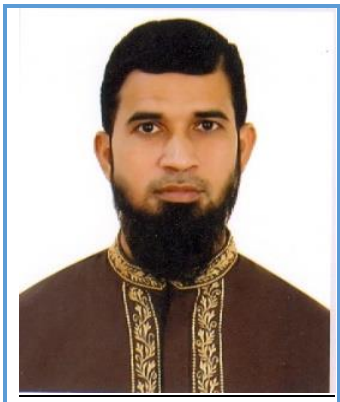

Abu Hashem, Ph.D. (with Distinction)
Chief Scientific Officer (Current Charge) and
Head of the Division
Microbial Biotechnology Division;
And
Coordinator
National Institute of Biotechnology
Ganakbari, Ashulia, Savar, Dhaka-1349, Bangladesh
www.nib.gov.bd

Email: hashemnib04@yahoo.com
Cell phone: +8801316578375
https://orcid.org/0000-0002-0033-7346
https://www.researchgate.net/profile/Abu_Hashem
Scopus Author ID: 57190141083
Researcher ID: M-2450-2019
https://scholar.google.com/citations?user=Ls4m20oAAAAJ&hl=en

Summary

In December 2022, I received my PhD (with distinction) in nanobiotechnology from the University of Malaya. I have been on a Ph.D. journey under the scholarship of the Bangabandhu Science and Technology Fellowship Trust, Government of the People's Republic of Bangladesh. A vigorous literature search and analysis were carried out on the electrochemical DNA biosensor to find out the research gap and scope for innovative research. Based on that, I have developed new DNA-based electrochemical biosensors to detect p*orcine and box turtles* based on an *in silico*-designed probe using bioinformatics tools and employing nanoparticles. The developed biosensor was validated in wet-lab experiments. Screen-printed carbon electrodes (SPCE) modified with graphene (Gr) and gold nanoparticle (AuNPs) composites were used as a detection platform. The designed probe DNA was conjugated with modified SPCE via the AuNPs-thiol bridge. The *targets* were identified based on hybridization-induced electrochemical change in the presence of methylene blue (MB) as a redox indicator measured by deferential pulse voltammetry (DPV). The developed DNA biosensor showed a selective response to complementary DNA of target species and was capable of distinguishing mismatches and non-complementary DNA in synthetic DNA as well as DNA isolated from real samples. I finished my Ph.D. work on deputation. In recognition of my outstanding contribution, I received eight awards and distinctions, including four international awards related to his PhD topic. A short version of one of our review articles, titled "Graphene and Carbon-Based Additives," has been published in the Encyclopedia. Elsevier has provided a letter of congratulations due to one of my articles having significantly helped to achieve Sustainable Development Goal 3 (SDG-3). A news story called "A needle in a haystack?" was posted on Twitter by the Beilstein Journal of Nanotechnology about one of his research articles. A "Certificate of Appreciation" is provided for being an active member of the Elsevier Advisory Panel and providing feedback and suggestions for improvement of Elsevier's products & services in 2022. I have developed ecofriendly microbial enzymes for leather hide processing and Microbial fuel cell for electricity production using dumping rubbish. I have published about 35 journal articles, 6 book chapters (two of which were accepted) with world

reputed publishers, and 16 conference abstracts related to my work. Some other articles and book chapters have been submitted for publication.

In 2004, I became Scientific Officer at the National Institute of Biotechnology. In 2013, I was promoted to Senior Scientific Officer; in 2018, I was promoted to Principal Scientific Officer; and in June 2023, I have been assigned the current charge of Chief Scientific Officer.

Education

Ph.D. (in Nanobiotechnology with distinction), Nanotechnology and Catalysis Research Centre, Institute for Advanced Studies, University of Malaya, Malaysia (December 2022).

M.Sc. (Biochemistry), Department of Biochemistry, University of Dhaka, Bangladesh, 2002 (Exam of 1999 held in 2001).

