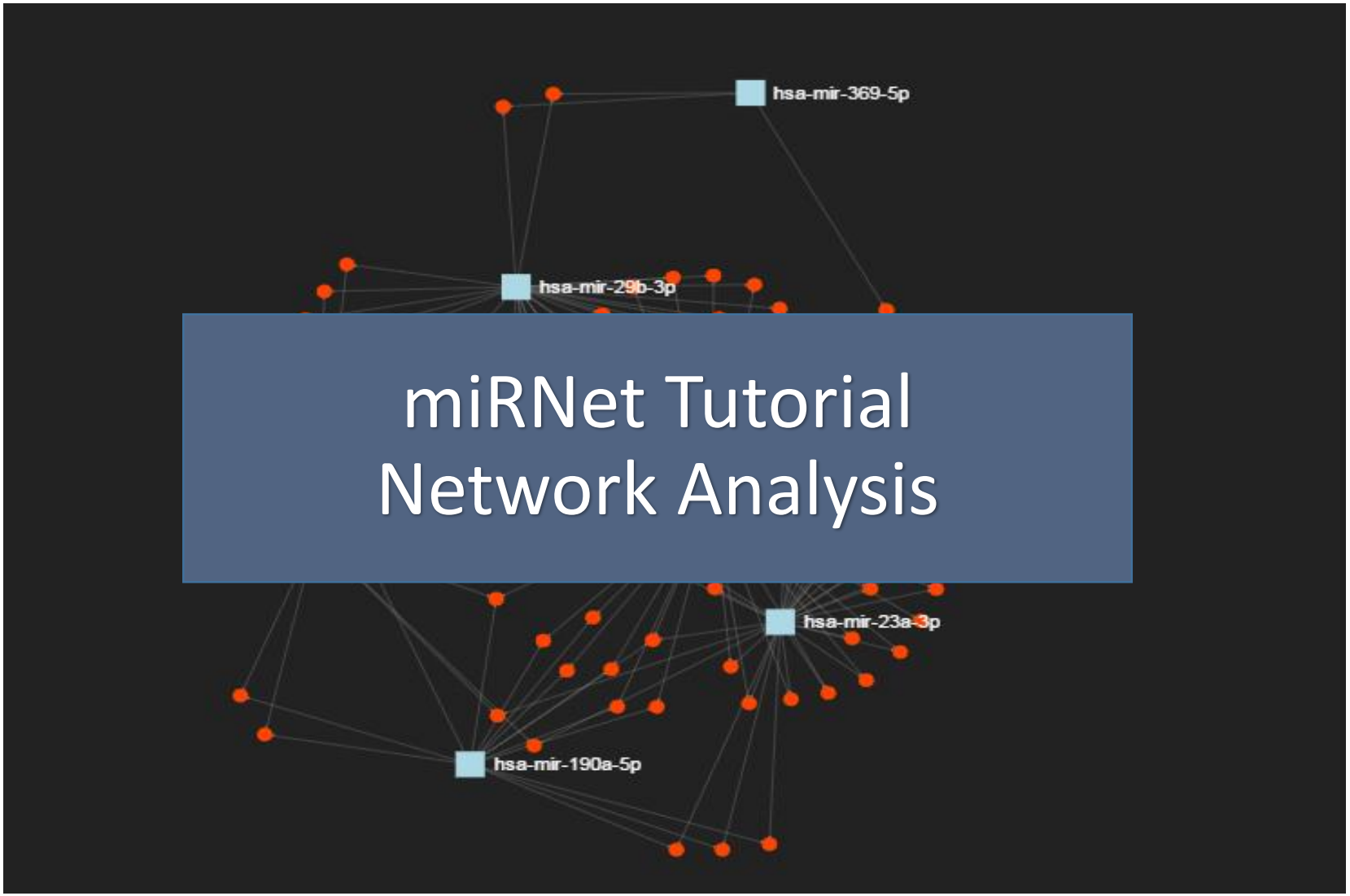
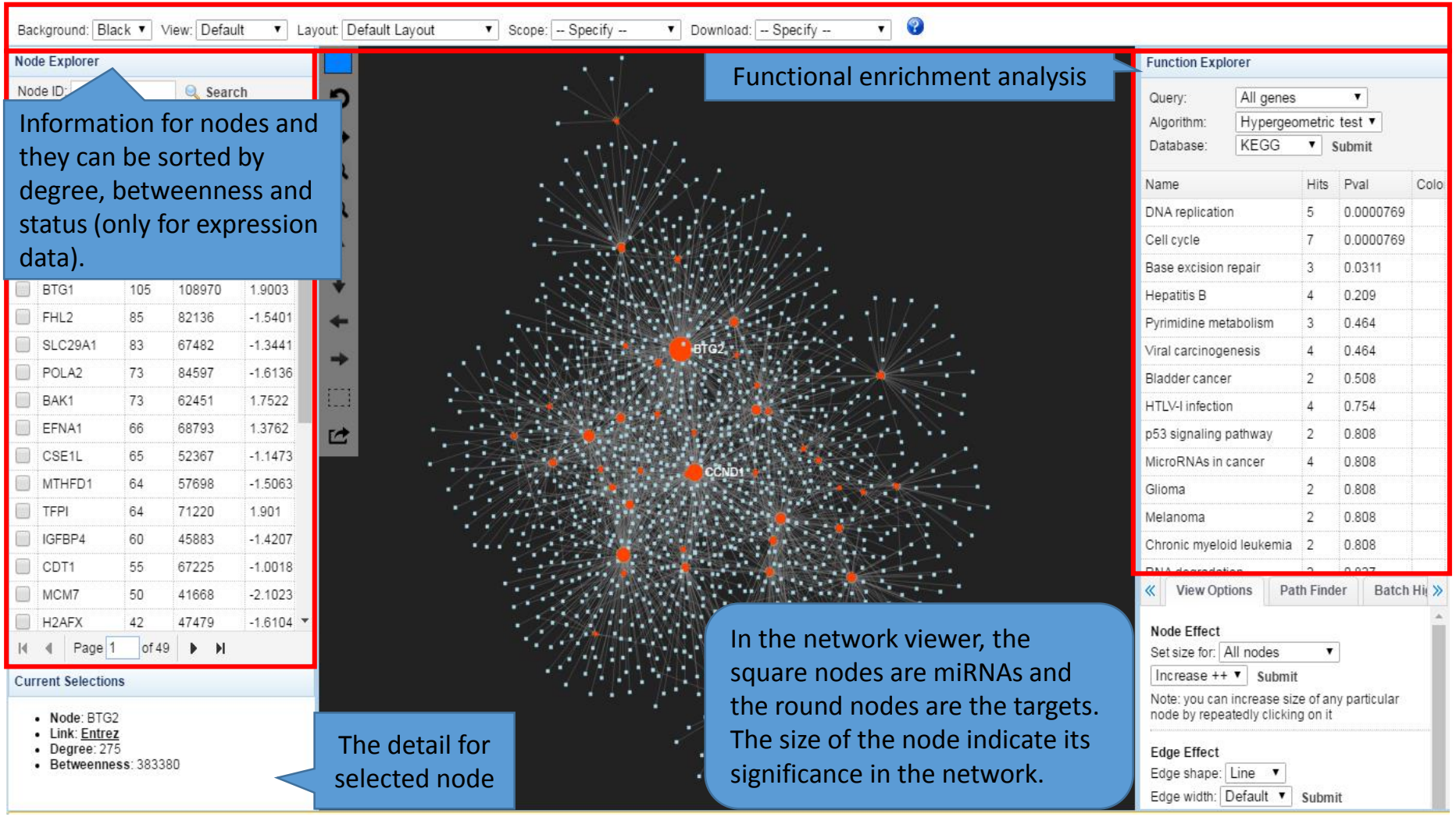


