

# SAMBA's Viewer

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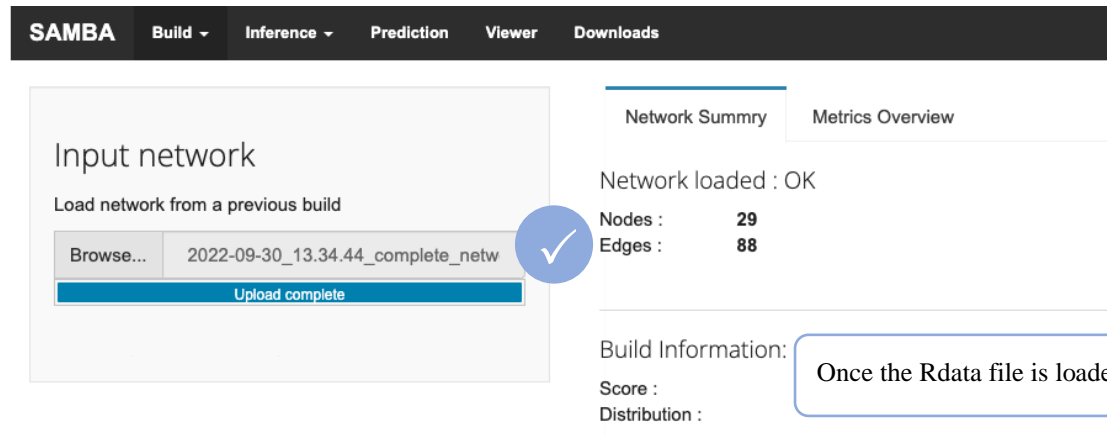
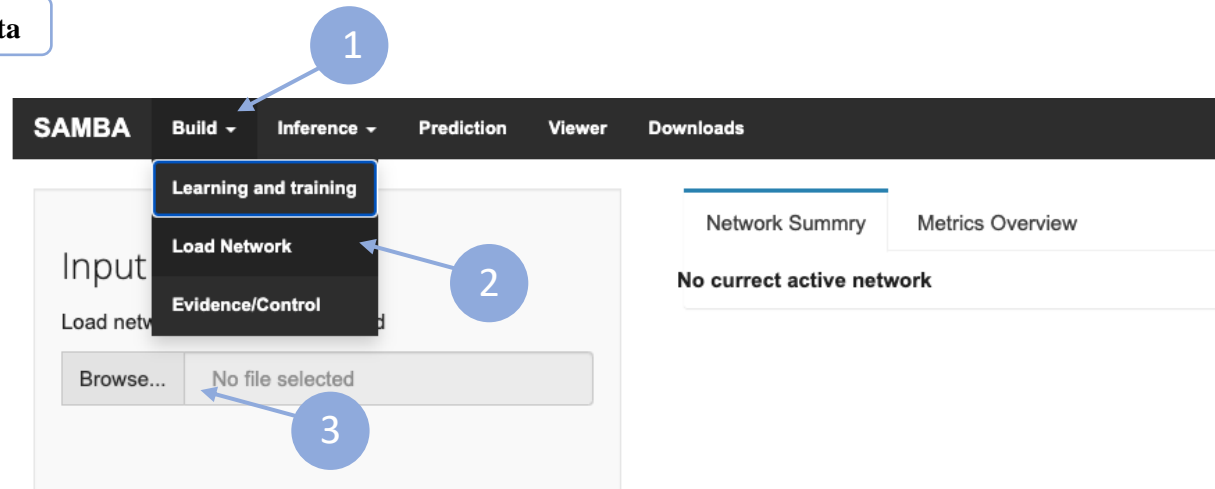
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## 1. Network generation

### 1 Load the network data



## 2 Network generation

The screenshot displays the SAMBA application interface. At the top is a dark navigation bar with the following items: 'SAMBA', 'Build' with a dropdown arrow, 'Inference' with a dropdown arrow, 'Prediction' with a dropdown arrow, 'Viewer' (which is highlighted with a blue circle and the number 1), and 'Downloads'. Below the navigation bar, the text 'Network:' is followed by the message 'Network loaded successfully, Refresh to view the it.' To the right of this message are two buttons: 'Refresh' (with a circular arrow icon) and 'Close' (with an 'x' icon). A blue circle with the number 2 points to the 'Refresh' button. A horizontal line is positioned below the message and buttons.


**SAMBA** Build ▾ Inference ▾ Prediction ▾ **Viewer** Downloads

Network:  
Network loaded successfully, Refresh to view the it.

Refresh × Close

### 3 Network visualization and manipulation

**A**



**B**

Label editing

**C**

Edit:

- > Nodes <
- > Edges <
- > Physics <

Select:

- > Select menu <

Filter:

- > Filter menu <
- > Filter by subgraphs <

**D**

Nodes Edges

Select an option to emphasize or show only selected nodes

☐ Emphasize ☒ Recorder (selected first)

☐ Show all

Show: 10 entries

	id	label
	All	All
1	additive	additive
2	Experiments	Experiments
3	PM	PM
4	PD	PD
5	parasite	parasite
6	season	season
7	T	T
8	T164	T164
9	T185	T185
10	T328	T328

Showing 1 to 10 of 29 entries

Previous 1 2 3 Next

**E**

Node info

Double click on a node to display the information.

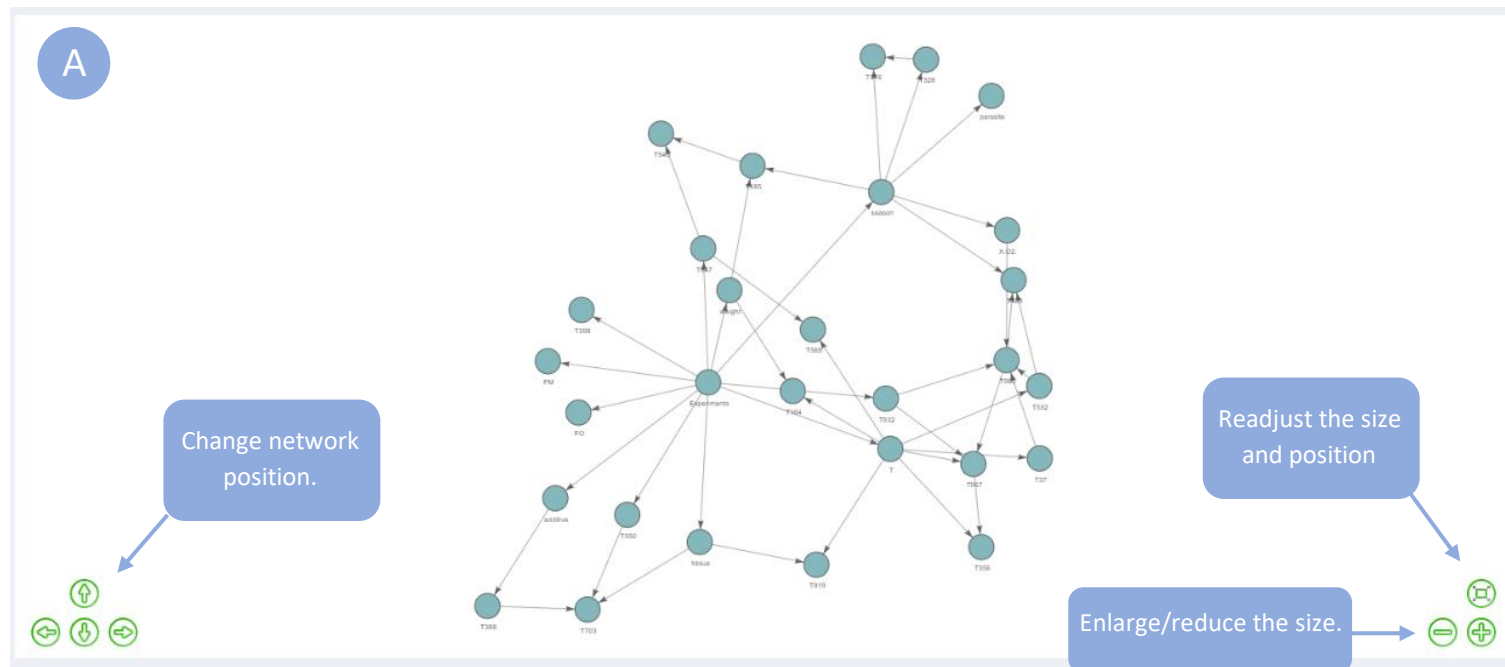
Edge info

Double click on an edge to display the information.