B. Sc. (Biochemistry), Department of Biochemistry, University of Dhaka, Bangladesh, 2000 (Exam of 1998 held in 2000).

H.S.C. (Science), Dhaka college, Dhaka, under the Dhaka Education Board, 1995

S.S.C. (Science), Fultala High School, Tangail, under the Dhaka Education Board, 1993

Research Involvement

- Development of Nanomaterial based electrochemical DNA biosensor for animal species authentication.
- Development of probiotics for human consumption
- Development of ecofriendly Leather and Textile processing enzymes based on Microorganisms.
- Generation of electricity by using Microbial Fuel Cell (MFC) from waste samples
- Development of regeneration protocol plant varieties through micropropagation
- Bioinformatics for genome analysis of Virus, Bacteria, and higher species

Work and Employment History

Employment Records

- 1 August 2022- Present: Coordinator, National Institute of Biotechnology (NIB) Ganakbari, Ashulia, Savar, Dhaka-1349, Bangladesh
- 18 June 2023-Present: Chief Scientific Officer (Current Charge) & Head of the Division, Microbial Biotechnology Division, NIB, Ganakbari, Ashulia, Savar, Dhaka-1349, Bangladesh
- 18 August 2018-17 June 2023: Principal Scientific Officer & Head, Microbial Biotechnology Division, NIB, Ganakbari, Ashulia, Savar, Dhaka-1349, Bangladesh

- 18 August 2013-17 August 2018: Senior Scientific Officer and Head, Microbial Biotechnology Division, NIB, Savar, Dhaka, Bangladesh
- 08 September 2004- 17 August 2013: Scientific Officer & Head (in-charge), Microbial Biotechnology Division, NIB, Savar, Dhaka, Bangladesh
- 01 December 2009-31August, 2013: Head (Additional charge), Engineering & General Services Division, NIB, Savar, Dhaka, Bangladesh
- 12 June 2012- 30 August 2018: Coordinator, NIB, Savar, Dhaka, Bangladesh
- 01 January 2004-30 July 2004: Research Associate, Plant Biotechnology Laboratory, Department of Biochemistry, University of Dhaka, Bangladesh
- 20 July 2002- 30 October 2003: Scientific Officer, Lalmai Food Products Ltd., Khan Mansion (5th floor) 107, Motijheel C/A, Dhaka, Bangladesh
- 05 January 2005-30 September 2007: Co-investigator, National Institute of Biotechnology Project, Bangladesh
- 01 July 2010-30 June 2013: Co-investigator, Enhancement of Research Facility of National Institute of Biotechnology Project, Bangladesh

Research Grants

- Eco-friendly approaches to develop biofertilizer, biopesticide and micropropagation of fruit plants of economic interest. Ministry of Science and Information & Communication Technology, Government of the People's Republic of Bangladesh, 2008-2009.

ADP Project implementation of the Ministry of Science and & Technology (MOST), Bangladesh

1. National Institute of Biotechnology project (2004-2007)
2. Enhancement of research facility of National Institute of Biotechnology (2010 –2013)

Thesis Students Supervision

I have supervised 8 thesis students for the degree of Master of Science from different universities carried out thesis in the Microbial Biotechnology Division of NIB, Bangladesh.

Publications

Published Journal Articles

1. Yasmin Abdul Wahab, Mohammad Al Mamun, Mohd Rafie Johan, M. A. Motalib Hossain, **Abu Hashem**, Nurul Ezaila Alias, Hanim Hussin and Maizan Muhamad (2023), Determination of the Aptamer Probe Density by Double Layer and Redox Capacitance of CNT-Based Electrochemical DNA-Aptasensors, 2023 IEEE Regional

Symposium on Micro and Nanoelectronics (RSM), PROCEEDINGS OF THE IEEE, 74-77 (Q1, IF 20.6, 2022).

