

Faculty Profile



Dr. Sayak Das

M.Sc. (Gold); M.Phil., Ph.D.

Assistant Professor
Microbiology Laboratory
Department of Life Sciences & Bioinformatics
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Google Scholar: <https://scholar.google.com/citations?hl=en&user=U7mDxEUAAAJ>

Education

Ph.D. [Microbiology]	Sikkim University (Central), Sikkim	2021
	Thesis Title: <i>DnaK-DnaJ-GrpE chaperone system diversity of the thermophilic bacterial isolates of the Hot Springs of Sikkim</i>	
M.Phil. [Microbiology]	Sikkim University (Central), Sikkim	2014
	Thesis Title: <i>Physicochemical and microbiological analysis of Dzongu–Tatopani – The Hot Springs of Sikkim</i>	
M.Sc. [Microbiology]	Sikkim University (Central), Sikkim	2012
	Thesis Title: <i>Physicochemical and microbiological analysis of Polok and Borong Tatopani – The Hot Springs of Sikkim</i>	
B.Sc. (Hons.) [Microbiology]	University of Calcutta, Kolkata	2010

Research Area

Microbiome; Extremophiles; Microbial Taxonomy; High Altitude Biology

Discovery/Invention

Co-discovered novel bacteria: *Parageobacillus yumthangensis* AYN2, *Chryseomicrobium excrementii* and two novel strains *Parageobacillus* sp. strain SY1 and *Stenotrophomonas maltophilia* strain P13.

Awards/Recognition

1. **Qualified WBSET (2022)** [West Bengal College Service Commission, WBCSC]
2. **Young Scientist Award, 2020** at 2nd International e-Conference on “Emerging Innovation and Advancement in Biological Science, Human Welfare and Agriculture Research in Current Era (EIABSHWAR-2020)” held on 25-27 July, 2020, organized by Department of Biotechnology & Microbiology, Kalp laboratories, Mathura and The Bouquet Society, Mathura, co-organized by Environment and Social Development Association, Delhi and International Biotech Technocrats & Consultants Association, Dehradun, jointly organized by Plant Research & Educational Promotion Society.
3. **International Book Prize Award, 2019** (100£) from **Royal Society of Chemistry, London, UK** at International Conference on “Chemical Ecology, Environment and Human Health: Emerging Frontiers and Synthesis (ICCEEHH)” held from 9-10th August, 2019; Organized by Department of Zoology, Sikkim University, Gangtok, Sikkim, India.
4. **Young Scientist Award, 2019** at International Conference on “Chemical Ecology, Environment and Human Health: Emerging Frontiers and Synthesis (ICCEEHH)” held from 9-10th August, 2019; Organized by Department of Zoology, Sikkim University, Gangtok, Sikkim, India.
5. **DST – INSPIRE FELLOW, 2013** [IF130091], Govt. of India (2014-2019).
6. **M. Sc. University Gold Medalist, 2010-2012** Department of Microbiology, School of Life Sciences, Sikkim University.
7. **Best Student, Sikkim University 2010-2012 – Inaugural Edition Award**, nominated by the Sikkim University Award Committee.

Administrative Positions

Position	Organization	Duration		Job
		From	To	
IIC Coordinator (Institute Innovation Committee)	Sikkim University Under MIC (MHRD Innovation Cell) Ministry of Human Resources & Development Government of India	01/2018	Till date	Skill development; entrepreneurship development
Sikkim State Coordinator	North-east India Chapter (NeIC) Microbiologist's Society, India (MBSI)	03/2021	04/2022	Promoting, organizing, and generating awareness of Microbiology and its importance

Publications

Cumulative Impact Factor = 84.471 (SCI-SCOPUS INDEXED, 2022) [Two year IF]
Google Scholar Citations = 310; h-index = 10; i-10 index = 10

