

Name: Dr.K.P.Krishnan

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Office: +91-832-2525510 (☎)

Designation: Scientist E

Functional Designation: Scientist in Charge – Arctic
Program and Logistics

Lab: Polar Biology/Cryobiology Laboratory

Job Profile:

- Planning, co-ordination and implementation of the Indian Arctic programme
- Cryobiological studies in the Polar Regions
- Member, Marine Working Group, International Arctic Science Committee
- Indian Representative, Ny-Ålesund Science Managers Committee

Career record:

Scientist E, National Centre for Antarctic and Ocean Research, 2017-Present

Scientist D, National Centre for Antarctic and Ocean Research, 2013-2017

Scientist C, National Centre for Antarctic and Ocean Research, 2009-2013

Scientist B, National Centre for Antarctic and Ocean Research, 2006-2009

Senior Research Fellow (UGC), National Institute of Oceanography, 2005 - 2006

Junior Research Fellow (UGC), National Institute of Oceanography, 2003-2005

Expeditions:

Team Coordinator, Indian Scientific Expedition to Arctic (2016, Summer/Winter)

Member, IndARC deployment team, Expedition to Arctic (2014, Summer)

Team Coordinator, Indian Scientific Expedition to Arctic (2013, Summer)

Team Coordinator, Indian Scientific Expedition to Arctic (2012, Summer)

Team Coordinator, Indian Scientific Expedition to Arctic (2011, Summer)

Dy.Chief Scientist, Indian Scientific Expedition to the Southern Ocean (2010)

Member, 1st Indian Scientific Expedition to Arctic (2008, Winter)

Member, 26th Indian Scientific Expedition to Antarctica (2007)

Guest Editor:

- Topic Editor, Digitizing Frozen Earth - Revealing Microbial Diversity and Physiology in the Cryobiosphere through 'Omics' Tools : Frontiers in Microbiology (Section: Extreme Microbiology) - 2018
- AFoPS special issue in Polar Science – Elsevier (2015)
- AFoPS special issue in Advances in Polar Science (2013)

International Grants/Awards:

National Geoscience Award – 2014 for contribution in the field of glaciology and Arctic and Antarctic research (team award for work related to IndARC, India's first multisensory mooring in polar waters)

International Network Programme Grant (2016) by The Danish Agency for Science, Technology and Innovation, Ministry of Higher Education and Science. Project: Microbial stress responses to temperature changes in the three Polar Regions.

Certificate of Merit in Ocean Science and Technology by Ministry of Earth Sciences, Government of India in 2013.

Academic Record:

Doctor of Philosophy (Marine Sciences) from Goa University, Goa, India in the year 2010. [PhD Mentor: Dr.P.A.Loka Bharathi, National Institute of Oceanography]

Master of Science in Marine Biology from Cochin University of Science and Technology (CUSAT), Kerala, India in the year 2003 (First Rank with distinction)

Fellowships/Scholarships:

University Grants Commission (Government of India) –Research Fellowship 2002

Undergraduate merit scholarship for scoring the highest percentage in B.Sc. degree examination (2001)

Merit cum means scholarship for the best undergraduate student in the year 2001 (Sacred Heart College, Kerala)

Publications:

