STARS USER'S MANUAL

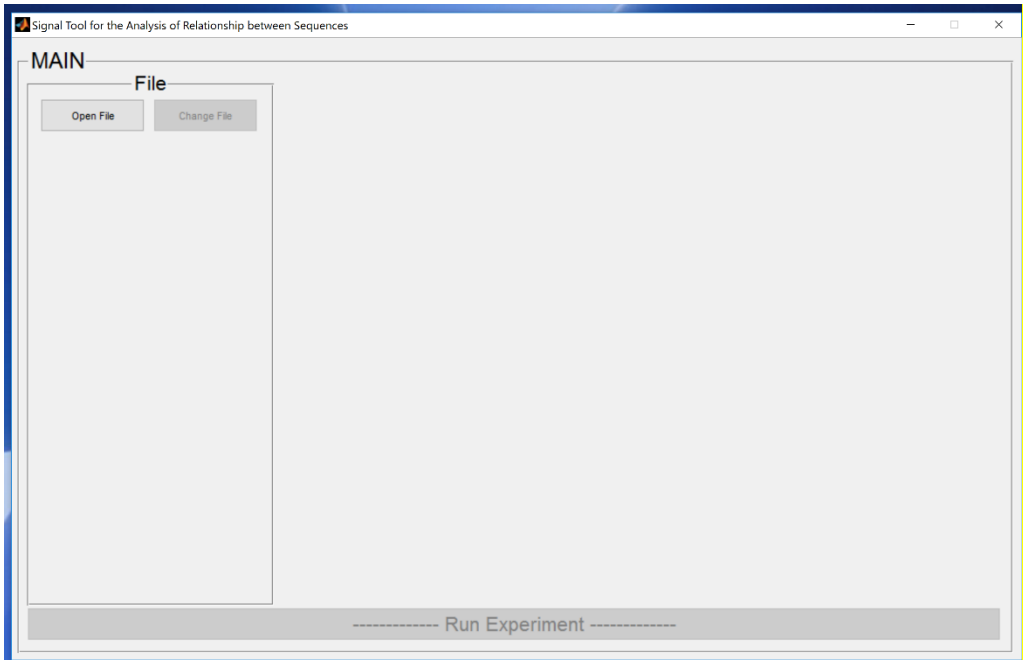
Welcome to STARS!

What is STARS?

STARS is a **S**ignal **T**ool for the **A**nalysis of **R**elationship between **S**equences.

How to use this tool?

By executing the file "InterfazVer1punto0.m" the system will show you the main window of STARS.

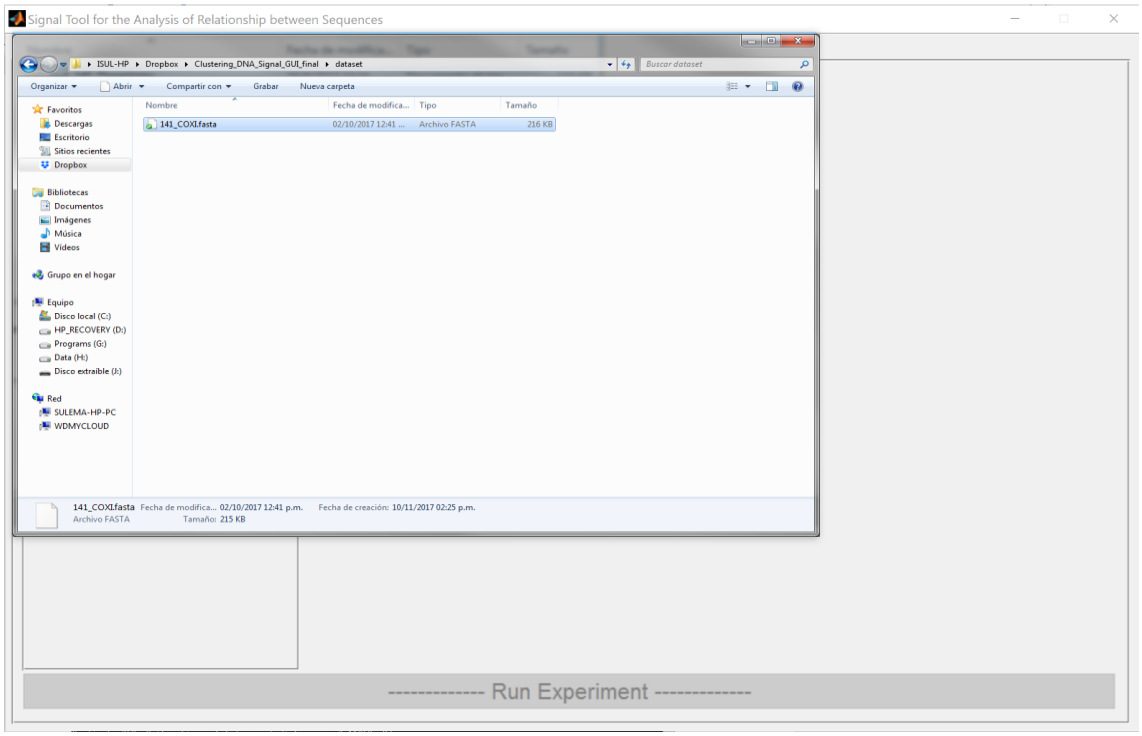


What kind of files can be read by STARS?

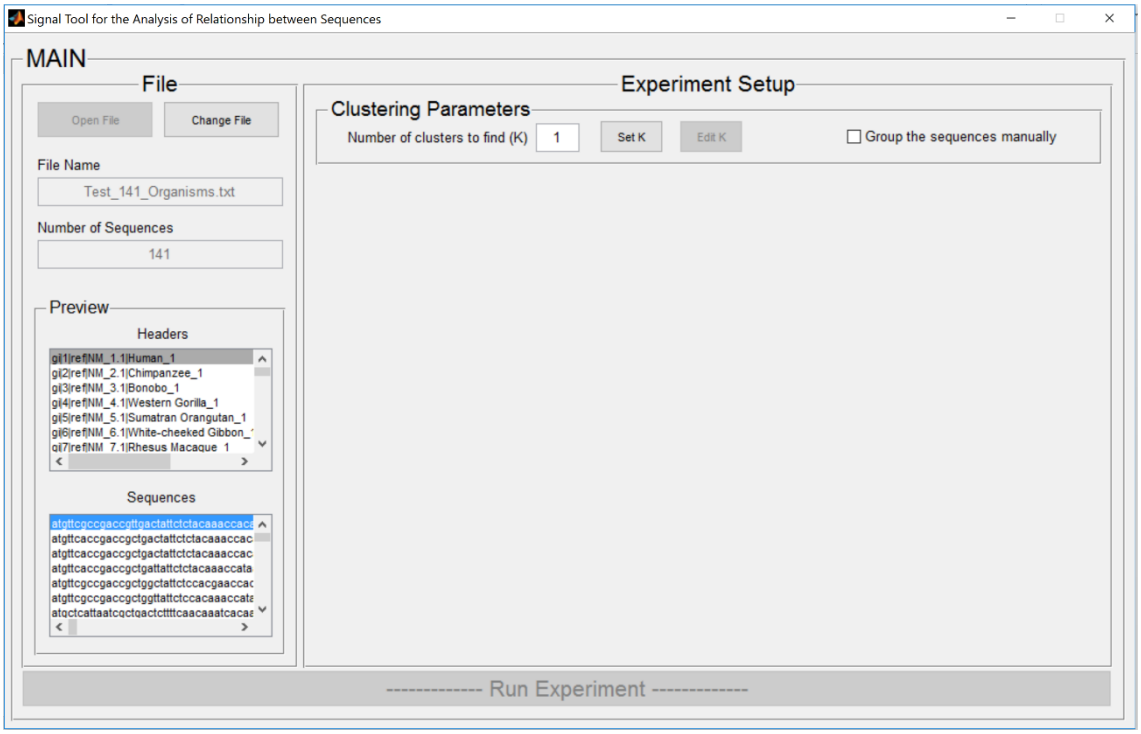
STARS is capable of reading FASTA Files. A FASTA File contains the sequence following the next structure:

The characters “>” indicates that a sequence will begin. In this example we have marked until the beginning of a fifth sequence.

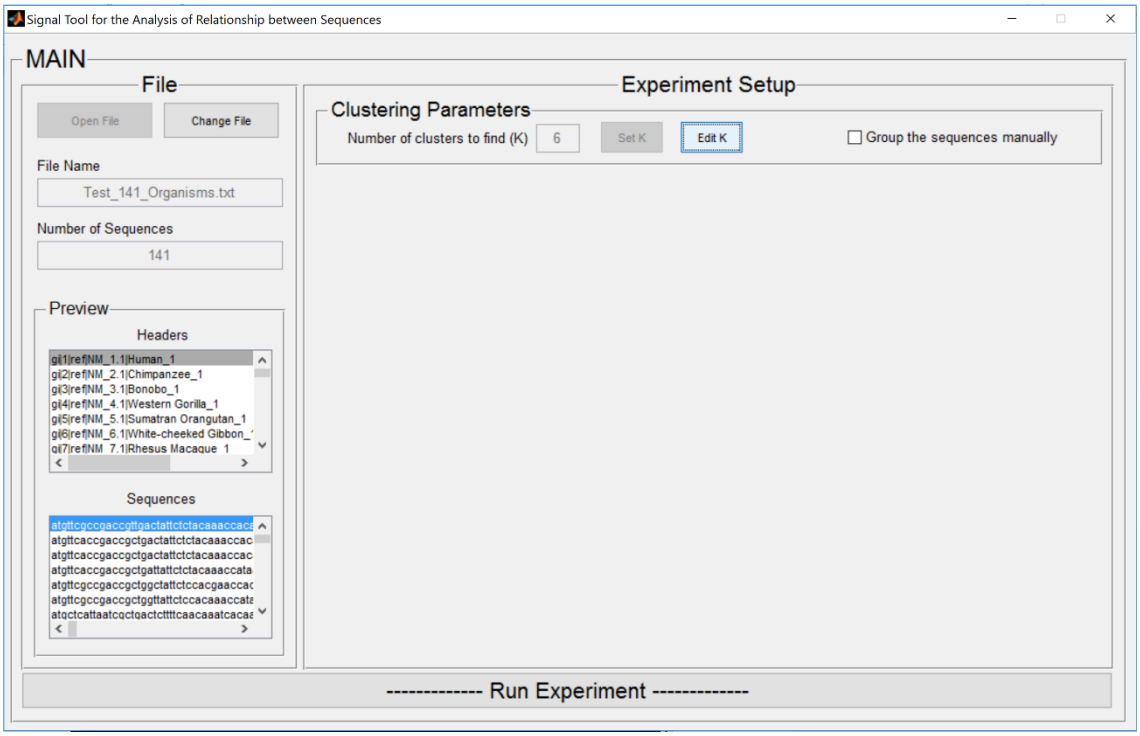
To open a Fasta File click “Open File”, choose the file and then click open as shown in the next screen.



After opening the Fasta File the Change File option will habilitate and some other sections in STARS will appear showing the File Name, the number of sequences in the File, a preview of the sequences “Headers” and “Sequences” for a quick view. Also you will see the Experiment Setup section with the Clustering Parameters to be set as shown in the next screen.

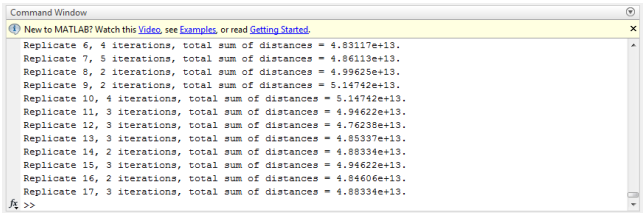


You can set the number of clusters you want to group your sequences (by default is set to one). You must click set K just after choosing the number of clusters. You will be capable of changing your mind by clicking Edit K before proceed to the next options as shown in the next screen.



