IF 13.3)**
2. Mohapatra, S., Bhakuni, P., Barman, S. R., & Nayak, B. (2024). RSM-CCD optimized hollow mesoporous silica nanospheres encapsulating sorafenib induce mitochondrial membrane potential mediated apoptotic cell death in non-small cell lung cancer. *Microporous and Mesoporous Materials*, *370*, 113032 (**IF: 5.2).**
3. Das, A. P., Nayak, B., & Behera, I. D. (2024). Applications of Microorganisms in Advanced Geomicrobiological and Biotechnological Exploration. *Geomicrobiology Journal*, *41*(4), 309-311. (**IF: 3.2).**
4. Nayak, S. K., Dash, P., Bariki, R., Pradhan, S. K., Panda, S., Nayak, B., & Mishra, B. G. (2024). Metal–Organic Framework-Derived Hierarchical Ag/Sr6Bi2O9-α-Bi2O3 Ternary Photocatalyst for Micropollutant Remediation and Bacterial Photoinactivation. *ACS Applied Engineering Materials*, *2*(1), 179-194. **(IF: 10.4)**
5. Mohapatra, S., Kumar, S., Kumar, S., Singh, A. K., & Nayak, B. (2023). Immunodominant conserved moieties on spike protein of SARS-CoV-2 renders virulence factor for the design of epitope-based peptide vaccines. *Virus Disease*, *34*(4), 456-482.
6. Rana, S., Sen, A., Malla, S., Rai, M., Dash, P., Nayak, B., & Nayak, D. (2023). Utilization of Probiotic Bacteria Enterococcus lactis for Biogenic Synthesis of Hemocompatible AgNPs. *Geomicrobiology Journal*, *40*(8-10), 766-774 **(IF: 2.3)**

