

Curriculum vitae of Shakila Nargis Khan

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Working & Mailing address	Professor Department of Microbiology University of Dhaka, Dhaka 1000, Bangladesh Tel: (+880 2) 966 1900-73 Fax: (+ 880 2) 9667222 email: shakila@du.ac.bd
Date and place of birth	Sep 26, 1971, Dhaka, Bangladesh
Marital status	Married

Academic qualification

- 1) **Post-doc** (2002-2004): Department of Biochemistry, McGill University, Montreal, Canada.
Project title: Effect of small molecules on translation regulation.
- 2) **PhD** (1997-2000): Department of Biomolecular Sciences, University of Manchester Institute of Science and Technology (UMIST), Manchester, UK
Thesis title: Molecular characterization of the xylanolytic system in *Phanerochaete chrysosporium*.
- 3) **M.Sc.** (1991-1992, Exam held in 1995): Obtained from the Department of Microbiology, University of Dhaka, Bangladesh, and was awarded **First class** (position 2nd). A thesis was submitted for the partial fulfillment of the degree working in the Department of Microbiology, University of Dhaka, Dhaka-1000, Bangladesh.
Thesis title: Production and partial characterization of endoxylanase and endoglucanase by thermophilic fungi.
- 4) **B.Sc. (Honours)** (1988-1991, Exam held in 1993): Obtained from the Department of Microbiology, University of Dhaka, Bangladesh, and was awarded **First class** (position 2nd). Botany and Biochemistry were studied as minor subjects in addition.
- 5) **H.S.C.** (Higher Secondary Certificate) (1986-1988): Obtained from the Secondary and Higher Secondary Education Board, Dhaka, studying in Holy Cross College, Dhaka. **First Division** (79.3%) was obtained.
- 6) **S.S.C.** (Secondary School Certificate) (1986): Obtained from the Secondary and Higher Secondary Education Board, Dhaka, studying in Agrani School, Dhaka. **First Division** (81.4%) was obtained which placed me 14th in the combined merit list position in Dhaka Board.

Research Interest

1. Recombinant gene products and their application in biotech industries
2. Genetic improvement of industrially important genes encoding enzymes
3. Agriculturally important microorganisms and their application as Biopesticides
4. Isolation and characterization of antibacterial and anticancer proteins, peptides and metabolites
5. Probiotic Technology for application in shrimp industries and fish aquaculture
6. Integrated pest management for vector-borne diseases

Research Projects

1. Identification of mosquitocidal toxin encoding genes in indigenous *Bacillus thuringiensis* strains for biocontrol of *Aedes aegypti*. 2023-2024. Chromosome Research Centre, University of Dhaka, Dhaka-1000. Bangladesh. [Project ID: 001/2024/Centre] 2 lac
2. Genetic improvement of processes yielding microbial phytase for application in the poultry industries. 2022-2023. Ministry of Science and Technology (Project ID: SRG-221222). 3 lacs
3. Screening of indigenous probiotic bacteria from shrimp for application as an alternative to antibiotics in aquaculture. 2021-2022. University Grants Commission, University of Dhaka (UGC-DU). 3.3 lacs
4. The investigation of anticancer and antimicrobial activities of Violacein purified from indigenous *Chromobacterium violaceum*. 2020-2021. Centennial Research Grant (CRG), University of Dhaka. 5.5 lacs
5. Enhanced production of Phytase from selected bacteria to be used as a digestive aid in poultry feed in Bangladesh. 2019-2020. MoE (Ref: 37.20.0000.004.033.020.2016-86). 14 lacs
6. *Artemia-mediated* biohazard control and management by probiotic technology for shrimp industries in Bangladesh. MoST. 2019-2020. (Ref: 39.00.0000.009.06.024.11/SI. No. 183 (BS)/Gr.SL: BS-183BS). 2 lacs
7. “Enhanced production of alpha-amylase from *Bacillus licheniformis* for potential application in textile industries of Bangladesh. Ministry of Science, Information, Communication and Technology. 2018-19. (Ref:39.00.0000.09.02.90.19-09/235/Gr.SL: BS-326). 2 lacs
8. Determination of Anticancer and Antibacterial Activities by the Violacein from ‘*Chromobacterium violaceum*’ UGC, DU 2018-19. (Ref: Reg/Adm-3/61444). 1.2 lacs
9. Community Structure and Quality Assessment of *Artemia* Cysts Used as Shrimp Feed in Aquaculture Industries of Bangladesh. 37.20.0000.004.033.005.2014-1309/1 (42). MoE 2013-14. 25 lacs
10. Cost-effective expression and purification of recombinant ‘keratinase’ from *Bacillus licheniformis* for biotechnological application in Bangladesh. a project funded by the Ministry of Science, Information, Communication and Technology (Reference: 39.009.002.01.00.053.2014-2015/92/BS-296). 3 lacs
11. “Production of fungal enzymes as inoculum for green jute retting in Bangladesh”– a project funded by Ministry of Science, Information, Communication and Technology (Reference: MOSIC&T/Sha-9/be anu pro-16/ 2007-2008/35, dated 13-02-2008). 5 lacs
12. ‘Abundance and community structure of bacteria associated with *Artemia* cysts of used in hatchery operations of Bangladesh’ a project funded by University Grants Commission Bangladesh, 2008-09. 72,400 BDT
13. Gene Cloning and Production of ‘Keratinase’ and ‘Alkaline Protease’ with Dehairing Function for Biotechnological Application in Leather Industries of Bangladesh. a project funded by Ministry of Science, Information, Communication and Technology. 4.5 lacs

Employment Record

Period	Position held	Name of the Institution
Feb 2011- Onwards	Professor	Department of Microbiology University of Dhaka, Dhaka, Bangladesh
Oct 2005- Feb 2011	Associate Professor	Department of Microbiology University of Dhaka, Dhaka, Bangladesh
Nov 2002- Oct 2004	Post-doctoral Fellow	Department of Biochemistry, McGill University, Montreal, Canada

