



## **Mohammad Sorowar Hossain, PhD**

Assistant Professor

Dept. of Environmental Management, School of Environmental Science and Management,  
Independent University Bangladesh  
Cell: +8801963378441

### **Academic Qualifications**

**PhD** in Molecular Biology (2004-2009), National University of Singapore (NUS)  
Thesis: *"Molecular Analyses of Gonad Differentiation and Function in Zebrafish"*

**Master of Science** in Microbiology (1998-2000), University of Dhaka, First Class (Grade A)

**Bachelor of Science** (Honors) in Microbiology (1994-1998), University of Dhaka. First Class (Grade A)

### **Certificates/Training**

- Certificate on 'Resource Efficient Chemical Management' organized by German-based organization (GIZ), 30 May-01 June 2016
- Merit certificate in Research Writing course (Six weeks duration, 1 April to 12 May, 2016) jointly organized by UK-based institutes (INASP and AuthorAID)
- "Certified to LEAD" December 27-29, 2015 Organized by Incepta Pharmaceutical Ltd.
- 'Teaching and Learning for Teachers: Preparing well-grounded on Educators' (certification no: TLC/09/2013/000190), January 7-10, 2013
- 'Innovative teaching and learning in and beyond the classroom' (Certification no: SPH/PED01/2012/026, October 13, 2012
- 'Responsible care and use of laboratory animals' (Certification no: 536/05) from National University of Singapore (NUS) and 'Biological Safety' certificates from DUKE-NUS Graduate Medical School and National Cancer Centre Singapore

### **Professional Experience and Work Summary**

**Assistant Professor** (*Jan 2017- at present*): Dept. of Environmental Management, School of Environmental Science and Management, Independent University Bangladesh

- Teaching & supervising postgraduate students
- Actively engaged in research projects

**Adjunct Professor** (*May 2015- Dec 2016*): Faculty of Basic Sciences, Bangladesh University of Health Sciences

- Teaching & supervising postgraduate students
- Actively engaged in research projects

**Senior Manager & Head (R&D)** (*October 2014- May 2016*): Biotech Division, Incepta Pharmaceutical Ltd, Bangladesh

- Supervises the development of biosimilars (erythropoietin, monoclonal antibodies and industrial enzymes)
- Responsible for management and professional development of researchers.
- Coordinate industry-university collaborative research projects (such as HEQEP)

**Senior Manager & Acting Plant Head**(*September 2014- November2014*): Biotech Division, Incepta Pharmaceutical Ltd, Bangladesh

- Supervise all activities of Biotech division, Incepta Pharmaceuticals

**Assistant Professor** (*May 2012- August 2014*):Microbiology Program, BRAC University, Dhaka, Bangladesh

- Teaching undergraduate and postgraduate students
- Actively engaged in research
- Supervising MS and undergraduate thesis students
- Contributing in the planning, design and development of modules and programs
- Student advising and counseling
- Overseeing BRAC University Bulletin from MNS department

**Post-doctoralResearch Fellow** (*July 2011- December 2011*), Laboratory of Cancer Genomics lab, Molecular and Cellular Research Program, National Cancer Centre Singapore

- Designing, conducting and managing independent research projects

**Post-doctoralResearch Fellow** (*June 2009- June 2011*), Molecular Cancer Pharmacology lab, Cancer and Stem Cell Program, DUKE-NUS Graduate Medical School, Singapore

- Designing, conducting and managing independent research projects
- Supervising undergraduate students and technicians

**Junior Research Fellow** (*August 2002- April 2009*), Reproductive Genomics Lab,Temasek Life Sciences Laboratory (TLL), Singapore.

- Study reproductive aspects of zebrafish, a model organism to study environmental toxicology and development biology

**Junior Research Fellow** (*Feb 2002-July 2002*), Animal Health Biotechnology Lab,Institute of Molecular Agrobiolgy (IMA) which was later renamed as Temasek Life Sciences Laboratory (TLL), Singapore (from August 2002)

- Focused on the pathogenesis of economically important devastating shrimp virus, white spot syndrome virus (WSSV).