7. Das, P., Ghosh, S., Ashashainy, V., & Nayak, B. (2023). Augmentation of anti-proliferative efficacy of quercetin encapsulated chitosan nanoparticles by induction of cell death via mitochondrial membrane permeabilization in oral cancer. *International Journal of Biological Macromolecules, 250*, 126151. **(IF: 8.2)**
8. Dash, P., Pattanayak, S., & Nayak, B. (2023). Facile and controllable synthesis of hematite (α-Fe2O3) nanostructures using GRA-APSO and ANN: Reaction performance optimization for haemotoxicity and MRI assessment. *Journal of Alloys and Compounds, 957*, 170383. Doi: https://doi.org/10.1016/j.jallcom.2023.170383 (**I.F- 6.371**)
9. Rani, R., Nayak, M., & Nayak, B. (2023). Exploring the reprogramming potential of B cells and comprehending its clinical and therapeutic perspective. *Transplant Immunology*, 101804. doi: 10.1016/j.trim.2023.101804 (**I.F- 2.032**)
10. Ghosh, S., Das, P., Nayak, B., High Potency EDC-crosslinked Bovine Serum Albumin Nanoencapsulation of Berberine Enhances In-Vitro Anticancer Efficacy Against Glioblastoma by Inducing ROS Mediated Cell Apoptosis, New Journal of Chemistry, Volume- 46 (2022). doi: 10.1039/D2NJ03880C (**I.F- 3.925**)
11. Singh, G., Ghosh, S., Dinakar, B., Nayak, B., Role of multi-walled carbon nanotubes as a growth regulator for Basella alba (Malabar spinach) plant and its soil microbiota, Chemical and Biological Technologies in Agriculture, Volume-9 (2022). doi: 10.1186/s40538-022-00337-9 (**I.F-4.839**)
12. Singh, G., Senapati, S., Satpathi, S., Behera, P.K., Das, B., Nayak, B., Establishment of decellularized extracellular matrix scaffold derived from caprine pancreas as a novel alternative template over porcine pancreatic scaffold for prospective biomedical application, The FASEB Journal, Volume-36 (2022). doi: 10.1096/fj.202200807R (**I.F- 5.834)**
13. Das, K., Bariki, R., Pradhan, S.K., Majhi, D., Dash, P., Mishra, A., Dhiman, R., Nayak, B., Mishra, B.G., Boosting the photocatalytic performance of Bi2Fe4O9 through formation of Z-scheme heterostructure with In2S3: Applications towards water decontamination, Chemosphere, Volume 306 (2022). doi: 10.1016/j.chemosphere.2022.135600 (**IF-8.943**)
14. Panda, S., ChawPattnayak, B., Dash, P., Nayak, B. & Mohapatra, S. Papaya-Derived Carbon-Dot-Loaded Fluorescent Hydrogel for NIR-Stimulated Photochemotherapy and Antibacterial Activity. *ACS Appl. Polym. Mater.* **4**, 369–380 (2022). doi: 10.1021/acsapm.1c01317 **(IF-4.089)**
15. 7. Das, P., Ghosh, S. & Nayak, B. Phyto-fabricated Nanoparticles and Their Anti-biofilm Activity: Progress and Current Status. *Front. Nanotechnol.* **0**, 76 doi: 10.3389/fnano.2021.739286 (2021).
16. Begum, S., Nayak, B. & Chand, P. K. Nanosilver Particles Coated with Sida acuta Burm. f. Transformed 'Hairy Root' Extract for Efficient Biocatalytic Degradation of Organic Dyes. *J. Clust. Sci.* (2021) doi:10.1007/s10876-021-02038-z. **(IF-3.061)**
17. Nayak, D., Thathapudi, N. C., Ashe, S. & Nayak, B. Bioengineered ethosomes encapsulating AgNPs and Tasar silk sericin proteins for non melanoma skin carcinoma (NMSC) as an alternative therapeutics. *Int. J. Pharm.* (2021) doi:10.1016/j.ijpharm.2021.120265. **(IF-5.875)**
18. Dash, P., Mohapatra, S., Ghosh, S. & Nayak, B. A Scoping Insight on Potential Prophylactics, Vaccines and Therapeutic Weaponry for the Ongoing Novel Coronavirus (COVID-19) Pandemic- A Comprehensive Review. *Frontiers in Pharmacology* (2021) doi:10.3389/fphar.2020.590154. **(IF-5.810)**
19. Dash, P., Raut, S., Jena, M. & Nayak, B. Harnessing the biomedical properties of ferromagnetic α-Fe2O3 NPs with a plausible formation mechanism. *Ceram. Int.* (2020) doi:10.1016/j.ceramint.2020.07.117. **(IF-4.527)**
20. Ashe, S., Behera, S., Dash, P., Nayak, D. & Nayak, B. Gelatin carrageenan sericin hydrogel

composites improves cell viability of cryopreserved SaOS-2 cells. *Int. J. Biol. Macromol.* (2020) doi:10.1016/j.ijbiomac.2020.03.039. **(IF-6.953)**