2. Al Mamun, M., ABDUL WAHAB, Y. A. S. M. I. N., Hossain, M. M., Hashem, A., Hamizi, N. A., Chowdhury, Z. Z., ... & Johan, M. R. (2023). Differential Pulse Voltammetric Tuning of the Screen-Printed Carbon Electrode Surface to Enhance the Electrochemical Performance and Multiplex Detection. Journal of The Electrochemical Society (Q2, IF 3.9, 2022).
3. Shalauddin, M., Basirun, W. J., Akter, S., **Hashem, A.**, & Marlinda, A. R. (2023). Nanocellulose-based carbon nanocomposite for the electrochemical sensing application for pharmaceuticals: A review. Malaysian NANO-An International Journal, 3(1), 1-16
4. Marlinda, A. R., Thien, G. S. H., Shahid, M., Ling, T. Y., **Hashem, A.**, Chan, K. Y., & Johan, M. R. (2023). Graphene as a Lubricant Additive for Reducing Friction and Wear in Its Liquid-Based Form. Lubricants, 11(1), 29 (Q2, IF 3.9, 2022) (Q2, IF 3.5, 2022).
5. Hossain MAM, Uddin SMK, **Hashem A**, Mamun MA, Sagadevan S, Johan MR. Advancements in detection approaches of severe acute respiratory syndrome coronavirus 2. Malays J Med Sci. 2022;29(6):15–33. https://doi.org/10.21315/mjms2022.29.6.3 (Q4, IF 1.4, 2022).
6. **Hashem, A.**; Hossain, M. A. M.*; Marlinda, A. R*.; Mamun, M. A.; Simarani, K.; Johan, M. R. (2022). Rapid and sensitive detection of box turtles using an electrochemical DNA biosensor based on gold-graphene nanocomposite. Beilstein Journal of Nanotechnology. *13*, 1458–1472. doi:10.3762/bjnano.13.120 (Q3, IF 3.1, 2022)
7. **Hashem, A.***, Marlinda, A. R.*, Hossain, M. A., Al Mamun, M., Shalauddin, M., Simarani, K., & Johan, M. R. (2022). A Unique Oligonucleotide Probe Hybrid on Graphene Decorated Gold Nanoparticles Modified Screen-Printed Carbon Electrode for Pork Meat Adulteration. *Electrocatalysis*, 1-16. https://doi.org/10.1007/s12678-022-00779-7 (Q3, IF 3.1, 2022).
8. Al Mamun, M., Wahab, Y. A., Hossain, M. M., **Hashem, A.**, & Johan, M. R. (2022). Scrap Gold Recovery: Recycling, Fabrication and Electrochemical Characterization of Low-Cost Gold Electrode. Malaysian Catalysis-An International Journal, 2(1), 1-20. Doi: 10.22452/mcij.vol2no1.1
9. Al Mamun, M., Wahab, Y. A., Hossain, M. M., **Hashem, A**., Khan, K. A., Johan, M. R., ... & Alias, N. E. (2022, August). Electrochemistry of Green Ag Nanoparticles Modified Electrode Surface. In *2022 IEEE International Conference on Semiconductor Electronics (ICSE)* (pp. 37-40). PROCEEDINGS OF THE IEEE (Q1, IF 20.6, 2022).
10. **Hashem, A. ***, Khalil, I., Al Mamun, M., Shalauddin, M., Hossain, M. M., Ab Rahman, M., ... & Johan, M. R. (2022). Applications of nanocellulose as biosensing platforms for the detection of functional biomacromolecules: A Review. *Malaysian NANO-An International Journal*, *2*(1), 15-45.
11. **Hashem, A**., Hossain, M. M., Marlinda, A. R., Mamun, M. A., Sagadevan, S., Shahnavaz, Z., ... & Johan, M. R. (2022). Nucleic acid-based electrochemical biosensors for rapid clinical diagnosis: Advances, challenges, and opportunities. Critical reviews in clinical laboratory sciences, 59 (3), 156-177 (Q1, IF 10.0, 2022).

12. Al Mamun, M., Wahab, Y. A., Hossain, M. M., **Hashem, A**., & Johan, M. R. (2021). Electrochemical Biosensors with Aptamer Recognition Layer for the Diagnosis of Pathogenic Bacteria: Barriers to Commercialization and Remediation. *TrAC Trends in* Analytical Chemistry, 145, 116458 (Q1, IF 13.1, 2022).

13. **Hashem, A**., Hossain, M. M., Al Mamun, M., Simarani, K., & Johan, M. R. (2021). Nanomaterials based electrochemical nucleic acid biosensors for environmental monitoring: A review. Applied Surface Science Advances, *4*, 100064 (Q1, IF 6.2, 2022).

14. Khalil, I., **Hashem, A.**, Nath, A. R., Julkapli, N. M., Yehye, W. A., & Basirun, W. J. (2021). DNA/Nano based advanced genetic detection tools for authentication of species: Strategies, Prospects and Limitations. Molecular and cellular probes, 59, 101758 (Q2, IF 3.3, 2022).

15. Moonnee, Y. A., Foysal, M. J., **Hashem, A**., & Miah, M. F. (2021). Keratinolytic protease from Pseudomonas aeruginosa for leather skin processing. *Journal of Genetic Engineering and Biotechnology*, *19*(1), 1-9 (Q2, 3.5, 2022).

16. Islam, E., Hossain, M. S., Sarker, P. K., Towhid, S. T., Salimullah, M., & **Hashem, A∗**. (2020). Isolation and Characterization of Electrogenic Bacteria from Tannery Wastewater. *Bangladesh Journal of Microbiology*, *37*(1), 23-27.

