

## **Supplementary Figures**

### **System analysis identifies distinct and common functional networks governed by transcription factor ASCL1, in glioma and Small Cell Lung Cancer**

Sainitin Donakonda<sup>1a</sup>, Swati Sinha<sup>1</sup>, Shrinivas Nivrutti Dighe<sup>1b</sup>, and  
Manchanahalli R Satyanarayana Rao<sup>1\*</sup>

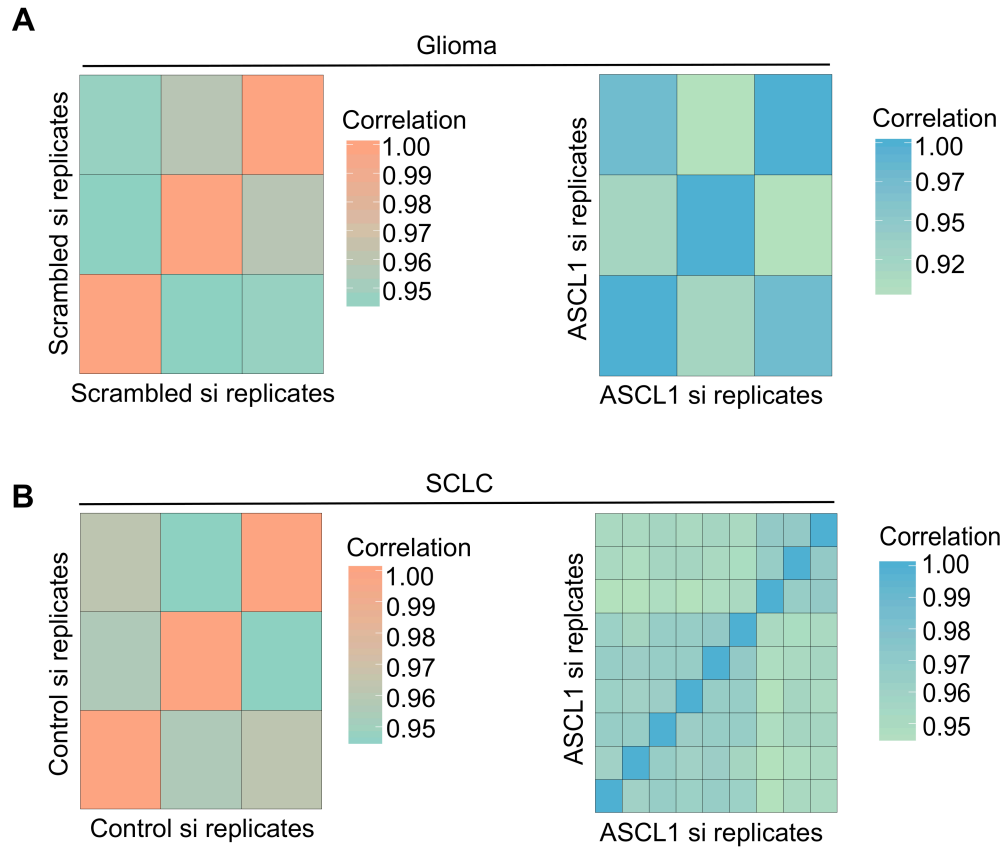
1. Chromatin Biology Laboratory, Molecular Biology and Genetics Unit

Jawaharlal Nehru Centre for Advanced Scientific Research, Bangalore-  
560064. India.