21. Majhi, D. *et al.* A facile reflux method for in situ fabrication of a non-cytotoxic Bi2S3/β-Bi2O3/ZnIn2S4ternary photocatalyst: A novel dual Z-scheme system with enhanced multifunctional photocatalytic activity. *J. Mater. Chem. A* (2020) doi:10.1039/d0ta06129h. **(IF-12.73)**
22. 14.Swain, B. R. *et al.* Preparation of dendritic carboranyl glycoconjugates as potential anticancer therapeutics. *RSC Adv.* (2020) doi:10.1039/d0ra07264h. **(IF-3.36)**
23. Sarkar, D., Behera, S., Ashe, S., Nayak, B. & Seth, S. K. Facile TMSOI catalysed stereoselective synthesis of 2-Methylene selanyl-4-chromanols and anti-cancer activity. *Tetrahedron* (2017) doi:10.1016/j.tet.2017.11.007. **(IF-2.457)**
24. Ashe, S. *et al.* Novel chromogenic bacteria characterized and their probable treatment options using herbal products and reagents to restrict biofilm formation. *J. Appl. Biomed.* (2017) doi:10.1016/j.jab.2017.08.001. **(IF-1.302)**
25. Shrivastava, D., Nayak, B., Kant, S. & Panda, J. A Review on Health Impacts of Air Pollutants with a Special Mention to Eastern Parts of India, a Growing Hub for Diseases. *Int. J. Earth Atmos. Sci.* **4**, 21–33 (2017). **(IF-2.40)**
26. Nayak, D., Ashe, S., Rauta, P. R. & Nayak, B. Assessment of antioxidant, antimicrobial and anti-osteosarcoma potential of four traditionally used Indian medicinal plants. *J. Appl. Biomed.* (2017) doi:10.1016/j.jab.2016.10.005. **(IF-1.302)**
27. Nayak, D., Boxi, A., Ashe, S., Thathapudi, N. C. & Nayak, B. Stavudine loaded gelatin liposomes for HIV therapy: Preparation, characterization and in vitro cytotoxic evaluation. *Mater. Sci. Eng. C* (2017) doi:10.1016/j.msec.2016.12.073. **(IF-7.328)**
28. Rauta, P. R., Nayak, B., Monteiro, G. A. & Mateus, M. Design and characterization of plasmids encoding antigenic peptides of Aha1 from Aeromonas hydrophila as prospective fish vaccines. *J. Biotechnol.* (2017) doi:10.1016/j.jbiotec.2016.11.019. **(IF-3.163)**
29. Rauta, P. R., Ashe, S., Nayak, D. & Nayak, B. In silico identification of outer membrane protein (Omp) and subunit vaccine design against pathogenic Vibrio cholerae. *Comput. Biol. Chem.* (2016) doi:10.1016/j.compbiolchem.2016.10.004. **(IF-2.877)**
30. Nayak, D. *et al.* Biofilm Impeding AgNPs Target Skin Carcinoma by Inducing Mitochondrial Membrane Depolarization Mediated through ROS Production. *ACS Appl. Mater. Interfaces* (2016) doi:10.1021/acsami.6b11391. **(IF-9.229)**
31. Padhi, J. R. *et al.* Development of highly biocompatible Gelatin & i-Carrageenan based composite hydrogels: In depth physiochemical analysis for biomedical applications. *Carbohydr. Polym.* (2016) doi:10.1016/j.carbpol.2016.07.098. **(IF-9.381)**
32. Rauta, P. R., Das, N. M., Nayak, D., Ashe, S. & Nayak, B. Enhanced efficacy of clindamycin hydrochloride encapsulated in PLA/PLGA based nanoparticle system for oral delivery. *IET Nanobiotechnology* (2016) doi:10.1049/iet-nbt.2015.0021. **(IF-1.847)**
33. Nayak, D. *et al.* Synergistic combination of antioxidants, silver nanoparticles and chitosan in a nanoparticle based formulation: Characterization and cytotoxic effect on MCF-7 breast cancer cell lines. *J. Colloid Interface Sci.* (2016) doi:10.1016/j.jcis.2016.02.043. **(IF-8.128)**
34. Kumari, M., Nayak, D., Ashe, S., Thathapudi, N. C. & Nayak, B. Stability study of OMP encapsulated PLA-PLGA microparticles in simulated body fluid: A DLS perspective. *Micro Nano Lett.* (2016) doi:10.1049/mnl.2016.0208. **(IF-1.10)**
35. Chopra, P. *et al.* Fabrication of poly(vinyl alcohol)-Carrageenan scaffolds for cryopreservation: Effect of composition on cell viability. *Carbohydr. Polym.* (2016) doi:10.1016/j.carbpol.2016.04.027. **(IF-9.381)**
36. Ashe, S., Nayak, D., Kumari, M. & Nayak, B. 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 Appl. Mater. Interfaces* (2016) doi:10.1021/acsami.6b10639. **(IF-9.229)**

