

# User Guide

Version 1.0

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# 1. BEST PRACTISE

## 1.1 Basic Feature: CircRNAs Visualization

1.1.1 Java Virtual Machine needs to be installed before running this program. See **7 HOW TO INSTALL JAVA VIRTUAL MACHINE.**

1.1.2 Download and decompress “CircView.tar.gz” from

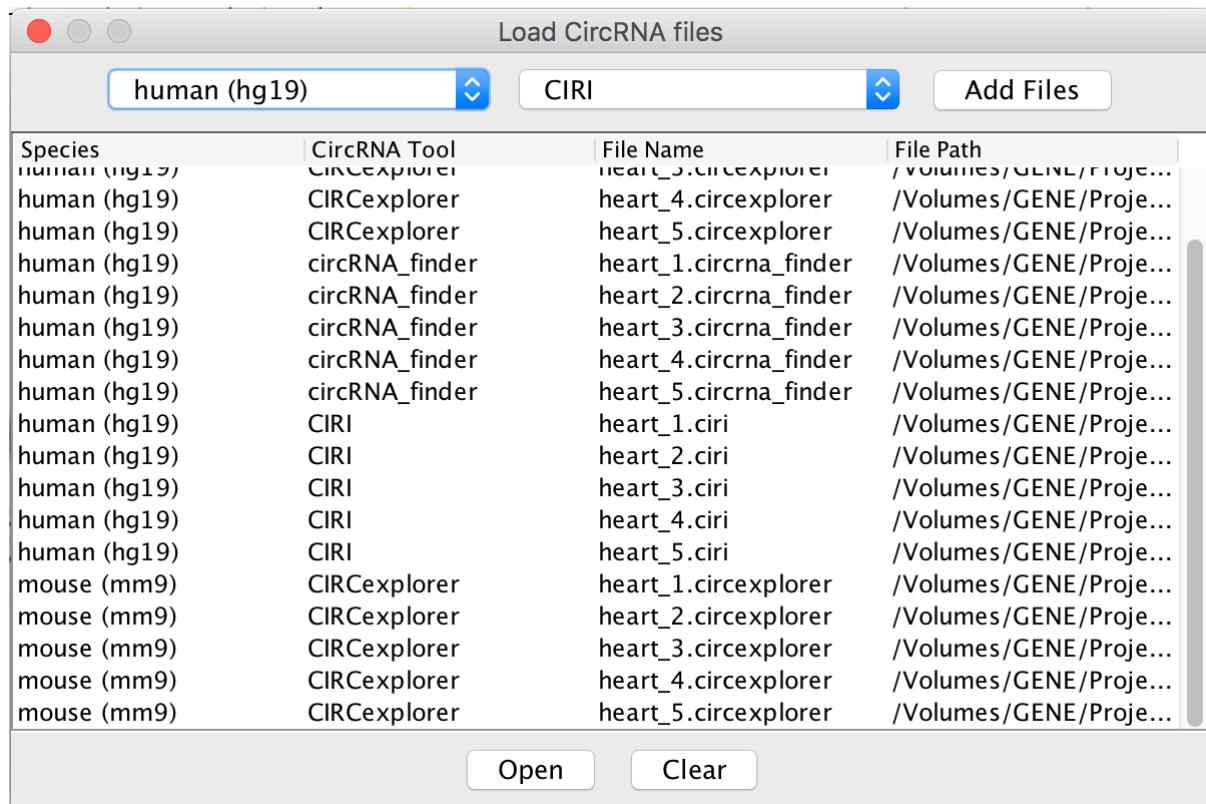
<http://github.com/GeneFeng/CircView/blob/master/CircView.tar.gz>

Double click “CircView.jar” to launch the program.

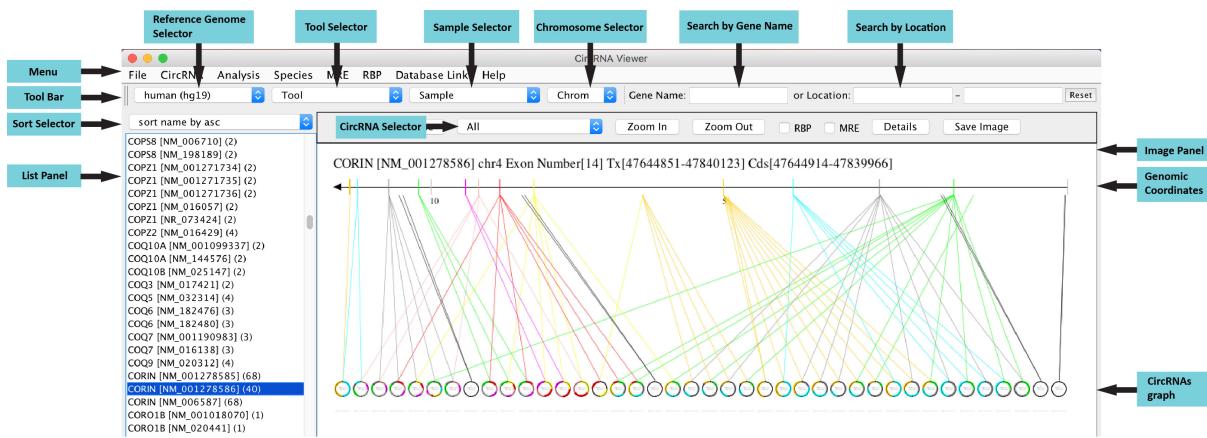
1.1.3 Download and decompress circRNA test data from

