



Centre for Advanced Research in Sciences (CARS)
University of Dhaka, Dhaka 1000

Ph: 966 1920-59/Ext. 4616
Email: coe@du.ac.bd
FAX: 880-2-8615583

Director

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Dated:12 JUN 2023

CARS SEMINAR SERIES-2023

Speaker: Dr. Gazi Nurun Nahar Sultana, Chief Scientist, CARS, DU

Title: **Quantitative analysis of serum cell-free DNA as a predictive and prognostic marker in breast cancer patients.**

Venue: Committee Room (2nd Floor), Center for Advanced Research in Sciences (CARS), University of Dhaka

Date: Wednesday, June 14, 2023

Time: 11:00 am

You are cordially invited to attend the seminar.

12 JUN 2023

Ishtiaque M Syed, PhD
Professor of Physics &

Director

Center for Advanced Research in Sciences (CARS)
University of Dhaka

Abstract:

The prognosis of breast cancer may be predicted using circulating cell-free DNA (cfDNA), a non-invasive diagnosis technique. This study aimed to determine the most sensitive and effective method for detecting changes in cfDNA levels and for using cfDNA as a diagnostic and prognostic marker of breast cancer. This research suggests that the most successful way to measure the amount of cfDNA described decades ago could be used as a "liquid biopsy" to track cancer in real time. The potential function of serum cfDNA levels as a marker for early breast cancer diagnosis was investigated using UV spectrophotometric, fluorometric, and real-time qPCR assays. The RT-qPCR (ALU115) method produced the most statistically significant results ($p=0.000$). At the threshold concentration of 395.65 ng/ml of cfDNA, the ROC curve reflects the maximum AUC= 0.7607, with a sensitivity of 0.65 and specificity of 0.80. For a preliminary assessment of total circulating cfDNA, a combination of all of the above techniques will be most efficacious. Based on our results, we conclude that the RT-qPCR technique combined with fluorometric measurement can identify a statistically significant difference in cfDNA levels between cohorts of breast cancer patients and healthy controls.