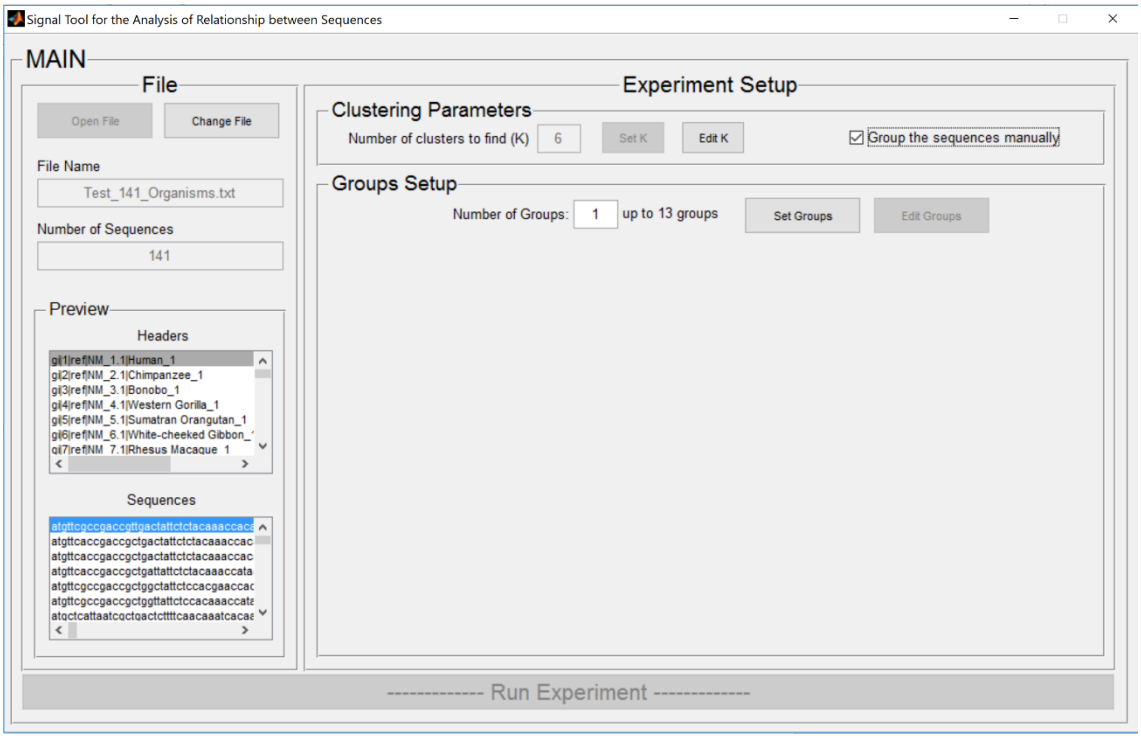
At this step you can choose another number of clusters by clicking Edit K or continue in two ways:

1) By clicking “Run the experiment” in order to continue with the clustering you will see the experiment status at the Matlab Command Window until Results[1] appear as shown in the next screen.



or by

2) Introducing some a priori information by checking “Group the sequences manually”[2].

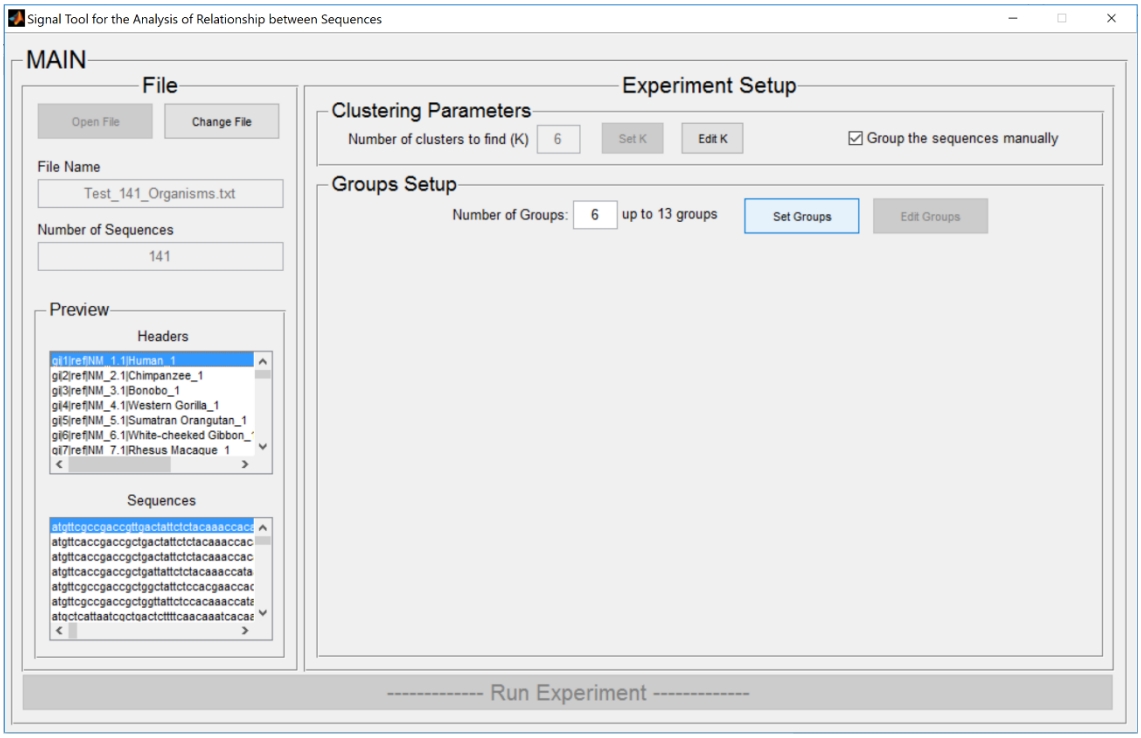


*Results figures will be presented in the last pages of this user’s manual.

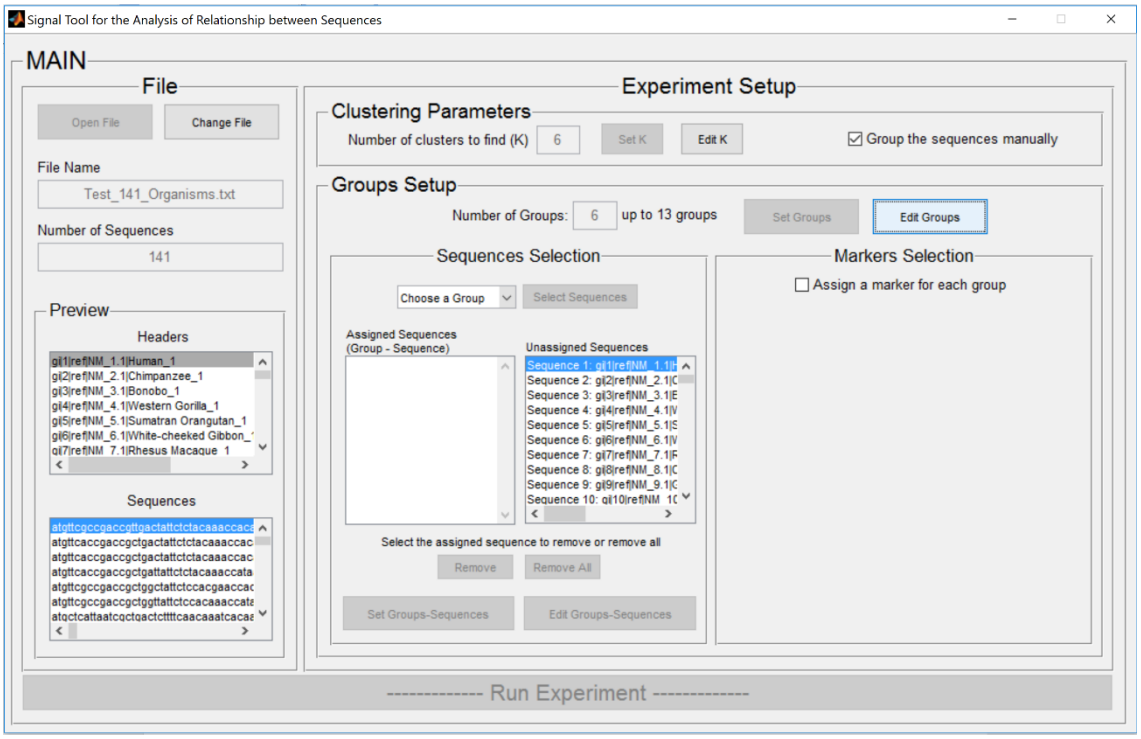
After checking the box you will be able to set the number of groups by introducing the number and clicking on the “Set Groups” button as shown in the next screen.

[1] Results figures will be presented in the last pages of this user’s manual

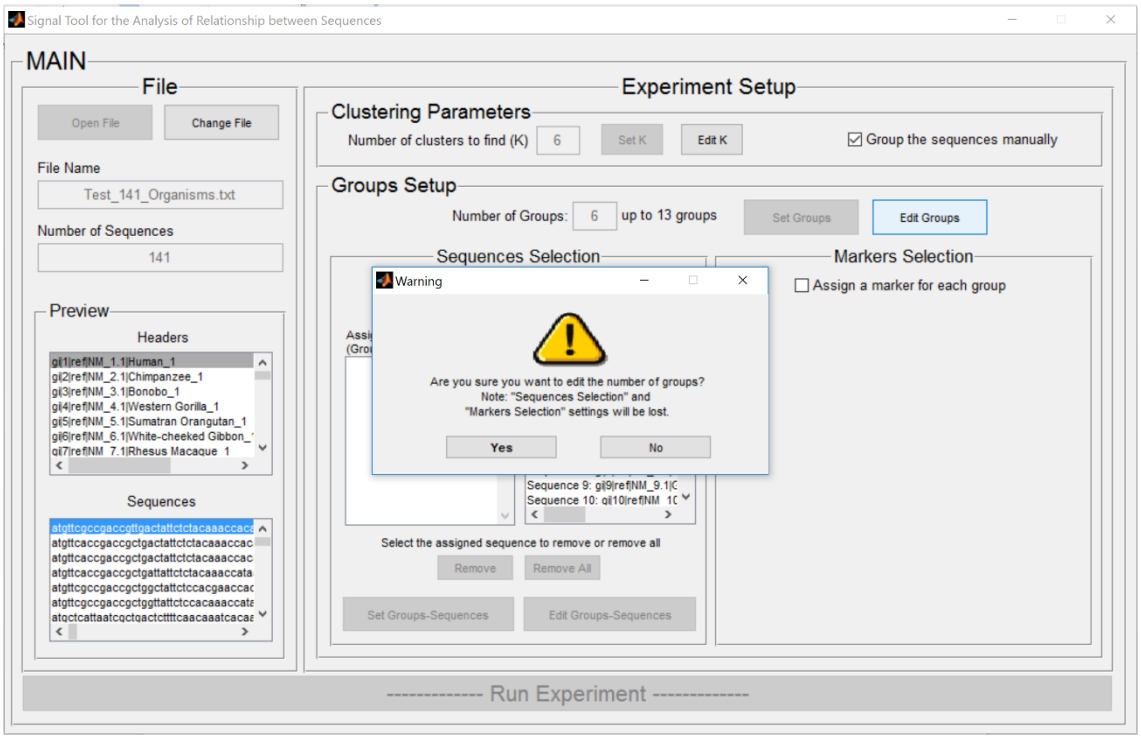
[2] Note that the manual grouping is an a priori organization (like their position in the tree of life), and this grouping could be different to the number of clusters you want to find with the software.