37. Mishra, P., Nayak, B. & Dey, R. K. PEGylation in anti-cancer therapy: An overview. *Asian Journal of Pharmaceutical Sciences* (2016) doi:10.1016/j.ajps.2015.08.011. **(IF-0.46)**
38. Nayak, D., Ashe, S., Rauta, P. R., Kumari, M. & Nayak, B. Bark extract mediated green synthesis of silver nanoparticles: Evaluation of antimicrobial activity and antiproliferative response against osteosarcoma. *Mater. Sci. Eng. C* (2016) doi:10.1016/j.msec.2015.08.022. **(IF-7.328)**
39. Nayak, D., Pradhan, S., Ashe, S., Rauta, P. R. & Nayak, B. Biologically synthesised silver nanoparticles from three diverse family of plant extracts and their anticancer activity against epidermoid A431 carcinoma. *J. Colloid Interface Sci.* (2015) doi:10.1016/j.jcis.2015.07.012. **(IF-8.128)**
40. Rauta, P. R. & Nayak, B. Parenteral immunization of PLA/PLGA nanoparticle encapsulating outer membrane protein (Omp) from Aeromonas hydrophila: Evaluation of immunostimulatory action in Labeo rohita (rohu). *Fish Shellfish Immunol.* (2015) doi:10.1016/j.fsi.2015.02.007. **(IF-4.43)**
41. Ashe, S., Nayak, D., Tiwari, G., Rauta, P. R. & Nayak, B. Development of liposome-encapsulated ketoconazole: Formulation, characterisation and evaluation of pharmacological therapeutic efficacy. *Micro Nano Lett.* (2015) doi:10.1049/mnl.2014.0198. **(IF-1.10)**
42. Nayak, D., Ashe, S., Rauta, P. R. & Nayak, B. Biosynthesis, characterisation and antimicrobial activity of silver nanoparticles using Hibiscus rosa-sinensis petals extracts. *IET Nanobiotechnology* (2015) doi:10.1049/iet-nbt.2014.0047. **(IF-1.847)**
43. Rauta, P. R., Samanta, M., Dash, H. R., Nayak, B. & Das, S. Toll-like receptors (TLRs) in aquatic animals: Signaling pathways, expressions and immune responses. *Immunology Letters* (2014) doi:10.1016/j.imlet.2013.11.013. **(IF-2.436)**
44. Bissoyi, A., Nayak, B., Pramanik, K. & Sarangi, S. K. Targeting cryopreservation-induced cell death: A review. *Biopreservation and Biobanking* (2014) doi:10.1089/bio.2013.0032. **(IF- 2.30)**
45. Rauta, P. R., Dhupal, M. & Nayak, B. Original Research Article Screening and characterization of potential probiotic lactic acid bacteria isolated from vegetable waste and fish intestine. *Int. J. Curr. Microbiol. Appl. Sci.* (2013). **(IF-0.654)**
46. Rauta, P. R., Nayak, B. & Das, S. Immune system and immune responses in fish and their role in comparative immunity study: A model for higher organisms. *Immunology Letters* (2012) doi:10.1016/j.imlet.2012.08.003. **(IF-2.436)**
47. Sahoo, S. *et al.* Organogels: Properties and applications in drug delivery. *Designed Monomers and Polymers* (2011) doi:10.1163/138577211X555721. **(IF-2.30)**
48. Nayak, B., Ray, A. R., Panda, A. K. & Ray, P. Improved immunogenicity of biodegradable polymer particles entrapped rotavirus vaccine. *J. Biomater. Appl.* (2011) doi:10.1177/0885328209353642. **(IF-2.646)**
49. Nayak, B., Panda, A. K., Ray, P. & Ray, A. R. Formulation, characterization and evaluation of rotavirus encapsulated PLA and PLGA particles for oral vaccination. *J. Microencapsul.* (2009) doi:10.1080/02652040802211709. **(IF-2.287)**

PAPER PRESENTATION AT CONFERENCES - INTERNATIONAL:

1. **Bismita Nayak**, Pradipta Ranjan Rauta, Niladri Mohan Das, Oral presentation on "Evaluation of Clindamycin encapsulated in PLA/PLGA nanoparticles", at The 4th Asian Biomaterials Congress held at Hong Kong, 26-29th June 2013.