miRNet Tutorial
Network Analysis

Goal for this tutorial

- Understand the main features of network viewer;
- Perform functional enrichment analysis according to the result network.

Understanding the Network Viewer



Choose different algorithms

- **Hypergeometric tests :**

Using the hypergeometric distribution to measure the statistical significance of those genes are identified from the miRNA target analysis.

- **Unbiased Empirical tests (only for miRNA):**

Being used to estimate the null distribution of the target genes as selected based on the input miRNAs. The procedures can be divided into three steps:

1) A list of miRNAs of the same size are randomly selected from all the miRNAs with known targets in the database;

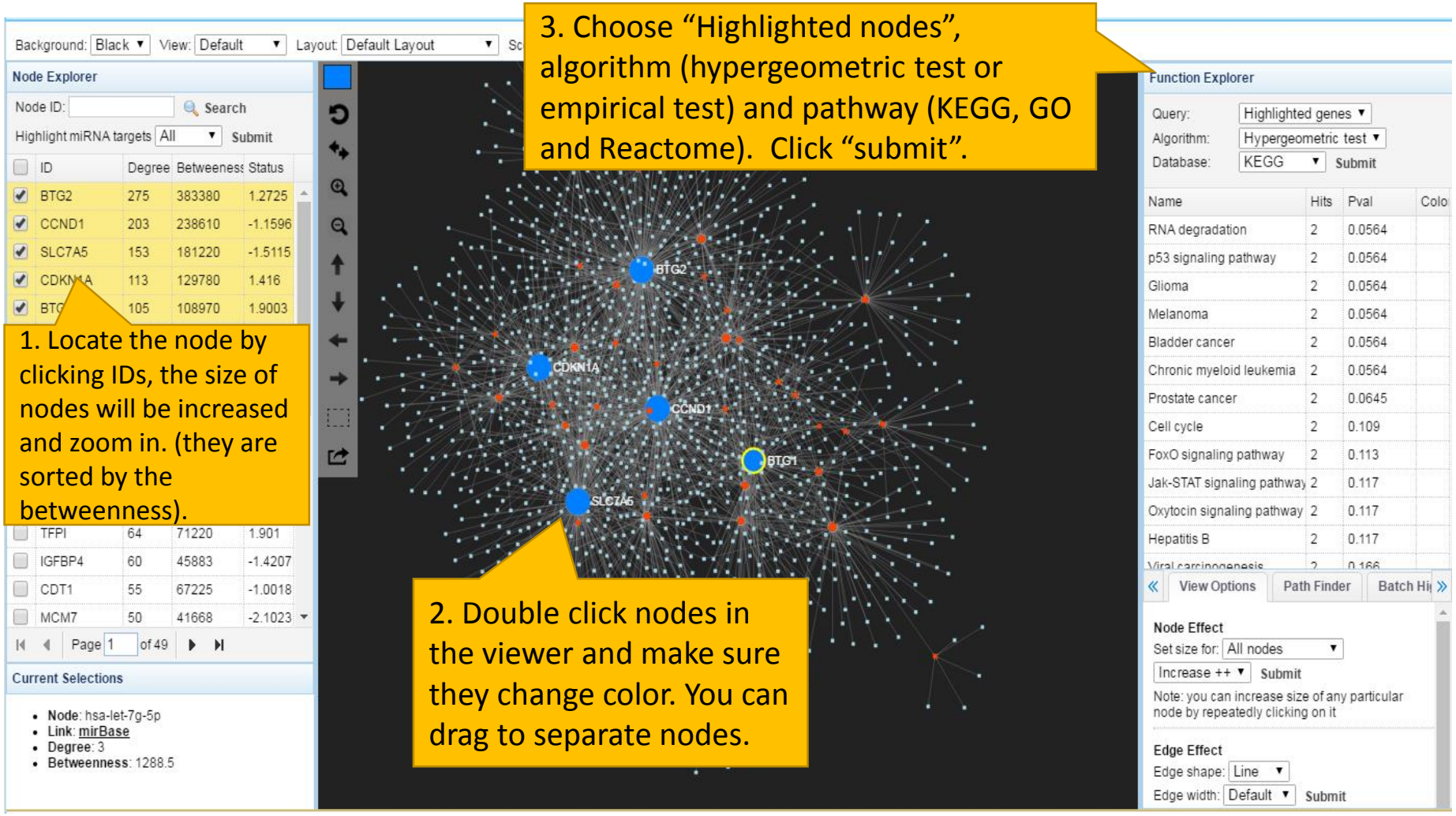
2) The functional annotations (i.e. GO or KEGG) are then performed for the list;