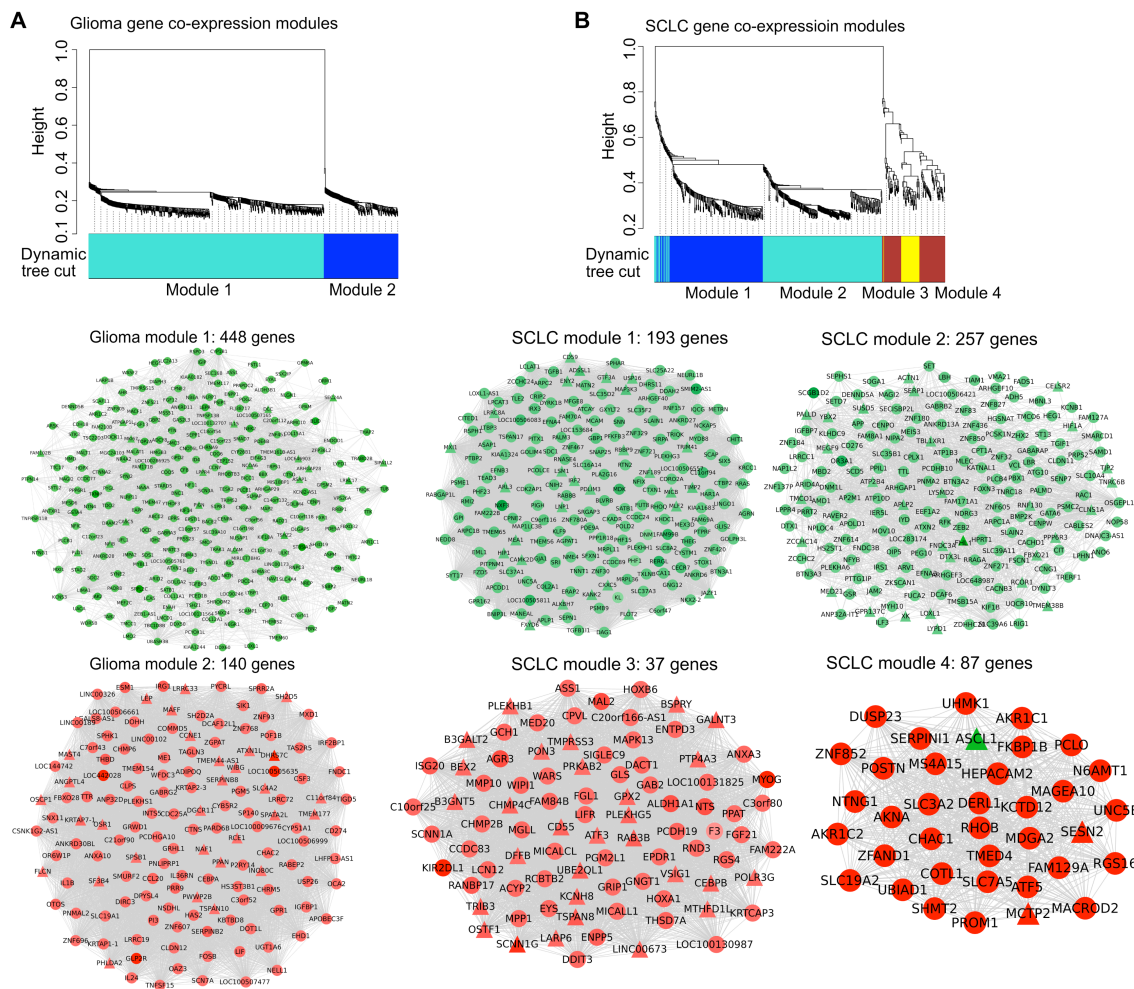
a. Present address: Institute of Molecular Immunology and Experimental  
Oncology, Technical University Munich, Munich, Germany

b. Present address: School of Biosciences, Cardiff University, The Sir Martin  
Evans Building, Museum Avenue, Cardiff, CF10 3AX, United Kingdom