2. **Bismita Nayak,** Oral Presentation on "Formulation and Characterization of Chitosan coated PLA and PLGA encapsulated microparticles for vaccine development" at "**International conference on Bioengineering and Biotechnology (ICBB 2011)**" held from 28-30th November, 2011, **at Venice, Italy.**
3. **Bismita Nayak**, Amulya K. Panda, Pratima Ray and Alok R. Ray, Presented paper on "Immune response generated to Rotavirus encapsulated PLA/PLGA microparticles through various routes of immunization" at International Conference on **Antivirals Congress, held at Amsterdam,** The Netherlands held from 07-11-2010 to 09-11-2010.
4. **Bismita Nayak**, Amulya K. Panda, Pratima Ray and Alok R. Ray, Poster presentation on topic "Preparation and Characterization of Rotavirus Loaded Biodegradable Microparticles for Vaccine Delivery" at 8th World Biomaterials Congress (WBC 2008) held at Amsterdam, The Netherlands, from 28 May to June 2008.
5. **Dash, P**., Nayak, D., Chinnasamy, S., **Nayak, B**., "Synthesis of Biocompatible Iron Oxide Nanoparticles using biological and chemical resources: A Comparative study" poster presented at " International Conference on Advanced Materials (ICAM)" held at Jamia Millia Islamia (A Central University), New Delhi, India, 6th -7th March, 2019, Page No-259.
6. **Dash, P**., **Nayak, B**., " Physicochemical characterization of Pristine hematite NPs and its in-vitro hemolysis, and anti-cancer evaluation against glioma cells" poster presented at "6th International Conference on Advanced Nanomaterials and Nanotechnology (*ICANN2019*)" held at IIT Guwahati, India, 18 -21 December, 2019, PNo.-118
7. **Nayak, B**., "A comparative study on Biocompatible synthesis of magnetite NPs- Chemical and green route" poster presented at "6th International Conference on Advanced Nanomaterials and Nanotechnology (*ICANN2019*)" held at IIT Guwahati, India, 18 -21 December, 2019, PNo-117
8. Garima Singh, **Bismita Nayak**, Poster presentation on "Development of Bioartificial Endocrine Pancreas Using a Natural Scaffold", at International Conference on Biomaterial-based Therapeutic Engineering and Regenerative medicine held at IIT Kanpur from 28th Nov. 2019 to 1st Dec.2019, Organized by: The Society for biomaterials & artificial organs in India. **Poster ID**- P116, **Abstract ID**- OF11
9. **Bismita Nayak***, Debasis Nayak, Oral Presentation on Preparation, characterization and evaluation of anticancer efficacy of antioxidant conjugated Chitosan nanoparticle against breast cancer at International Conference on Biomaterial-based Therapeutic Engineering and Regenerative medicine held at IIT Kanpur from 28th Nov. 2019 to 1st Dec.2019

PAPER PRESENTATION AT CONFERENCES - NATIONAL:

1. *Nayak, D*., Minz, A.P., Boxi, A., Ashe, S., Rauta, P.R., **Nayak, B**: " Antioxidant activity of phytochemical conjugated silver nanoparticles and its anticancer efficacy against A431 Skin carcinoma: A case study" 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.
2. *Nayak, D*., Ashe, S, Kumari, M., Rauta, P.R., **Nayak, B**: "Antimicrobial and anticancer efficacy of green synthesized silver nanoparticles from bark extracts of *Ficus benghalensis*" poster presented at "International conference on polymeric biomaterials, bioengineering and biodiagnostics" held at IIT, Delhi, India, 27-30th October, 2014, Page no-271
3. *Nayak, D*., Ashe, S, Rauta P. R., **Nayak, B**: "Green synthesis, characterization and evaluation of antimicrobial properties of AgNPs using Hibiscus rosa-sinensis petal extract" poster presented at International conference on Nanoscience and Nanotechnology- Aligarh Nano IV

International 2014- held at Dept.of Applied Physics, Aligarh Muslim university, Aligarh, 8-10th March, 2014, Page No-70.