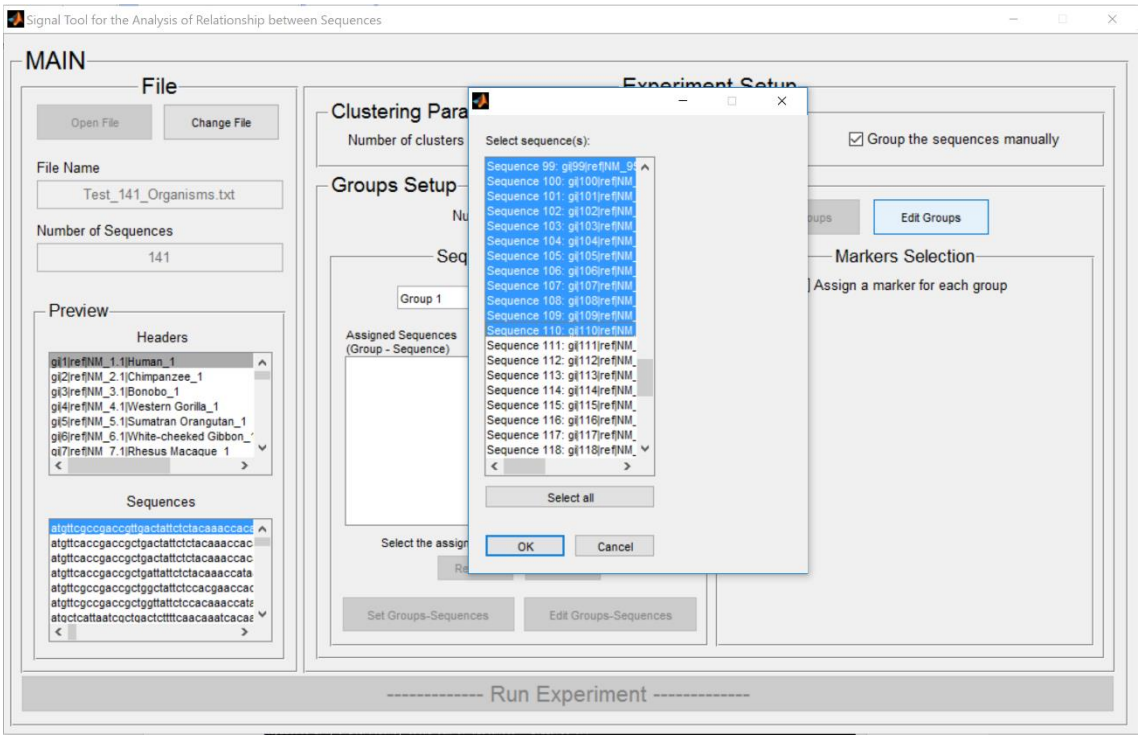
And the Sequence Selection and Markers Selection sections will appear!



Remember, you can always change the number of groups by clicking on “Edit Groups” button and after in Yes if you are sure to do it. However you must keep in mind that that you will lost your settings on the Sequences and Markers Sections!

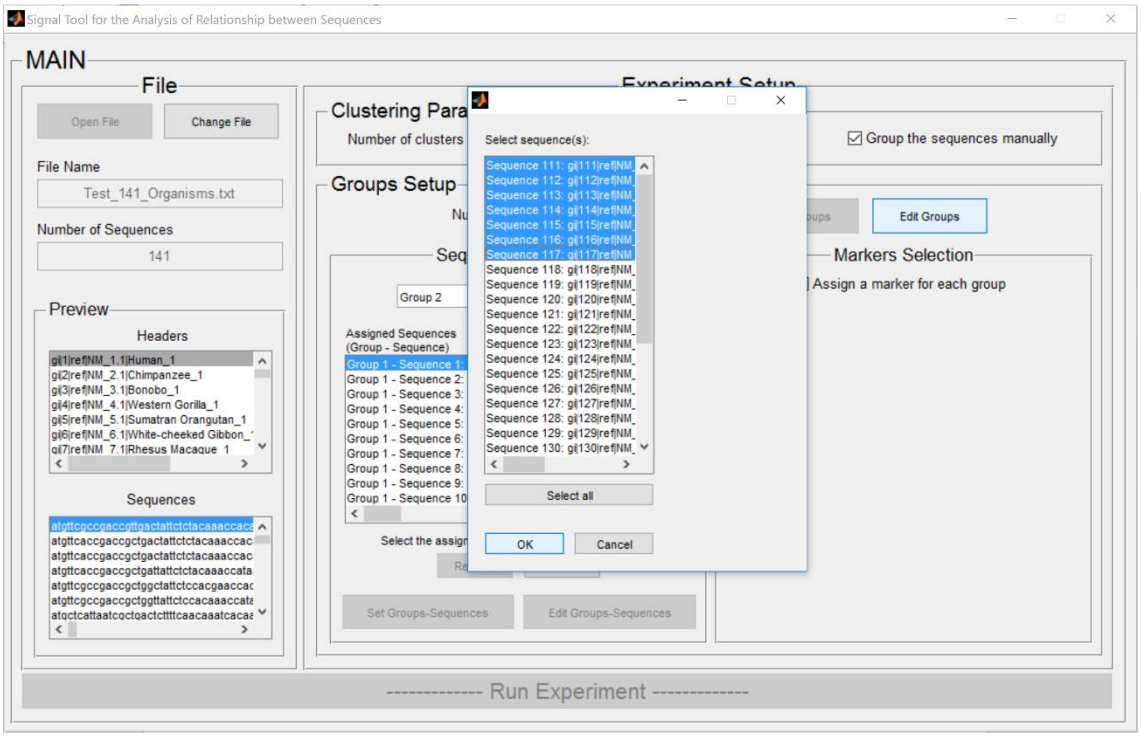


Group the sequences in the Sequence Section by choosing the group number and then clicking on the “Select Sequences” button, then select all the sequences you want to belong in this group and click “OK” as shown in the next screen.

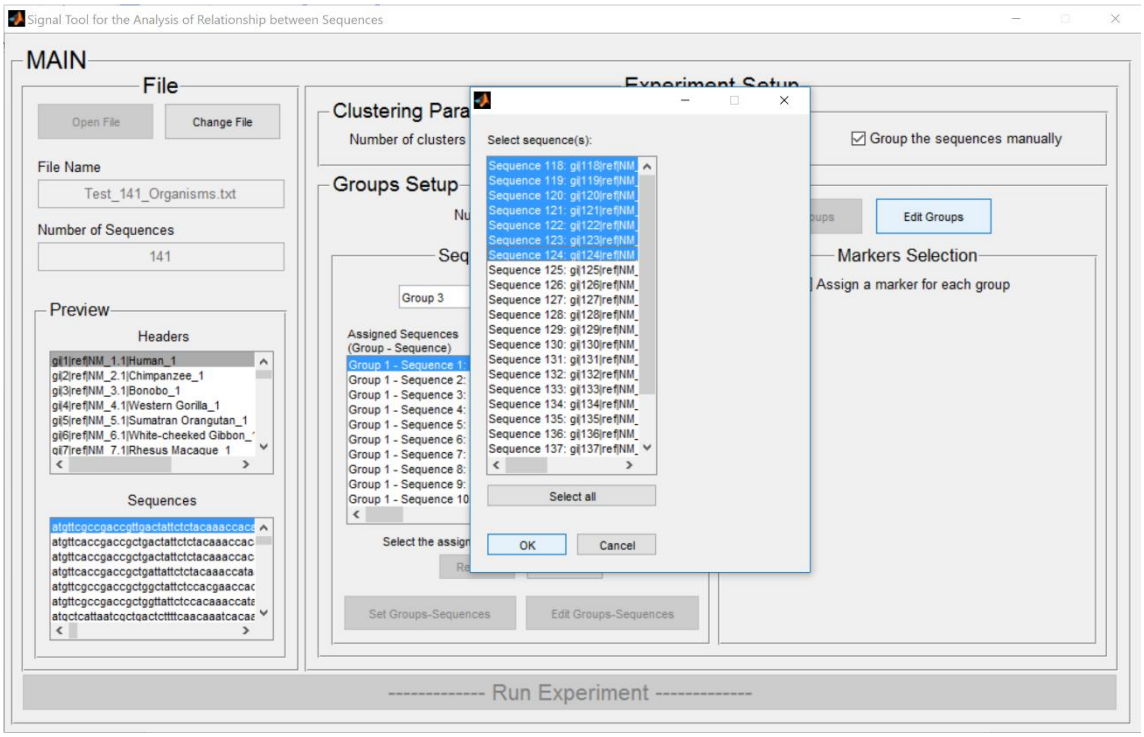


Repeat until you select for all groups the sequences as shown in the next screens.

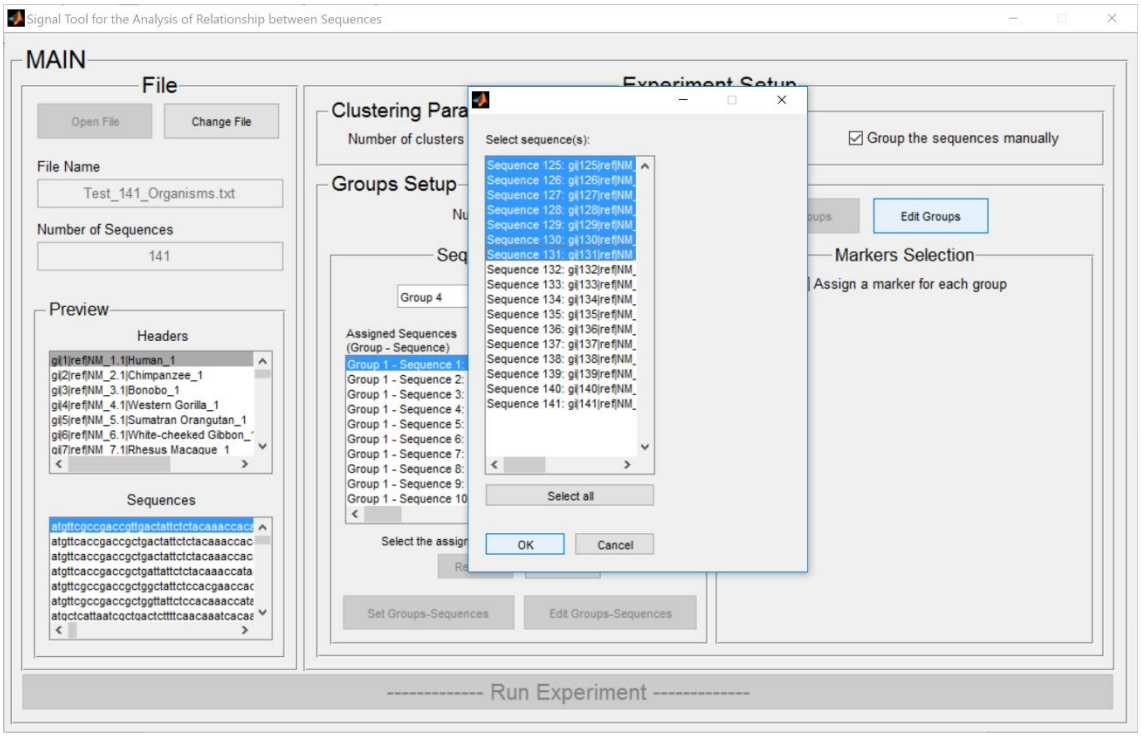
Choosing the sequences for the second group