**Research Officer** (Nov 2000-Dec 2001), Laboratory Science Division (LSD), ICDDR,B Bangladesh

- Isolation and identification of acute respiratory pathogens from clinical specimens (blood, nasopharyngeal swab, and cerebrospinal fluid)
- Isolation of diarrhea causing and sexually transmitted pathogens
- Determination of antibiotic sensitivity of the isolated pathogens
- Maintenance and storage of pathogens

## **Research Experiences**

### ***BRAC University and University of Health Sciences, Bangladesh (2012-2016)***

- Two environmental microbiology related projects completed in BRAC University:
  - Assessment of physico-chemical and the microbiological quality of Urban Lake of a developing country- A case study of Gulshan Lake, Dhaka
  - Isolation dye-degrading bacteria from textile ETP sludge
- Studying geographic variation of Asian seabass (kural fish) across Asian-Australian region (A multinational project)
- Pattern and distribution of childhood cancer in Bangladesh (a collaborative involving National Institute of Cancer Research & Hospital and ASHIC Foundation ( *Principal Investigator*))
- Status of hematological malignancies in Bangladesh: A retrospective study involving tertiary and specialized hospitals ( *Principal Investigator*, a collaborative project involving thirteen institutes)
- Clinico-pathological profile of breast cancer in Bangladesh ( *Principal Investigator*)
- Diagnosis of pulmonary tuberculosis in resource-limited rural areas in Bangladesh ( *Co-principal Investigator*).

### ***Incepta Biotech, Bangladesh (Sept 2014- May 2016)***

- Industrial scale-up of erythropoietin (EPO) in CHO cell line under roller bottle system
- Optimization for the higher yield of recombinant insulin production in 10 L fermenter using yeast-based expression system

### ***Duke-NUS Graduate Medical School and National Cancer Centre, Singapore (2009-2011)***

- Impact on cell signaling and preclinical evaluation of potent and selective small molecule inhibitors of isoprenylcysteinecarboxylmethyltransferase (Icmt) linking to prenylation.
- Role for GTPases in the regulation of autophagic cell death
- Screening of novel candidate genes involving in cancer metastasis of hepatocellular carcinoma

**PhD candidate**(August 2004-June 2009) in the Department of Biological Sciences, National University of Singapore affiliated with Reproductive Genomics Lab, Temasek Life Sciences Laboratory (TLL). Specific focus of PhD projects-

- Study sexual behavior and differentiation of zebrafish in response to endocrine disruption (due to synthetic hormones such as estrogen/methyl testosterone) at environmental concentration by modulating steroidogenic pathways (environmental toxicology).
- Identification of early testicular markers in zebrafish to study sex differentiation and endocrine disruption (environmental toxicology)
- Observing the role of primordial germ cells (PGCs) during gonad development in zebrafish
- Defining the role of apoptosis during testicular transformation in zebrafish

***Tamasek Life Sciences Laboratory, Singapore (February 2002-July 2004)***

Identification and functional characterization of latency-related genes of a devastating shrimp virus, white spot syndrome virus (WSSV).

***University of Dhaka, Bangladesh (1999-2000)***

Characterization and small-scale production (2.5 litre fermenter) of xylanase and cellulase of from different strains of *Neurospora crassa* (MS thesis project).

**Patent**

Wang M, Zhu WL, Hossain MS and Casey PJ. *Rac3 GTPase as a Therapeutic Target* as set forth and described in US Provisional Application Serial No. 61/514,947 filed on 4 August 2011.