<https://github.com/GeneFeng/CircView/blob/master/testdata/human.tar.gz>

1.1.4 Click “CircRNA”->“Load Data” to load circRNA files according species and tools.

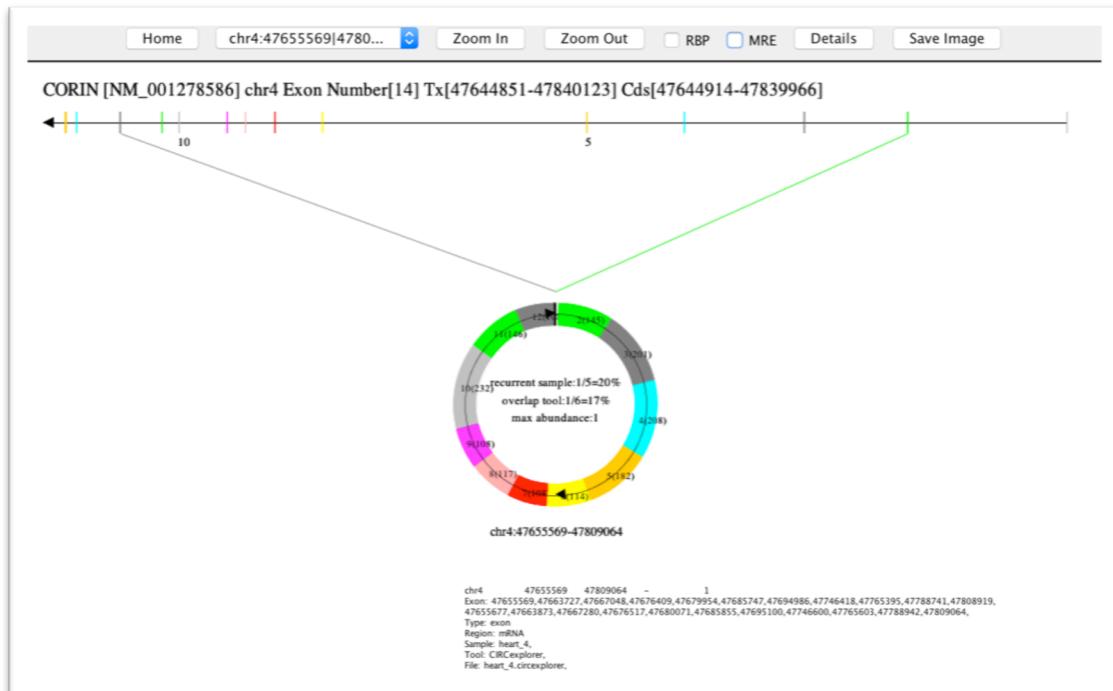


1.1.5 Click gene transcript name on left panel to view the image of the circRNAs.



1.1.6 Gene transcript can be searched by name or location.

1.1.7 Click one "Circle" to view details of each circRNA.



1.1.8 Detailed information and image of CircRNAs can be saved for further use.

1.1.9 Click "Analysis"->"Comparison" to make a comparison between circRNAs with different samples and/or tools.

The screenshot shows the CircView software interface. At the top, there are three tabs: 'Genome Selector', 'Sample Multiple Selector', and 'Comparison Items'. The 'Sample Multiple Selector' tab is active, showing 'human (hg19)' and 'mouse (mm10)' as selected samples. Below this is the 'Comparison Setting' section, which includes 'Sample selected' (set to 'heart'), 'Recurrent Sample Number' (set to 5), and 'Overlap Tool Number' (set to 6). The main area is a table titled 'Sample List' comparing genomic features between human and mouse. The table columns include: No., ID, chromosome, donor site, acceptor site, junction rea..., strand, tissue name, tissue num, sample name, sample num, tool name, tool num, circRNA type, and circRNA re... . A red arrow points to a specific row in the table.