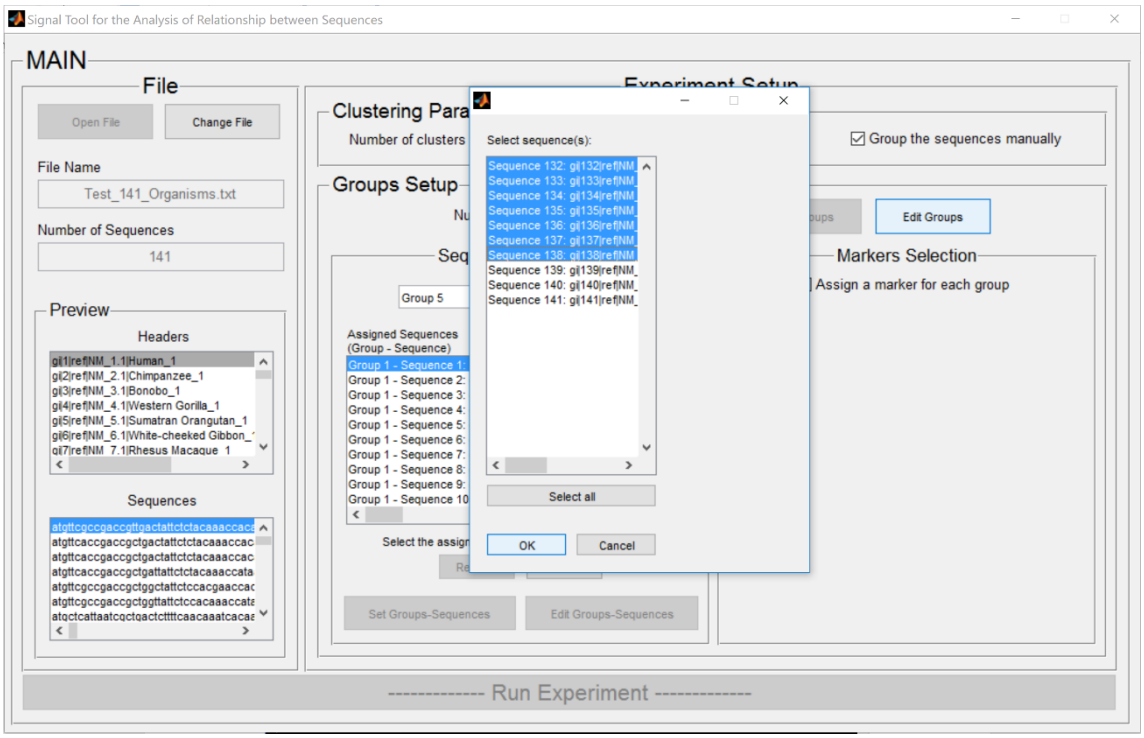
Choosing the sequences for the third group



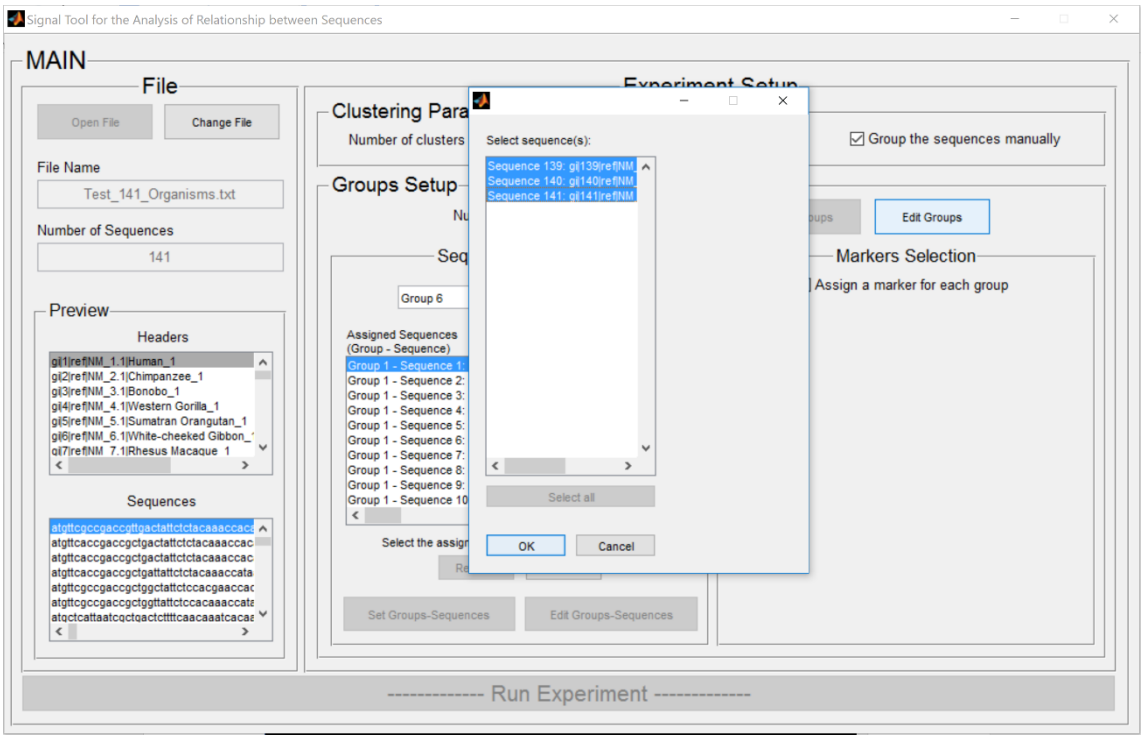
Choosing the sequences for the fourth group



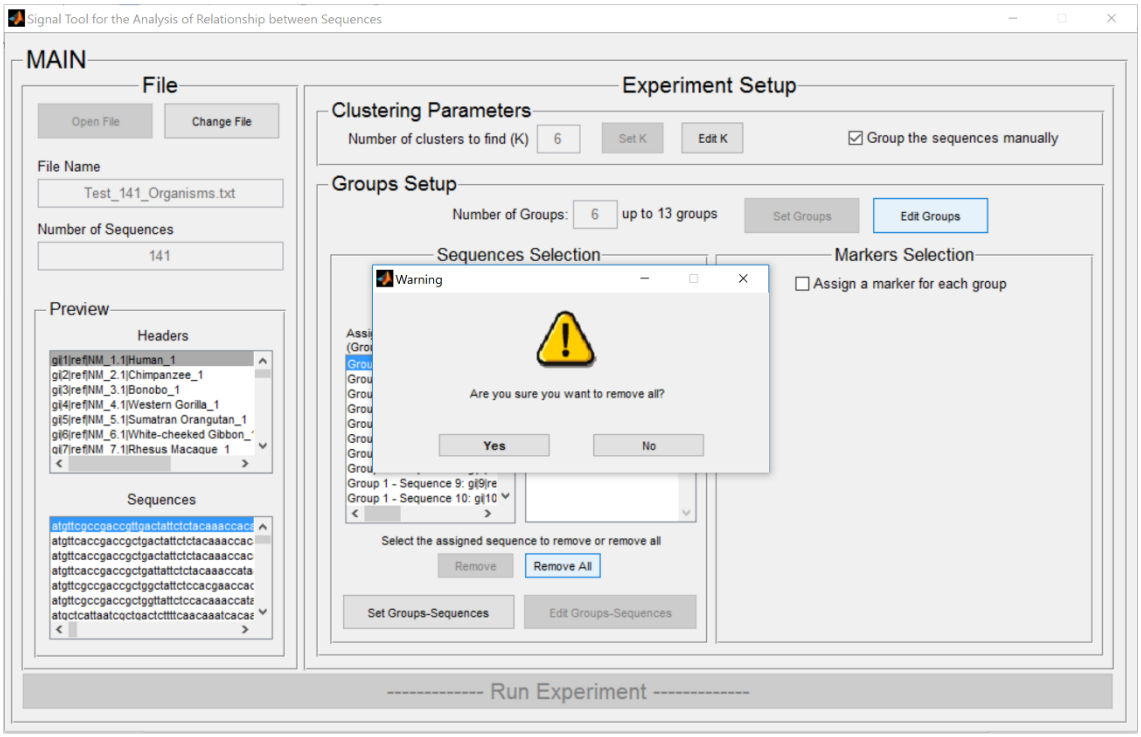
Choosing the sequences for the fifth group.



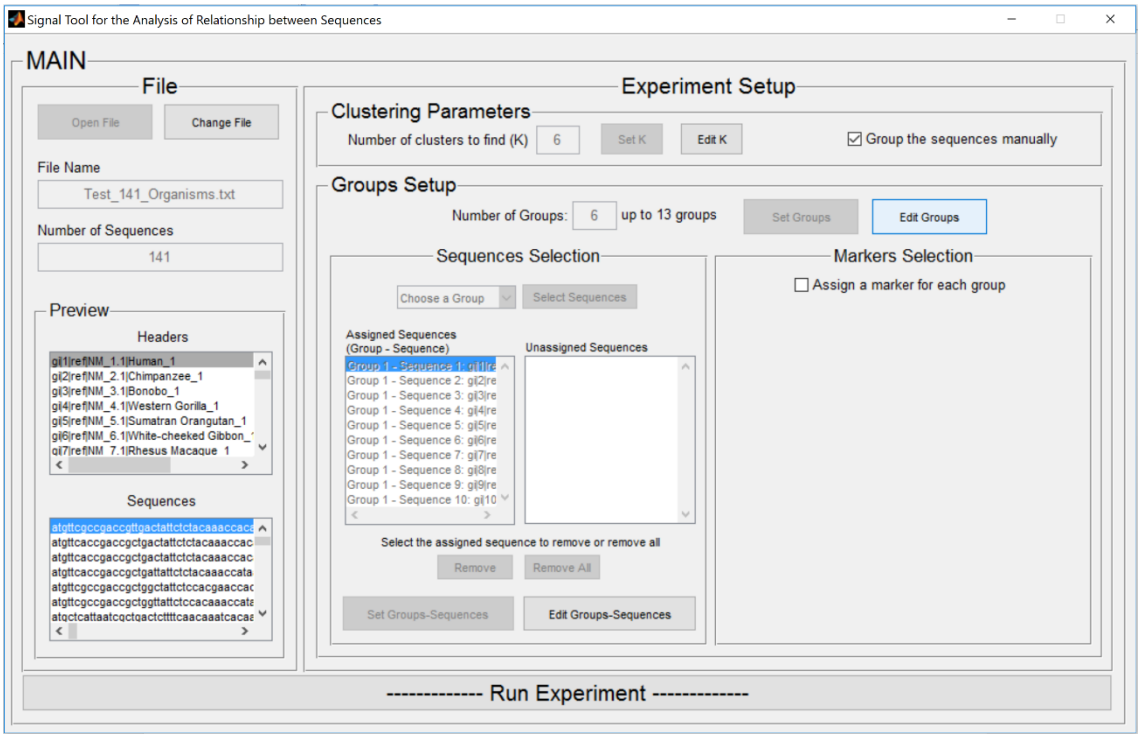
You can select the remaining sequences for a group by clicking on “Select all” button as shown in the next screen.



