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In silico DVL3 pathway analysis in head and neck squamous cell carcinoma to identify drug targets

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Statement of the Problem: Disheveled (DVL) proteins are the key regulators of Wnt signaling cascade components and their over expression is strongly associated with cancer progression, being involved in cell proliferation regulation in humans. The present work analyzed and characterized the contribution of disheveled segment polarity protein 3 (DVL3) mediated network in head and neck squamous cell carcinoma (HNSCC).

Methodology: STRING database was used to retrieve the network of DVL3 as a query submitted and Web Gestalt toolkit was used for enrichment analysis of network that provided disease sensitive proteins. Hub proteins were extracted from Hubba server and finally cBioPortal a genomic cancer platform was used for further mutational analysis.

Findings: Several protein's over/under expression was clearly scrutinized that are involved in cell proliferation and apoptotic activities such as DVL3, FGF3, PIK3CA, CDH19, FAT1, PRKCI, DLG1, CTTN, EPHB3, GNB4, PSMD2, FGF4, TP53, PAK2, MYC and NOTCH1. These proteins are declared as confirmed drug targets in HNSCC.

Conclusion & Significance: These findings will pave a repository for rational, empirical and experimental future investigation of therapeutic markers of DVL3 network in HNSCC.

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