Jun 2001- Oct 2005	Assistant Professor	Department of Microbiology University of Dhaka, Dhaka, Bangladesh
Sep 1999- Jun 2000	Student Demonstrator	Department of Biomolecular Sciences, University of Manchester Institute of Science and Technology (UMIST), Manchester, M60 1QD, UK
Sep 1997- Dec 2000	Graduate Student	Department of Biomolecular Sciences, UMIST, Manchester, M60 1QD, UK
Jan 1997- Jun 2001	Lecturer	Department of Microbiology University of Dhaka, Dhaka 1000, Bangladesh
Sep 1996- Dec 1996	Product Officer	Acme Laboratories (A pharmaceutical company) Satmasjid road, Dhaka, Bangladesh
June 1993- Dec 1995	Research Student	Bangladesh Jute Research Institute Manik Mia Avenue, Dhaka, Bangladesh

Publication profile

Publication record as calculated by Google

(<https://scholar.google.com/citations?hl=en&user=R9KlAc8AAAAJ&btnA=1&cstart=20&pagesize=20>)



List of publications

1. Siddika A, Rashid AA, **Khan SN**, Khatun A, Karim MM, Prasad PVV and Hasanuzzaman M. 2024. Harnessing plant growth-promoting rhizobacteria, *Bacillus subtilis* and *B. aryabhatai* to combat salt stress in rice: a study on the regulation of antioxidant defense, ion homeostasis, and photosynthetic parameters. *Front. Plant Sci.* 15:1419764. doi: 10.3389/fpls.2024.1419764
2. Abedin, S. M. M., Tarafdar, M. R., Saha, A., Atiqua, Rahim, S., Karim, M. M., & Khan, S. N. (2024). Isolation and characterization of *Chromobacterium violaceum* and antibacterial activities of its metabolite violacein. *Dhaka University Journal of Biological Sciences*, 33(1), 109–119. <https://doi.org/10.3329/dujbs.v33i1.72487>.
3. Roy, S, Saha, A, Khan, SI, Hasan, MM, Karim, MM, Akhter, MZ, Hoq, MM, & **Khan, SN**. 2023. Identification and Differentiation of Closely Related Members of *Bacillus cereus* Group by

- Multiplex PCR. Bangladesh Journal of Microbiology, 39(1), 21–29. doi.org/10.3329/bjm.v39i1.64055
4. Aktar N, Shishir MA, **Khan SN** and Hoq MM. Isolation and Molecular Characterization of *Bacillus thuringiensis* Harboring Putative ps Genes from Bangladesh. Microbial Bioactives, 4(1), 143-149. 2021. DOI:[10.25163/microbbioacts.412122A0630120921](https://doi.org/10.25163/microbbioacts.412122A0630120921)
 5. Bari A, Shishir MA, Khan SA, **Khan SN**, Hoq MM. Bio-efficacy of Indigenous *Bacillus thuringiensis* JSd1 against Melon Fly, *Zeugodacus cucurbitae* (Coq.) (Diptera: Tephritidae: Dacinae). International Journal of Entomology Research (Impact Factor: RJIF 5.24), vol.6 (2): 127-134, 2021. <http://www.entomologyjournals.com/search?keyword=6-2-15>
 6. Sultana S, Saha A, **Khan SN** and Karim MM: An asymptomatic case report with prolonged viral clearance: an issue to ponder COVID-19 control and containment, Bangladesh J Medical Sciences (impact factor:0.17), vol.20, no.1, pp.187-9, 2021. DOI: <https://doi.org/10.3329/bjms.v20i1.50368>
 7. Hasan MM, **Khan SN**, Karim MM, Begum A and Hoq MM. Complete genome and plasmid sequence of a novel *Bacillus* sp. BD59S, a parasporal protein synthesizing bacterium. 3 Biotech. 2019; 9:318. DOI: [10.1007/s13205-019-1849-7](https://doi.org/10.1007/s13205-019-1849-7)
 8. Aktar N, Karim MM, **Khan SN**, Rahman M, Begum A and Hoq MM. In silico studies of Parasporin proteins: Structural and functional insights and proposed cancer cell killing mechanism for parasporin 5 and 6, Microbial Bioactives, vol.2, no.1, pp.82-90, 2019. <https://doi.org/10.25163/microbbioacts.21007A0621280219>
 9. Ferdous UT, Shishir MA, Khan SN and Hoq MM. *Bacillus spp*: Attractive sources of anti-cancer and anti-proliferative biomolecules. Microbial Bioactives, 2018; 1(1):033-045. <https://doi.org/10.25163/microbbioacts.11005B0408130818>
 10. Mian MM, Mamun MA, **Khan SN**, Hoq MM. Efficient Medium for Protease Production by *Bacillus licheniformis* MZK05M9 Optimized through Response Methodology. MicrobialBioactives, 2018; 1(1),022028. <https://doi.org/10.25163/microbbioacts.11003A0425300718>.
 11. Akter D, Khan MM, Mian MM, **Khan SN**, Hoq MM. Phytase Production from a Novel *Klebsiella* sp. on Wheat Bran for Animal Feed Digestion. Microbial Bioactives, 2018; 1(1), 014-021. <https://doi.org/10.25163/microbbioacts.11004A0423100718>
 12. Hossain MS, Akhter MZ, Hossain MM, Shishir MA, **Khan SN**, Hoq MM. Complete genome sequence of *Bacillus subtilis* strain MH1, which has a high level of bacteriocin-like activity, isolated from soil in Bangladesh. Genome Announcement. 2018; 6 (25): e 00516-18. <https://doi.org/10.1128/genomeA.00516-18>
 13. Mamun MA, Mian MM, Saifuddin M, **Khan SN**, Hoq MM. Optimization of fermenting medium by statistical method for production of alkaline protease by *Bacillus licheniformis* MZK05M9. Journal of Applied Biology & Biotechnology. 2017; 5(6), pp. 24-28. DOI: [10.7324/JABB.2017.50604](https://doi.org/10.7324/JABB.2017.50604)
 14. Mamun MA, Mian MM, Begum S, Manzum AA, **Khan SN** and Hoq MM. Stabilization of protease from *Bacillus licheniformis* MZK05M9. Bangladesh J Ind Microbiol Biotechnol.2017; 1(1):39-45.
 15. Mamun MA, Hosain MA, Ahmed S, Zohra FT, Sultana R, Khan MM, Akhter MZ, **Khan SN**, and Hoq MM. "Development of an Alternative Enzyme-assisted Dehairing Method of Animal Skins using Proteases from *Bacillus licheniformis* MZK05M9." Bangladesh Journal of Microbiology. 2016; 32: 33-37. <https://doi.org/10.3329/bjm.v32i0.28475>
 16. Zaman MA, Mamun MAA, **Khan SN** and Hoq MM and Mazid MA. Partial purification of Alkaline protease as thrombolytic agent from mutant strain *Bacillus licheniformis* EMS250-O-1. Dhaka Univ. J. Pharm. Sci. 2016; 15(2):135-141.
 17. Nahar M, Shishir MA, Waliullah S, Haque S, Ilias M, Karim MM, **Khan SN** and Hoq M.M. Cloning, expression and structure simulation of keratinase from *Bacillus licheniformis* strain