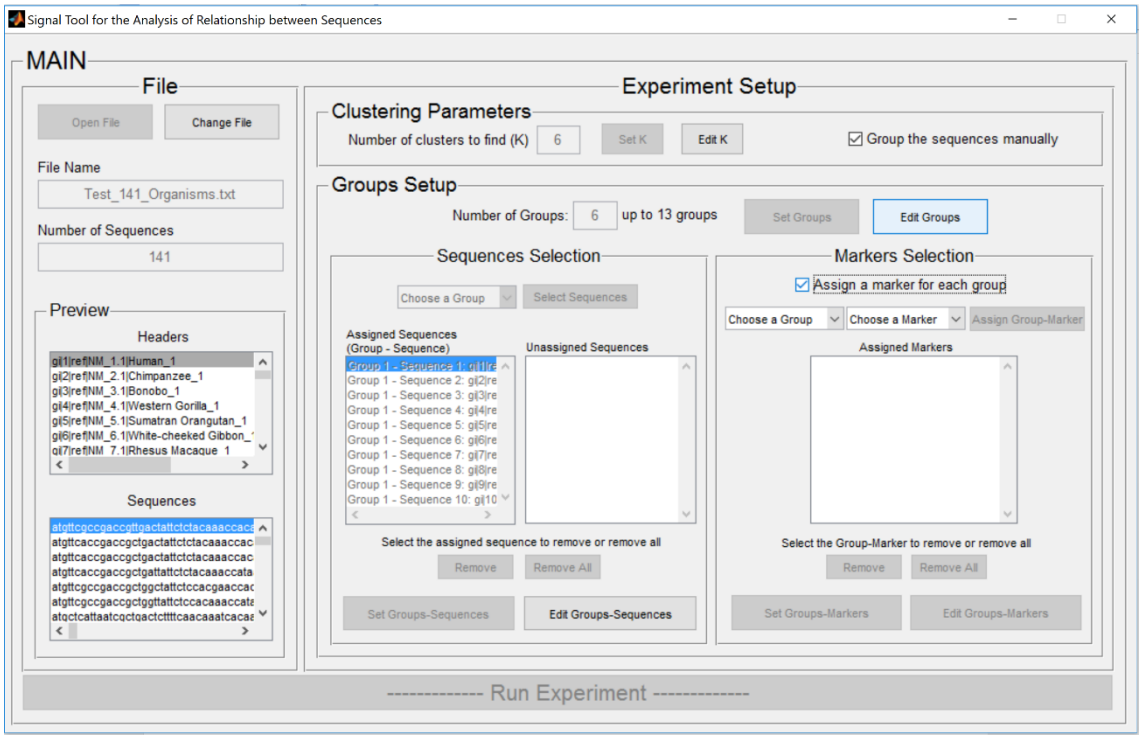
Then you are ready to set the Group Sequences. You can always change your mind by clicking on “Remove” or “Remove all” buttons in order to choose another group for the sequences. However you must keep in mind that that you will lost all your grouping sequences!



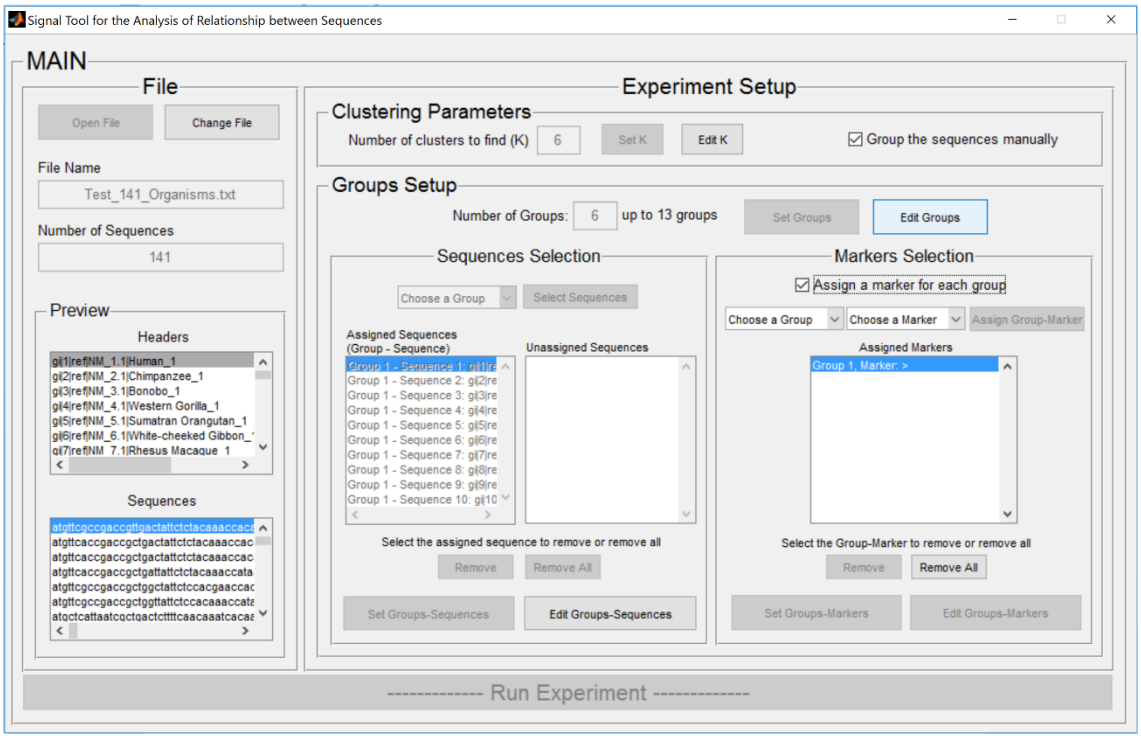
If you choose to click “Set Groups-Sequences” you will have enabled the “Run Experiment button”. However you can always get back to the Sequence Selection by clicking on “Edit Groups-Sequences” or continue your setting by checking the “Assign a marker for each group” option in the “Markers Selection” section as shown in the next screen.



If you choose to check the option in “Markers Selection” section, another options will appear as shown in the next screen.

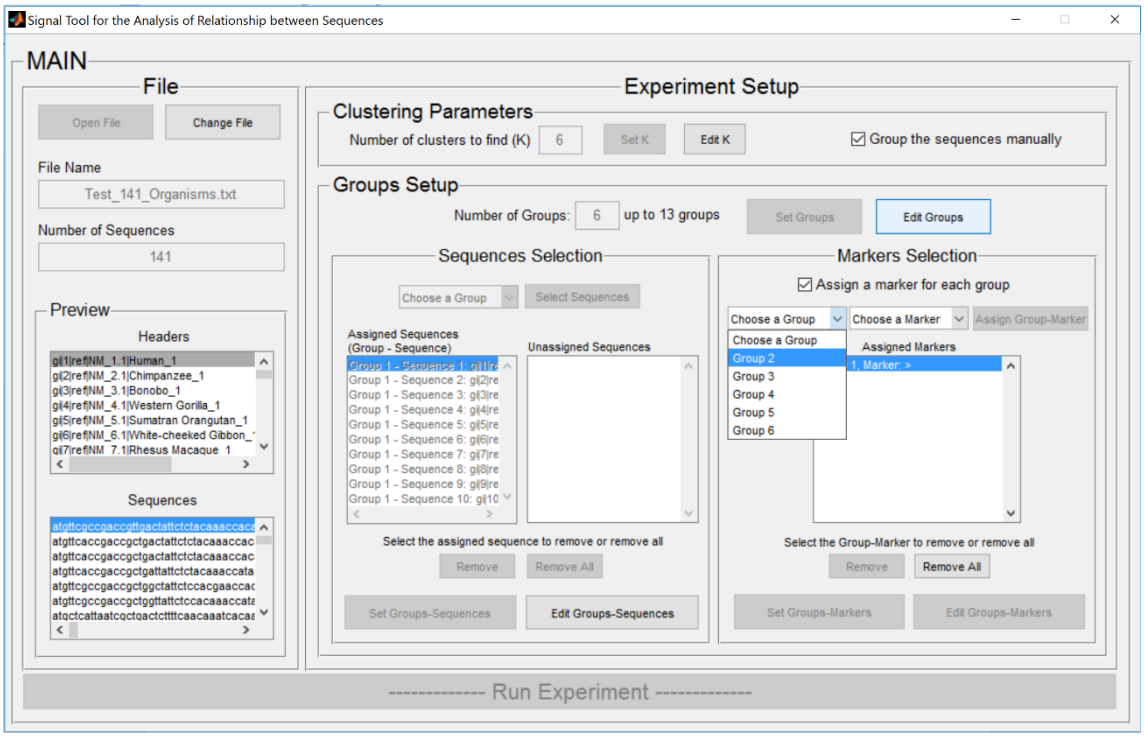


Here, you must set a marker for each of the selected groups by selecting on the group and the marker options. Once selected the group and the marker click on the “Assign Group-Marker” button.

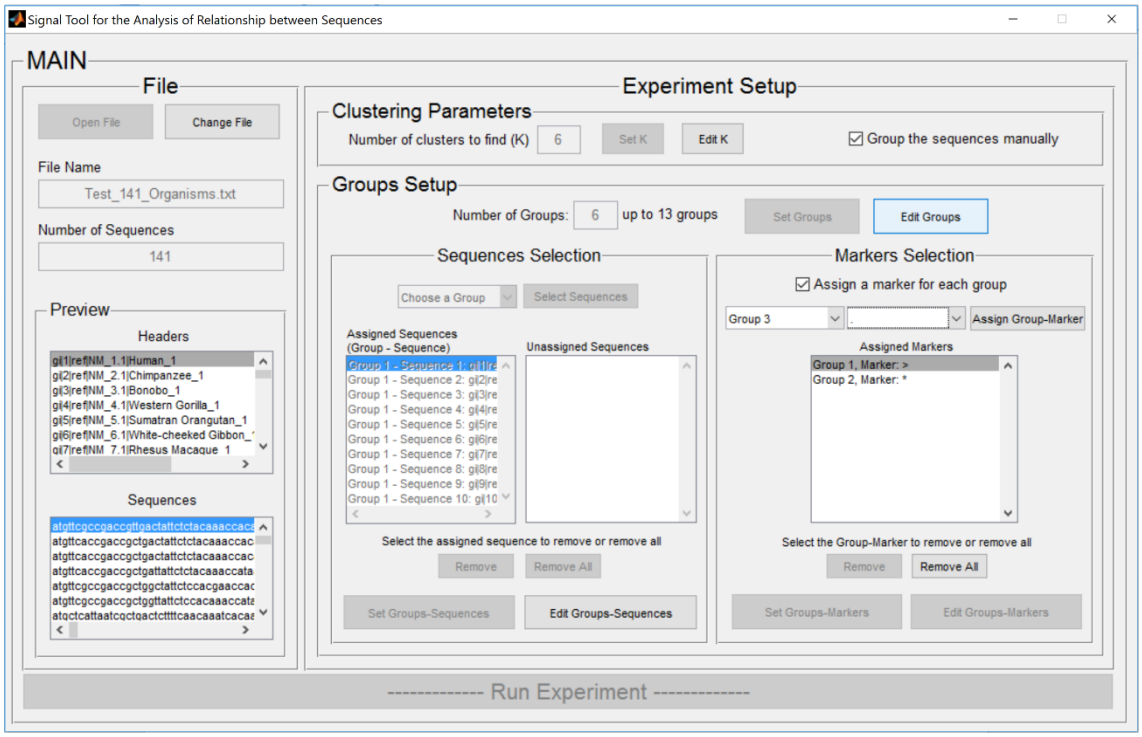


Repeat until you have selected for all groups the markers as shown in the next screens. Note: you will see that previous selected groups will disappear from the list.