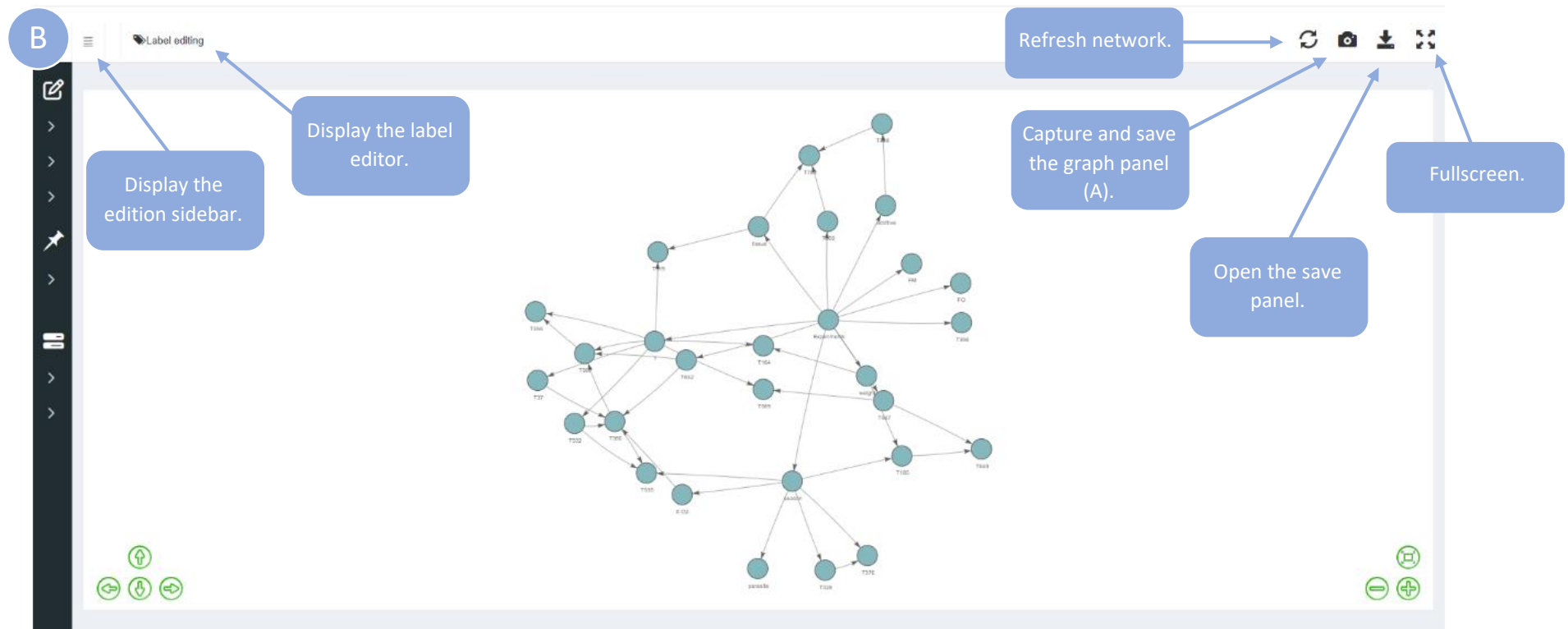
## 2. Network visualization and manipulation

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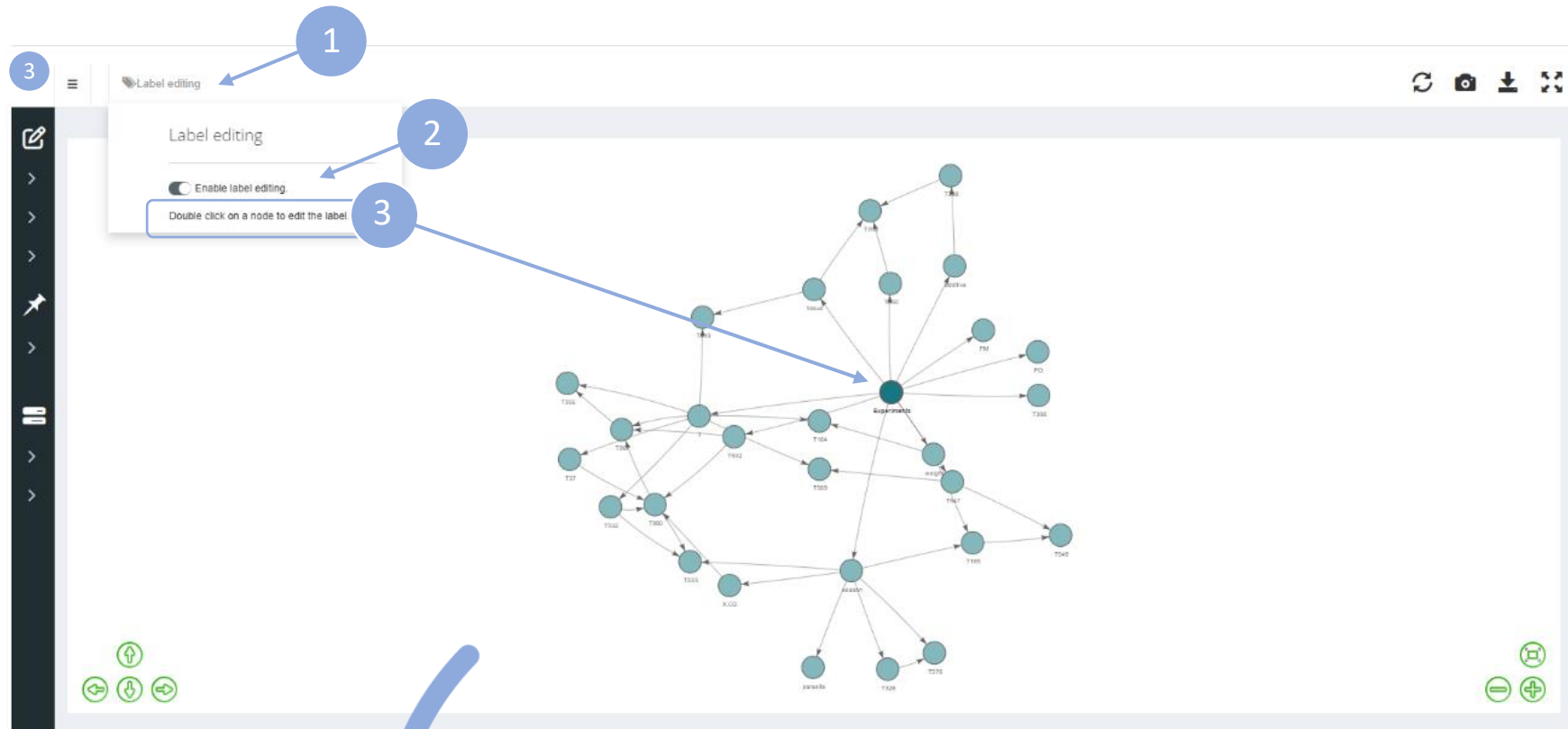
### (A) Graph panel

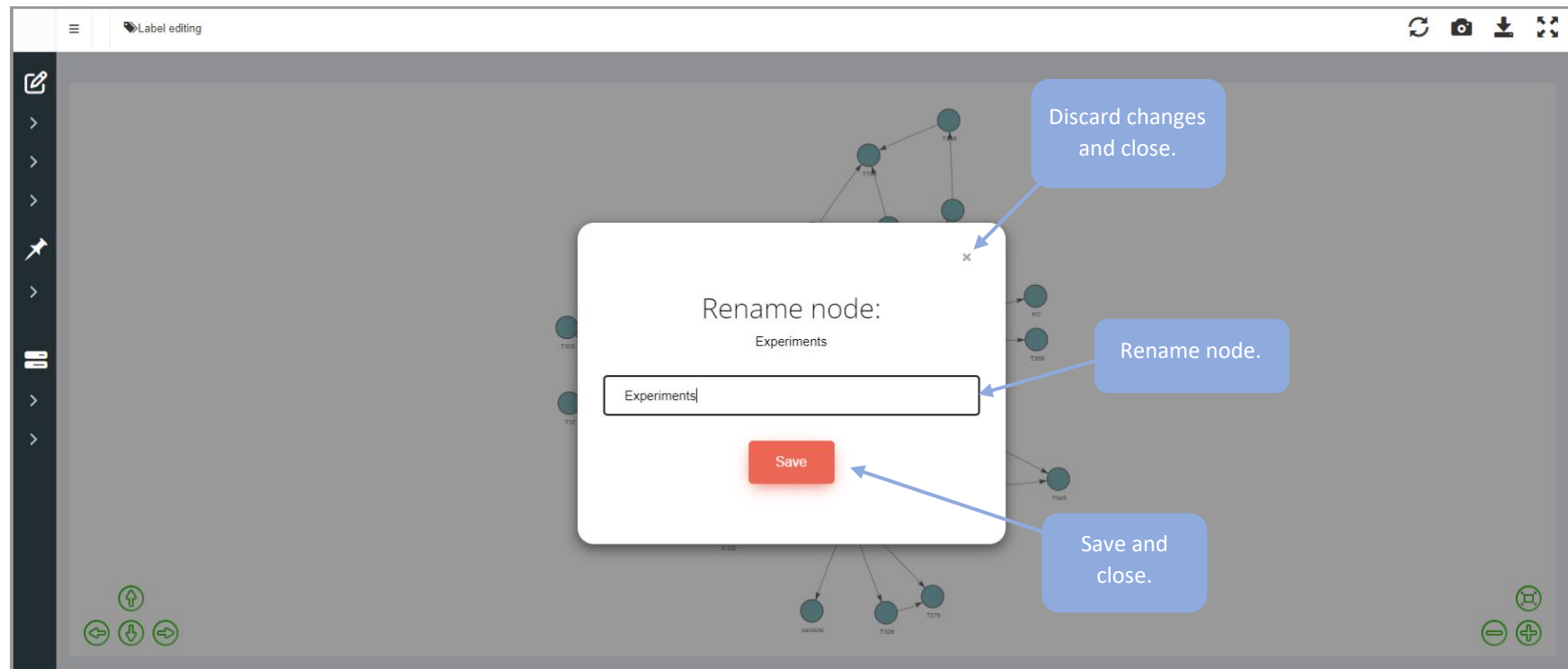


*(B) Global settings*



## 1 Label editing







## 2 Save Network

2 Set title (optional).

Preview

Main title:

Submain:

Footer:



1



3 Set output file name .

File name

Output

Format

png

4

Set output format.

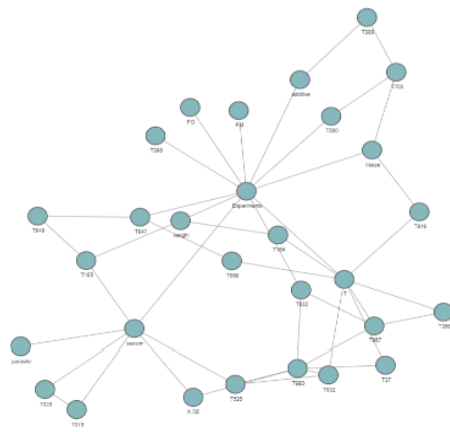
5

Save.

Export as png

Close

Close without saving.