3) The process is repeated 1000 times (default);

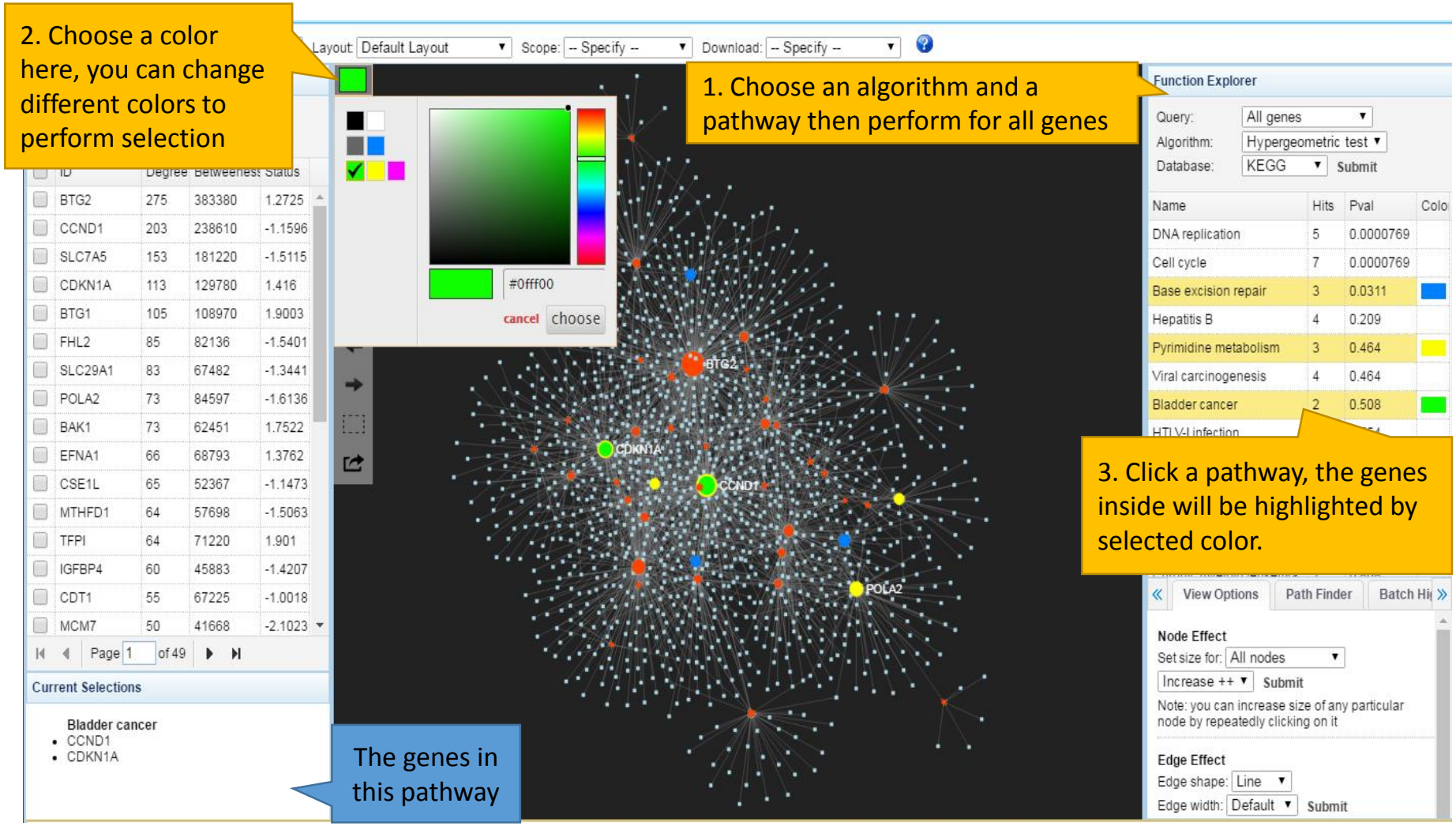
4) Compare the hits in each GO or KEGG pathways and the empirical p (Emp. p) values are calculated as the proportion of overlaps (with pathways or GO) from 1000 random process that equal or larger than the original.

