

CURRICULUM VITAE

Dr. MAHMUDA BEGUM

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EDUCATIONAL QUALIFICATIONS

PhD in Life Science (2017-2021)

Passing Year: December, 2021

Genetics, Ecology and Evolutionary research group

Faculty of Medicine and Health Sciences, School of Life Sciences,

University of Nottingham, United Kingdom

Thesis title: Environmental Adaptation in Three-spined Stickleback

M.S. in Zoology (1 year)

Result: Marks obtained 76.2%, First Class 3rd Position in order of merit

University: Department of Zoology, University of Dhaka, Bangladesh

Passing Year: 2004 (Exam Held in 2007).

Major Course: Zoology (Fisheries)

B.Sc. (Honors) in Zoology (4 years)

Result: Marks obtained 69.06 %, First Class 3rd Position in order of merit

University: Department of Zoology, University of Dhaka, Bangladesh

Passing Year: 2003 (Exam Held in 2005)

Major Course: Zoology

Minor Course: Botany, Biochemistry, Microbiology and Fisheries

PROFESSIONAL EXPERIENCE

January 2020 to present: Senior Scientific Officer, Zoology Section
Biological Research Division,
BCSIR, Dhaka-1205, Bangladesh

July 2011 to December 2019: Scientific Officer, Zoology Section
Biological Research Division,
BCSIR, Dhaka-1205, Bangladesh

December 2010 to June 2011: Lecturer (28th BCS), Department of Zoology,
Kumudini Govt. Women's College, Tangail, Bangladesh

January 2010 to November 2010: Lecturer, Biology Section,
ACADEMIA, Dhaka, Bangladesh

March 2008 to December 2009: Research Assistant,
Encyclopedia of Flora and Fauna of Bangladesh Project,
Ministry of Environment and Forest, Government of the
People's Republic of Bangladesh,
Asiatic Society of Bangladesh, Nimtoli, Dhaka-1000,
Bangladesh

Technical skills and Competence

- **Molecular Techniques:** PCR, qPCR, Primer Design, RFLP, Sanger sequencing, Molecular Cloning, CRISPR-Cas9, ELISA, DNA barcoding.
- **Microbiology:** Culture dependent & Independent microbiome analysis, Biochemical confirmation.
- **Aquaculture & Fisheries:** Microscopic identification, feed formulation & analysis, Microtomy, Fish culture & breeding.

Computational skill

Programing: SPSS, R & R studio, Python Operating System: Windows

Research Grants (Selected)

Principal investigator in 4 Special Research Grants from Ministry of Science and Technology-

- i) Principal investigator: Bio-monitoring of a lake ecosystem through DNA barcoding of its benthic invertebrate fauna (2014-2015).
- ii) Principal investigator: Development of molecular biomarker through identification of heavy metal resistance genes in fish for environmental bio-monitoring (2022-23).
- iii) Principal investigator: Molecular biomarker development for the antibiotic resistance of edible fish and their microbes (2023-24).
- iv) Principal investigator: Assessment of transcriptomic and genotoxic response to dose-dependent microplastic exposure in a highly edible fish, Tilapia (*Oreochromis niloticus*) (2025-26).
- v) **Associate Principal Investigator** in a Bangladesh Food Safety Authority (BFSA) project: Evaluation of the toxicological impact of microplastic-contaminated water and food on animal health using fish and mice model (2024-25).

PUBLICATIONS (Selected)