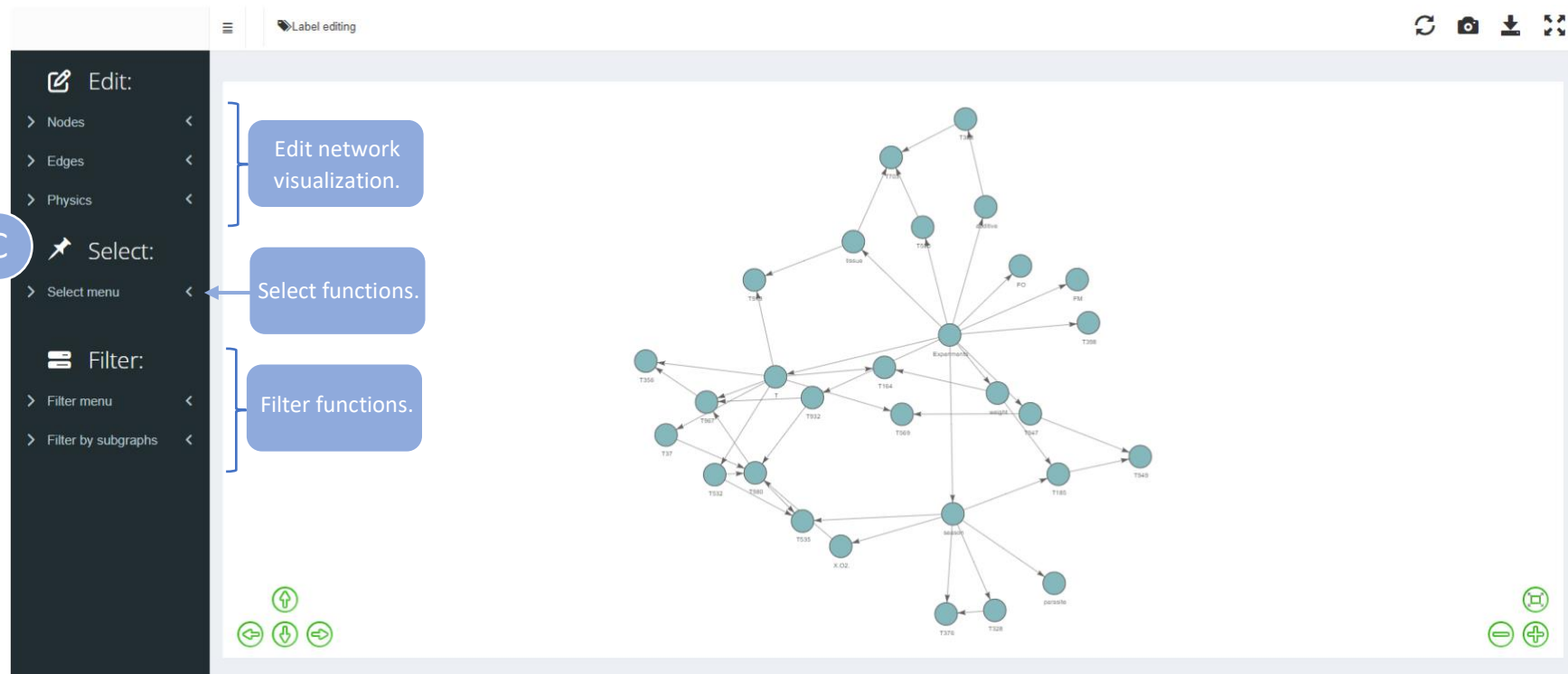


## (C) Edit and manipulation menu

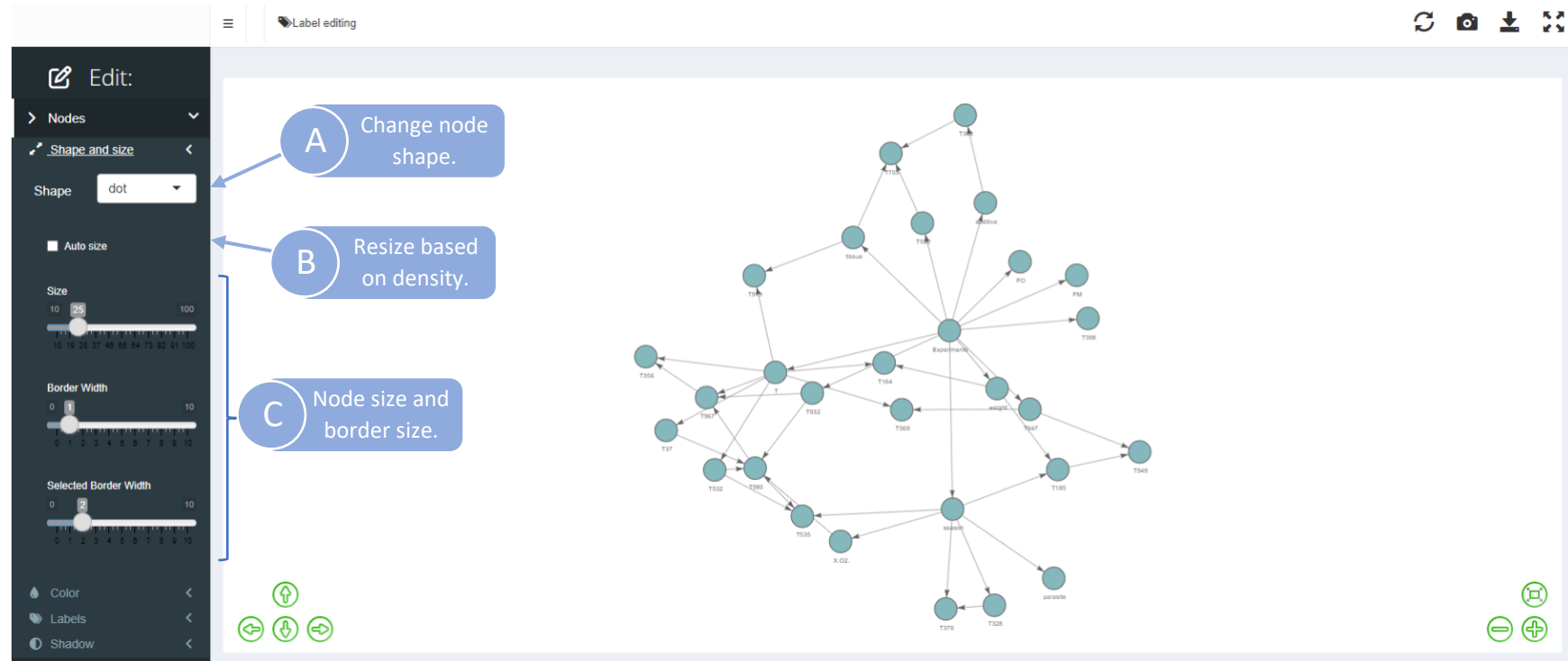


In this section, when selecting one or more nodes and edges the changes will be made only on the selected elements.

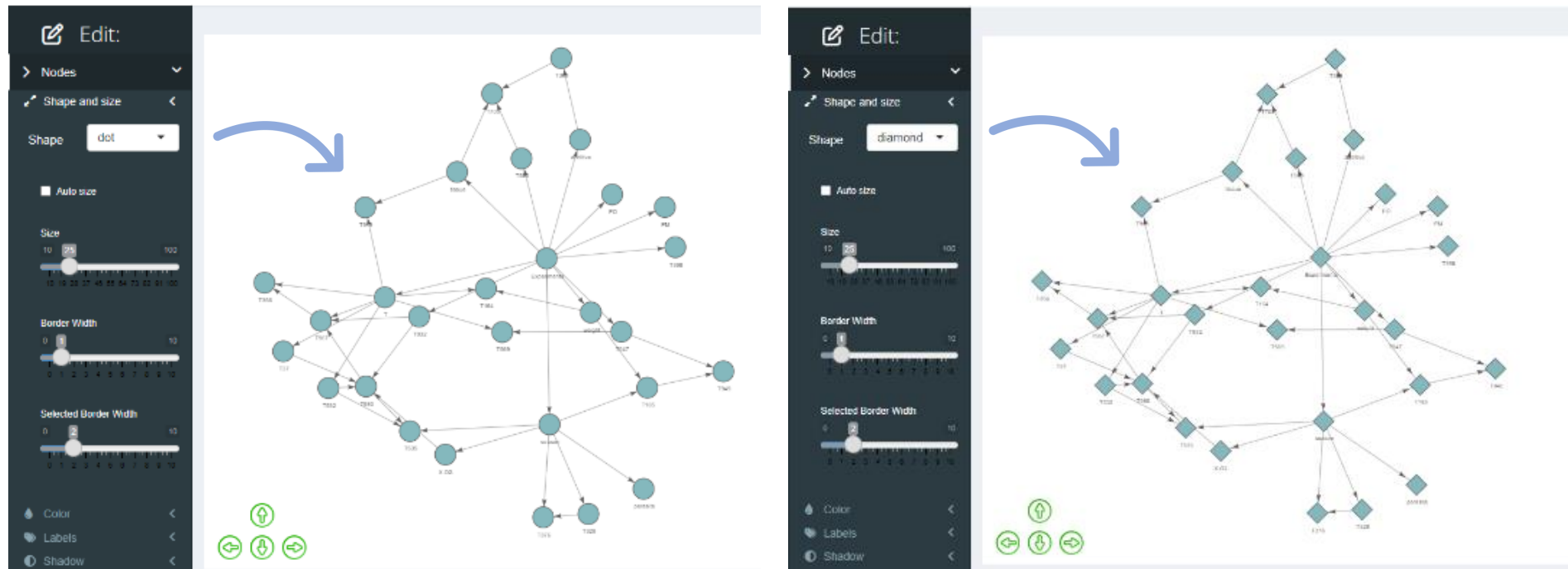
### 1 Edit network



- Nodes: Shape and size.