5) User can perform the functional analysis again under the same parameters, the results will be combined. i.e. clicking five times will generate empirical p values based on 5000 random samplings.

Enrichment analysis by highlighting nodes

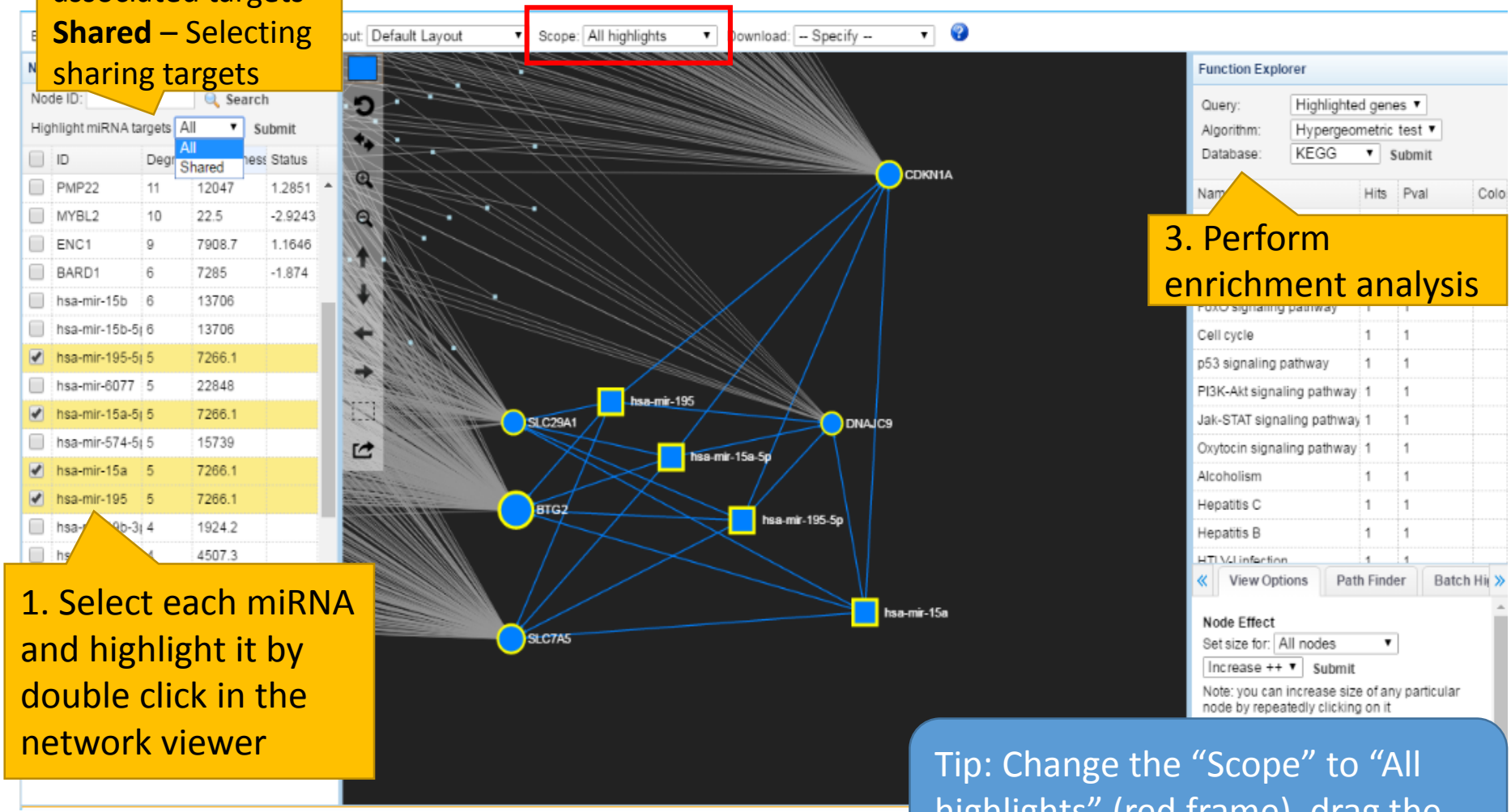


Enrichment analysis by selecting pathway



Enrichment analysis by associated targets