No.	ID	chromosome	donor site	acceptor site	junction rea...	strand	tissue name	tissue num	sample name	sample num	tool name	tool num	circRNA type	circRNA re...
51	Compare Overlap Value	5... chr7	12175317...	12177379...	118(184.)	-	heart,	1	heart_1_circexplorer	5	CIRCExplor...	6	exon	mRNA
426	Compare Overlap	5... chr5... 5... chr17	953289[...]	1003975[...]	4(6.)	-	heart,	1	heart_1_circna_finder	5	CIRCExplor...	6	exon	mRNA
898	ACAP2	chr3:1950... chr3	19502723...	19504154...	4(4.)	-	heart,	1	heart_1_circna_finder	5	CIRCExplor...	6	exon	mRNA
1016	ACP6	chr1:1471... chr1	14712004...	14713189...	34(34.)	-	heart,	1	heart_1_circna_finder	5	CIRCExplor...	6	exon	mRNA
1388	ADAMTS6	chr5:6446... chr5	64466443...	64492978...	6(8.)	-	heart,	1	heart_1_circna_finder	5	CIRCExplor...	6	exon	mRNA
1527	ADCYS	chr3:1230... chr3	12304416...	12305152...	10(13.)	-	heart,	1	heart_1_circna_finder	5	CIRCExplor...	6	exon	mRNA
1546	ADCY9	chr1:6402... chr16	4029116[...]	4033441[...]	4(9.)	-	heart,	1	heart_1_circna_finder	5	CIRCExplor...	6	exon	mRNA
1659	ADPK3	chr1:5730... chr15	73052747...	73067438...	32(33.)	-	heart,	1	heart_1_circna_finder	5	CIRCExplor...	6	exon	mRNA
1790	AFF4	chr5:1322... chr5	13222785...	13222881...	32(41.)	-	heart,	1	heart_1_circna_finder	5	CIRCExplor...	6	exon	mRNA
1818	[AFG3L2]	chr1:8123... chr18	12366963[...]	12371690[...]	41(42.)	-	heart,	1	heart_1_circna_finder	5	CIRCExplor...	6	exon	mRNA
2003	AGTPBP1	chr5:132227855[...]	132228810[...]	132228810[...]	63.)	-	heart,	1	heart_1_circna_finder	5	CIRCExplor...	6	exon	mRNA
2005	AGTPBP1	chr9:8819... chr9	88190229...	88245289...	38(60.)	-	heart,	1	heart_1_circna_finder	5	CIRCExplor...	6	exon	mRNA
2007	AGTPBP1	chr9:8819... chr9	88190229...	88261333...	25(35.)	-	heart,	1	heart_1_circna_finder	5	CIRCExplor...	6	exon	mRNA
2016	AGTPBP1	chr9:8819... chr9	Two circRNAs regard as same	..	17(49.)	-	heart,	1	heart_1_circna_finder	5	CIRCExplor...	6	exon	mRNA
2020	AGTPBP1	chr9: one based on compare overlap	..	..	46(55.)	-	heart,	1	heart_1_circna_finder	5	CIRCExplor...	6	exon	mRNA
2026	AGTPBP1	chr9:8823... chr9	88233697...	88245289...	81(129.)	-	heart,	1	heart_1_circna_finder	5	CIRCExplor...	6	exon	mRNA
2083	AH1	chr6:1356... chr6	13562163...	13564446...	25(33.)	-	heart,	1	heart_1_circna_finder	5	CIRCExplor...	6	exon	mRNA
2263	AK9	chr6:1099... chr6	10996272...	10999337...	9(12.)	-	heart,	1	heart_1_circna_finder	5	CIRCExplor...	6	exon	mRNA
2713	ALPK2	chr18:562... chr18	56246045...	56247780...	1078(1282.)	-	heart,	1	heart_1_circna_finder	5	CIRCExplor...	6	exon	mRNA
