Visualizing Tables

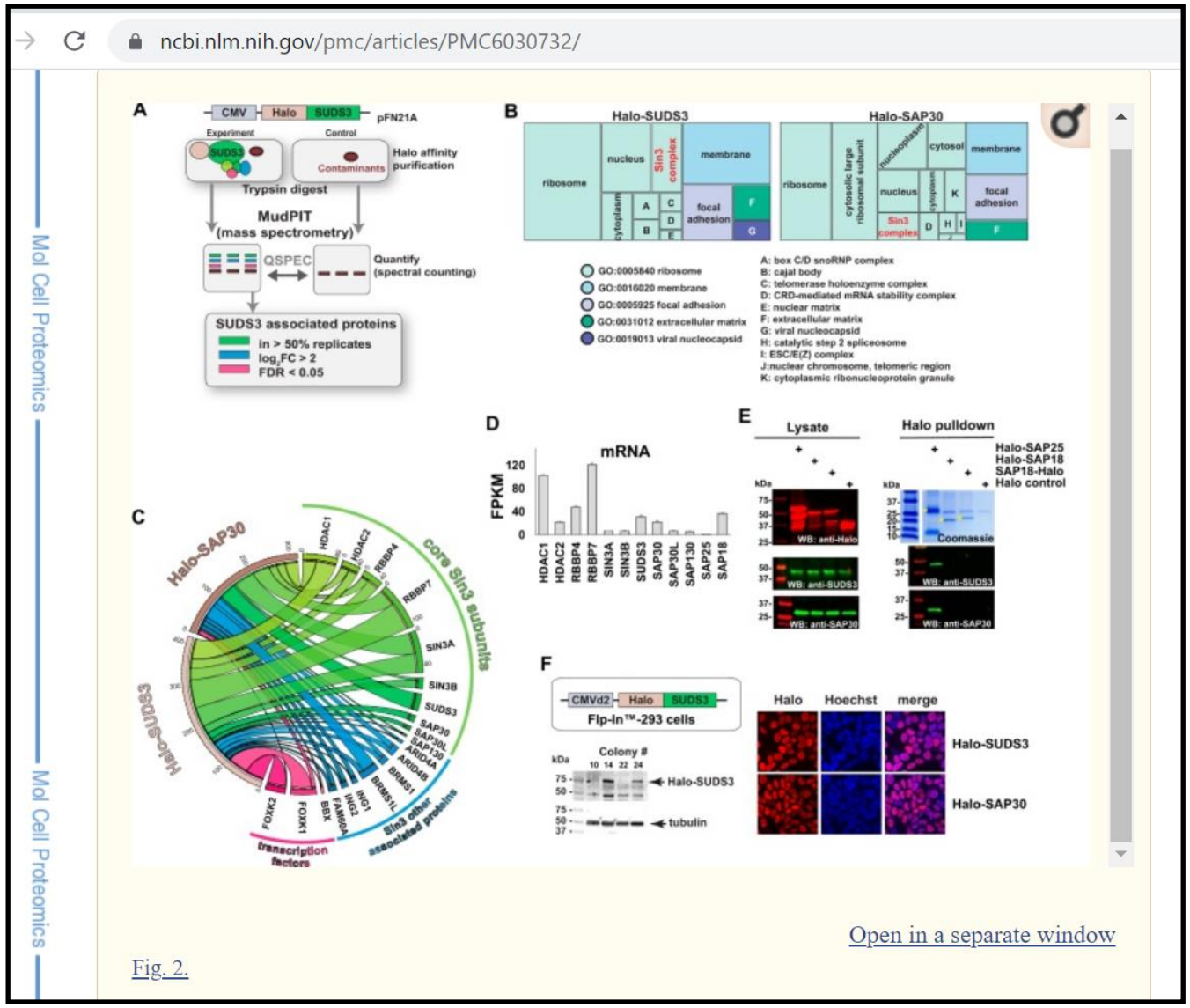
Visualize relations

- Circular visualization/relations between objects by links
- Visualize relations with circos (in R or using online version of Circos)
- Visualize relations with networks (Cytoscape and R)

- Circos is a software package for visualizing data and information. It visualizes data in a circular layout — this makes Circos ideal for exploring relationships between objects or positions. There are other reasons why a circular layout is advantageous, not the least being the fact that it is attractive.

