Interactive Toxicogenomics: Gene Set Discovery, Clustering and Analysis in Toxygates

Nyström-Persson, J., Natsume-Kitatani, Y., Igarashi, Y., Satoh, D., and Mizuguchi, K.

Supplementary Methods

This supplementary document includes the details of the analytical flow in our case study in which the new analytical functions in Toxygates were utilized.
For the figures of heatmap and the interpretation of the obtained results, please refer to the main manuscript. For the general tutorial for Toxygates, please refer to the user guide (http://toxygates.nibiohn.go.jp/toxygates/toxygatesManual.pdf)

Toxygates

Toxygates is an integrated platform for toxicogenomics data analysis. For more information, please see our *Bioinformatics* paper, or use the help menu.

2016-10-20 ("v2.0")

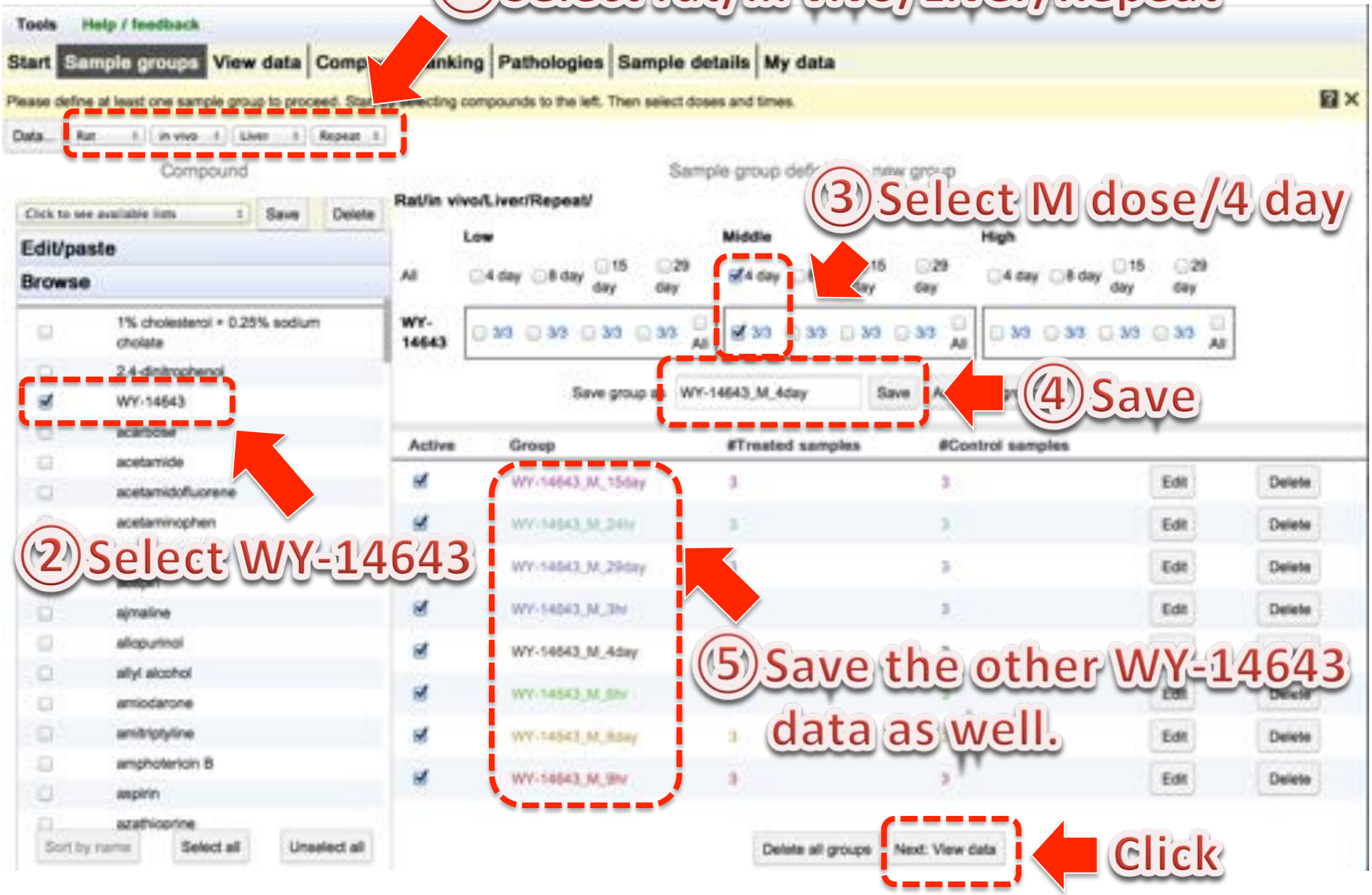
Several major new features have now been released.

- A clustering and heat-map visualisation feature has been added.
- Users may now upload their own data and analyse it alongside existing data in Toxygates.
- KEGG pathways and GO terms are now updated automatically on a weekly basis.

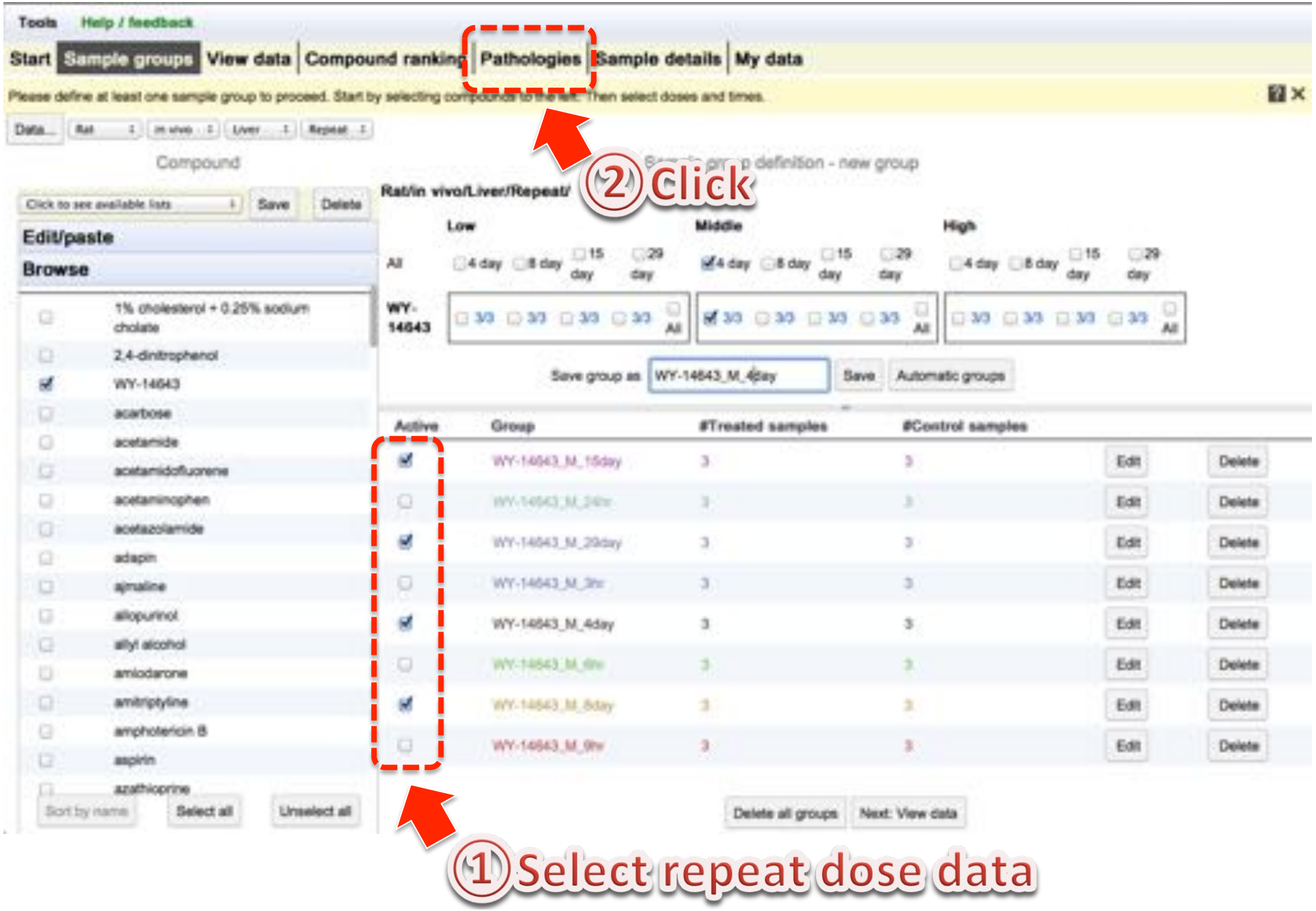
With the addition of user data uploads and clustering/visualisation, Toxygates is now a much more powerful analysis environment than previously, and we urge users to try these functions for themselves.

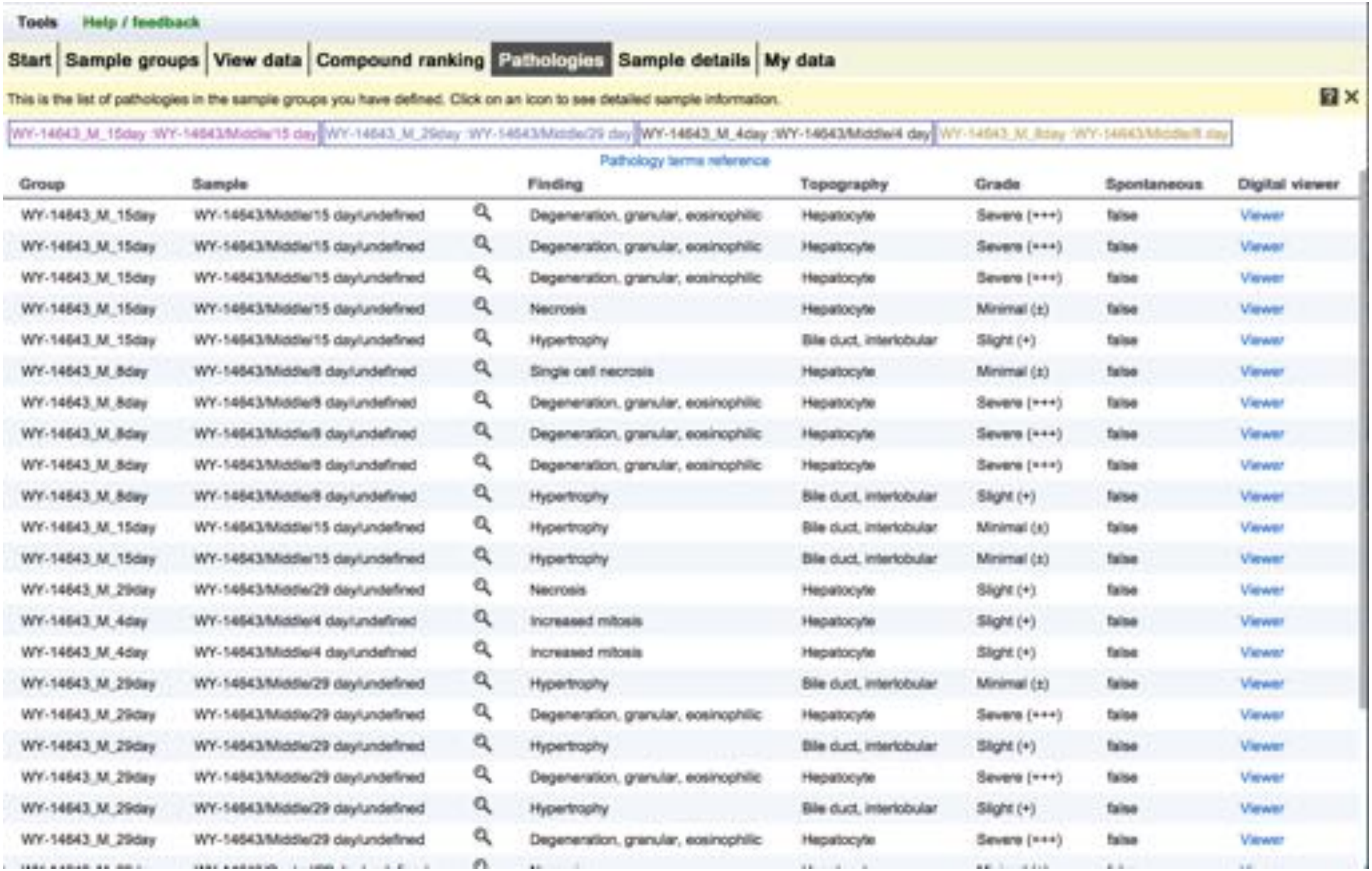
For more information, please see the user guide, or use the help menu.

Click here to begin.


①Select rat/in vivo/Liver/Repeat
Tools
Help / feedback
Start
Sample groups
View data
Pathologies
Sample details
My data
Please define at least one sample group to proceed. Start selecting compounds to the left. Then select doses and times.
Data...
Rat
in vivo
Liver
Repeat
Compound
Click to see available lists
Save
Delete
Edit/paste
Browse
1% cholesterol + 0.25% sodium cholate
2,4-dinitrophenol
WY-14643
acarbose
acetamide
acetamidofluorene
acetaminophen
ajmaline
allopurinol
allyl alcohol
amiodarone
amitriptyline
amphotericin B
aspirin
azathioprine
Sort by name
Select all
Unselect all
Rat/in vivo/Liver/Repeat/
Low
Middle
High
All
4 day
8 day
15 day
29 day
WY-14643
3/3
All
③Select M dose/4 day
Save group as
WY-14643_M_4day
Save
④Save
Active
Group
#Treated samples
#Control samples
WY-14643_M_15day
WY-14643_M_24hr
WY-14643_M_29day
WY-14643_M_3hr
WY-14643_M_4day
WY-14643_M_8hr
WY-14643_M_8day
WY-14643_M_9hr
Edit
Delete
②Select WY-14643
⑤Save the other WY-14643 data as well.
Delete all groups
Next: View data
Click

Observed pathologies as starting point





Tools Help / feedback

Start | Sample groups | View data | Compound ranking | Pathologies | Sample details | My data

This is the list of pathologies in the sample groups you have defined. Click on an icon to see detailed sample information.

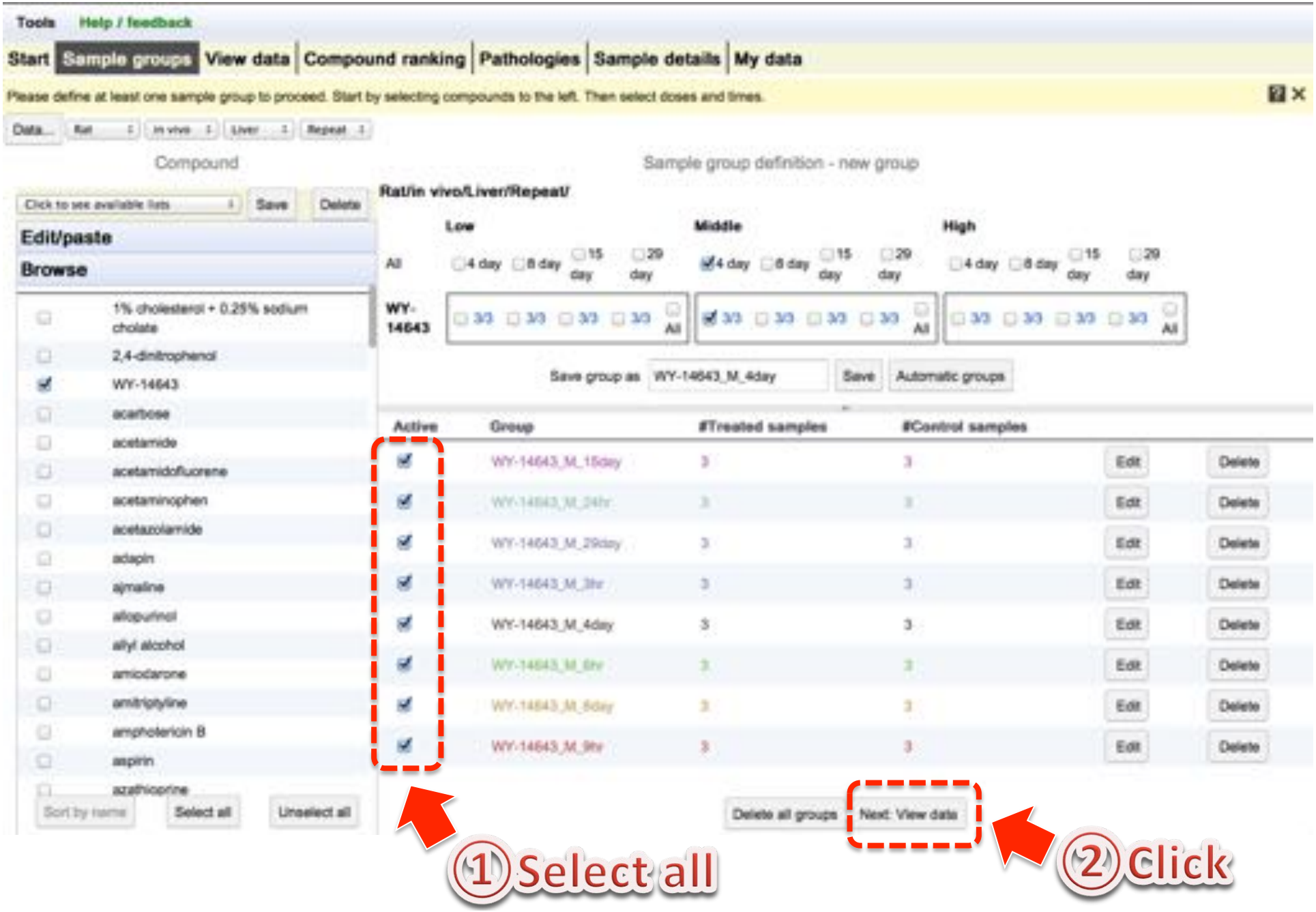
WY-14643_M_15day :WY-14643/Middle/15 day | WY-14643_M_29day :WY-14643/Middle/29 day | WY-14643_M_4day :WY-14643/Middle/4 day | WY-14643_M_8day :WY-14643/Middle/8 day

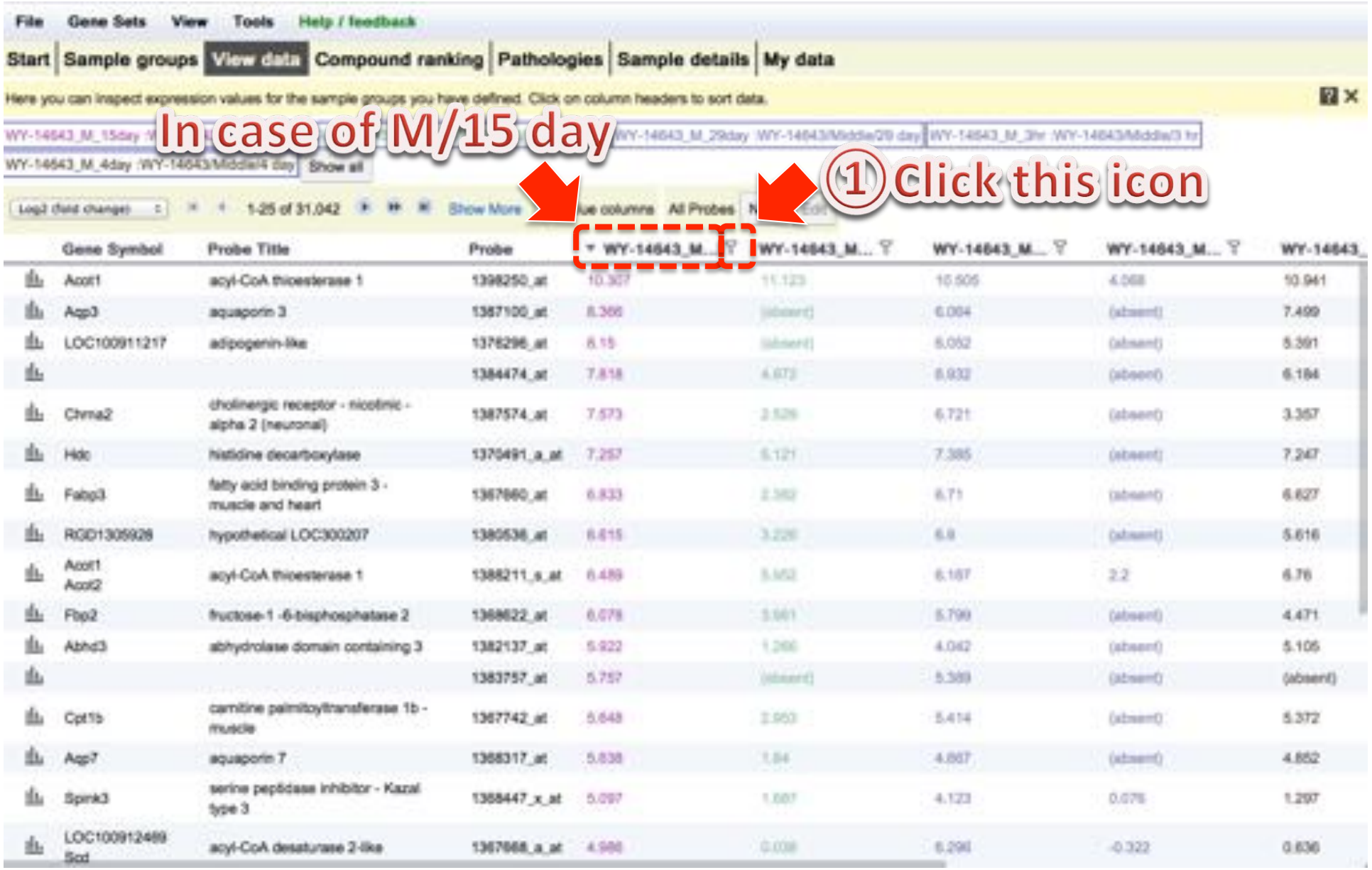
Pathology terms reference

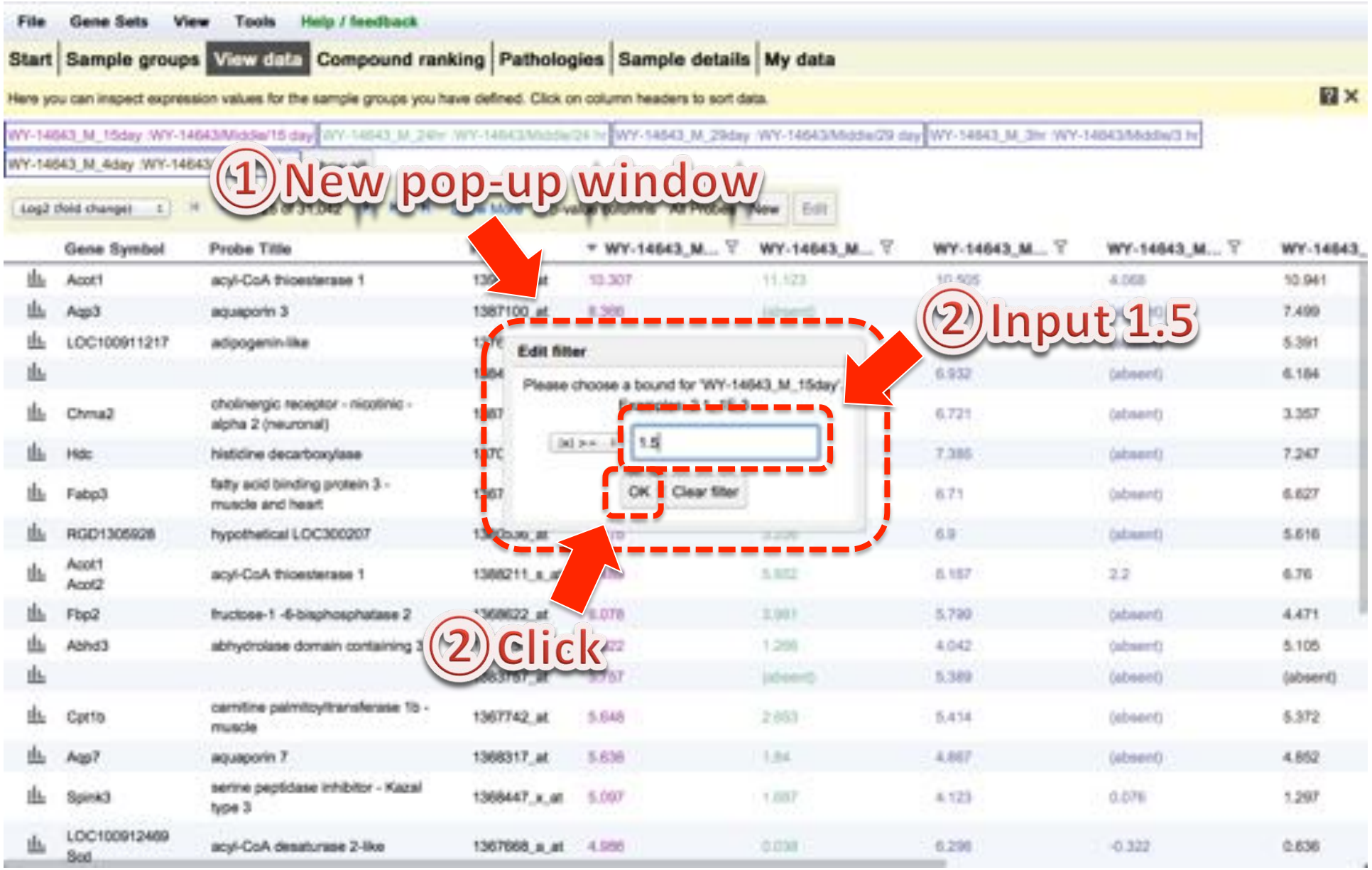
Group	Sample	Finding	Topography	Grade	Spontaneous	Digital viewer
WY-14643_M_15day	WY-14643/Middle/15 day/undefined	Degeneration, granular, eosinophilic	Hepatocyte	Severe (+++)	false	Viewer
WY-14643_M_15day	WY-14643/Middle/15 day/undefined	Degeneration, granular, eosinophilic	Hepatocyte	Severe (+++)	false	Viewer
WY-14643_M_15day	WY-14643/Middle/15 day/undefined	Degeneration, granular, eosinophilic	Hepatocyte	Severe (+++)	false	Viewer
WY-14643_M_15day	WY-14643/Middle/15 day/undefined	Necrosis	Hepatocyte	Minimal (±)	false	Viewer
WY-14643_M_15day	WY-14643/Middle/15 day/undefined	Hypertrophy	Bile duct, interlobular	Slight (+)	false	Viewer
WY-14643_M_8day	WY-14643/Middle/8 day/undefined	Single cell necrosis	Hepatocyte	Minimal (±)	false	Viewer
WY-14643_M_8day	WY-14643/Middle/8 day/undefined	Degeneration, granular, eosinophilic	Hepatocyte	Severe (+++)	false	Viewer
WY-14643_M_8day	WY-14643/Middle/8 day/undefined	Degeneration, granular, eosinophilic	Hepatocyte	Severe (+++)	false	Viewer
WY-14643_M_8day	WY-14643/Middle/8 day/undefined	Degeneration, granular, eosinophilic	Hepatocyte	Severe (+++)	false	Viewer
WY-14643_M_8day	WY-14643/Middle/8 day/undefined	Hypertrophy	Bile duct, interlobular	Slight (+)	false	Viewer
WY-14643_M_15day	WY-14643/Middle/15 day/undefined	Hypertrophy	Bile duct, interlobular	Minimal (±)	false	Viewer
WY-14643_M_15day	WY-14643/Middle/15 day/undefined	Hypertrophy	Bile duct, interlobular	Minimal (±)	false	Viewer
WY-14643_M_29day	WY-14643/Middle/29 day/undefined	Necrosis	Hepatocyte	Slight (+)	false	Viewer
WY-14643_M_4day	WY-14643/Middle/4 day/undefined	Increased mitosis	Hepatocyte	Slight (+)	false	Viewer
WY-14643_M_4day	WY-14643/Middle/4 day/undefined	Increased mitosis	Hepatocyte	Slight (+)	false	Viewer
WY-14643_M_29day	WY-14643/Middle/29 day/undefined	Hypertrophy	Bile duct, interlobular	Minimal (±)	false	Viewer
WY-14643_M_29day	WY-14643/Middle/29 day/undefined	Degeneration, granular, eosinophilic	Hepatocyte	Severe (+++)	false	Viewer
WY-14643_M_29day	WY-14643/Middle/29 day/undefined	Hypertrophy	Bile duct, interlobular	Slight (+)	false	Viewer
WY-14643_M_29day	WY-14643/Middle/29 day/undefined	Degeneration, granular, eosinophilic	Hepatocyte	Severe (+++)	false	Viewer
WY-14643_M_29day	WY-14643/Middle/29 day/undefined	Hypertrophy	Bile duct, interlobular	Slight (+)	false	Viewer
WY-14643_M_29day	WY-14643/Middle/29 day/undefined	Degeneration, granular, eosinophilic	Hepatocyte	Severe (+++)	false	Viewer

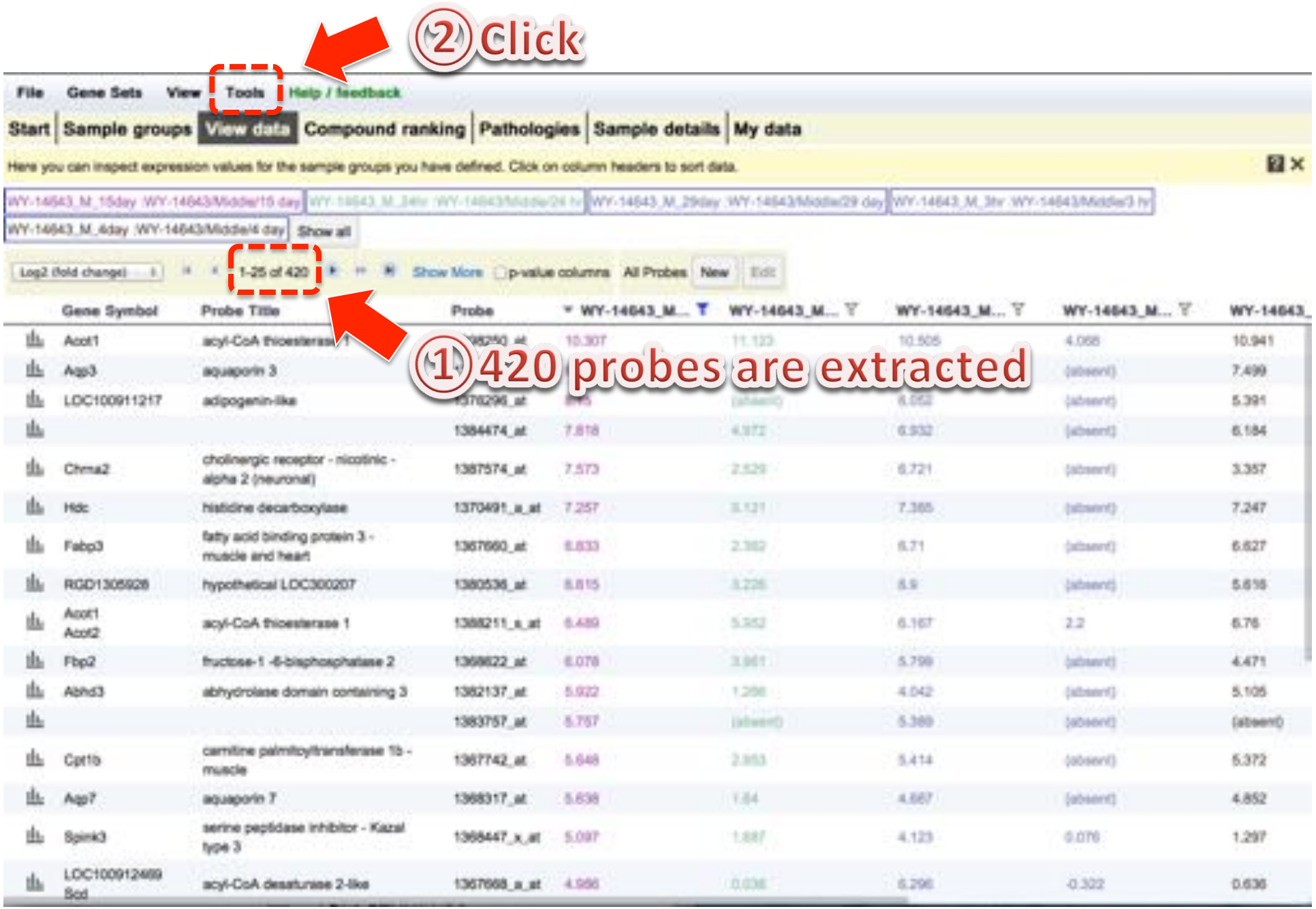
Supplementary Table 1: summary of this table