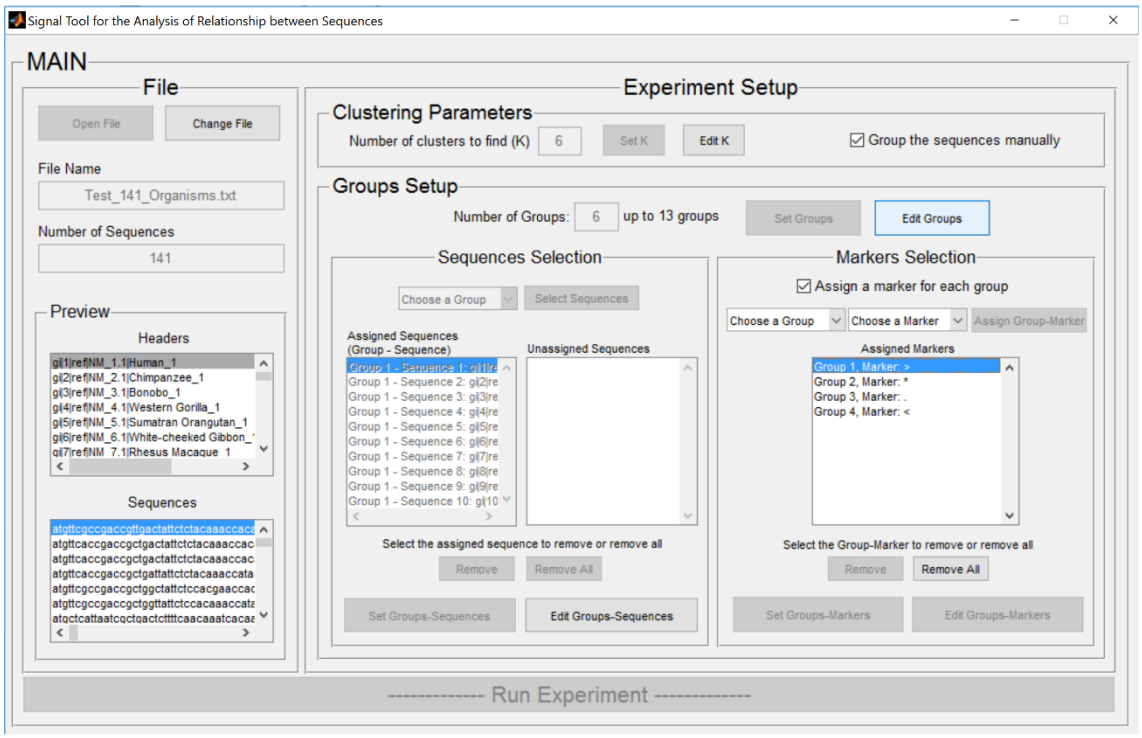
Choosing the marker for the second group



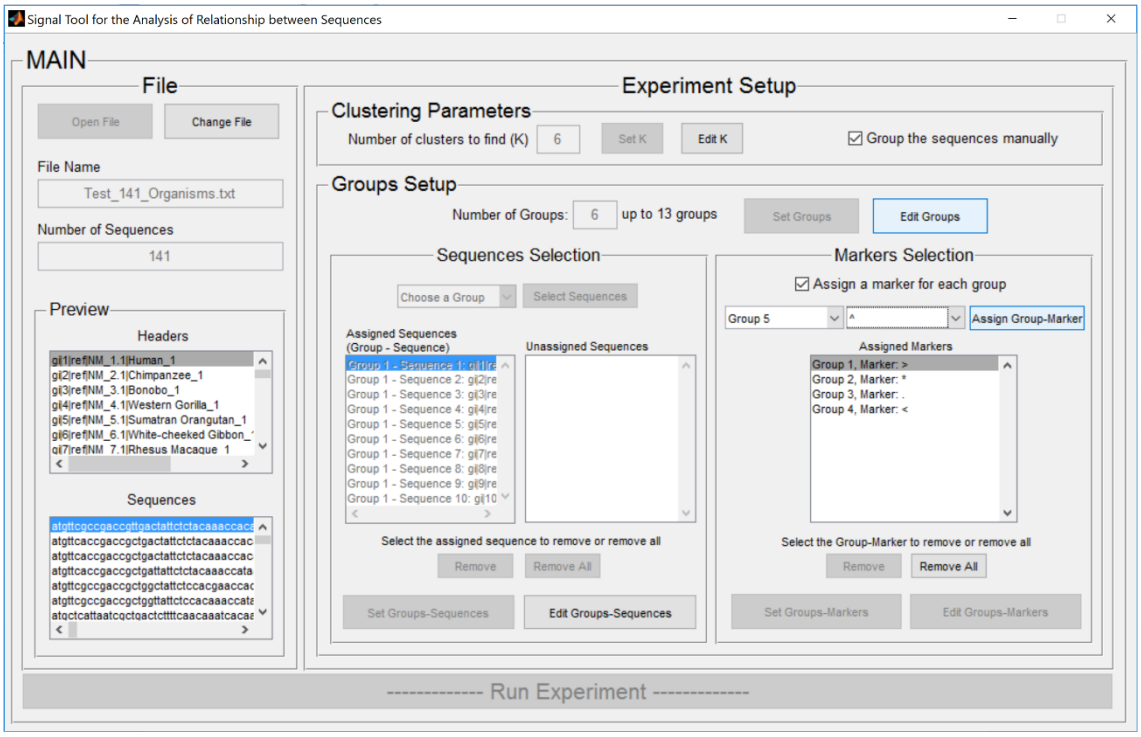
Choosing the marker for the third group



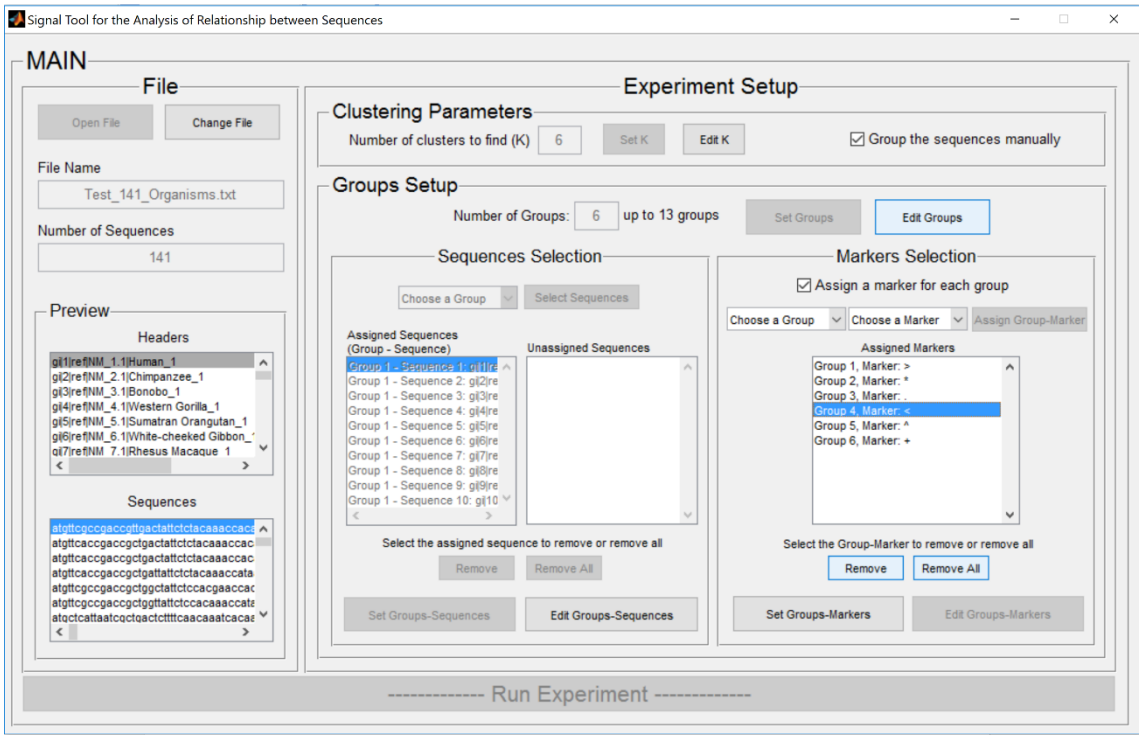
Choosing the marker for the fourth group