17. **Hashem, A∗**., Hossain, M. M., Simarani, K. B., & Johan, M. R. B. (2019). Innovation in Agriculture and Industrial sectors of Bangladesh through application of Biotechnology to achieve SDGs: Opportunities and Challenges. In *1st International Conference on Planning and Development, NAPD, Dhaka*.

18. Saha, T. C., Protity, A. T., Zohora, F. T., Shaha, M., Ahmed, I., Barua, E., Salimullah, M. & **Hashem, A∗**. (2019). Microbial Fuel Cell (MFC) Application for Generation of Electricity from Dumping Rubbish and Identification of Potential Electrogenic Bacteria. *Adv. Ind. Biotechnol*, *2*(10).

19. Shaha, M., Chakraborty, S., Hossain, M. S., **Hashem, A.**, & Salimullah, M. (2018). Molecular evolution and genomics of hepatitis B virus subgenotype C2 strain predominant in the chronic patients in Bangladesh. *Virusdisease*, *29*(4), 486-490 (Q3, Impact score 3.31).

20. Shaha, M., Das, K. C., Hossain, M. S., Jahan, M., **Hashem, A.,** Rahman, S. R., & Salimullah, M. (2018). Complete genome sequence of a circulating hepatitis B virus genotype C strain isolated from a chronically infected patient identified at an outdoor hospital in Bangladesh. *Genome announcements*, *6*(9), e01601-17 (Research Impact Score 2.7).

21. Shaha, M., Rahman, M. H., Jahan, M., Dey, S. K., Das, K. C., **Hashem, A.**, & Salimullah, M. (2018). Identification of a novel tri-genotypic recombinant Hepatitis B virus in Bangladesh. Virus research, 255, 154-156 (Q2, IF 5.0, 2022).

22. Shaha, M., Roy, B., Akter, T., Karim, M. E., Moniruzzaman, M., & **Hashem, A**. (2018) Detection of Genetic Alteration of Polymerase Protein of Hepatitis B Virus Strain C2 Isolated from Bangladesh. Advance in Biotechnology & Microbiology, 9(2), 555758.

23. Shaha, M., Sarker, P. K., Hossain, M. S., Das, K. C., Jahan, M., Dey, S. K., ... **Hashem, A**. & Salimullah, M. (2018). Analysis of the complete genome of hepatitis B virus subgenotype C2 isolate NHB17965 from a HBV infected patient. *F1000Research*, *7*.

24. Barua, E., Hossain, M. S., Shaha, M., Islam, E., Zohora, F. T., Protity, A. T., ... & **Hashem, A∗**. (2018). Generation of Electricity Using Microbial Fuel Cell (MFC) from Sludge. *Bangladesh Journal of Microbiology*, *35*(1), 23-26.

25. Hossain, M. U., Keya, C. A., Das, K. C., **Hashem, A.**, Omar, T. M., Khan, M., ... & Salimullah, M. (2018). An immunopharmacoinformatics approach in development of vaccine and drug candidates for West Nile virus. *Frontiers in chemistry*, *6*, 246. (Q2, IF 5.5, 2022).

26. Barman, N. C., Zohora, F. T., Das, K. C., Mowla, M., Banu, N. A., Salimullah, M., & **Hashem, A.∗** (2017). Production, partial optimization and characterization of keratinase enzyme by Arthrobacter sp. NFH5 isolated from soil samples. *AMB Express*, *7*(1), 1-8 (Q2, IF 3.7, 202).

27. Hossain, M. U., **Hashem, A.**, Keya, C. A., & Salimullah, M. (2016). Therapeutics insight with inclusive immunopharmacology explication of human rotavirus A for the treatment of Diarrhea. *Frontiers in pharmacology*, *7*, 153. (Q1, IF 5.6, 2022).

28. Hossain, M. U., Khan, M., **Hashem, A.**, Islam, M., Morshed, M. N., Keya, C. A., & Salimullah, M. (2016). Finding potential therapeutic targets against Shigella flexneri through proteome exploration. *Frontiers in microbiology*, *7*, 1817. (Q2, IF 5.2, 2022)

29. **Hashem, A.**, Yesmin, S., Pramanik, M. K., Islam, M. S., Rahim, K. A., Salimullah, M., & Rahman, M. (2015). Isolation, purification and characterization of an extracellular protease from a locally isolated *Bacillus sphaericus* SI-1. *Bioresearch Communications-(BRC)*, *1*(2), 87-92(GIF 0.565).