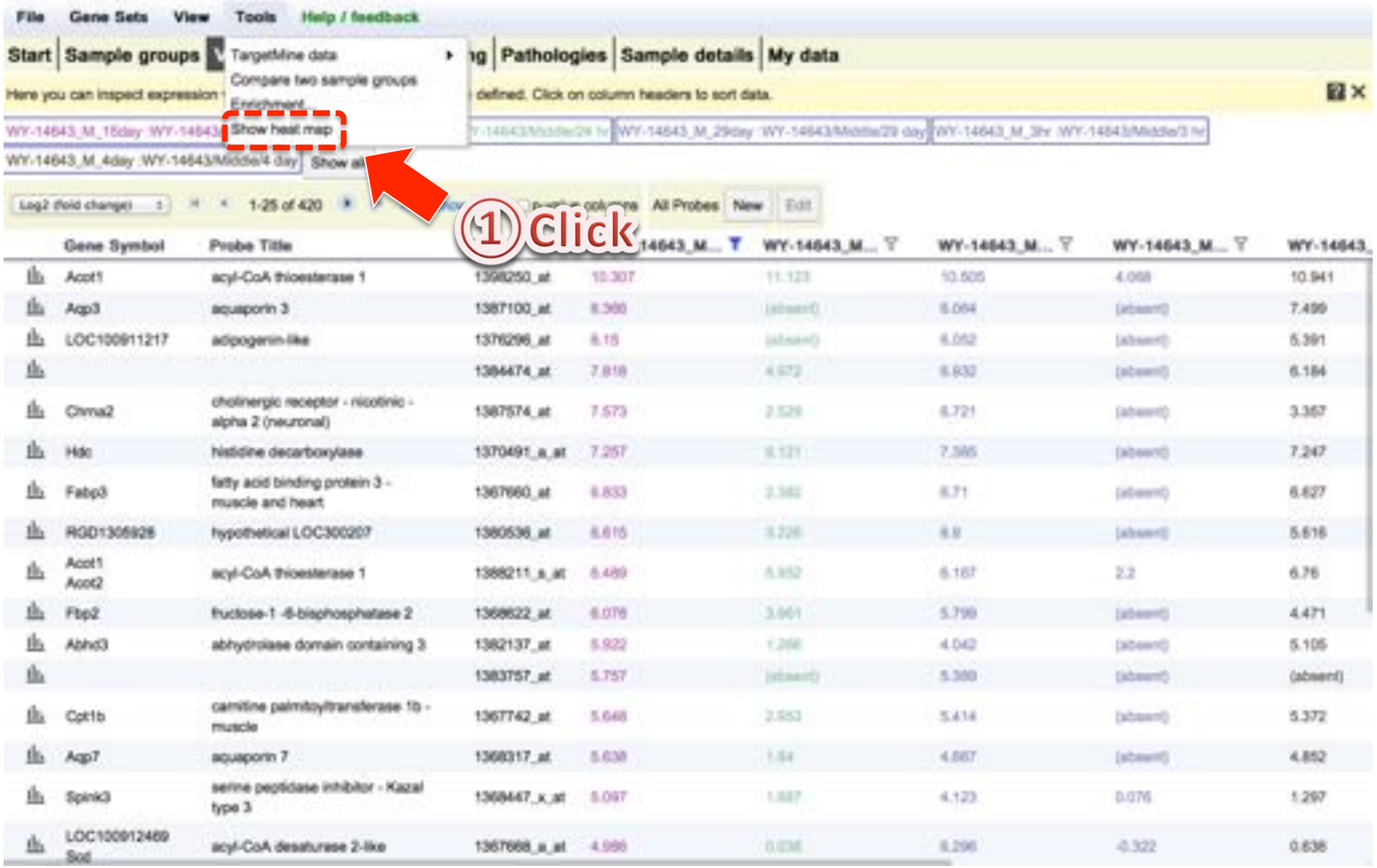
Cluster analysis



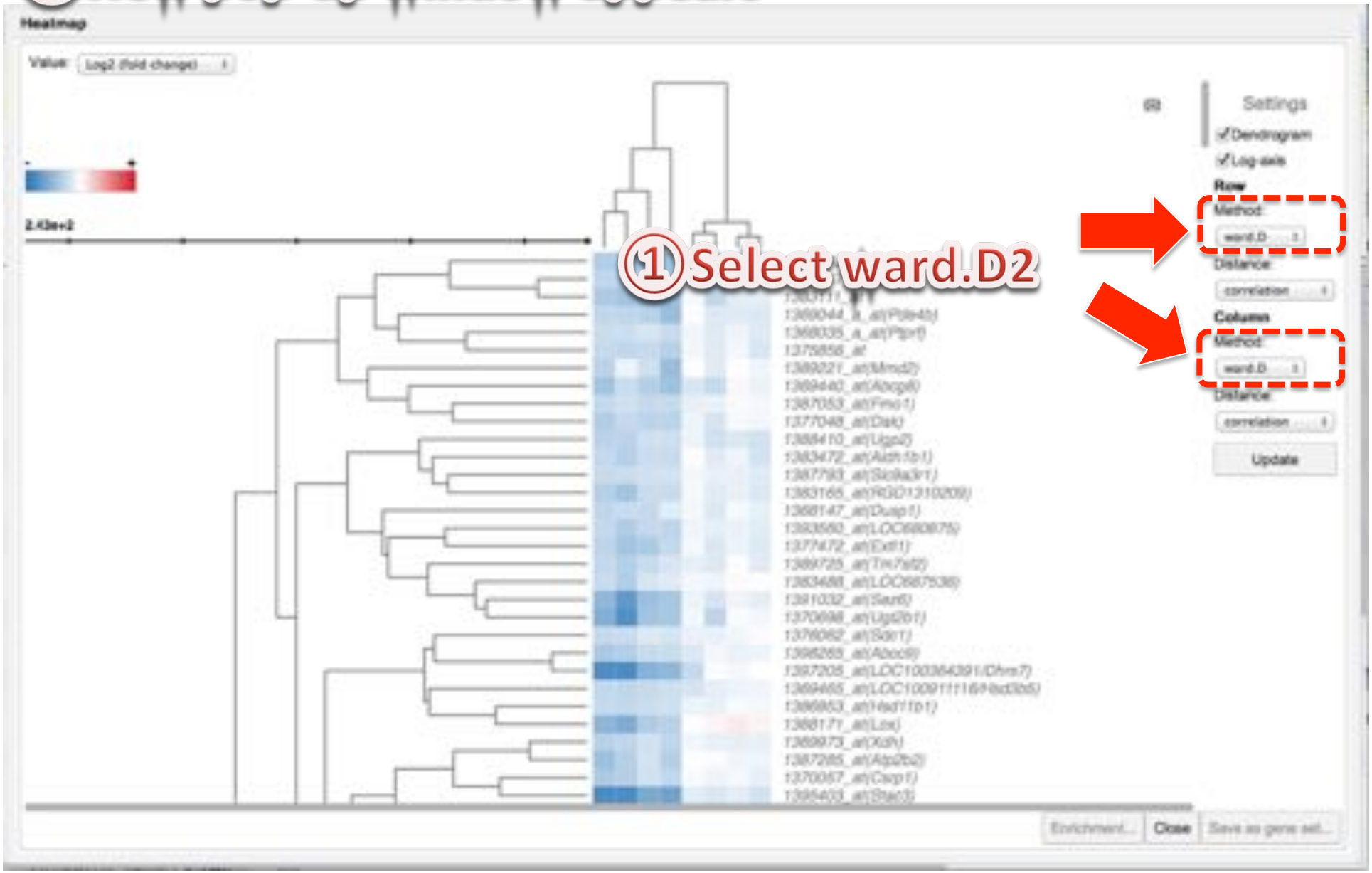

File Gene Sets View Tools Help / feedback
Start Sample groups View data Compound ranking Pathologies Sample details My data
Here you can inspect expression values for the sample groups you have defined. Click on column headers to sort data.
In case of M/15 day
① Click this icon
Show all
Show More
All Probes
Gene Symbol
Probe Title
Probe
Acot1
acyl-CoA thioesterase 1
1398250_at
Aqp3
aquaporin 3
1387100_at
LOC100911217
adipogenin-like
1376296_at
1384474_at
Chrna2
cholinergic receptor - nicotinic - alpha 2 (neuronal)
1387574_at
Hdc
histidine decarboxylase
1370491_a_at
Fabp3
fatty acid binding protein 3 - muscle and heart
1367660_at
RGD1305928
hypothetical LOC300207
1380536_at
Acot1 Acot2
acyl-CoA thioesterase 1
1388211_s_at
Fbp2
fructose-1 -6-bisphosphatase 2
1368822_at
Abhd3
abhydrolase domain containing 3
1382137_at
1383757_at
Cpt1b
carnitine palmitoyltransferase 1b - muscle
1367742_at
Aqp7
aquaporin 7
1368317_at
Spink3
serine peptidase inhibitor - Kazal type 3
1368447_x_at
LOC100912469 Scd
acyl-CoA desaturase 2-like
1367668_a_at

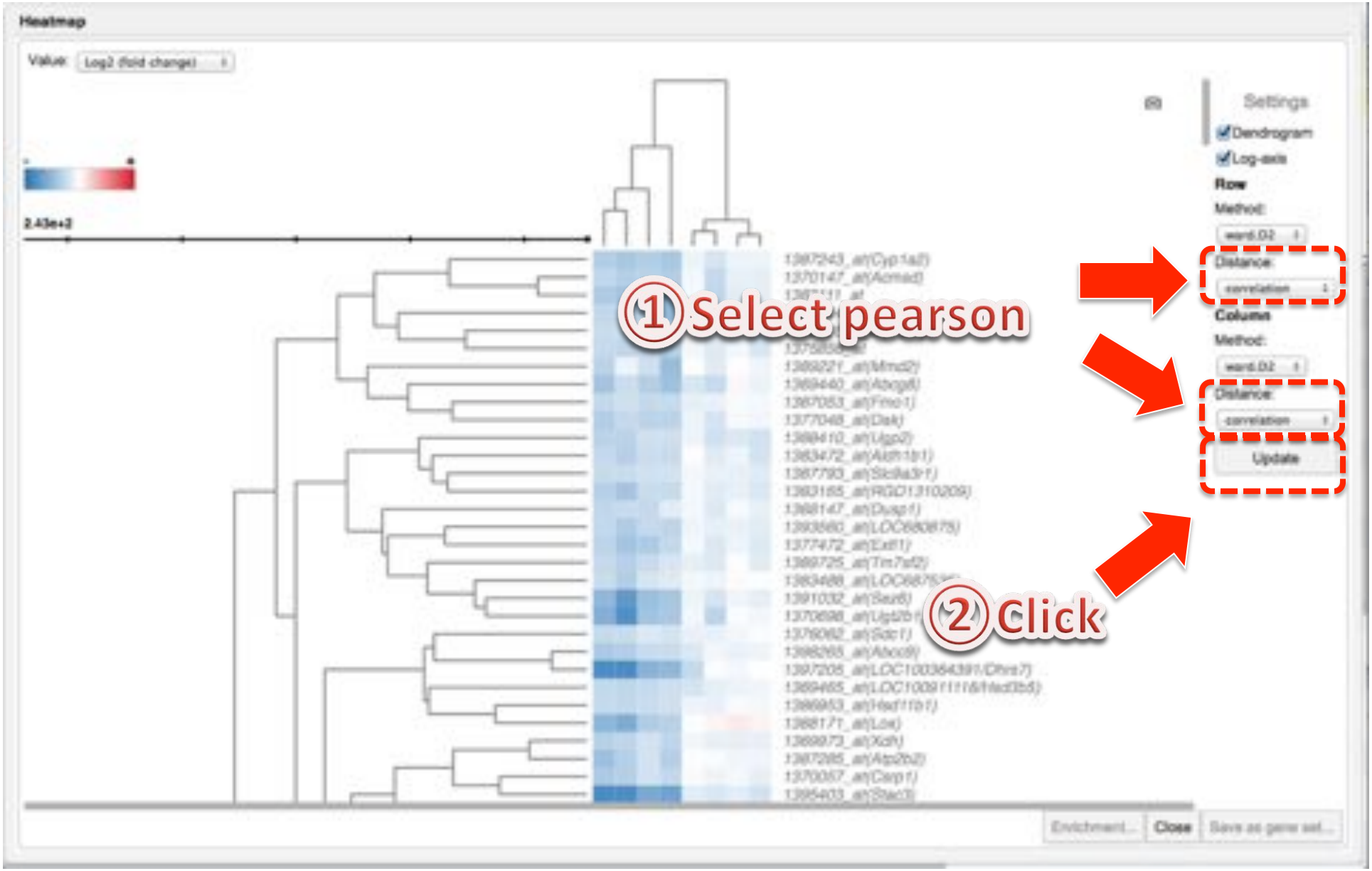

File
Gene Sets
View
Tools
Help / feedback
Start
Sample groups
View data
Compound ranking
Pathologies
Sample details
My data
Here you can inspect expression values for the sample groups you have defined. Click on column headers to sort data.
① New pop-up window
② Input 1.5
② Click
Edit filter
Please choose a bound for 'WY-14643_M_15day'
1.5
OK
Clear filter
Gene Symbol
Probe Title
Acot1
acyl-CoA thioesterase 1
Aqp3
aquaporin 3
LOC100911217
adipogenin-like
Chrna2
cholinergic receptor - nicotinic - alpha 2 (neuronal)
Hdc
histidine decarboxylase
Fabp3
fatty acid binding protein 3 - muscle and heart
RGD1305928
hypothetical LOC300207
Acot1
Acot2
acyl-CoA thioesterase 1
Fbp2
fructose-1 -6-bisphosphatase 2
Abhd3
abhydrolase domain containing 3
Cpt1b
carnitine palmitoyltransferase 1b - muscle
Aqp7
aquaporin 7
Spink3
serine peptidase inhibitor - Kazal type 3
LOC100912469
Scd
acyl-CoA desaturase 2-like
1387100_at
1367742_at
1368317_at
1368447_x_at
1367668_a_at

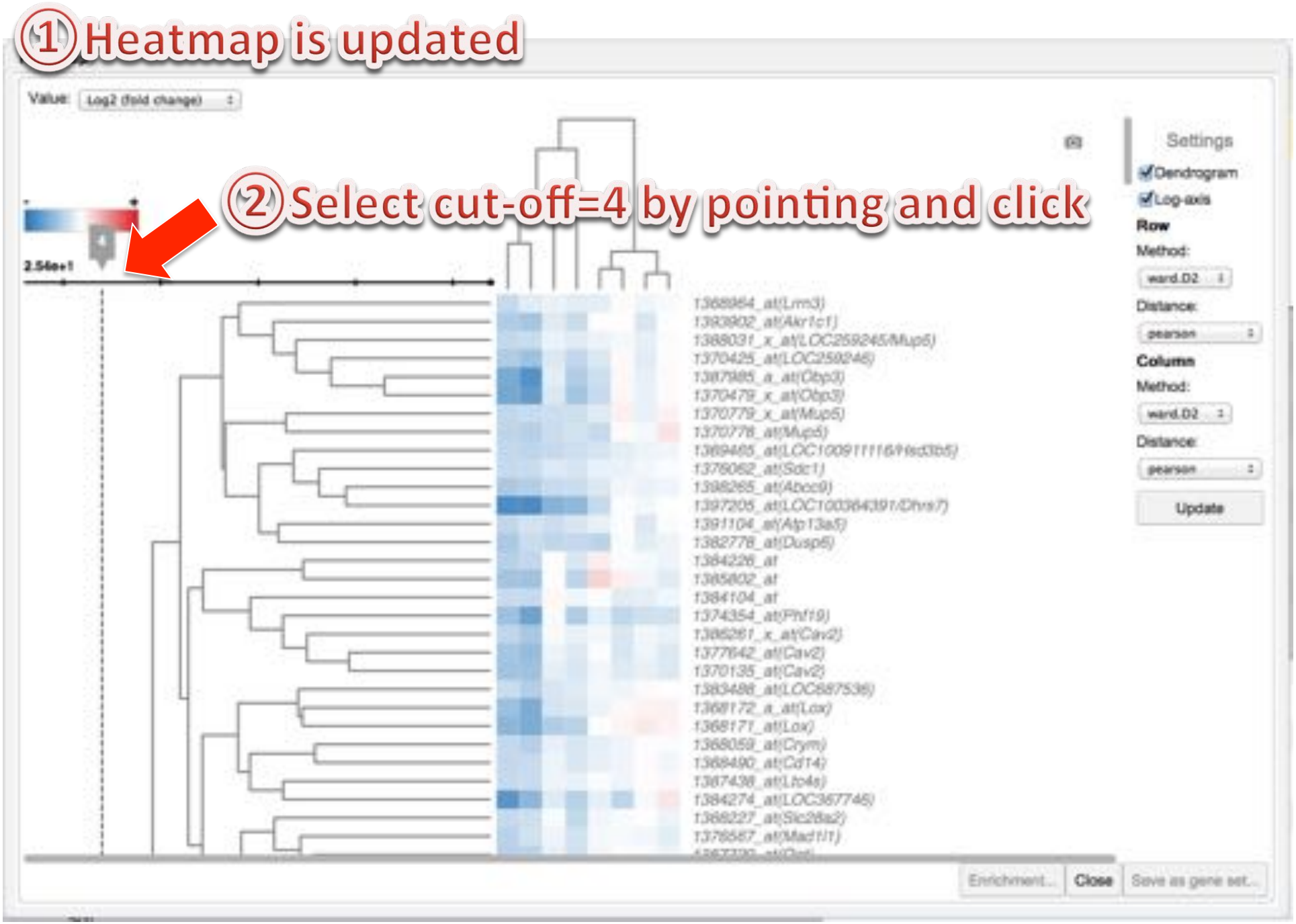

② Click
File
Gene Sets
View
Tools
Help / feedback
Start
Sample groups
View data
Compound ranking
Pathologies
Sample details
My data
Here you can inspect expression values for the sample groups you have defined. Click on column headers to sort data.
WY-14643_M_15day (WY-14643/Middle/15 day)
WY-14643_M_29day (WY-14643/Middle/29 day)
WY-14643_M_4day (WY-14643/Middle/4 day)
Show all
Log2 (fold change)
1-25 of 420
Show More
p-value columns
All Probes
New
Edit
Gene Symbol
Probe Title
Probe
WY-14643_M...
Acot1
acyl-CoA thioesterase 1
Aqp3
aquaporin 3
LOC100911217
adipogenin-like
1384474_at
Chrna2
cholinergic receptor - nicotinic - alpha 2 (neuronal)
1387574_at
Hdc
histidine decarboxylase
1370491_a_at
Fabp3
fatty acid binding protein 3 - muscle and heart
1367660_at
RGD1305928
hypothetical LOC300207
1380536_at
Acot1
Acot2
acyl-CoA thioesterase 1
1388211_s_at
Fbp2
fructose-1 -6-bisphosphatase 2
1369822_at
Abhd3
abhydrolase domain containing 3
1382137_at
1383757_at
Cpt1b
carnitine palmitoyltransferase 1b - muscle
1367742_at
Aqp7
aquaporin 7
1368317_at
Spink3
serine peptidase inhibitor - Kazal type 3
1368447_x_at
LOC100912469
Sod
acyl-CoA desaturase 2-like
1367668_a_at
① 420 probes are extracted

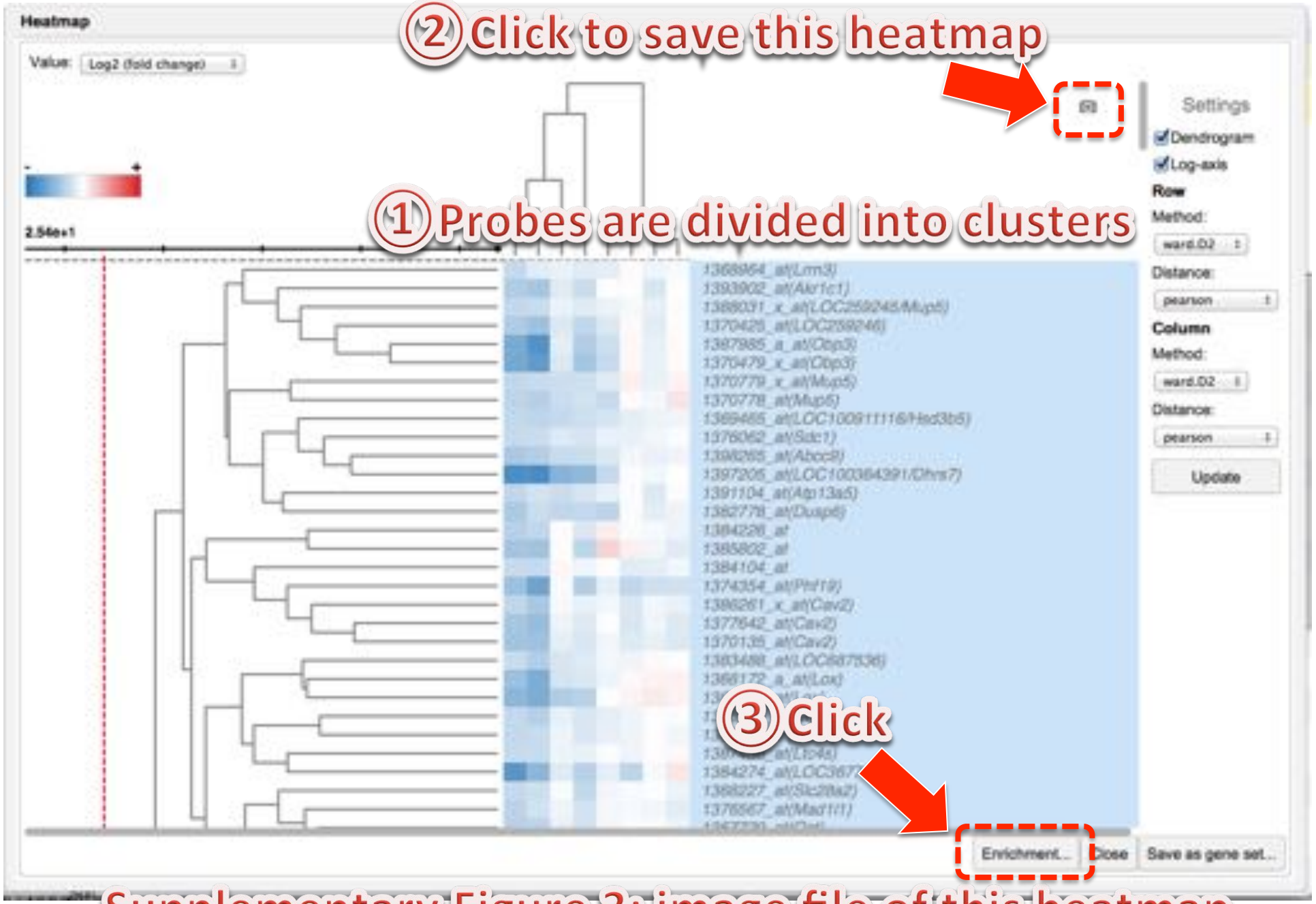

File
Gene Sets
View
Tools
Help / feedback
Start
Sample groups
Pathologies
Sample details
My data
TargetMine data
Compare two sample groups
Enrichment
Show heat map
Here you can inspect expression
defined. Click on column headers to sort data.
WY-14643_M_15day
WY-14643_M_29day
WY-14643_M_3hr
WY-14643_M_4day
Show a
Log2 (fold change)
1-25 of 420
All Probes
New
Edit
1 Click
Gene Symbol
Probe Title
WY-14643_M...
WY-14643_M...
WY-14643_M...
WY-14643_M...
WY-14643_
Acot1
acyl-CoA thioesterase 1
1398250_at
10.307
11.123
10.505
4.068
10.941
Aqp3
aquaporin 3
1387100_at
8.366
(absent)
8.064
(absent)
7.499
LOC100911217
adipogenin-like
1376296_at
8.15
(absent)
8.052
(absent)
8.391
1384474_at
7.818
8.932
(absent)
8.184
Chrna2
cholinergic receptor - nicotinic - alpha 2 (neuronal)
1387574_at
7.573
2.529
8.721
(absent)
3.367
Hdc
histidine decarboxylase
1370491_a_at
7.257
8.121
7.365
(absent)
7.247
Fabp3
fatty acid binding protein 3 - muscle and heart
1367660_at
6.833
2.382
8.71
(absent)
6.627
RGD1306928
hypothetical LOC300207
1380536_at
6.815
3.226
8.9
(absent)
5.616
Acot1
Acot2
acyl-CoA thioesterase 1
1388211_s_at
6.469
5.952
8.167
2.2
6.76
Fbp2
fructose-1 -6-bisphosphatase 2
1368622_at
6.078
3.961
5.799
(absent)
4.471
Abhd3
abhydrolase domain containing 3
1382137_at
5.922
1.266
4.042
(absent)
5.105
1383757_at
5.757
(absent)
5.389
(absent)
(absent)
Cpt1b
carnitine palmitoyltransferase 1b - muscle
1367742_at
5.648
2.553
5.414
(absent)
5.372
Aqp7
aquaporin 7
1368317_at
5.638
1.84
4.667
(absent)
4.852
Spink3
serine peptidase inhibitor - Kazal type 3
1368447_x_at
5.097
1.887
4.123
0.076
1.297
LOC100912469
Sod
acyl-CoA desaturase 2-like
1367668_a_at
4.986
0.036
6.296
-0.322
0.636

① New pop-up window appears

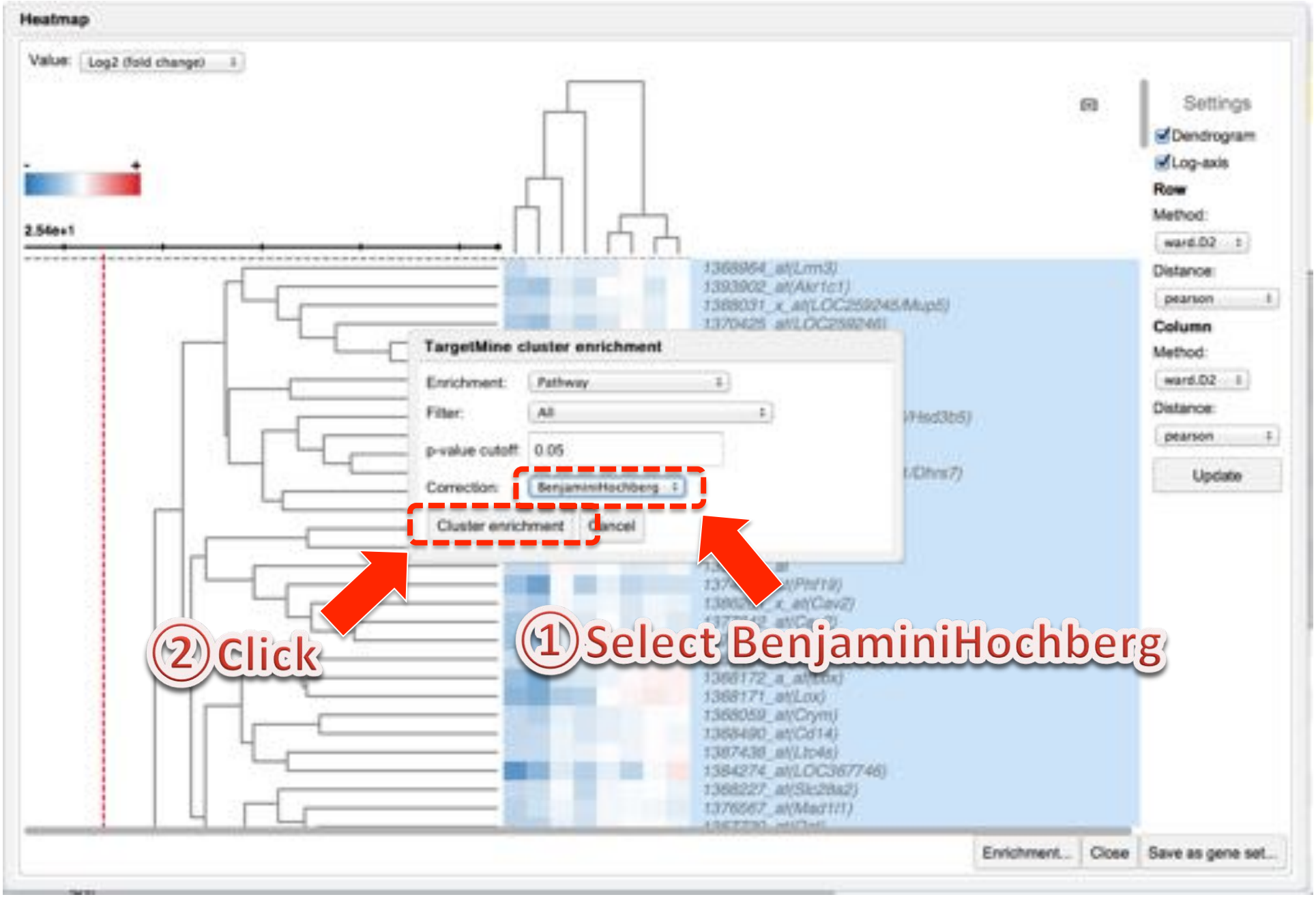


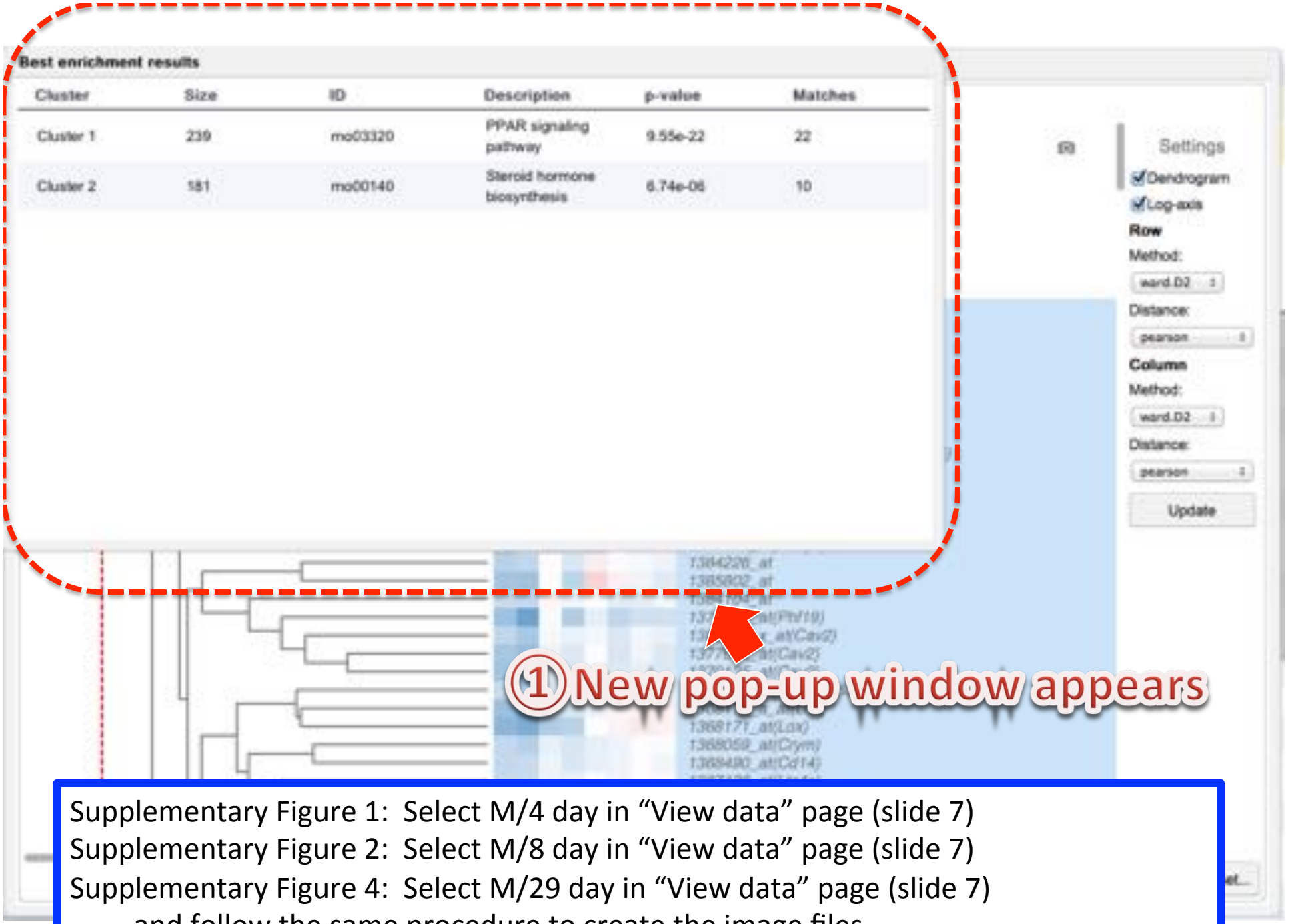

Heatmap
Value:
Log2 (fold change)
2.43e+2
Settings
Dendrogram
Log-axis
Row
Method:
Distance:
correlation
Column
Method:
Distance:
correlation
Update
① Select pearson
② Click
Enrichment...
Close
Save as gene set...