Research Articles

1. Sharma P, Mondal K, Kumar S, Tamang S, Najar IN, **Das S**, Thakur N. **2022**. RNA thermometers in bacteria: Role in thermoregulation. **Biochimica et Biophysica Acta (BBA) – Gene Regulatory Mechanisms**. [Impact Factor = 6.304] <https://doi.org/10.1016/j.bbagr.2022.194871> ISSN: 1874-9399
2. Thakur N[†], **Das S**[†], Kumar S[†], Maurya VK[†], Dhama K[†], Paweska JT, Abdel-Moneim AS, Jain A, Tripathi AK, Puri B, Saxena SK.[†] **2022**. Tracing the origin of Severe acute respiratory syndrome Coronavirus-2 (SARS-CoV-2): A systematic review and narrative synthesis. **Journal of Medical Virology**. [Impact Factor = 20.693] Advance online publication. <https://doi.org/10.1002/jmv.28060> Online ISSN: 1096-9071 [[†]equal contribution]
3. Najar IN, **Das S**, Kumar S, Sharma P, Mondal K, Sherpa MT, Thakur N. **2022**. Coexistence of heavy metal tolerance and antibiotic resistance in thermophilic bacteria belonging to genus *Geobacillus*. **Frontiers in Microbiology**, 13, 914037, 1-15. [Impact Factor = 6.064] <https://doi.org/10.3389/f-micb.2022.914037> ISSN: 1664-302X
4. Najar IN, Sharma P, **Das S**, Sherpa MT, Kumar S, Thakur N. **2022**. Bacterial diversity, physicochemical and geothermometry of South Asian hot springs. **Current Research in Microbial Sciences**, 3, 100125, 1-14. <https://doi.org/10.1016/j.crmicr.2022.100125> ISSN: 2666-5174
5. Sherpa MT, Sharma L, Bag N, **Das S**. **2021**. Isolation, characterization, and evaluation of native rhizobacterial consortia developed from the rhizosphere of rice grown in organic state Sikkim, India, and their effect on plant growth. **Frontiers in Microbiology**, 12, 713660, 1-15. [Impact Factor = 6.064] <https://doi.org/10.3389/fmicb.2021.713660> ISSN: 1664-302X
6. Najar IN, Sherpa MT, **Das S**, Thakur N. **2021**. The draft genome sequence of *Parageobacillus* sp. strain SY1 gives insights into its physiological properties and protease production. **Meta Gene (Human Gene)**, 22, 1-7. [Impact Factor = 0.9] <https://doi.org/10.1016/j.mgene.20-21.100894> ISSN: 2214-5400
7. **Das S**, Roy G, Sherpa MT, Najar IN, Thakur N. **2021**. Diversity and composition of the North Sikkim hot spring mycobiome using a culture-independent method. **Folia Microbiologica**, 66, 457-468. <https://doi.org/10.1007/s1222-3021-00859-z> [Impact Factor = 2.629]. ISSN: 1874-9356
8. **Das S**, Roy G, Sherpa MT, Najar IN, Thakur N. **2020**. Chemical ecology and microbial quality assessment of water of recreational hot springs of Sikkim Himalayas. **Journal of Water and Environmental Technology**, 18(6), 398-414. <https://doi.org/10.2965/jw-et.20056> [Impact Factor = 1.067]. ISSN: 1348-2165
9. Najar IN, **Das S**, Thakur N. **2020**. Reclassification of *Geobacillus galactosidasius* and *Geobacillus yumthangensis* as *Parageobacillus galactosidasius* comb. nov. and *Parageobacillus yumthangensis* comb. nov. respectively. **International Journal of Systematic and Evolutionary Microbiology**, 70(12), 6518-6523. <https://doi.org/10.1099/ijsem.0.0045-50> [Impact Factor = 2.747]. ISSN: 1466-5026