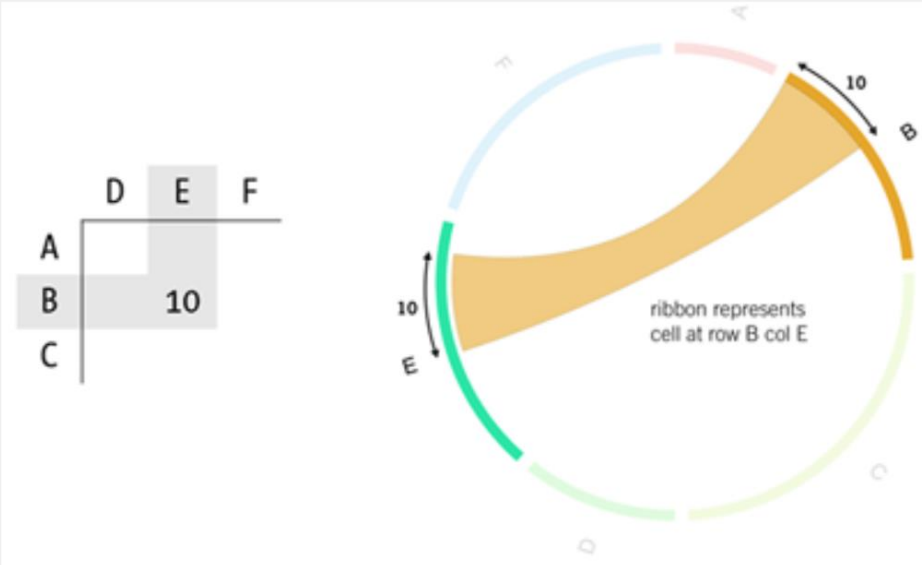
- Circos is ideal for creating publication-quality infographics and illustrations with a high data-to-ink ratio, richly layered data and pleasant symmetries. You have fine control each element in the figure to tailor its focus points and detail to your audience.

Circular representation in Manuscripts



VISUALIZING TABLES

The Circos table viewer uses the Circos application to turn data tables into chord diagrams.



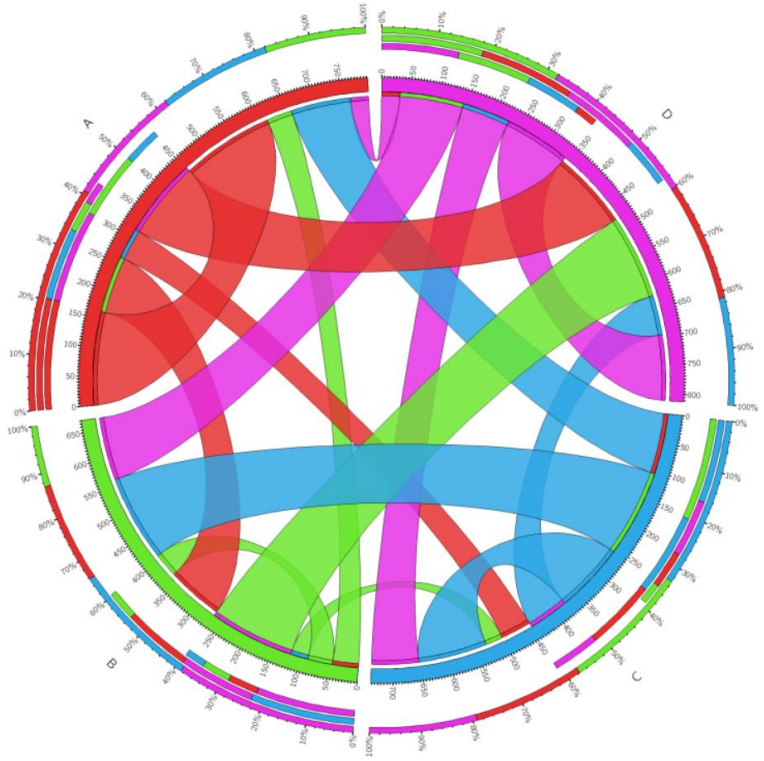
▲ The table is drawn with its rows and columns as segments along the edge of the circle and with cells represented by ribbons proportional in width to the value in the cell. A cell's ribbon joins the cells row and column segments.