①Heatmap is updated
②Select cut-off=4 by pointing and click
Value: Log2 (fold change)
2.56e+1
Settings
Dendrogram
Log-axis
Row
Method:
ward.D2
Distance:
pearson
Column
Method:
ward.D2
Distance:
pearson
Update
Enrichment...
Close
Save as gene set...

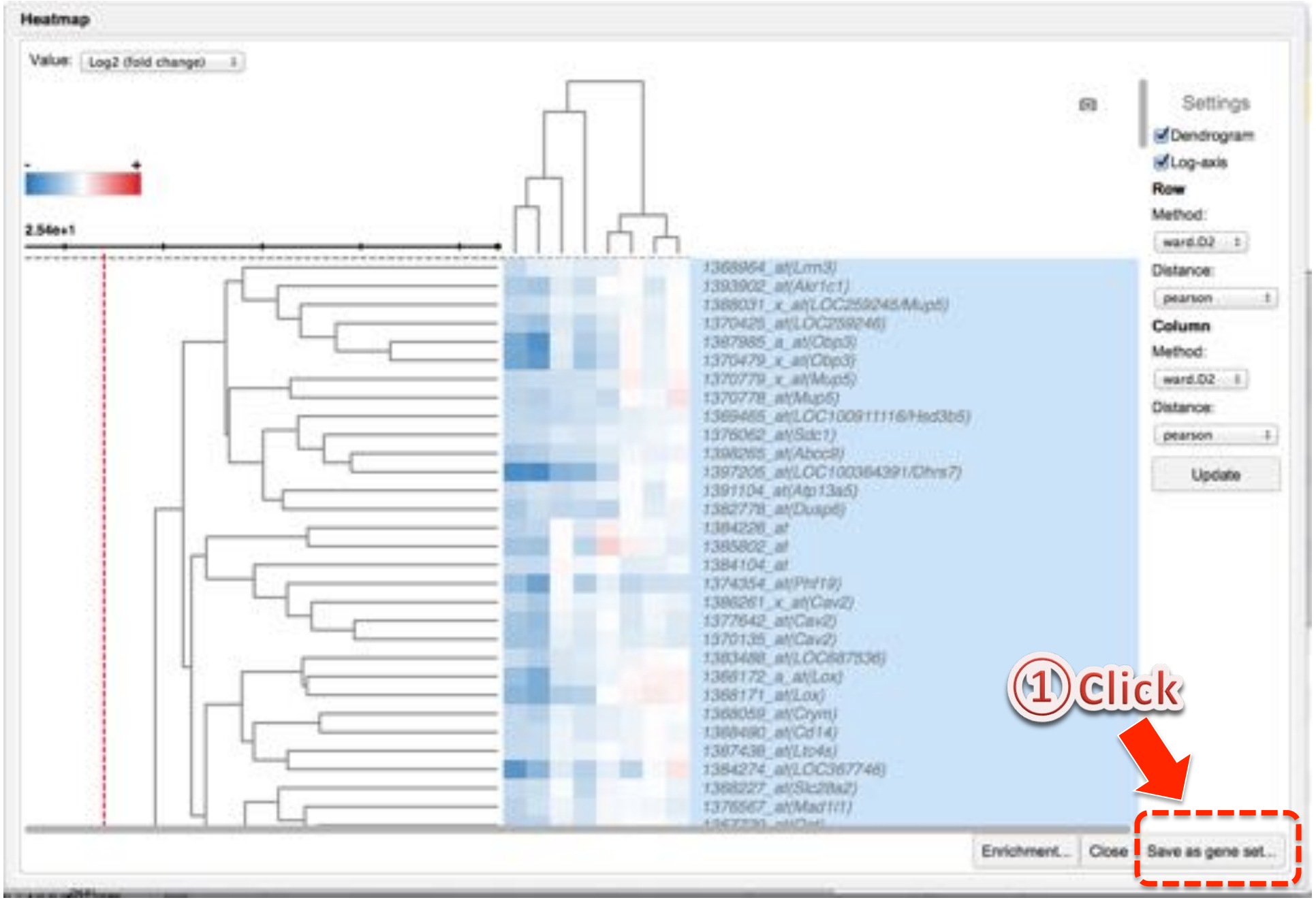


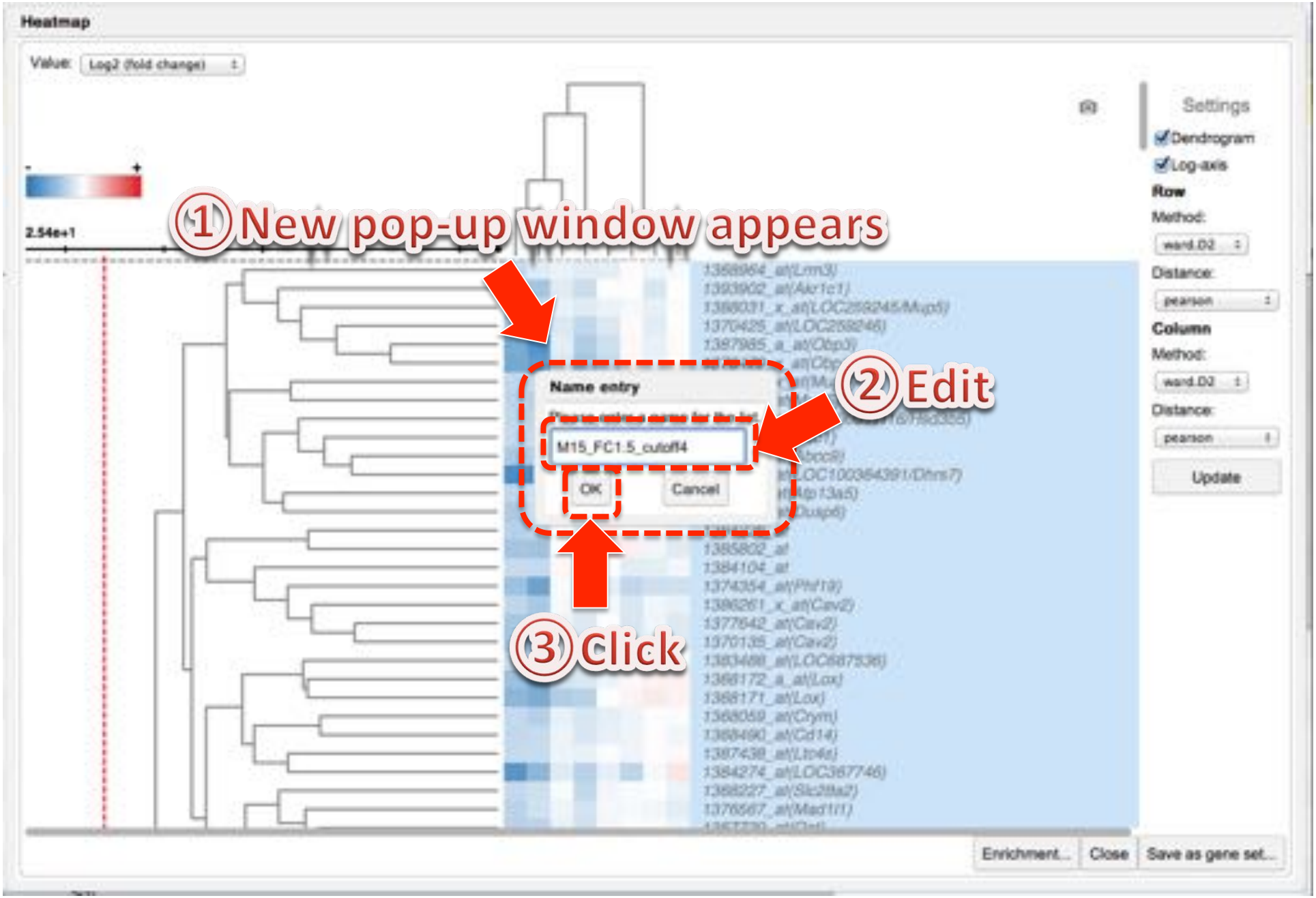
Supplementary Figure 3: image file of this heatmap


Heatmap
Value:
Log2 (fold change)
2.56e+1
Settings
Dendrogram
Log-axis
Row
Method:
ward.D2
Distance:
pearson
Column
Method:
ward.D2
Distance:
pearson
Update
TargetMine cluster enrichment
Enrichment:
Pathway
Filter:
All
p-value cutoff:
0.05
Correction:
BenjaminiHochberg
Cluster enrichment
Cancel
② Click
① Select BenjaminiHochberg
Enrichment...
Close
Save as gene set...



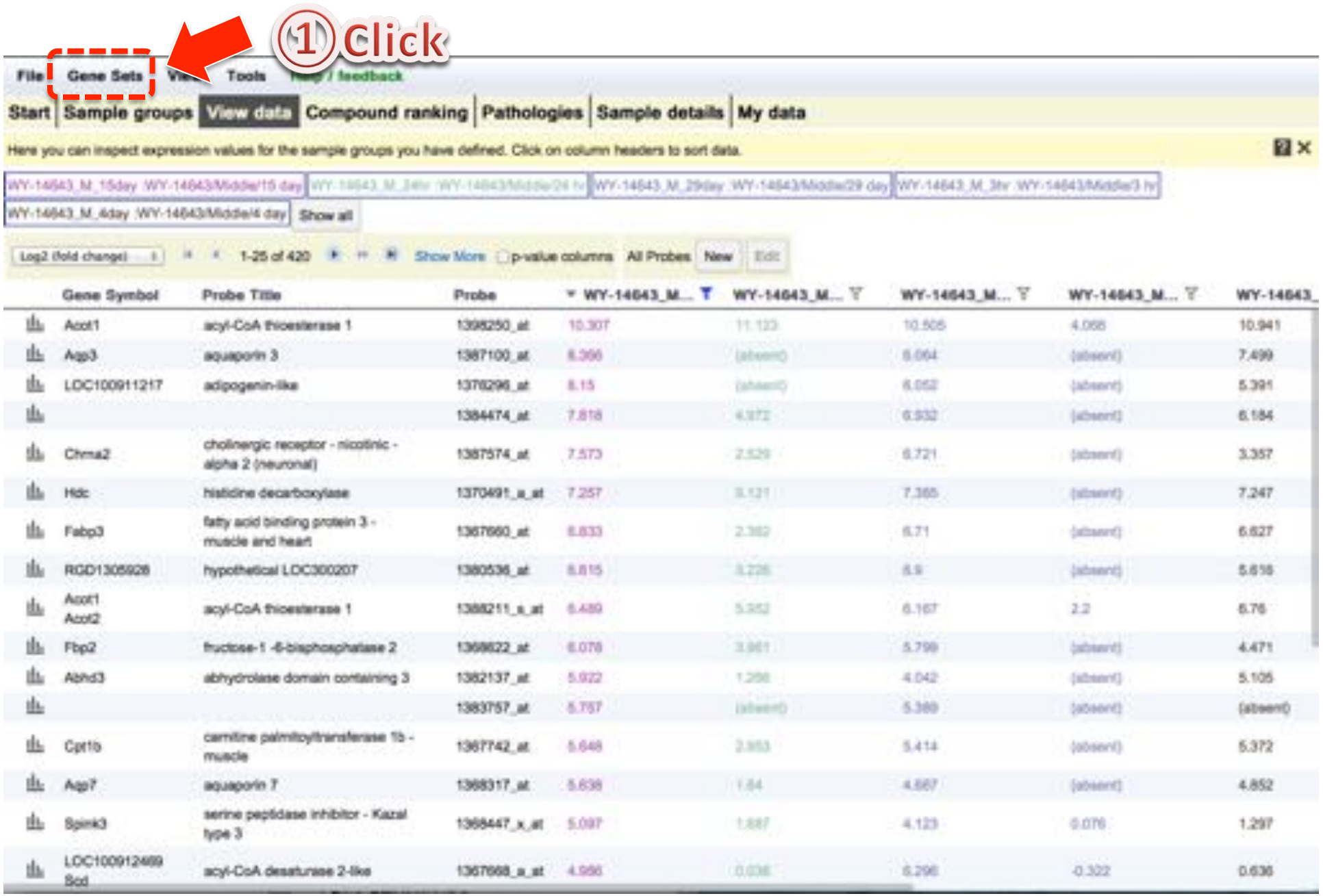
Supplementary Figure 1: Select M/4 day in “View data” page (slide 7)
Supplementary Figure 2: Select M/8 day in “View data” page (slide 7)
Supplementary Figure 4: Select M/29 day in “View data” page (slide 7)
and follow the same procedure to create the image files

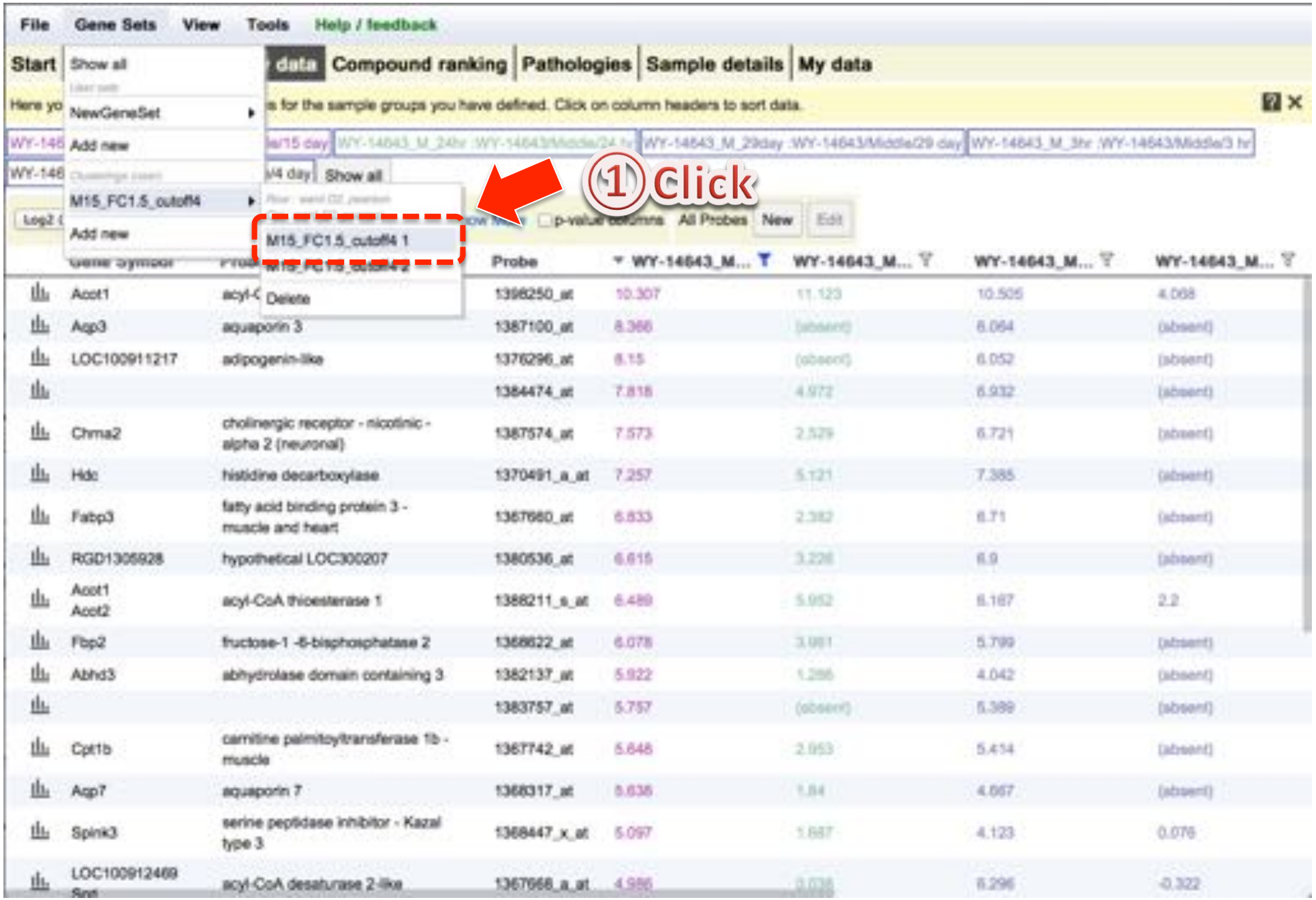

Heatmap
Value:
Log2 (fold change)
2.54e+1
Settings
Dendrogram
Log-axis
Row
Method:
ward.D2
Distance:
pearson
Column
Method:
ward.D2
Distance:
pearson
Update
1 Click
Enrichment...
Close
Save as gene set...

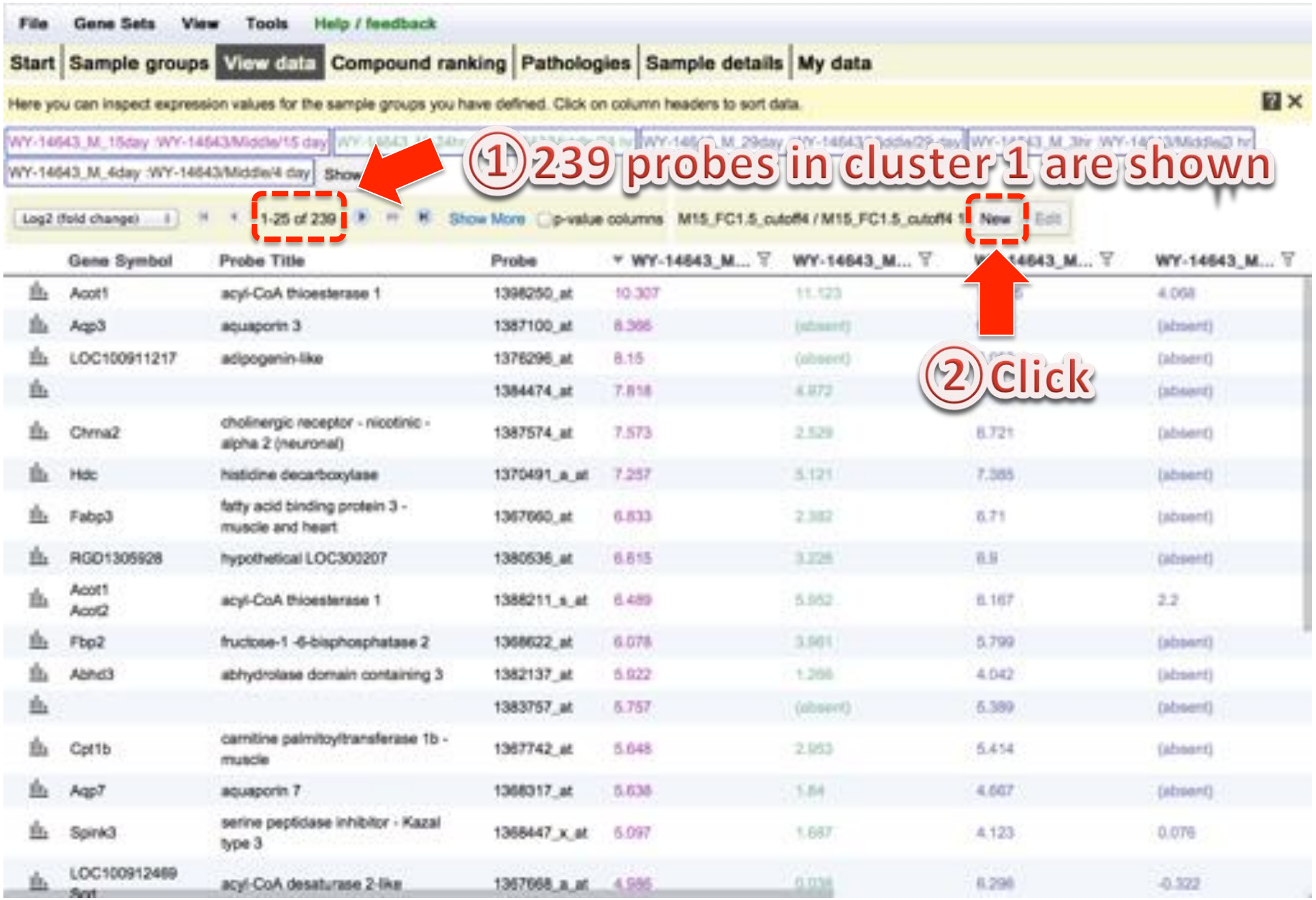

Heatmap
Value:
Log2 (fold change)
2.54e+1
Settings
Dendrogram
Log-axis
Row
Method:
ward.D2
Distance:
pearson
Column
Method:
ward.D2
Distance:
pearson
Update
① New pop-up window appears
② Edit
③ Click
Name entry
M15_FC1.5_cutoff4
OK
Cancel
Enrichment...
Close
Save as gene set...

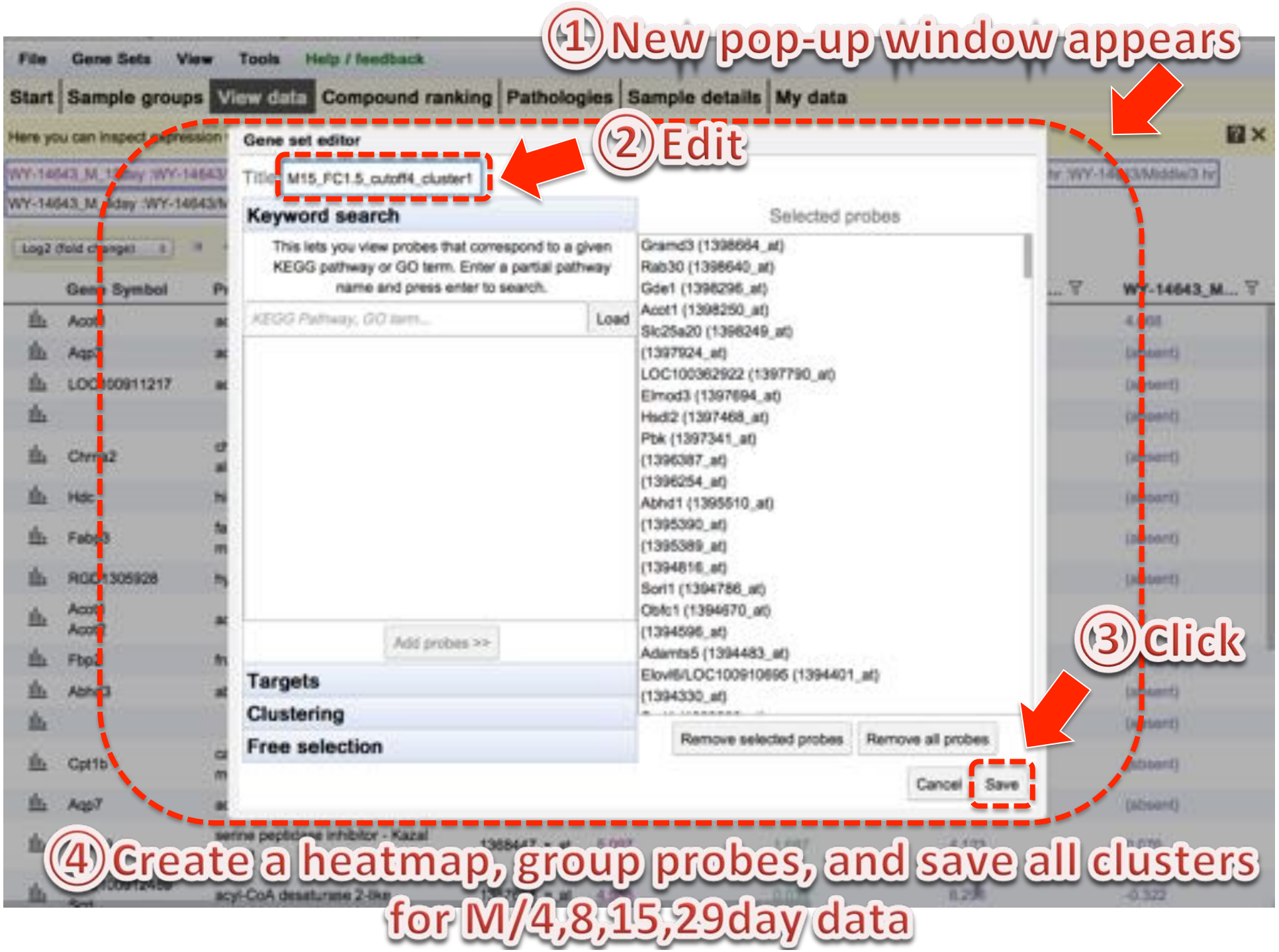

Heatmap
Value
Log2 (fold change)
2.56e+1
Settings
Dendrogram
Log-axis
Row
Method:
ward.D2
Distance:
pearson
Column
Method:
ward.D2
Distance:
pearson
Update
Clusters are successfully saved.
閉じる
① Click to close
Enrichment...
Close
Save as gene set...

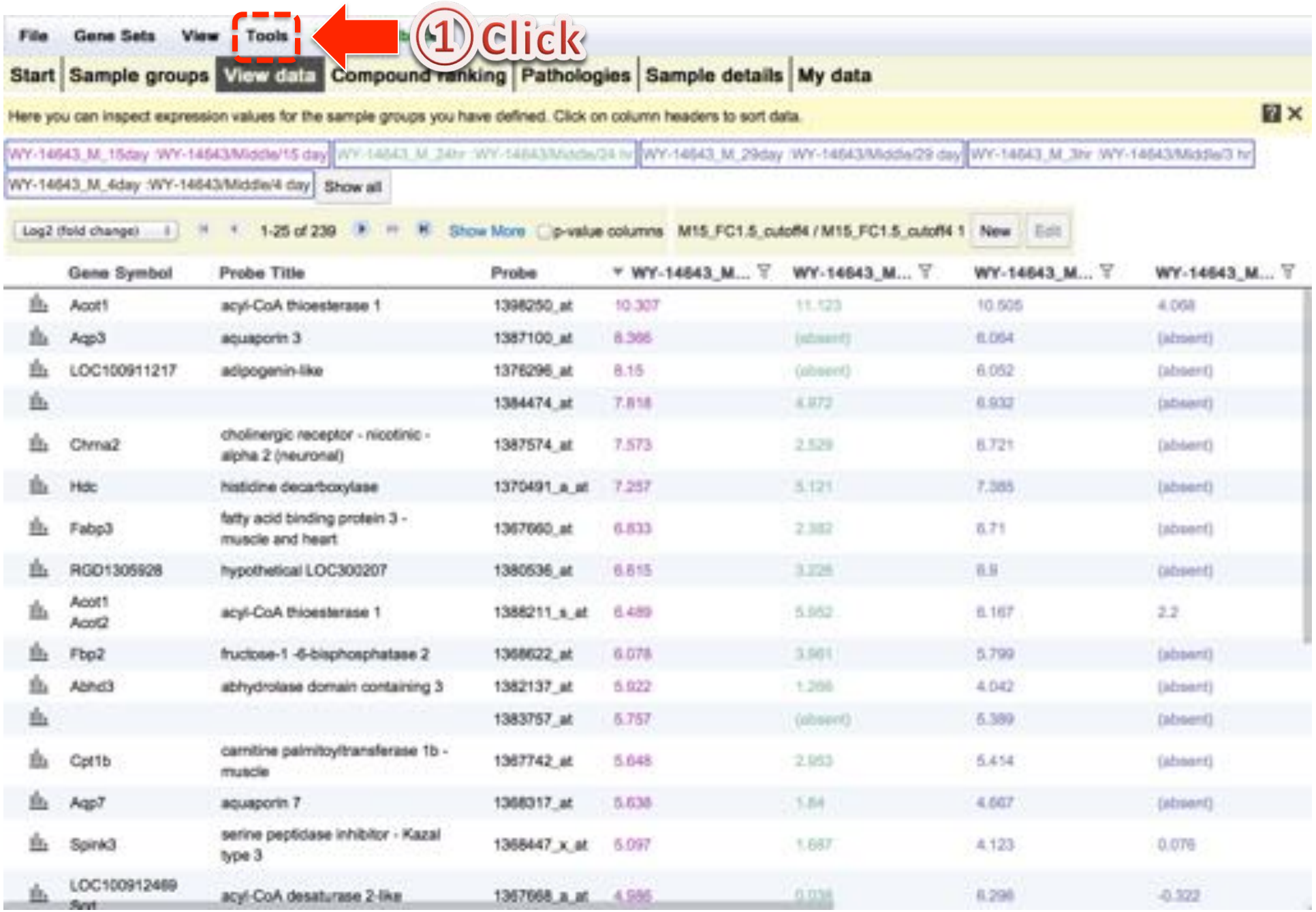

Heatmap
Value:
Log2 (fold change)
2.54e+1
Settings
Dendrogram
Log-axis
Row
Method:
ward.D2
Distance:
pearson
Column
Method:
ward.D2
Distance:
pearson
Update
1368964_at(Lrrn3)
1393902_at(Akr1c1)
1388031_x_at(LOC259246/Mup5)
1370428_at(LOC259246)
1387985_a_at(Obp3)
1370479_x_at(Obp3)
1370779_x_at(Mup5)
1370778_at(Mup5)
1389485_at(LOC100911116/Hsd3b5)
1376062_at(Sdc1)
1398265_at(Abcc9)
1397205_at(LOC100364391/Dhrs7)
1391104_at(Atp13a5)
1382778_at(Dusp6)
1384228_at
1385802_at
1384104_at
1374354_at(Phf19)
1388261_x_at(Cav2)
1377642_at(Cav2)
1370135_at(Cav2)
1383488_at(LOC687536)
1368172_a_at(Lox)
1368171_at(Lox)
1368059_at(Crym)
1368490_at(Cd14)
1387438_at(Ltc4s)
1384274_at(LOC367746)
1388227_at(Slc28a2)
1376567_at(Mad1l1)
① Click to close
Enrichment...
Close
Save as gene set...