- MZK05. Malays J Microbiol. 2016; 12(1). | 12(2) 2016, pp. 182-190
<http://dx.doi.org/10.21161/mjm.78515>
18. Khandoker N, Mamun AA, Nafiz TN, **Khan SN** and Hoq MM. Strain improvement of *Trichoderma viride* through mutation for enhanced production of cellulase. Bangladesh J. Microbiol, 2015; 30(1&2):43-47. <https://doi.org/10.3329/bjm.v30i1-2.28452>
 19. Khan TT, Mamun AA, Mian MM, **Khan SN.** and Hoq MM. Stability of *Bacillus licheniformis* MZK05 mutants upon mutagenic treatment for enhanced protease activity. BANGL J BOT.2015.
 20. Islam MN, Akhand NR, Mamun AA., Shishir A., Aktar MZ., **Khan SN.**, Hoq M.M. and Hossain M.S. Screening and Characterization of Bacteriocin-Like Inhibitory Substances Produced by Bangladeshi Strains of *Bacillus thuringiensis*. Bangladesh pharm. j. 2015; 18 (2):149-156.
 21. Mamun AA, Khan MM, Akand MNR, **Khan SN** and Hoq MM. Characterization of an alkaline protease with high quality bating potential in leather processing from *Bacillus licheniformis* MZK05M9 mutant. Int J Biol Res, 2015; 3(1):36-41. doi: 10.14419/ijbr.v3i1.4250
 22. Mourin M, Shishir A., **Khan SN.** and Hoq MM. Regulation of major cultural components for designing a cost effective medium to increase δ -endotoxin synthesis by *Bacillus thuringiensis*. Afr J Biotechnol. 2015; 14(16): 1379-1386.
<https://doi.org/10.5897/AJB2014.14340>
 23. Shishir, MA., Akter A, Bodiuzzaman M., Hossain MA., Alam MM., Khan SA., **Khan SN.** and Hoq MM. Novel toxicity of *Bacillus thuringiensis* strains against melon fruit fly, *Bactrocera cucurbitae* (Diptera: Tephritidae). *Biocontrol Sci.*2015 20(2): 115-123.
DOI: [10.4265/bio.20.115](https://doi.org/10.4265/bio.20.115)
 24. Shishir MA, Pervin S., Sultana M, **Khan SN.**, and Hoq MM. Genetic Diversity of Indigenous *Bacillus thuringiensis* Strains by RAPD-PCR to Combat Pest Resistance. *Bt Research*,2015; 6: 1-16. doi: 10.5376/bt.2015.06.0008
 25. Bhowmik A, Mourin M, Shishir MA, **Khan SN.** and Hoq M.M. Development of a cost-effective medium for enhanced production of *Bacillus thuringiensis* δ - endotoxin. Bangladesh J Microbiol, 2015; 32(1): 1- 6. <https://doi.org/10.3329/bjm.v32i0.28470>
 26. Shishir A., Bhowmik A., Akand NR., Mamun AA., **Khan SN.** and Hoq MM. Efficacy of Indigenous *Bacillus thuringiensis* Strains for Controlling Major Vegetable Pests in Bangladesh. Egypt J. Biol. Pest Control, 2015; 25(3):729-734.
 27. Salaheen, S., Mamun, M. A. Al, Khan, S. N., & Hoq, M. M. (2015). Improvement of *Bacillus licheniformis* MZK05 by mutation for increased production of keratinase. *Dhaka University Journal of Biological Sciences*, 24(1), 17–23. Retrieved from <http://journal.library.du.ac.bd/index.php?journal=dujbs&page=article&op=download&path%5B%5D=1004&path%5B%5D=964>
 28. Mamun MA, Khan MM, Akand MNR, **Khan SN,** Hoq MM. Characterization of an alkaline protease with high quality bating potential in leather processing from *Bacillus licheniformis* MZK05M9 mutant. Int J Biol Res.2015; 3 (1):36-41
 29. Shishir M, Roy A, Islam N, Rahman A and, **Khan SN** and Hoq MM. Abundance and diversity of *Bacillus thuringiensis* in Bangladesh and their cry genes profile. Front. Environ. Sci.2014 2:20. <https://core.ac.uk/download/pdf/82833925.pdf>
 30. Hoq MM., Mamun AA, Shishir MA, Khan MM., Akand MNR. and **Khan SN.** Bioprocess development for eco-friendly microbial products and impacts on bio-industry establishment in Bangladesh. Proceedings of international conference on biotechnology, 25-26. 2013.
 31. Shishir A, Akter A, Bodiuzzaman, Aktar N, Rahman M, Khan SA, Ilias M, **Khan SN** and Hoq MM. Molecular characterization of indigenous *Bacillus thuringiensis kurstaki* isolates from Bangladesh and toxicity of *Btk* HD-73 against melon fruit fly, *Bactrocera cucurbitae*. Proceedings of 1st AFSA Conferences on Food Safety and Food Security held in Osaka, Japan from September 15-17, 2012.