10. Sherpa MT, **Das S**, Najar IN, Thakur N. **2020**. Exploration of microbial diversity of Himalayan glacier moraine soil using 16S amplicon sequencing and phospholipid fatty acid analysis approaches. **Current Microbiology**, 78(1), 78-85. <https://doi.org/10.1007/s-00284-020-02259-x> [Impact Factor = 2.343]. Electronic ISSN: 1432-0991
11. **Das S**, Sherpa MT, Najar IN, Thakur N. **2020**. Prevalence of methanogens in the uncultured Sikkim hot spring solfataric mud archaeal microbiome. **Environmental Sustainability**, 3(4), 453-469. <https://doi.org/10.1007/s42398-020-00133-x> ISSN: 2523-8922
12. Sherpa MT, **Das S**, Najar IN, Thakur N. **2020**. Draft genome sequence of *Stenotrophomonas maltophilia* strain P13 from Kanchengayao glacier accumulation zone of Sikkim - an overview of protease production and assessment of sulphur and nitrogen metabolism. **Current Research in Microbial Sciences**, 2, 100012 <https://doi.org/10.1016/j.cr-micr.2020.100012> ISSN: 2666-5174
13. Sherpa MT, Najar IN, **Das S**, Thakur N. **2020**. Distribution of antibiotic and metal resistance genes in two glaciers of North Sikkim, India. **Ecotoxicology and Environmental Safety**, 203(111037). <https://doi.org/10.1016/j.eco-env.2020.1110-37> [Impact Factor = 7.129]. ISSN: 0147-6513
14. **Das S**, Kumari A, Sherpa MT, Najar I, Thakur N. **2020**. Metavirome and its functional diversity analysis through microbiome study of the Sikkim Himalayan hot spring solfataric mud sediments. **Current Research in Microbial Sciences**, 1, 18-29. <https://doi.org/10.1016/j.crmicr.2020.05.002> ISSN: 2666-5174
15. Najar IN, Sherpa MT, **Das S**, Das S, Thakur N. **2020**. Diversity analysis and metagenomic insights into the antibiotic resistance and metal resistances among hot spring bacteriome-insinuating inherent environmental baseline levels of antibiotic and metal tolerance. **Journal of Global Antimicrobial Resistance**, 21, 342-352. <https://doi.org/10.1016/j.jgar.2020.03.026> [Impact Factor = 4.349] ISSN: 2213-7165
16. Najar IN, Sherpa MT, **Das S**, Thakur N. **2020**. Bacterial diversity and functional metagenomics expounding the diversity of xenobiotics, stress, defense and CRISPR gene ontology providing eco-efficiency to himalayan hot springs. **Functional and Integrative Genomics**, 20, 479–496. <https://doi.org/10.10-07/s10142-019007-23-x> [Impact Factor = 3.674]. Electronic ISSN: 1438-7948
17. Sherpa MT, Najar IN, **Das S**, Thakur N. **2019**. Culture independent bacterial diversity of Changme Khang and Changme Khangpu glaciers of North Sikkim, India. **Environmental Sustainability**, 2, 241–253. <https://doi.org/10.1007/s42398-019-00067-z> ISSN: 2523-8922
18. Sherpa MT, Najar IN, **Das S**, Thakur, N. **2019**. The diversity of Pseudomonas species from the Accumulation zone of Kanchengayao glacier, North Sikkim, India. **Journal of Pure and Applied Microbiology**, 13(1):339-348. <http://dx.doi.org/10.22207/JPA-M.13.-1.37> [Impact Factor = 0.22]. ISSN: 2581-690X
19. Sherpa MT, Najar IN, **Das S**, Thakur, N. **2018**. Diversity of Bacillus species from Chumbu glacier. **Research Journal of Life Sciences, Bioinformatics, Pharmaceutical and Chemical Sciences** <https://dx.doi.org/10.26479/2018.0403.14> ISSN: 2454-6348 (online)
20. Sherpa MT, Najar IN, **Das S**, Thakur N. **2018**. Bacterial diversity in an alpine debris-free and debris-cover accumulation zone glacier ice, North Sikkim, India. **Indian Journal of**

Microbiology, 58(4), 470-478 <https://dx.doi.org/10.1007/s12088-01807-47-8> [Impact Factor = 2.461]. ISSN: 0973-7715 (Electronic)