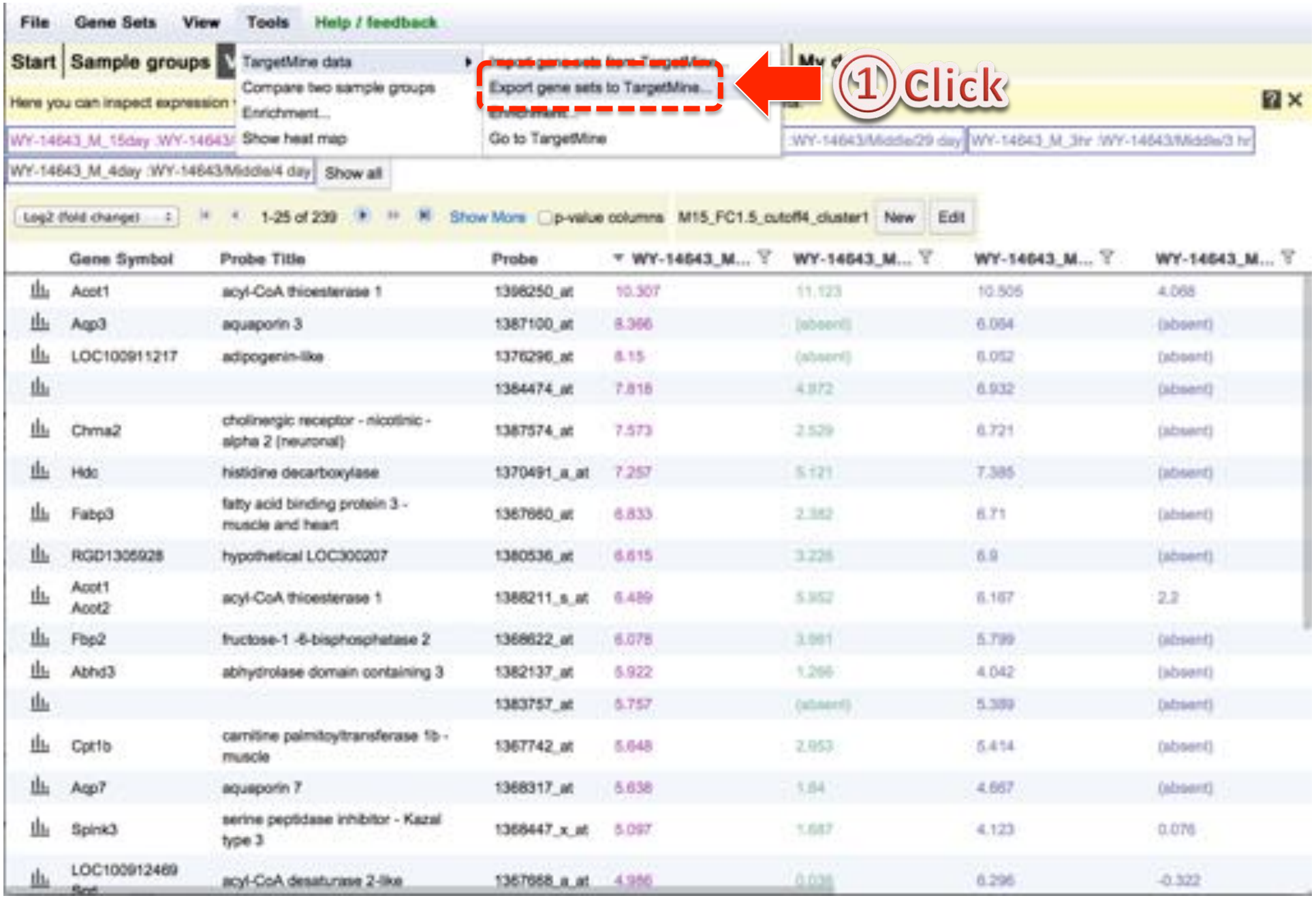

①Click
File
Gene Sets
Tools
Start
Sample groups
View data
Compound ranking
Pathologies
Sample details
My data
Here you can inspect expression values for the sample groups you have defined. Click on column headers to sort data.
Show all
Show More
p-value columns
All Probes
New
Edit
Gene Symbol
Probe Title
Probe
Acot1
acyl-CoA thioesterase 1
1398250_at
Aqp3
aquaporin 3
1387100_at
LOC100911217
adipogenin-like
1376296_at
1384474_at
Chrna2
cholinergic receptor - nicotinic - alpha 2 (neuronal)
1387574_at
Hdc
histidine decarboxylase
1370491_a_at
Fabp3
fatty acid binding protein 3 - muscle and heart
1367660_at
RGD1305928
hypothetical LOC300207
1380536_at
Acot1
Acot2
acyl-CoA thioesterase 1
1388211_s_at
Fbp2
fructose-1 -6-bisphosphatase 2
1369822_at
Abhd3
abhydrolase domain containing 3
1382137_at
1383757_at
Cpt1b
carnitine palmitoyltransferase 1b - muscle
1367742_at
Aqp7
aquaporin 7
1368317_at
Spink3
serine peptidase inhibitor - Kazal type 3
1368447_x_at
LOC100912469
Scd
acyl-CoA desaturase 2-like
1367668_a_at

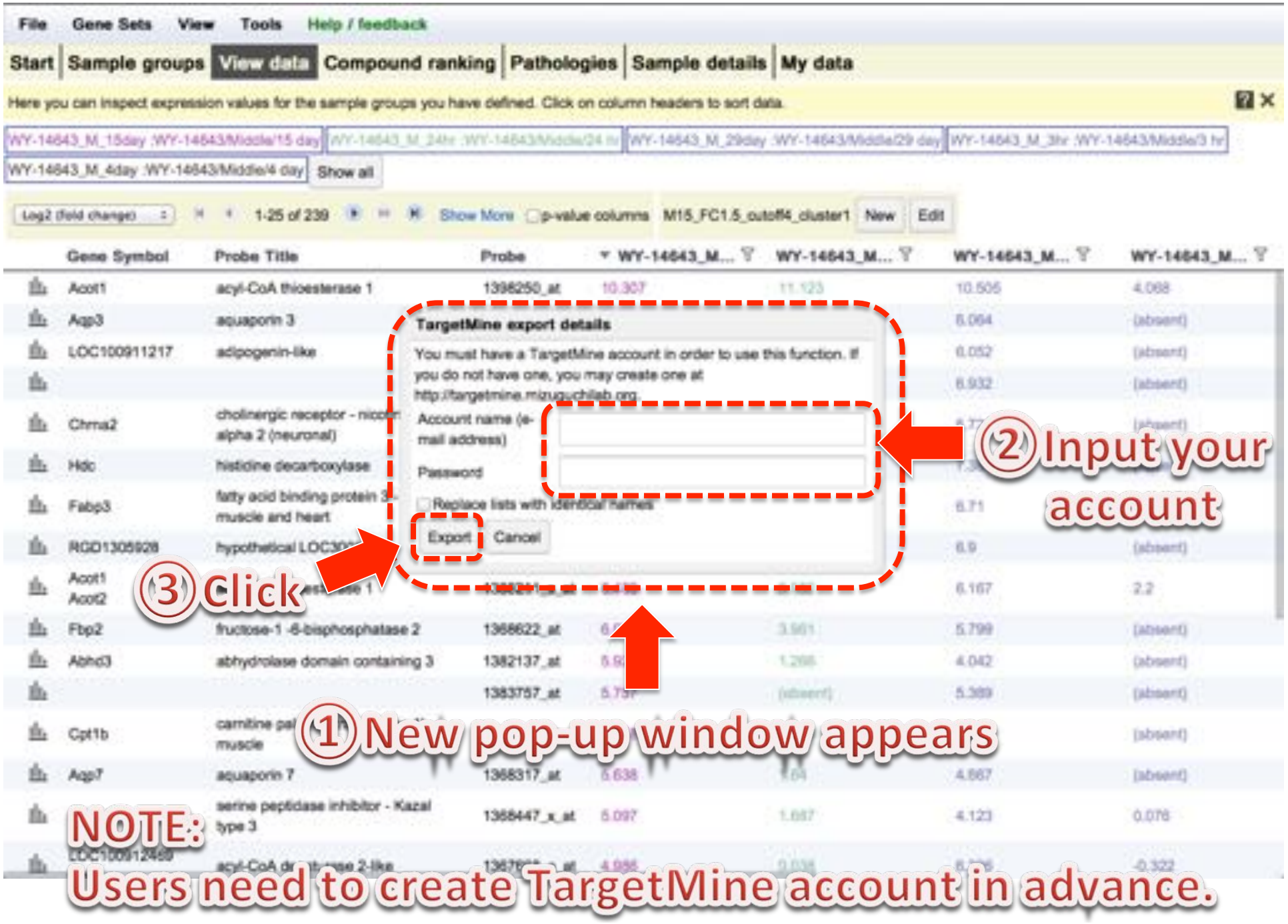

File
Gene Sets
View
Tools
Help / feedback
Start
Compound ranking
Pathologies
Sample details
My data
Show all
NewGeneSet
Add new
M15_FC1.5_cutoff4
Add new
M15_FC1.5_cutoff4 1
Delete
①Click
Show all
All Probes
New
Edit
Probe
WY-14643_M...
Acot1
aquaporin 3
adipogenin-like
cholinergic receptor - nicotinic - alpha 2 (neuronal)
histidine decarboxylase
fatty acid binding protein 3 - muscle and heart
hypothetical LOC300207
Acot1 Acot2
acyl-CoA thioesterase 1
fructose-1 -6-bisphosphatase 2
abhydrolase domain containing 3
carnitine palmitoyltransferase 1b - muscle
aquaporin 7
serine peptidase inhibitor - Kazal type 3
1396250_at
1387100_at
1376296_at
1384474_at
1387574_at
1370491_a_at
1367660_at
1380536_at
1388211_s_at
1368822_at
1382137_at
1383757_at
1367742_at
1368317_at
1368447_x_at
1367668_a_at

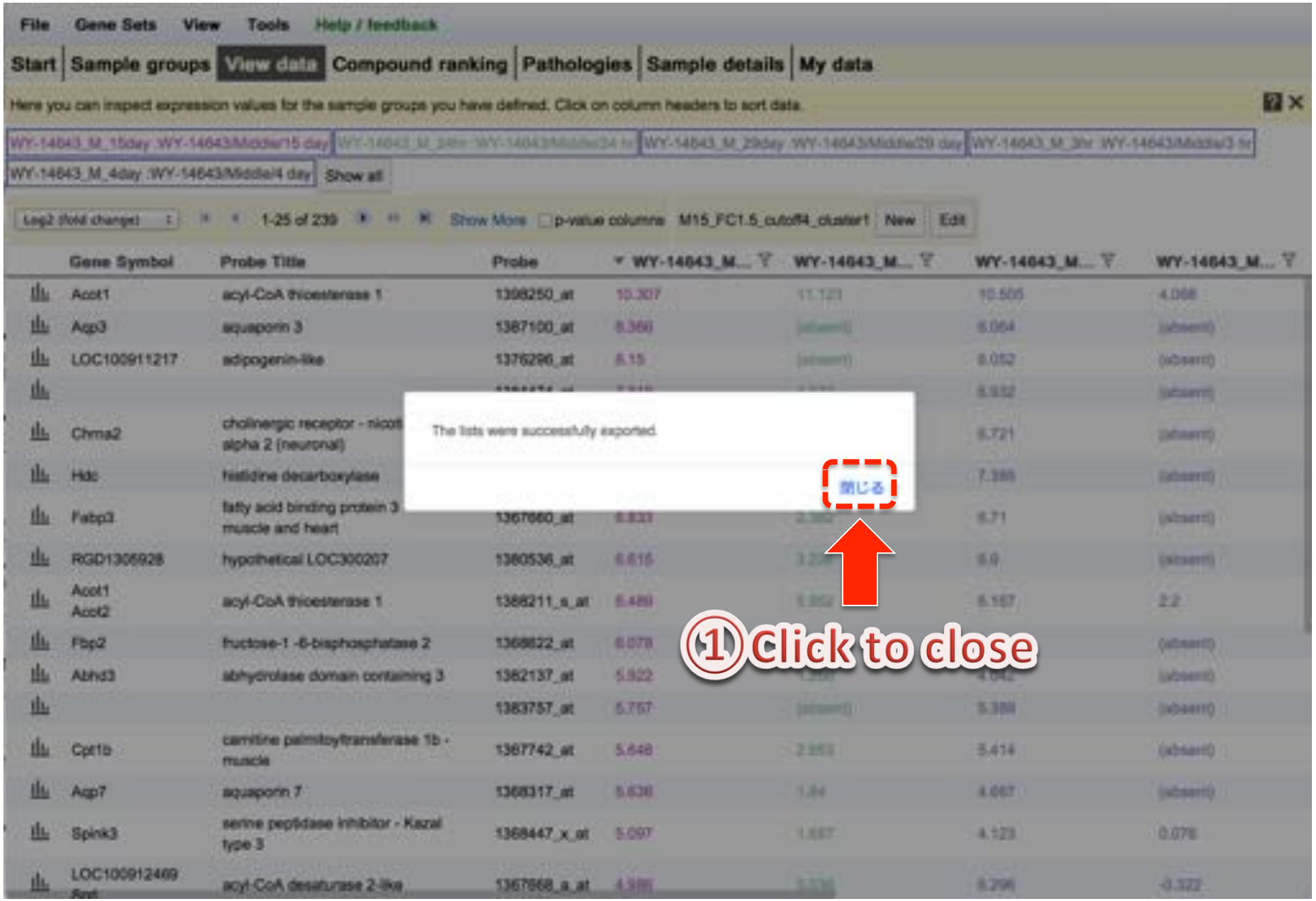

File
Gene Sets
View
Tools
Help / feedback
Start
Sample groups
View data
Compound ranking
Pathologies
Sample details
My data
Here you can inspect expression values for the sample groups you have defined. Click on column headers to sort data.
WY-14643_M_15day :WY-14643/Middle/15 day
WY-14643_M_4day :WY-14643/Middle/4 day
Show
① 239 probes in cluster 1 are shown
Log2 (fold change)
1-25 of 239
Show More
p-value columns
M15_FC1.5_cutoff4 / M15_FC1.5_cutoff4 1
New
Edit
② Click
Gene Symbol
Probe Title
Probe
WY-14643_M...
WY-14643_M...
WY-14643_M...
WY-14643_M...
Acot1
acyl-CoA thioesterase 1
1398250_at
10.307
11.123
4.068
Aqp3
aquaporin 3
1387100_at
8.366
(absent)
(absent)
LOC100911217
adipogenin-like
1376296_at
8.15
(absent)
(absent)
1384474_at
7.818
4.972
(absent)
Chrna2
cholinergic receptor - nicotinic - alpha 2 (neuronal)
1387574_at
7.573
2.529
8.721
(absent)
Hdc
histidine decarboxylase
1370491_a_at
7.257
5.121
7.385
(absent)
Fabp3
fatty acid binding protein 3 - muscle and heart
1367660_at
6.833
2.382
6.71
(absent)
RGD1305928
hypothetical LOC300207
1380536_at
6.615
3.226
6.9
(absent)
Acot1
Acot2
acyl-CoA thioesterase 1
1388211_s_at
6.489
5.952
8.167
2.2
Fbp2
fructose-1 -6-bisphosphatase 2
1368622_at
6.078
3.961
5.799
(absent)
Abhd3
abhydrolase domain containing 3
1382137_at
5.922
1.266
4.042
(absent)
1383757_at
5.757
(absent)
5.389
(absent)
Cpt1b
carnitine palmitoyltransferase 1b - muscle
1367742_at
5.648
2.953
5.414
(absent)
Aqp7
aquaporin 7
1368317_at
5.638
1.84
4.667
(absent)
Spink3
serine peptidase inhibitor - Kazal type 3
1368447_x_at
5.097
1.687
4.123
0.076
LOC100912469
acyl-CoA desaturase 2-like
1367668_a_at
4.986
0.018
6.298
-0.322


① New pop-up window appears
② Edit
③ Click
④ Create a heatmap, group probes, and save all clusters for M/4,8,15,29day data
File
Gene Sets
View
Tools
Help / feedback
Start
Sample groups
View data
Compound ranking
Pathologies
Sample details
My data
Gene set editor
Title
M15_FC1.5_cutoff4_cluster1
Keyword search
This lets you view probes that correspond to a given KEGG pathway or GO term. Enter a partial pathway name and press enter to search.
KEGG Pathway, GO term...
Load
Add probes >>
Targets
Clustering
Free selection
Selected probes
Gramd3 (1398664_at)
Rab30 (1398640_at)
Gde1 (1398296_at)
Acot1 (1398250_at)
Slc25a20 (1398249_at)
(1397924_at)
LOC100362922 (1397790_at)
Elmod3 (1397694_at)
Hsd2 (1397468_at)
Pbk (1397341_at)
(1396387_at)
(1396254_at)
Abhd1 (1395510_at)
(1395390_at)
(1395389_at)
(1394816_at)
Sorl1 (1394786_at)
Obfc1 (1394670_at)
(1394596_at)
Adamts5 (1394483_at)
Elovl6/LOC100910695 (1394401_at)
(1394330_at)
Remove selected probes
Remove all probes
Cancel
Save

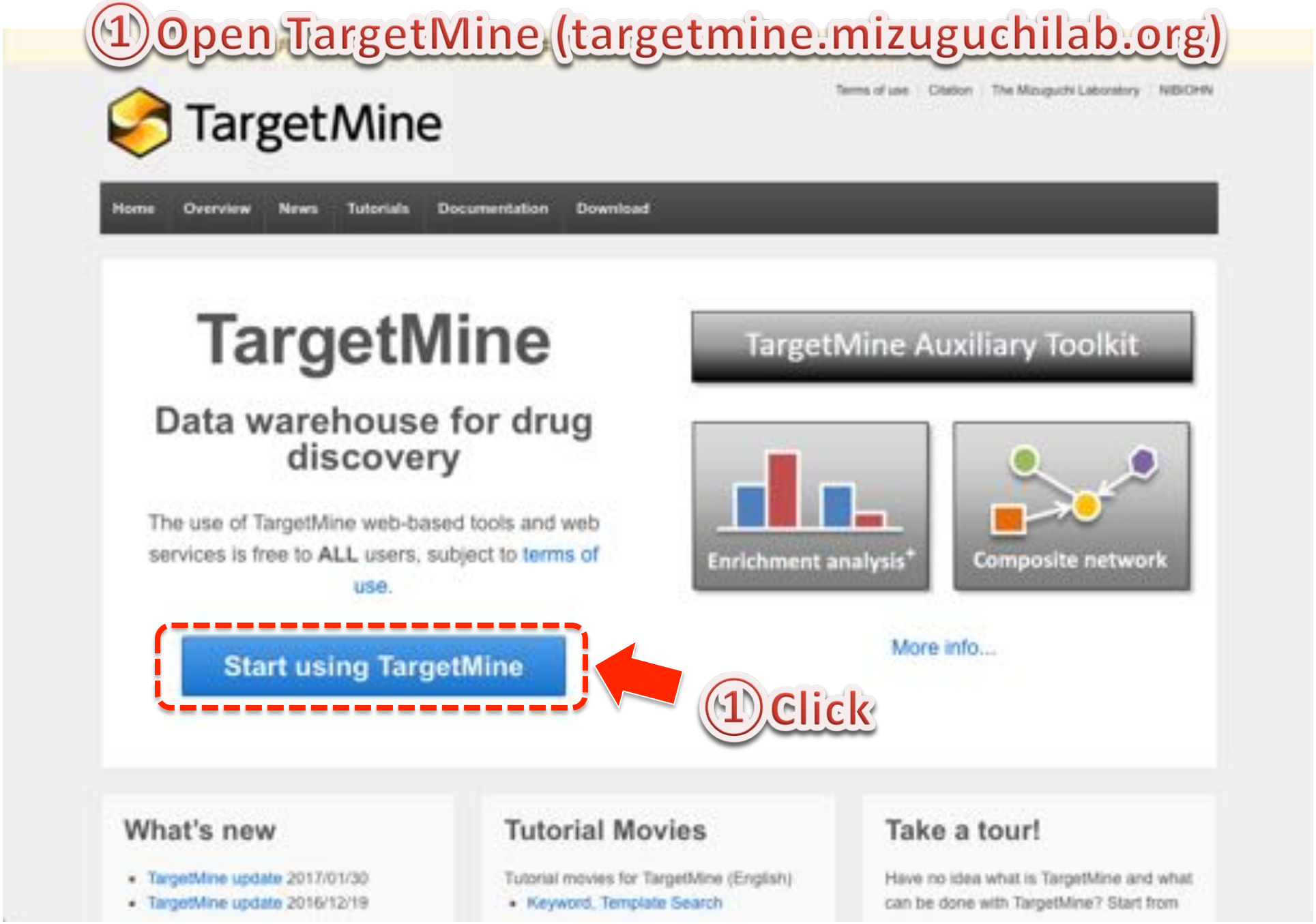

File
Gene Sets
View
Tools
① Click
Start
Sample groups
View data
Compound ranking
Pathologies
Sample details
My data
Here you can inspect expression values for the sample groups you have defined. Click on column headers to sort data.
WY-14643_M_15day :WY-14643/Middle/15 day
WY-14643_M_24hr :WY-14643/Middle/24 hr
WY-14643_M_29day :WY-14643/Middle/29 day
WY-14643_M_3hr :WY-14643/Middle/3 hr
WY-14643_M_4day :WY-14643/Middle/4 day
Show all
Log2 (fold change)
1-25 of 239
Show More
p-value columns
M15_FC1.5_cutoff4 / M15_FC1.5_cutoff4 1
New
Edit
Gene Symbol
Probe Title
Probe
WY-14643_M...
WY-14643_M...
WY-14643_M...
WY-14643_M...
Acot1
acyl-CoA thioesterase 1
1398250_at
10.307
11.123
10.505
4.068
Aqp3
aquaporin 3
1387100_at
8.366
(absent)
8.064
(absent)
LOC100911217
adipoganin-like
1376296_at
8.15
(absent)
8.052
(absent)
1384474_at
7.818
4.972
8.932
(absent)
Chrna2
cholinergic receptor - nicotinic - alpha 2 (neuronal)
1387574_at
7.573
2.529
8.721
(absent)
Hdc
histidine decarboxylase
1370491_a_at
7.257
5.121
7.385
(absent)
Fabp3
fatty acid binding protein 3 - muscle and heart
1367660_at
6.833
2.382
8.71
(absent)
RGD1305928
hypothetical LOC300207
1380536_at
6.815
3.226
8.8
(absent)
Acot1
Acot2
acyl-CoA thioesterase 1
1388211_s_at
6.489
5.952
8.167
2.2
Fbp2
fructose-1 -6-bisphosphatase 2
1368622_at
6.078
3.961
5.799
(absent)
Abhd3
abhydrolase domain containing 3
1382137_at
5.922
1.266
4.042
(absent)
1383757_at
5.757
(absent)
5.389
(absent)
Cpt1b
carnitine palmitoyltransferase 1b - muscle
1367742_at
5.648
2.953
5.414
(absent)
Aqp7
aquaporin 7
1368317_at
5.638
1.84
4.667
(absent)
Spink3
serine peptidase inhibitor - Kazal type 3
1368447_x_at
5.097
1.687
4.123
0.076
LOC100912469
acyl-CoA desaturase 2-like
1367668_a_at
4.986
0.078
6.298
-0.322


File
Gene Sets
View
Tools
Help / feedback
Start
Sample groups
TargetMine data
Compare two sample groups
Enrichment...
Show heat map
Export gene sets to TargetMine...
Go to TargetMine
① Click
Here you can inspect expression
WY-14643_M_15day :WY-14643/
:WY-14643/Middle/29 day
WY-14643_M_3hr :WY-14643/Middle/3 hr
WY-14643_M_4day :WY-14643/Middle/4 day
Show all
Log2 (fold change)
1-25 of 239
Show More
p-value columns
M15_FC1.5_cutoff4_cluster1
New
Edit
Gene Symbol
Probe Title
Probe
WY-14643_M...
WY-14643_M...
WY-14643_M...
WY-14643_M...
Acot1
acyl-CoA thioesterase 1
1396250_at
10.307
11.123
10.505
4.068
Aqp3
aquaporin 3
1387100_at
8.366
(absent)
6.064
(absent)
LOC100911217
adipogenin-like
1376296_at
8.15
(absent)
6.052
(absent)
1384474_at
7.818
4.972
6.932
(absent)
Chrna2
cholinergic receptor - nicotinic - alpha 2 (neuronal)
1387574_at
7.573
2.529
6.721
(absent)
Hdc
histidine decarboxylase
1370491_a_at
7.257
5.121
7.385
(absent)
Fabp3
fatty acid binding protein 3 - muscle and heart
1367660_at
6.833
2.382
6.71
(absent)
RGD1306928
hypothetical LOC300207
1380536_at
6.615
3.226
6.9
(absent)
Acot1
Acot2
acyl-CoA thioesterase 1
1388211_s_at
6.489
5.952
6.167
2.2
Fbp2
fructose-1 -6-bisphosphatase 2
1368622_at
6.075
3.981
5.799
(absent)
Abhd3
abhydrolase domain containing 3
1382137_at
5.922
1.266
4.042
(absent)
1383757_at
5.757
(absent)
5.389
(absent)
Cpt1b
carnitine palmitoyltransferase 1b - muscle
1367742_at
5.648
2.953
5.414
(absent)
Aqp7
aquaporin 7
1368317_at
5.638
1.84
4.667
(absent)
Spink3
serine peptidase inhibitor - Kazal type 3
1368447_x_at
5.097
1.687
4.123
0.076
LOC100912469
acyl-CoA desaturase 2-like
1367668_a_at
4.986
0.038
6.296
-0.322


File
Gene Sets
View
Tools
Help / feedback
Start
Sample groups
View data
Compound ranking
Pathologies
Sample details
My data
Here you can inspect expression values for the sample groups you have defined. Click on column headers to sort data.
WY-14643_M_15day :WY-14643/Middle/15 day
WY-14643_M_24hr :WY-14643/Middle/24 hr
WY-14643_M_29day :WY-14643/Middle/29 day
WY-14643_M_3hr :WY-14643/Middle/3 hr
WY-14643_M_4day :WY-14643/Middle/4 day
Show all
Log2 (fold change)
1-25 of 239
Show More
p-value columns
M15_FC1.5_cutoff4_cluster1
New
Edit
Gene Symbol
Probe Title
Probe
WY-14643_M...
WY-14643_M...
WY-14643_M...
WY-14643_M...
Acot1
acyl-CoA thioesterase 1
1398250_at
10.307
11.123
10.505
4.068
Aqp3
aquaporin 3
6.064
(absent)
LOC100911217
adipogenin-like
6.052
(absent)
6.932
(absent)
Chrna2
cholinergic receptor - nicotinic alpha 2 (neuronal)
Hdc
histidine decarboxylase
Fabp3
fatty acid binding protein 3 muscle and heart
6.71
RGD1305928
hypothetical LOC30
6.9
(absent)
Acot1
Acot2
6.167
2.2
Fbp2
fructose-1 -6-bisphosphatase 2
1368622_at
5.799
(absent)
Abhd3
abhydrolase domain containing 3
1382137_at
4.042
(absent)
1383757_at
5.389
(absent)
Cpt1b
carnitine pal muscle
(absent)
Aqp7
aquaporin 7
1368317_at
5.638
4.667
(absent)
serine peptidase inhibitor - Kazal type 3
1368447_x_at
5.097
4.123
0.078
LOC100912469
acyl-CoA dr se 2-like
-0.322
TargetMine export details
You must have a TargetMine account in order to use this function. If you do not have one, you may create one at http://targetmine.mizuguchilab.org
Account name (e-mail address)
Password
Replace lists with identical names
Export
Cancel
② Input your account
③ Click
① New pop-up window appears
NOTE:
Users need to create TargetMine account in advance.

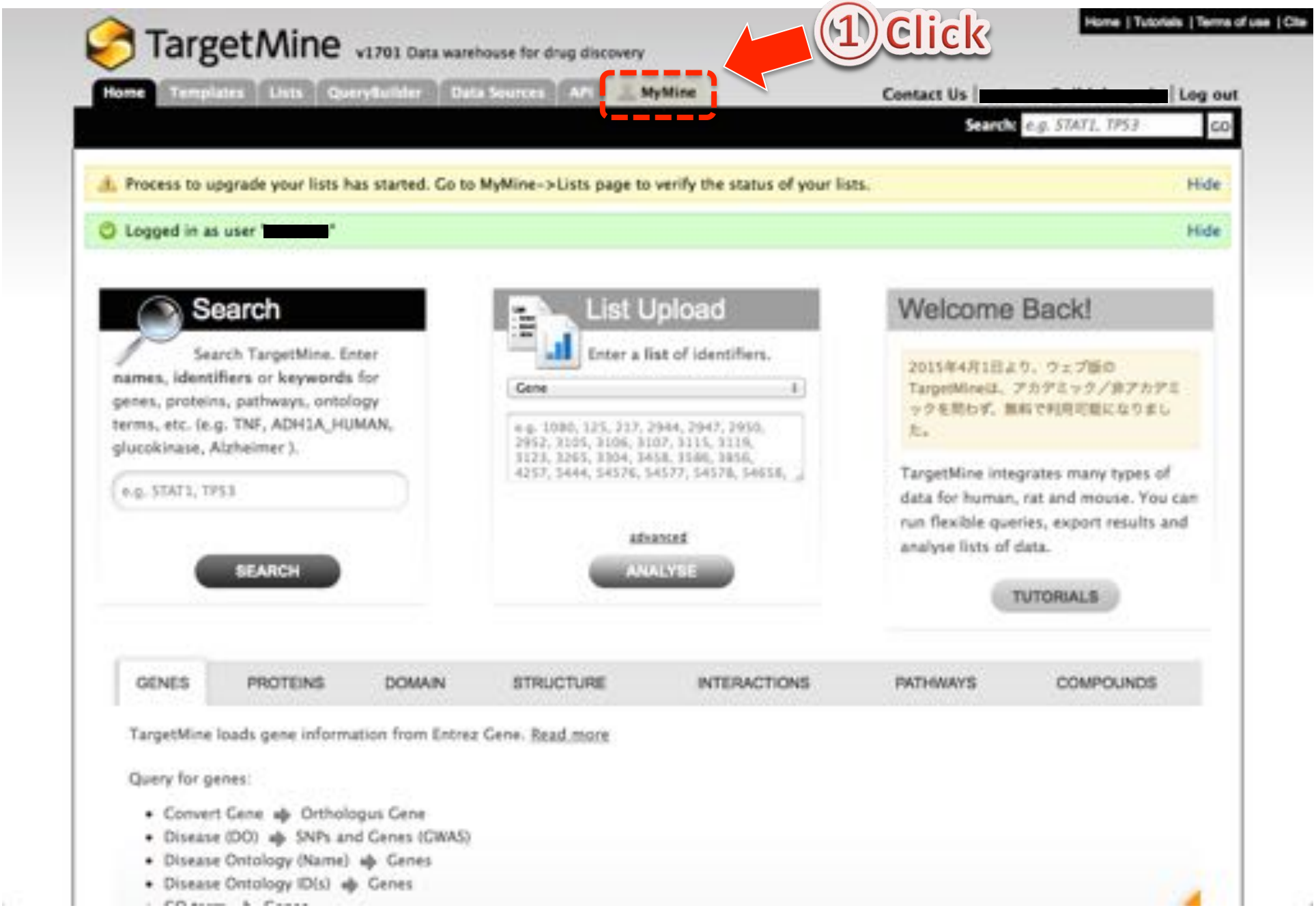

File
Gene Sets
View
Tools
Help / feedback
Start
Sample groups
View data
Compound ranking
Pathologies
Sample details
My data
Here you can inspect expression values for the sample groups you have defined. Click on column headers to sort data.
Show all
1-25 of 239
Show More
p-value columns
M15_FC1.5_cutoff4_cluster1
New
Edit
Gene Symbol
Probe Title
Probe
Acot1
acyl-CoA thioesterase 1
1398250_at
Aqp3
aquaporin 3
1387100_at
LOC100911217
adipogenin-like
1376296_at
Chrna2
cholinergic receptor - nicot
alpha 2 (neuronal)
Hdc
histidine decarboxylase
Fabp3
fatty acid binding protein 3
muscle and heart
1367660_at
RGD1306928
hypothetical LOC300207
1380536_at
Acot1
Acot2
acyl-CoA thioesterase 1
1388211_s_at
Fbp2
fructose-1 -6-bisphosphatase 2
1368822_at
Abhd3
abhydrolase domain containing 3
1382137_at
1383757_at
Cpt1b
carnitine palmitoyltransferase 1b -
muscle
1367742_at
Aqp7
aquaporin 7
1368317_at
Spink3
serine peptidase inhibitor - Kazal
type 3
1368447_x_at
LOC100912469
acyl-CoA desaturase 2-like
1367668_a_at
The lists were successfully exported.
閉じる
①Click to close

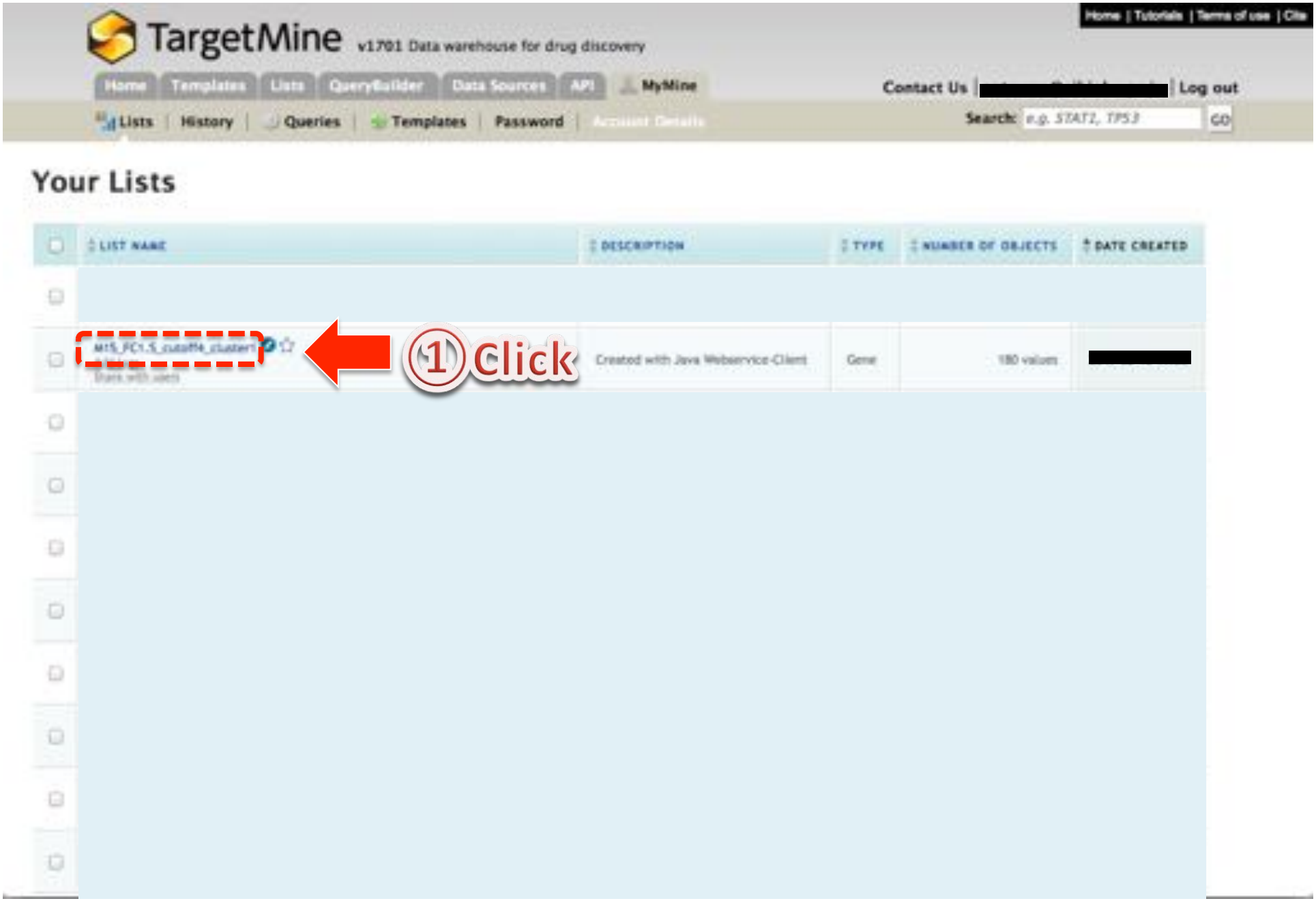
① Open TargetMine (targetmine.mizuguchilab.org)

