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Content

TRANSCRIPTIONAL PROFILING OF *PHF19* GENE IN COLON CANCER CELL LINES CULTIVATED IN 3D

Sofija Ignjatovic,[1] Dunja Pavlovic,[1] Tamara Babic,[1] Sandra Dragicevic,[1] Aleksandra Nikolic[1]

[1]*Institute of Molecular Genetics and Genetic Engineering, University of Belgrade, Belgrade, Serbia*

Introduction: A recent comprehensive pan-cancer transcriptome analysis revealed differential activity of two alternative promoters of the gene *PHF19* in malignant and non-malignant gut mucosa. Transcription from the promoter which is up-regulated in colorectal cancer results in the synthesis of transcript PHF19-207. This finding indicates that transcript PHF19-207 could potentially be used as a biomarker for this disease. Our study aimed to assess the expression profile of the *PHF19* gene in colon cancer.

Methods: Immortalized colonic epithelial cell line isolated from healthy tissue (HCEC-1CT) as well as a set of colon cancer cell lines (DLD1, SW620, HCT116) were used for transcriptional profiling of *PHF19* in cells cultivated in 3D. The transcriptional profile was obtained using RNA sequencing and the function of transcript PHF19-207 was evaluated using *in silico* tools.

Results: Our analysis confirmed the up-regulation of transcript PHF19-207 in all malignant cell cultures in comparison to the healthy cell line HCEC-1CT. The expression of transcript PHF19-207 was more notable in cell lines that originated from colon cancer in later stages. Coding Potential Calculator tool classifies this transcript as non-coding, with a probability of 0.2. Annolnc tool shows the up-regulation of this transcript in colorectal cancer cell lines and its down-regulation in healthy samples. Also, this tool predicts that transcript PHF19-207 localizes in the nucleus.

Conclusion: We conclude that transcript PHF19-207 could serve as a biomarker for colorectal cancer. Also, we hypothesize that this transcript is a lncRNA with a role in gene expression regulation and could be linked to oncogenesis.

Key words: PHF19; colorectal cancer; transcript; biomarker

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