**DR. ABDULLAH-AL MASUM**
ASSOCIATE PROFESSOR
DEPARTMENT OF PHARMACEUTICAL SCIENCES
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## Career Objective

Pursue a highly research-oriented career in academia through innovation.

## Research Interest

Synthetic Bioorganic Chemistry, Chemical Biology, Cell Biology and Molecular Biology, Drug design and Drug Development, Biomedical Fluorescent Imaging.

## Education

- **PhD in Pharmaceutical Sciences (2015-2018)**
  Tokyo University of Science, Tokyo, Japan
  CGPA: 4/4

- **Master of Pharmaceutical Sciences (2013-2015)**
  Tokyo University of Science, Tokyo, Japan
  CGPA: 3.75/4

- **Bachelor of Pharmaceutical Sciences (2002-2006)**
  Jahangirnagar University, Dhaka, Bangladesh
  First class

## Publications

- **Masum, A**.; Aoki, S.**;** Rahman, M.; Hisamatsu, Y. Chemical Synthetic Approaches to Mimic the TRAIL: Promising Cancer Therapeutics. *RSC Med. Chem*. **2024**, Aug 1.

- Zubair, T.; Sultana, S.; Mojumder, T. J.; Rafi, A. R.; Megh, N. I.; Apu, H. H.; Shariare. M. H.; **Masum. A**. Metal Complexes as Chemotherapeutic Agents for the Treatment of Cancer. *JBEP*. July **2024**, 02 (1), 1-13.

- Shariare, M.H.; Khan, M.A.; **Masum, A**.; Khan, J.H.; Uddin, J.; Kazi, M. Development of Stable Liposomal Drug Delivery System of Thymoquinone and Its In Vitro Anticancer Studies Using Breast Cancer and Cervical Cancer Cell Lines. *Molecules* **2022**, *27*, 6744.

- Shariare, M.H.; **Masum, A.**; Alshehri, S.; Alanazi, F.K.; Uddin, J.; Kazi, M. Preparation and Optimization of PEGylated Nano Graphene Oxide-Based Delivery System for Drugs with Different Molecular Structures Using Design of Experiment (DoE). *Molecules* **2021**, 26, 1457.

- **Masum, A**.; Yokoi, K., Hisamatsu, Y.; Naito, K., Shashni, B., Aoki, S**.** Design and Synthesis of a Luminescent Iridium Complex-Peptide Hybrid (IPH) that Detects Cancer Cells and Induces Their Apoptosis. *Bioorganic & Medicinal Chemistry*. **2018**; *26* (17): 4804-4816.

- **Masum, A**.; Hisamatsu, Y.; Yokoi, K., Aoki, S**.** Luminescent Iridium Complex-Peptide Hybrids (IPHs) for Therapeutics of Cancer: Design and Synthesis of IPHs for Detection of Cancer Cells and Induction

of Their Necrosis-type Cell Death. *Bioinorganic Chemistry and Applications*. **2018**; Article ID: 7578965.

- Hisamatsu, Y.; Suzuki, N.; **Masum, A**.; Shibuya, A.; Abe. R.; Sato, A.; Tanuma, S.; Aoki, S. Cationic Amphiphilic Tris-Cyclometalated Iridium(III) Complexes Induce Cancer Cell Death via Interaction with $Ca^{2+}$-Calmodulin Complex. *Bioconjugate Chem*. **2017**; *28* (2): 507–523.

**Research Recognition & Awards**

- Has been selected as a **key scientific article contributing to excellence in biomedical research** by Medicine Innovates.
  https://medicineinnovates.com/luminescent-detectors-killers-cancer-cells/

- Graphical abstract has been selected as the **cover page** of the Bioorganic & Medicinal Chemistry, volume 26, Issue 17.
  https://www.sciencedirect.com/journal/bioorganic-and-medicinal-chemistry/vol/26/issue/17

- Winner of **oral presentation award**, International Postgraduate Conference on Pharmaceutical Sciences (iPoPs2016)

- Awarded Japan Government (**Monbukagakusho**) Scholarship (October 2012 to March 2018)

**Conference Papers**

- Sultana, S.; Mojumder, T. J.; Ashraf, R. B.; Zubair, T.; and **Masum, A**. Supramolecular Complexation of Antibiotic That Improves Therapeutic Efficacy. ICPHS 2024, 6 - 7 December 2024.