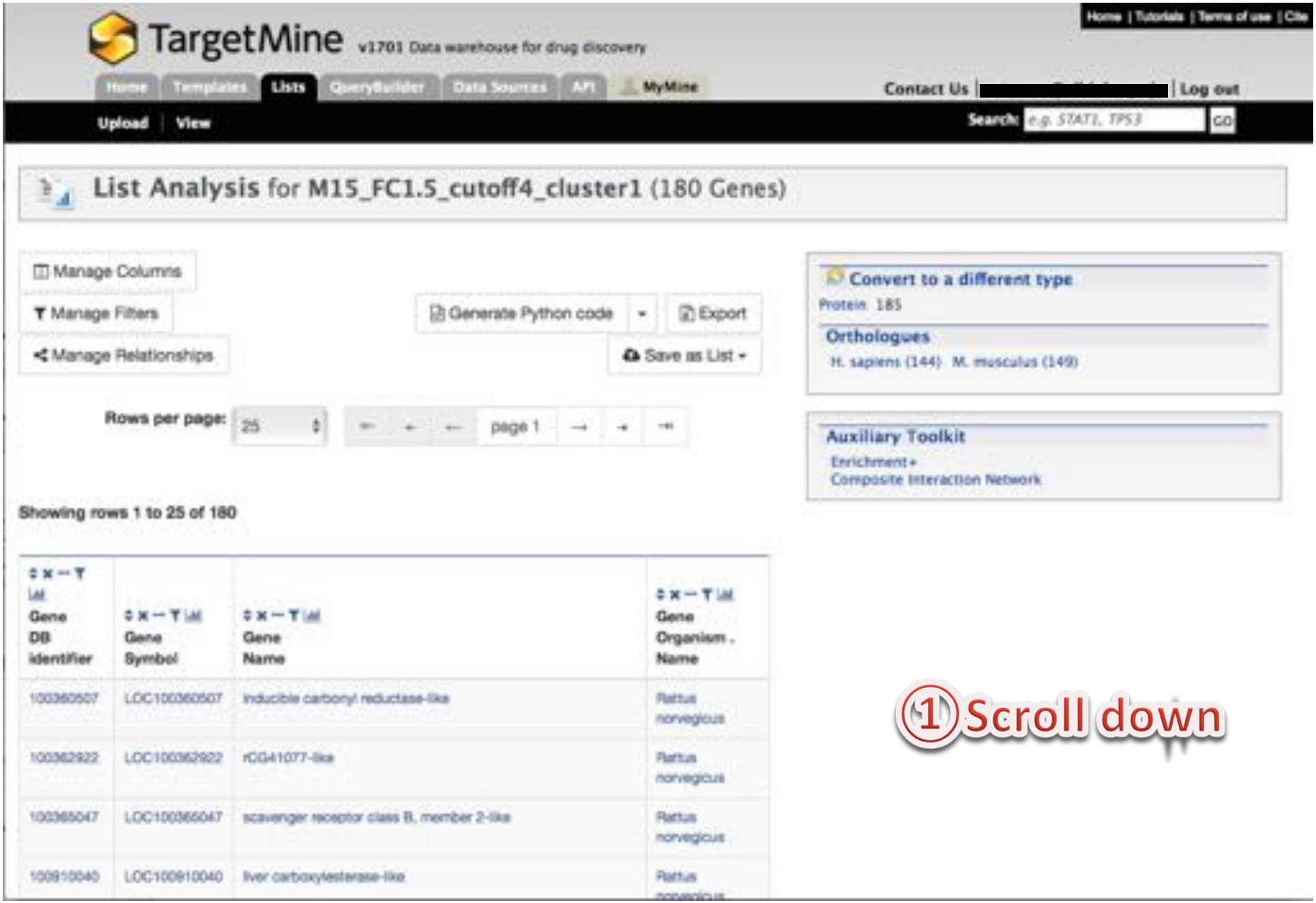



TargetMine
v1701 Data warehouse for drug discovery
Home | Tutorials | Terms of use | Cite
Home
Templates
Lists
QueryBuilder
Data Sources
API
MyMine
①Click
Log in
Search:
e.g. STAT1, TP53
GO
Search
Search TargetMine. Enter names, identifiers or keywords for genes, proteins, pathways, ontology terms, etc. (e.g. TNF, ADH1A_HUMAN, glucokinase, Alzheimer).
e.g. STAT1, TP53
SEARCH
List Upload
Enter a list of identifiers.
Gene
e.g. 1080, 125, 217, 2944, 2947, 2950, 2952, 3105, 3106, 3107, 3115, 3119, 3123, 3265, 3304, 3458, 3586, 3856, 4217, 5444, 54576, 54577, 54578, 54638,
advanced
ANALYSE
Welcome Back!
2015年4月1日より、ウェブ版のTargetMineは、アカデミック／非アカデミックを問わず、無料で利用可能になりました。
TargetMine integrates many types of data for human, rat and mouse. You can run flexible queries, export results and analyse lists of data.
TUTORIALS
GENES
PROTEINS
DOMAIN
STRUCTURE
INTERACTIONS
PATHWAYS
COMPOUNDS
TargetMine loads gene information from Entrez Gene. Read more
Query for genes:
Gene → Pathway
Gene(s) → Disease(s)
Gene(s) → Compound(s)
Gene(s) → Integrated Pathway clusters
Disease Ontology (Name) → Genes
Disease (DO) → SNPs and Genes (GWAS)
Gene list → Compounds that target hub or bottleneck genes
Convert Gene → Orthologus Gene

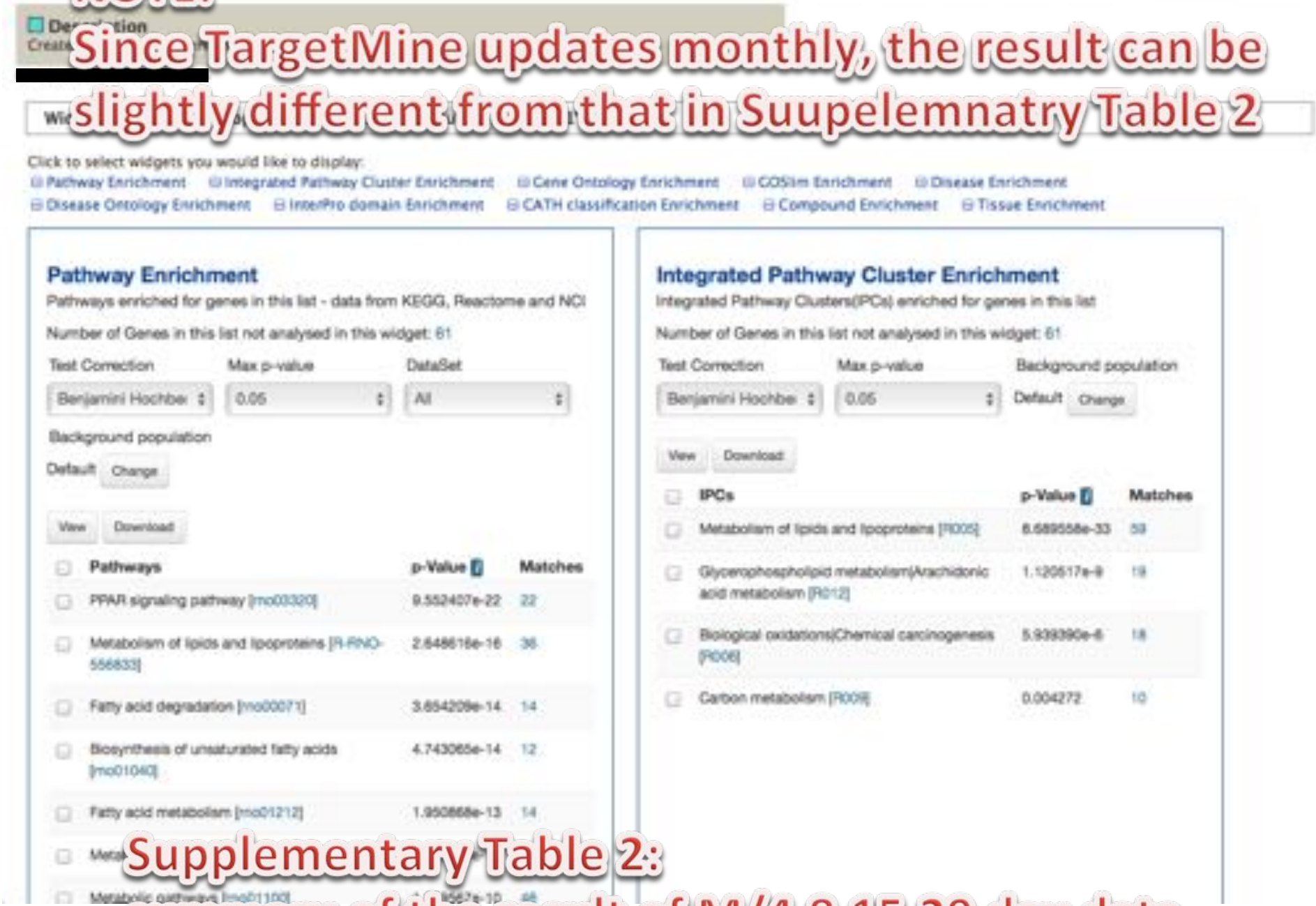

TargetMine
v1701 Data warehouse for drug discovery
Home | Tutorials | Terms of use | Cite
Home
Templates
Lists
QueryBuilder
Data Sources
API
MyMine
Contact Us | Log in
Lists | History | Queries | Templates | Password | Account Details
Search: e.g. STAT1, TP53
GO
Account
Login using username (email) and password
Username:
Password:
Log in
Forgot password?
Create account ...
your lists and queries
favorite items
share lists with
other users
Create account now
①Login
Questions? Comments? Click here!
TargetMine is developed by the
Mizuguchi Laboratory
Powered by
InterMine 1.6.8


TargetMine
v1701 Data warehouse for drug discovery
① Click
Home | Tutorials | Terms of use | Cite
Home
Templates
Lists
QueryBuilder
Data Sources
API
MyMine
Contact Us
Log out
Search:
e.g. STAT1, TP53
GO
Process to upgrade your lists has started. Go to MyMine->Lists page to verify the status of your lists.
Hide
Logged in as user
Hide
Search
Search TargetMine. Enter names, identifiers or keywords for genes, proteins, pathways, ontology terms, etc. (e.g. TNF, ADH1A_HUMAN, glucokinase, Alzheimer).
e.g. STAT1, TP53
SEARCH
List Upload
Enter a list of identifiers.
Gene
e.g. 1080, 125, 217, 2944, 2947, 2950, 2952, 3105, 3106, 3107, 3115, 3119, 3123, 3265, 3304, 3458, 3586, 3856, 4257, 5444, 54576, 54577, 54578, 54658,
advanced
ANALYSE
Welcome Back!
2015年4月1日より、ウェブ版のTargetMineは、アカデミック／非アカデミックを問わず、無料で利用可能になりました。
TargetMine integrates many types of data for human, rat and mouse. You can run flexible queries, export results and analyse lists of data.
TUTORIALS
GENES
PROTEINS
DOMAIN
STRUCTURE
INTERACTIONS
PATHWAYS
COMPOUNDS
TargetMine loads gene information from Entrez Gene. Read more
Query for genes:
Convert Gene → Orthologus Gene
Disease (DO) → SNPs and Genes (GWAS)
Disease Ontology (Name) → Genes
Disease Ontology ID(s) → Genes


TargetMine
v1701 Data warehouse for drug discovery
Home | Tutorials | Terms of use | Cite
Home
Templates
Lists
QueryBuilder
Data Sources
API
MyMine
Contact Us
Log out
Lists
History
Queries
Templates
Password
Search:
e.g. STAT2, TP53
GO
Your Lists
LIST NAME
DESCRIPTION
TYPE
NUMBER OF OBJECTS
DATE CREATED
Created with Java Webservice Client
Gene
180 values
①Click

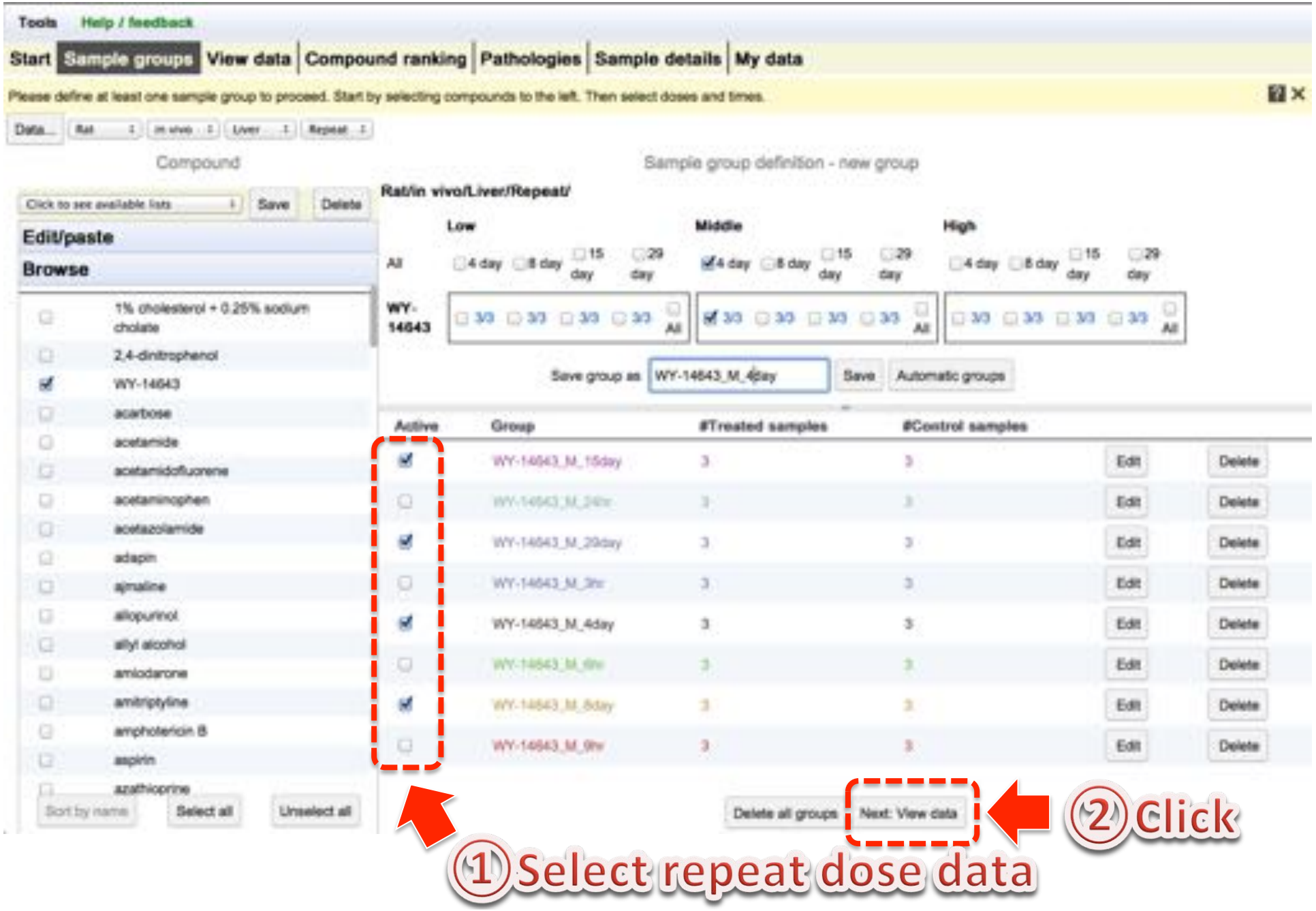

TargetMine
v1701 Data warehouse for drug discovery
Home | Tutorials | Terms of use | Cite
Home
Templates
Lists
QueryBuilder
Data Sources
API
MyMine
Contact Us
Log out
Upload
View
Search:
e.g. STAT1, TP53
GO
List Analysis for M15_FC1.5_cutoff4_cluster1 (180 Genes)
Manage Columns
Manage Filters
Manage Relationships
Generate Python code
Export
Save as List
Rows per page:
25
page 1
Showing rows 1 to 25 of 180
Gene DB identifier
Gene Symbol
Gene Name
Gene Organism . Name
100360507
LOC100360507
inducible carbonyl reductase-like
Rattus norvegicus
100362922
LOC100362922
rCG41077-like
Rattus norvegicus
100365047
LOC100365047
scavenger receptor class B, member 2-like
Rattus norvegicus
100910040
LOC100910040
liver carboxylesterase-like
Rattus norvegicus
Convert to a different type
Protein 185
Orthologues
H. sapiens (144) M. musculus (149)
Auxiliary Toolkit
Enrichment+
Composite Interaction Network
① Scroll down

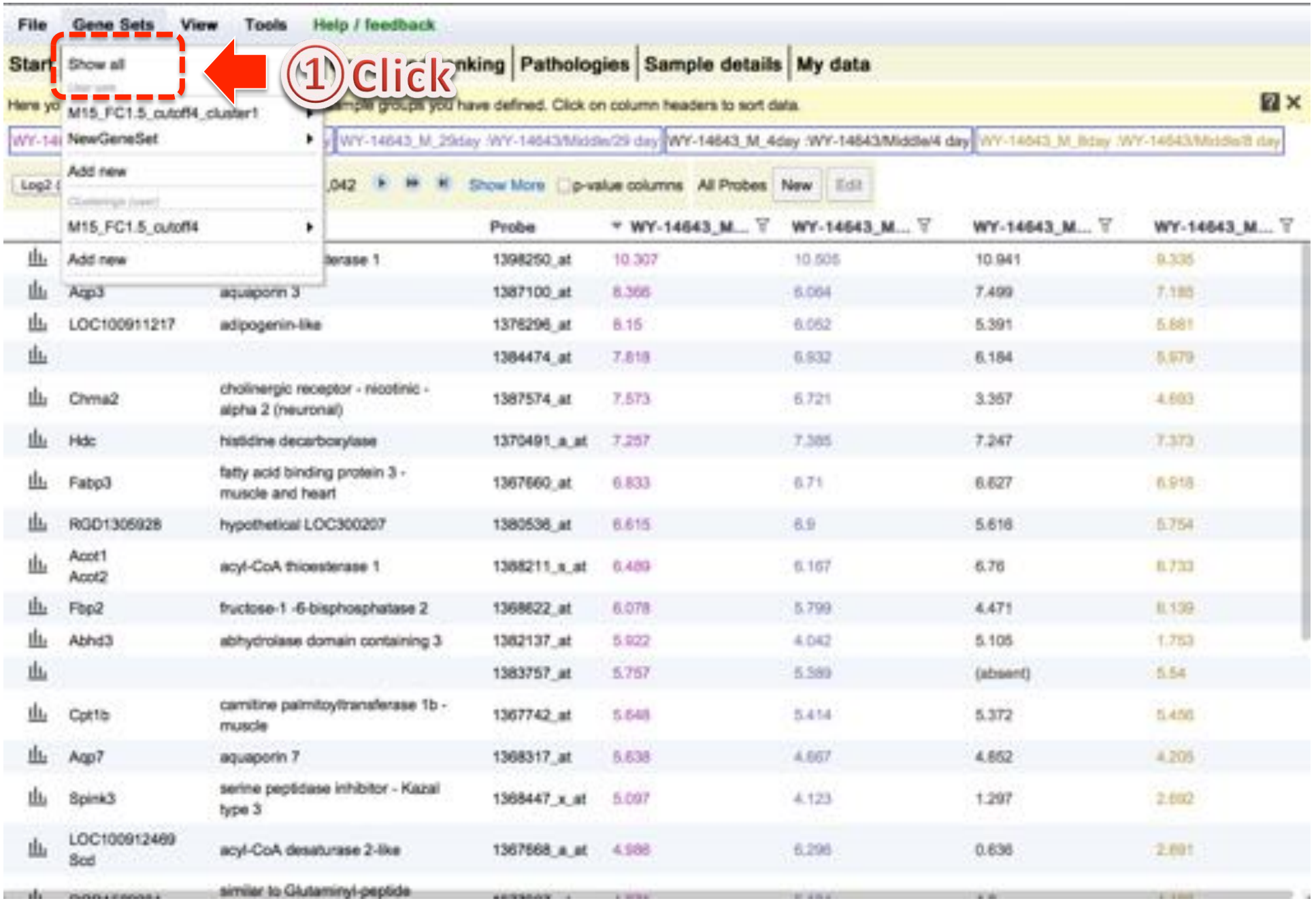
NOTE:
Since TargetMine updates monthly, the result can be slightly different from that in Suupelemnatry Table 2

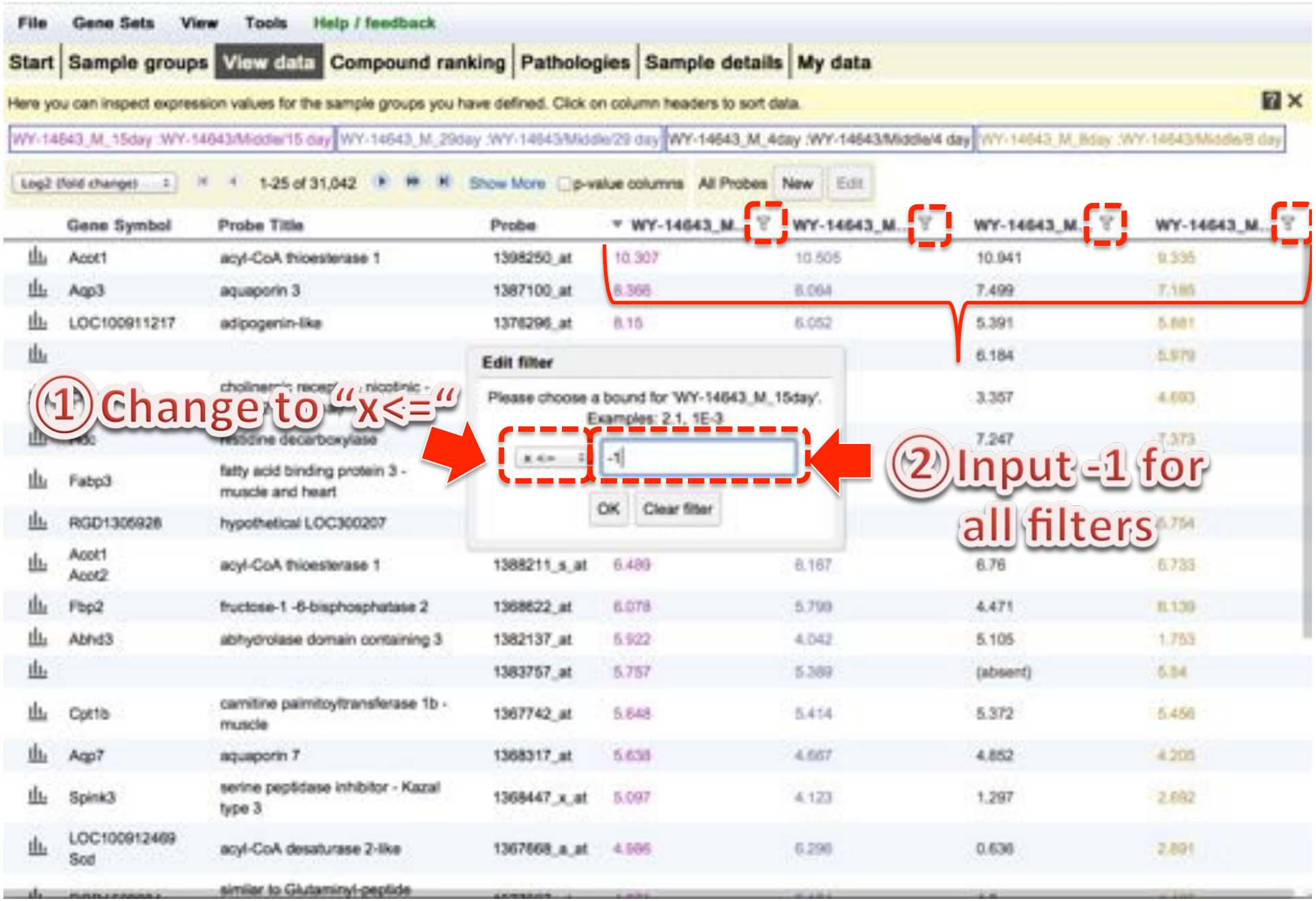


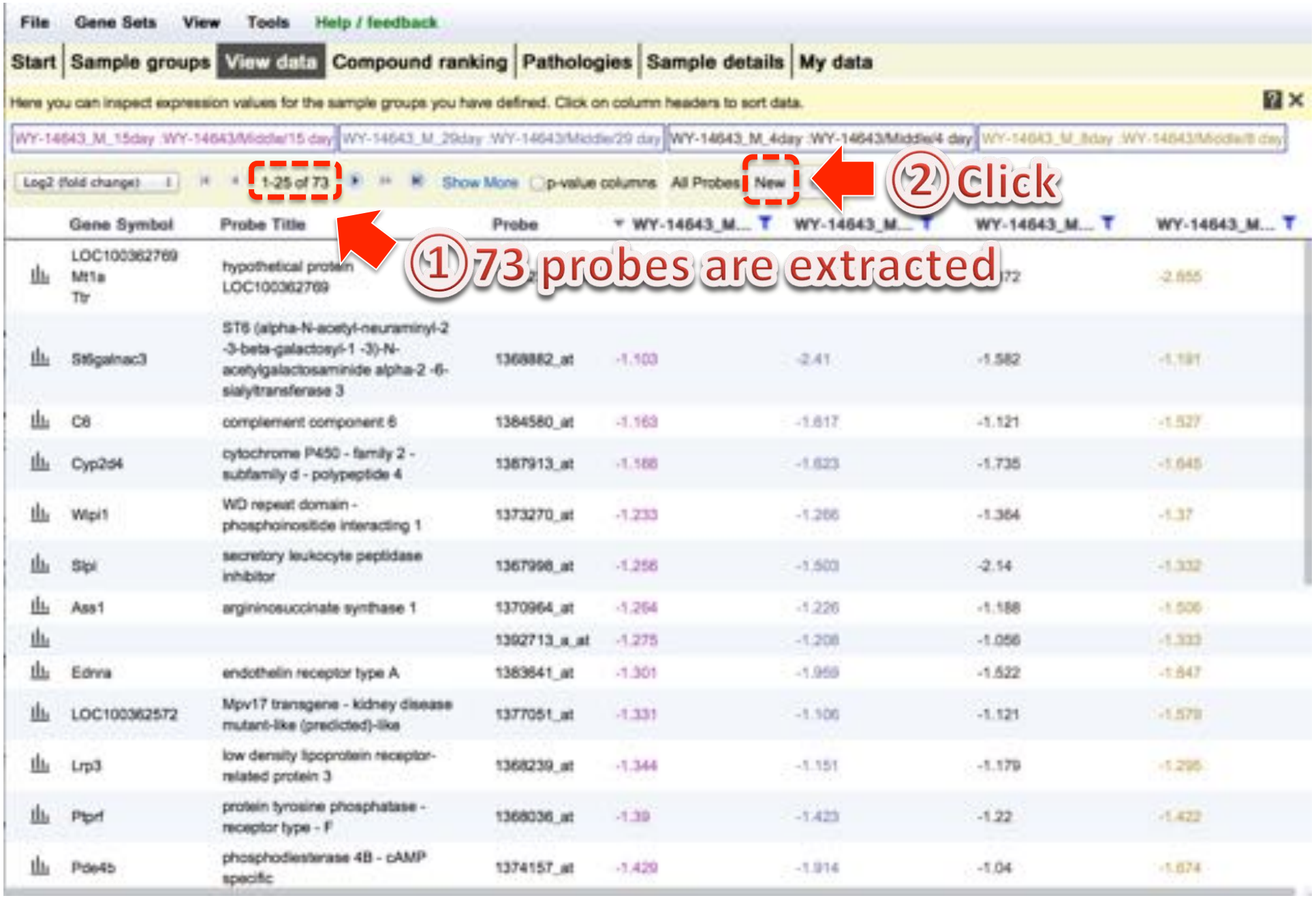
Supplementary Table 2:
summary of the result of M/4,8,15,29 day data.