4. Ashe, S., *Nayak, D.*, Rauta, P.R., Kumari, M., **Nayak.B**: " Effect of advanced glycation end products in human osteogenic Saos-2 cells" poster presented at "Conference on Frontiers in Biological Sciences [InCoFIBS-2]" held at NIT Rourkela, Odisha India, 22- 24th January, 2015, page No-153.
5. Ashe, S., *Nayak, D.*, Rauta, P.R., **Nayak. B**: "Liposomal silk sericin formulations targeting ROS activity in vitro cell culture studies" poster presented at "International conference on polymeric biomaterials, bioengineering and biodiagnostics" held at IIT, Delhi, India, 27-30th October, 2014, Page no-273.
6. Madhusmita Dhupal, **Bismita Nayak** and Mihir K Dash, "Isolation, characterization of probiotic lacticacid bacteria from kitchen waste and from fresh water fish intestine", presented by Madhusmita Dhupal at 52nd Annual conference of Association of Microbiologists of India (AMI 2011), International conference on microbial Biotechnology for sustainable development, November 3-6, 2011, Punjab University, Chandigarh, pp-503.
7. Manalee Surve, Krishna Pramanik, Sunil K. Sarangi and **Bismita Nayak**, "a review on targeting cryopreservation induced cell death", presented by Manalee Surve at International Conference on Tissue Engineering and Regenerative Medicine, 30-09-2011 to 02-10-2011, Department of Biotechnology and Medical Engineering, NIT Rourkela, Orissa, PP-55.
8. Pravat Kumar Parida, Kautilya Kumar Jena and **Bismita Nayak,** "Alginate coated Chitosan microparticles and scaffold materials for delivery of anti-tuberculous drugs (ATDs)" poster presentation by Pravat Kumar Parida at National Conference on Tissue Engineering: Prospects & Challenges, 21-22 January 2011, Department of Biotechnology and Medical Engineering, NIT Rourkela, Orissa, pp-247.
9. Amit Chatterjee and **Bismita Nayak,** oral paper presentation by Amit Chatterjee on "Dynamics of telomere in immune response and tumorigenesis", at National Conference on Tissue Engineering: Prospects &Challenges, 21-22 January 2011, Department of Biotechnology and Medical Engineering, NIT Rourkela, pp-39.
10. Pradipta R. Rauta, Rohini N and **Bismita Nayak,** oral paper presentation by Pradipta R. Rauta, "Bioleaching of slime metal ores collected from Joda mines of Orissa by the use of *bacillus* species" at national seminar "Trends in microbial bioremediation of contaminated soil" held on 24-25 September 2011 at PG Department of Microbiology, OUAT, Bhubaneswar, pp-25.
11. **Invited Lecture** on "Chitosan coated PLA/PLGA nanoparticles for delivery of drugs and therapeutic proteins" at International world conference on Nanomedicine and drug delivery 2011 held at Kottayam, Kerala, India from 11-03-2011 to 13-03-2011, pp-28.
12. **Bismita Nayak**, Amulya K. Panda, Pratima Ray and Alok R. Ray, Paper "Immunoevaluation of rotavirus encapsulated nanoparticles: In vitro and in vivo response" selected for oral presentation at 33rd Indian Immunology Society conference held on 28 – 31st Jan 2007 at J.L.N. auditorium, AIIMS, New Delhi, one among 10 best papers presented, **Appreciation award**, pp-93.
13. **Bismita Nayak**, Amulya K. Panda, Pratima Ray and Alok R. Ray, **First prize in poster presentation** "Preparation and characterization of PLA/PLGA encapsulated rotavirus particles" at International Conference on Design of Biomaterials (BIND-06) and XVII Annual meeting of SBAOI held in Indian Institute of Technology Kanpur, 8 – 11th Dec, 2006, pp-67.
14. **Bismita Nayak**, Amulya K. Panda, Pratima Ray and Alok R. Ray, ICMM – 2006, "Preparation and characterization of alginate and PLA/PLGA encapsulated BSA particles"

International conference on Molecules to Materials (ICMM) held during March 3-4, 2006 at Sant Longowal Institute of Engineering & Technology, Longowal, Sangrur, Punjab (India), pp-84.