30. Yesmin, S., **Hashem, A**., & Islam, M. S. (2015). Micropropagation of an important medicinal herb Eclipta alba (L.) Hassk. *Jahangirnagar University Journal of Biological Sciences*, *4*(1), 61-69.

31. Yesmin, S., **Hashem, A**., Khatun, M. M., Nasrin, S., Tanny, T., & Islam, M. S. (2015). In vitro clonal propagation of BARI Ada-1 (Zingiber officinale Rosc.). *Jahangirnagar University Journal of Biological Sciences*, *4*(2), 53-57.

32. Yesmin, S., Sarker, R. H., Hoque, M. I., **Hashem, A.**, & Islam, M. S. (2014). Agrobacterium-mediated transformation of eggplant (Solanum melongena L.) using cotyledon explants. *Nuclear Science and Applications*, *23*, 41-46.

33. Yesmin, S., **Hashem, A.**, Das, K. C., Hasan, M. M., & Islam, M. S. (2014). Efficient in vitro regeneration of chrysanthemum (Chrysanthemum morifolium Ramat.) through nodal explant culture. *Nuclear science and applications*, *23*(1&2), 47-50.

34. Md. Kamruzzaman Pramanik, M. Z. H., S.M. Asaduzzaman, **Abu Hashem**, Fauzia Begums, Md. Shakhawat Hossain Bhuiyan (2011). "Bacteriological Quality Assessment of Decorative Fountains in Dhaka City." Bangladesh Journal of Environmental Research **9**: 87-93.

35. S Nasrin, K. C. D., F Rahman, **A Hashem,** S Yesmin, M S Islam (2010). "Mass Production of Strawberry Plants Through Microporpagation." Eco-friendly Agriculture Journal 3(7): 340-344.

Chapter in Books

1. Hossain, M. M., Uddin, S. M. K., Sultana, S., **Hashem, A**., Rizou, M., Aldawoud, T. M., ... & Johan, M. R. (2021). DNA-based methods for species identification in food forensic science. In *Food Toxicology and Forensics* (pp. 181-211). Academic Press.
2. **Hashem, A. ***, Simarani, K., Marlinda, A. R., Hossain, M. A., Al Mamun, M., & Johan, M. R. (2022). Application of Microbial Fuel Cells as Biosensors. In *Microbial Fuel Cells for Environmental Remediation* (pp. 349-387). Springer, Singapore.
3. Akter, T., Shaha, M., Al Mamun, M., Sayem Khan, M. A., & **Hashem, A***. (2022). The role of the proton exchange membrane (PEM) in microbial fuel cell performance. In Microbial Fuel Cells: Emerging trends in electrochemical applications (pp. 7-1). Bristol, UK: IOP Publishing.
4. Al Mamun, M., Wahab, Y. A., Hossain, M. M., **Hashem, A**., & Johan, M. R. (2023). DNA-Aptamer–Based Electrochemical Biosensors for the Detection of Thrombin: Fundamentals and Applications. In *Functional Nanomaterials for Sensors* (pp. 201-221). CRC Press.
5. Abu Hashem, Ab Rahman Marlinda, M.A. Motalib Hossain, Mohammad Al Mamun, Khanom Simarani, Mohd Rafie Johan (2021). Application of Biomaterials for Tissue Engineering, Chapter in book: Advances in Biomaterials Research, in Advances in Material Research and Technology series. springer (Accepted).
6. Tanzina Akter, Modhusudon Shaha, Fatema Tuj Zohora, Anika Tasnim Protity, Mohammad Al Mamun, **Abu Hashem⁎** (2023). The Impact of Textile Dyes on the Environment. Chapter in Book: Nanohybrid Materials for Treatment of Textiles Dyes. Springer Nature (Accepted).

Conference Papers

1. Yasmin Abdul Wahab, Mohammad Al Mamun, Mohd Rafie Johan, M. A. Motalib Hossain, **Abu Hashem**, Nurul Ezaila Alias, Hanim Hussin and Maizan Muhamad (2023), Determination of the Aptamer Probe Density by Double Layer and Redox Capacitance of CNT-Based Electrochemical DNA-Aptasensors, 2023 IEEE Regional Symposium on Micro and Nanoelectronics (RSM), Langkawi, Malaysia, August 28-29, 2023
2. **Abu Hashem***, M. A. Motalib Hossain, Ab Rahman Marlinda, Mohammad Al Mamun, Khanom Simarani, Mohd Rafie Johan. Nanomaterial-Based Electrochemical DNA Biosensor for the Detection of the Sus scrofa. Scholars World Congress on Drug Delivery, Materials Science and Biopolymers (MatScience2023), 10-11th July 2023, Online
3. **Abu Hashem***, M. A. Motalib Hossain, Ab Rahman Marlinda, Mohammad Al Mamun, Khanom Simarani, Mohd Rafie Johan. Nanocomposite-based Electrochemical DNA Biosensor for the Detection of Pig and Turtle Species. 5th International Conference on Molecular Biology and Biotechnology 2022 (ICMBB2022), 7-9th June 2022, Kuala Lumpur, Malaysia.
4. **Abu Hashem***, M. A. Motalib Hossain, Ab Rahman Marlinda, Mohammad Al Mamun, Khanom Simarani, Mohd Rafie Johan. Nanotechnology and its application in