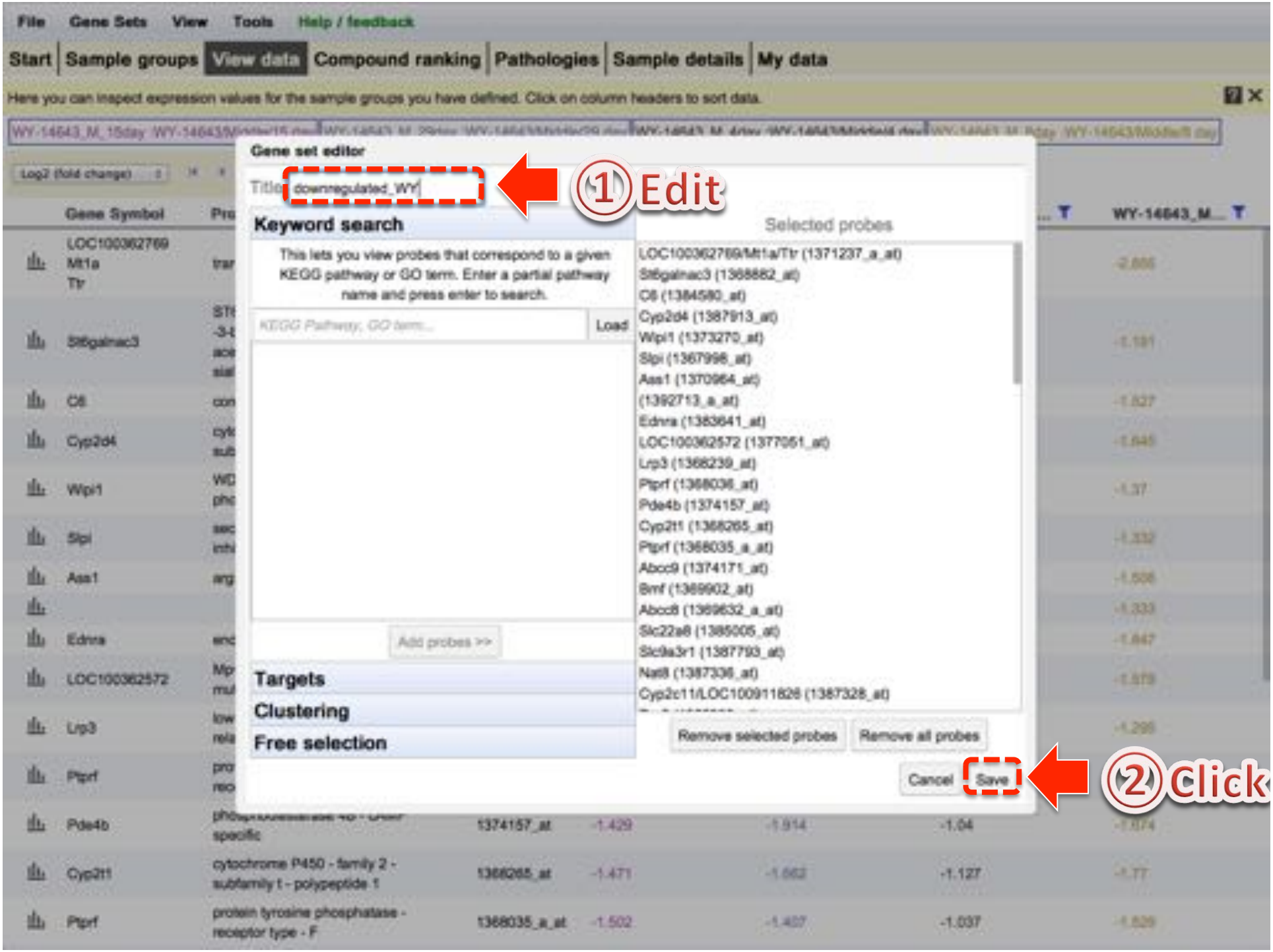
Compound ranking

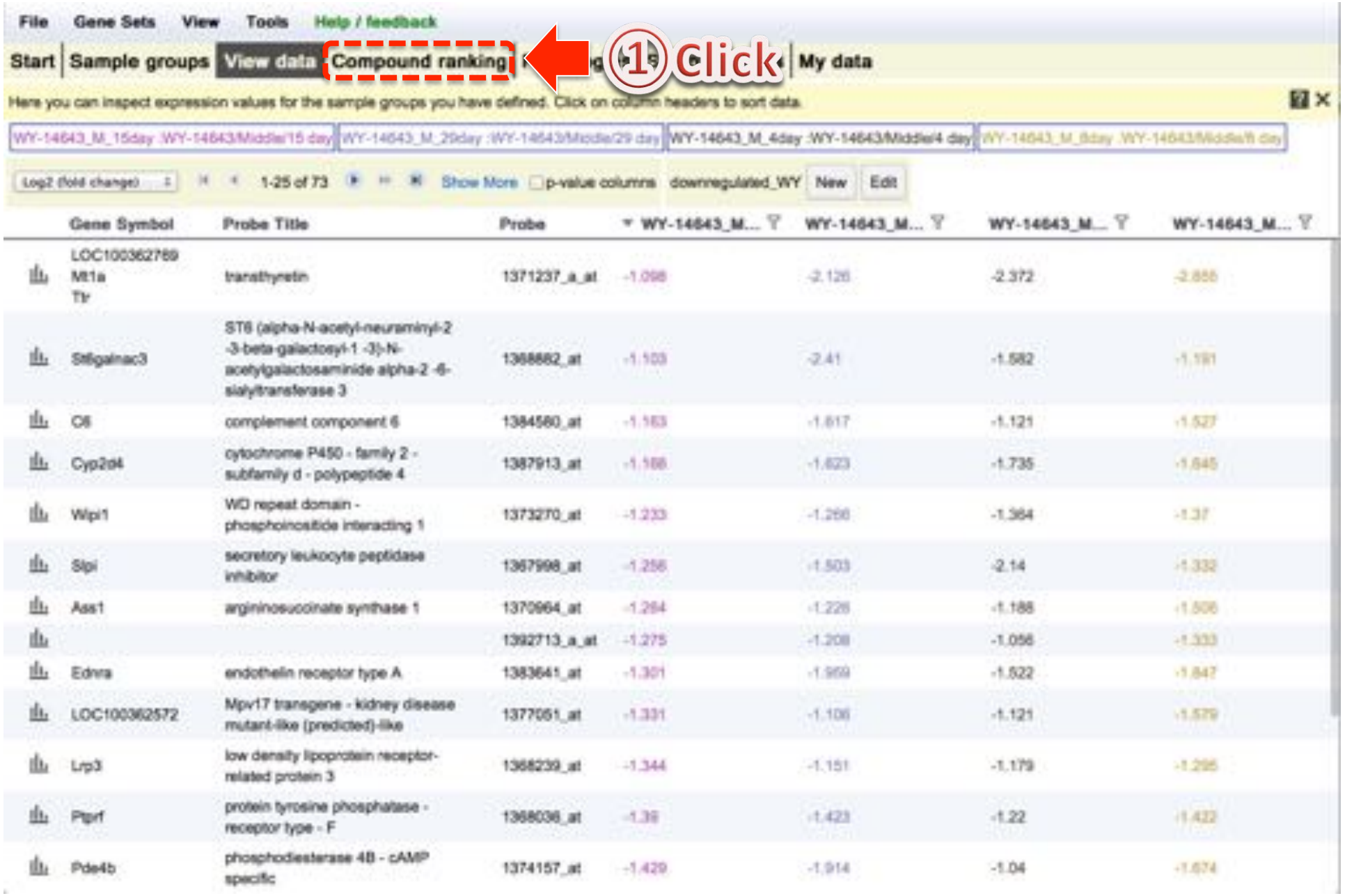


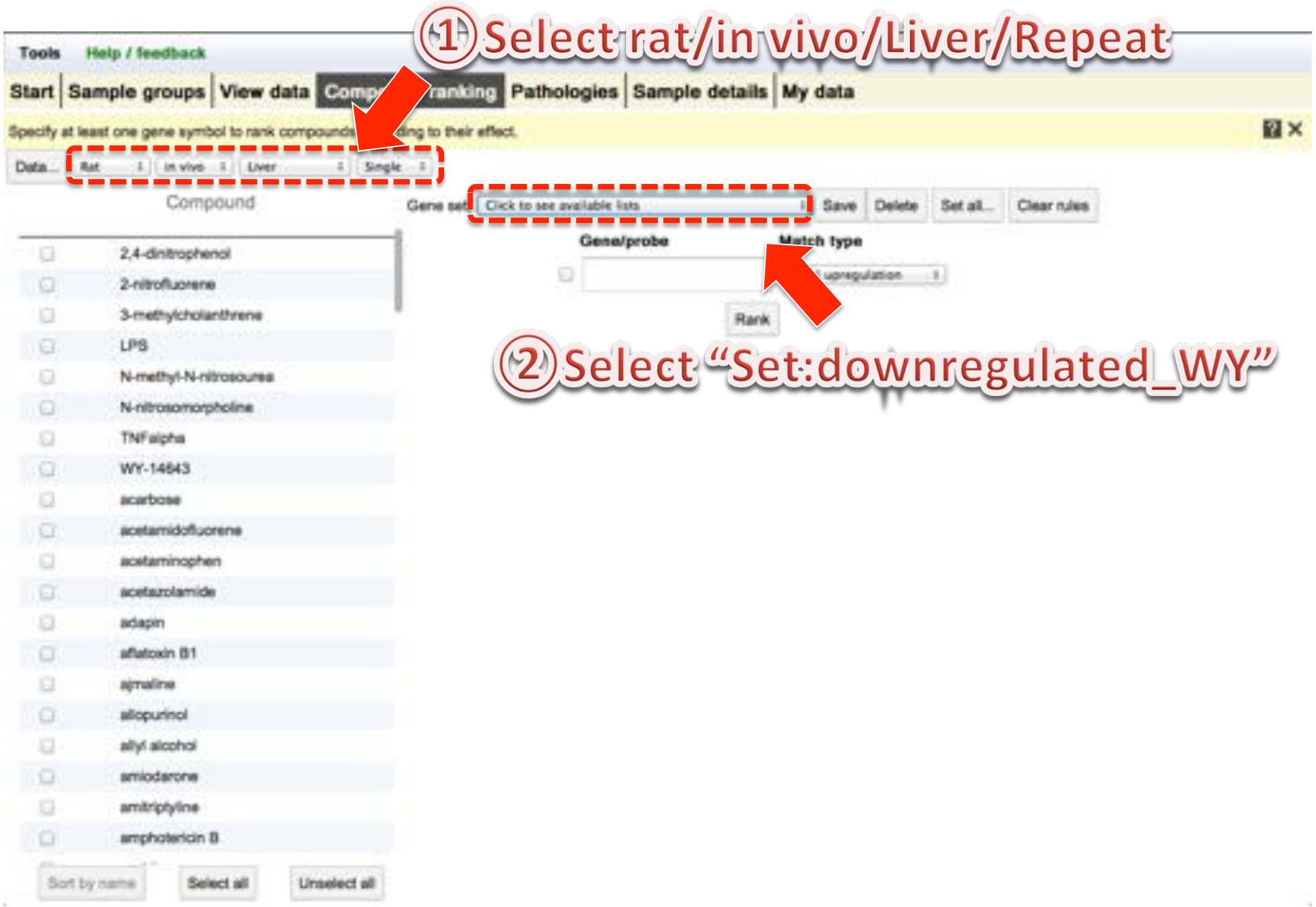

File
Gene Sets
View
Tools
Help / feedback
Show all
M15_FC1.5_cutoff4_cluster1
NewGeneSet
Add new
M15_FC1.5_cutoff4
Add new
①Click
Pathologies
Sample details
My data
Show More
p-value columns
All Probes
New
Edit
Probe
WY-14643_M...
WY-14643_M...
WY-14643_M...
WY-14643_M...
1398250_at 10.307 10.505 10.941
Aqp3 aquaporin 3 1387100_at 8.366 8.064 7.499
LOC100911217 adipogenin-like 1376296_at 8.15 8.052 5.391
1384474_at 7.818 6.932 6.184
Chrna2 cholinergic receptor - nicotinic - alpha 2 (neuronal) 1387574_at 7.573 6.721 3.357
Hdc histidine decarboxylase 1370491_a_at 7.257 7.385 7.247
Fabp3 fatty acid binding protein 3 - muscle and heart 1367660_at 6.833 6.71 6.627
RGD1306928 hypothetical LOC300207 1380536_at 6.615 6.9 5.616
Acot1 Acot2 acyl-CoA thioesterase 1 1368211_s_at 6.489 6.167 6.76
Fbp2 fructose-1 -6-bisphosphatase 2 1368822_at 6.078 5.799 4.471
Abhd3 abhydrolase domain containing 3 1382137_at 5.922 4.042 5.105
1383757_at 5.757 5.589 (absent)
Cpt1b carnitine palmitoyltransferase 1b - muscle 1367742_at 5.648 5.414 5.372
Aqp7 aquaporin 7 1368317_at 5.638 4.667 4.652
Spink3 serine peptidase inhibitor - Kazal type 3 1368447_x_at 5.097 4.123 1.297
LOC100912469 Scd acyl-CoA desaturase 2-like 1367668_a_at 4.986 6.296 0.636

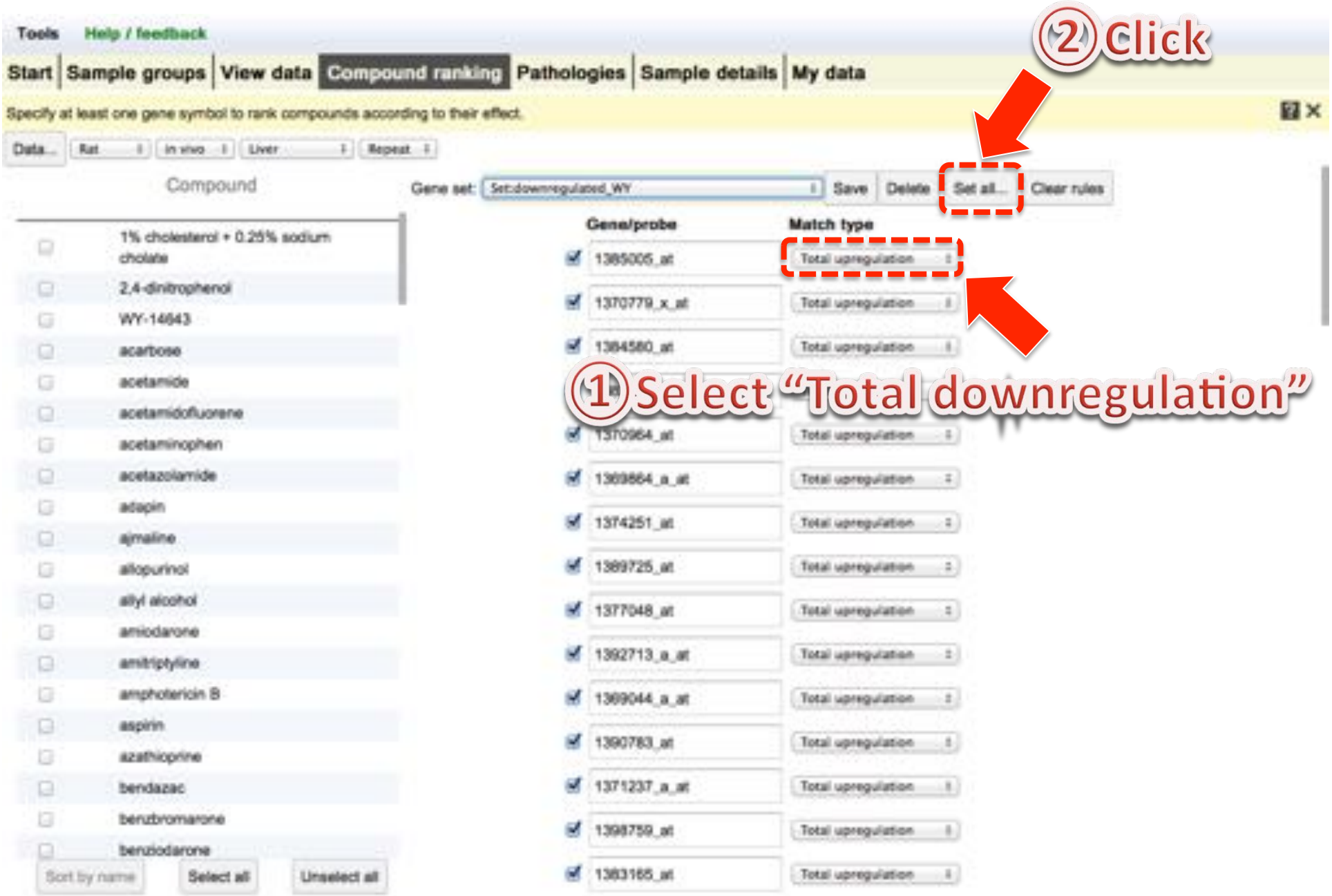

File
Gene Sets
View
Tools
Help / feedback
Start
Sample groups
View data
Compound ranking
Pathologies
Sample details
My data
Here you can inspect expression values for the sample groups you have defined. Click on column headers to sort data.
WY-14643_M_15day :WY-14643/Middle/15 day
WY-14643_M_29day :WY-14643/Middle/29 day
WY-14643_M_4day :WY-14643/Middle/4 day
WY-14643_M_8day :WY-14643/Middle/8 day
Log2 (fold change)
1-25 of 31,042
Show More
p-value columns
All Probes
New
Edit
Gene Symbol
Probe Title
Probe
WY-14643_M...
WY-14643_M...
WY-14643_M...
WY-14643_M...
Acot1
acyl-CoA thioesterase 1
1398250_at
10.307
10.505
10.941
9.335
Aqp3
aquaporin 3
1387100_at
8.366
8.064
7.499
7.186
LOC100911217
adipogenin-like
1376296_at
8.15
6.052
5.391
5.881
6.184
5.979
3.357
4.693
histidine decarboxylase
7.247
7.373
Fabp3
fatty acid binding protein 3 - muscle and heart
RGD1306926
hypothetical LOC300207
6.754
Acot1
Acot2
acyl-CoA thioesterase 1
1388211_s_at
6.489
8.167
6.76
6.733
Fbp2
fructose-1 -6-bisphosphatase 2
1368822_at
6.078
5.799
4.471
8.139
Abhd3
abhydrolase domain containing 3
1382137_at
5.922
4.042
5.105
1.753
1383757_at
5.757
5.389
(absent)
5.84
Cpt1b
carnitine palmitoyltransferase 1b - muscle
1367742_at
5.648
5.414
5.372
5.456
Aqp7
aquaporin 7
1368317_at
5.638
4.667
4.852
4.205
Spink3
serine peptidase inhibitor - Kazal type 3
1368447_x_at
5.097
4.123
1.297
2.692
LOC100912469
Sod
acyl-CoA desaturase 2-like
1367668_a_at
4.986
6.296
0.636
2.891
similar to Glutaminyl-peptide
Edit filter
Please choose a bound for 'WY-14643_M_15day'.
Examples: 2.1, 1E-3
x <=
-1
OK
Clear filter
①Change to "x<="
②Input -1 for all filters

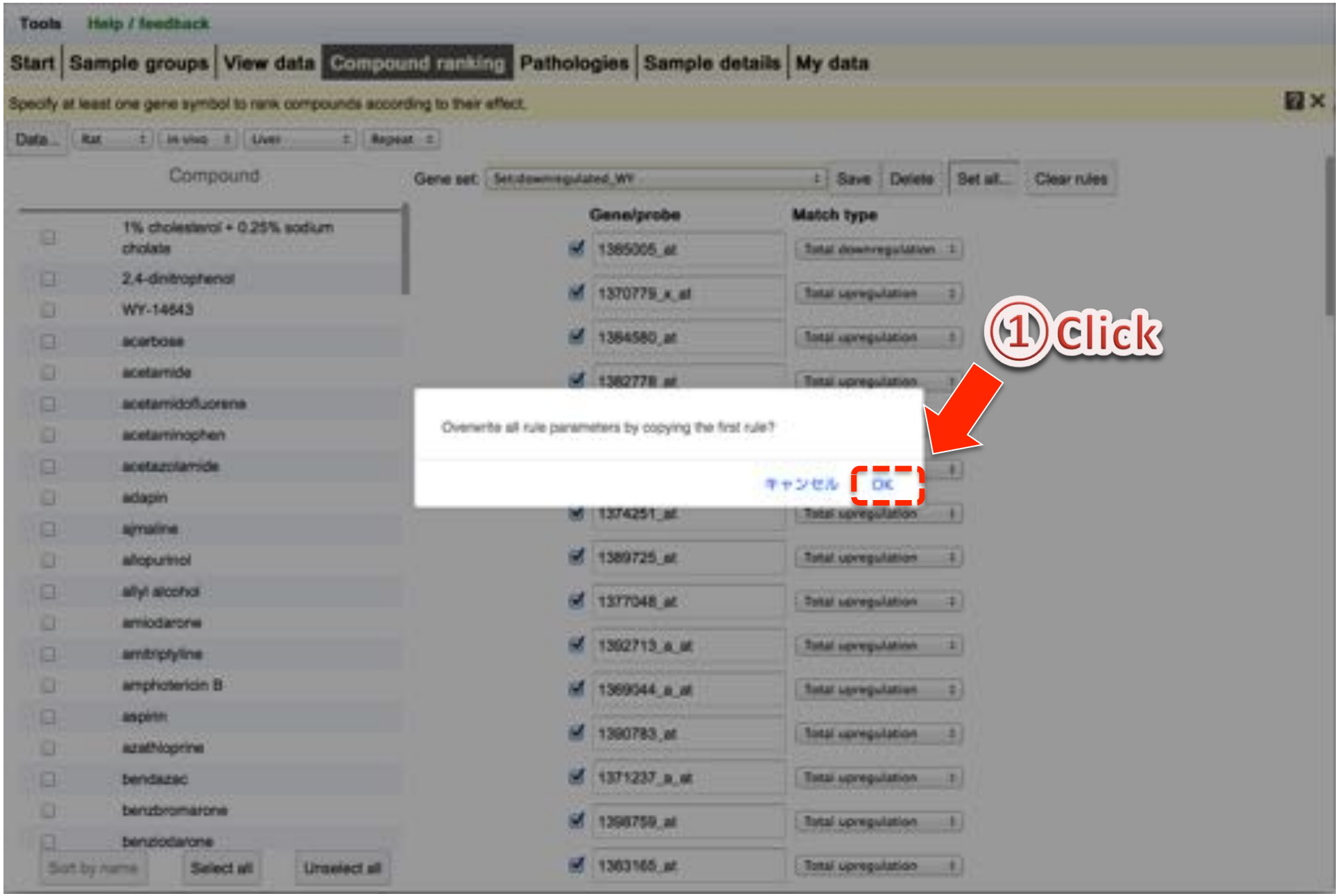

File
Gene Sets
View
Tools
Help / feedback
Start
Sample groups
View data
Compound ranking
Pathologies
Sample details
My data
Here you can inspect expression values for the sample groups you have defined. Click on column headers to sort data.
WY-14643_M_15day :WY-14643/Middle/15 day
WY-14643_M_29day :WY-14643/Middle/29 day
WY-14643_M_4day :WY-14643/Middle/4 day
WY-14643_M_8day :WY-14643/Middle/8 day
Log2 (fold change)
1-25 of 73
Show More
p-value columns
All Probes
New
② Click
① 73 probes are extracted
Gene Symbol
Probe Title
Probe
WY-14643_M...
WY-14643_M...
WY-14643_M...
WY-14643_M...
LOC100362769
Mt1a
Tfr
hypothetical protein LOC100362769
-2.655
St6galnac3
ST6 (alpha-N-acetyl-neuraminyl-2 -3-beta-galactosyl-1 -3)-N-acetylgalactosaminide alpha-2 -6-sialyltransferase 3
1368882_at
-1.103
-2.41
-1.582
-1.191
C8
complement component 6
1384580_at
-1.163
-1.617
-1.121
-1.527
Cyp2d4
cytochrome P450 - family 2 - subfamily d - polypeptide 4
1387913_at
-1.188
-1.623
-1.735
-1.645
Wipi1
WD repeat domain - phosphoinositide interacting 1
1373270_at
-1.233
-1.266
-1.364
-1.37
Slpi
secretory leukocyte peptidase inhibitor
1367998_at
-1.256
-1.503
-2.14
-1.332
Ass1
argininosuccinate synthase 1
1370964_at
-1.264
-1.226
-1.188
-1.506
1392713_a_at
-1.275
-1.208
-1.056
-1.333
Ednra
endothelin receptor type A
1383641_at
-1.301
-1.959
-1.522
-1.847
LOC100362572
Mpv17 transgene - kidney disease mutant-like (predicted)-like
1377051_at
-1.331
-1.106
-1.121
-1.579
Lrp3
low density lipoprotein receptor-related protein 3
1368239_at
-1.344
-1.151
-1.179
-1.296
Ptprf
protein tyrosine phosphatase - receptor type - F
1368036_at
-1.39
-1.423
-1.22
-1.422
Pde4b
phosphodiesterase 4B - cAMP specific
1374157_at
-1.429
-1.914
-1.04
-1.674

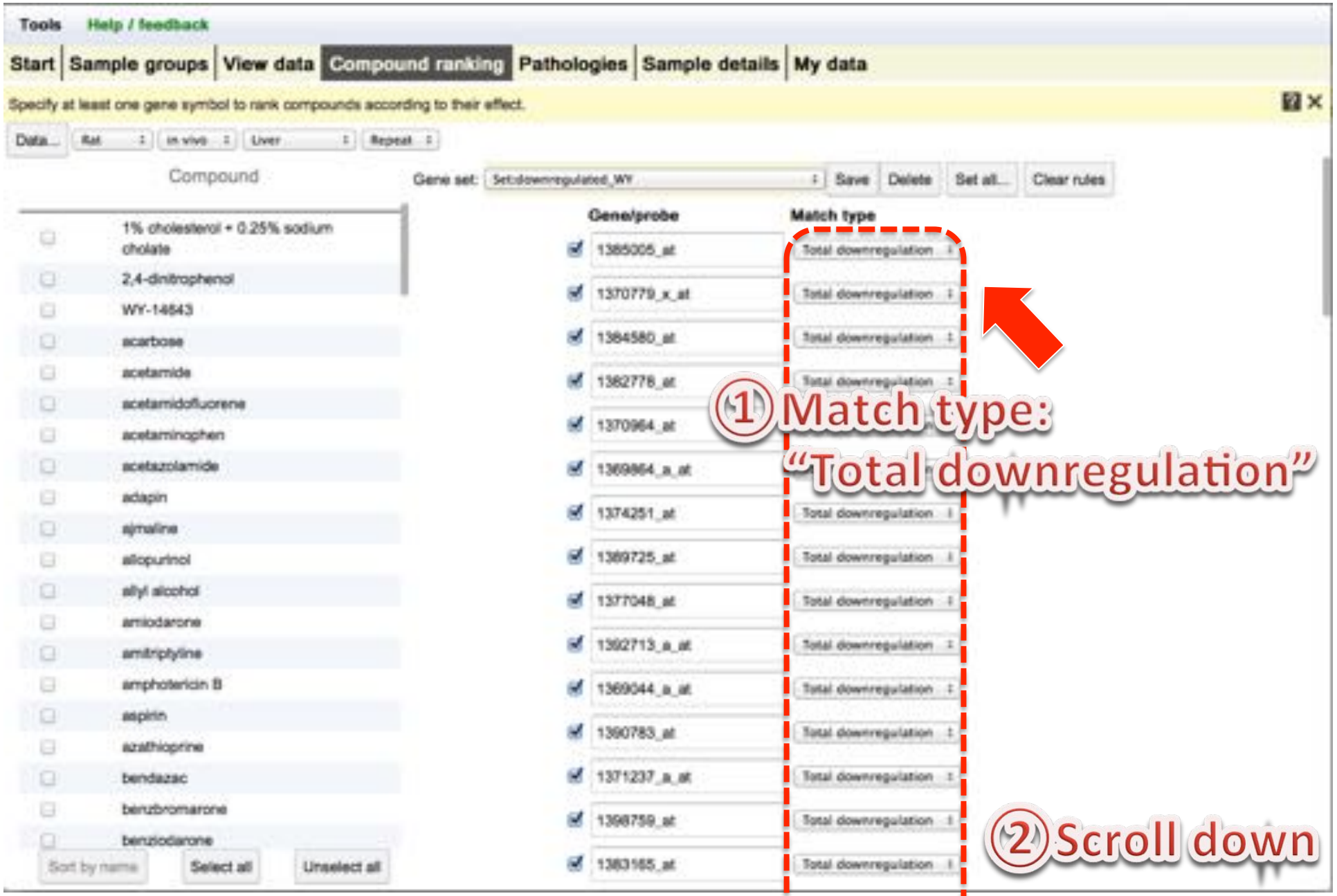

File
Gene Sets
View
Tools
Help / feedback
Start
Sample groups
View data
Compound ranking
Pathologies
Sample details
My data
Here you can inspect expression values for the sample groups you have defined. Click on column headers to sort data.
Gene set editor
Title
downregulated_WY
① Edit
Keyword search
This lets you view probes that correspond to a given KEGG pathway or GO term. Enter a partial pathway name and press enter to search.
KEGG Pathway, GO term...
Load
Add probes >>
Targets
Clustering
Free selection
Selected probes
LOC100362769/Mt1a/Ttr (1371237_a_at)
St6galnac3 (1368882_at)
C8 (1384580_at)
Cyp2d4 (1387913_at)
Wpi1 (1373270_at)
Slpi (1367996_at)
Aas1 (1370964_at)
(1392713_a_at)
Ednra (1383641_at)
LOC100362572 (1377051_at)
Lrp3 (1368239_at)
Ptprf (1368036_at)
Pde4b (1374157_at)
Cyp2l1 (1368265_at)
Ptprf (1368035_a_at)
Abcc9 (1374171_at)
Bmf (1369902_at)
Abcc8 (1369632_a_at)
Slc22a8 (1385005_at)
Slc9a3r1 (1387793_at)
Nat8 (1387336_at)
Cyp2c11/LOC100911826 (1387328_at)
Remove selected probes
Remove all probes
Cancel
Save
② Click
Gene Symbol
WY-14643_M
LOC100362769
Mt1a
Ttr
St6galnac3
C8
Cyp2d4
Wpi1
Slpi
Aas1
Ednra
LOC100362572
Lrp3
Ptprf
Pde4b
Cyp2l1
Ptprf
1374157_at
1368265_at
1368035_a_at
cytochrome P450 - family 2 - subfamily t - polypeptide 1
protein tyrosine phosphatase - receptor type - F

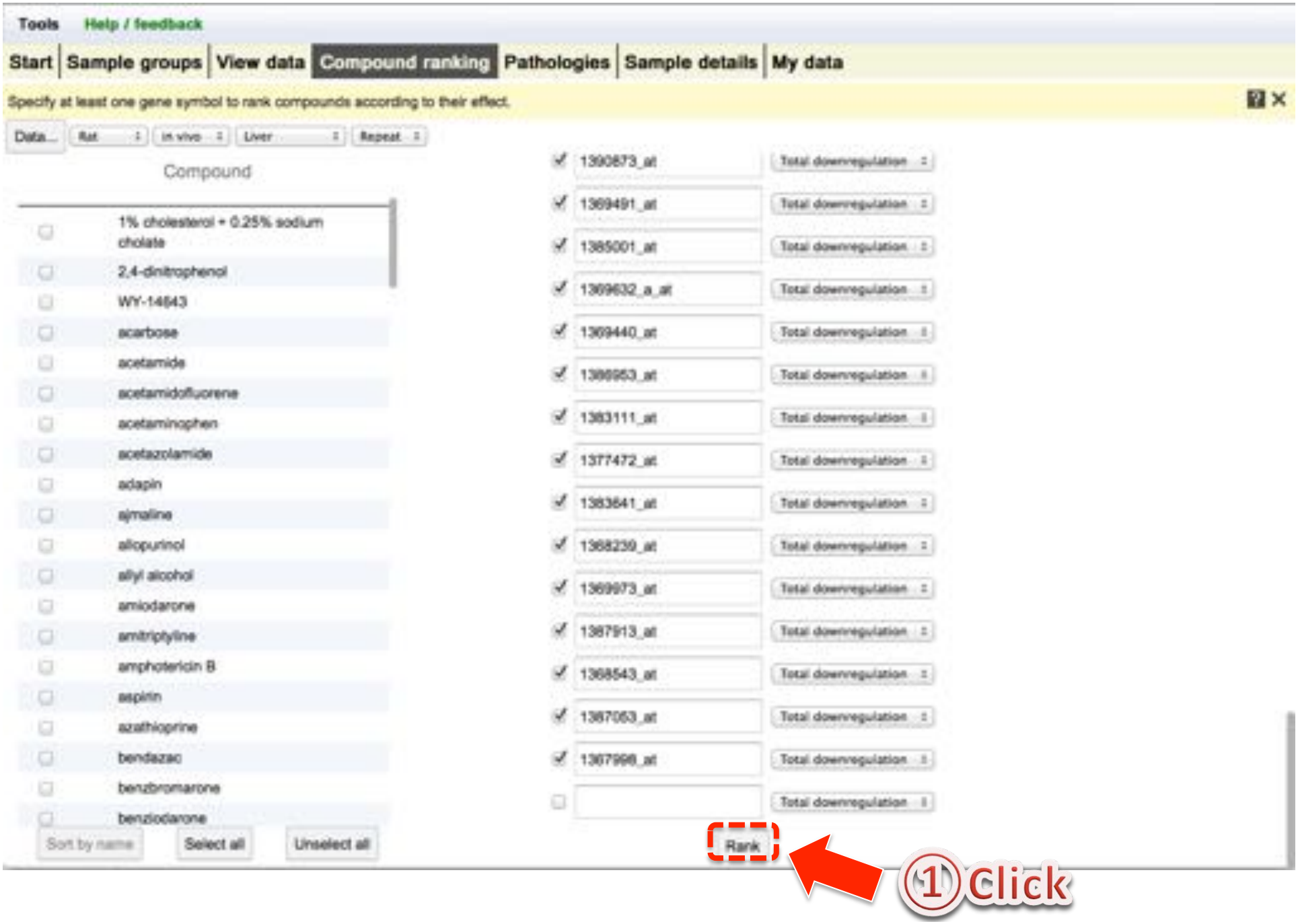

File
Gene Sets
View
Tools
Help / feedback
Start
Sample groups
View data
Compound ranking
1 Click
My data
Here you can inspect expression values for the sample groups you have defined. Click on column headers to sort data.
WY-14643_M_15day :WY-14643/Middle/15 day
WY-14643_M_29day :WY-14643/Middle/29 day
WY-14643_M_4day :WY-14643/Middle/4 day
WY-14643_M_8day :WY-14643/Middle/8 day
Log2 (fold change)
1-25 of 73
Show More
p-value columns
downregulated_WY
New
Edit
Gene Symbol
Probe Title
Probe
WY-14643_M...
WY-14643_M...
WY-14643_M...
WY-14643_M...
LOC100362769
Mt1a
Ttr
transthyretin
1371237_a_at
-1.098
-2.126
-2.372
-2.856
St6galnac3
ST6 (alpha-N-acetyl-neuraminyl-2 -3-beta-galactosyl-1 -3)-N-acetylgalactosaminide alpha-2 -6-sialyltransferase 3
1368882_at
-1.103
-2.41
-1.582
-1.191
C6
complement component 6
1384580_at
-1.163
-1.617
-1.121
-1.527
Cyp2d4
cytochrome P450 - family 2 - subfamily d - polypeptide 4
1387913_at
-1.186
-1.623
-1.735
-1.645
Wipi1
WD repeat domain - phosphoinositide interacting 1
1373270_at
-1.233
-1.266
-1.364
-1.37
Slpi
secretory leukocyte peptidase inhibitor
1367998_at
-1.256
-1.503
-2.14
-1.332
Ass1
argininosuccinate synthase 1
1370964_at
-1.264
-1.226
-1.188
-1.506
1392713_a_at
-1.275
-1.208
-1.056
-1.333
Ednra
endothelin receptor type A
1383641_at
-1.301
-1.969
-1.522
-1.847
LOC100362572
Mpv17 transgene - kidney disease mutant-like (predicted)-like
1377051_at
-1.331
-1.106
-1.121
-1.579
Lrp3
low density lipoprotein receptor-related protein 3
1368239_at
-1.344
-1.151
-1.179
-1.295
Ptprf
protein tyrosine phosphatase - receptor type - F
1368036_at
-1.39
-1.423
-1.22
-1.422
Pde4b
phosphodiesterase 4B - cAMP specific
1374157_at
-1.429
-1.914
-1.04
-1.674