- Adrita. S.H.; Lima. K.A.; **Masum, A.** Supramolecular Complexation of Different Drugs to Switch Cellular Entry and Efficacy. (Poster Presentation). 2nd International Conference on Genomics, Nanotech and Bioengineering. 26-28 June, 2022. Dhaka, Bangladesh.

- **Masum, A.;** Hisamatsu, Y.; Suzuki, N.; Aoki, S. Detection and Induction of Cell Death of Cancer Cells by Luminescent Iridium Complexes Having Death Receptor Binding Peptides. (Poster presentation). 17th Asian Chemical Congress (17ACC). 23-28 July, 2017, Melbourne, Australia.

- **Masum, A.;** Hisamatsu, Y.; Suzuki, N.; Aoki, S. Detection and Induction of Cell Death of Cancer Cells by Luminescent Iridium Complex-Peptide Hybrids. (Oral presentation) 15th symposium on organic chemistry-the next generation. May 26-27, 2017, Tokyo, Japan.

- **Masum, A.;** Hisamatsu, Y.; Suzuki, N.; Aoki, S. Detection and Induction of Cell Death of Cancer Cells by Luminescent Iridium Complexes Having Death Receptor Binding Peptides. (Poster presentation) Annual meeting of Division of Medical-Science-Engineering Cooperation, Research Institute for Science and Technology, TUS. March 09, 2017, Chiba, Japan.

- **Masum, A.;** Hisamatsu, Y.; Suzuki, N.; Aoki, S. Observation of Cell Death Signal of Cancer Cells by DR5 Binding Peptide-Iridium Complex Hybrids for selective Staining and Induction of Cell Death of Cancer Cells. (Poster presentation) Imaging Frontier Center Symposium. December 10, 2016, Chiba, Japan.

- **Masum, A.;** Hisamatsu, Y.; Suzuki, N.; Aoki, S. Design and Synthesis of DR5 Binding Iridium Complex-Peptide Hybrids for Selective Staining and Induction of Cell Death of Cancer Cells. (Oral presentation) 60th Annual Meeting of The Pharmaceutical Society of Japan (Kanto branch). September 17, 2016, Tokyo, Japan.

- **Masum, A.;** Hisamatsu, Y.; Suzuki, N.; Aoki, S. Design and Synthesis of TRAIL Mimics Based on $C_3$-symmetric and Luminescent Iridium Complexes that are Able to Stain and Induce Cell Death of Cancer Cells. (Oral presentation) 136th Annual Meeting of The Pharmaceutical Society of Japan. March 26-29, 2016, Yokohama, Japan.

- **Masum, A.**; Hisamatsu, Y.; Suzuki, N.; Aoki, S. Design and Synthesis of Artificial TRAIL Mimics Based on $C_3$-symmetric and Luminescent Iridium Complexes that are Able to Stain and Induce Cell Death of Cancer Cells. (Oral presentation) International Postgraduate Conference on Pharmaceutical Science (iPoPS2016). Feb 27-28, 2016, Chiba, Japan.

- **Masum, A.;** Tanaka, H., Suzuki, N., Hisamatsu, Y.; Aoki, S. Design and Synthesis of Artificial TRAIL Mimics Based on $C_3$-symmetric and Luminescent Iridium Complexes. (Poster presentation) International Chemical Congress of Pacific Basin Societies. December 15-20, 2015, Honolulu, Hawaii, U.S.A.