theranostics, MOMPES 1st Scientific Symposium 2021, Department of Molecular Medicine, Faculty of Medicine, University Malaya, Malaysia, 22 November 2021.

5. **Abu Hashem***. The development of an oligonucleotide-based electrochemical biosensor for the detection of Sus scrofa using graphene-gold nanoparticles modified screen printed carbon electrode, 1st Malaysia International Conference on Nanotechnology and Catalysis, Nanotechnology and Catalysis Research Centre, University of Malaya, Malaysia, 1-3 September 2021.
6. **Abu Hashem***, M. A. Motalib Hossain, Ab Rahman Marlinda, Mohammad Al Mamun, Khanom Simarani, Mohd Rafie Johan. Fundamentals of nanotechnology and its applications in food, water, and biomedical care, Iinternational Conference on Science and Technology for Celebrating the Birth Centenary of Bangabandhu (ICSTB-2021, at the premises of BCSIR, Dhaka, Bangladesh, 11–13 March 2021.
7. **Abu Hashem***, M. A. Motalib Hossain, Ab Rahman Marlinda, Khanom Simarani, Zaira Zaman Chowdhury, Mohd Rafie Johan. Applications and innovative approaches of Nucleic Acid based Electrochemical Biosensor in Clinical Diagnosis, The 5th RSU National and International Research Conference on Science and Technology, Social Science and Humanities 2020, Rangsit University, Pathum Thani, Thailand, 1 May 2020.
8. **Abu Hashem***, M. A. Motalib Hossain, Khanom Simarani, Zaira Zaman Chowdhury, Mohd Rafie Johan. Innovation in Agriculture and Industrial sectors of Bangladesh through application of Biotechnology to achieve SDGs: Opportunities and Challenges in 1st International Conference on Planning and Development organized by NAPD, Ministry of Planning, Dhaka, Bangladesh. 23-24 November 2019.
9. Modhusudon Shaha, Munira Jahan, Keshob Chandra Das, **Abu Hashem**, Md Salimullah, Genomic Alterations and Evolution of Hepatitis B Virus in Bangladesh, ASM Microbe 2019, San Francisco, CA, USA, June 20–24, 2019.
10. **Abu Hashem**, Titon Chandra Saha, Eti Barua, Anika Tasnim Protity, Fatema Tuj Zohora, Abanti Barua, Md. Salimullah. Microbial fuel cell (mfc) application for generation of electricity from dumping rubbish and identification of potential electrogenic bacteria. Annual Industrial Biotechnology and Bioprocessing Congress 2018, San Diego, USA. September 17-18, 2018.
11. Yeasmin Akter, Modhusudon Shaha, Fatema Tuj Zohora, Md. Faruque Miah, Md. Salimullah, **Abu Hashem**. Screening and Optimization of production parameters of Keratinase Enzyme from Pseudomonas aeruginosa for Leather Skin Processing, 31st Annual Conference of Bangladesh Society of Microbiologists (BSM), Department of Microbiology, University of Dhaka, Bangladesh, March 2018.
12. Modhusudon Shaha, Keshob Chandra Das, Md. Saddam Hossain, Munira Jahan, **Abu Hashem**, Md. Salimullah. Analysis of complete genome of hepatitis B virus for potential mutations to relate with chronicity, 31st Annual Conference of Bangladesh Society of Microbiologists (BSM), Dhaka, Bangladesh, March 2018.
13. Modhusudon Shaha, Keshob Chandra Das, Mohammad Uzzal Hossain, **Abu Hashem**, Md. Salimullah. Prediction of conserved pockets of hepatitis B virus genome for antiviral drug target, 3rd International Conference on Biotechnology in Health and Agriculture (ICBHA) 2017, University of Dhaka, Bangladesh, December 2017.
14. Nirmal Chandra Barman, Fatema Tuj Zohora, Palash Kumar Sarker, Nilufa Akhter Banu, Md. Salimullah, **Abu Hashem**. Identification, Production and Partial

Characterization of Keratinase Enzyme Secreted by Arthrobacter sp. Isolated from Hair Dumps Soil Samples, in 1st Bangladesh association of Biotechnology Graduates congress organized by Jahangirnagar University. 28 April 2017.