2749	ALS2CR11	chr2:2024... chr2	20241026...	20244004...	74(99.)	-	heart,	1	heart_1_circna_finder	5	CIRCExplor...	6	exon	mRNA
2750	ALS2CR11	chr2:2024... chr2	20241026...	20244694...	29(46.)	-	heart,	1	heart_1_circna_finder	5	CIRCExplor...	6	exon	mRNA
2752	ALS2CR11	chr2:2024... chr2	20241026...	20246942...	14(18.)	-	heart,	1	heart_1_circna_finder	5	CIRCExplor...	6	exon	mRNA
2758	ALS2CR11	chr2:2024... chr2	20243045...	20244004...	16(17.)	-	heart,	1	heart_1_circna_finder	5	CIRCExplor...	6	exon	mRNA
2889	ANKRD13C	chr8:4151... chr8	41513959...	41513959...	174(151.)	-	heart,	1	heart_1_circna_finder	5	CIRCExplor...	6	exon	mRNA, lnc...
2890	ANK1	chr8:4151... chr8	41513947...	41521260...	9(12.)	-	heart,	1	heart_1_circna_finder	5	CIRCExplor...	6	exon	mRNA, lnc...
2962	ANK3	chr10:618... chr10	6181315...	61837439...	6(6.)	-	heart,	1	heart_1_circna_finder	5	CIRCExplor...	6	exon	mRNA
2992	ANK3	chr10:618... chr10	61843559...	61843559...	45(66.)	-	heart,	1	heart_1_circna_finder	5	CIRCExplor...	6	exon	mRNA
3224	ANKRD13C	chr1:7075... chr1	70758072...	70781249...	6(248.)	-	heart,	1	heart_1_circna_finder	5	CIRCExplor...	6	exon	mRNA
3232	ANKRD17	chr4:7394... chr4	73944358...	73958017...	10(10.)	-	heart,	1	heart_1_circna_finder	5	CIRCExplor...	6	exon	mRNA
3233	ANKRD17	chr7:7395... chr7	73950965...	73958017...	39(37.)	-	heart,	1	heart_1_circna_finder	5	CIRCExplor...	6	exon	mRNA
3237	ANKRD17	chr4:7395... chr4	73956383...	73958017...	14(21.)	-	heart,	1	heart_1_circna_finder	5	CIRCExplor...	6	exon	mRNA
3246	ANKRD17	chr7:7398... chr7	73984404...	73991029...	72(35.)	-	heart,	1	heart_1_circna_finder	5	CIRCExplor...	6	exon	mRNA
3645	ANQ2	chr1:7590... chr12	5908672...	59633076...	37(44.)	-	heart,	1	heart_1_circna_finder	5	CIRCExplor...	6	exon	mRNA
3665	ANQ2	chr12:603... chr12	6030205...	6031970...	25(35.)	-	heart,	1	heart_1_circna_finder	5	CIRCExplor...	6	exon	mRNA
4486	ARHGAP29	chr1:9466... chr1	94667275...	94697199...	6(7.)	-	heart,	1	heart_1_circna_finder	5	CIRCExplor...	6	exon	mRNA
5060	ASAP1	chr8:1311... chr8	13116498...	13118131...	30(51.)	-	heart,	1	heart_1_circna_finder	5	CIRCExplor...	6	exon	mRNA
5061	ASAP1	chr8:1311... chr8	13116498...	13119312...	80(101.)	-	heart,	1	heart_1_circna_finder	5	CIRCExplor...	6	exon	mRNA
5082	ASAP1	chr8:1311... chr8	13137026...	13137401...	75(102.)	-	heart,	1	heart_1_circna_finder	5	CIRCExplor...	6	exon	mRNA
5200	AK133	chr3:1374... chr3	3EE40933...	3EE40980E...	336(3103)	-	heart,	1	heart_1_circna_finder	5	CIRCExplor...	6	exon	mRNA