A. Change node shape.



## B. Resize based on density.

1

**Edit:**

> Nodes

Shape and size

Shape: dot

☒ Auto size

Set nodes size according to the number of:

- ☒ All connected edges
- ☐ Edges from the node
- ☐ Edges to the node

Size range:

0 10 20 30 40 50 60 70 80 90 100

Border Width

0 1 2 3 4 5 6 7 8 9 10

Selected Border Width

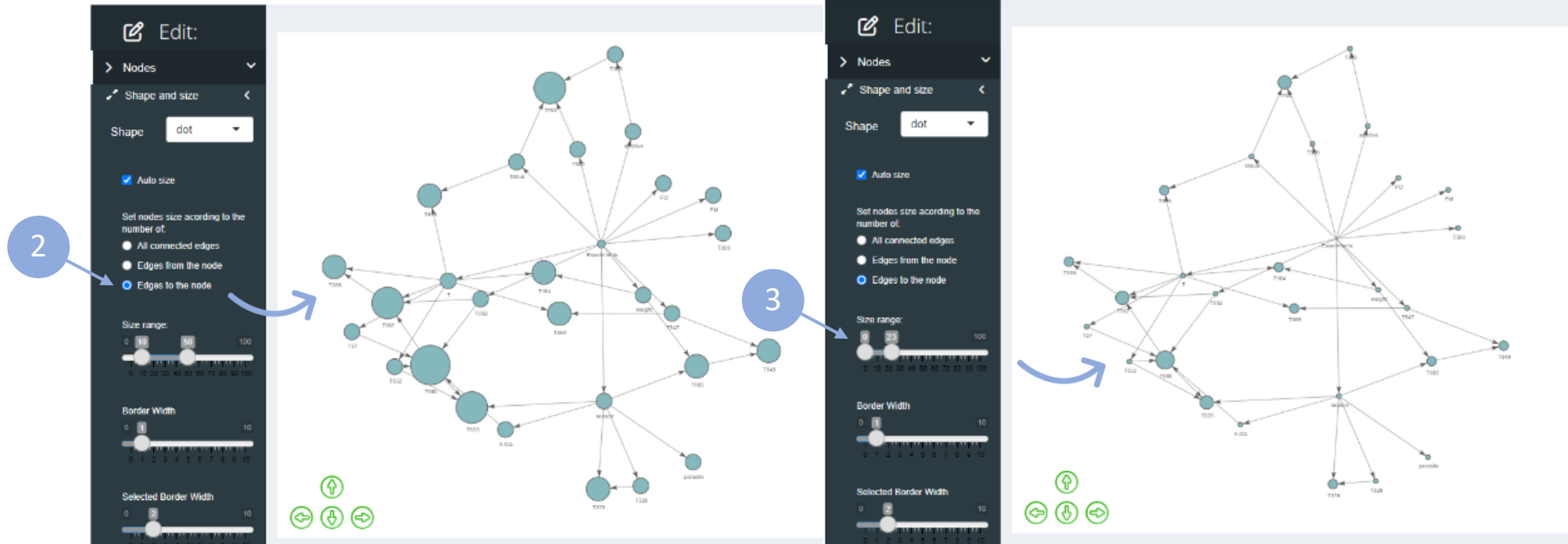
0 1 2 3 4 5 6 7 8 9 10

C

**Click on “Auto size”.**

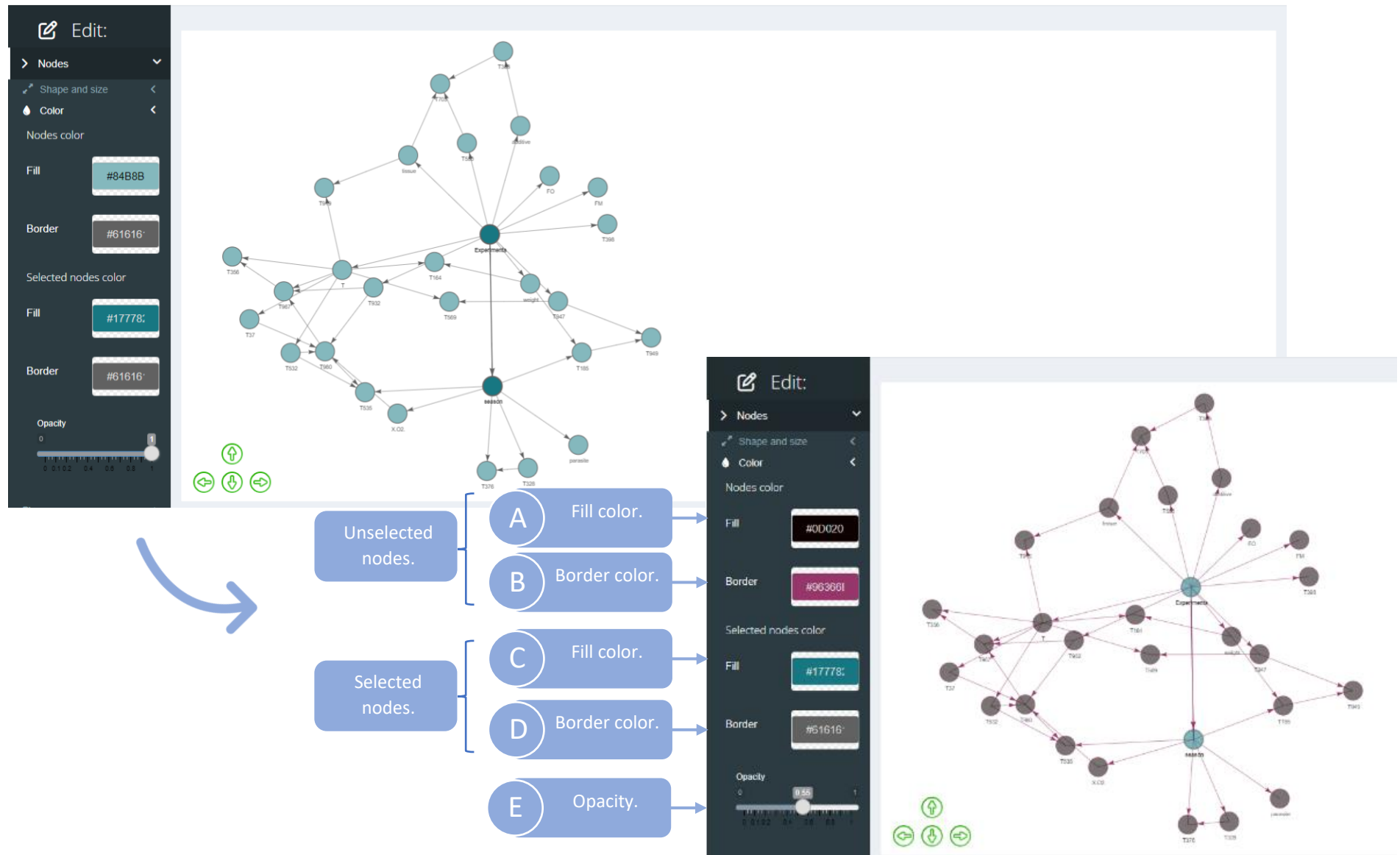
This function recalculates the size of the nodes based on the density of direct connections that each one presents (1).

Likewise, it allows the user to select which connections are considered (input, output, or both) (2), and to choose the range of sizes to resize the nodes (3).





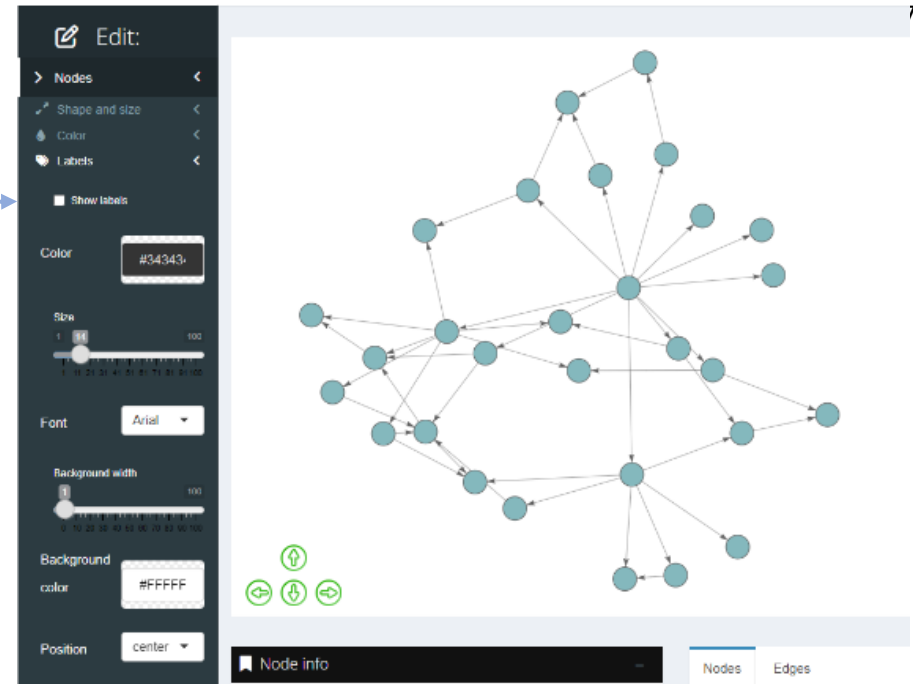
- Nodes: Color.



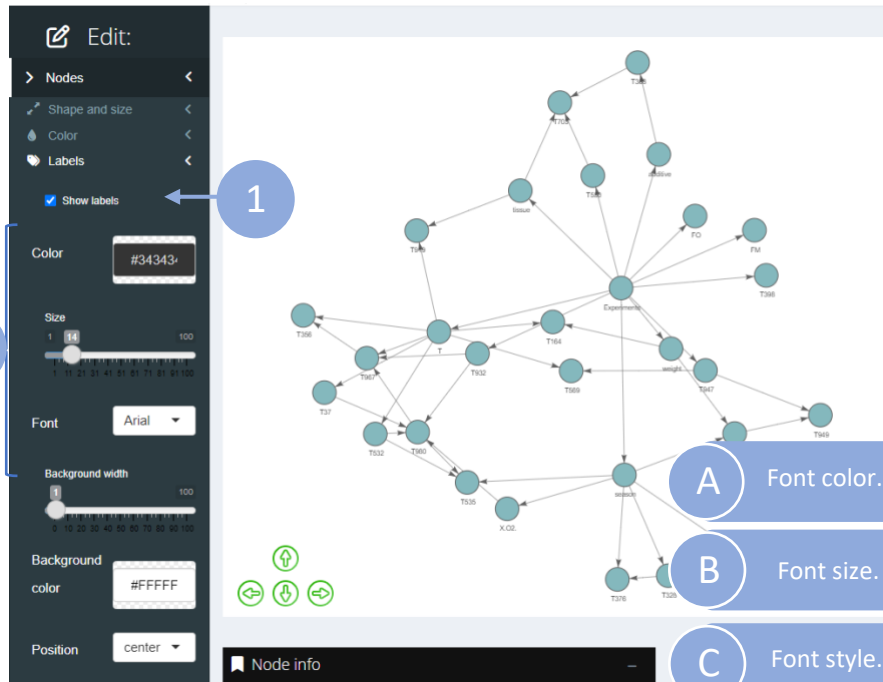


- Nodes: Labels.