http://circos.ca/intro/tabular_visualization/

VISUALIZING TABLES

TABLE DATA USED FOR FIGURE

/home/martink/work/circos/svn/tools/tableviewer/bin/../etc/make-table.confdata	A	B	C	D
	A	162	99	54	138
	B	45	43	30	148
	C	105	152	121	70
	D	32	111	83	115



http://circos.ca/intro/tabular_visualization/

DATA FORMAT

online version of Circos

eb.bcgsc.ca/tableviewer/

1 . CHECK DATA FORMAT

Before uploading a data file, check the samples gallery to make sure that your data format is compatible.

- Your file must be **plain text**.
- Your data values must be **non-negative integers**.
- Data must be space-separated (**one or more** tab or space, which will be collapsed).
- No two rows or columns may have the same name.
- Column and row names must **begin with a letter** (e.g. 'A', 'A0', 'A-0') and can only contain letters, numbers and _. No punctuation!
- Maximum row + column total is 150 — if exceeded, rows and columns are limited to 75.
- If you are using order, size and color rows/columns in combination they must appear in that order.
- No double underscores.

Need help? Post questions to the Circos Google Group.

2A . UPLOAD YOUR FILE

If you are using the size, order or color options below, make sure your input file has the appropriate content (see samples 5-9).

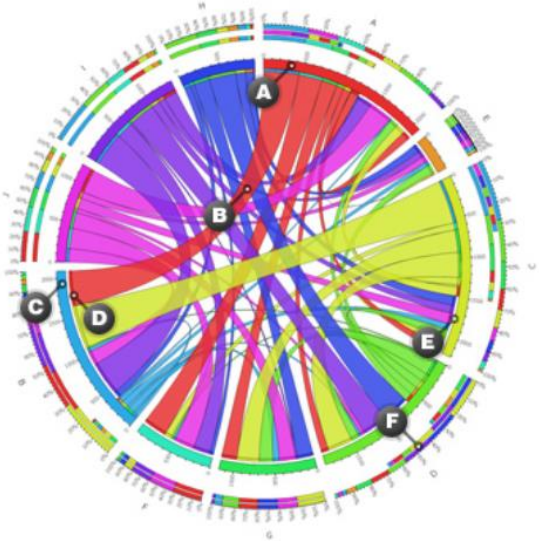
Choose File No file chosen

order ☐ col with row order ☐ row with col order
size ☐ col with row size ☐ row with col size
color ☐ col with row colors ☐ row with col colors

The Circos table viewer uses the Circos application to turn data tables into chord diagrams.

	A	B	C	D	E	F	G
A	105	450	92	96	5	301	195
B	20	46	78	33	53	28	83
C	118	553	94	317	25	89	287
D	100	18	108	104	105	25	173
H	23	83	123	342	98	48	205
I	173	428	103	325	82	215	23
J	305	173	138	49	81	258	207