Click "Save as" button to export results to a ".csv" file for further use.

## 1.2 Advanced Feature: MRE and RBP sites Visualization on CircRNAs

### 1.2.1 MySQL needs to be installed, see 8 HOW TO INSTALL MYSQL

### 1.2.2 Restart CircView.jar

### 1.2.3 Download and decompress MRE data from

[http://gb.whu.edu.cn/CircView/testdata/mre\\_human.tar.gz](http://gb.whu.edu.cn/CircView/testdata/mre_human.tar.gz)

### 1.2.4 Click "MRE"->"Load Data" to load MRE file.

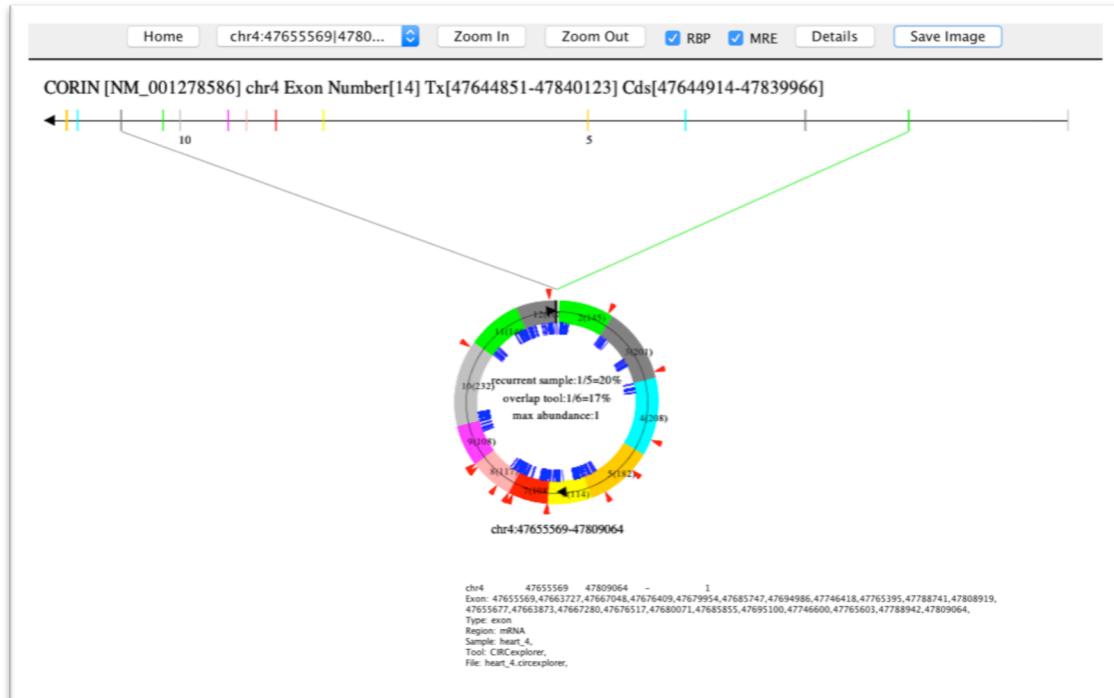
### 1.2.5 Download and decompress RBP data from

[http://gb.whu.edu.cn/CircView/testdata/rbp\\_human.tar.gz](http://gb.whu.edu.cn/CircView/testdata/rbp_human.tar.gz)