1. Rupesh Kumar Sinha, **K. P. Krishnan**, Femi Anna Thomas, Binish M.B., Mahesh Mohan, P. John Kurian (2018). Polyphasic approach revealed complex bacterial community structure and function in deep sea sediment of ultra-slow spreading Southwest Indian Ridge. *Ecological Indicators*. Vol.96. Pg 40–51.
2. Aneesa P. Alikunju, Susan Joy, Jaseetha Abdul Salam, Reshma Silvester, Ally. C. Antony, Mujeeb Rahiman K. M., **Krishnan K. P.**, and Mohamed Hatha A. A. (2018). Functional characterization of a new cold-adapted β -galactosidase from an Arctic Fjord sediment bacteria *Enterobacter ludwigii* MCC3423. *Catalysis Letters*. <https://doi.org/10.1007/s10562-018-2504-3>.
3. Mahesh Mohan, Sreelakshmi U., Vishnusagar M.K., Gopikrishna V.G., Pandit G.G., Sahu S.K., Tiwari M, Ajmal P.Y., Kannan V.M., Abdul Shukkur M. and **Krishnan K.P.** (2018). Rate of sediment accumulation and historic metal contamination in a tidewater glacier fjord, Svalbard. *Marine Pollution Bulletin*. Vol. 131. Pg 453–459.
4. Sheryl Oliveira Fernandes, Surya Prakash L., Binish M. B., **K. P. Krishnan**, P. John Kurian (2018). Changes in morphology and metabolism enable Mn-oxidizing bacteria from mid-oceanic ridge environment to counter metal-induced stress. *Journal of Basic Microbiology*. DOI: 10.1002/jobm.201700580.
5. Binish Mechirackal Balan, Sruthy Shini, **Kottekkattu Padinchati Krishnan** and Mahesh Mohan (2018). Mercury tolerance and biosorption in bacteria isolated from Ny-Ålesund, Svalbard, Arctic. *Journal of Basic Microbiology*. DOI: 10.1002/jobm.201700496.
6. Nejumal K. K., Dineep D, Mahesh Mohan, **Krishnan K.P.**, U. K. Aravind, C. T. Aravindakumar (2018). Presence of Bisphenol S and Surfactants in the Sediments of Kongsfjorden: A Negative Impact of Human Activities in Arctic? *Environmental Monitoring and Assessment*. 190:22. Pg 2-8.
7. Aneesa P Alikunju, Susan Joy, Mujeeb Rahiman, Emilda Rosmine, Ally C Antony, Solly Solomon, Manjusha K, Saramma A V, **Krishnan K P** and Mohamed Hatha A A (2017). A statistical approach to optimize cold active β -galactosidase production by an Arctic sediment psychrotrophic bacteria, *Enterobacter ludwigii* (MCC 3423) in cheese whey. *Catalysis Letters*. <https://doi.org/10.1007/s10562-017-2257-4>.
8. Rupesh Kumar Sinha, **K.P. Krishnan**, Archana Singh, Femi Anna Thomas, Anand Jain and P. John Kurian (2017). *Alteromonas pelagimontana* sp. nov., a

- marine exopolysaccharide-producing bacterium isolated from the Southwest Indian Ridge. *International Journal of Systematic and Evolutionary Microbiology*. 67(10):4032-4038.
9. Anand Jain and **Kottekkattu Padinchati Krishnan** (2017). Variation in free-living and particle-associated bacterial communities in Kongsfjorden, Arctic. *Journal of Basic Microbiology*. DOI: 10.1002/jobm.201700216.
 10. Mahesh Mohan, Chandini P.K., **K.P. Krishnan**, Gopikrishna V.G., Sajin Kumar K.S., Kannan V.M. (2017). Mercury Fractionation in the Sediments of Kongsfjorden, an Arctic Fjord, Svalbard. *International Journal of Marine Science*, 2017, Vol. 7, No. 26.
 11. Rupesh Kumar Sinha, **Kottekkattu Padinchati Krishnan**, Savita Kerkar, Divya David Thresyamma (2017). Influence of glacial melt and Atlantic water on bacterioplankton community of Kongsfjorden, an Arctic fjord. *Ecological Indicators*. Vol. 82. Pages 143–151.
 12. Archana Singh, **K. P. Krishnan**, D. Prabakaran and Rupesh K. Sinha (2017). Lipid membrane modulation and pigmentation as a cryoprotection mechanism in Arctic pigmented bacteria. *Journal of Basic Microbiology*. <https://doi.org/10.1002/jobm.201700182>.
 13. Rupesh Kumar Sinha, **K.P.Krishnan** and P. John Kurian (2017). Draft Genome Sequence of *Idiomarina* sp. Strain 5.13, a Highly Stress-Resistant Bacterium Isolated from the Southwest Indian Ridge. *Genome Announcements*. Volume 5 Issue 10 e01747-16.
 14. Dhaneesha M, C. Benjamin Naman, **Krishnan K.P**, Rupesh Sinha, Jayesh P, Valsamma Joseph, I.S. Bright Singh, William H. Gerwick, and Sajeewan T.P (2017). *Streptomyces artemisiae* MCCB 248 isolated from Arctic fjord sediments has unique PKS and NRPS biosynthetic genes and produces potential new anticancer natural products. *3 Biotech*. DOI: 10.1007/s13205-017-0610-3.
 15. Anand Jain and **Kottekkattu Padinchati Krishnan** (2017). A Glimpse of the diversity of complex polysaccharide degrading culturable bacteria from Kongsfjorden, Arctic. *Annals of Microbiology*. DOI 10.1007/s13213-016-1252-0.
 16. Sini Salam, Lekshmi S, Reshma Silvester, **Krishnan, K.P.**, Saramma, A.V. and A.A. Mohamed Hatha (2017). Effect of environmental factors on growth and enzyme production of cold adapted bacteria from water and sediment of Kongsfjord, Ny-Ålesund, Norwegian Arctic. *Journal of Environmental Biology*. Vol.38. DOI : 10.22438.
 17. Rupesh Kumar Sinha, **K. P. Krishnan**, A. A. Mohamed Hatha, Mujeeb Rahiman, Divya David T., Savita Kerkar (2017). Diversity of retrievable heterotrophic bacteria in Kongsfjorden, an Arctic fjord. *Brazilian Journal of Microbiology*. 48:51-61.
 18. Bijoy Nandan S., Krishnapriya P.P., Akhilesh V., Asha C.V., Jayachandran P.R., and **Krishnan K.P.** (2016). Benthic Faunal Assemblage of the Arctic Kongsfjorden System, Norway, *International Journal of Marine Science*, 6(54):1-8
 19. Divya David T and **K.P. Krishnan** (2016). Recent variability in the Atlantic water intrusion and water masses in Kongsfjorden, an Arctic fjord. *Polar Science*. *In Press*. <http://dx.doi.org/10.1016/j.polar.2016.11.004>.
 20. Rupesh Kumar Sinha, **K.P. Krishnan**, Savita Kerkar and Divya David T (2016). Spatio-temporal monitoring and ecological significance of retrievable pelagic heterotrophic bacteria in Kongsfjorden, an Arctic fjord. *Indian Journal of Microbiology*. DOI: 10.1007/s12088-016-0621-5.