32. Shishir A, Akter A, Hassan MH, Kibria G, Ilias M, **Khan SN**, Hoq MM. Characterization of locally isolated *Bacillus thuringiensis* for the development of eco-friendly biopesticides in Bangladesh. Journal of Biopesticides.2012; **5**: 216-222.
http://www.jbiopest.com/users/LW8/efiles/Vol_5_0_216_222F.pdf
33. Rahman S, **Khan SN**, Naser MN and Karim MM. Safety issues of isolated probiotic natured bacteria from Bangladesh coastal waters for controlling shrimp diseases. J.Sci.Res. 2011; **3**(3): 659-668.
34. Hasan MH, Akter A, Ilias M, **Khan SN**, Hoq MM. Growth, sporulation and toxin production by *Bacillus thuringiensis* isolates in media based on mustard-seed meal. Banglad J Microbiol. 2010; **27** (2): 51-55. <https://doi.org/10.3329/bjm.v27i2.9172>
35. Jahan Z, **Khan SN** and Hoq MM. Screening of keratinolytic bacteria from poultry wastes. Bangladesh j. sci. ind. res. 2010; **45**(3): 261-266.
36. Sarker A, Rahman S, **Khan SN**, Naser MN and Karim MM. Optimization and partial characterization of a putative probiotic bacterium antagonistic to *vibrios* in shrimp larval rearing system. Dhaka University J. Pharmaceutical Sciences. 2010; **9**(1):23-29.
37. Fahmi T, Karim MM, Rahman S, Naser MN and **Khan SN**. Abundance and Community Structure of Bacteria Associated with *Artemia* Cysts of Commercial Brands Commonly Used in Hatchery Operations of Bangladesh. Bangladesh j. zool. 2010; **38** (1): 41-49.
38. Rahman S, **Khan SN**, Naser MN and Karim MM. Isolation of *Vibrio* spp from penaeid shrimp hatchery and coastal waters of Cox's Bazar, Bangladesh. Asian J Exp Biol Sci.2010; **1**(2): 288-293.
39. Rahman S, **Khan SN**, Naser MN and Karim MM. Application of probiotic bacteria: a novel approach towards ensuring food safety in shrimp aquaculture. Journal of Bangladesh Academy of Sciences 2009; **33**(1): 139-144.
40. MT Alam, Karim MM and **Khan SN**. Antibacterial activity of different organic solvent extracts from *Achyranthes aspera* and *Cassia alata*. J Sci Res. 2009;**1** (2): 393-398.
41. Robert F, Kapp LD, **Khan SN**, Acker M, Kaufman RJ, Merrick WC, Lorsch JR and Pelletier J. Translation initiation by the HCV IRES is refractory to reduced ternary complex availability. *Mol. Biol. Cell.*2006; **17**(11):4632-4644. (IF: 3.905) <https://doi.org/10.1091/mbc.e06-06-0478>
42. **Khan SN** and Paul F. G. Sims. Molecular characterization of two endo-1,4- β -xylanase genes from *Phanerochaete chrysosporium*. Bangladesh J. Bot.2005; **34**(2):101-108.
43. Akhter MZ, Hussain A and **Khan SN**. Plasmid mediated multi-drug resistance of *E. coli* isolated from urinary tract infection: a preliminary study. Bangladesh J. Microbiol.2005; **22** (1): 55-58.
44. Malina A, **Khan SN**, Carlson CB, Svitkin Y, Harvey I, Sonenberg N, Beal PA, Pelletier J. Inhibitory properties of nucleic acid-binding ligands on protein synthesis. FEBS Lett 2005 **579**(1):79-89. <https://doi.org/10.1016/j.febslet.2004.06.103>
45. Chan J, **Khan SN**, Harvey I, Merrick W and Pelletier J. Eukaryotic Protein synthesis inhibitor identified by comparison of cytotoxicity profiles.RNA 2004;**10**:528-543.
<http://www.rnajournal.org/cgi/doi/>
46. **Khan SN**, Akter MZ and Sims PFG. Cloning and Expression analysis of two endo-1,4- β -xylanase genes from *Phanerochaete chrysosporium*. Plant Tissue Culture. 2002; **12** (1): 57-68.
47. **Khan SN** and Sims PFG. Substrate dependant PCR based analysis of *in vivo* expression of *Phanerochaete chrysosporium xynA* and *xynB* genes Dhaka Univ. J. Biol. Sci. 2002; **11** (2): 159-165.
48. **Khan SN**, Gomes DJ, Mohiuddin G and Choudhury N. Characterisation of xylanase and β -xylosidase from *Thermomyces lanuginosus* TF5. Bangladesh J. Microbiol. 1996; **13** (1 & 2):49-56.
49. **Khan SN**, Gomes DJ, and Choudhury N. Optimization of culture medium for the production of xylanase from *Thermomyces lanuginosus* TF5 using Box-Wilson method. Bangladesh J. Life Sci. 1996; **8** (2): 35-44.

50. **Khan SN**, Gomes DJ, Mohiuddin G and Choudhury N. Optimization of culture medium for the production of xylanases by a newly isolated thermophilic fungus *Thermomyces lanuginosus*. Bangladesh J. Microbiol. 1995; **12** (1 & 2):7-14.

*denotes peer-reviewed international journals

Books/ Proceedings chapter

1. **Khan, SN** and Rahman, MM. 2022. Chapter 8 on “Microbial Biotechnology in Solving Industrial Problems”, *In: Microbiology Education and Research in Bangladesh: Prospects and Challenges - Centennial Book series of the University of Dhaka* (Edited by MM Rahman *et al*), pp 201-222. published by the Department of Microbiology, University of Dhaka, Bangladesh.
2. Rahman S, **Khan SN**, Naser MN and Karim MM. 2012. Probiotic technology for sustainable aquaculture. *In: Wahab MA, Shah MS, Hossain MAR and Barman BK and Hoq ME (eds.) Advances in Fisheries Research in Bangladesh: In: Proceedings of 5th Biennial Fisheries Conference and Research Fair 2012*, pp 83-96. **ISBN: 978-984-33-6729-7**. Published by Bangladesh Fisheries Research Forum
3. Rahman S, Khan SN, Naser MN and Karim MM. 2012. Cytotoxic and antibacterial activities of isolated probiotic bacteria from Bangladesh for controlling bacterial infection in shrimp aquaculture. *In: Food, Health and Environment*. QA Fattah, SMH Kabir and N Choudhury (eds.), **ISBN: 987-984-33-4982-9**, Published by Bangladesh Academy of Sciences, Bangladesh. pp 161-170.
4. Sarker A, Khan SN, Naser MN and Karim MM. 2008. Isolation of probiotic bacteria from natural sources to control diseases in shrimp aquaculture. *In: Food Safety and Hygiene*. N Choudhury, CR Ahsan and MM Karim (eds.), **ISBN: 984-300-001933-4**, Published by Bangladesh Academy of Sciences, Bangladesh. pp 129-135.
5. Seraj, ZI., Khan H, Sarker RH, **Khan SN** and Islam AS. Harnessing biotechnology. *In Bangladesh in the new millennium* Edited by Abul Kalam. The University Press Ltd., Dhaka Bangladesh. 2004; p.393-422.