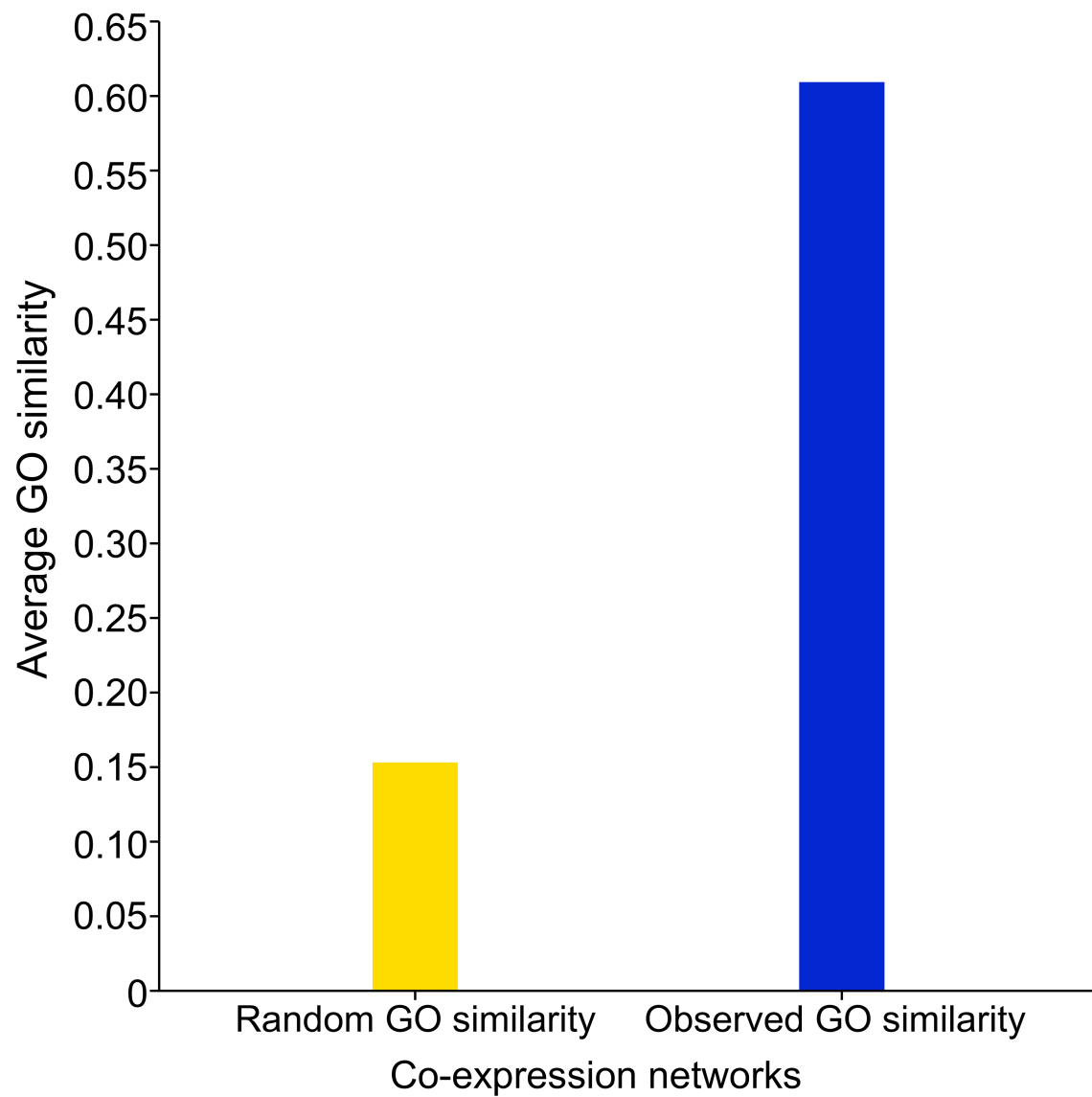
\*Corresponding author: [mrsrao@jncasr.ac.in](mailto:mrsrao@jncasr.ac.in)



**Supplementary Figure S1:** A and B) Correlation analysis of array replicates of scrambled or control si RNA and ASCL1 si RNA samples.