21. Najar IN, Sherpa MT, **Das S**, Das S, Thakur N. 2018. Microbial ecology of two hot springs of Sikkim: Predominate population and geochemistry. **Science of The Total Environment**, 637-638(1):730-745. <https://doi.org/10.1016/j.scitotenv.2018.05.037> [Impact Factor = 10.753]. ISSN: 0048-9697 (print)
22. Najar IN, Sherpa MT, **Das S**, Verma K, Dubey VK, Thakur N. 2018. *Geobacillus yumthangensis* sp. nov., a novel thermophilic bacterium isolated from a north-east Indian hot spring. **International Journal of Systematic and Evolutionary Microbiology**, 68, 3430-3434 <https://dx.doi.org/10.1099/ijsem.0.003002> [Impact Factor = 2.747]. ISSN: 1466-5026
23. Najar IN, Sherpa MT, **Das S**, Thakur N. 2018. Draft genome sequence of *Geobacillus yumthangensis* AYN2 sp. nov., a denitrifying and sulfur reducing thermophilic bacterium isolated from the hot springs of Sikkim. **Gene Reports**, 10:162–166. <https://doi.org/10.1016/j.genrep.2017.12.007>. [Impact Factor = 1.6]. ISSN: 2452-0144
24. Saha T, Chakraborty B, **Das S**, Thakur N, Chakraborty R. 2018. *Chryseomicrobium excrementi* sp. nov., a Gram-stain-positive rod-shaped bacterium isolated from an earthworm (*Eisenia fetida*) cast. **International Journal of Systematic and Evolutionary Microbiology**, 68(7), 2165-2171. <https://dx.doi.org/10.1099/ijsem.0.0-02791> [Impact Factor = 2.747]. ISSN: 1466-5026
25. Gogoi P, Das S, **Das S**, Khan MZA. 2016. Effect of organophosphorus insecticide, Malathion on the division of meristems of *Allium cepa* L. **International Journal of Pure and Applied Biosciences**, 4(4):114-122. <http://dx.doi.org/10.18782/2320-7051.2342> ISSN: 2320-7051
26. Najar IN, **Das S**.* 2015. Poly-Glutamic Acid (PGA) – structure, synthesis, genomic organization and its application: A Review. **International Journal of Pharmaceutical Sciences and Research**, 6(6):1000-1023. [http://dx.doi.org/10.130-40/IJPSR.09758232.6-\(6\).225880](http://dx.doi.org/10.130-40/IJPSR.09758232.6-(6).225880) (*corresponding author). ISSN (Online):0975-8232, Society of Pharmaceutical Sciences and Research.
27. Sherpa MT, Mathur A, **Das S**.* 2015. Medicinal Plants and Traditional medicine system of Sikkim – A Review. **World Journal of Pharmacy and Pharmaceutical Sciences**, 4(2):161-184. (*corresponding author). ISSN: 2278-4357
28. Sachdeva SA, Thapa S, Indira Kh, **Das S**, Najar IN. 2014. Rural Housing in Sikkim: An Assessment of Chief Minister's Rural Housing Mission. **Eastern Quarterly 10 (I & II) Spring and Monsoon**, 42-56. ISSN: 0975-4962.
29. Thakur N, **Das S**, Sherpa MT, Ranjan R. 2013. GPS Mapping and Physical Description of Polok, Borong and Reshi Tatopani - Hot Springs of Sikkim. **Journal of International Academic Research for Multidisciplinary**, 1(10):637-647. ISSN: 2320-5083.
30. Sherpa MT, **Das S**, Thakur N. 2013. Physicochemical analysis of Hot water springs of Sikkim - Polok Tatopani, Borong Tatopani and Reshi Tatopani. **Recent Research in Science and Technology**, 5(1):63-67. ISSN: 2076-5061.
31. **Das S**, Sherpa MT, Sachdeva S, Thakur N. 2012. Hot springs of Sikkim (Tatopani): A socio medical conjuncture which amalgamates religion, faith, traditional belief and tourism.