- 1) **Begum, M.**, Ahmed, A.T.A., Hafiz, F. and Parveen, S. 2007. A Comparative study of the Bacterial flora in a tannery polluted Environment and a freshwater fishpond. *Bangladesh J Microbiol.* 24(2): 81-84.
- 2) **Begum, M.**, Ahmed, A.T.A., Rahman, M.M., and Begum, S. 2010. Determination of microbial growth co relation with three chemicals as fish preservatives. *J. Asiat. Soc. Bangladesh. Sci.*, 36(1):37-48.
- 3) **Begum, M.**, Ahmed, A.T.A., Das, M. Parveen, S. 2010. A Comparative Microbiological Assessment of Five Types of Selected Fishes Collected from Two Different Markets. *Advances in Biological Research.* 4 (5): 259-265.
- 4) **Begum, M.**, Noor P., Ahmed K. N., Mohanta L.C., Sultana N., Hasan M.R. and Uddin M.N.2013.Assessment of four Different Media for the Mass Culture of *Ceriodaphnia reticulata* (Jurine) as a Live Fish Feed. *J. Asiat. Soc. Bangladesh. Sci.*, 39(2):129-138.
- 5) **Begum, M.**, P. Noor, K. N. Ahmed, N. Sultana, M. R. Hasan and L. C. Mohanta, 2014. Development of culture techniques for tubificid worm, under laboratory conditions. *Bangladesh. J. Zool.*, 42(1):117-122.
- 6) **Begum, M.**, Uddin M.N., Rahman, M. M. and Sultana N., 2015.The effect of three different feed types on growth performance of *Ceriodaphnia reticulata* (Jurine) and *Bosmina* sp. culture as a live fish feed. *International Journal of Fisheries and Aquatic Studies*, 3(1): 400-405.
- 7) **Begum, M.**, Nolan, V. and MacColl, A.D., 2023. Ecological constraint, rather than opportunity, promotes adaptive radiation in three-spined stickleback (*Gasterosteus aculeatus*) on North Uist. *Ecology and Evolution*, 13(1), p.e9716.
- 8) **Begum M.**, Afrahim S., Jahan I., Sultana N., Islam S. and Jahan I., 2025. Growth Enhancement of Guppy (*Poecilia reticulata*) and Platy (*Xiphophorus maculatus*) with the Dietary Inclusion of Plant and Animal-Based Protein Sources. *Asian J Biol Life Sci.*, 2025; 14(2):1-9.<https://ajbls.com>
- 9) **Begum, M.**, Barsha, K.F., Rahman, M.M., Sarkar, M.M.H., Chowdhury, S.F., Bhowmik, S., Shormi, A.S. and Bari, S.M., 2025. Gut microbiome profiling of antibiotic-treated *Mystus cavasius* using culture-based and shotgun metagenomic approaches. *Antonie van Leeuwenhoek*, 118(12), p.183.
- 10) Hossain A., M. M. Rahman, B. Saha, M. Moniruzzaman and M. **Begum** 2016. Heavy Metal Concentration and Its Toxicity Assessment in Some Market Fishes of Dhaka City. *Int. J. of Fisheries and Aquatic Studies*, 2016; 4(3): 523-527.
- 11) Hossain M. I., Saha B., **Begum M.**, Punom N.J, Begum M. K. and Rahman M. S. 2016. Bioaccumulation of heavy metals in Nile tilapia *Oreochromis niloticus* (Linnaeus 1758) fed with commercial fish feeds. *Bangladesh J. Sci. Res.* 29(2): 89-99.
- 12) Kabir, M. A., Rahman, M. S., **Begum, M.**, Faruque, M. F. 2017: Genetic diversity by RAPD in four populations of rohu *Labeo rohita*. *Croatian Journal of Fisheries*, online first, 75:1-9.
- 13) Sultana, N., Mohammad, M., Lisa, S.A., Saha, B., **Begum, M.** and Naser, M.N., 2022. Effects of dietary inclusion of Seaweed in regular commercial fish feed on proximate composition, minerals and fatty acid profiling of Nile Tilapia *Oreochromis niloticus* (Linnaeus, 1758), *Aquatic Food Studies*, 2(2), AFS112.