15. Fatema Tuj Zohora, Md. Rasel Bhuiyan, Md. Ashraful Jahan, **Abu Hashem**, Palash Kumar Sarker (2015) Production of Extracellular Amylase Enzyme by a Newly Isolated Bacillus sp. RS-2 from Food Waste Dumping Area at Savar. National Conference on Biochemistry, Industry and Sustainable Economy, Dhaka, Bangladesh, 21 March 2015.
16. Titon Chandra Saha, Anika Tasnim Protity, Fatema Tuj Zohora, Abanti Barua, Md. Salimullah, **Abu Hashem**. Generation of electricity by using Microbial Fuel Cell (MFC) from waste samples and identification of potential electrogenic bacterial community" in 30th Annual Conference on Microbiology Education and Research for Sustainable Development Organized by Dhaka University. 29 April 2017.

Journal Articles' Reviewer

- Jordan Journal of Biological Sciences (JJBS)
- 3 Biotech, Springer publication
- BioMed Research International
- Biochimie
- Cleaner Waste Systems
- Nanotechnology

Social media

Several stories have been posted on the Facebook page in my native language, which have attracted the attention of many readers.

Patent Application

Mohammad Al Mamun, Yasmin Abdul Wahab, M. A. Motalib Hossain, **Abu Hashem**, Mohd Rafie Johan (2022). Naked Eye Viewed Honeycomb Structured Graphene Oxide from Waste Pencil Leads. Applied for United states patent application.

Experience in Administrative and Management

Coordination of administration, procurement, engineering and general services, accounts, recruitment, governing body of NIB and National Committees on Biotechnology, institutional committees, and official programs.

Administration

Regular monitoring of administrative activities like scrutiny of letters received from ministries and distribution of letters to relevant personnel for measures. Preparation of answers to important informative letters and reports, including regular monthly reports and opinions on

acts to be promulgated. Active participation and assistance in different types of administrative work directed by the Head of the institute during the reporting period.

Major responsibilities

Post creation: Proposal for post with name, number, and pay scale; justification of institutional post requirement; justification of individual post as per job description, duty and responsibility of individual post; annual expenditure for the post; formulation of schedule (tafsil); and follow-up documents for the ministry of finance (state own enterprise & scale fixation subdivision).

Schedule revision of created post: Formulation of the schedule with post name, number, pay scale, grade and draught ordinance. Follow up documents for the ministries of Public Administration, Law, Justice, and Parliamentary Affairs and BG press.

Manpower recruitment: Manpower recruitment entails compiling a list of job postings. Preparation of a statement of applications, compilation of various candidate records, preparation of a working paper for a meeting, preparation of minutes for approval, Preparation of appointment letters with terms and conditions, The role of verification, the letter to the civil surgeon for a health check-up, the format of the agreement, and the final agreement

Electronic communication: Regular official email follow-up and online communication of NIB official mail (dgnibbd@gmail.com) from which all administrative activities are conducted. Besides this, offline communication, such as scanning and sending of documents prepared by hand and by others**,**

Conduct Governing Body Meeting: Involved in all meeting-related events, such as notice preparation, working paper (with previous meeting achievement & progress made, tentative discourse & decisions), and posting arrangement; power point presentation on various issues; status & achievement for conducting meeting. Put together meeting proceedings and minutes for approval by the body. association with authority for the implementation of governing body decisions.

Gene Bank: Different documents for land acquisition, project summary, and chronological statement for Gene Bank establishment. Documentary letter for land relocation from the Atomic Energy Research Establishment campus. Revised DPP preparation.