1 Show/hide labels.



2



A Font color.

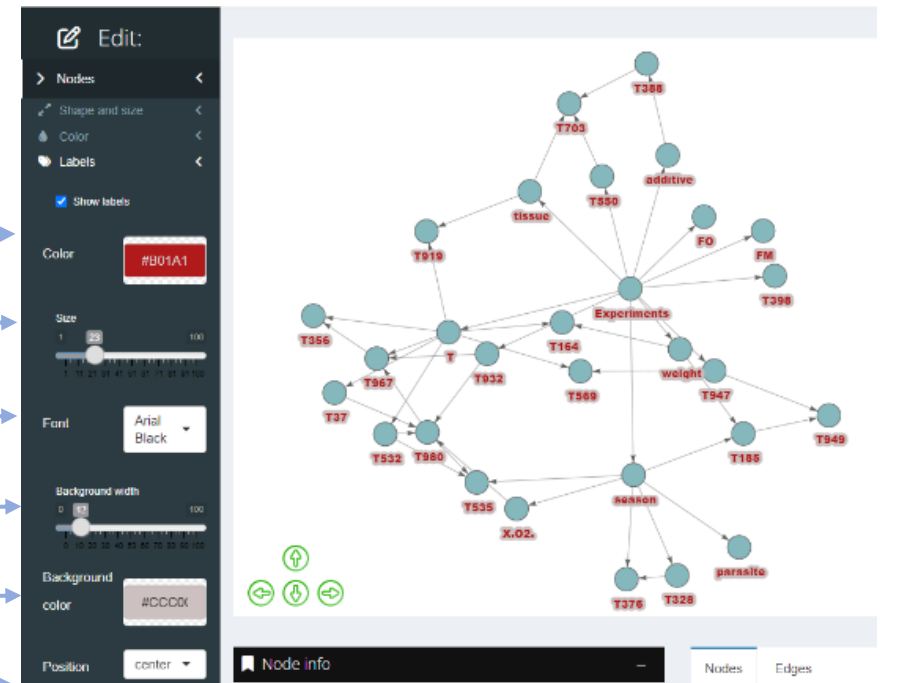
B Font size.

C Font style.

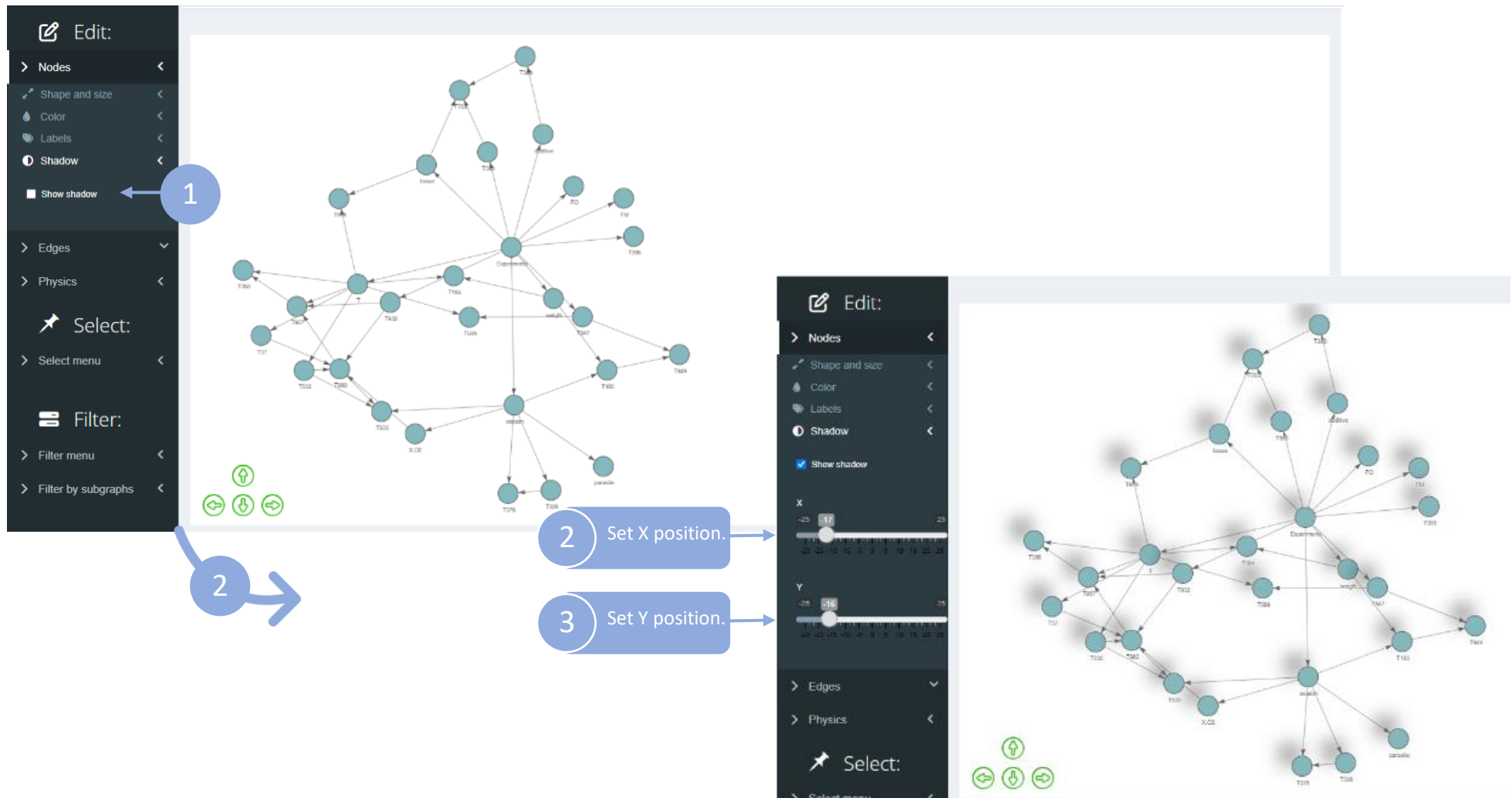
D Text background width.

E Text background color.

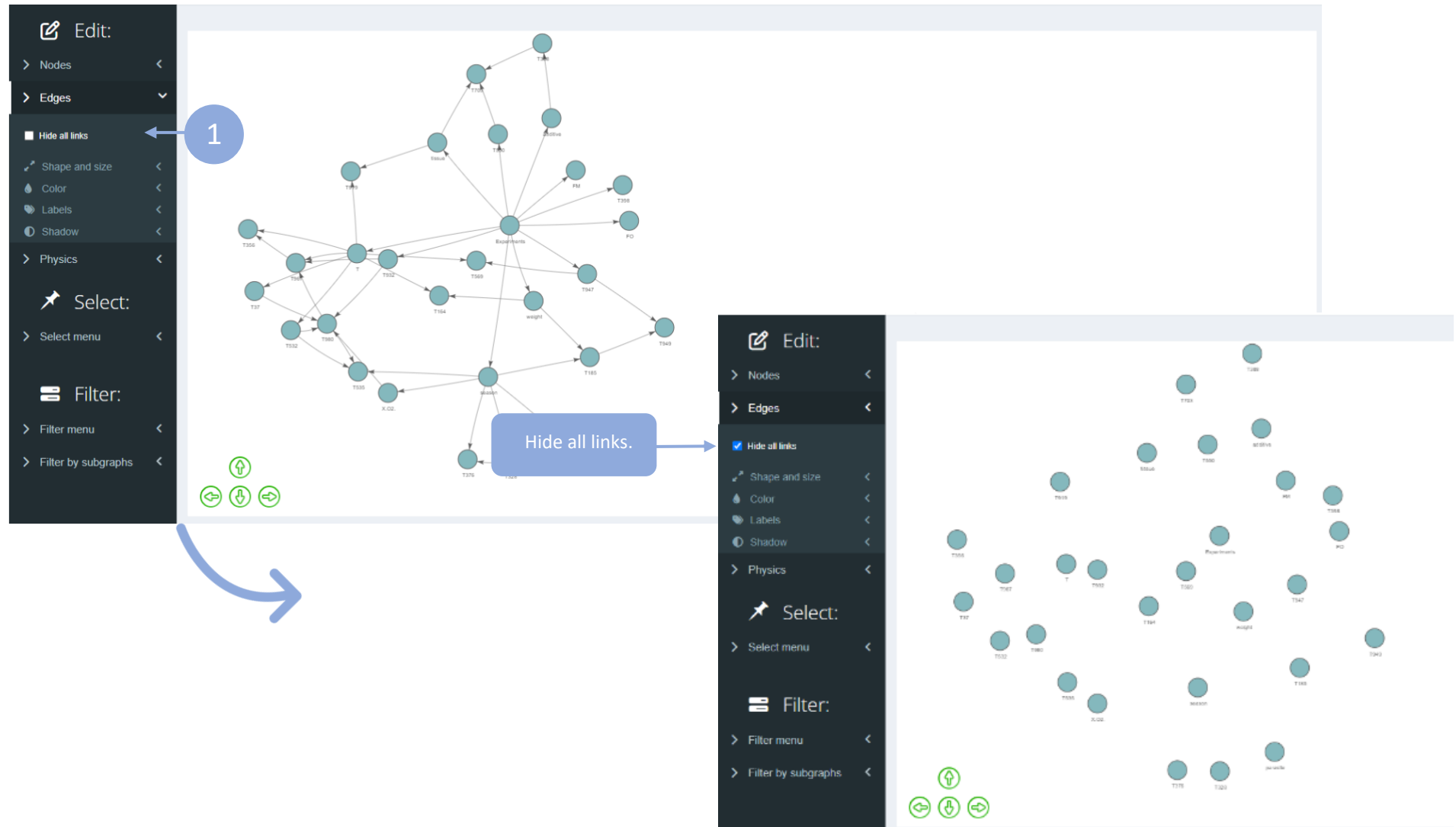
F Label position



- Nodes: Shadow.