21. Venkatesan R., **K.P.Krishnan** and Divya David (2016). Box 2. Another Comparison on the Other Side of the Arctic. In: A tale of two spicy seas. Oceanography. Vol. 29. No.2. 47-57.
22. Venkatesan R., **K.P.Krishnan**, M. Arul Muthiah, B. Kesavakumar, David T. Divya, M.A. Atmanand, S. Rajan and M. Ravichandran (2016). Indian moored observatory in the Arctic for long-term in situ data collection. The International Journal of Ocean and Climate Systems. Vol.7 (2) 55-61.
23. Kentaro Watanabe, Koichiro Doi, Hong Tat Ewe, **Kottekkatu Padinchati Krishnan**, Jae Il Lee and Ruiyuan Liu (2015). Recent advance in Asian polar science - Commemorating ten-year activities of the Asian Forum for Polar Sciences (AFoPS). Polar Science. 9-335-337.
24. A.A.Mohamed Hatha, C.S. Neethu, S.M. Nikhil, K.M. Mujeeb Rahiman, **K.P. Krishnan**, A.V. Saramma (2015). Relatively high antibiotic resistance among heterotrophic bacteria from arctic fjord sediments than water – evidence towards better selection pressure in the fjord sediments. Polar Science. 9-382-388.
25. **K.P.Krishnan**, Rupesh Kumar Sinha, Shanta Nair, Sharon B. Noronha, Rachael Chacko and N. Anilkumar (2014). Carbon demand utilization and metabolic diversity of bacterioplankton in the frontal regimes of the Indian sector of Southern Ocean. Annals of Microbiology. DOI 10.1007/s13213-014-0948-2.
26. Gonsalves, M.J.B.D., Neetu, S., Krishnan, K.P., Attri, K., LokaBharathi, P.A. (2013). Mathematical modelling of the evolution of a simple biological system. Journal of Coastal Environment. Vol.4(1). Pages 15-24.
27. Mohamed Hatha A.A., Mujeeb Rahiman, **K.P. Krishnan**, Saramma A.V., Saritha G., Deepu Lal (2013). Characterization and cold adapted yeast. Indian Journal of Marine Sciences. Vol.42 (4). Pages 458-465.
28. Rupesh Kumar Sinha and **K.P.Krishnan** (2013). Phenotypic plasticity in *Bacillus cereus* strains isolated from various Antarctic habitats. Advances in Polar Sciences. Vol. 24, Issue 4, pp. 213-222.
29. **K.P.Krishnan**, Rupesh Kumar Sinha and S. Rajan (2013). Pelagic nitrification and denitrification rates in an Arctic fjord during early spring. Annals of Microbiology. DOI: 10.1007/s13213-013-0671-4.
30. Mohamed Hatha A.A., Divya P.S., Saramma A.V., Mujeeb Rahiman and **K.P. Krishnan** (2013). Migratory bird, *Branta leucopsis* (Barnacle goose), a potential carrier of diverse *Escherichia coli* serotypes into pristine Arctic environment. Current Science. Vol.104 (8). Pages 1078-1080.
31. Jenson V. George, Nuncio M., Racheal Chacko, Anilkumar N., Sharon B. Noronha, Shramik M. Patil, Sini Pavithran, Denny P. Alappattu, **Krishnan K.P.**, Achuthankutty C.T. (2013). Role of physical processes on chlorophyll distribution in the Western Tropical Indian Ocean. Journal of Marine Systems. Vol.113-114. Pages 1-12.
32. Shivaji S, Begum Z, Shiva Nageswara Rao SS, Vishnu Vardhan Reddy PV, Poorna Manasa, Sailaja B, Prathiba MS, Thamban M, **K. P. Krishnan**, Singh SM, Srinivas TNR (2013). Antarctic ice core sample: bacterial diversity and bioprospecting for cold-active enzymes from culturable bacteria. Research in Microbiology. Vol.164. Pages 70-82.
33. Rupesh Kumar Sinha and **K.P.Krishnan** (2013). Novel opportunity for understanding origin and evolution of life: perspectives on the exploration of subglacial environment of Lake Vostok, Antarctica. Annals of Microbiology. *In Press*. 10.1007/s13213-012-0525-5.