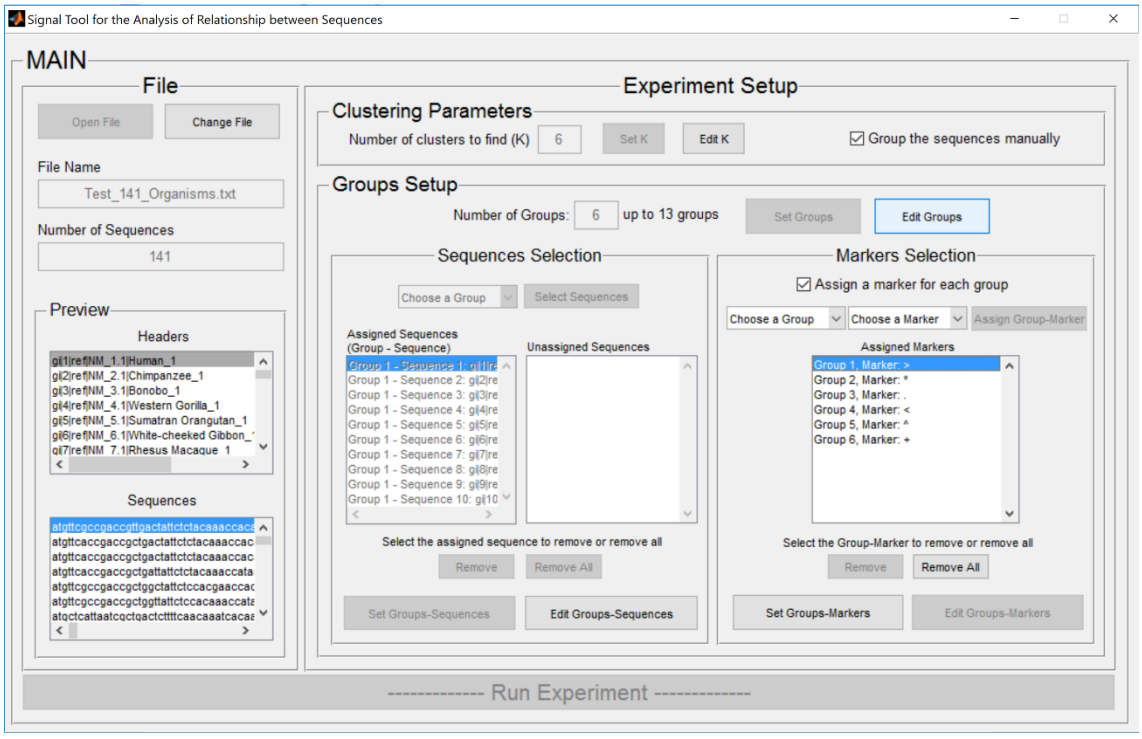
Choosing the marker for the fifth group



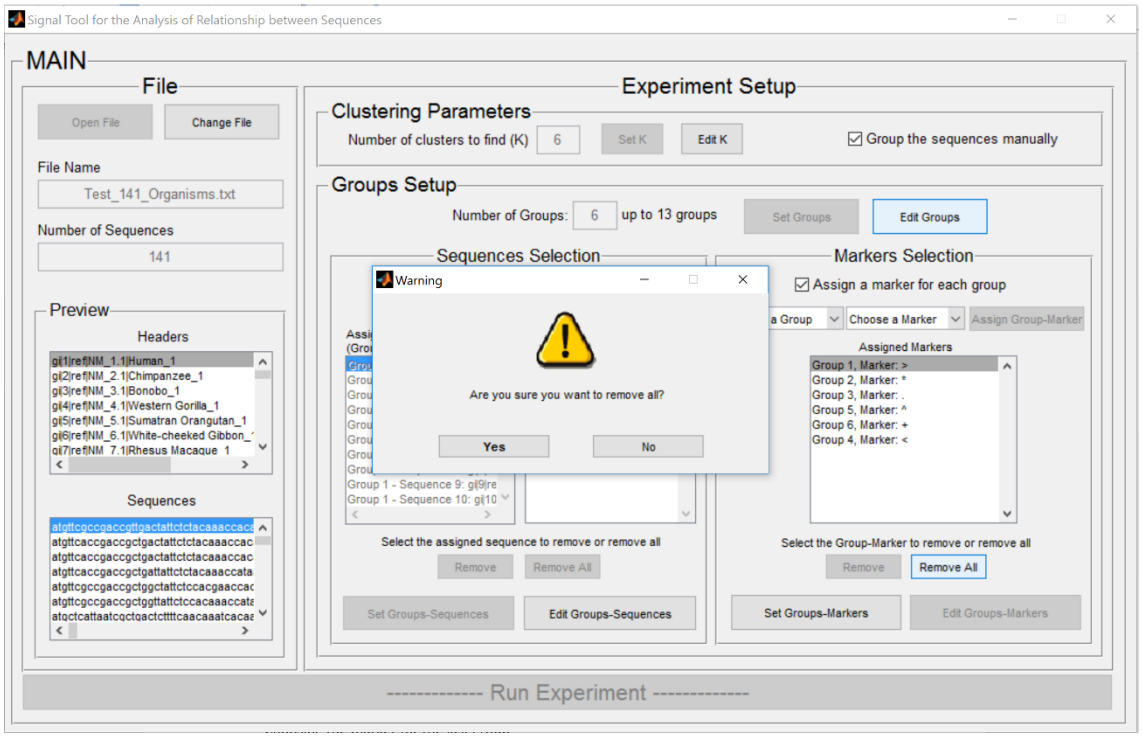
Choosing the marker for the sixth group. Note that if you select in previous groups with an assigned marker you can always click on the “Remove” button in order to change the marker.



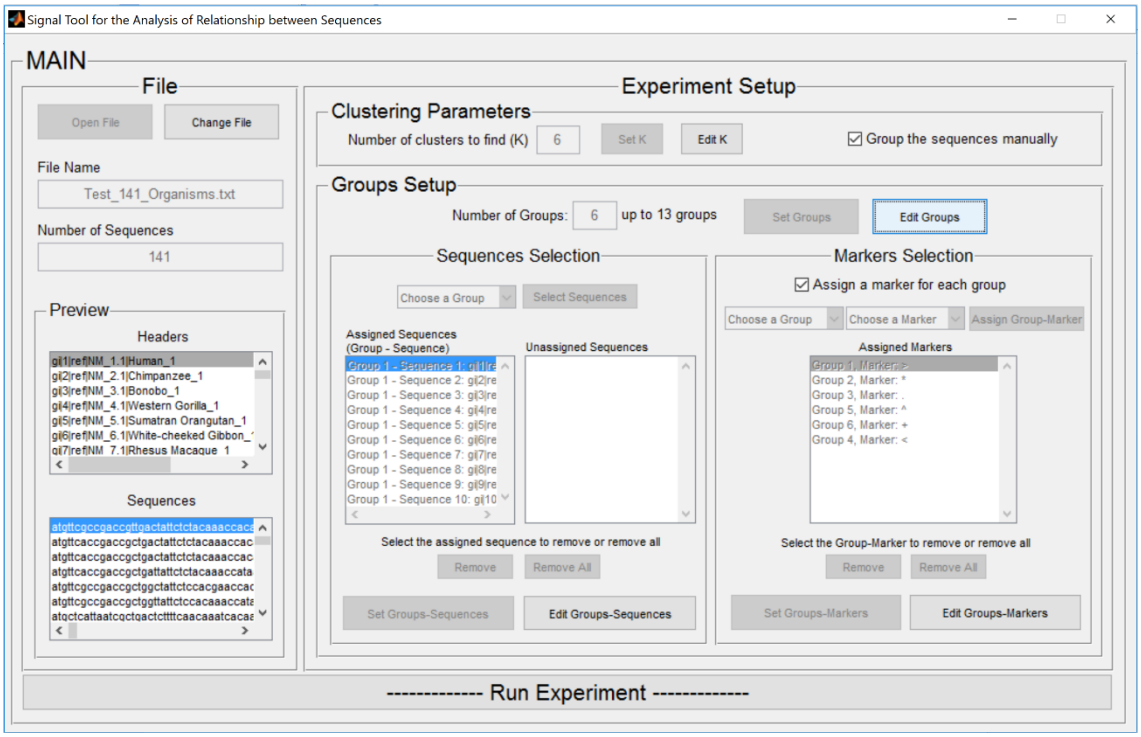
Choosing the marker for the last group



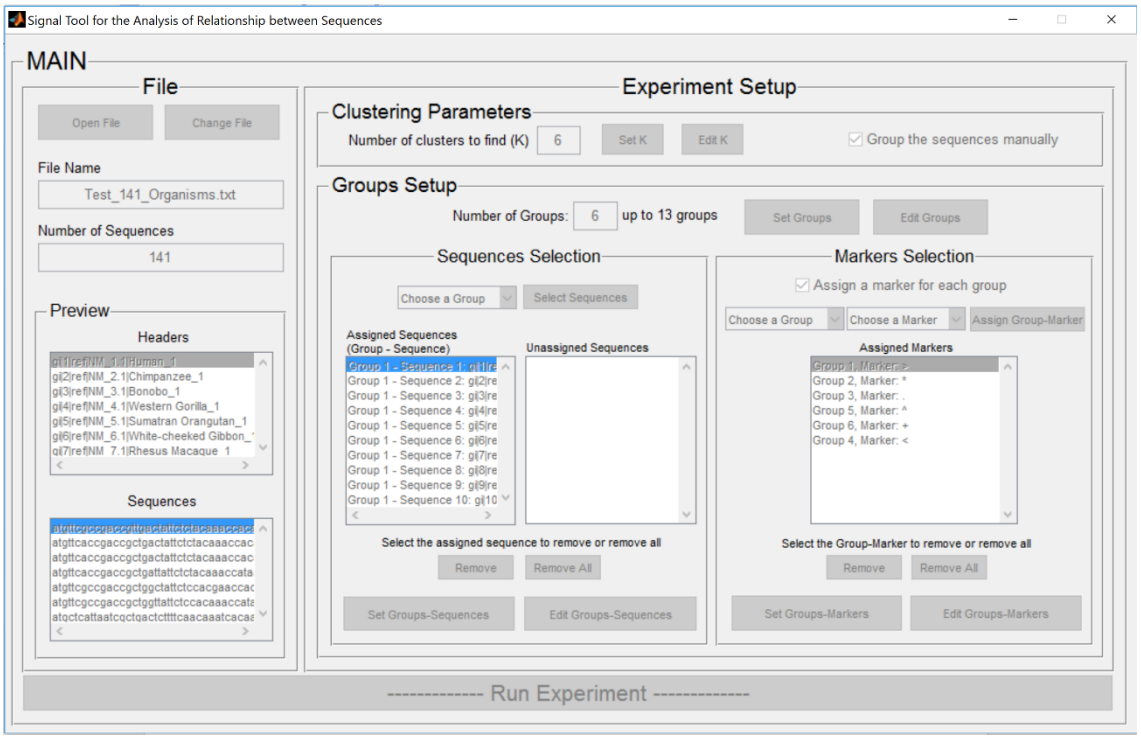
When assigning the last group the options “Remove All” and “Set Groups-Markers” will be enabled. If you choose to click on “Remove All” button you will remove all your marker assignations, so make sure if you want to do it.

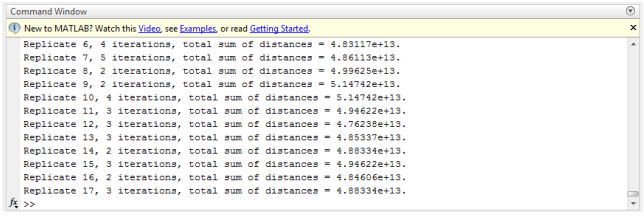


If you choose to click on “Set Groups-Markers” button all the options on “Markers Selection” will be disabled except the “Edit Group-Markers” button who was disabled previously and that allows you to reset the Markers Selections as shown in the next screen.

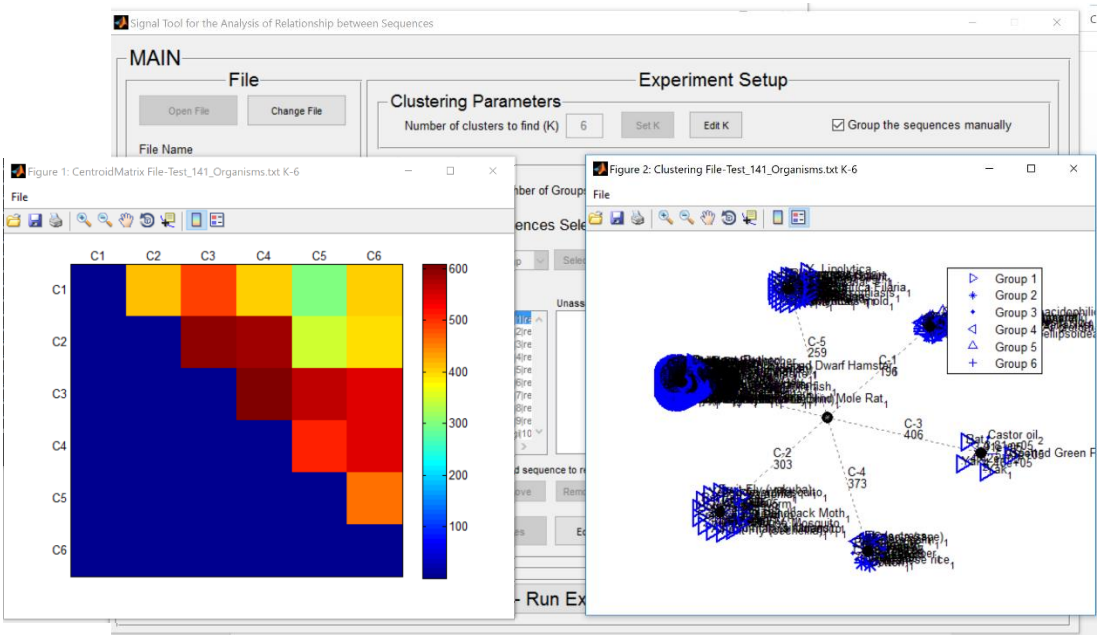


If you choose to Run the experiment by clicking on “Run Experiment” button you will see the experiment status at the Matlab Command Window until Results* appear as shown in the next screens.