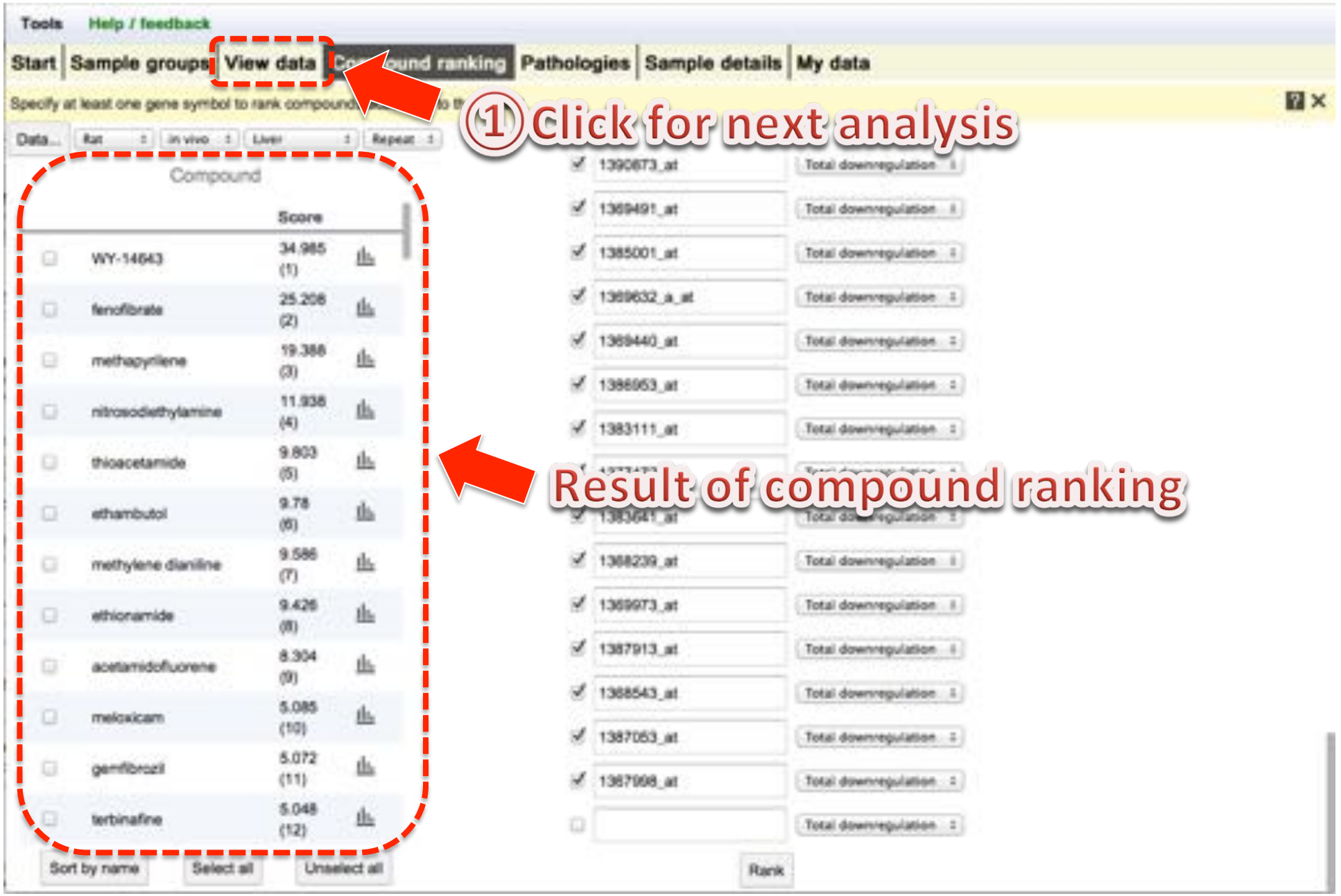

①Select rat/in vivo/Liver/Repeat
Tools
Help / feedback
Start
Sample groups
View data
Pathologies
Sample details
My data
Data...
Rat
in vivo
Liver
Single
Compound
Gene set
Click to see available lists
Save
Delete
Set all...
Clear rules
Gene/probe
Match type
upregulation
Rank
②Select “Set:downregulated_WY”
2,4-dinitrophenol
2-nitrofluorene
3-methylcholanthrene
LPS
N-methyl-N-nitrosourea
N-nitrosomorpholine
TNFalpha
WY-14643
acarbose
acetamidofluorene
acetaminophen
acetazolamide
adapin
aflatoxin B1
ajmaline
allopurinol
allyl alcohol
amiodarone
amitriptyline
amphotericin B
Sort by name
Select all
Unselect all


Tools
Help / feedback
Start
Sample groups
View data
Compound ranking
Pathologies
Sample details
My data
Specify at least one gene symbol to rank compounds according to their effect.
Data...
Rat
In vivo
Liver
Repeat
Compound
Gene set:
Set:downregulated_WY
Save
Delete
Set all...
Clear rules
Gene/probe
Match type
1% cholesterol + 0.25% sodium cholate
2,4-dinitrophenol
WY-14643
acarbose
acetamide
acetamidofluorene
acetaminophen
acetazolamide
adapin
ajmaline
allopurinol
allyl alcohol
amiodarone
amitriptyline
amphotericin B
aspirin
azathioprine
bendazac
benzbromarone
benziodarone
1385005_at
1370779_x_at
1384580_at
1370964_at
1369864_a_at
1374251_at
1389725_at
1377048_at
1392713_a_at
1369044_a_at
1390783_at
1371237_a_at
1398759_at
1383165_at
Total upregulation
Sort by name
Select all
Unselect all
② Click
① Select “Total downregulation”

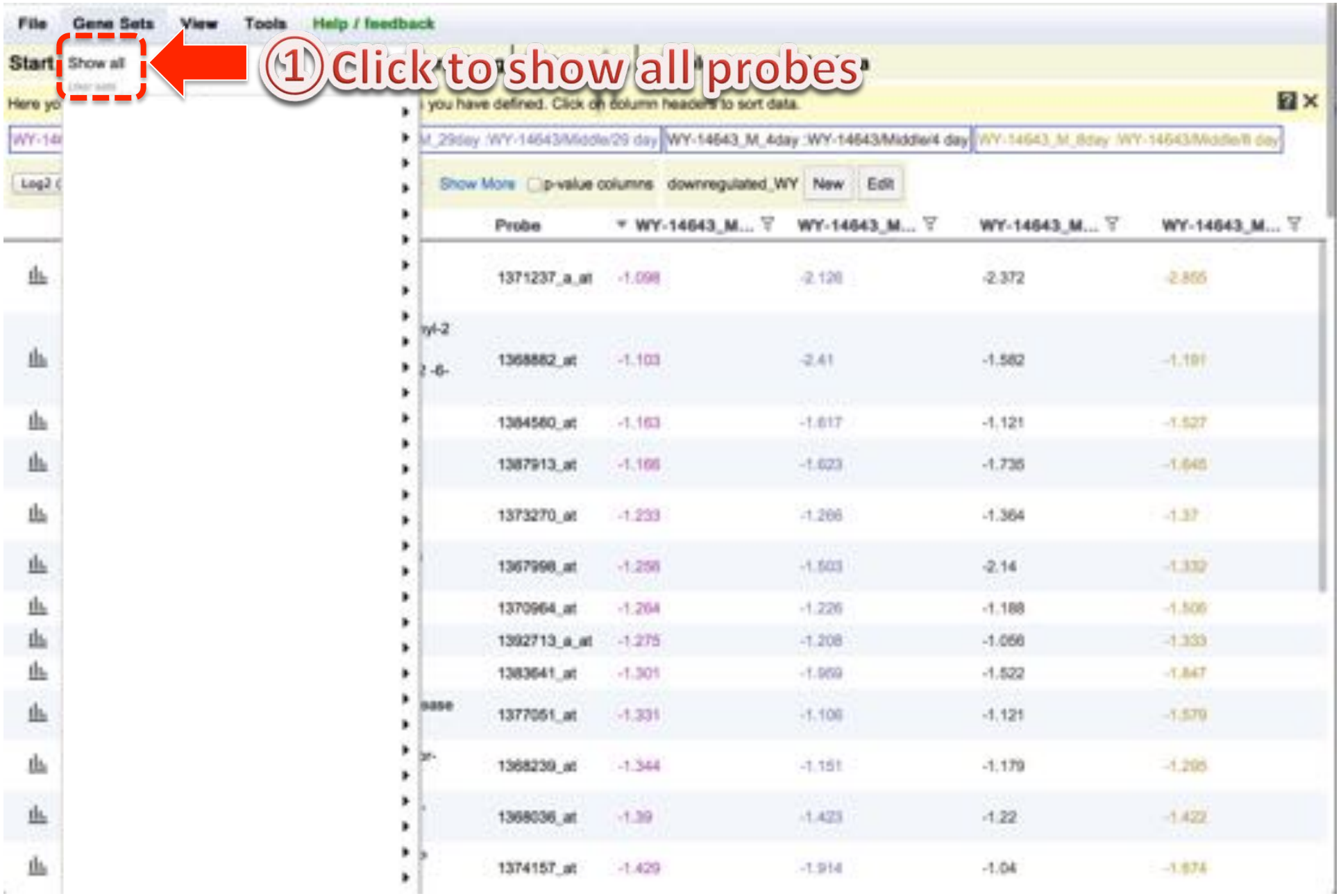

Tools
Help / feedback
Start
Sample groups
View data
Compound ranking
Pathologies
Sample details
My data
Specify at least one gene symbol to rank compounds according to their effect.
Data...
Rat
in vivo
Liver
Repeat
Compound
Gene set:
Save
Delete
Set all...
Clear rules
Gene/probe
Match type
1% cholesterol + 0.25% sodium cholate
2,4-dinitrophenol
WY-14643
acarbose
acetamide
acetamidofluorene
acetaminophen
acetazolamide
adapin
ajmaline
allopurinol
allyl alcohol
amiodarone
amitriptyline
amphotericin B
aspirin
azathioprine
bendazac
benzbromarone
benzocaine
1385005_at
1370779_x_at
1384580_at
1382778_at
1374251_at
1389725_at
1377048_at
1392713_a_at
1369044_a_at
1390783_at
1371237_a_at
1398759_at
1383165_at
Total downregulation
Total upregulation
Overwrite all rule parameters by copying the first rule?
キャンセル
OK
①Click
Sort by name
Select all
Unselect all

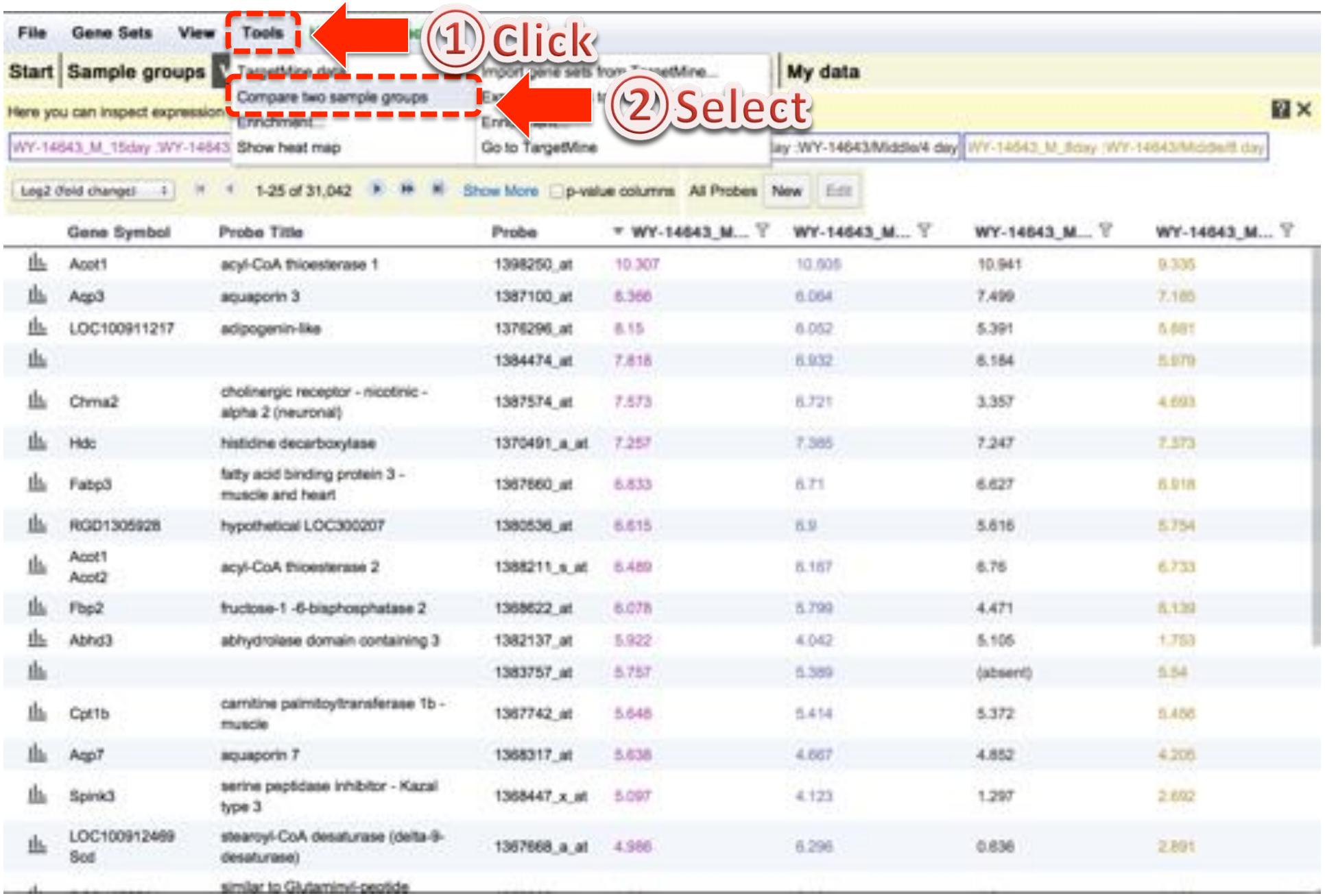

Tools
Help / feedback
Start
Sample groups
View data
Compound ranking
Pathologies
Sample details
My data
Specify at least one gene symbol to rank compounds according to their effect.
Data...
Rat
in vivo
Liver
Repeat
Compound
Gene set:
Save
Delete
Set all...
Clear rules
Gene/probe
Match type
1% cholesterol + 0.25% sodium cholate
2,4-dinitrophenol
WY-14643
acarbose
acetamide
acetamidofluorene
acetaminophen
acetazolamide
adapin
ajmaline
allopurinol
allyl alcohol
amiodarone
amitriptyline
amphotericin B
aspirin
azathioprine
bendazac
benzbromarone
benziodarone
1386005_at
1370779_x_at
1384580_at
1382778_at
1370964_at
1369864_a_at
1374251_at
1389725_at
1377048_at
1392713_a_at
1369044_a_at
1390783_at
1371237_a_at
1398759_at
1383165_at
Total downregulation
Sort by name
Select all
Unselect all
①Match type:
"Total downregulation"
②Scroll down

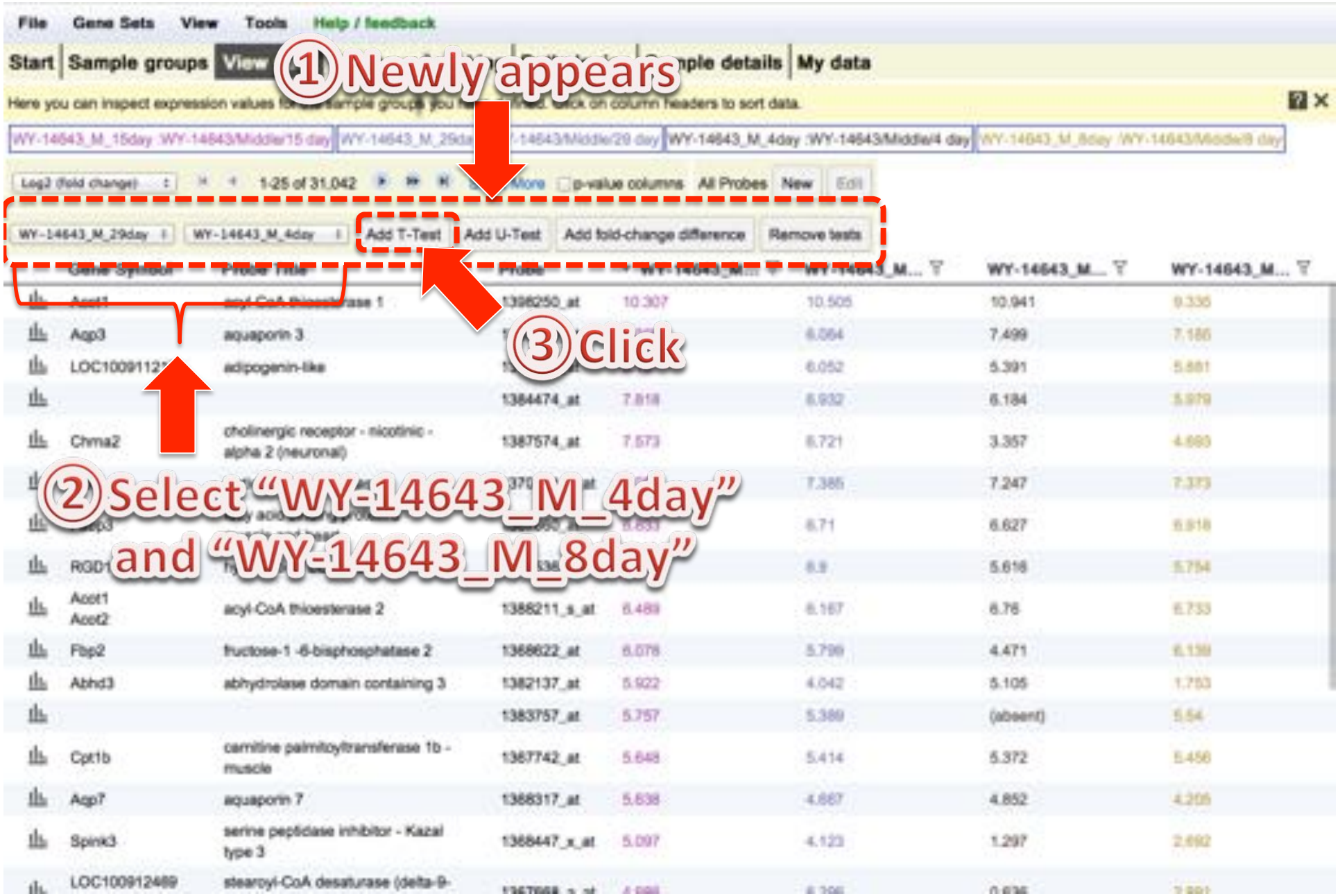

Tools
Help / feedback
Start
Sample groups
View data
Compound ranking
Pathologies
Sample details
My data
Specify at least one gene symbol to rank compounds according to their effect.
Data...
Rat
in vivo
Liver
Repeat
Compound
1% cholesterol + 0.25% sodium cholate
2,4-dinitrophenol
WY-14643
acarbose
acetamide
acetamidofluorene
acetaminophen
acetazolamide
adapin
ajmaline
allopurinol
allyl alcohol
amiodarone
amitriptyline
amphotericin B
aspirin
azathioprine
bendazac
benzbromarone
benziodarone
Sort by name
Select all
Unselect all
1390873_at
1369491_at
1385001_at
1369632_a_at
1369440_at
1386953_at
1383111_at
1377472_at
1383641_at
1368239_at
1369973_at
1387913_at
1368543_at
1387053_at
1387998_at
Total downregulation
Rank
① Click

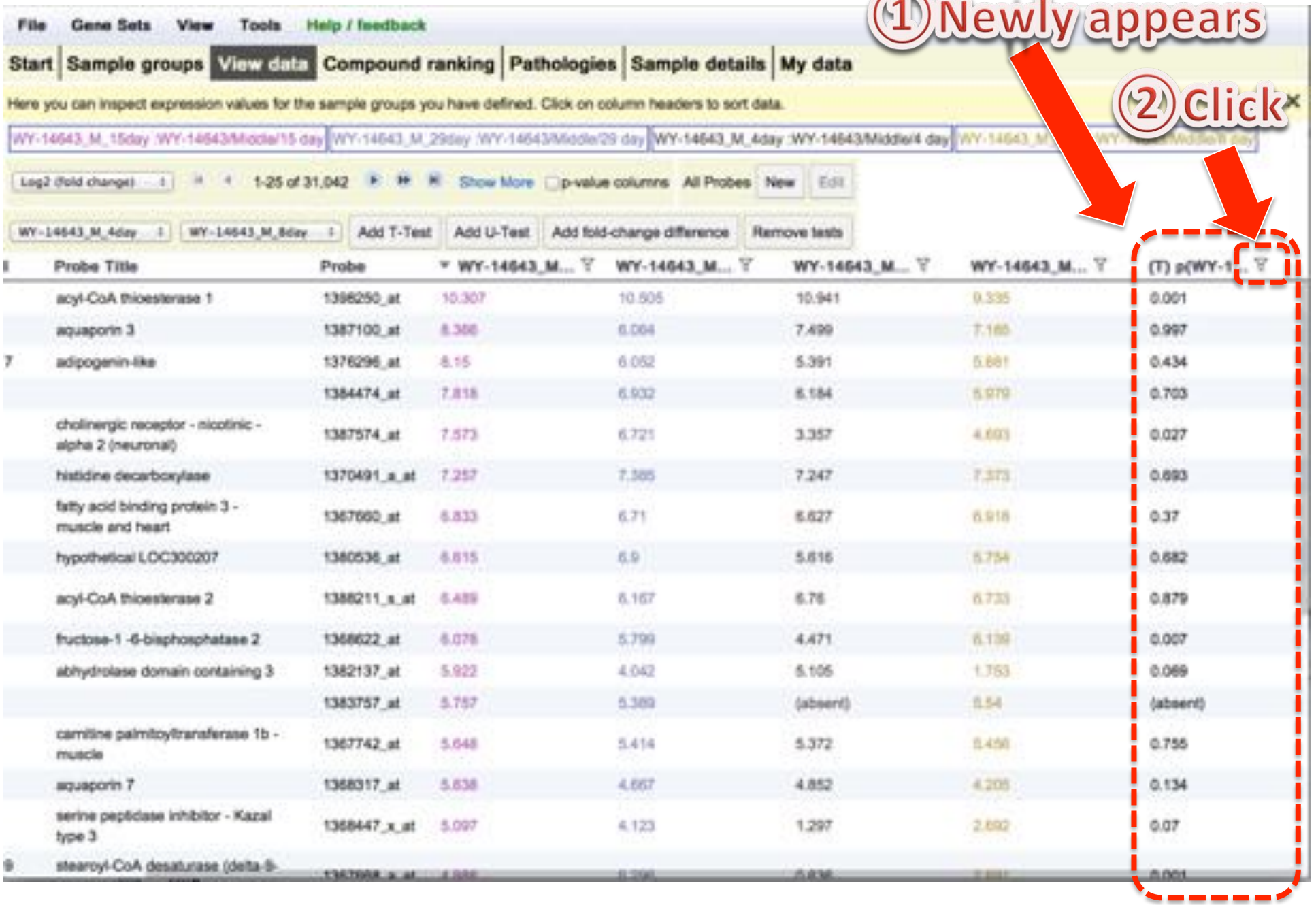

Tools
Help / feedback
Start
Sample groups
View data
Compound ranking
Pathologies
Sample details
My data
① Click for next analysis
Data...
Rat
in vivo
Liver
Repeat
Compound
Score
WY-14643 34.985 (1)
fenofibrate 25.208 (2)
methapyrilene 19.388 (3)
nitrosodiethylamine 11.938 (4)
thioacetamide 9.803 (5)
ethambutol 9.78 (6)
methylene dianiline 9.586 (7)
ethionamide 9.426 (8)
acetamidofluorene 8.304 (9)
meloxicam 5.085 (10)
gemfibrozil 5.072 (11)
terbinafine 5.048 (12)
Sort by name
Select all
Unselect all
1390673_at
1389491_at
1385001_at
1389632_a_at
1389440_at
1386953_at
1383111_at
1368239_at
1389973_at
1387913_at
1388543_at
1387053_at
1387998_at
Total downregulation
Rank
Result of compound ranking

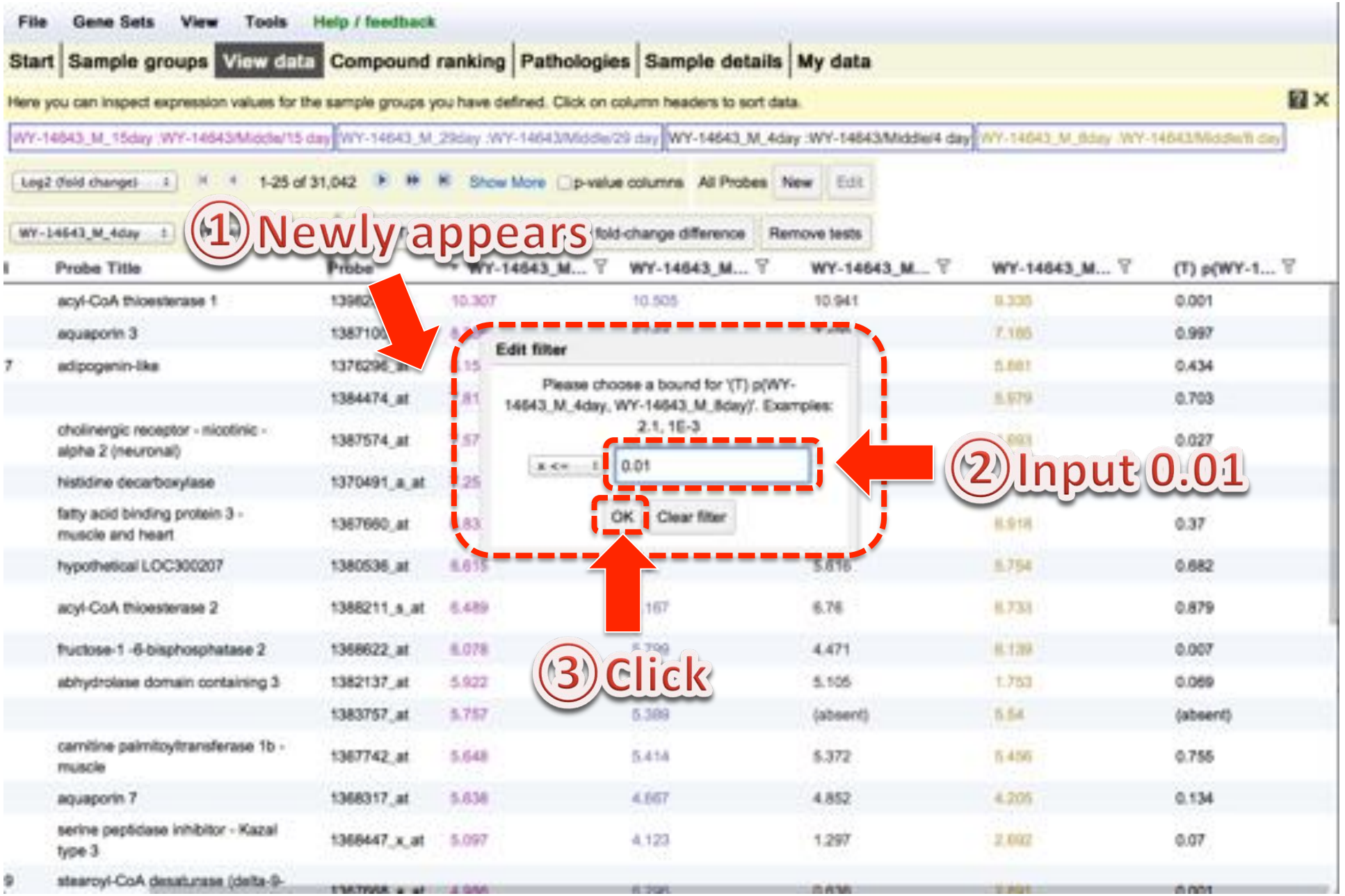
Welch’s t-test filtering

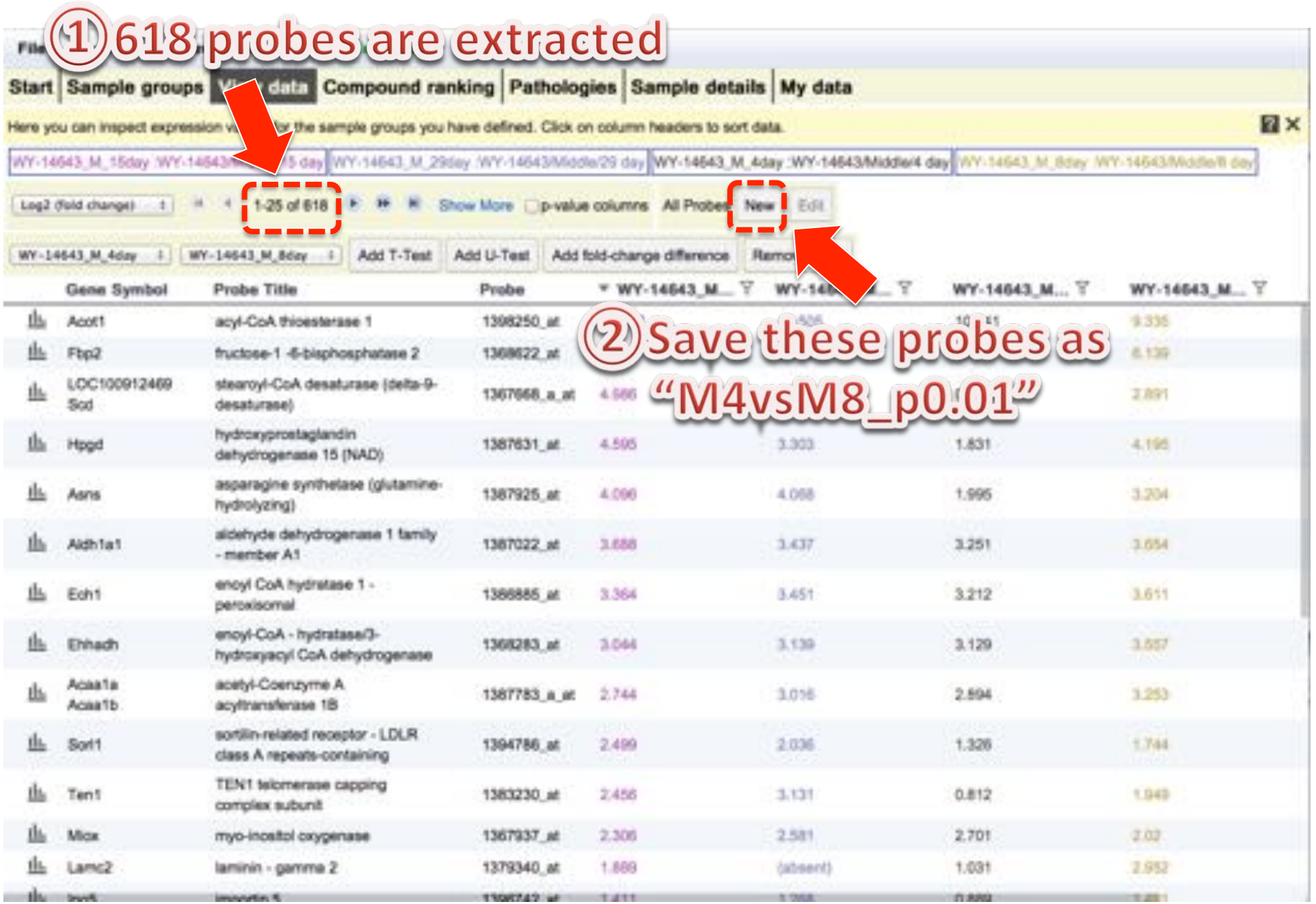



File
Gene Sets
View
Tools
① Click
Start
Sample groups
My data
Compare two sample groups
② Select
Show heat map
Go to TargetMine
Here you can inspect expression
Log2 (fold change)
1-25 of 31,042
Show More
p-value columns
All Probes
New
Edit
Gene Symbol
Probe Title
Probe
WY-14643_M...
WY-14643_M...
WY-14643_M...
WY-14643_M...
Acot1
acyl-CoA thioesterase 1
1398250_at
10.307
10.505
10.941
9.335
Aqp3
aquaporin 3
1387100_at
6.366
6.064
7.499
7.185
LOC100911217
adipogenin-like
1376296_at
8.15
6.052
5.391
5.681
1384474_at
7.818
6.932
6.184
5.979
Chrna2
cholinergic receptor - nicotinic - alpha 2 (neuronal)
1387574_at
7.573
6.721
3.357
4.693
Hdc
histidine decarboxylase
1370491_a_at
7.257
7.385
7.247
7.373
Fabp3
fatty acid binding protein 3 - muscle and heart
1367660_at
6.833
6.71
6.627
6.918
RGD1305928
hypothetical LOC300207
1380536_at
6.615
6.9
5.616
5.754
Acot1
Acot2
acyl-CoA thioesterase 2
1388211_s_at
6.489
6.167
6.76
6.733
Fbp2
fructose-1 -6-bisphosphatase 2
1368622_at
6.078
5.799
4.471
5.139
Abhd3
abhydrolase domain containing 3
1382137_at
5.922
4.042
5.105
1.753
1383757_at
5.757
5.389
(absent)
5.54
Cpt1b
carnitine palmitoyltransferase 1b - muscle
1367742_at
5.648
5.414
5.372
5.466
Aqp7
aquaporin 7
1368317_at
5.638
4.667
4.852
4.205
Spink3
serine peptidase inhibitor - Kazal type 3
1368447_x_at
5.097
4.123
1.297
2.692
LOC100912469
Sod
stearoyl-CoA desaturase (delta-9-desaturase)
1367668_a_at
4.986
6.296
0.636
2.891