Research experience

During my stay at McGill University, I have worked on the effects of small molecules on the regulation of translation. My particular interest was to screen new inhibitors of eukaryotic protein synthesis using the High Throughput Screening facility of McGill Cancer Center. I have worked on several synthetic compounds, natural products, and plant extracts and finally identified few compounds as novel protein synthesis inhibitors which I had characterized both in vitro and in vivo. The importance of the project was not only to better understand the mechanism of the regulation of translation but a number of studies indicate that deregulation of protein synthesis is a major contributor in cancer initiation and progression.

While doing PhD, various techniques of ‘Recombinant DNA technology’ and ‘Genetic engineering’ were applied to complete the molecular characterization of two different xylanase genes from the fungus *Phanerochaete chrysosporium*. This work represents the first description of any such genes from this important model organism. The data has been submitted in the GenBank database under accession numbers AF301902 to AF301905. RT-PCR method was used to investigate the kinetics of the expression of these genes. Overexpression and purification of these proteins using a heterologous *E. coli* system were also performed. These products were characterized using the peptide mass fingerprinting technique.

Editorial activities

1. Member, Editorial Board; The Dhaka University Journal of Biological Science', 2022-2023, published by Dhaka University Faculty of Biological Sciences

Abstracts / Poster Presentation in Conferences

1. Al Muid Khan, **Shakila N Khan**, Muhammad Manjurul Karim and Maksuda Begum. Enhancing Poultry Nutrition in Bangladesh: Molecular Engineering and Cost-Effective Production of Thermostable Phytase from *Bacillus subtilis* SP11. Oral presentation. Asian Food Safety and Security Association (AFSA) Conferences on "Food Safety and Food Security" on 2-4 October 2024; Organized by AFSA & Chulalongkorn University, Bangkok, Thailand.
2. Mithu Rani Tarafdar, Atiqua, Shah Md Minhajul Abedin, Al Muid Khan Abid, Avirup Saha, Dr. Muhammad Manjurul Karim, **Dr. Shakila Nargis Khan**. Isolation and characterization of a multi-task bacterial metabolite violacein with potential implications for pharmaceuticals and beyond. Oral presentation. Rajshahi University. April 2024.
3. Rashna Sharmin Shama, Md. Mahmuduzzaman Mian, Md. Mahmud Hasan, Mithu Rani Tarafdar, **Dr. Shakila Nargis Khan**. Molecular Cloning, Expression, and Toxicity Evaluation of a Mosquitocidal Toxin Protein from Indigenous *Bacillus thuringiensis* BD59S. Oral presentation. BCSIR Congress 2023. March 2024
4. DC Pal, **SN Khan**, M Hasanuzzaman, and MM Karim. Isolation and identification of phytopathogenic fungi and its biocontrol using plant growth-promoting rhizobacteria. 37th BSM Annual Conference, Senate Hall, University of Dhaka, Jan 26-27, 2024
5. Mithu Rani Tarafdar, Shah Md Minhajul Abedin, Atiqua, Muhammad Manjurul Karim, **Shakila Nargis Khan**. The Perfect Blue. 3MT thesis presentation. NYAB Research Skill Development program. 2023. (1st position)
6. Md. Al Muid Khan, Sabina Yasmin, **Shakila Nargis Khan**, M Mozammel Hoq. Cost effective phytase production for application in poultry feed. 3MT thesis presentation. NYAB Research Skill Development program. November, 2023.
7. **Shakila Nargis Khan** and Md. Mozammel Hoq. Driving Green Innovation: Microbial Biotechnology for Enhanced Bioprocesses in Bangladesh. 5th International Conference on Biotechnology in Health and Agriculture (ICBHA). NNAC, University of Dhaka. Dhaka, Bangladesh. Sep 1-3. Keynote Speaker for the Session on "Microbial Biotechnology".
8. **Shakila Nargis Khan**, Invited speaker, "Mosquitocidal potential of an indigenous *Bacillus thuringiensis* BD59s : A hope of biocontrol of Dengue in Bangladesh", ISBM e-Webinar. 'Potential Tasks to Prevent and Control Dengue in Bangladesh', 26 August 2023.
9. Shah Md. Minhajul Abedin, Avirup Saha, Muhammad Manjurul Karim, Md. Mozammel Hoq, **Shakila Nargis Khan**. "Production and Characterization of a unique metabolite, violacein from locally isolated Chromobacterium violaceum", 36th BSM Annual Conference, 19-20 January, 2023. (Poster Presentation)
10. Roy S, Saha A, Khan SI, Hasan MM, Karim MM, Akhter MZ, Hoq MM, **Khan SN**. Identification and Differentiation of Closely Related Members of Bacillus cereus group by Multiplex PCR. 1st International Dhaka Science Conference for Woman. Dhaka Nanomaterials Group, BAN-02/2, International Science Programme, Uppsala University, Sweden in association with Materials Science Division, Atomic Energy Centre Dhaka, Bangladesh Atomic Energy Commission. Hotel Pan Pacific Sonargaon, Dhaka. 15-16th February 2023.
11. Boby, F, Hoq MM, **Khan SN**, Bhuiyan MNH, Islam MJ, Dey SS, Zakaria-Al-Noman M. Strain Improvement and Upscaling of phytase production of *Bacillus* sp. Phs12 Using UV and EMS. BCSIR Congress 2022. 3rd December. BCSIR, Dhaka.
12. Shah MD Minhajul Abedin, Avirup Saha, Md. M. Hoq, Md. M. Karim, **Shakila N. Khan**. "Production, extraction, and characterization of violacein from *Chromobacterium*

violaceum and its antibacterial, anticancer, anti-biofilm, and synergistic antimicrobial profiling”, ACB-ISBE, 4-5 October, 2022. (Oral Presentation).