15. **Bismita Nayak**, Amulya K. Panda, Pratima Ray and Alok R. Ray, "Preparation of biodegradable and biocompatible micro and nanoparticles for oral drug delivery" XVI conference of society for Biomaterial and Artificial Organs- India, Biomaterials, Tissue Engineering and Medical Diagnostics held at IIT Delhi on 24-26 Feb 2006.
16. **Bismita Nayak**, Amulya K. Panda, Pratima Ray and Alok R. Ray, "Biodegradable and biocompatible microspeheres for intranasal vaccine delivery" CHEMCON 2005, 58th Annual Indian Session of Institute of chemical Engineers held at IIT Delhi on 14-17 Dec, 2005, pp-127.
17. **Bismita Nayak**, Amulya K. Panda, Pratima Ray and Alok R. Ray, ICCE-2005, International Congress of Chemistry and Environment held at Indore, India on 24-26 Dec, 2005.
18. Subhashree Mohapatra, Srinivasan Muthuswamy, **Bismita Nayak***, Poster Presentation on "An integrated computational assessment of novel hub genes and drug targets for non-small cell lung cancer (NSCLC) prognosis" at 91st annual meeting of the society of Biological chemists held at Kolkata from 8th to 11th November, 2022
19. Sayantan Ghosh, **Bismita Nayak***, poster presentation on Berberine encapsulated bovine serum albumin nanoparticles enhances in-vitro anti-cancer efficacy against Glioblastoma at 91st annual meeting of the society of Biological chemists held at Kolkata from 8th to 11th November 2022

MEMBER OF ANY SOCIETY

- Life member of Society for Biomaterials and Artificial Organs, India.
- Life member of Indian Immunological Society, India.

BOOK CHAPTERS:

Sl. No.	Title	Publisher-name & Year	Authors (same order as in publication)	Remarks (whether authored or edited)
1.	*"Drug Delivery Methodolgies"* for Recent Advances of Biotechnology	Modern Biology and its applications: Part 2, New India Publishing Agency, PP, 611-647	B. Behera, S. S. Sagiri, Sudheep, V. Patil, V. Varghese, B. Biswal, K. Pal, S. Roy, S. S. Ray and B. Nayak	Co Author
2.	*Nanomedicines: journey from ayurvedic bhasma to Nanoparticles* for Ethno-Pharmacology, Biodiversity and Conservation	Kunal books publishers 2016, New Delhi, Chapter 10, Page no-154-204 ISBN: 978-81-932499-5-6	Debasis Nayak, Bismita Nayak	Co-Author

3.	Abstract Book, IcoFIBS	2010	Dr. S.K. Patra, Dr. S. Das, Bismita Nayak	Edited
4.	Abstract book ATILS	2013	Contributed and Edited	Contributed and Edited
5.	Synthesis of Biopolymer-Based Cryogel Matrix: A Unique Solution for Cell Storage	Springer Publication, Tissue Scaffolds, Springer Protocols Handbooks. Humana, New York. 2022 pp-383–397	Priyanka Dash, Bismita Nayak	Co-author
6.	Processing of Tissue Specimen with Special Reference to Fatty Tissue	Springer Publication, Tissue Scaffolds, Springer Protocols Handbooks. Humana, New York. 2022, pp-493–503	Garima Singh, Bismita Nayaka	Co-author
7.	Oral delivery of polymeric nanoparticles for solid tumors	Springer Publication, Polymeric nanoparticles for the treatment of solid tumors, vol 71. Springer,	Priyanka Dash, Sayantan Ghosh, Bismita Nayak	Co-author
		2022 pp 307–327		
8.	Ligand targeted polymeric nanoparticles for cancer chemotherapy	Polymeric nanoparticles for the treatment of solid tumors, Vol-71 Springer, 2022 pp 251–272	Sayantan Ghosh, Priyanka Dash, Puja Das, Bismita Nayak.	Co-author

