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Network-based prediction of drug biomarker targets in lung cancer and brain cancer

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Abstract: Cancer leads to abnormal growth in cells and disrupts the process of a healthy cell life cycle. Many of the cancer types may now be treated to eradicate, minimize, or slowdown the impact of disease impact on patient's lives. In this work, we attempt for network-based prediction of drug-target biomarkers associated with the glioblastoma multiform brain cancer and lung adenocarcinoma. TCGA data portal was used to extract the clinical data related to both of these cancers. Drug targets and associated pathways were retrieved from DrugBank and KEGG databases. Biomarker selection is performed on the basis of hops values, that are primarily the shortest distances between one node to other nodes in a bipartite network. In this study, biomarkers are identified as the protein targets having hop values less than the four in the drug-target network. We report the HDAC1 (histone deacetylase 1) and PRKCA (protein kinase C alpha) as the potential drug targets in case of lung cancer and brain cancer, respectively.

Keywords: Brain cancer, Lung cancer, Biomarkers, Drug targets, Pathways