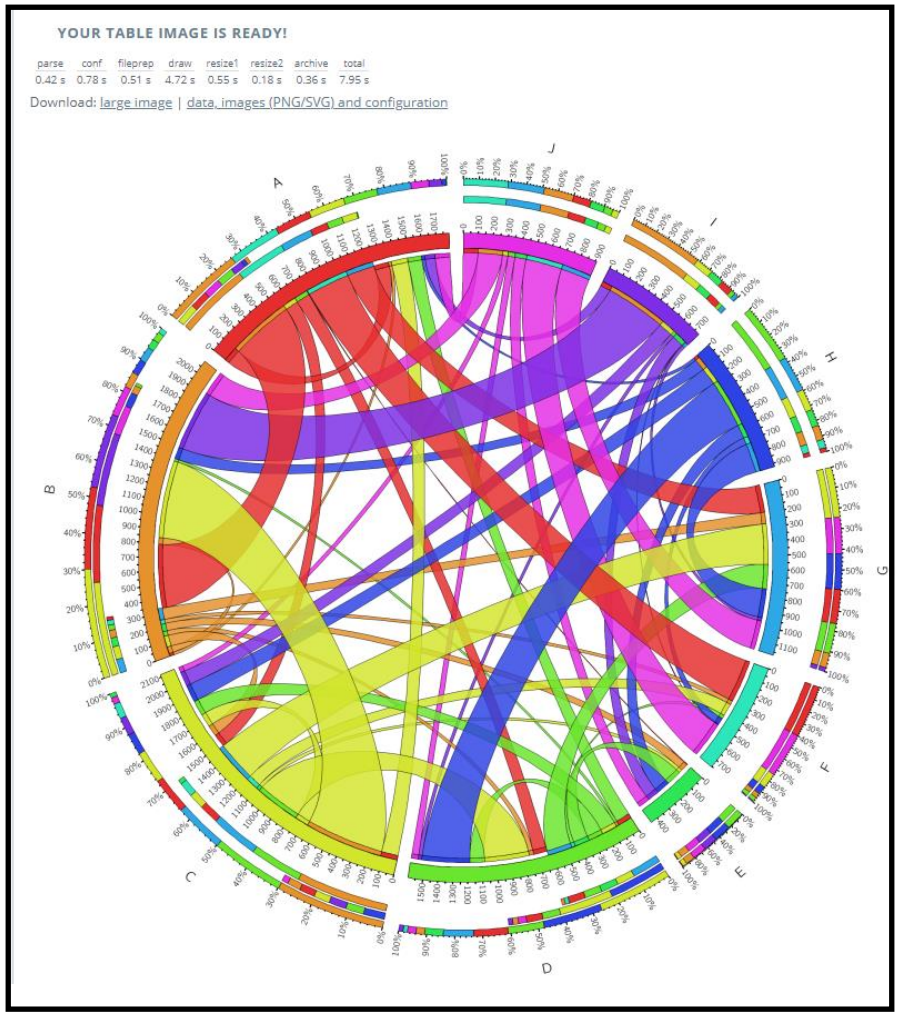
into circularly composited visualizations like this



A Row and column segments.
B Ribbon size encodes cell value associated with row/column segment pair.
C Ribbons can be colored by
D Ribbon ends colored by column segment.
E Gap between ribbon and associated column segment.
F Relative row, column and

