

PP 18 - *In silico* characterization of putative uncharacterized protein FLJ37218 and its association with multiple myeloma

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Introduction: Despite the recent advances in treatment, multiple myeloma (MM) remains incurable. Our preliminary study identified a differentially expressed, putative uncharacterized protein FLJ37218 in plasma cells of MM patients compared with non-myeloma patients. It is not known if there is an association between the overexpression of FLJ37218 and the development of MM. The main aim of the study was to characterize FLJ37218 using bioinformatics tools.

Methods: The amino acid sequence of FLJ37218 (accession number: Q8N1Y9) was retrieved from the UniProt database and used in downstream analysis. The physicochemical properties, transmembrane topology and signal peptides, subcellular localizations, secondary and tertiary structures of the polypeptide were predicted using a range of bioinformatics tools.

Results: FLJ37218 consisted of 231 amino acid residues and has a molecular weight of 24914.57 Da. The theoretical isoelectric point and Grand average of hydropathicity of FLJ37218 were 6.89 and -0.074, respectively. Further analysis of the protein using Phobius and TMHMM tools revealed that FLJ37218 is a membrane protein with a cytoplasmic region, a non-cytoplasmic region, transmembrane domains and a signal peptide. Interestingly, the sequence similarity search analysis showed that the uncharacterized FLJ37218 aligned with the translated amino acid sequence of the human PTGES2 antisense RNA 1 (*PTGES2-AS-1*) (E value: 8e-109; identity: 79.8%; query coverage: 96%). Further analysis revealed that a region (128,128,433-128,129,305 bp) in human chromosome 9 possibly encodes the FLJ37218. It was also noted that the predicted genomic region of FLJ37218 overlaps PTGES2 protein-coding gene and long non-coding RNA, *PTGES2-AS-1*, and transcribed from the opposite strand of DNA.

Conclusion: Therefore, it is possible that an antisense protein is translated under MM condition.

Keywords: Multiple Myeloma, PTGES2-AS1, FLJ37218, Membrane proteins, Antisense protein translation

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