- Nodes: Shape and size.





- Edges: Color

The image displays two side-by-side screenshots of a network visualization software interface, illustrating the 'Edges: Color' settings.

**Left Screenshot:**

- Edit Panel:**
  - Nodes:** <
  - Edges:** <
  - Hide all links:** ☐
  - Shape and size:** <
  - Color:** <
  - Edges color:**
    - Color:** #616161
    - Selected color:** #616161
    - Opacity:** 1.0
  - Labels:** <
  - Shadow:** <
  - Physics:** <
- Network Graph:** A complex network of nodes (circles) and edges (lines). The edges are colored gray. A blue arrow points from the 'Edges color' section of the panel to the graph.

**Right Screenshot:**

- Edit Panel:**
  - Nodes:** <
  - Edges:** <
  - Hide all links:** ☐
  - Shape and size:** <
  - Color:** <
  - Edges color:**
    - Color:** #10A39C
    - Selected color:** #D6040
    - Opacity:** 0.58
  - Labels:** <
  - Shadow:** <
  - Physics:** <
- Network Graph:** The same network graph as the left screenshot, but with edges colored light blue. A red line connects two nodes, and a dark blue node is highlighted. A blue arrow points from the 'Edges color' section of the panel to the graph.

**Annotations:**

- A:** Edge color when is unselected. (Points to the light blue edges in the right graph)
- B:** Edge color when is selected. (Points to the red line in the right graph)
- C:** Opacity. (Points to the opacity slider in the right panel)

# Edges: Labels

Diagram illustrating the configuration of edge labels in a network visualization tool. The interface shows a network graph with nodes and edges. The 'Edit' panel on the left allows configuring edge labels.

**Configuration Options:**

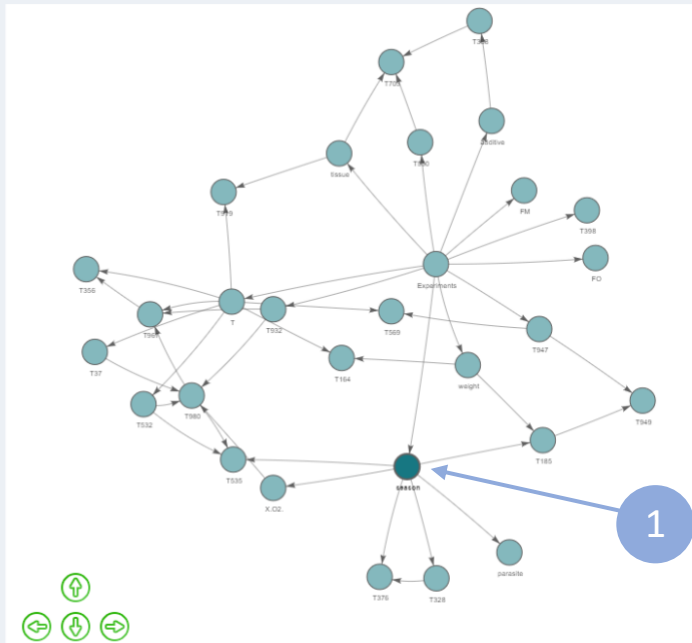
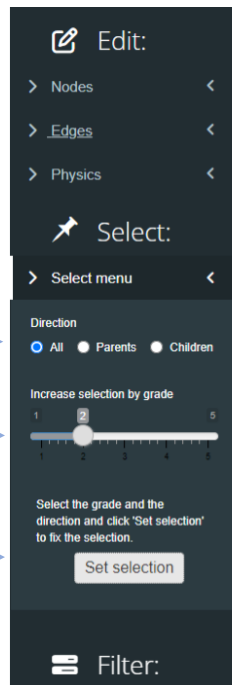
- Show labels:** A checkbox to toggle the visibility of edge labels.
- Color:** A color picker to set the color of the edge labels.
- Size:** A slider to adjust the font size of the edge labels.
- Font:** A dropdown menu to select the font style.
- Background:** A slider to adjust the background width of the edge labels.
- Background color:** A color picker to set the background color of the edge labels.
- Position:** A dropdown menu to select the position of the edge labels.

**Callouts:**

- A:** Points to the 'Show labels' checkbox.
- B:** Points to the 'Node info' panel.
- C:** Points to the 'Font' dropdown.
- D:** Points to the 'Text background width' slider.
- E:** Points to the 'Text background color' dropdown.
- F:** Points to the 'Label position' dropdown.

**Labels:** The edge labels are displayed on the edges of the network graph. The labels are text strings that identify the edges.

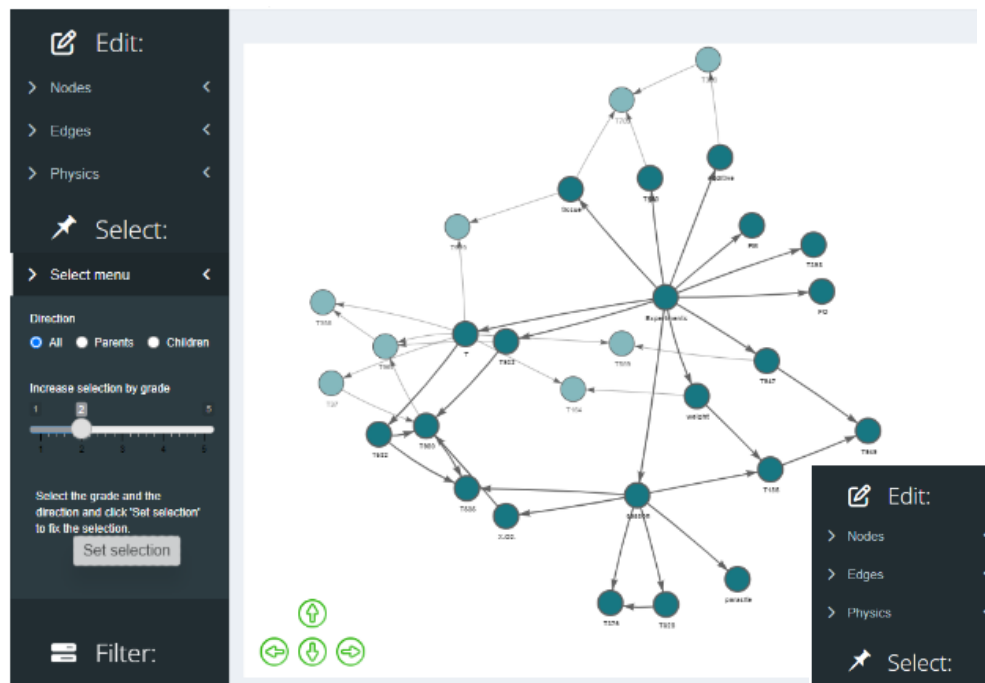
## 2 Set selection

C<sub>2</sub>

Click on "Auto size".

- (1) Click on a node to select it.
- (2) Select the **relation**:
  - All**: Take in account all connected nodes.
  - Parents**: Take only parent nodes.
  - Children**: Take only children nodes.
- (3) Select the **degree** of the nodes to be selected considering the initial selection.

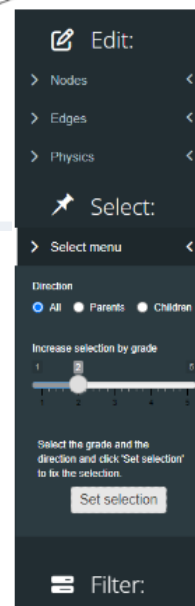


C<sub>2</sub>

Once you have your group, you can:

- Move the whole group (A).
- Edit the selected nodes in the edit menu.
- Add a new filter group in the filter menu.

A







- Define a group based on the selection.

The image illustrates the process of defining a group in a network visualization tool, consisting of three main parts: the sidebar, the network graph, and the 'New group' dialog.

**Sidebar:** The sidebar on the left contains three main sections: 'Edit:', 'Select:', and 'Filter:'. The 'Filter:' section includes options to 'Emphasize' or 'Show/Hide' nodes or edges, and a 'Filter menu' to select a group of nodes and click 'Add group' to define a new group. Below this is an 'Input a list of nodes' section with an example 'Bacteria\_X,E' and an 'Add input group' button.

**Network Graph:** The central part of the image shows a network graph with nodes and edges. A blue arrow points to a specific node, labeled '1 Select nodes.'.

**New group Dialog:** A dialog box titled 'New group:' is shown on the right. It contains a text input field for 'Set group name:' with the text 'G1' entered. Below the input field is a red 'Save' button. A blue arrow points to the input field, labeled '3 Set group name.', and another blue arrow points to the 'Save' button, labeled '4 Save.'.

**Callouts:** The process is guided by four numbered callouts:
 

- 1: Select nodes.
- 2: Click on "Add group"
- 3: Set group name.
- 4: Save.

- Define a group from a list of nodes.

**1** Enter a list of nodes separated by commas.

**2** Click on "Add input group"

**3** Set group name.

**4** Save.

- Filter by selecting.

The image displays two screenshots of a network visualization software interface, illustrating filtering capabilities.