34. Flory Pereira, Savita Kerkar and **K.P.Krishnan** (2013). Bacterial response to dynamic metal concentrations in the surface sediments of a solarsalern (Goa, India). *Environmental Monitoring Impact and Assessment*. 185(5):3625-36.
35. Neethu C S, Mujeeb Rahiman K. M, **Krishnan K. P**, Saramma A.V., Hatha A. A. M (2012). Substrate specificity of cold active lipases of psychrotrophic bacteria from Kongsfjord, and its partial characterization. *Advanced Biotech*. Vol. 12. Is. 1. Pages 28-31.
36. Flory Pereira, **K.P.Krishnan**, Rupesh Kumar Sinha and Savita Kerkar (2012). Some insights on the metal-microbe interactions in *Bacillus sp.* and *Chromohalobacter sp.* isolated from a solar saltern. *Journal of Ecobiotechnology*. 4(1):14-24.
37. Runa Antony, **K.P. Krishnan**, C.M. Laluraj, Meloth Thamban, P.K. Dhakephalkar, Anupama S. Engineer and S. Shivaji (2012). Diversity and physiology of culturable bacteria associated with a coastal Antarctic ice core. *Microbiological Research*. 167(6):372-380.
38. Pavithran S, Anilkumar N, **K.P Krishnan**, Sharon B. Noronha, Jenson V. George, Nanajkar M, Chacko R, Dessai DRG, Achuthankutty CT (2012). Contrasting pattern in chlorophyll a distribution within the Polar front of the Indian sector of Southern Ocean during austral summer 2010. *Current Science*. 102(6):899-903.
39. Rupesh Kumar Sinha, **K.P.Krishnan**, Angshuman Sarkar (2012). Heat shock response as a cue for phenotypic variability: A study from the psychrotrophic and mesophilic strains of *Cellulosimicrobium cellulans*. *Annals of Microbiology*. Vo.62. Pages 1565-1572.
40. Runa Antony, K. Mahalinganathan, **K.P. Krishnan**, Meloth Thamban (2012). Microbial preference for different size classes of organic carbon: A study from Antarctic snow. *Environmental Monitoring and Assessment*. Vo.184 (10). Pages 5929-43.
41. Runa Antony, Meloth Thamban, **K.P. Krishnan**, K. Mahalinganathan (2010). Is cloud seeding in coastal Antarctica linked to bromine and nitrate variability in snow? *Environmental Research Letters*.5_014009.
42. Runa Antony, **K.P.Krishnan**, Sabu Thomas, Wilson P. Abraham, Thamban Meloth (2009). Phenotypic and molecular identification of *Cellulosimicrobium cellulans* isolated from Antarctic snow. *Antonie van Leeuwenhoek International Journal of General and Molecular Microbiology*. 96(4):627-634.
43. **K.P.Krishnan** and P.A.Loka Bharathi (2009). Organic carbon and iron modulate nitrification rates in mangrove swamps of Goa, South west coast of India. *Estuarine, Coastal and Shelf Science*. 84(3):419-426.
44. **K.P.Krishnan**, Rupesh Kumar Sinha, Kiran Krishna, Shanta Nair and S.M.Singh (2009). Microbially mediated redox transformation of manganese (II) along with some other trace elements: A study from Antarctic lakes. *Polar Biology*. 32:1765-1778
45. **K.P.Krishnan**, S.O. Fernandes, P.A. Loka Bharathi, L. Krishna Kumari, Shanta Nair, Anil K. Pratihari and B. Ramalingeswara Rao (2008). Anoxia over the western continental shelf of India: Bacterial indications of intrinsic nitrification feeding denitrification. *Marine Environmental Research*. Vol.65, 445-455.
46. Laluraj C.M, **K.P.Krishnan**, M. Thamban, Rahul Mohan, S.S.Naik, W.Dsouza, R. Ravindra and A. Chaturvedi (2008). Origin and characterisation of micro particles in the ice core from the Central Dronning Maud Land, East Antarctica. *Environmental Monitoring and Assessment*.149:377-383.