13. M. A. Bari, M. A. Shishir, K. Seheli, M. Khan, S. A. Khan, S. N. Khan and M. M. Hoq. Insecticidal Activity of Indigenous *Bacillus Thuringiensis* Strains Against Oriental Fly, *Bactrocera Dorsalis* (Diptera: Tephritidae). 22nd National Conference and AGM 2020 of Zoological Society of Bangladesh (ZSB), TSC Auditorium, Dhaka University, Dhaka. 29th October, 2021. (Oral Presentation)
14. Shah MD Minhajul Abedin, Avirup Saha, Md. M. Hoq, Md. M. Karim, **Shakila N. Khan**. “Antitumor and antimicrobial activity of violacein extracted from locally isolated strains of *Chromobacterium violaceum*”, 5th National Young Biotechnologists Congress, 20 February, 2020. (Oral Presentation)
15. Nahar M, **Khan SN**, Karim MM, Akhter MZ and Hoq MM. Cloning and Heterologous Expression of Bacteriocin Encoded Genes from *Bacillus subtilis* MZK05 Presented at the 31th Annual Conference, Bangladesh Society of Microbiology, June 29, 2020, Dhaka University, Dhaka.
16. Bari MA, Shishir A, Khan SA, **Khan SN** and Hoq MM, oral presentation on “Bio-efficacy of indigenous *Bacillus thuringiensis* strains against Melon fly, *Zeugodacus cucurbitae* (Diptera: Tephritidae) affecting fruits and vegetables” 32nd Annual Conference & General Meeting of Bangladesh Society of Microbiologists (BSM), JUST, Jashore. 6th April, 2019.
17. Bari MA, **Khan SN** and Hoq MM, oral presentation on “Efficacy of Indigenous *Bacillus Thuringiensis* Strains Against the Melon Fly, *Zeugodacus Cucurbitae* (Diptera: Tephritidae). 21st International Biennial Conference and AGM of Zoological Society of Bangladesh (ZSB), Nabab Nawab Ali Chowdhury Senate Bhaban, Dhaka University, Dhaka. 7-8th December, 2019.
18. Bari MA, **Khan SN** and Hoq MM, poster presentation on “Toxicity of Indigenous *Bacillus Thuringiensis* Strains Against the Oriental Fly, *Bactrocera Dorsalis* (Diptera: Tephritidae)”. 21st International Biennial Conference and AGM of Zoological Society of Bangladesh (ZSB), Nabab Nawab Ali Chowdhury Senate Bhaban, Dhaka University, Dhaka. 7-8th December, 2019.
19. Joy DJM, Hasan MM, Ramim AM, **Khan SN**, Akhter MZ, Hoq MM and Karim MM. Identification of a novel bacterial agent causing Early Mortality Syndrome (EMS) in black tiger shrimp of Bangladesh. 4th IPFS-GNOBB International Conference 2019, University of Dhaka, Dhaka, Nov 11-13, 2019.
20. Nusrat F, Hasan MM, Mamun MA, Hoq MM, Karim MM and **SN Khan**. Purification and partial characterization of extracellular α -amylase from *Bacillus subtilis* MZK05. 4th IPFS-GNOBB International Conference 2019, University of Dhaka, Nov 11-13, 2019.
21. Nahar M, Karim MM, Hoq MM and **Khan SN**. Cloning, Expression and Application of Recombinant keratinase from *Bacillus licheniformis* MZK05. 4th IPFS-GNOBB International Conference 2019, DU.
22. Jhuma TA, Rafeya J, **Khan SN**, Akhter MZ, Hoq MM and Karim MM. Potential for plant growth promotion under salinity-stress by biofilm forming halotolerant rhizobacteria isolated from rice endophytes. 4th IPFS-GNOBB International Conference 2019, University of Dhaka, Nov 11-13, 2019.
23. Roy S, Saha A, Khan SI, Hasan MM, Karim MM, Hoq MM and **Khan SN**. Multiplex PCR for Differentiation of Closely Related Strains of *Bacillus cereus* Group. 32nd BSM Annual Conference 2019.
24. Hasan MM, **Khan SN**, Karim MM. Complete genome and plasmid sequence of a novel *Bacillus thuringiensis* strain BD59S, a HeLa cell killing parasporal crystalline inclusion protein synthesizing bacterium. 32nd BSM Annual Conference 2019.

25. Basak S, Sultana S, Hoq MM, Karim MM, Naser MN and **Khan SN**. Bacterial Association with Artemia Cysts used in Aquaculture Industries of Bangladesh and use of Probiotics as Biocontrol Agent. 32nd BSM Conference 2019.
26. **Khan SN**, Sultana S, Basak S, Hoq MM, Karim MM and Naser MN, Poster presentation on Localization, Abundance and Community Structure of Bacteria Associated with *Artemia* Cysts: Challenges and Possible Remedy. The 14th Asian Congress on Biotechnology (ACB, 2019).
27. Mamun MAA, Mian MM, Khan TT, **Khan SN** and Hoq MM, oral presentation on “High level protease production by developing a *Bacillus licheniformis* mutant and statistically designed fermentation on molasses and soybean meal”, 10th AFOB regional symposium (ARS2018), 27-29 January 2018, University of Dhaka, Dhaka, Bangladesh.
28. Bari MA, Shishir A, Khan SA, **Khan SN** and Hoq MM, poster presentation on Bio-efficacy of indigenous *Bacillus thuringiensis* strains against Melon fly, *Bactrocera cucurbitae* (Diptera: Tephritidae). 10th AFOB Regional Symposium, Nabab Nawab Ali Chowdhury Senate Bhaban, Dhaka University, Dhaka. 27-29th January, 2018.
29. Mian MM, Mamun MAA, **Khan SN**, Hoq MM, poster presentation on “Industrial Applications of Protease from a New Strain *Bacillus subtilis* OM01”, 10th AFOB regional symposium (ARS2018), 27-29 January 2018, University of Dhaka, Dhaka, Bangladesh.
30. Akhtar T, Priyanka F, Islam F, Mamun MAA, **Khan SN**, Hoq MM and Mazid MA, oral presentation on “Isolation and Characterization of Indigenous *Bacillus* sp. Producing Novel Thrombolytic Enzymes,” 10th AFOB regional symposium (ARS2018), 27-29 January 2018, University of Dhaka, Dhaka, Bangladesh.
31. Mahjabeen F, Mian MM, Mamun MAA, **Khan SN**, Hoq MM, poster presentation on “Response Surface Methodology for optimization of cellulase production by *Trichoderma viride* BM01” 10th AFOB regional symposium (ARS2018), 27-29 January 2018, University of Dhaka, Dhaka, Bangladesh
32. Hasan MM, **Khan SN**, Begum A, Karim MM and Hoq MM. Identification of Mosquitocidal Toxin Encoded Gene from Plasmid Sequence of indigenous *Bacillus thuringiensis* strain. Abstract number 100, 21st National Conference and AGM of Zoological Society of Bangladesh (ZSB), Shishu Academy, Bangladesh. 7-8 Dec 2018.
33. Sultana S, Basak S, Hoq MM, Karim MM, Naser MN and **Khan SN**. “Bacterial association with *Artemia* cysts: Concern for aquaculture industries of Bangladesh and use of probiotics as biocontrol agent”. Poster presentation (P-84) in 4th Asian Food Safety and Security Association (AFSA) Int’l Conference, Aug 10-12, 2018, Angkor Paradise hotel, Seam Reap, Cambodia.
34. Hasan MM, **Khan SN**, Begum A and Hoq MM, Oral presentation on ‘Finding cancer cell targeted nontoxic peptide therapeutics from transmembrane protein of nonhemolytic *Bacillus thuringiensis*’. Oral Presentation on Bangladesh Zoological Society Conference. 2018.
35. Nahar M, **Khan SN***, Karim MM, Hoq MM, oral presentation on High level expression of recombinant keratinase from *Bacillus licheniformis*, The 13th Asian Congress on Biotechnology 2017 (ACB 2017) “Bioinnovation and Bioeconomy”. July 23-27, 2017 Pullman Khon Kaen Raja Orchid Hotel, Khon Kaen, Thailand.
36. Nahar M, **Khan SN**, Karim MM, Hoq MM. Gene cloning and expression of a recombinant protein, keratinase from *Bacillus licheniformis* for industrial applications. Presented at the 30th Annual Conference, Bangladesh Society of Microbiology, April 29, 2017, Dhaka University, Dhaka.
37. Nahar M, **Khan SN**, Karim MM, Hoq MM. Gene cloning and expression of a recombinant protein, keratinase from *Bacillus licheniformis* for industrial applications. Presented at the 1st International GCSTMR Congress, Nawab Ali Chowdhury Senate Bhaban, February 4-5, 2017, Dhaka, Bangladesh.