**Publications**

1. \***Hossain MS**, Begum M, Mian MM, Ferdous F, Kabir S, Sarker HK, Karim S, Choudhury S, Khan A, Khan ZJ and Karim-Kos H **2016**. Epidemiology of childhood and adolescent cancers in Bangladesh, 2001-2014. *BMC Cancer* (Impact factor: 3.36). [Hossain MS corresponding author]
2. **Hossain MS**, Ferdous S, and Karim-cos, H. **2014**. Breast cancer care in South Asia: A Bangladeshi perspective. *Cancer Epidemiology* (Impact factor: 2.71). [Hossain MS corresponding author]
3. \*Tzung K-W., R. Goto, J.M. Saju, R. Sreenivasan, T. Saito, K. Arai, E. Yamaha, **M.S. Hossain**, M. Calvert and L. Orbán **2014**. Early depletion of primordial germ cells in the zebrafish promotes testis formation. *Stem Cell Report* (Impact factor: 5.57). [Hossain MS conceived this project]
4. \***Hossain MS**, Iqbal MS et al. **2014**. Diagnosed hematological malignancies in Bangladesh - a retrospective analysis of over 5000 cases from 10 specialized hospitals. *BMC Cancer* (Impact factor: 3.36). [Hossain MS corresponding author]
5. Mohd S. Iqbal, **Hossain MS**, and Louis W Niessen. **2014**. Breast-cancer in low-income and middle-income countries: prioritizing the awareness and access programmes to overcome socio-cultural and economic barriers for early screening and improved outcomes. *European Journal of Cancer Prevention* [Impact factor: 3.03]

6. Islam MT, Rabbi F, Ferdous S, Parvin US, Hossain MA and **Hossain MS. 2014.** Evaluation of three immunological tests for the diagnosis of pulmonary tuberculosis in a rural endemic area of Bangladesh. *International Journal of Mycobacteriology* [Hossain MS corresponding author]
7. Vij S, Purushothaman K, Lau D, Saju JM, Shamsudheen KV, Gopikrishna G, Vinaya Kumar K, Basheer VS, Gopalakrishnan A, **Hossain MS**, Sivasubbu S, Scaria V, Jena JK, Ponniah AG, Orbán L. **2014.** Barcoding of Asian seabass across its geographic range provides evidence for its bifurcation into at least two distinct species. *Frontiers in Marine Science*[Impact factor: 0.7]
8. **Hossain MS. 2012.** Cancer-The Silent Killer, Ed.Yunus KIn: *Frontiers in Science and Technology*, IUM press, Malaysia, ISBN 978-9-6741-8240-3, paperback, pp 36-51.
9. Zhu WL, **Hossain MS**,Guo DY, Liu S, Tong H, Casey PJ, Wang M **2011.** A Role for Rac3 GTPase in the Regulation of Autophagy. *Journal of Biological Chemistry*, 286: 35291-8. (Impact factor 4.57)
10. \*Wang M, **Hossain MS**, Tan W, Coolman B, Zhou J, Liu S and Casey PJ. **2010.** Inhibition of isoprenylcysteinecarboxylmethyltransferase induces autophagic-dependent apoptosis and impairs tumor growth. *Oncogene*1–12. (Impact factor 8.47)
11. \***Hossain, MS**, Larsson A, Scherbak N, Olsson PE and Orban L. **2008.** Zebrafish Androgen Receptor: Isolation, Molecular, and Biochemical Characterization. *Biology of Reproduction* 78, 361–369. [Impact factor 3.32]
12. R. Bartfai, X Wang, M Cai, H. Srinivasan, **M. S. Hossain**, J. Komen, A. Christoffels, L Orban. **2007.** Cyprinid gonad differentiation: A comparative genomic study. *Aquaculture* [Impact Factor: 1.88]
13. **Hossain, MS**, Khadijah S and Kwang J. **2004.** Characterization of ORF89—A latency-related gene of white spot syndrome virus. *Virology*325 106–115. (Impact factor 3.32)
14. Khadijah S, Neo SY, **Hossain MS**, Miller LM, Mathavan S and Kwang J. **2003,** Identification of white spot syndrome virus latency-related genes in specific-pathogen-free shrimps by use of a microarray. *Journal of Virology*77:10162-7. (Impact factor 4.47)
15. **Hossain MS**, Hoq M M and Mozmadar TIM. **2000,** Production and activity of extracellular carboxymethylcellulase of *Neurosporacrassa*.*Bangladesh Journal of Microbiology* 18:169-176.

### **Manuscripts under preparation**

1. **Hossain MS** et al. **2016.** Hematological malignancies among adolescents and young adults in Bangladesh.
2. **Hossain MS** et al. **2016.** Oral and pharyngeal cancer in Asia- Bangladesh perspective.
3. **MS Hossain** et al **2016.** Thalassemia in developing country- A lesson from Bangladesh.