### 1.2.6 Click "RBP"->"Load Data" to load RBP file.

### 1.2.7 Load circRNAs data, see 1.1.4

### 1.2.8 Check MRE or RBP to add MRE sites (blue lines) or RBP sites (red triangles) to CircRNAs



### 1.2.9 Click “Details” button to see detailed information of MRE and RBP sites.

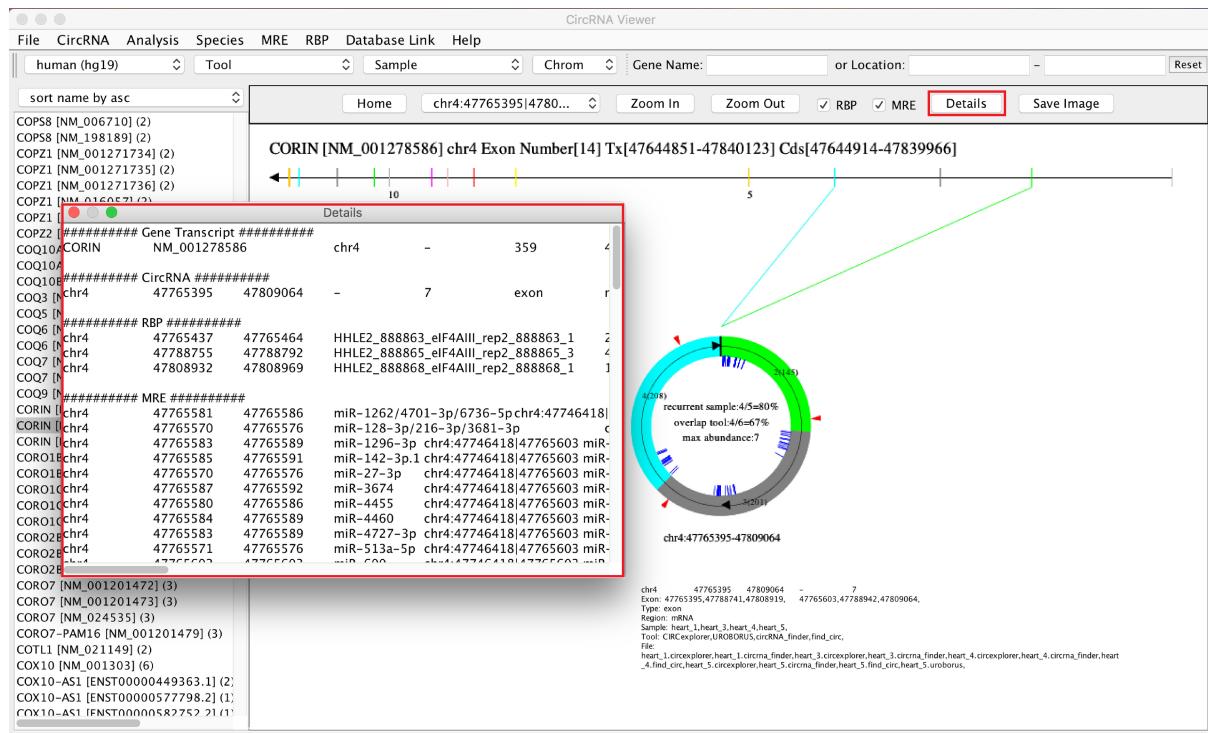


Figure 2. Detailed information of Gene Transcript, CircRNA, RBP and MRE

## 2. HOW TO DOWNLOAD CIRCVIEW AND TEST DATA

Download CircView application from

<http://github.com/GeneFeng/CircView/blob/master/CircView.tar.gz>

Download circRNAs test data from

<https://github.com/GeneFeng/CircView/blob/master/testdata/>

Download MRE data from

[http://gb.whu.edu.cn/CircView/testdata/mre\\_human.tar.gz](http://gb.whu.edu.cn/CircView/testdata/mre_human.tar.gz)

Download RBP data from

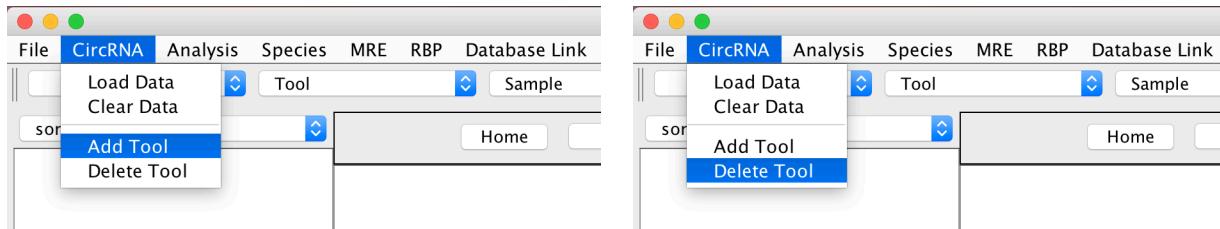
[http://gb.whu.edu.cn/CircView/testdata/rbp\\_human.tar.gz](http://gb.whu.edu.cn/CircView/testdata/rbp_human.tar.gz)

### 3. HOW TO MANAGE CIRCRNAs DATA

#### 3.1 CircRNAs Identification Tool Management

CircView integrates 6 CircRNAs identification tools (CIRCexplorer, circRNA\_finder, CIRI, find\_circ, Mapsplice, and UROBORUB) by default.

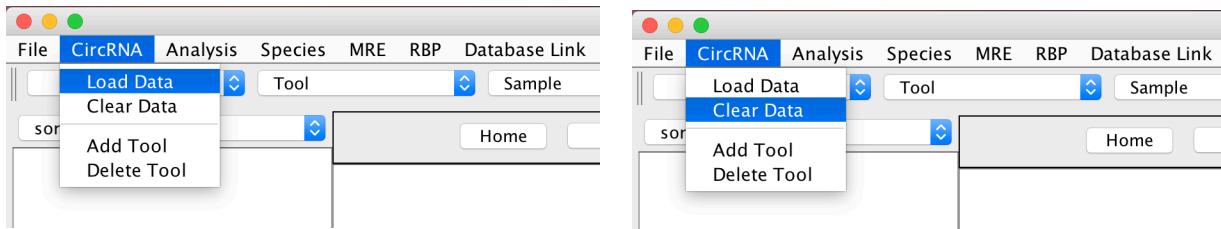
Users can add or delete tool by using menu “CircRNA”->“Add Tool” or “CircRNA”->“Delete Tool”.