2. **All** – Selecting all associated targets
Shared – Selecting sharing targets

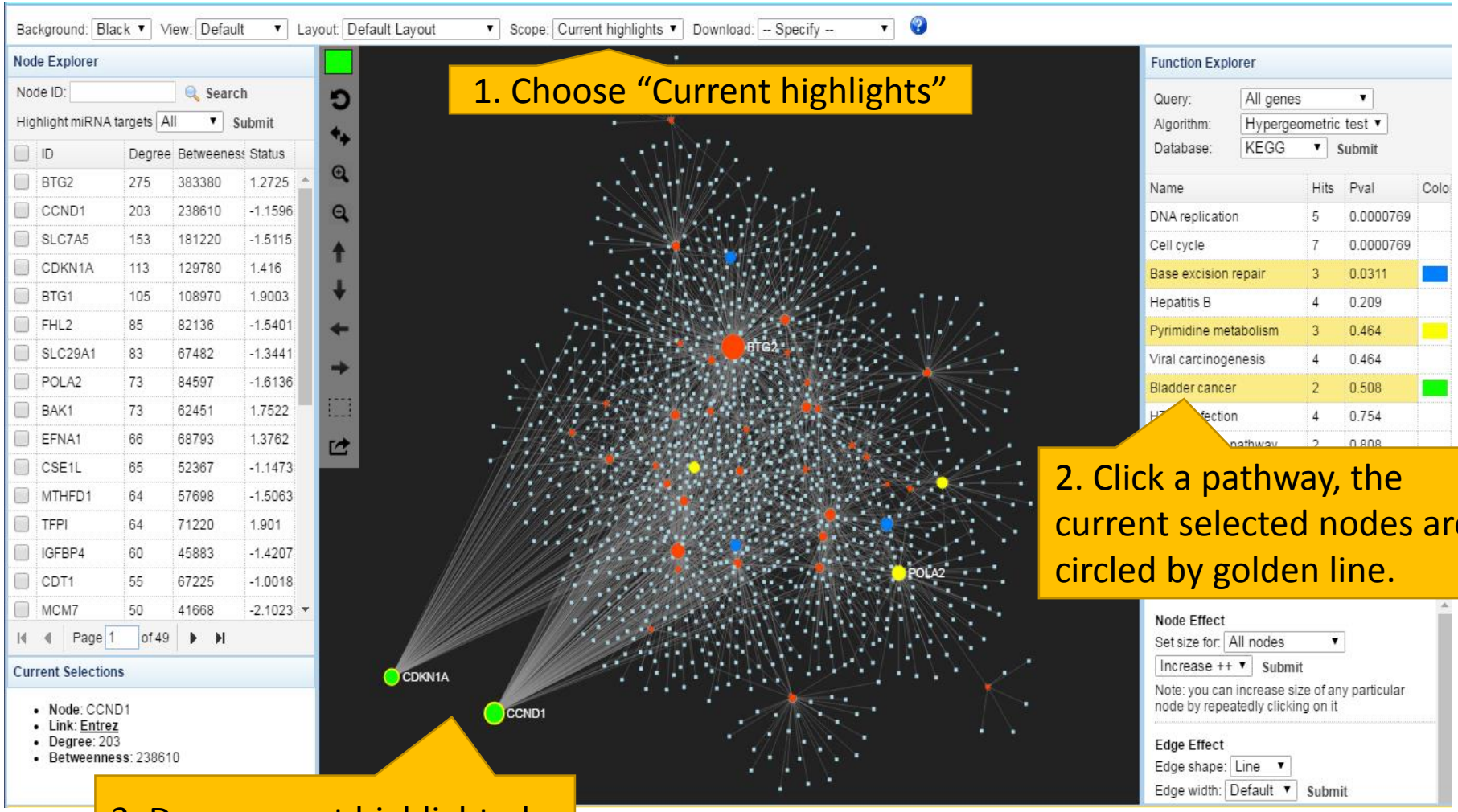


1. Select each miRNA and highlight it by double click in the network viewer

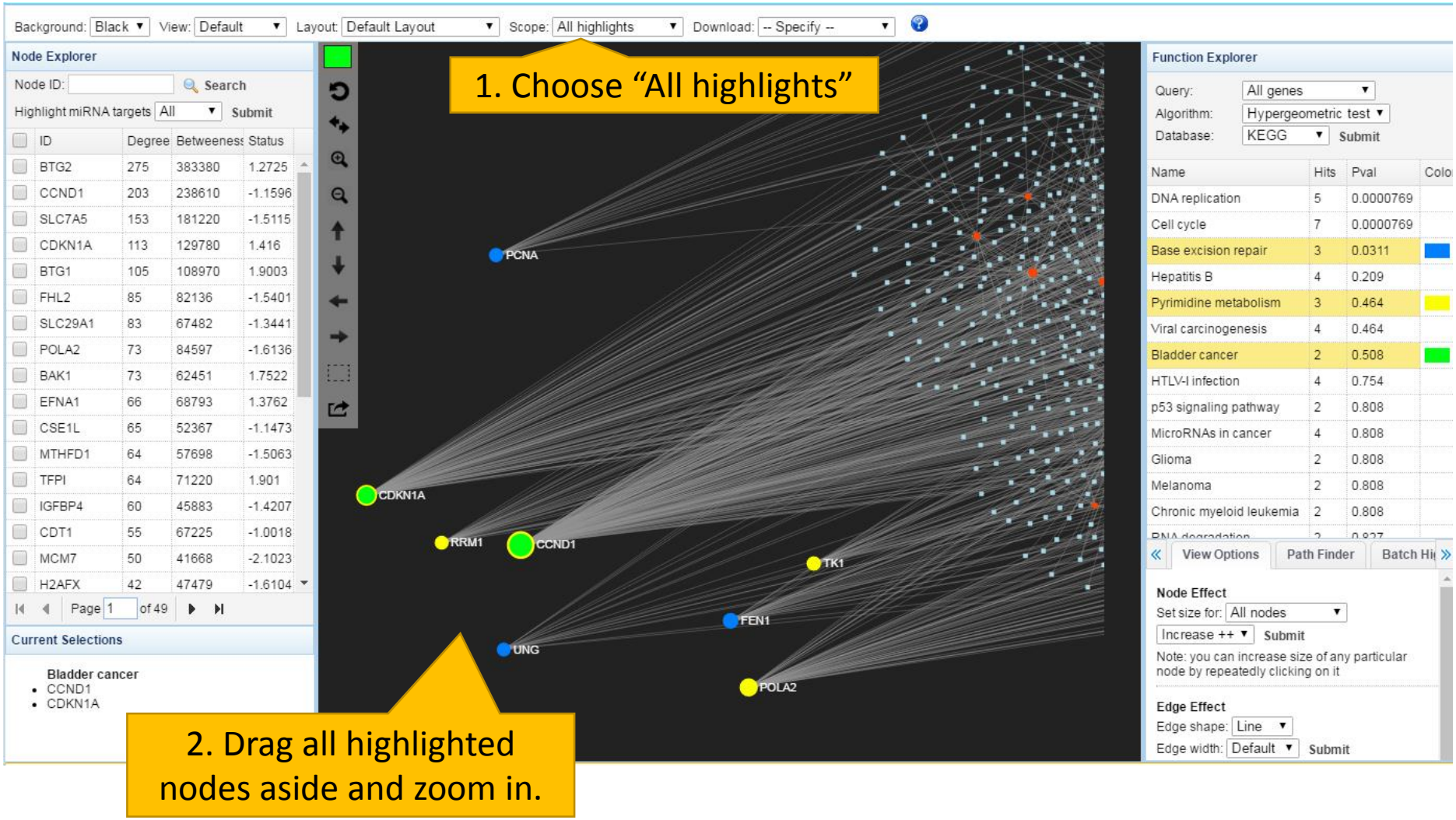
3. Perform enrichment analysis

Tip: Change the “Scope” to “All highlights” (red frame), drag the whole group aside and zoom in.