4. **Hossain MS**, Saju JM and Orban L and a Swedish group et al. **2016**. Identification of a new, conserved heat-shock transcription factor, (*hsf5*) with spermatocyte specific expression from zebrafish.

#### **Active and Long-term Collaborating Scientists/Clinicians**

1. Dr. Henriekos-Reza, Cancer Epidemiologist, Erasmus MC Medical University Rotterdam  
Department of Public Health Rotterdam, the Netherlands
2. Professor Louis Niessen, Centre for Chronic Diseases, Liverpool School of Tropical Medicine
3. Dr. EnayeturRaheem, Assistant Professor of Applied Statistics, Department of Applied Statistics and Research Methods, University of Northern Colorado, USA
4. Dr. Asad Khan, Senior Lecturer, School of Health and Rehabilitation Sciences, Faculty of Health Sciences, University of Queensland, Australia
5. Dr. Mamtaz Begum, Associate Professor & Head, Pediatric Oncology, National Institute of Cancer Research and Hospital (NICRH)
6. Dr.ZohoraJameela Khan, Assistant Professor, Pediatric Oncology, Dhaka Medical College and Hospital (DMCH)
7. FerdousShahriarSayed, MD, Medical Oncologist, United Hospital Ltd, Bangladesh
8. Dr.Abdur Rahim, Founder and chairman, Bangladesh Thalassemia Foundation Hospital
9. Salma Choudhury, Founder and chairman ASHIC (palliative care and support childhood cancer patients and their family).

#### **Technical Expertise/Experimental Skills**

**Molecular Biology/ Biotechnology:** DNA and RNA purification, Agarose gel electrophoresis, DNA cloning, PCR, DNA sequencing, genotyping (RAPD, RFLP, microsatellite), genome-walking, site-directed mutagenesis, southern blot, northern blot, RACE, RT-PCR, real time-PCR, HPLC, Chromatography

**Microbiology:** Isolation of bacterial pathogens from various clinical samples (blood, CSF, stool and vaginal swab) by culture, serology and molecular tools, maintenance and storage of pathogens

**Virology:** Purification of virus, viral infection, viral titer determination

**Proteomics:** Western blot, protein expression by bacterial system, baculovirus (in insect sf9 cells) and recombinant adenovirus, Yeast- two-hybrid, sub-cellular localization, protein purification by chromatographic techniques.

**Immunology:** Polyclonal antibody generation, ELISA, immunocytochemistry, immunohistochemistry, serology, Radioimmunoassay, Designing antigenic peptides

**Cell cultures:** Maintenance of mammalian, insect and fish derived continuous cell lines, generation of primary culture, transfection and electroporation of eukaryotic cells

**Gene silencing/knockdown:** siRNA/shRNA in cell cultures, Morpholinos in zebrafish

**Biochemical assays:** Cell survival assay (MTS), caspase assay, TUNNEL and DNA ladder assay, transactivation assay for transcription factors, luciferase, electrophoretic mobility shift (EMSA) assay

**Tumorigenicity assay:** Cell migration, cell invasion

**Histology:** Wax, plastic and cryosectioning of various zebrafish tissues, Hematoxylin& Eosin staining

**Imaging:** Confocal and fluorescence microscopy

**Bioinformatics:** Phylogenetic analysis, synteny analysis, gene annotation (using Ensemble database, Sanger Institute), determination of genetic locus, protein domain/motif analysis, promoter analysis

### **Communication skills**

I lived in Singapore for almost 11 years. Singapore is a multicultural and English speaking country. In my research career I have successfully completed many projects from their inception to the final presentation liaise with people/collaborators of different cultural background. In this process I have developed effective communication and excellent interpersonal skills.