38. Hoq MM, Mamun MAA, Nahar M, Mian MM, Khan TT, Karim MM and **Khan SN**, Key note presentation on “Bioprocess development for eco-friendly industrial enzymes from *Bacillus licheniformis*”, International conference on metabolic science, 20-23 October, 2016, Nanjiao hotel, Shanghai, China.
39. Production and application of Eco-friendly Industrial Enzymes in Bangladesh. Presented (as keynote speech) at the 1st International Congress-2017 by Global Circle for Scientific, Technological and Management Research (GCSTMR), Nabab Nawab Ali Chowdhury Senate Bhavan, University of Dhaka, Bangladesh.
40. Mamun MAA, Mian MA, **Khan SN** and Hoq MM, Oral presentation on “Optimization of Fermenting medium by Statistical Methodology for Production of Alkaline Serine Protease by *Bacillus licheniformis* MZK05M9”, 1st GCSTMR Congress, 4-5 February, 2017, Dhaka, Bangladesh.
41. Mian MM, Mamun MAA, Mamun MAA, **Khan SN**, Hoq MM, oral presentation on “Optimization of Amylase Production by *Bacillus licheniformis* MZK250 using Statistical Methods under Submerged Fermentation”, 1st GCSTMR Congress, 4-5 February 2017, Dhaka, Bangladesh.
42. Biopesticide of *Bacillus thuringiensis* JSc1 effectively cut chemicals in controlling caterpillars infesting vegetables. Presented at the 3rd AFSA Conference on “Food safety and Food Security” Sept 15-17, 2016, KIIT University, Bhubaneswar, India.
43. Nahar M, Shishir MA, Karim MM, **Khan SN**, Hoq MM. Cloning, expression and structure simulation of keratinase from *Bacillus licheniformis* MZK05. Presented at the “The 12th Asian Congress on Biotechnology,” November 15-19, 2015.
44. Nahar M, Shishir A, Karim MM, **Khan SN**, Hoq MM. Cloning, expression and structure simulation of keratinase from *Bacillus licheniformis* MZK05. Presented at the 2nd GNOBB Conference, “International Conference of Biotechnology in Health and Agriculture (ICBHA)”, January 9-10, 2015, Nawab Ali Chowdhury Senate Bhavan, Dhaka, Bangladesh.
45. Akand MNR, Mamun MAA, Shishir A, Mamun MAA, Mian MM, **Khan SN** and Hoq MM, oral presentation on “Bioprocess development for production of Biopesticide from indigenous *Bacillus thuringiensis*”, International conference of biotechnology in health and agriculture (ICBHA), 2nd GNOBB conference organized by Global Network of Bangladeshi Biotechnologists, 9-10 January, 2015, Nabab Nawab Ali Chowdhury Senate Bhavan, University of Dhaka, Dhaka-1000, Bangladesh.
46. Mian MM, Mamun MAA, Mamun AAA, Saifuddin M, **Khan SN** and Hoq MM, poster presentation on, “Optimization of amylase fermentation by *Bacillus licheniformis* MZK05M9 based on response surface methodology”, International conference 2015 organized by Bangladesh Society of Microbiologists, 26 -28 December, 2015, Department of Microbiology, University of Dhaka, Dhaka-1000, Bangladesh.
47. Akand MNR, Shishir MA, Mamun AAA, **Khan SN**, and Hoq MM, oral presentation on “Potentiality of *Bacillus thuringiensis* JSc1 for controlling pests with cauliflower and cabbage in the field”, 27th annual conference of Bangladesh Society of Microbiologist, 27 April 2014, Department of Microbiology, University of Dhaka, Dhaka-1000, Bangladesh
48. Mamun MAA, **Khan SN** and Hoq, MM, Poster presentation on “Production of alkaline protease with bating activity by *Bacillus licheniformis* mutant in modified soy meal medium”, 27th annual conference of Bangladesh Society of Microbiologist, 27 April 2014, Department of Microbiology, University of Dhaka, Dhaka-1000, Bangladesh.
49. Mamun MAA, Amin MR, Hossain SR, Akand MNR, Ahmed S, Zohra FT, **Khan SN** and Hoq MM, Poster presentation on “Evaluation of alkaline protease produced by *Bacillus licheniformis* in Bating operation of cow hides in tanneries”, 27th annual conference of Bangladesh Society of Microbiologists, 27 April 2014, Department of Microbiology, University of Dhaka, Dhaka-1000, Bangladesh.