PROJECT INFORMATION

I. As PI

Sl. No	Title of the project	Funding agency	Total Financial outlay	Year of start & total period	Names of P.I. and other investigators	Status
1	As PI for Outer membrane proteins targeted as new vaccine strategies for *vibrio cholerae*	DST, FastTrack	21.2 Lakhs	3 years Till Aug 2016	Dr. Bismita Nayak (PI)	Completed
2	Development of efficient and stable non-viral vector based therapeutics for nucleic acid delivery	DST EEQ Project	Rs41,36,000/-	3 years, Till 2nd Feb 2022,	Dr. Bismita Nayak (PI)	Completed

II. As Co-PI

Sl. No	Title of the project	Funding agency	Total Financial outlay	Year of start & total period	Names of P.I. and other investigators	Status (completed, in progress or proposal

						submitted)
1	As one of the Co-PIs for Programme support for project Center for excellence, Tissue Engineering, NIT Rourkela, under the project "cryopreservation of cells and cell scaffold constructs for tissue engineering applications	DBT	2.88 Crore	09-06-2010	Prof. Sunil Kumar Sarangi, Dr. (Mrs.) Krishna Pramanik (PI), Dr. Srisendu Sekhar Ray, Dr. Bismita Nayak (Co-PI)	Completed
2	As Co-PI for Development		31.788	July	Dr. Kunal Pal	Completed
	of antimicrobial Organogels	DBT	Lakhs	18,2011 3 years	(PI), and Dr. Bismita Nayak (Co-PI)	
3	Utilization of mushroom extracts as prebiotic sources to develop synbiotic microcapsules	SERB	24.9 laks	27 Dec 2012	DR. R Jayabalan PI Dr. Bismita Nayak, Co-PI	completed

Ph.D RESEARCH STUDENTS GUIDED

Sl.No	**Name of the Student**	**Project**	**Year of Joining**	**Remarks**
1	Pradipta Ranjan Rauta	Immunological evaluation of biodegradable particle based Omp nanoparticles as potential vaccine candidate	Jan 2011	Awarded. Selected for **Erasmus Mundas Heritage Exchange Fellowship** to Portugal
2	Debasis Nayak	Ethosomal nano-carriers encapsulating novel green synthesized AgNPs and Sericin protein as potential therapeutics against skin carcinoma	July 2012	Awarded
3	Sarbani ashe	Understanding the underlying mechanism of hyperglycemic bone degeneration and development of innovative therapeutic treatment approaches	July 2012	Waiting for Viva
4	Priyanka Dash	Development of efficient and stable Non viral drug delivery	July 2017	Continuing experimental work
5	Garima Singh	Development of Bioscaffold and bioartificial pancreas and their in vivo studies for Diabetes type II.	July 2017	Continuing experimental work
6.	Sayantan Ghosh	Nanoparticle research for Cancer therapeutics	July 2019	Continuing experimental work
7.	Puja Das	Antimicrobial agents and overcoming Drug resistance	July 2019	Continuing experimental work

8.	Subhashree Mohapatra	Nanoparticle-based drug delivery for cancer	January 2020	Continuing experimental work
9.	Reetika Rani	B Regulatory cells and T-regulatory cells in Immune reprogramming	July 2022	Continuing experimental work
10.	Swastik Arya	Cancer stem cells for Glioblastoma	July 2024	Continuing experimental work
10	Manav Goenka	Cancer phototherapy & PDX model , CRISPR Technology	July 2024	Continuing experimental work
11	Yamini Pattnaik	Nanotechnology and Glioblastoma and AGE compound synthesis	July 2024	Continuing experimental work

PATENTS GRANTED

BIOCOMPATIBLE GELATIN AND ICARRAGEENAN BASED COMPOSITE HYDROGELS AND BIOMEDICAL APPLICATIONS THEREOF
Temp/e-1/12919/2017-kol, application no:201731012689

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Date: 19/09/2024

NIT Rourkela

Bismita Nayak