Procurement

- For the procurement of both goods and services. the following tasks on a regular basis to procure under the revenue budget, S & T Allocation projects and programmes:
- Preparation of Specification, Schedules of Requirements for the Procured Items, and Departmental Estimate
- Compilation of Tender Advertisement documents according to the Public Procurement Act 2006 and Public Procurement Regulation 2008 of the Govt. of Bangladesh and Invitation for Tender.
- Formulation of Tender Data Sheets (ITT & GCC) and compilation of Tender Schedules
- Preparation of tender opening documents and relevant papers

- Instructions for repairing the comparative statement (CS), the technical evaluation report, and the working paper
- Guidance for the preparation of minutes for approval
- Arranging and conducting procurement committee and bid evaluation meetings

Engineering & General Services

- Schedule preparation guidelines for the engineering division's activities like construction and development of children's parks.
- Guidelines for the repair, maintenance, and troubleshooting of different office (computers, printers, photocopiers, and fax) equipment
- Provide advice on officer's and staff quarters repairs, maintenance, and renovations, as well as the office building and sewerage pipelines.

Accounts

- Documents for midterm budgetary frameworks, such as statements of institutional achievement, targeted budgets and revised targeted budgets, and projections for future years with justification code, must be prepared. and item-wise budget distribution. Counselling on expenditure incurred and related services in financial matters. Time budget revision and planning for inter-item adjustments, as well as incurred budget implementation strategy
- Pay fixation on the implementation of a new pay scale in 2015.Methodologies and an Excel database for arrears calculation
- Take the necessary steps to resolve audit objections.

Arrangement of various official programs

Act as a preparatory and management patron of national day celebrations (international Mother Language Day, Independence Day, National Day, National Mourning Day, Victory Day). Also, a speaker mentioned official programs. Patron of preparatory and arrangement programmes for other institutional programmes.

Special achievements

1. A short version of one of his review articles has been published by the Encyclopedia with the title "Graphene and Carbon-Based Additives".
2. Elsevier has provided a letter of congratulations due to one of the articles having significantly helped to achieve Sustainable Development Goal (SDG-3).
3. A news story called "A needle in a haystack?" was posted on Twitter by the Beilstein Journal of Nanotechnology about one of his research articles.
4. "Certificate of Appreciation" for being an active member of the Elsevier Advisory Panel, providing feedback and suggestions for improvement of Elsevier's products & services in 2022.

Awards

1. The Best Conference Paper Award: Our conference paper entitled "Determination of the Aptamer Probe Density by Double Layer and Redox Capacitance of CNT-Based Electrochemical DNA-Aptasensors" won **the Best Paper Award (Devices)** in the "2023 IEEE Regional Symposium on Micro and Nanoelectronics (RSM)", held on August 28–29, 2023
2. The Second-Best Paper Prize Award: My article entitled "Applications of nanocellulose as biosensing platforms for the detection of functional biomacromolecules: A Review" has achieved the **2nd best prize in the BEST PAPER AWARDS** for the "1st Postgraduate Students Research Paper Competition" in Malaysian NANO-An International Journal (MNIJ). The paper has been published by the Malaysian NANO-An International Journal (MNIJ). A certificate and a cash prize have been awarded. September 2022.
3. The Best conference Paper Award: Our conference paper entitled "Electrochemistry of Green Ag Nanoparticles Modified Electrode Surface" has achieved **the Best Paper Award** in the "2022 IEEE International Conference on Semiconductor Electronics (ICSE2022)" in the category of "Cluster 1-MEMS & Nanoelectronics", held on August 15–16, 2022.
4. The first-Best Paper Prize Award: Our article entitled "Scrap Gold Recovery: Recycling, Fabrication and Electrochemical Characterization of Low-Cost Gold Electrode" has achieved the **1st best prize in the BEST PAPER AWARDS** for the "1st Postgraduate Students Research Paper Competition" in Malaysian Catalysis-An International Journal (MCIJ). The paper has been published by the Malaysian Catalysis-An International Journal (MCIJ). A certificate and a cash prize have been awarded. October 2022.
5. The National Institute of Biotechnology awarded a **Certificate of Integrity** for good conduct implementation in the official environment in 2018.
6. The Best Poster Award: My work won the **best poster award** in the category of "Microbiology Education and Research in Food, Industry, and Environment" at the 30th Annual Conference on Microbiology Education, and Research for Sustainable Development held at Dhaka University on April 29, 2017. The title of the poster was "Generation of electricity by using Microbial Fuel Cell (MFC) from waste samples and identification of a potential electrogenic bacterial community."
7. The National Institute of Biotechnology awarded a **Certificate of Appreciation** for outstanding contributions to the implementation of the ADP project entitled Enhancement of Research Facility of the National Institute of Biotechnology in January 2015 (implementation period of July 2010–June 2013).
8. In recognition of outstanding contributions to the institute's overall activities, the National Institute of Biotechnology awarded a **Certificate of Excellence**, a Crest, and cash.

Dr. Abu Hashem