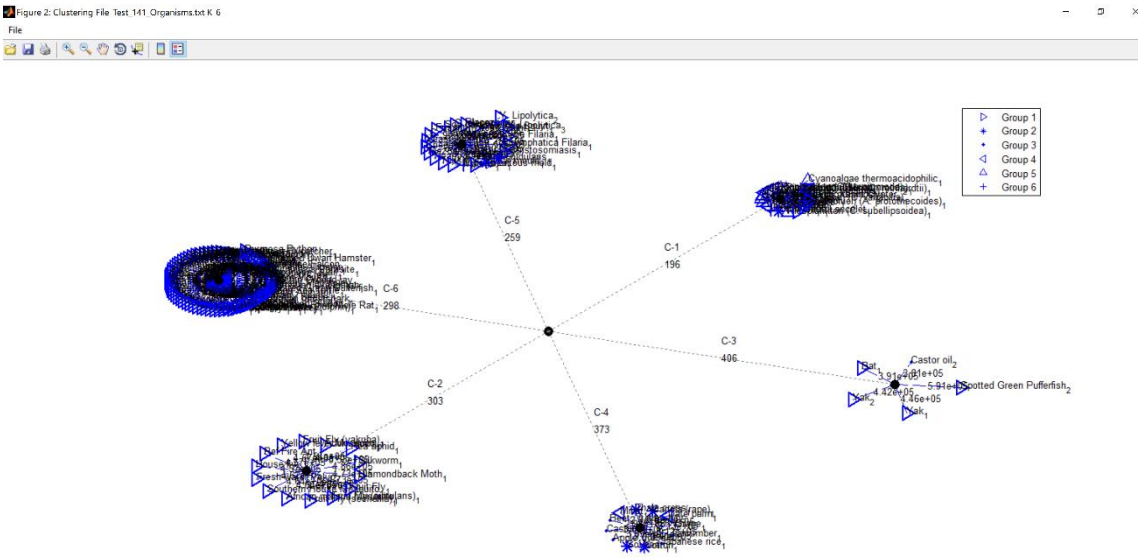




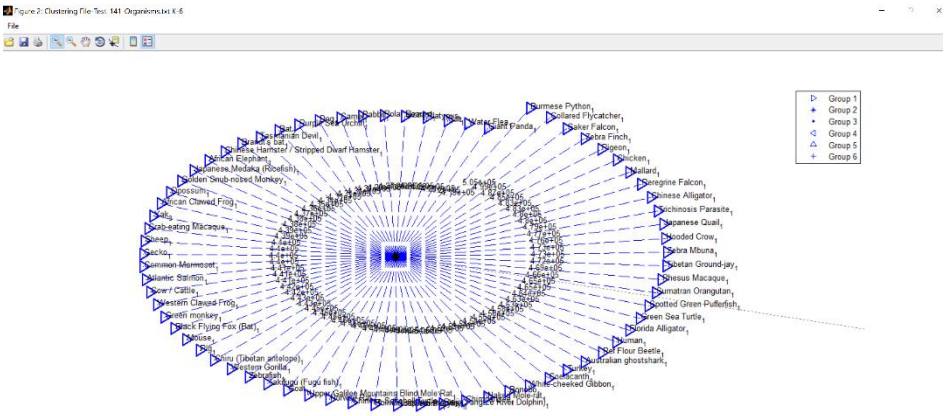
After 100 replicates you will see the Results in two separated figures as shown in the next screen. There you will see in Figure 1 the Centroid Matrix which tell us about how close or far are clusters among them. In Figure 2 you will see the clusters around a center for which the distances are calculated and a legend with the selected markers for each group in order to identify the sequences.

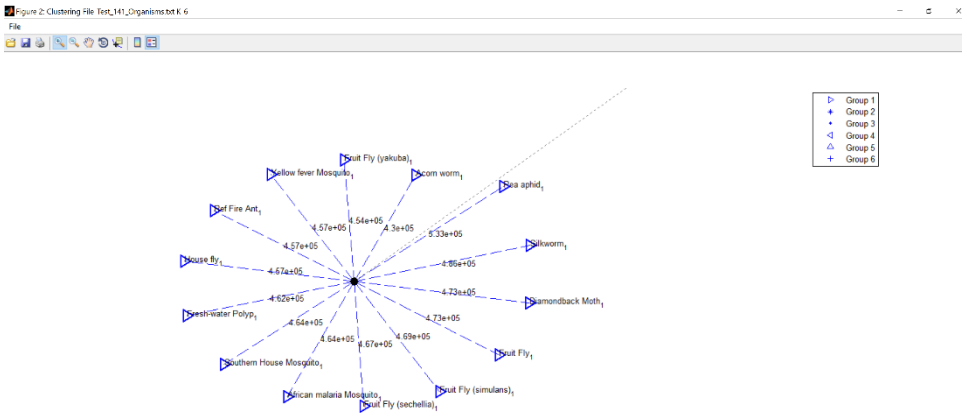


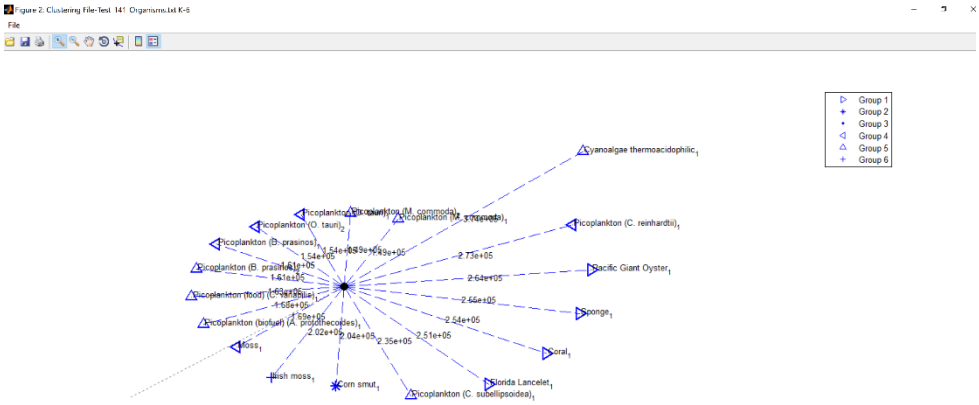
You can click on maximize in Figure 2 in order to obtain a better view of the data as shown in the next screen.



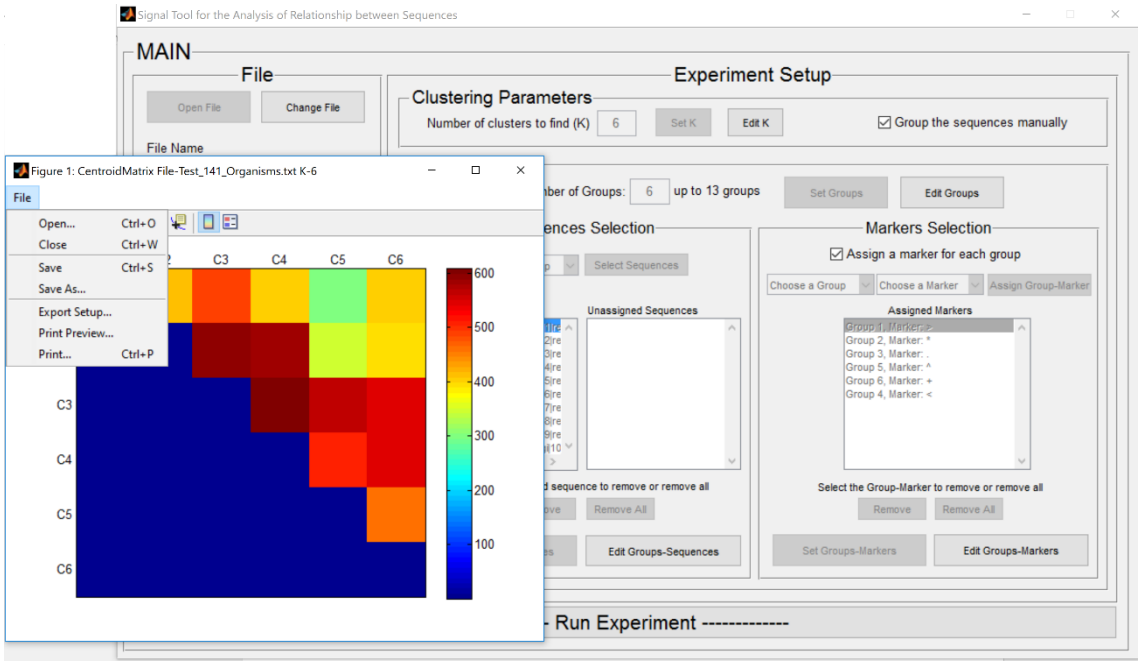
Or if you need, you can make a “zoom in” on a specific cluster in order to analyze it as shown in the next screens.

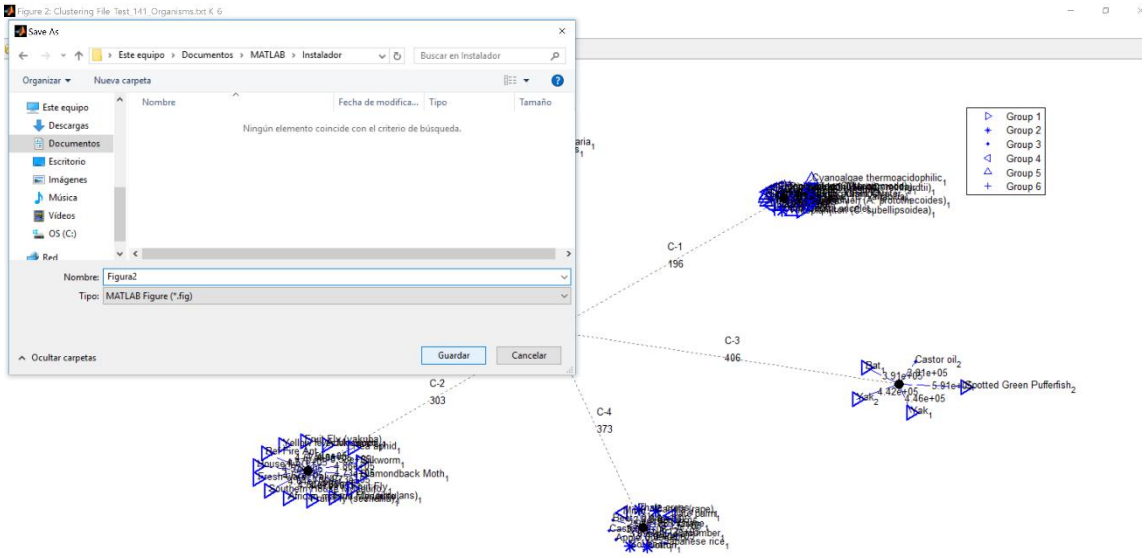






You can save your Figures by clicking on File then save or Save As options as shown in the next screens.


Signal Tool for the Analysis of Relationship between Sequences
MAIN
File
Open File
Change File
File Name
Experiment Setup
Clustering Parameters
Number of clusters to find (K)
6
Set K
Edit K
Group the sequences manually
Figure 1: CentroidMatrix File-Test_141_Organisms.txt K-6
File
Open... Ctrl+O
Close Ctrl+W
Save Ctrl+S
Save As...
Export Setup...
Print Preview...
Print... Ctrl+P
C3
C4
C5
C6
600
500
400
300
200
100
Set Groups
Edit Groups
Select Sequences
Unassigned Sequences
Markers Selection
Assign a marker for each group
Choose a Group
Choose a Marker
Assign Group-Marker
Assigned Markers
Group 1, Marker: >
Group 2, Marker: *
Group 3, Marker: .
Group 5, Marker: ^
Group 6, Marker: +
Group 4, Marker: <
Select the Group-Marker to remove or remove all
Remove
Remove All
Edit Groups-Sequences
Set Groups-Markers
Edit Groups-Markers
Run Experiment


Save As
Este equipo
Documentos
MATLAB
Instalador
Buscar en Instalador
Organizar
Nueva carpeta
Nombre
Fecha de modifica...
Tipo
Tamaño
Ningún elemento coincide con el criterio de búsqueda.
Este equipo
Descargas
Documentos
Escritorio
Imágenes
Música
Vídeos
OS (C:)
Red
Nombre: Figura2
Tipo: MATLAB Figure (*.fig)
Ocultar carpetas
Guardar
Cancelar
Group 1
Group 2
Group 3
Group 4
Group 5
Group 6
C-1
196
C-2
303
C-3
406
C-4
373
Castor oil
Spotted Green Pufferfish
Diamondback Moth