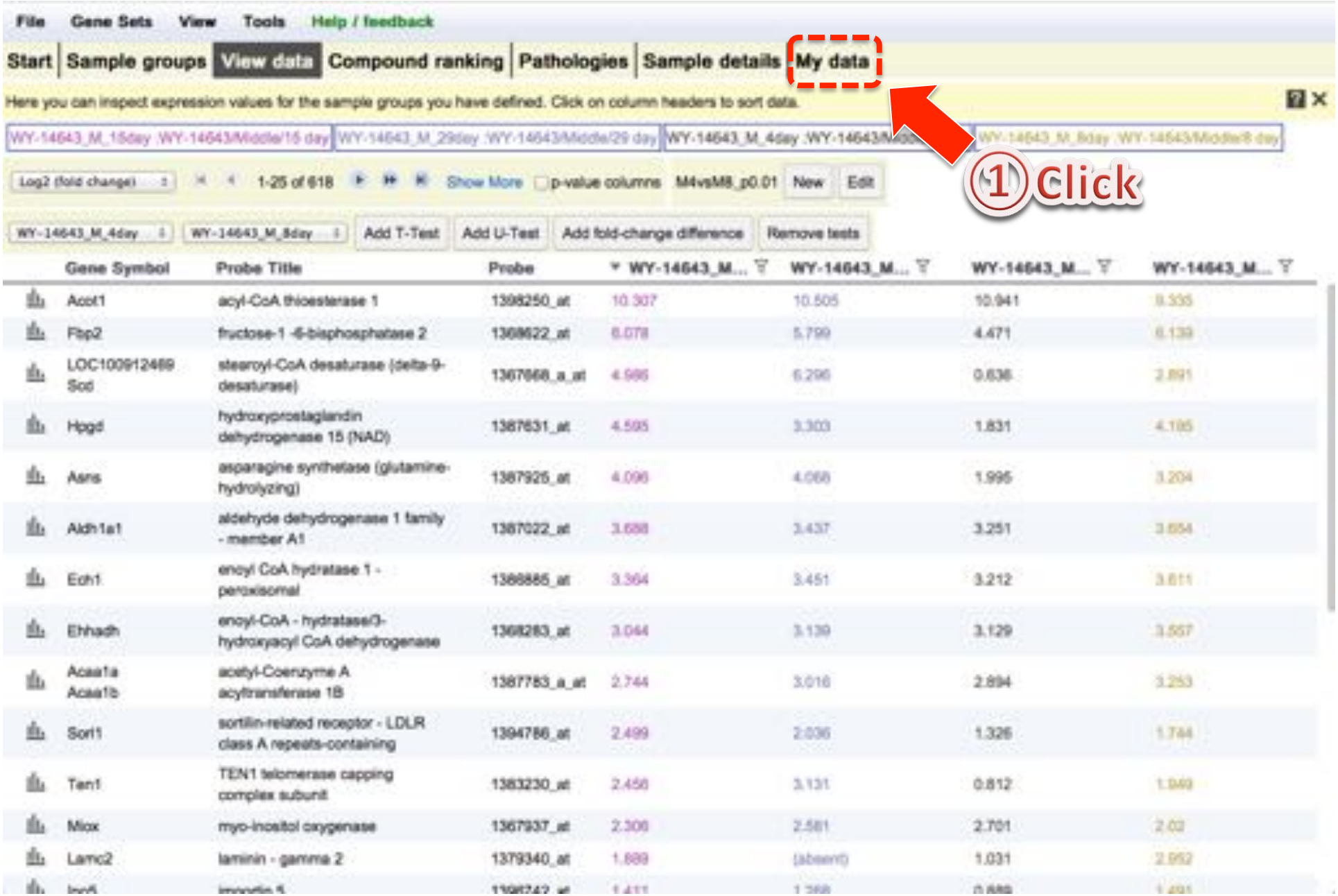

File
Gene Sets
View
Tools
Help / feedback
Start
Sample groups
View
My data
① Newly appears
WY-14643_M_4day :WY-14643/Middle/4 day
WY-14643_M_29day
WY-14643_M_4day
Add T-Test
Add U-Test
Add fold-change difference
Remove tests
③ Click
② Select “WY-14643_M_4day”
and “WY-14643_M_8day”
Aqp3
aquaporin 3
LOC100911251
adipogenin-like
1384474_at
Chrna2
cholinergic receptor - nicotinic - alpha 2 (neuronal)
1387574_at
Acot1
Acot2
acyl-CoA thioesterase 2
1388211_s_at
Fbp2
fructose-1 -6-bisphosphatase 2
1368622_at
Abhd3
abhydrolase domain containing 3
1382137_at
1383757_at
(absent)
Cpt1b
carnitine palmitoyltransferase 1b - muscle
1367742_at
Aqp7
aquaporin 7
1368317_at
Spink3
serine peptidase inhibitor - Kazal type 3
1368447_x_at
LOC100912489
stearoyl-CoA desaturase (delta-9-


①Newly appears
②Click
File
Gene Sets
View
Tools
Help / feedback
Start
Sample groups
View data
Compound ranking
Pathologies
Sample details
My data
Here you can inspect expression values for the sample groups you have defined. Click on column headers to sort data.
WY-14643_M_15day :WY-14643/Middle/15 day
WY-14643_M_29day :WY-14643/Middle/29 day
WY-14643_M_4day :WY-14643/Middle/4 day
Log2 (fold change)
1-25 of 31,042
Show More
p-value columns
All Probes
New
Edit
WY-14643_M_4day
WY-14643_M_8day
Add T-Test
Add U-Test
Add fold-change difference
Remove tests
Probe Title
Probe
WY-14643_M...
WY-14643_M...
WY-14643_M...
WY-14643_M...
(T) p(WY-1...
acyl-CoA thioesterase 1 1396250_at 10.307 10.505 10.941 9.335 0.001
aquaporin 3 1387100_at 8.366 8.064 7.499 7.165 0.997
adipogenin-like 1376296_at 8.15 8.052 5.391 5.881 0.434
1384474_at 7.818 8.932 8.184 8.979 0.703
cholinergic receptor - nicotinic - alpha 2 (neuronal) 1387574_at 7.573 8.721 3.357 4.693 0.027
histidine decarboxylase 1370491_a_at 7.257 7.385 7.247 7.373 0.693
fatty acid binding protein 3 - muscle and heart 1367660_at 6.833 6.71 6.627 6.918 0.37
hypothetical LOC300207 1380536_at 6.815 6.9 5.616 5.754 0.682
acyl-CoA thioesterase 2 1388211_s_at 6.489 6.167 6.76 6.733 0.879
fructose-1 -6-bisphosphatase 2 1368622_at 6.078 5.799 4.471 6.139 0.007
abhydrolase domain containing 3 1382137_at 5.922 4.042 5.105 1.753 0.069
1383757_at 5.757 5.389 (absent) 5.54 (absent)
carnitine palmitoyltransferase 1b - muscle 1367742_at 5.648 5.414 5.372 5.456 0.755
aquaporin 7 1368317_at 5.638 4.667 4.852 4.208 0.134
serine peptidase inhibitor - Kazal type 3 1368447_x_at 5.097 4.123 1.297 2.692 0.07
stearoyl-CoA desaturase (delta-9-

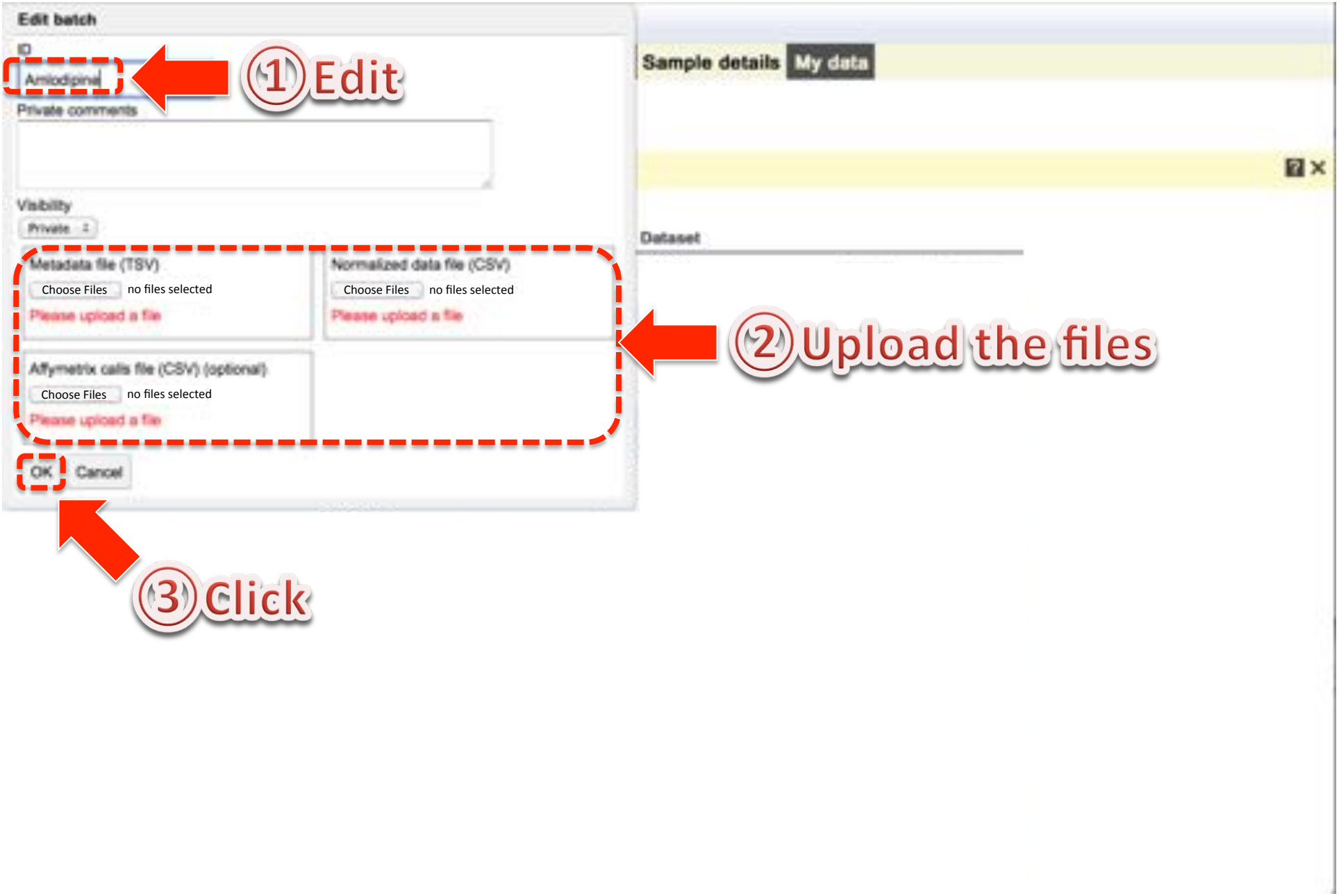

File
Gene Sets
View
Tools
Help / feedback
Start
Sample groups
View data
Compound ranking
Pathologies
Sample details
My data
Here you can inspect expression values for the sample groups you have defined. Click on column headers to sort data.
WY-14643_M_15day :WY-14643/Middle/15 day
WY-14643_M_29day :WY-14643/Middle/29 day
WY-14643_M_4day :WY-14643/Middle/4 day
WY-14643_M_8day :WY-14643/Middle/8 day
Log2 (fold change)
1-25 of 31,042
Show More
p-value columns
All Probes
New
Edit
WY-14643_M_4day
fold-change difference
Remove tests
①Newly appears
Probe Title
Probe
WY-14643_M...
WY-14643_M...
WY-14643_M...
WY-14643_M...
(T) p(WY-1...
acyl-CoA thioesterase 1
aquaporin 3
adipogenin-like
1384474_at
cholinergic receptor - nicotinic - alpha 2 (neuronal)
1387574_at
histidine decarboxylase
1370491_a_at
fatty acid binding protein 3 - muscle and heart
1367660_at
hypothetical LOC300207
1380536_at
acyl-CoA thioesterase 2
1388211_s_at
fructose-1 -6-bisphosphatase 2
1368622_at
abhydrolase domain containing 3
1382137_at
1383757_at
carnitine palmitoyltransferase 1b - muscle
1367742_at
aquaporin 7
1368317_at
serine peptidase inhibitor - Kazal type 3
1368447_x_at
stearoyl-CoA desaturase (delta-9-
Edit filter
Please choose a bound for '(T) p(WY-14643_M_4day, WY-14643_M_8day)'. Examples: 2.1, 1E-3
x <=
0.01
OK
Clear filter
②Input 0.01
③Click

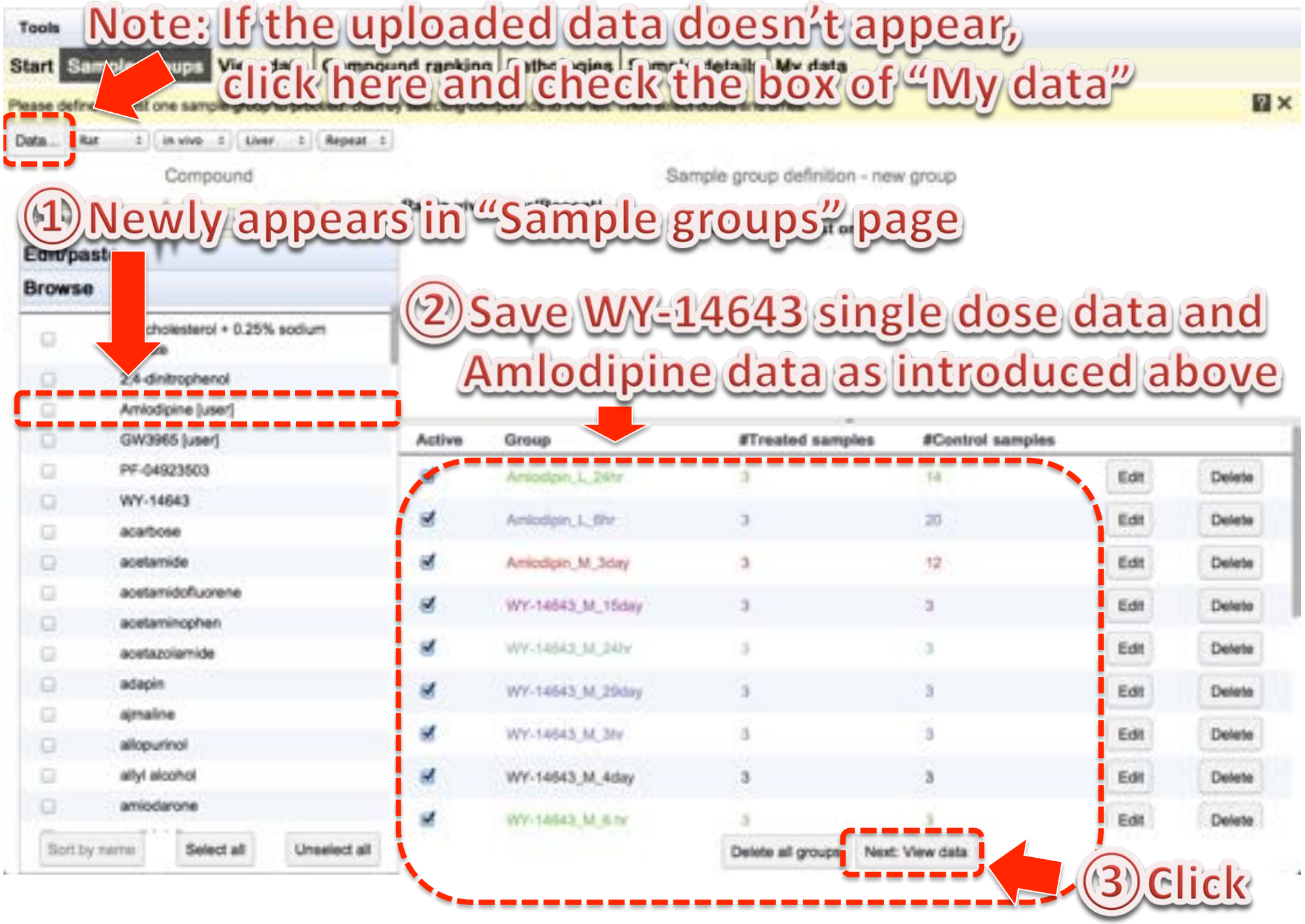

① 618 probes are extracted
Start
Sample groups
data
Compound ranking
Pathologies
Sample details
My data
1-25 of 618
Show More
p-value columns
All Probes
New
Edit
Add T-Test
Add U-Test
Add fold-change difference
② Save these probes as "M4vsM8_p0.01"
Gene Symbol
Probe Title
Probe
Acot1
acyl-CoA thioesterase 1
1398250_at
Fbp2
fructose-1 -6-bisphosphatase 2
1368822_at
LOC100912469 Scd
stearoyl-CoA desaturase (delta-9-desaturase)
1367668_a_at
Hpgd
hydroxyprostaglandin dehydrogenase 15 (NAD)
1387631_at
Asns
asparagine synthetase (glutamine-hydrolyzing)
1387925_at
Aldh1a1
aldehyde dehydrogenase 1 family - member A1
1387022_at
Ech1
enoyl CoA hydratase 1 - peroxisomal
1386885_at
Ehhadh
enoyl-CoA - hydratase/3-hydroxyacyl CoA dehydrogenase
1368283_at
Acaa1a Acaa1b
acetyl-Coenzyme A acyltransferase 1B
1387783_a_at
Sorl1
sortilin-related receptor - LDLR class A repeats-containing
1394786_at
Ten1
TEN1 telomerase capping complex subunit
1383230_at
Mlcx
myo-inositol oxygenase
1367937_at
Lamc2
laminin - gamma 2
1379340_at

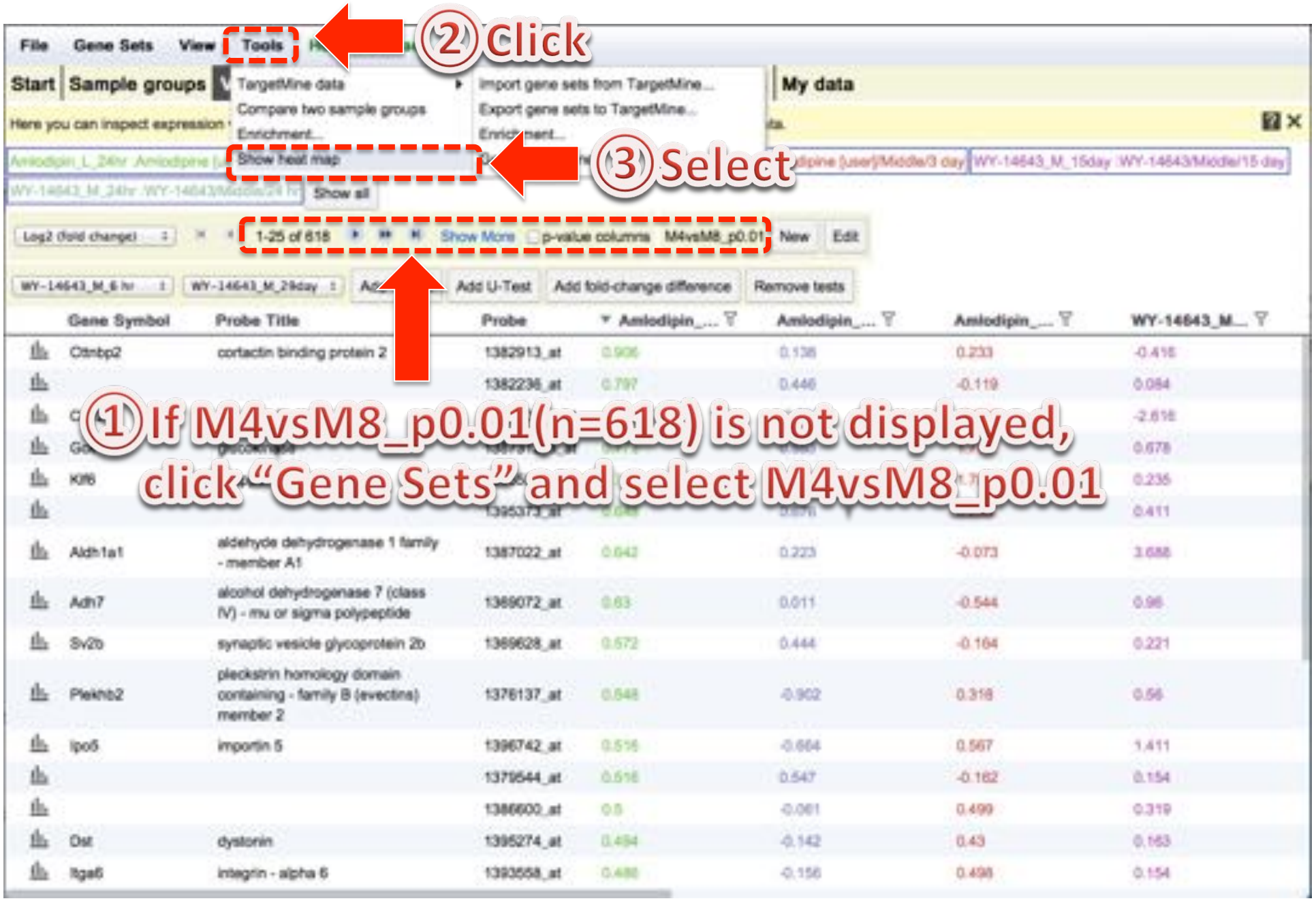
Uploading user data to aid the investigation

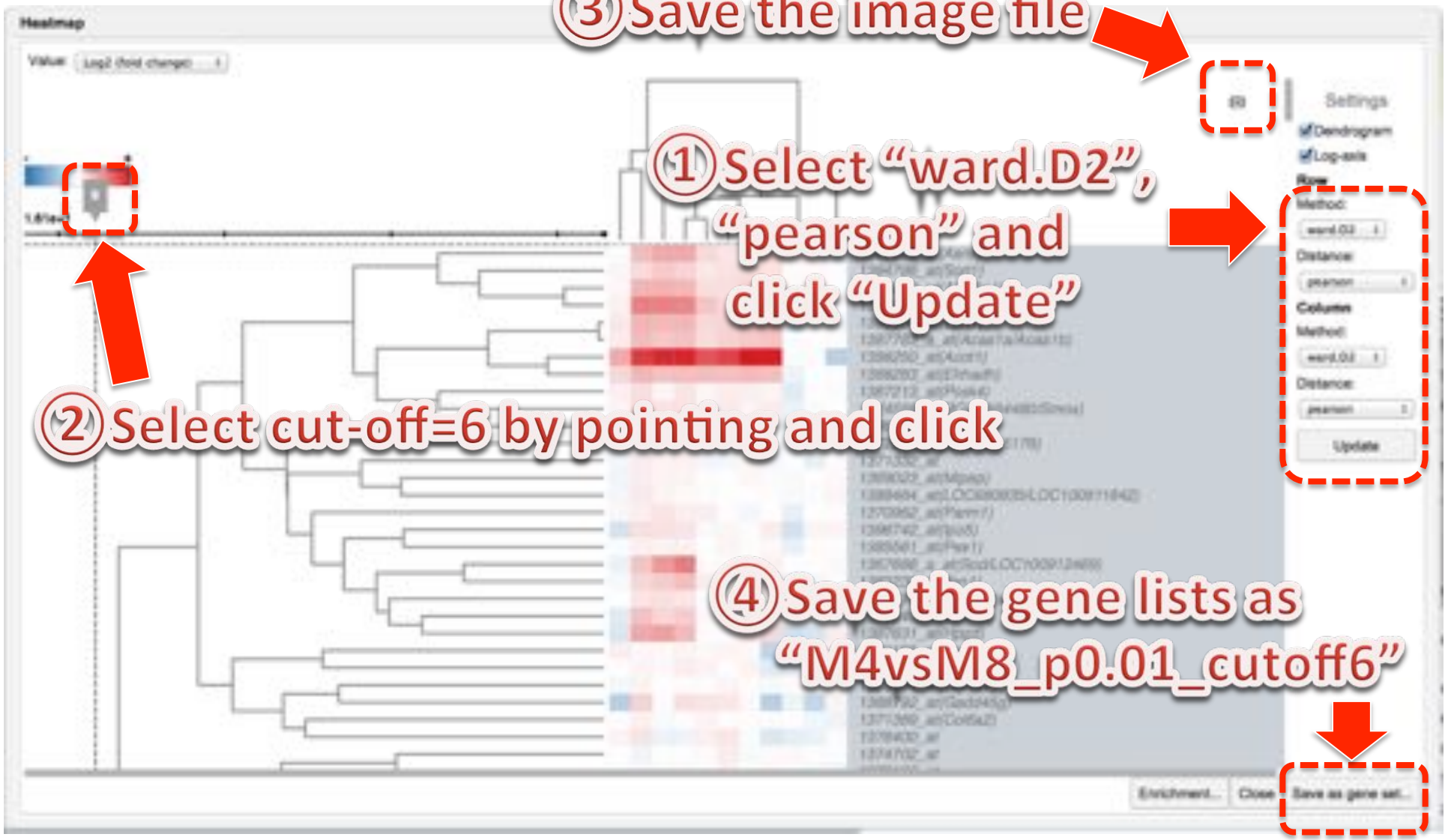



Tools
Help / feedback
Start
Sample groups
View data
Compound ranking
Pathologies
Sample details
My data
Add new ...
Download example files
Access key:
Change ...
ID
Comment
② Click
① Create files to be uploaded,
by following the format of example files


Edit batch
ID
Amlodipine
Private comments
Visibility
Private
Metadata file (TSV)
Choose Files
no files selected
Please upload a file
Normalized data file (CSV)
Choose Files
no files selected
Please upload a file
Affymetrix calls file (CSV) (optional)
Choose Files
no files selected
Please upload a file
OK
Cancel
Sample details
My data
Dataset
① Edit
② Upload the files
③ Click


Note: If the uploaded data doesn't appear,
click here and check the box of "My data"
Tools
Start
Data...
Rat
in vivo
Liver
Repeat
Compound
Sample group definition - new group
① Newly appears in "Sample groups" page
Browse
cholesterol + 0.25% sodium
2,4-dinitrophenol
Amlodipine [user]
GW3965 [user]
PF-04923503
WY-14643
acarbose
acetamide
acetamidofluorene
acetaminophen
acetazolamide
adapin
ajmaline
allopurinol
allyl alcohol
amiodarone
Sort by name
Select all
Unselect all
② Save WY-14643 single dose data and
Amlodipine data as introduced above
Active
Group
#Treated samples
#Control samples
Edit
Delete
WY-14643_M_4day
Delete all groups
Next: View data
③ Click


File
Gene Sets
View
Tools
② Click
Start
Sample groups
My data
TargetMine data
Compare two sample groups
Enrichment...
Show heat map
Import gene sets from TargetMine...
Export gene sets to TargetMine...
Enrichment...
③ Select
Show all
Log2 (fold change)
1-25 of 618
Show More
p-value columns
M4vsM8_p0.01
New
Edit
Add U-Test
Add fold-change difference
Remove tests
Gene Symbol
Probe Title
Probe
Amlodipin_...
Amlodipin_...
Amlodipin_...
WY-14643_M_...
① If M4vsM8_p0.01(n=618) is not displayed,
click “Gene Sets” and select M4vsM8_p0.01
Ctnbp2
cortactin binding protein 2
1382913_at
Klf6
Aldh1a1
aldehyde dehydrogenase 1 family - member A1
1387022_at
Adh7
alcohol dehydrogenase 7 (class IV) - mu or sigma polypeptide
1369072_at
Sv2b
synaptic vesicle glycoprotein 2b
1369628_at
Plekhb2
pleckstrin homology domain containing - family B (evectins) member 2
1376137_at
Ipo5
importin 5
1396742_at
1379544_at
1386600_at
Ost
dystonin
1395274_at
Itga6
integrin - alpha 6
1393558_at


③Save the image file
①Select “ward.D2”, “pearson” and click “Update”
②Select cut-off=6 by pointing and click
④Save the gene lists as “M4vsM8_p0.01_cutoff6”
Heatmap
Settings
Update
Enrichment...
Close
Save as gene set...

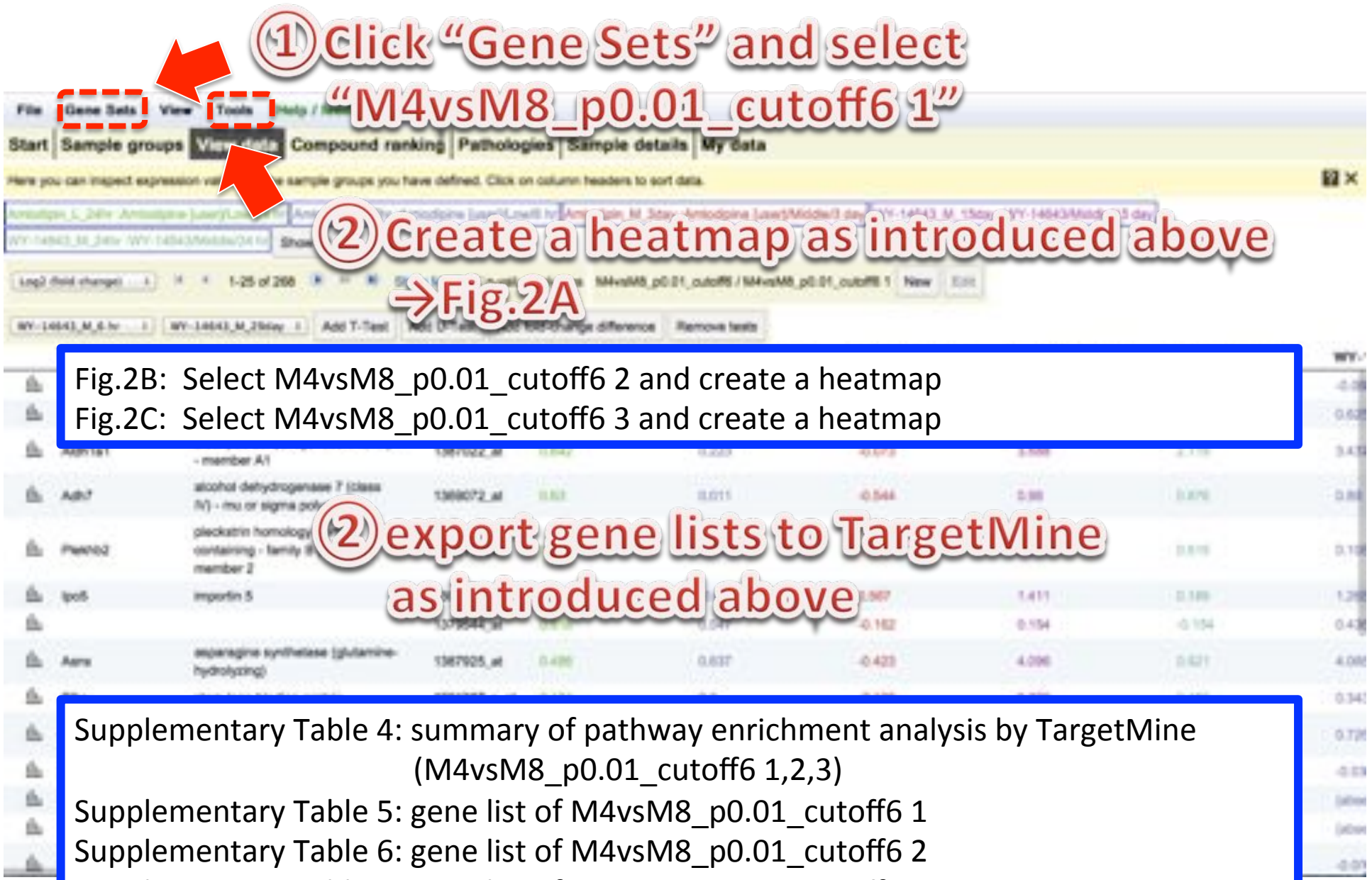


Fig.2B: Select M4vsM8_p0.01_cutoff6 2 and create a heatmap
Fig.2C: Select M4vsM8_p0.01_cutoff6 3 and create a heatmap

Supplementary Table 4: summary of pathway enrichment analysis by TargetMine (M4vsM8_p0.01_cutoff6 1,2,3)
Supplementary Table 5: gene list of M4vsM8_p0.01_cutoff6 1
Supplementary Table 6: gene list of M4vsM8_p0.01_cutoff6 2
Supplementary Table 7: gene list of M4vsM8_p0.01_cutoff6 3