To extract the most common genes involved in gastric cancer, at first, we did a comprehensive exploration of genes associated with gastric carcinogenesis. Initially, we selected a total of 40 genes implicated in gastric cancer on the basis of highest number of literature resources in the Cancer Genetics Web database (<http://www.cancer-genetics.org/>). We have additionally retrieved the genes related to other types of cancer such as prostate, colon, bladder, breast and lung cancer. The interactions between GC and other cancer related genes were visualized with Cytoscape network analysis tool. Subsequently, only the genes found to be common between prostate, colon, bladder, breast, lung cancer and GC were selected to probe their interactions with one other. Following this, we utilized the GeneMania tool to reveal the representing group and their interactions with the other genes.

We have found a group of 8 gastric cancer genes (CASP3, CD44, VEGFA, MUC1, CDKN1B, KIT, PIK3CA, TP53) which are common with bladder cancer genes. These genes share a common co-expression and pathway network. Four genes namely, TP53, STK11, CDH1, and PTEN of GC were found to be linked with breast cancer as well. These four genes interacted with the breast cancer genes in a manner of co-expression, genetic interactions and pathway network. The interaction network revealed that TP53, PIK3CA, APC, MSH2, KRAS genes are common between GC and colon cancer. These genes were observed to interact in a way of co-expression, genetic interactions and co-localization network. We have identified only 2 genes (KRAS and MET) of GC which were found to be associated with lung cancer too. These two GC genes again showed interactions with lung cancer related genes in terms of co-expression, genetic interactions and pathway network. Interestingly, we have observed that there were no associations between GC genes with prostate cancer genes. By cross-referencing with all of the interactions data, we have identified 16 GC associated genes (CASP3, CD44, VEGFA, MUC1, CDKN1B, KIT, PIK3CA, TP53, STK11, CDH1, PTEN, PIK3CA, APC, MSH2, KRAS, KRAS, MET) that interacted with the genes related to other types of cancer.