Book Chapters

32. **Das S**, Thakur N. **2021**. The microbial diversity of hot springs located in Himalayan Geothermal Belts (HGB). **In: Extreme Environments**, Ed. Pandey A, Sharma A, **CRC Press**. eBook ISBN 9780429343452, <https://doi.org/10.1201/978-0429-34-3452-2>
33. **Das S**, Najjar IN, Sherpa, MT, Thakur N. **2021**. Hot and cold bacteria of Sikkim Himalayas. **In: Bioprospecting of Enzymes in Industry, Healthcare and Sustainable Environment**, Ed. Thatoi H, Mohapatra S, Das SK, 269-289, Springer, Singapore, ISBN (online) - 978-981-33-4195-1, https://doi.org/10.1007/978-981-33-4195-1_13
34. **Das S**, Najjar IN, Sherpa MT, Thakur N. **2016**. Hot Springs of Sikkim: Biotechnological and Sociological Importance. **In: Research on Biotechnology in India: Some Initiatives and Accomplishments**, Ed. Bag N, Bag A and Murugan N, 149-181, New India Publishing Agency, ISBN – 978-93-85516-25-2, New Delhi, India.

Proceedings

35. **Das S**, Sherpa MT, Thakur N. **2012**. Sikkim's Tatopani – A balneotherapeutic prospect for community health in North East India. **International Journal of Agriculture and Food Science Technology**, 3(2):149-152. ISSN: 2249-3050
36. **Das S**, Sherpa MT, Thakur N. **2012**. Polok Tatopani – A Hot Spring of Sikkim: A Social Elixir. Proceedings of Conference Paper, 2nd Indian Mountain Initiative Sustainable Mountain Development Summit (IMI SMDS2), Sikkim: 59-62.

Presentations (Poster/Oral)

1. **Online e-Oral Presentation** on the topic **“Microbiome and functional genomics of the hot spring solfataric mud sediments of Sikkim Himalayas”** at **International e-Conference on “Emerging Innovation and Advancement in Biological Science, Human Welfare and Agriculture Research in Current Era (EIABSHWAR-2020)”** held on 25-27 July, 2020, organized by Department of Biotechnology & Microbiology, Kalp laboratories, Mathura and The Bouquet Society, Mathura, co-organized by Environment and Social Development Association, Delhi and International Biotech Technocrats & Consultants Association, Dehradun, jointly organized by Plant Research & Educational Promotion Society.
2. **Online e-Poster Presentation** on the topic **“Viruses predominant in the hot springs of Sikkim”** at **National Web Conference on “Microbiology, Biotechnology and Pharmaceutical Science”** held on 10-11th May, 2020; Jointly Organized by Sanjivani Arts, Commerce and Science College, Kopergaon, Maharashtra and Microbiologist Society, India.
3. **Oral Presentation** on the topic **“Phospholipid Fatty Acid analysis and Next generation Sequencing profile of the hot springs of Sikkim”** at **International Conference on “Chemical Ecology, Environment and Human Health: Emerging Frontiers and Synthesis (ICEEE)”** held from 9-10th August, 2019; Organized by Department of Zoology, Sikkim University, Gangtok, Sikkim, India.

4. **Poster Presentation** on the topic **“Physicochemical analysis of hot water springs of Sikkim - Polok Tatopani, Borong Tatopani and Reshi Tatopani”** at **International Conference on “New Horizons in Pharmaceutical & Biomedical Sciences”** From 12/01/2013-13/01/2013, Organized by Society of Environment, Health & Biotech and Sheetal Life Sciences (P) Ltd., Dehradun, Uttarakhand, India.
5. **Oral Presentation** on the topic **“Sikkim’s Tatopani – A balneotherapeutic prospect for community health in North East India”** International Conference on **“Agriculture, Foods Sciences & Environmental Technology for Sustainable Global Development (AFSET – 2012)”** From 28/10/2012-29/10/2012, Organized by Krishi Sanskriti, Jawaharlal Nehru University (JNU), New Delhi, India.

Extra-Curricular Activities

Quizzing; NSS

Professional Memberships

Microbiologists Society, India [Life Member, LM-259]