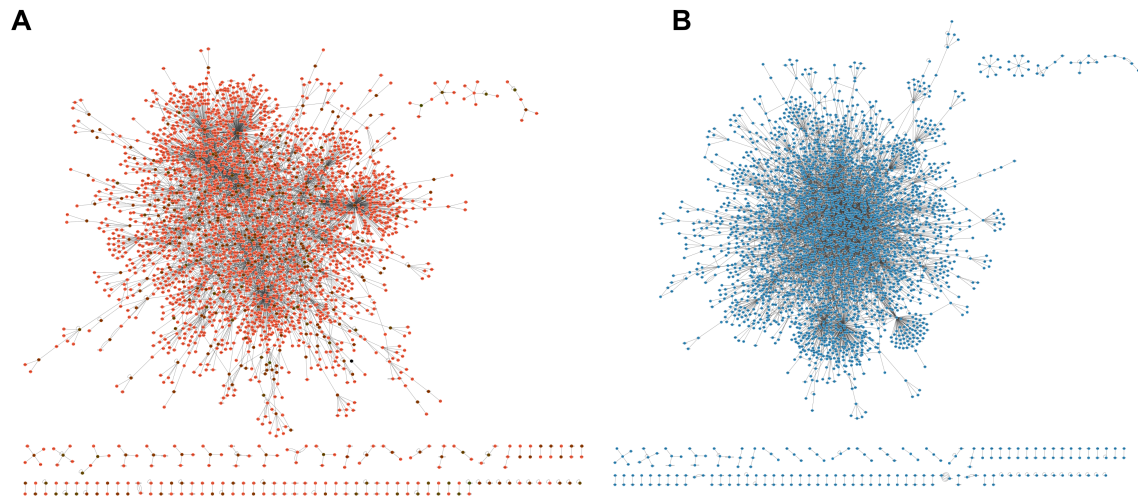


**Supplementary Figure S2: ASCL1 silenced co-expression networks in glioma and SCLC** A) Dendrogram signifies network-integrated organization into two co-expression modules: module 1 (turquoise) and module 2 (blue) from the glioma dataset. B) The dendrogram signifies network-integrated association into the four co-expression modules: module 1 (blue), module 2 (brown), module 3 (turquoise) and module 4 (yellow) from the SCLC dataset. Edges between nodes (genes) represent the correlations between them and genes are colored based on their regulation. Red color denotes up-regulated genes and green color down-regulated genes influenced by ASCL1 silencing respectively. Hub genes (top 5% kME) are indicated as diamond-shaped nodes.

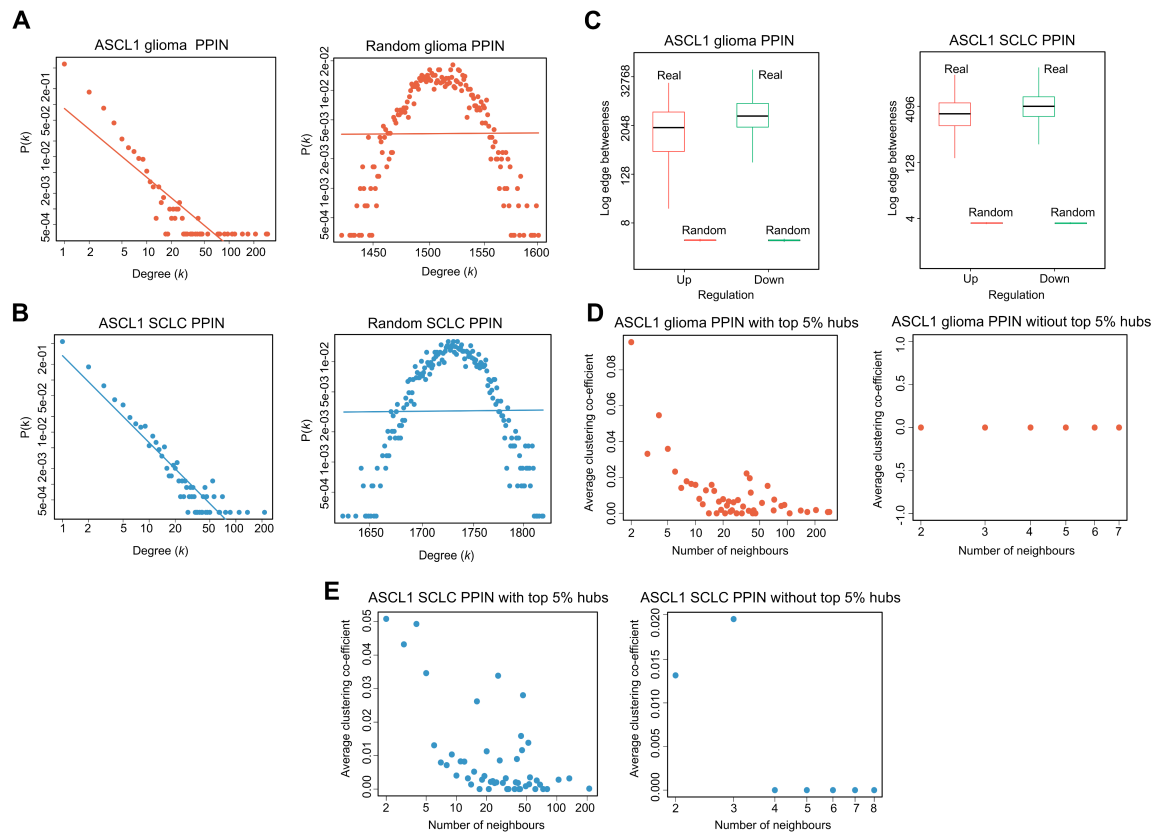


**Supplementary Figure S3:** This bar plot represents the comparison of GOSemSim scores between the random and observed co-expression modules (glioma and SCLC).