47. **K.P. Krishnan**, Sheryl O Fernandes, G.S. Chandan and Loka Bharathi P A (2007). Bacterial contribution to mitigation of iron and manganese in mangrove sediments. *Marine Pollution Bulletin* Vol.54 Iss.9 1427-1433.
48. **K.P. Krishnan**, Christabelle E.G. Fernandes, Sheryl Oliveira Fernandes and P.A. Loka Bharathi (2006). Tolerance and immobilization of cobalt by some bacteria from ferromanganese crusts of the Afanasiy Nikitin Seamounts. *Geomicrobiology Journal*. Vol.23.Issue.1 Pages 31-36.
49. Reshma C. Goltekar, **K.P. Krishnan**, Maria -Judith B.D. De Souza, A. L. Paropkari and P.A. Loka Bharathi (2006). Effect of carbon source concentration and culture duration on retrievability of bacteria from certain estuarine, coastal and offshore areas around the peninsular India. *Current Science*. Vol.90.No.1.103-106.
50. Sheryl Oliveira Fernandes, **K.P. Krishnan**, V.D. Khedekar and P. A. Loka Bharathi. (2005). Manganese oxidation by bacterial isolates from the Indian Ridge System. 18:483–49. *BioMetals*.
51. **Krishnan K.P.** and A.V. Saramma (2005). Mixed substrate degradation: Are consortia better than monocultures? *Indian Journal of Marine Sciences*. Vol.34.No.2.188-191.

Books:

1. Rajan S and **K.P.Krishnan** (2016). India's scientific endeavors in the Arctic. In: *Asia and the Arctic*. Part of the series Springer Geology pp 43-48
2. Hatha A.A.M., Mujeeb Rahiman K.M., Deepu Lal K.M., **Krishnan K.P.**, Rupesh Kumar Sinha, A.V. Saramma (2013). Impact of climate change on heterotrophic bacterial communities in the water and sediment of Kongsfjord in Norwegian Arctic. *Climate Change and Himalayan Informatics*. Pages 170-182; , ISBN: 978-81-7233-846-6.
3. **K.P.Krishnan**, Rupesh Kumar Sinha and Kuldeep Attri (2013). Interseasonal variabilities in an Arctic fjord: The Kongsfjorden system as a natural laboratory for climate change. *Scientific and Geopolitical Interests in Arctic and Antarctic*. LIGHTS and Iris Publication. Pages 187-196.
4. *The Story of Antarctica*. (2008). Anju Tiwari, **K.P.Krishnan** and Rasik Ravindra. Pub. NCAOR and Geological Society of India.