50. Mamun MAA, **Khan SN** and Hoq MM. Poster presentation on “Enhanced production of protease by *Bacillus* MAS-6 Mutant and application in Bating of hides in leather”, Sixth HOPE Meeting with Nobel Laureates, 11-15 March 2014, Tokyo, Japan.
51. Shishir MA, Asma Akter, Bodiuzzaman, Nasima Aktar, Mushfiqur Rahman, Md. Shakil, Mohammad Ilias, **Shakila Nargis Khan** and Mozammel Hoq. Molecular characterization of indigenous *Bacillus thuringiensis kurstaki* isolates from Bangladesh and toxicity of *Btk* HD-73 against melon fruit fly, *Bactrocera cucurbitae*. 1st AFSA Conferences on Food Safety and Food Security held in Osaka, Japan from September 15-17, 2012.
52. Shishir MA, Akther A, Ilias M, **Khan SN**, Hoq MM. Characterization of Locally Isolated *Bacillus thuringiensis* for the Development of Eco-friendly Biopesticides in Bangladesh. Presented at the 3rd Biopesticide International Conference (BIOCON-2011), November 28 – 30, 2011, Tamil Nadu, India.
53. Characterization of *Bacillus thuringiensis* from different habitats of Bangladesh. Shishir SA, **Khan SN** and Hoq MM, Presented at the Meeting on Biopesticides Nomenclature organized by Neil Christopher, University of Sussex University, UK, 18 – 19th March, 2012.
54. Sumaiya W, Shishir SA, **Khan SN** and Hoq MM, Cloning of *kerA* gene for increased production of keratinase from *Bacillus licheniformis* MZK-5. 26th Annual Conference, Bangladesh Society of Microbiologists, 21st January, 2012, Chittagong University, Chittagong.
55. Developments of mutants of *Bacillus licheniformis* for increased production of keratinase. Salaheen S, Shishir MA, **Khan SN**, Ilias M, and Hoq MM. 26th Annual Conference, Bangladesh Society of Microbiologists, 21st January, 2012, Chittagong University, Chittagong.
56. Isolation and characterization of indigenous *Bacillus thuringiensis* from Bangladesh for Developing Eco-friendly Biopesticides. Shishir MA, Fatema K, Ilias M, **Khan SN**, Md. Mozammel Hoq. 26th Annual Conference, Bangladesh Society of Microbiologists, 21 January, 2012, Chittagong University, Chittagong.
57. Hoq MM, Hossain MS, Nizamuddin, Rahman A, Ilias M and **Khan SN**. 2009. Biotechnological production and application of environmentally friendly industrial enzymes in Bangladesh. First Humboldt Kolleg International Conference. Theme: “Environmental challenges in the new millennium”. Organized by Association of Humboldt Fellow Bangladesh at Senate Bhaban, University of Dhaka, and Dhaka Sheraton Hotel, 19-21 Nov 2009.
58. Sarker A, **Khan SN**, Naser MN and Karim MM. Indigenous Probiotics can control Pathogenic *Vibrio* infection during Shrimp Larva Development in Hatcheries. Oral presentation and Abstract (no. 44) published on the proceedings of the “15th International Congress on Biotechnology in Animal Reproduction (ICBAR).” Bangladesh Agricultural University, Mymensingh, Bangladesh. 6-7 August 2008.
59. Fahmi T, Naser MN, Karim MM and **Khan SN**. Bacteria in Dormant Embryonic Phase (cyst) of *Artemia*. Abstract no. 45 published on the proceedings of the 15th International Congress on Biotechnology in Animal Reproduction (ICBAR). Bangladesh Agricultural University, Mymensingh, Bangladesh 06-07 August 2008.
60. Alam MT, Karim MM and **Khan SN**. Antibacterial activity of different solvent extracts of *Achyranthes aspera* and *Cassia alata*. Abstract no. 49 published on the proceedings of the 24th Annual Conference of Bangladesh Society of Microbiologists (BSM) on *Microbes in the Food and Environment*, IFST auditorium, BCSIR (Science Laboratory), Dhaka, 28 June 2008.

Mentoring Activities

Mentored 6 PhD, 1 MPhil and 35 MS students for producing their dissertations

Professional

Affiliations

- * **Member**, Self-assessment entity, Department of Microbiology, DU, for Institutional Quality Assurance Cell, Dhaka University (IQAC-DU), 2022-23, www.du.ac.bd
- * **Member**, BSTI, Halal Cosmetics, 2022-23

- * **Member**, RCC, CARS, DU. 2021-23
- * **Member**, (ID no. 40653417) American Society for Microbiology since 20th June 2011, www.asm.org
- * **Member**, Academic Council, University of Dhaka, www.du.ac.bd
- * **Member**, Asian Federation of Biotechnology (AFOB) Bangladesh (Founding member), admitted in Apr 2017)
- * **Life Member**, International Society of Bangladesh-affiliated Microbiologists (ISBM) (2022-23),
- * **Life member**, Bangladesh Society of Microbiologists (BSM), <http://www.bsm.org.bd/>
- * **Life member**, The University of Manchester Alumni Association; Membership no: 2052543.
- * **Life member**, Dhaka University Microbiologists Alumni Association (DUMAA);
- * **Life member**, Dhaka University Alumni Association (DUAA);
- * **Life member**, Dhaka University Registered Graduates;
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* **Awards and Scholarships**

1. “Commonwealth Scholarship” from Association of Commonwealth Universities (ACU), London, UK for doing PhD at UMIST, Manchester, UK, 1997-2000;
2. Dhaka University Grant Scholarship in B. Sc. (Honours), 1991;
3. Dean’s Honours Award, Dhaka University, 1995;
4. Dhaka Board Scholarship in H.S.C. level, 1988;
5. Dhaka Board Scholarship in S.S.C. level, 1986;
6. “Chancellor’s Award” in 1988 from the President of the People’s Republic of Bangladesh;
7. Talent Pool Junior Scholarship in Dhaka Division, Bangladesh, 1983;
8. Talent Pool Primary Scholarship in Dhaka Division, Bangladesh, 1980

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