

MOHAMED N. M. FARHATH

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EDUCATION

Ph.D. in Biochemistry, **2016**

Kent State University, Department of Chemistry and Biochemistry, Ohio, USA

- Perform doctoral research on “Transcriptional modulation by DNA G-quadruplex structures”
- Teaching basic and advanced level laboratory courses of chemistry and biochemistry
- Assisted the advisor in writing grants for NIH funding and reviewing research articles

Bachelor of Science (Hons) in Computational Chemistry, **2008**

University of Colombo, Sri Lanka

- Thesis: “*Theoretical analysis of mechanism of bromination of *a*-methylstyrene*”

APPOINTMENTS AND POSITIONS

Senior Lecturer Gr. II in Chemistry **2019 -2020**

South Eastern University of Sri Lanka, Department of Chemical Sciences

Lecturer in Chemistry **2017 -2019**

South Eastern University of Sri Lanka, Department of Chemical Sciences

Postdoctoral Research Fellow **2016- 2017**

Harvard University, Boston, MA-02130

Teaching Assistant **2010-2016**
Kent State University, Department of Chemistry and Biochemistry, Ohio, USA

Demonstrator **2008-2009**
University of Colombo, Department of Chemistry, Sri Lanka

RESEARCH EXPERIENCE

Harvard Medical School, Boston, MA **2016 - 2017**
Postdoctoral fellow; Mentor: Jakub Godlewski, Ph.D

- Identifying of non-coding RNAs (lncRNA, miRNA and circRNA) which overexpress in Glioblastoma Stem-like Cells
- Examined how non-coding RNAs (lncRNA, miRNA and circRNA) regulates the gene expression and their downstream effect on maintenance of Glioblastoma Stem-like Cells
- Advised and assisted several students, including an undergraduate researcher
- Studying the therapeutic application of miRNA/circRNA for Glioblastoma cancer

Kent State University, Kent, OH **2010 - 2016**
Graduate Researcher; Advisor: Soumitra Basu, Ph.D

- Identified and characterized G- Quadruplex (GQ) forming sequence (TH49) in the TH promoter
- Established the role of GQ structures on TH transcription
- Modulated the TH transcription through GQ interacting small molecule
- Developed therapeutic tool using LNA to modulate endogenous TH gene expression
- Developed research project and mentored several undergraduate researchers for their honors thesis

Rubber Research Institute, Sri Lanka **2007**
Vocational training;

- Explore different chemical methodologies to remove allergic nature of Natural Rubber Latex (NRL)

University of Colombo, Sri Lanka

2005 - 2007

Undergraduate Researcher; Advisor: Dammika Dissanayake, Ph.D

- Performed theoretical analysis Using ab-initio quantum mechanical method to predict the mechanism of bromination of α -methylstyrene

TEACHING AND MENTORSHIP EXPERIENCES

Senior Lecturer Gr. II in Chemistry

2019 -2020

South Eastern University of Sri Lanka, Department of Chemical Sciences

- Designed research project for undergraduates
- Advised and assisted undergraduates to perform their project
- Teaching various chemistry and molecular biology courses

South Eastern University of Sri Lanka

2017-2019

Lecturer in Chemistry

- Teaching various chemistry and molecular biology courses

Kent State University, Kent, OH

2015 - 2016

Teaching Assistant

- Taught the laboratory section for the first and second year undergraduate *General chemistry* course and Advance biochemistry course
- Grading lab reports and meeting students individually

Kent State University, Kent, OH

2010 - 2014

Teaching Assistant

- Directed advance biochemistry laboratory
- Grading lab reports and meeting students individually

Kent State University, Kent, OH

2012 - 2015

Mentor

- Designed research project for undergraduates

- Advised and assisted undergraduates to perform their project

University of Colombo, Colombo, SL

2008 - 2009

Teaching Assistant

- Directed computational chemistry laboratory
- Grading lab reports

HONORS AND AWARDS

Senate honours award for high impact publication	2021
Best poster in SAACS poster session 2014, Kent State University	2015
Best poster in SAACS poster session 2013, Kent State University	2014

EXTRA-CURRICULAR ACTIVITIES

Head of the Department	2022
Director for Science Research Centre	2022
Students' counselor	2022
Coordinator for English subject at FAS	2021
Students' counselor	2021
Member of editorial board for university Newsletter	2021
Invited reviewer for university research grant, SEUSL	2021
Member of editorial board for FAS Newsletter	2021
Member of board of studying for post graduate unit	2021
Member of research management committee	2021
Member of curriculum revision committee	2020
Invited reviewer for 8th Annual Science research sessions 2017, SEUSL	2020
Member of editorial board for 9th Annual Science research sessions, SEUSL	2020
Students' counselor	2020
Member of editorial board for FAS Newsletter	2020
Coordinator of the AHEAD project of SEUSL	2019
Invited reviewer for 8 th Annual Science research sessions 2017, SEUSL	2019
Member of editorial board for 7 th Annual Science research sessions 2017, SEUSL	2018

Member of faculty proposal writing committee of SEUSL for AHEAD project	2018
Invited reviewer for 6 th Annual Science research sessions 2017, SEUSL	2017
Invited reviewer for University research grant, SEUSL	2017

PRESENTATIONS

- Invited oral presentation on “Modulation of endogenous TH expression and Dopamine production via GQ DNA Clip” at the Harvard Medical School (HMS), Department of Neurosurgery, 2016, **Harvard University**, Boston, MA
- Invited oral presentation on “Modulation of endogenous TH expression and Dopamine production via GQ DNA Clip” at Perelman School of Medicine, 2016, **University of Pennsylvania**, Philadelphia, PA
- Invited oral presentation at the Graduate Student Senate symposium 2013, 2014 and 2015, **Kent State University**
- Invited oral presentation on “Modulation of TH transcription by G-quadruplex structures in the promoter” at **Rustbelt RNA meeting**, October 2013, Cleveland, OH
- Poster presentation at **Rustbelt RNA meeting** October 2014 on “Multiple G-Quadruplex on TH promoter and their role on transcription”
- Poster presented in student affiliate ACS poster sessions 2013, 2014 and 2015, **Kent State University**.