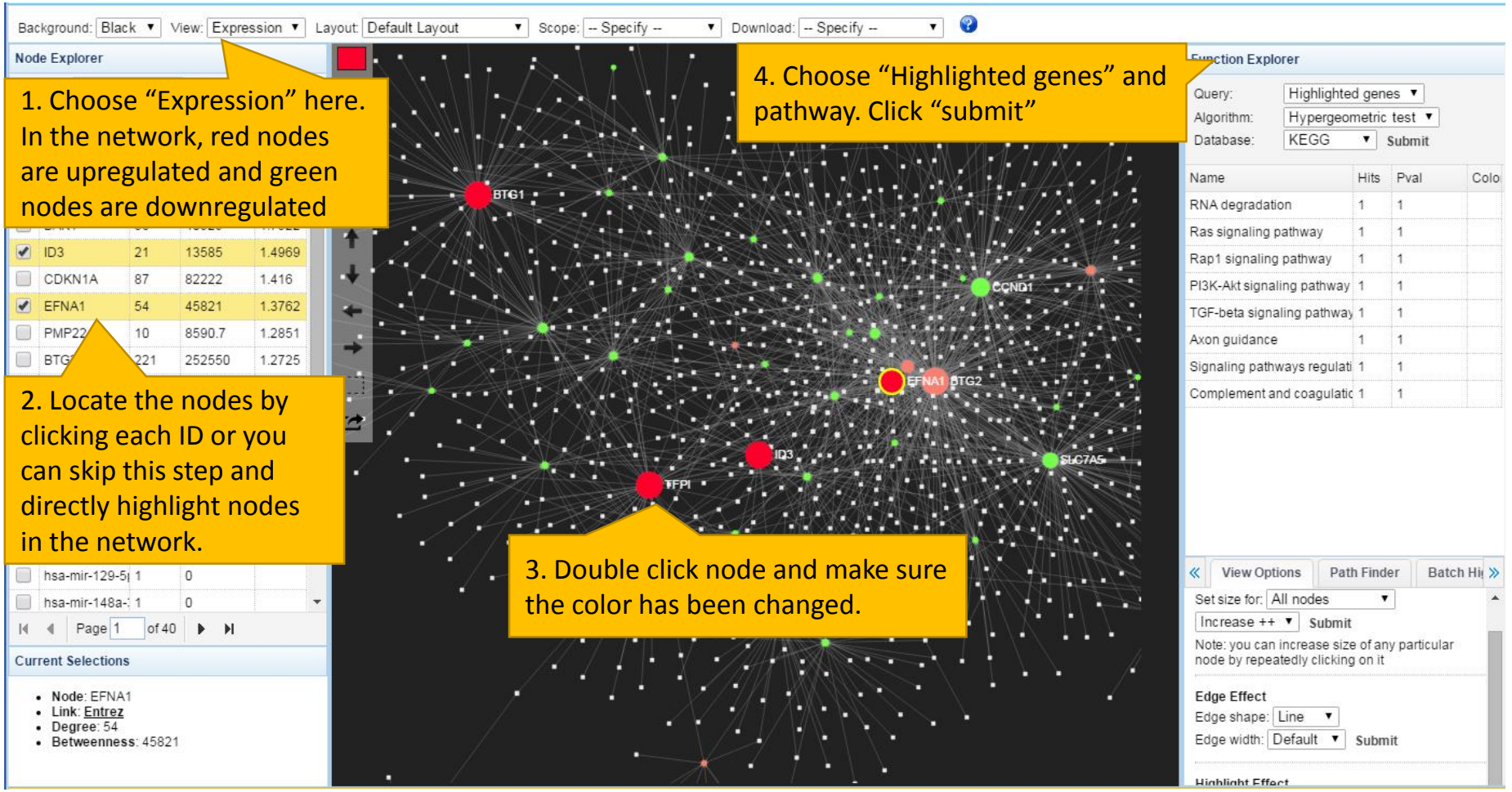
Dragging nodes-Current highlights



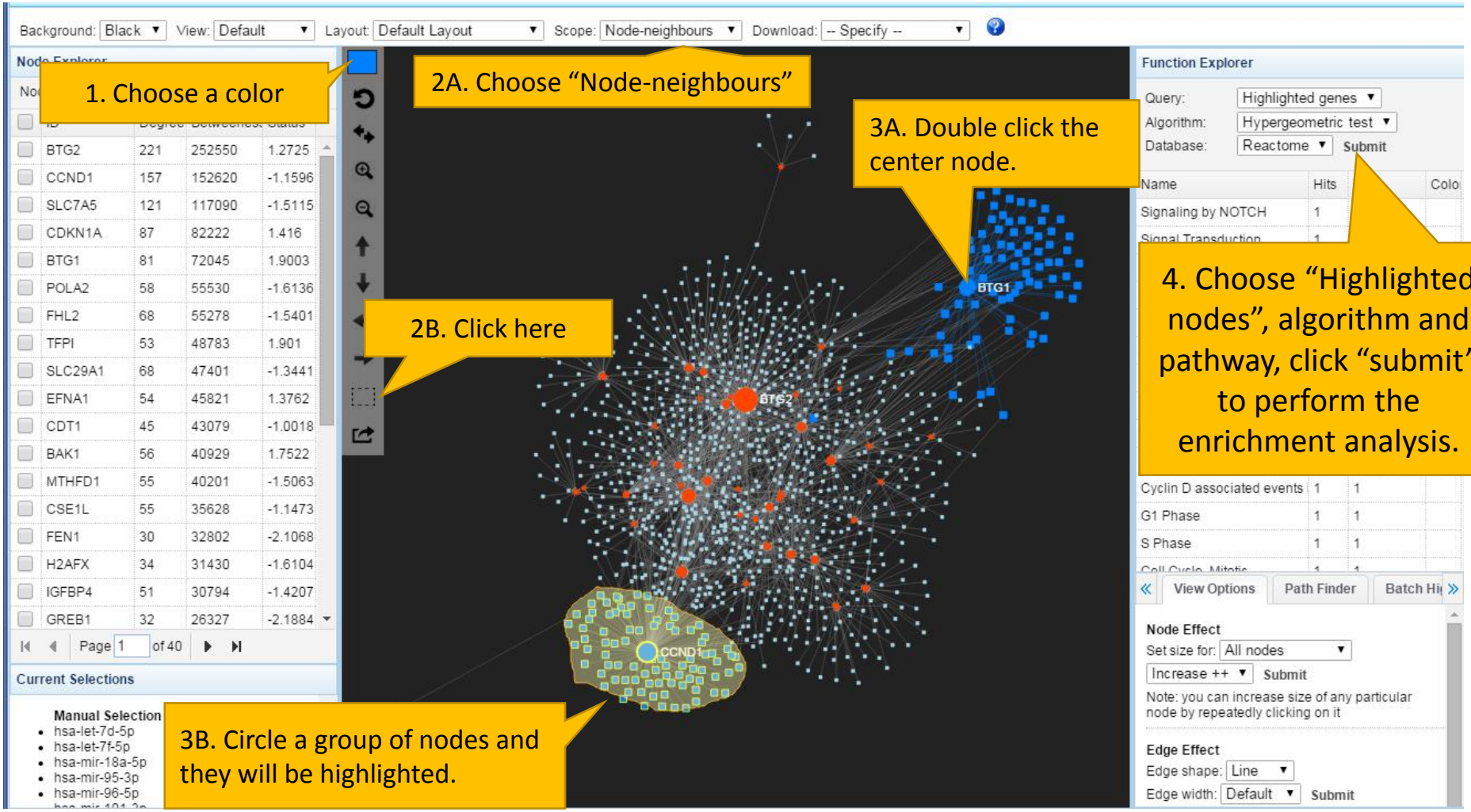
Dragging nodes-All highlights



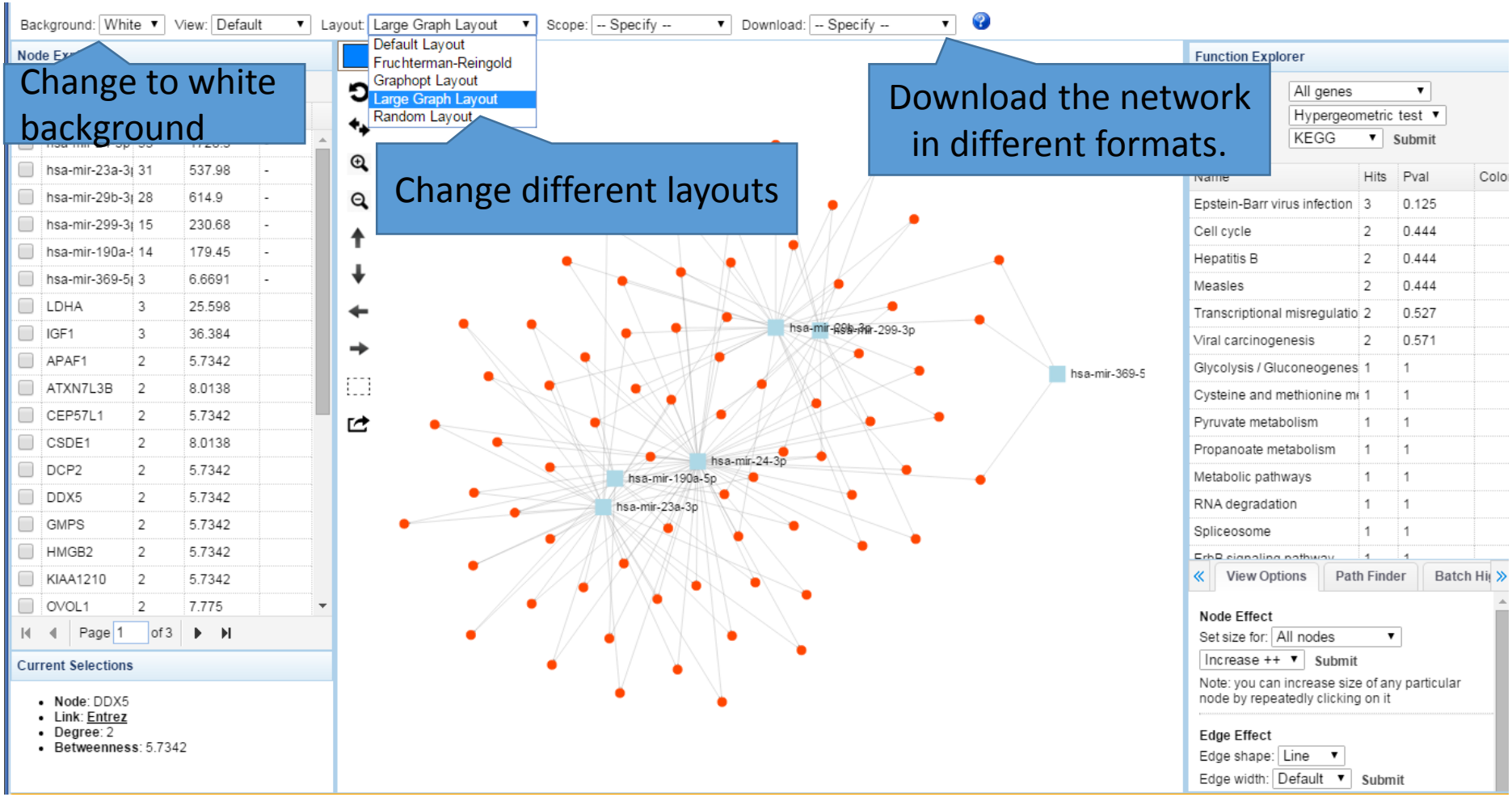
Expression analysis in network



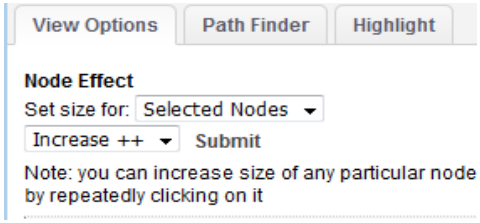