*Invited Speakers:*

1. Organized by Faculty of Science, International Islamic University Malaysia. Title: *"A Promising Anti-cancer Drug: Cysmethynil"*- April 22, 2011.
2. Organized by Professor ShirishShenolikar, Associate Dean for Research, DUKE-NUS Graduate Medical, Singapore. Title: *"Testis development in zebrafish"*- April 15, 2009
3. Organized by Bangladesh Shrimp and Fish Foundation, Bangladesh. Title: *"Healthy shrimp as an asymptomatic carrier of white spot syndrome virus"* 29<sup>th</sup> January, 2005- a keynote speech

### **Affiliation to Professional Society**

- Member, CARES, Bangladesh
- Member, American Society of Microbiology (ASM)
- Life member of Graduate Microbiologists Association (GMA), Bangladesh
- Life Member of Bangladesh Society of Microbiologists (BSM)
- Life Member, Oceanographic Society (NOAMI), Bangladesh

### **Awards and/or other recognitions**

- Coordinated HEQEP Industry-University collaborative projects on behalf of Incepta Biotech Division, which resulted \$ 1 million research grant for studying inborn genetic disorders
- Bangladesh Medical Research Council Grant (BDT 5 Lac) in 2014 for cancer research
- Junior Research Fellowship, Temasek Life Science Laboratory, National University of Singapore (NUS)
- National Science and technology Fellowship (NST), Bangladesh
- Merit Scholarship in Dhaka University
- Recipient of Bangladesh School Scholarships at all levels

## Community services

**Co-Founder & Chief Editor:** [Scientific Bangladesh](#) (About 8,000 subscriber in Facebook page)

**Founder:** [Bangladesh Cancer Support Group](#) (online platform to create awareness related to cancer and environmental pollution: nearly 2200 subscribers)

Contributing as a science communicator in the area of Health & Environment for over 20 years.  
Some selected popular articles (English):

1. M.S. Hossain. [Science based economy: Singapore's biggest experiment](#). Scientific Bangladesh, October 11, 2012
2. M.S. Hossain, **Swine flu scare in Bangladesh**, published in the *News from Bangladesh* and also in the *New Age* newspaper, 2009.
3. M.S. Hossain, [AIDS/HIV situation in Bangladesh: A Looming Threat](#), published in the *Scholars Journals*. October 15, 2005.
4. M.S. Hossain, [Flu Outbreak -An Approaching Nightmare](#) , published in the *Daily Star* newspaper, Feb27, 2004
5. M.S. Hossain, [Nipah virus breaks out in Bangladesh](#). First appeared in the *New Nation*, June 24, 2004. Cited in the Department of Homeland Security (USA), IAIP Directorate Daily Open Source, Infrastructure Report, for 28 June 2004.
6. M.S. Hossain, **SARS Virus: Fight against unseen foe**. *The Independent*, Bangladesh, 2003
7. 8. M.S. Hossain, [Abuse of antibiotics and its harmful effects](#), Published as a cover story in the *Shastho Sanglap* (ISSN 1021-2078), 2001. A periodical published by International Centre for Diarrheal Research, Bangladesh (ICDDR, B).
8. M.S. Hossain, **Antibiotic Resistance- the underlying facts**. *The Independent*, Bangladesh Sept 28, 2000.
9. M.S. Hossain, **Environmental Hazard of Pesticides**, *The Independent*, Bangladesh 2003, May 2, 1997
10. M.S. Hossain, **Polyethylene Poses Environmental Problem**, *The Independent*, Bangladesh, March 2, 1996.

## **References**

### **Professor Dr. K. M. Sultanul Aziz**

Deputy Director (rtd), ICDDR'B

Immediate Past Secretary (Ex-officio), Bangladesh Academy of Science (BAS)

Editor in Chief, Bangladesh Journal of Microbiology

Email: [azizkms@gmail.com](mailto:azizkms@gmail.com)

Contact: 01819410315

### **Professor Laszlo Orban**

Director of Reproductive Genomics

Strategic Research Program

Temasek Life Sciences Laboratory (TLL)

National University of Singapore

1 Research Link, NUS

Singapore 117 604

E-mail: [laszlo@tll.org.sg](mailto:laszlo@tll.org.sg)

### **Dr. Henrike Karim-Kos**

Cancer Epidemiologist

Erasmus MC Medical University Rotterdam

Department of Public Health Rotterdam

The Netherlands

Email: [h.karim@erasmusmc.nl](mailto:h.karim@erasmusmc.nl)