**Left Screenshot:** The interface shows a network graph with nodes and edges. On the left, a sidebar contains a 'Filter:' section with a 'Filter menu' dropdown. Below it, a 'Filter' table is visible:

Filter	By
<input type="checkbox"/> Emphasize	<input type="checkbox"/> Selected
<input type="checkbox"/> Show/Hide	<input type="checkbox"/> Group
	<input type="checkbox"/> Number of interactions

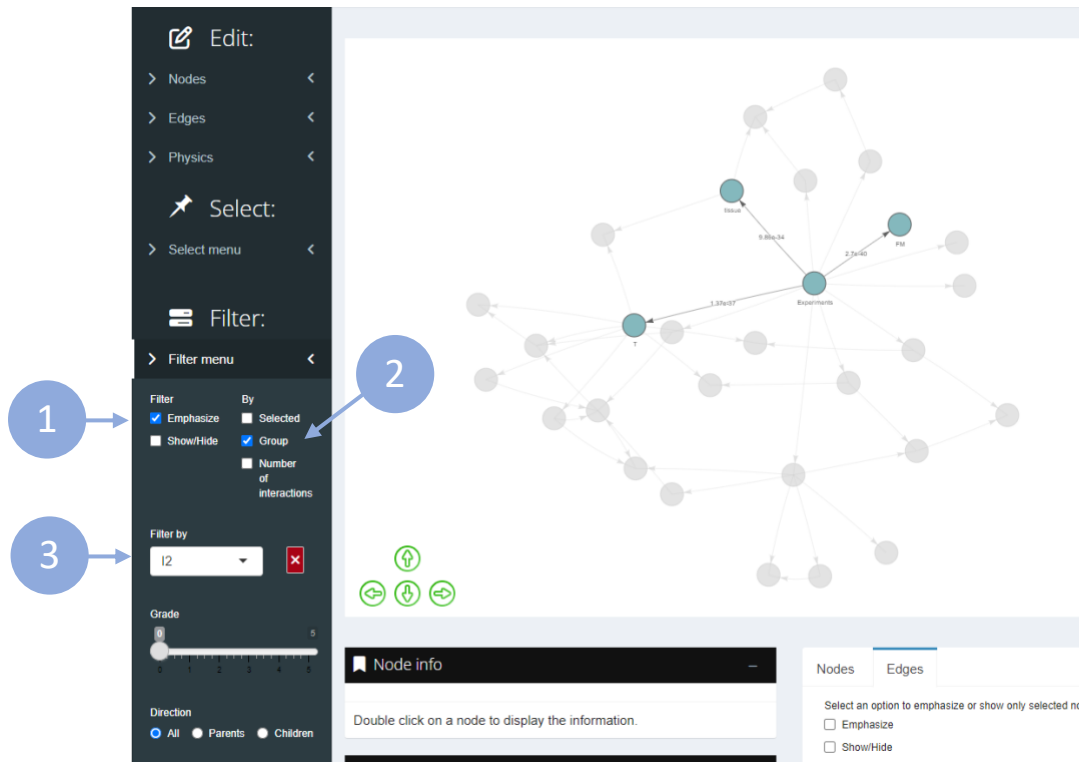
Below the table, there is a text input field with the example 'Bacteria\_X,E' and a '+ Add input group' button. A blue circle with the number '1' points to the 'Show/Hide' filter option.

**Right Screenshot:** The same network graph is shown, but with a different set of filters applied. The 'Filter' table now shows:

Filter	By
<input type="checkbox"/> Emphasize	<input checked="" type="checkbox"/> Selected
<input checked="" type="checkbox"/> Show/Hide	<input type="checkbox"/> Group
	<input type="checkbox"/> Number of interactions

Below the table, there is a 'Grade' slider and a 'Direction' section with radio buttons for 'All', 'Parents', and 'Children'. A blue callout box points to the 'Show/Hide' filter and the 'Grade' slider, stating: "You can also increase the filtered nodes by grade and connections."

- Filter by group.

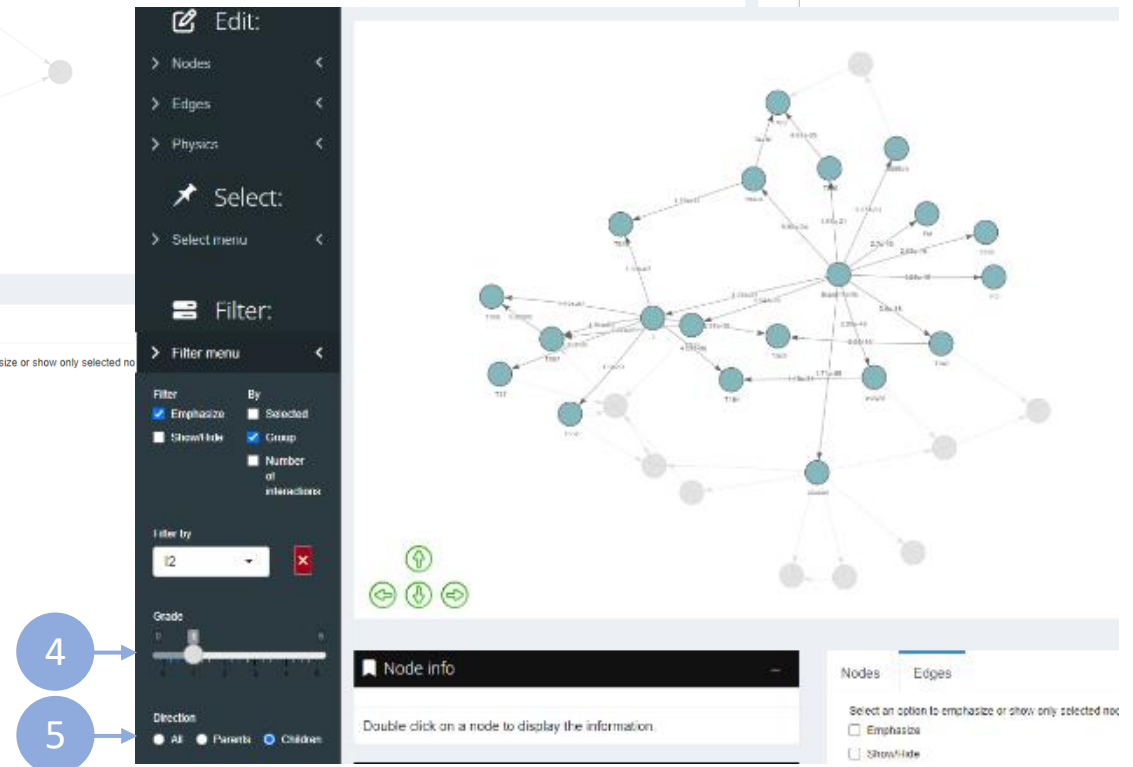
C<sub>3</sub>

### Filter by group

- (1) Select a display method.
- (2) Select filter by group.
- (3) Select the predefined group.

You can also extend the filtering by choosing the nodes of degree X with respect to the selected one:

- (4) Select the interaction grade.
- (5) Select the direction.



- Filter by number of interactions.

**C<sub>3</sub> Edit:**

- > Nodes <
- > Edges <
- > Physics <

**Select:**

- > Select menu <

**Filter:**

- > Filter menu <

**Filter**      **By**

☒ Emphasize    ☐ Selected

☐ Show/Hide    ☐ Group

☒ Number of interactions

Minimum number of connections

0 2 4 6 8 10 12 14 16 18 20

Direction

☒ All    ☐ Parents    ☐ Children

**C<sub>3</sub> Filter by the number of interactions**

- (1) Select a display method.
- (2) Select filter by number of interactions.
- (3) Set the minimum number of interactions for a node to be included in the network.
- (4) Set the direction of these interactions.

Node info

Nodes    Edges

↑ ↓ ↔

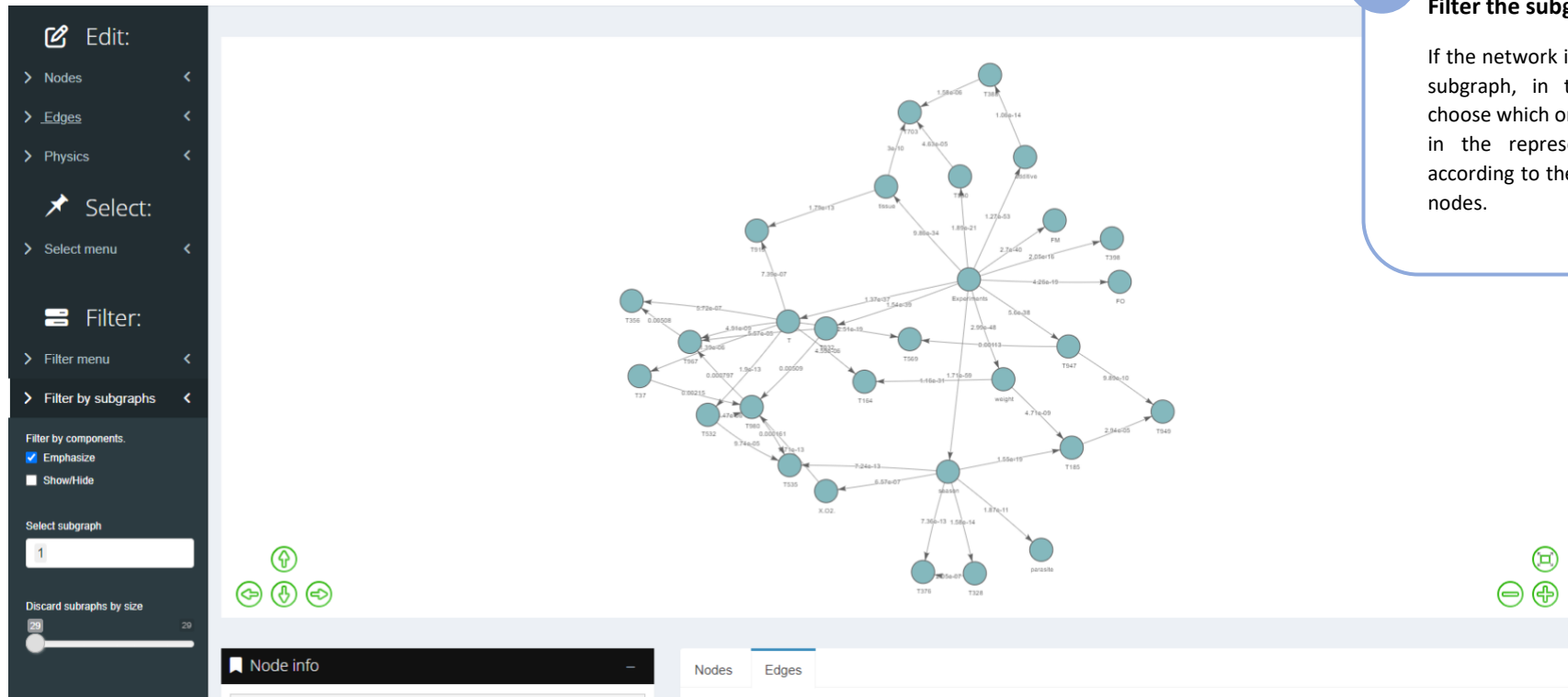
⊖ ⊕

- Filter the subgraph:

C<sub>3</sub>

### Filter the subgraphs

If the network includes more than one subgraph, in this section, you can choose which ones you want to include in the representation manually or according to the number of connected nodes.