- **Masum, A.;** Koinuma, K.; Miyata, Y.; Hisamatsu, Y.; Aoki, S. Design and Synthesis of Artificial Death Ligands Based on Metal-Centered Homotrimeric Self-Assembly of Chelator-Peptide Hybrids. (Poster presentation) 134th Annual Meeting of The Pharmaceutical Society of Japan. March 27-30, 2013, Kumamoto, Japan.

**Research Expertise**

- Cell Culture and Cell Assay
- Fluorescence Microscopy
- Confocal Microscopy
- Flow Cytometry
- Quartz Crystal Microbalance
- Organic Synthesis
- Purification technique:
  - Column Chromatography
  - High-Performance Liquid Chromatography (HPLC)
  - Gel Phase Chromatography (GPC)
  - Recrystallization
  - Separation and Extraction
- Spectroscopy (UV/Vis, NMR, IR, Mass)
- Fluorescence spectroscopy (quantum yield, lifetime measurement)
- Other software:
  - Imaris (3D Image Analysis Software)
  - Flowjo (Flow Cytometry Analysis Software)
  - Discovery Studio
  - Chem Office (ultra)
  - Affinix Q4

**Ongoing Research Project:**

- Supramolecular Complexation of Drugs to Combine Same or Different Therapeutic Groups to Switch Biological Efficacy.

**Project/Thesis Supervision:**

**Graduate (Masters) Project:**

- Combining of Antibiotic and Antiprotozoals to Treat Mixed Infection.
- Supramolecular Complexation of Drugs to Switch Biological Efficacy.
- Efficacy Assessment of Tiemonium Methylsulphate and Evaluation of Clinical Outcomes.

**Undergrad (Bachelors) Project:**

- Study of Organic Drugs Purification by Thin Layer Chromatography.
- A Comparative Study of Lipid-Based Nano Drug Delivery System Using Chitosan and Poloxamer.
- Separation and Identification of Organic Drug Compounds from a complex Mixture.
- Purification of Organic Drug Compounds from a complex Mixture.
- Survey on COVID-19 Infection and Vaccination Rate.
- Neuroprotective effect of *Phyllanthus niruri* extract in rotenone-induced mouse model of Parkinson's Disease.
- A survey on Hospital Inpatients Drug Use Management.
- Comparison & Efficacy evaluation of Antimuscarinic Drugs along with Pharma market trends.
- Efficacy Assessment & Comparison of Antimuscarinic Drugs with Pharma Market Prescription Pattern.

## Academic Other Activities

- **Reviewer** of the 2nd International Conference on Genomics, Nanotech and Bioengineering. 26-28 June, 2022. Dhaka, Bangladesh.
- **Co-chairperson** of the organizing committee of 4th International Postgraduate Conference on Pharmaceuticals Sciences (iPoPS2016)
- Worked as a **teaching assistant** at Tokyo University of Science

## Research in Industry (Clinical Research)

- Assessment of the prescriptions pattern of Antimuscarinic drugs and the efficacy of the most widely prescribed Antimuscarinic drug (Tiemonium Methylsulphate) in Bangladesh.

## Job Experiences

- **Associate Professor**, Department of Pharmaceutical Sciences, North South University, November 01, 2023 to till date
- **Assistant Professor**, Department of Pharmaceutical Sciences, North South University, January 01 to October 31, 2023.
- **Senior Product Executive**, Apex Pharma Ltd. Dhaka, Bangladesh. May 08, 2011 to August 31, 2012
- **Product Executive**, Orion Pharma Ltd. Dhaka, Bangladesh. September 01, 2008 to May 06, 2011
- **Training Executive**, Silva Pharmaceuticals Ltd. Dhaka, Bangladesh. May 03, 2008 to August 31, 2008

## Languages

- Bangla: Native speaker
- English: Full professional proficiency
- Japanese: Limited user

## References

- **Dr. Shin Aoki**
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