#### 3.2 CircRNAs Data Management

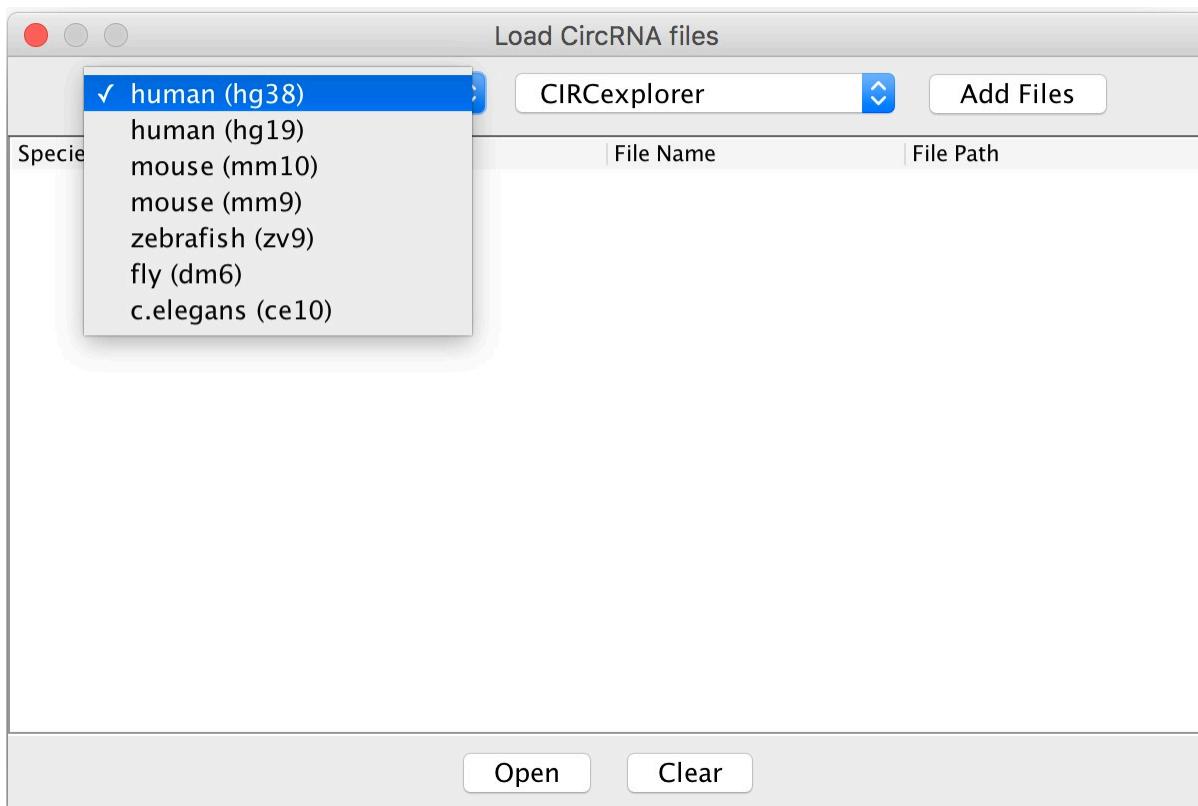
CircView can load CircRNAs data directly from output of default 6 CircRNAs identification tools.

Users can also import circRNAs identified by other tools with six tab delimited columns, including chromosome, start position, end position, running number/name, junction reads and strand.

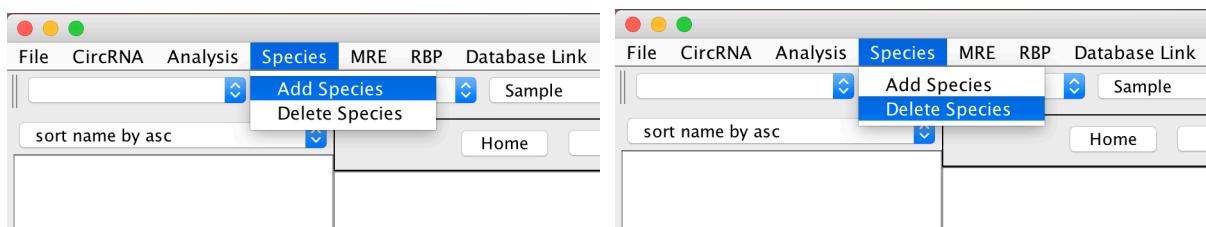


#### 4. HOW TO MANAGE SPECIES DATA

CircView provides 7 species (Human (hg38), Human (hg19), Mouse (mm10), Mouse (mm9), Zebrafish (zv9), Fly (dm6), C.elegans (ce10)) by default.



Users can also add or delete species annotation data with compatible format by using menu "Species"->"Add Species" or "Species"->"Delete Species".

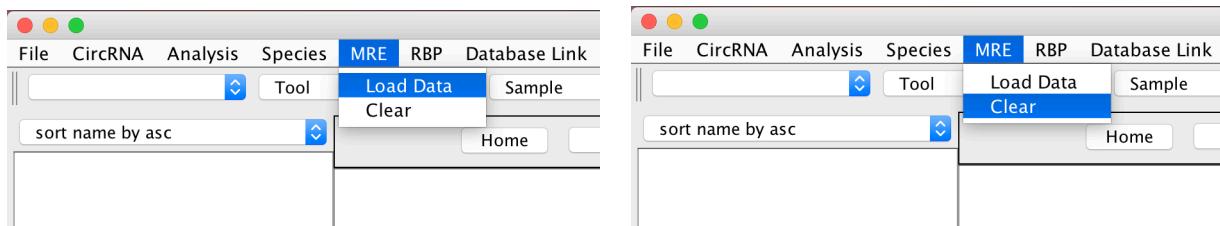


## 5. HOW TO MANAGE MRE AND RBP DATA

CircRNAs mainly function as sponges for the regulatory elements, such as miRNA respond elements (MREs) and RNA binding proteins (RBPs). CircView provides advanced features to display regulatory elements.