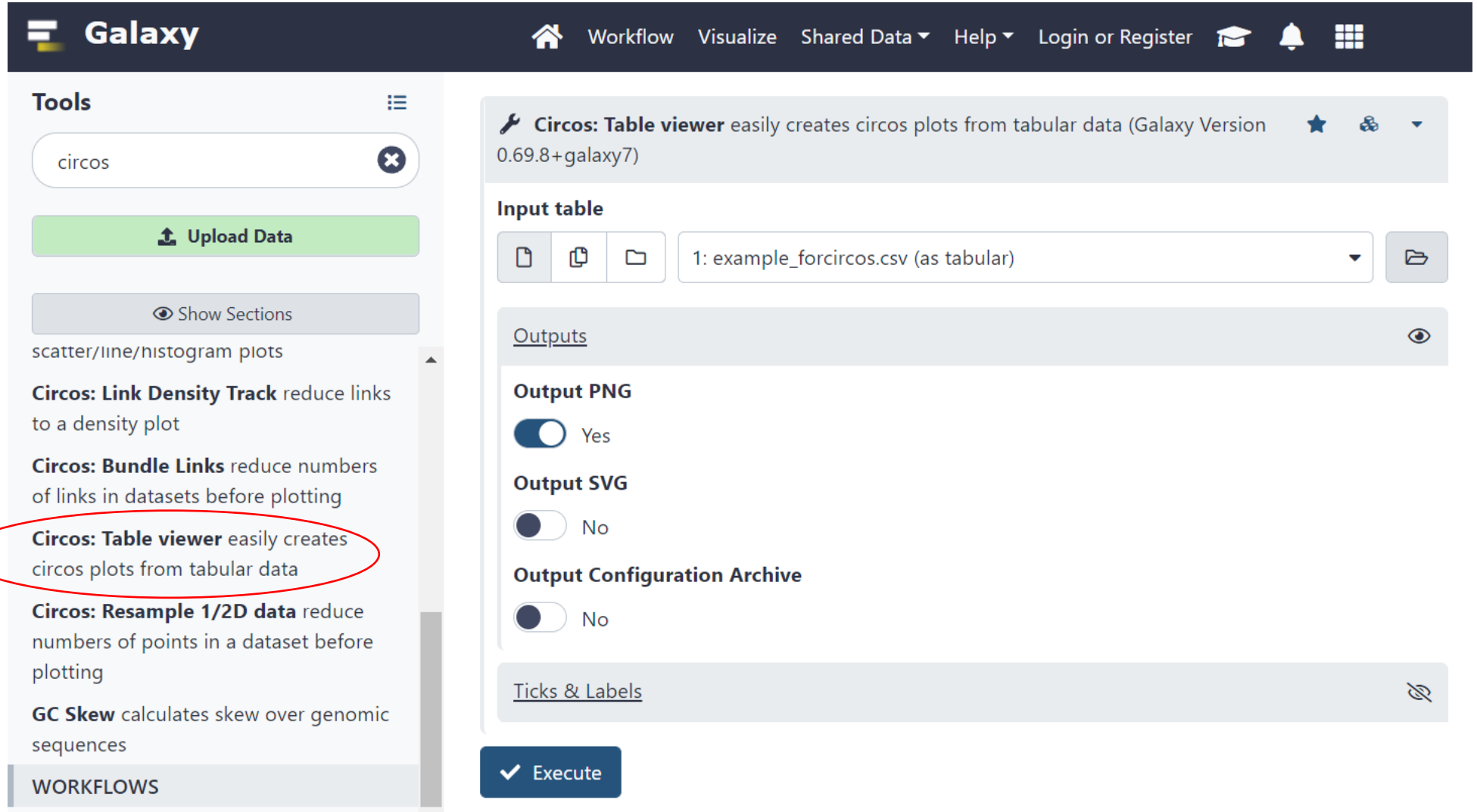
Example output

File needs to be in a .txt format
Read the file example_forcircos.txt



Creating circular plots with GALAXY

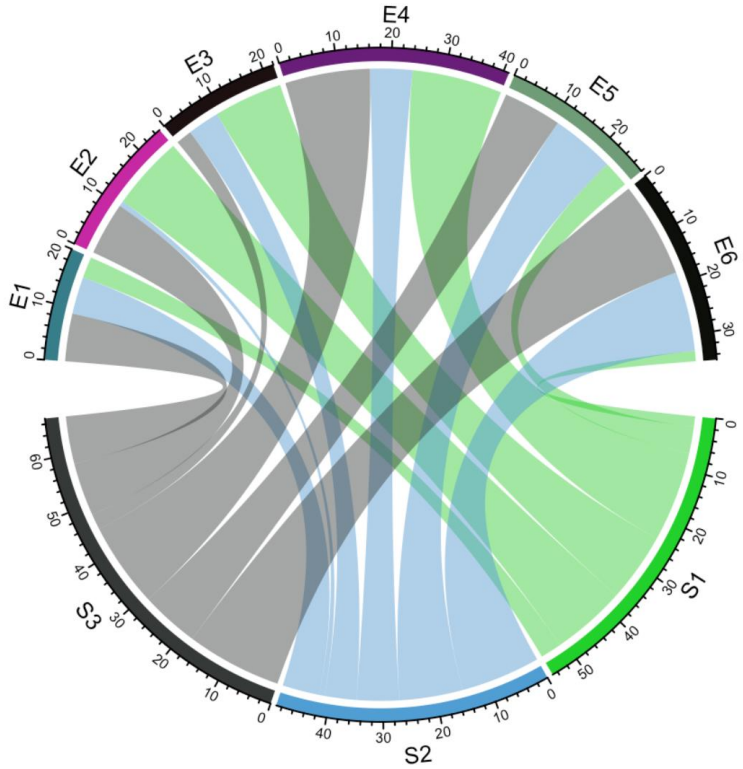
https://usegalaxy.org/



Rvb1
Nhp10
Ies3
Taf14