(D) *Data manager.*

**D**

Nodes table.

Edges table.

Nodes Edges

Select an option to emphasize or show only selected nodes

☐ Emphasize ☒ Reorder (selected first)

☐ Show/Hide

Show:  Search:

entries

	id	label
	<input type="text" value="All"/>	<input type="text" value="All"/>
1	additive	additive
2	Experiments	Experiments
3	FM	FM
4	FO	FO
5	parasite	parasite
6	season	season
7	T	T
8	T164	T164
9	T185	T185
10	T328	T328

Showing 1 to 10 of 29 entries

Previous 1 2 3 Next

Nodes Edges

Select an option to emphasize or show only selected nodes

☐ Emphasize ☒ Reorder (selected first)

☐ Show/Hide

Significant digits

Show:  Search:

entries

	id	value	from	to
	<input type="text" value="All"/>	<input type="text" value="All"/>	<input type="text" value="All"/>	<input type="text" value="All"/>
1	72e31d84-8dfb-45ea-a5fe-24b88a607b4	1.063915568173249937e-14	additive	T388
2	8df5e17e-c1c1-4372-b598-dcfd04fe7b65	1.273547168535819923e-53	Experiments	additive
3	346cb75a-a8d9-4aca-a990-28b139d0a282	2.697553424546429949e-40	Experiments	FM
4	d5098fcf-0c9d-4f94-9080-3ac253d46847	4.262573976869439938e-19	Experiments	FO
5	20a1a200-ca21-4b03-86c7-ddd5d5092cae7	1.705309285753289970e-59	Experiments	season
6	16ca4286-d506-4a41-9b2f-d7a5ec9c485a	1.367819024162779897e-37	Experiments	T
7	e5740d99-00de-4e7e-9a33-a47fa026d9cb	2.049064797897649976e-16	Experiments	T398
8	4f70e95d-db23-4e54-b6a1-0da1bf167fab	1.8878926639155099964e-21	Experiments	T550
9	f0dc5430-c439-4186-b53b-c194540a932f	1.543985530829460118e-39	Experiments	T932
10	e30e4af8-eb59-4b85-87d9-7ec54ea1f5d9	5.598117237194599997e-38	Experiments	T947

Showing 1 to 10 of 44 entries

Previous 1 2 3 4 5 Next

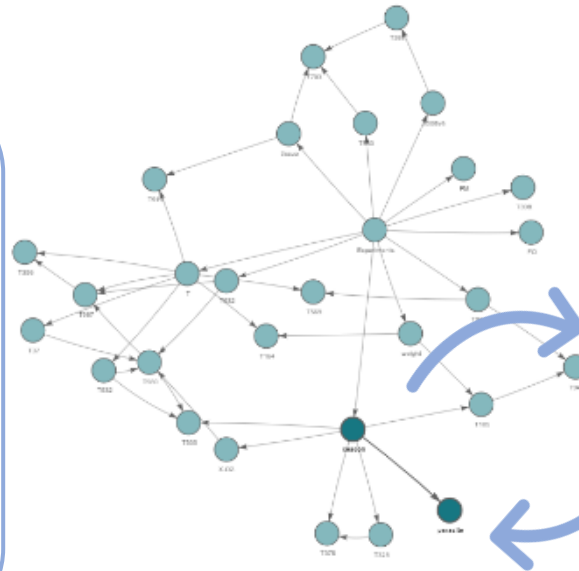
This section includes the nodes and edges information in a table format and allows the user to:



## 1 Select and reorder data.

D<sub>1</sub>

When selecting a node in the network, it is automatically selected in the table. Likewise, if we select a row of the network, the corresponding node will be selected in the network. By default, the selected nodes will be reordered, placing themselves in the first position of the table (this function can be deselected by deselecting the “Reorder” box (A)).



Nodes

Edges

Select an option to emphasize or show only selected nodes

☐ Emphasize

☐ Show/Hide

Show

entries

Id

label

All

All

5	parasite	parasite
6	season	season
1	additive	additive
2	Experiments	Experiments
3	FM	FM
4	FO	FO
7	T	T
8	T164	T164
9	T185	T185
10	T328	T328

Showing 1 to 10 of 29 entries

Previous 1 2 3 Next

A

☒ Reorder (selected first)

Search:

## 2 Filter data by columns.

Nodes Edges

Select an option to emphasize or show only selected nodes

☒ Emphasize **B**

☐ Show/Hide

☒ Reorder (selected first)

Significant digits

1 19

Show

10

entries

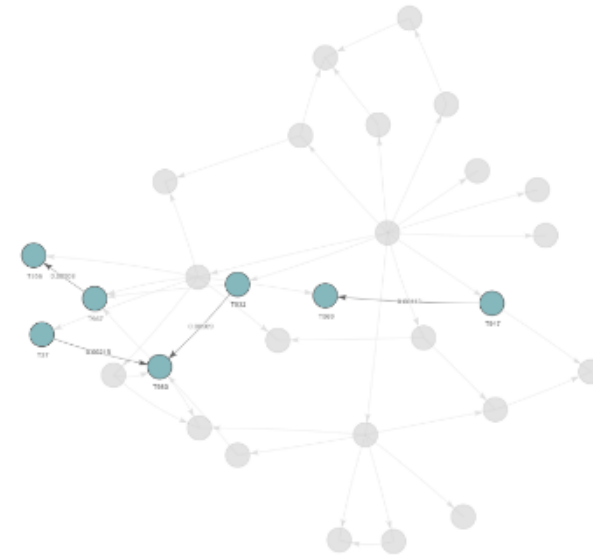
	id	value	from	to
	All	0.00104769 <b>Filter column.</b>	All	All
28	6f721089-ec3b-4fc4-9353-514e2ab02dfd	0.001047697869795	0.005094163619386	T980
34	a8aa8474-e082-4294-8f09-dd2ece15ef17	0.005094163619385670000	T932	T980
35	75824502-6951-479c-9f50-a9a5fe63de68	0.001133052386553959909	T947	T569
37	ee66f33b-41c1-42ff-8338-d35bee093642	0.005084613411738129682	T967	T356

Showing 1 to 4 of 4 entries (filtered from 44 total entries)

Previous 1 Next

D<sub>2</sub>

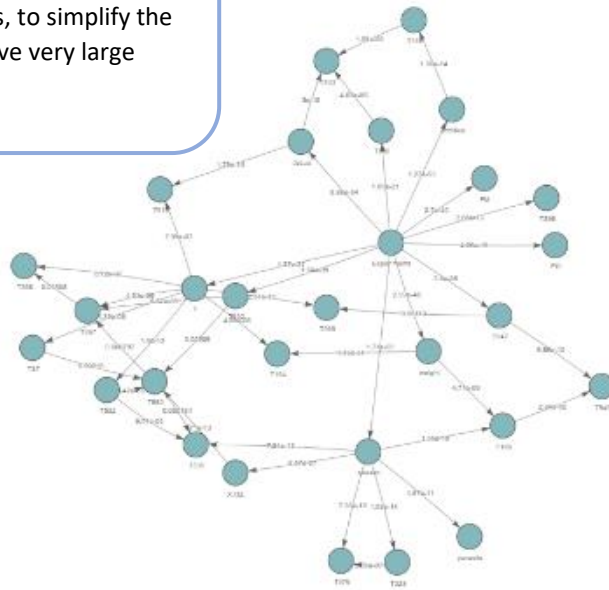
Filter by columns the information of the nodes and edges. These filters can be uploaded to the network by clicking on “Emphasize” or “Show/hide” **(B)**.



### 3 Change strength and labels.

D<sub>3</sub>

The strength value can be rounded to a certain number of significant digits, to simplify the display if we have very large values.



Nodes

Edges

Select an option to emphasize or show only selected nodes

☐ Emphasize

☐ Show/Hide

☒ Reorder (selected first)

Significant digits

1 3 19

Search:

Show

10

entries

	id	value	from	to
	All	All	All	All
1	72e31d84-8dfb-45ea-a5fe-24b88a60f3b4	1.06e-14	additive	T388
2	8df5e17e-c1c1-4372-b598-dcfd04fefb65	1.27e-53	Experiments	additive
3	346cb75a-a8d6-4aca-a690-28b139d0a282	2.70e-40	Experiments	FM
4	d5098fcf-0c9d-4f94-9080-3ac253d46847	4.26e-19	Experiments	FO
5	20a1a200-ca21-4b03-86c7-ddd5d5092ce7	1.71e-59	Experiments	season

Number of significant digits.

(E) CPT

Double clicking on a node will display its conditional probability table.

E

Node info

Double click on a node to display the information.

Edge info

Double click on an edge to display the information.

Node info

Parameters of node season (multinomial distribution)

Conditional probability table:

Experiments

season	BUT	EGG.HYDRO	ESH	GAIN_PreChallenge	LAB.DIET	LS.AQUA
A	0	0	1	0	1	0
S	1	1	0	1	0	1
Sp	0	0	0	0	0	0

Double click on a node to display the information.

Double clicking on an Edge will display causal relationships information and its strength.

Edge info

Causal Relationships :

season -> parasite

Edge Strength :

1.8739605653867e-11

Double click on an edge to display the information.