PUBLICATIONS

- 1) G. D. M. H. Wijewardhana, M. S. Kandanapitiye, M. N. M. Farhath., **Synthesis of BiOI nanoparticles toward potential contrast applications.** *Journal of Science*, 39-43, 2021.
- 2) Nathan Beals, **Mohamed M.Farhath**, Prakash Kharel, Brintha Croos, Thulasi Mahendran, John Johnson, Soumitra Basu., **Rationally designed DNA therapeutics can modulate human tyrosine hydroxylase expression by controlling specific G-quadruplex formation in its promoter.** *Molecular Therapy*, 2021, doi: 10.1016/j.ymthe.2021.05.013

- 3) Jakub Godlewski, **Mohamed Farhath**, Franz L. Ricklefs, Carmela Passaro, Klaudia Kiel, Hiroshi Nakashima, E. Antonio Chiocca and Agnieszka Bronisz. **Oncolytic Virus Therapy Alters the Secretome of Targeted Glioblastoma Cells.** *Cancers*, 13(6), 1287, 2021
- 4) Golam Mustafa, Cho-Ying Chuang, William A. Roy, **Mohamed M. Farhath**, Nilisha Pokhrel, Yue Ma, Kazuo Nagasawa, Edwin Antony, Matthew J. Comstock, Soumitra Basu, Hamza Balci. **A Force Sensor that Converts Fluorescence Signal into Force Measurement Utilizing Short Looped DNA.** *Biosensors and Bioelectronics*, 121, 34-40, 2018
- 5) Dassanayake, R. S.; **Mohamed M. Farhath**, Brasch, N. E. **Kinetic Studies on the Reaction of Cob(II)alamin with the Reactive Oxygen Species Hypochlorous Acid: Evidence for efficient scavenging of HOCl by cob(II) alamin.** *Journal of Inorganic Biochemistry*, 163, 81-87, 2016
- 6) **Mohamed M. Farhath**, Matthew Thompson, Sujay Ray, Abby Sewell, Hamza Balci, Soumitra Basu. **G-Quadruplex-Enabling Sequence within the Human Tyrosine Hydroxylase Promoter Differentially Regulates Transcription.** *Biochemistry*, 54(36): 5533-5545, 2015

ABSTRACT PUBLICATIONS

1. Perera M. D. R., Paranavithana T. M., Rizvi E. M. J. M., Farhath, M. N. M., Ratnayake R. R., Soil organic carbon dynamics & relationships with nutrient availability and physico-chemical parameters of paddy soil in Batticaloa district, Sri Lanka. *ASRS 2020*, ISBN 978-955-627-250-5, (2020)
2. **Mohamed M. Farhath**, S. Karunarathna, Dhammike P. Dissanayake. Prediction of mechanism of bromination for α -methylstyrene using *ab-initio* quantum mechanical method. *SLAAS*, (2007)
3. Golam Mustafa, Cho-Ying Chuang, William A. Roy, **Mohamed M. Farhath**, Nilisha Pokhrel, Yue Ma, Kazuo Nagasawa, Edwin Antony, Matthew J. Comstock, Soumitra Basu, Hamza Balci. *Biophysical Journal* 116(3):442a (2019)

TECHNICAL EXPERTISE

Characterizing nucleic acid-protein and nucleic acid-small molecule interactions using biochemical and biophysical methods such as

- Circular Dichroism (CD) spectroscopy
- Isothermal calorimetry (ITC)
- UV-Vis spectroscopy
- Chemical and enzymatic footprinting
- *In vitro* transcription
- Radiolabeling of DNA and RNA
- Enzymatic and chemical structural mapping of DNA and RNA secondary structures electrophoretic mobility shift assay (EMSA)
- Thermodynamic calculations of RNA or DNA folding from CD and UV/Vis spectroscopy
- Separation, purification and analysis of protein, nucleic acids and by Gel electrophoresis (agarose, SDS-PAGE, sequencing), Chromatography (affinity purification, gel filtration chromatography).

Molecular Biology and genetics

- Plasmid DNA, LNA and siRNA transfection
- DNA and RNA isolation
- plasmid and genomic DNA isolation
- gene cloning
- site-directed mutagenesis
- PCR, qPCR and DNA sequence analysis
- Southern blotting
- Northern blotting
- protein isolation
- fluorescent microscopy
- bacterial reporter assays
- Gene expression/repression by reporter gene assays
- Cell viability assays
- Western blot
- Animal studies
- Experience in working with human and animal tissue

Cell Culture

- Cell line maintenance
- transfection optimization,
- plasmid transfection
- RNAi knockdowns
- Mouse and rat handling
- intraperitoneal injections
- intracranial animal surgery

Animal Models

REFEREES

Prof. Soumitra Basu

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Dr. Hamza Balci

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Prof. Nicola E. Brasch

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Prof. Dhammike P. Dissanayake

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Date: 4th April 2022

Signature