Selecting a group in the network

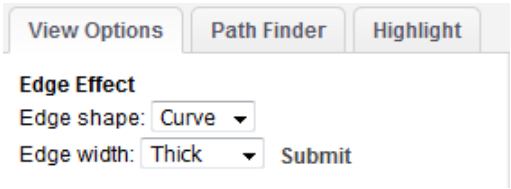


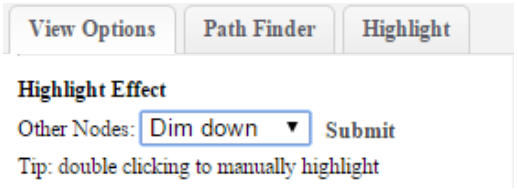
Configuring the general visualization feature

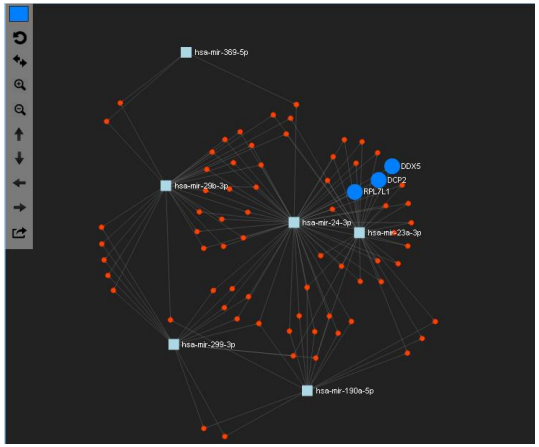


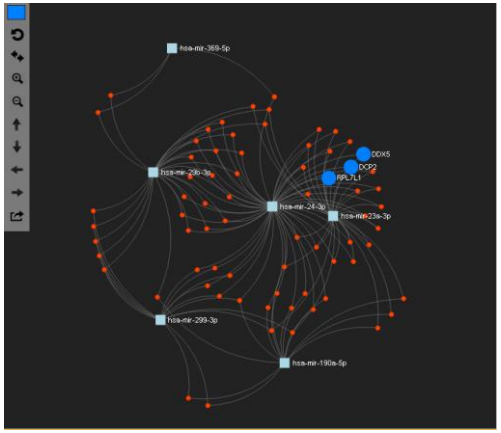
View Options

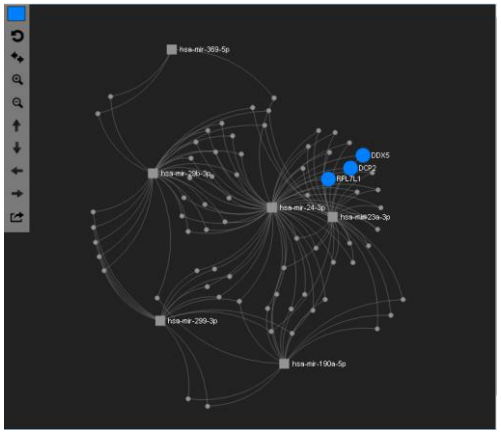












Node Effect: adjust the node size. You can increase or decrease the nodes.

Edge Effect : change the edge shape as curve or line. And the edge width as thin, medium and thick

Highlight Effect : for other nodes you can choose dim down or hide.

==END==