Ies5
Ies2
Arp8
Rvb2
Ies4D3
Ies4D4

Create relations in R

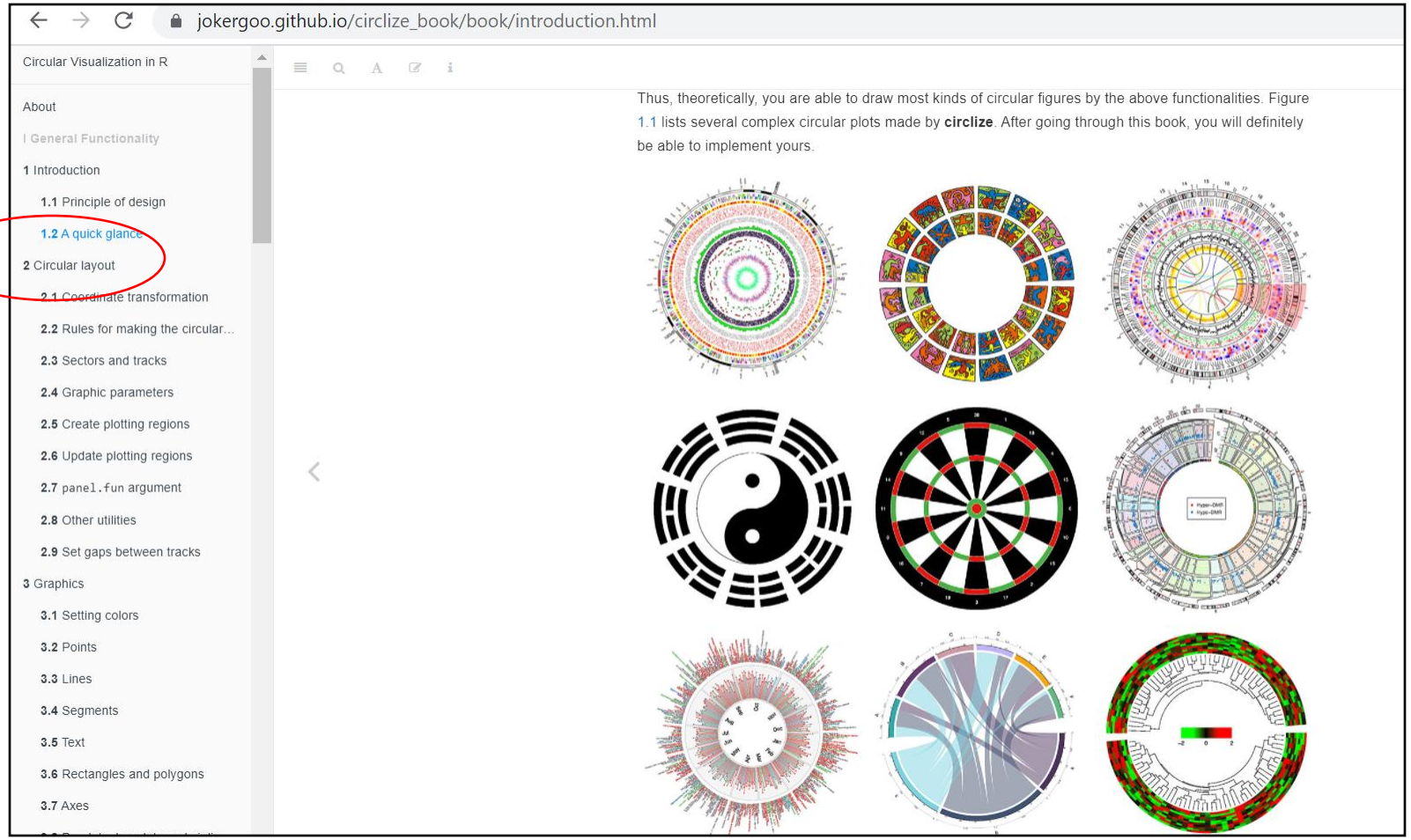
```
install.packages("circlize")
library("circlize")
```



https://jokergoo.github.io/circlize_book/book/the-chorddiagram-function.html#adjust-by-circos.par