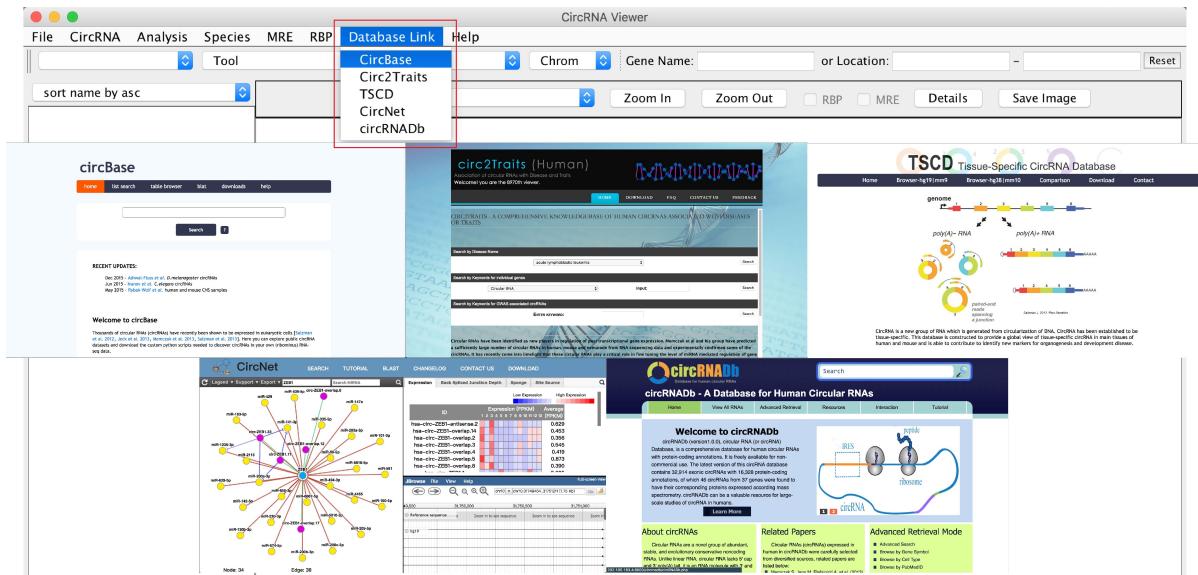
This module requires the users to install MySQL locally, see **8 HOW TO INSTALL MYSQL**. Users can load and display the MRE data identified by TargetScan (<http://targetscan.org/>) and/or the RBP data identified by starBase (<http://starbase.sysu.edu.cn/>) or any other software. The format requires five tab delimited columns, including chromosome, start position, end position, MRE/RBP name and description.

Load MRE or RBP file will create table and deposit data into MySQL database, and Clear MRE or RBP will remove data from the database. As the data are persistent, users should not load the same data for more than once.



## 6. HOW TO FIND CIRCRNA DATABASES

CircView provides links to some circRNA databases (CircBase, Circ2Traits, TSCD, CircNet, circRNADb).



## 7. HOW TO INSTALL JAVA VIRTUAL MACHINE

Java Virtual Machine needs to be installed before running this program. Simply access <http://www.java.com>, download Java, and install it.

## 8. HOW TO INSTALL MYSQL

### 8.1 For Windows

8.1.1 Download and decompress MySQL Installation file from

[http://gb.whu.edu.cn/CircView/MySQL/mysql\\_windows.tar.gz](http://gb.whu.edu.cn/CircView/MySQL/mysql_windows.tar.gz)

8.1.2 Double click “NDP46-KB3045557-x86-x64-AllOS-ENU.exe” to install .NET Framework.

8.1.3 Double click “mysql-installer-community-5.7.16.0.msi” to install MySQL. Please create password “12345” for user root during installation.

### 8.2 For Mac OS

8.2.1 Download MySQL Installation file from

[http://gb.whu.edu.cn/CircView/MySQL/mysql-5.7.17-macos10.12-x86\\_64.dmg](http://gb.whu.edu.cn/CircView/MySQL/mysql-5.7.17-macos10.12-x86_64.dmg)

8.2.2 Double click “mysql-5.7.17-macos10.12-x86\_64.dmg” to install MySQL. Please create password “12345” for user root during installation.