Xeno-miRNet tutorial

Network creation
Goal for this tutorial

- Perform data filtering on the interaction table
- Perform nodes management on the original network
Initial interaction table

Perform data filter to keep higher confident results (see more details in next slide)

Search corresponding column by keywords

Target score by miRanda (140-200) and TarPmiR (0.5-1)

Click “proceed” to the network builder

You can use the Data Filter to filter the results based on the miRanda scores (140-200) and TarPmiR probability (0.5-1).

<table>
<thead>
<tr>
<th>Source</th>
<th>Xeno-Species</th>
<th>miRNA</th>
<th>Link</th>
<th>Host gene</th>
<th>Link</th>
<th>Expression</th>
<th>miRanda</th>
<th>TarPmiR</th>
<th>Reference</th>
<th>Action</th>
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<tr>
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<td>miRBase</td>
<td>CFH</td>
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</tbody>
</table>
Perform data filtering

• **Step 1** : Choose a “target column” which you want to perform the filter.

• **Step 2** : Choose the filter option, “Matching” is filtering by the exact words, “Containing” is filtering by keywords, “At least” is filtering by expression level or predicted score.

• **Step 3** : Input the keywords and perform the filtering to keep or remove.
Optimizing network data

Summary for the nodes of the network

The details for each network (if there are more than one network)

Optimizing network by using network tools (see the next slide for more details)

Click to the network viewer page
The degree of a node is the number of connections it has to other nodes. Nodes with higher node degree act as hubs in a network.

- **Degree cutoff**: default 1.0, the minimal degree you want to choose.
- **All network nodes**: default option, choose all nodes in the network.
- **miRNA nodes only**: the degree filter will only perform in miRNA nodes.
- **All but miRNA nodes**: the degree filter will perform to other nodes except miRNA.
- **None**: Do not perform the filter.
Network tools – betweenness filter

The **betweenness centrality** measures the number of shortest paths going through the node. It takes into consideration the global network structure. For example, nodes that occur between two dense clusters will have a high betweenness centrality even if their degree centrality values are not high.

- **Degree cutoff**: default 0.0 (all nodes), the minimal betweenness you want to choose.
- **All network nodes**: default option, choose all nodes in the network.
- **miRNA nodes only**: the betweenness filter will only perform in miRNA nodes.
- **All but miRNA nodes**: the betweenness filter will perform to other nodes except miRNA.
- **None**: Do not perform the filter.
Network tools – shortest path filter

➢ **Shortest Path Filter**: If there are multiple paths that can link two nodes together, only one shortest path will be chose to reduce dense networks.

- **All network nodes**: default option, choose all nodes in the network.
- **miRNA nodes only**: the filter will only perform in miRNA nodes.
- **All but miRNA nodes**: the filter will perform to other nodes except miRNA.
- **None**: Do not perform the filter.
==END==