- 14) Sultana, N., Tista, R.R., Islam, M.S., **Begum, M.**, Islam, S. and Naser, M.N., 2023. Microplastics in freshwater wild and farmed fish species of Bangladesh. *Environmental Science and Pollution Research*, pp.1-17.
- 15) Mazumder L., Shahab M., Islam S., **Begum M.**, Oliveira J. V.N., Begum S. and Akter S. 2023. An immunoinformatics approach to epitope-based vaccine design against PspA in *Streptococcus pneumoniae*. *Journal of Genetic Engineering and Biotechnology*, 21:57.
- 16) Afrin S., Baki M. A., Chowdhury M., Sultana N., Saha S., Sarker A. and **Begum M.** 2024. DNA barcoding of mislabeled juvenile *Tenuulosa* spp. as *Gudusia chapra* in the fish markets of Bangladesh. *Bangladesh J. Sci. Ind. Res.* 59(2), 105-114.
- 17) Sarker M.M., Khan S., Haque M. M., **Begum M.** and Reza M.S. 2025. Unraveling the nutritional potential of the microalga *Scenedesmus* sp. and the zooplankton *Diaphanosoma* sp. as initial foods for the rearing of rohu (*Labeo rohita*) larvae. *Aquaculture International*: 33:428. <https://doi.org/10.1007/s10499-025-02106-5>.
- 18) Ferdous, J., Kundu, G.K., **Begum, M.**, Al Zahid, M., Khan, M.N., Hossain, A., Hosen, M.I., Mamun, A.A. and Mandal, S.C., 2025. Enhancement of innate immune responses in Nile tilapia (*Oreochromis niloticus*) by dietary green-synthesized nanoparticles. *Dhaka University Journal of Biological Sciences*, 34(2), pp.117-137.
- 19) Bari, S.M., Fuad, M., Hossain, M.J., Ahammad, I., **Begum, M.** and Helal, M.M.U., 2025. Transcriptomic Insights into Heat and Hypoxia Stress in Rainbow Trout: A Meta-Analysis of Public RNA-Seq Data. *BMC Genomics*: 26:999.
- 20) **Books:** Moreover 40 articles/ entries written in the two volumes of *Encyclopaedia of Flora and Fauna of Bangladesh* are as follows:
 - 1) Ahmed, A. T.A., Kabir, S.M.H., Ahmad, M., Rahman, A.K.A., Haque, E.U., Ahmed, Z.U., Begum, Z.N.T., Hassan, M.A. and Khondkher, M (eds). *Encyclopedia of Flora and Fauna of Bangladesh*, Vol. 18. Part I *Arthropoda: Arachnida*. Asiatic Society of Bangladesh, Dhaka. 437 Pp.
 - 2) Ahmed, A. T.A., Kabir, S.M.H., Ahmad, M., Rahman, A.K.A., Haque, E.U., Ahmed, Z.U., Begum, Z.N.T., Hassan, M.A. and Khondkher, M (eds). *Encyclopedia of Flora and Fauna of Bangladesh*, Vol. 18. Part II *Arthropoda: Crustacea*. Asiatic Society of Bangladesh, Dhaka. 226Pp.

Research Process:

1. Production of Nutrient Enriched Ornamental Fish Feed using Spirulina and Natural ingredients (01.10.2023).
2. Production of aquarium fish feed using Tubifex worms including natural ingredients (10.12.2023).

Conference presentation

- Attended and delivered oral presentation in the International Conference on Environmental Protection for Sustainable Development (ICEPSD)-2022, held on 2-4 September 2022.
- Attended and delivered oral presentation in the 5th Young Scientist Congress 2022 organized by Bangladesh Academy of Science (BAS), held on 25-27 November 2022.
- Attended and delivered oral presentation in the BCSIR Congress 2022 organized by Bangladesh Council of Scientific and Industrial Research (BCSIR), held on 1-3 December 2022.
- Attended and delivered oral presentation in the 23rd National Conference of the Zoological Society of Bangladesh (ZSB) "of the Zoological Society of Bangladesh, held on 28th of January 2023.
- Attended and acts as a Co-Chairman of a Technical Session in the 23rd International Conference and AGM 2023 of the Zoological Society of Bangladesh (ZSB) held on 26th of April 2024 at Department of Zoology, University of Dhaka, Dhaka, Bangladesh.
- Attended for oral presentation and acts as a Co-Chairman of a Technical Session in the “BCSIR Congress-2023” held on 08-10 March 2024 at BCSIR, Dhaka, Bangladesh.
- Attended and acted as a Judge on the Poster presentation session in the International Biotechnology Conference 2025 held on 20-21th of June 2025 at BRAC University, Dhaka, Bangladesh.
- Attended and presented oral presentation on the 6th International Conference on Biotechnology in Health and Agriculture 2025, organized by GNOBB, held on 26-27th of September 2025 SAU TSC complex Sher-e Banga Agricultural University, Dhaka, Bangladesh.