SCRIPT

Examples by circlize



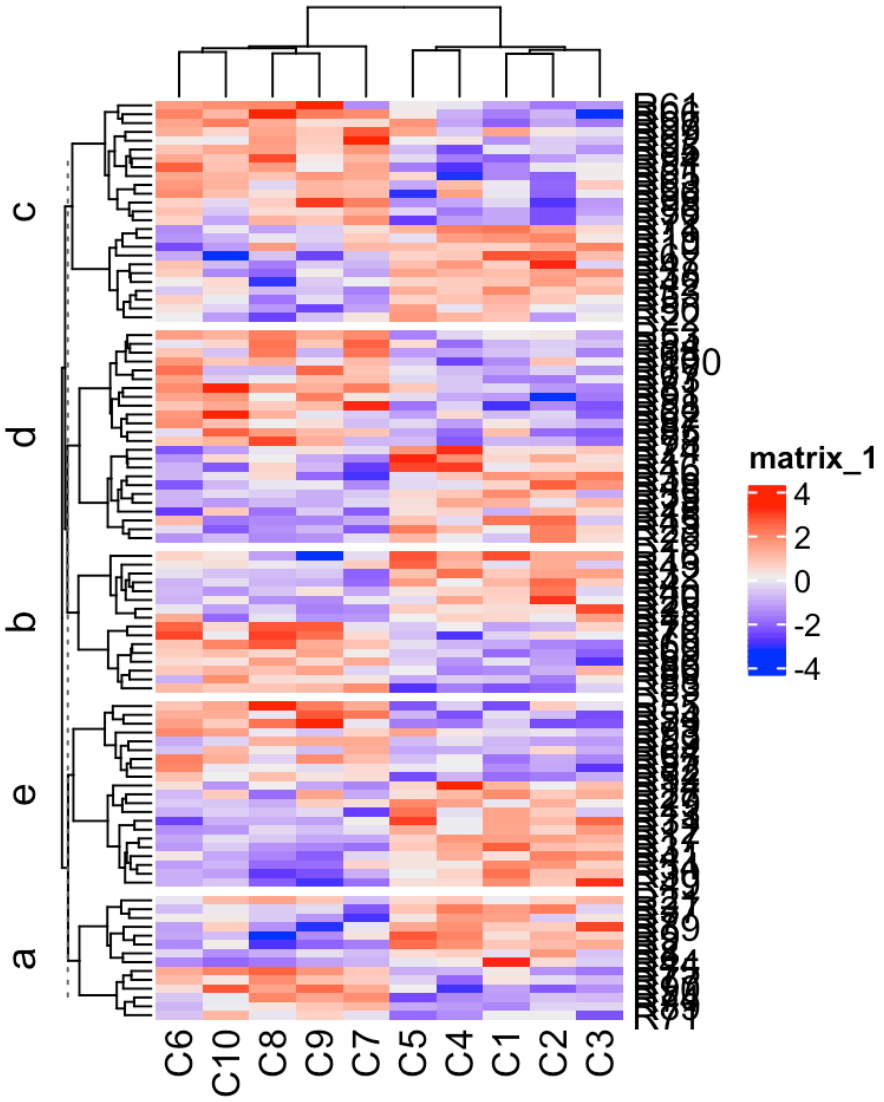
Using circos to create heatmaps and clusters