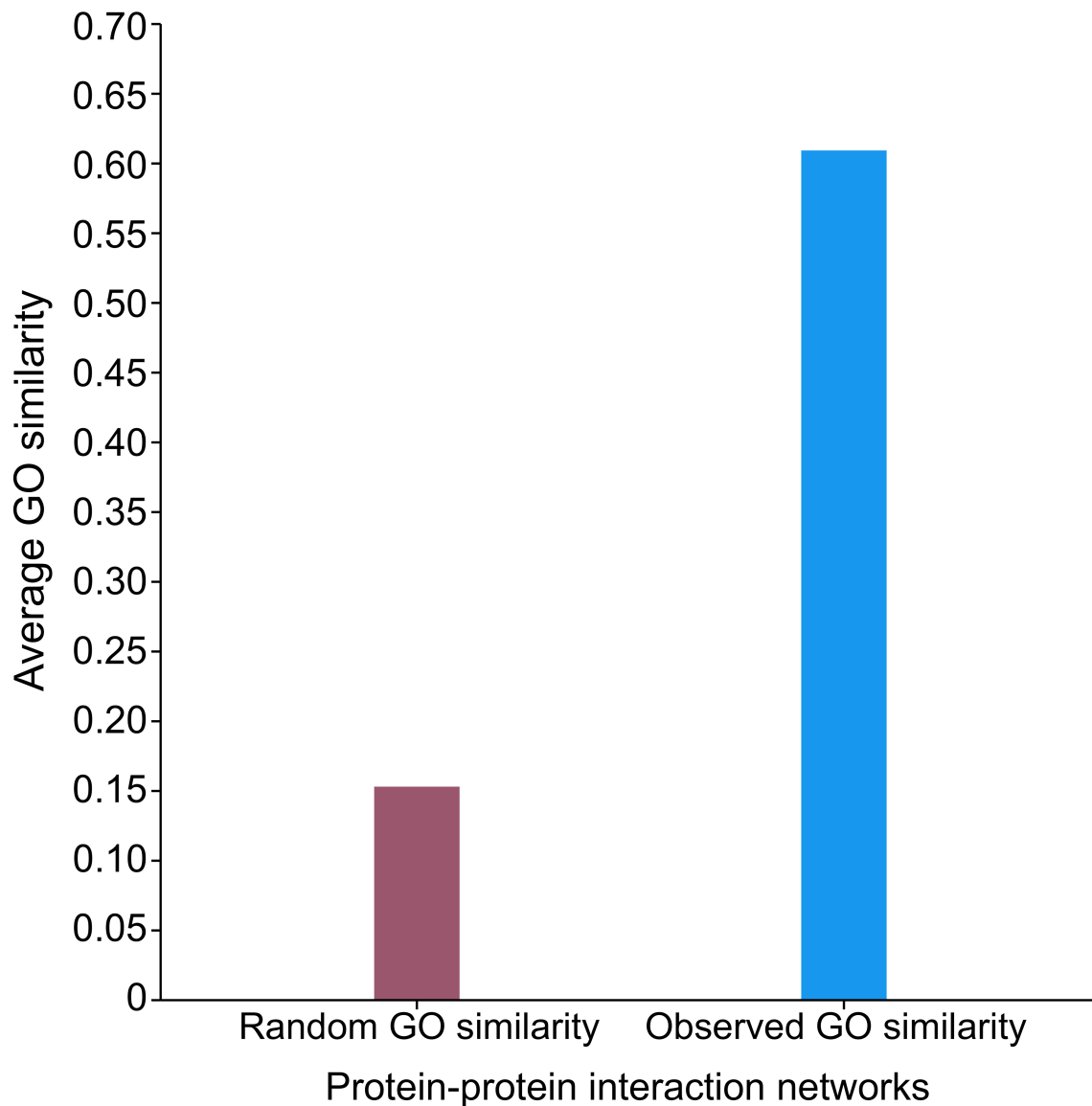




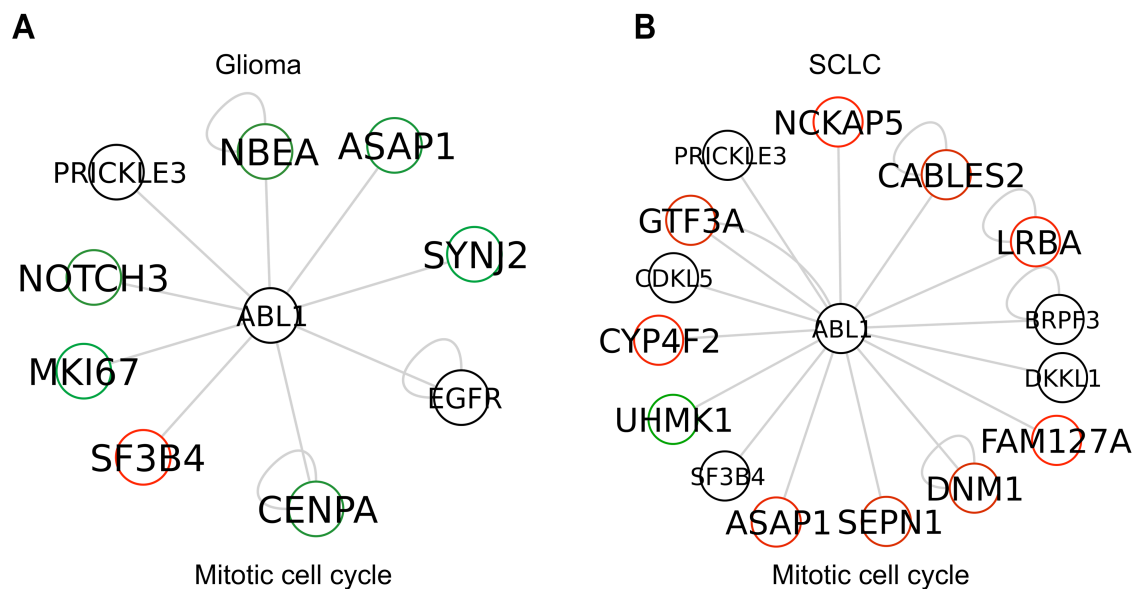
**Supplementary Figure S4:** Protein-Protein interaction networks regulated by ASCL1 in glioma and SCLC cells. A and B) Protein network of differentially regulated genes upon *ASCL1* silencing in glioma and SCLC are visualized using the Cytoscape v3.1. The circle represents a protein and black edge connecting two proteins indicates interaction between the proteins.



**Supplementary Figure S5:** Topological analysis of ASCL1 regulated protein networks in the glioma, SCLC. A) Node degree distribution plotted against the number of nodes in ASCL1 glioma (left) and random network (right).  $P(k)$  is the number of proteins with  $k$  links. B) Node degree distribution compared against the number of nodes in ASCL1 SCLC (left) and random network (right).  $P(k)$  is the number of proteins with  $k$  links. C) Boxplot on left side signifies the edge betweenness between the ASCL1 glioma-specific up (red) and down (green) regulated networks. Down-regulated protein network has high edge betweenness (Wilcoxon test  $p$ -value= 0.002674) when compared to up-regulated network. Boxplots on right side represents the edge betweenness between the ASCL1 SCLC specific up (red) and down (green) regulated networks. Down-regulated protein network has high edge betweenness (Wilcoxon test  $p$ -value=  $2.2 \times 10^{-16}$ ) when compared to up-regulated network. These plots confirm that down-regulated network consists of intermodular interactions. The edge betweenness of ASCL1 specific protein networks (up and down) are considerably higher than random protein networks. D and E) Average clustering coefficient distribution in ASCL1 glioma and SCLC (left) and after removal top 5% hubs (right).



**Supplementary Figure S6:** This bar plot represents GOSemSim scores between the random and observed protein-protein interaction networks (glioma and SCLC).



**Supplementary Figure S7:** Protein-Protein interaction sub networks regulated by ABL1 in glioma and SCLC cells. Red and green node border colors represent the up and down regulation upon ABL1 silencing in glioma and SCLC respectively.