

Ranakul Islam

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Personal Statement:

I am currently doing a Ph.D. and working as a graduate research assistant in the Department of Cell Biology and Regenerative Medicine at Thomas Jefferson University. My research project focuses on two different areas of cancer, one on heavy metals-induced (arsenic and chromium) lung cancers and the other on the effect of the translocase of the outer mitochondrial membrane complex subunit 20 (TOMM20) on different types of sarcoma. Long-term human exposure to inorganic arsenic induces lung, skin, bladder, and liver cancer, and we are evaluating the cancerous properties of epidermal growth factor receptors (EGFR) in lung cancer. Our studies show that long-term exposure to arsenic induces EGFR via miR-218, which activates PKM2 and NF- κ B, and induces PKM2 expression via the downregulation of miR-218. We have established a novel chimeric tumor model to study the crosstalk of signaling molecules in As-T cells and human endothelial cells in regulating tumor angiogenesis. We found that arsenic induces PKM2 expression via miR-218 suppression for inducing cell transformation, tumor growth, and angiogenesis. I am trying to help develop therapeutic strategies for heavy metals caused by cancer. The second half of my Ph.D. concentrated on the translocase of the outer mitochondrial membrane complex subunit 20 (TOMM20), which facilitates cancer aggressiveness and therapeutic resistance in different types of sarcomas. I also engaged in a project focusing on the neurotransmitter Neuropeptide Y (NPY) roles in predator and prey capture in African clawed frogs in my M.S. at Texas Tech University. I was involved in other projects aiming to find the mechanisms and conservation of serotonergic modulation of HSF-1 in *C. elegans*.

Google Scholar and Research Gate link:

<https://scholar.google.com/citations?user=BoPf95YAAAAJ&hl=en>
<https://www.researchgate.net/profile/Ranakul-Islam>

Position:

May 2023- Currently	Graduate Student in Dr. Ubaldo Martinez-Ousthoorn's lab, Department of Medical Oncology, Thomas Jefferson University
July 2020- February 2023	Graduate Student in Ling-Zhi Liu's lab, Department of Medical Oncology, Thomas Jefferson University
July 2019-June 2020	Graduate Student in Ling-Zhi Liu & Dr. Bing Hua Ziang lab, Department of Pathology, University of Iowa
Jan 2018-July 2019	Research Assistant, Department of Biology, University of Iowa, Iowa, USA
August 2014- May 2017	Teaching Assistant, Department of Biology, Texas Tech University

Education:

Examination	Degree	Credit earned	Institution	Subject/Group	Grade/CGPA
Master of Science	MSc.	62	Texas Tech University, USA	Biology	3.625 out of 4.00
Master of Science	MSc.	30	University of Dhaka, Bangladesh	Zoology	3.75 out of 4.00
Bachelor of Science	BSc	128	University of Dhaka, Bangladesh	Zoology	3.76 out of 4.00

Research Grant:

National Science and Technology Fellowship for M.S research, Ministry of Science and Technology, Bangladesh (\$800) 2011-2013
Doctoral Fellowship Award (Research) for 2023-2024

Article published in International Peer Review journal:

1. **Islam R**, Zhao L, Zhang X, Liu L-Z. MiR-218-5p/EGFR Signaling in Arsenic-Induced Carcinogenesis. *Cancers*. 2023; 15(4):1204. <https://doi.org/10.3390/cancers15041204>
2. Zhao L, **Islam R**, Wang Y, Lu-Yao G, Liu L.-Z. Epigenetic regulation and non-coding RNAs in metal-induced carcinogenesis and angiogenesis. *Cancers* 2022
3. **Islam R**, Zhao L, Wang Y, Lu-Yao G, Liu L.-Z. Epigenetic Dysregulations in Arsenic-Induced Carcinogenesis. *Cancers* 2022, 14, 4502. <https://doi.org/10.3390/cancers14184502>
4. **Islam, R.**, Zhao, L., Wang, Y., Lu-Yao, G., & Liu, L. (2022, September 20). Arsenic-Induced Carcinogenesis. In Encyclopedia. <https://encyclopedia.pub/entry/27379>
5. **Islam R**, Prater CM, Harris BN, Carr JA. Neuroendocrine modulation of predator avoidance/prey capture tradeoffs: Role of tectal NPY2R receptors. *Gen Comp Endocrinol*. 2019 Oct 1;282:113214. doi: 10.1016/j.ygcen.2019.113214. Epub 2019 Jul 1. PMID: 31271760.

Abstracts Published in International Conference Proceedings:

1. **Islam, R.**, Prahlad, V., Investigation of transgenerational stress tolerance in *C. elegans*, Poster presented at: The 24th Annual Midwest Stress Response and Molecular Chaperone Meeting; January 19, 2019; Northwestern University, Evanston, IL, USA
2. Das, S., Ooi, F., Wheat M., **Islam, R.**, Prahlad, V., Investigating the mechanisms and conservation of serotonergic modulation of HSF-1, Poster presented at: The 24th Annual Midwest Stress Response and Molecular Chaperone Meeting; January 19, 2019; Northwestern University, Evanston, IL, USA
3. Das, S., **Islam R**, Ooi, F., Wheat M., Prahlad, V., Investigating the nature of the nuclear bodies formed by HSF-1 upon heat activation in *C. elegans*, Poster presented at: The

24th Annual Midwest Stress Response and Molecular Chaperone Meeting; January 19, 2019; Northwestern University, Evanston, IL, USA

4. Carr, JA., **Islam, R.**, Harris, BN., Neuropeptide Y modulates discrete elements of prey capture via receptors in the optic tectum. Poster presented at: Neuroscience; 2017 Nov 14; Washington, DC, USA.
5. **Islam, R.** and Carr, J. A.. Poster presentation: Neuropeptide Y(NPY) Influence on Prey Capture and Predator Avoidance Responses in *Xenopus laevis*. Texas Tech Annual Biological Sciences Symposium, VII (2016), Lubbock, TX