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# GNC - User Guide

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Using graph theory to  
analyze gene networks  
coherence

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# Introduction

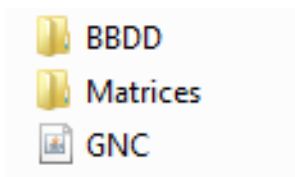
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This manual aims to provide basic knowledge for any user, regardless of their computer skills, to be able to use the GNC.

GNC is an app that allows the user to obtain a coherence measure of a gene network. This approach analyzes the networks based on graph theory and calculates a quantitative measure of its coherence based on well-known stored data.

GNC is distributed as below:

- ❖ *GNC.jar*: The main file. An executable to run our app.
- ❖ *BBDD, Matrices*: Two necessary folders which are used to support the program.



## Requirements and installation

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In order to run the app, it is necessary to install an updated version of Java which can be downloaded from their website (<http://www.java.com>).

GNC is compressed as a “.zip” file. It is necessary an app to decompress it.

On the other hand, GNC software is parallelized using threads. If your computer allows multi-threading operation, result will be showed in a shorter period of time.

# Use of GNC

To launch the app you must do a double click in “GNC.jar”. **Please, ensure that “BBDD” and “Matrices” folders are in the same directory that GNC.jar** (More info in Troubleshooting).

The next windows will be opened:

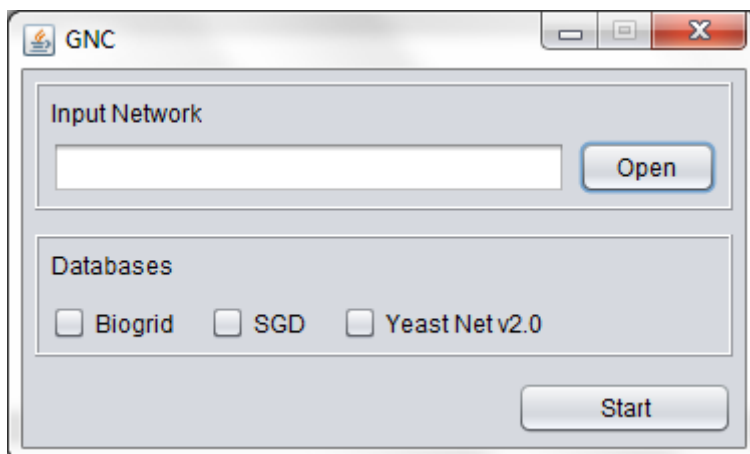
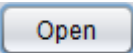


Figure 1 – Main window

This is the main windows of GNC. It can be split in tree part:

- ❖ At the top, we can choose the input network that will be measured. To choose it, you must click  and find in your computer the file. **Please, ensure that input network file is built correctly** (More info in Troubleshooting). At this point the text area is filling with the absolute path of the selected file.

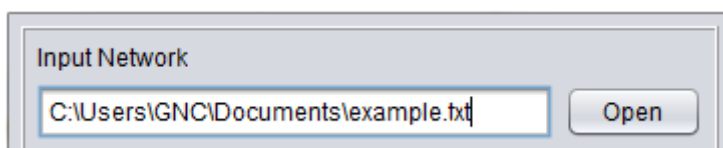


Figure 2 - Path of an Input Network

- ❖ When a file is chosen, the next step is to select the well-known data. In this part of the program, we can select between tree databases which are “Biogrid”, “SGD” and “Yeast Net v2.0”. **Please, ensure that at least one database is selected before start.**

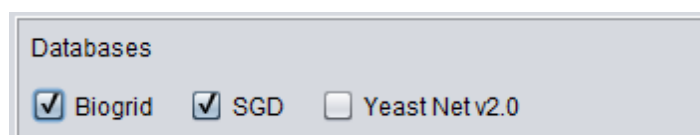


Figure 3 - Example of databases selection step

- ❖ Finally, push button .

*“As mentioned before, depends on the technical specifications of your computer and the size of the input network file, the duration of the process will be different.”*

- ❖ Once finished the execution part, for each database selected a new windows will be appear. This window offer information about coherence measure of an input network with the selected database.

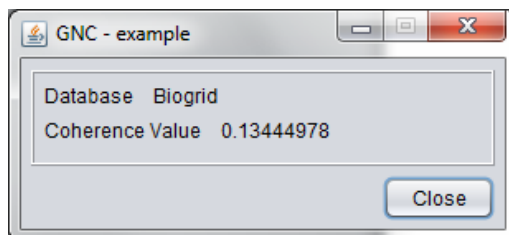


Figure 4 - Example input network againsts Biogrid database

## Troubleshooting and F.A.Q.

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Below is a list of common user mistakes when using the app as well as tips on how to avoid them.

- ❖ **Be patient.** Although this program is fully optimized, usually it takes a long time.
- ❖ **Input network files must be a “.txt” file and it must have the following aspect.**
  - Node1,Node2
  - Node1,Node3
  - ...
  - Node1,Node N
  - ...
  - Node N, Node M

```
YLR210W,YDR054C
YLR210W,YGR109C
YLR210W,YAL040C
YPR120C,YPL256C
YPR120C,YGL116W
YGR109C,YMR199W
YGR109C,YPR119W
YGR109C,YPL256C
YMR043W,YPL256C
YMR043W,YGL116W
```

Figure 5 - An Example of input network structure

- ❖ **An input network without data will be represented with coherence value of 1.** Furthermore, this fact will be appearing if the file does not perform the previous structure.
- ❖ **GNC works using 2 necessary folders, “BBDD and Matrices”.** If both folders are not included with the jar file, an error message will be appear. Under no circumstances shall be modified.