Thesis Supervision

1. Supervised more than 22 MS Thesis students and 24 undergraduate students for internship at different field of Zoology, Molecular Biology, Biotechnology and Microbiology.

Professional Members

- Zoological Society of Bangladesh (ZSB)
- Bangladesh Association for the Advancement of Science (BAAS)
- Bangladesh Society of Microbiologists (BSM)
- Global Network of Bangladeshi Biotechnologists (GNOBB)
- British Society for Parasitology (BSP)
- Scientist Forum of Bangladesh Council of Scientific and Industrial Research.

Professional Training

- Training on **MiniSeq Sequencing Platform** held in Dhaka Laboratories, BCSIR, Dhaka from 25-29th January, 2026.
- **Hands-on 6th ICBHA Genome Editing Workshop on CRISPR-Cas9** held in Department of Biochemistry and Molecular Biology, University of Dhaka from 28th -30th September, 2025.
- Workshop on **CRISPR-Cas9 Gene Editing Mechanism: A new era in molecular biology** held in Department of Botany, University of Dhaka from 10th -14th November, 2024.
- Workshop on **Laboratory animal Experimentation for Biomedical Engineers** held in Department of Biomedical Engineering, BUET from 24-25 May 2024.
- Training on **Liquid Chromatography with Tandem Mass Spectrometry (LC-MS/MS)** held in CARF, BCSIR, Dhaka from 09-13th April, 2023.
- Hands on training workshop on **“Basic Sanger Sequencing and Sequence Data Analysis** held in CARS, University of Dhaka from 14 June -18 June 2015.
- Training on **Real Time – Polymerase Chain Reaction Analyzer (RT-PCR)** held in BCSIR Laboratories, Rajshahi from 26-27 June, 2014.
- Tenth Training Course on **Oceanography: Principles and Applications** conducted by National Oceanographic and Maritime Institute (NOAMI), Dhaka, Bangladesh during 15 February to 10 May 2014.
- Training cum Workshop on **DNA Barcoding of Fish and Marine Life – Molecular Analysis and Bioinformatics Approaches (FISHCODE – 2012)** conducted by Department of Marine Science, Bharathidasan University, Tamil Nadu, India during 12-14 September, 2012.
- International Training Workshop on **“Tools of Molecular Biology and Bioinformatics in DNA Barcoding”** held in Poultry Research and Training Centre Laboratory of Chittagong Veterinary and Animal Sciences University supported by USDA and Assam University, India from 12-16 February 2012.
- Hands on training on **“Basic Laboratory Techniques in Molecular Biology and Biotechnology”** held in Poultry Research and Training Centre Laboratory of Chittagong Veterinary and Animal Sciences University supported by USDA, during 08-10 September, 2013.
- Participated as a Trainer in a training program on **“Getting Acquainted with R- An Introduction for Smart Scientist”** held on 12 February, 2024 at BCSIR Laboratories, Dhaka.
- Participated as a Trainer in a training program on **“R programming: Learning the basics of statistical computing”** held on 27 November, 2024 at BCSIR Laboratories, Dhaka.

Awards

Scholarships: Primary Scholarship in 1991

Pre-Graduate Scholarship in 2000-2003 (University of Dhaka)

Post-Graduate Scholarship in 2004 (University of Dhaka)

Vice-Chancellor's Scholarship for Research Excellence (International),
(University of Nottingham, UK)

Bangabandhu Science and Technology Fellowship, Bangladesh

(Ministry of Science and Technology, Bangladesh)

- Awards: 1) **Dean's Award (2003)** from Faculty of Biological Sciences, University of Dhaka
3) **Silver Jubilee Award (2005)** from Department of Zoology, University of Dhaka
4) Honors: Chairman's Honour (2002) from Department of Zoology, University of Dhaka
5) Elected as an **Associate Fellow** of the Bangladesh Academy of Sciences (BAS) in 2024.

REFERENCES

Available upon request.