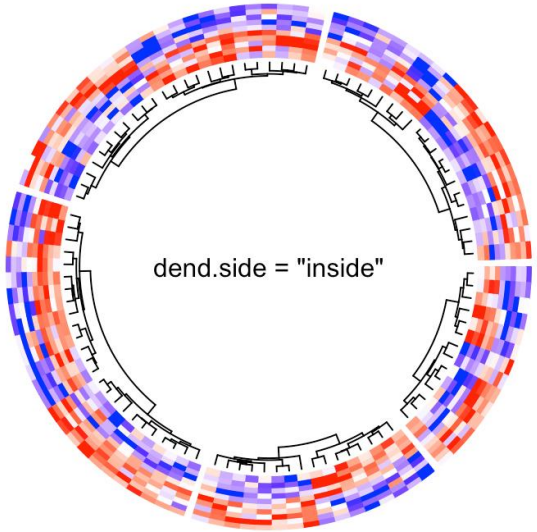
- With circlize package, it is possible to implement circular heatmaps by the low-level function circos.rect() (in an older version).However, there is a high-level function circos.heatmap() which simplifies the creation of circular heatmaps.

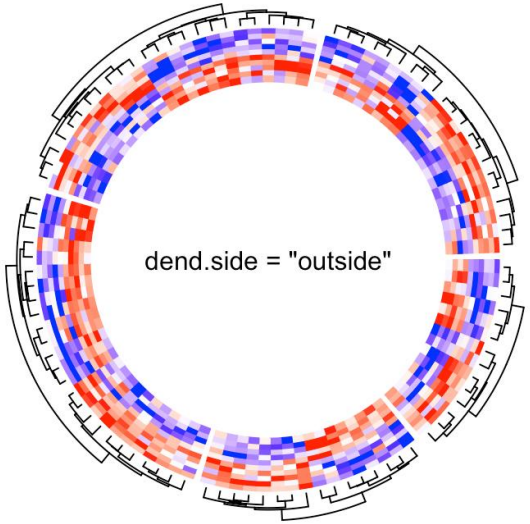
Install the library “ComplexHeatmap”

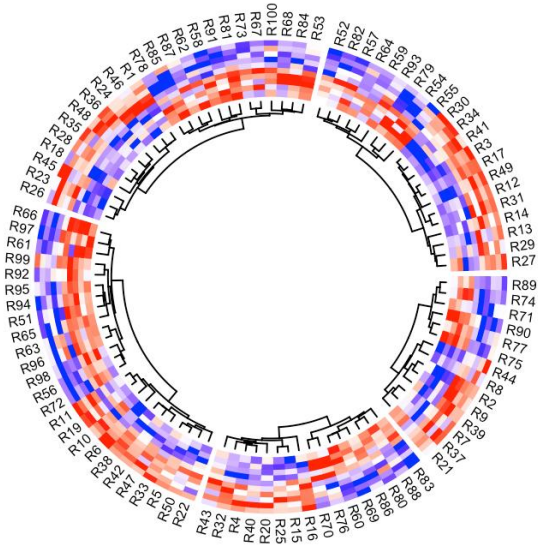
```
if (!requireNamespace("BiocManager", quietly = TRUE))
  install.packages("BiocManager")

BiocManager::install("ComplexHeatmap")
```

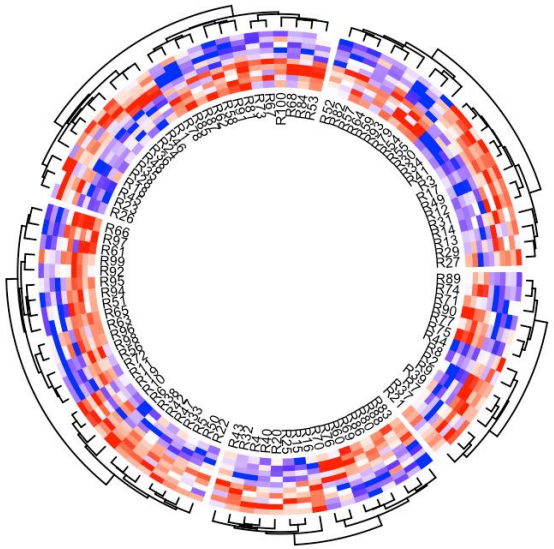
From 2D hierarchical clustering to circular clustering











Using circos to create histograms