AGCT Tutorial

Step-by-step introduction

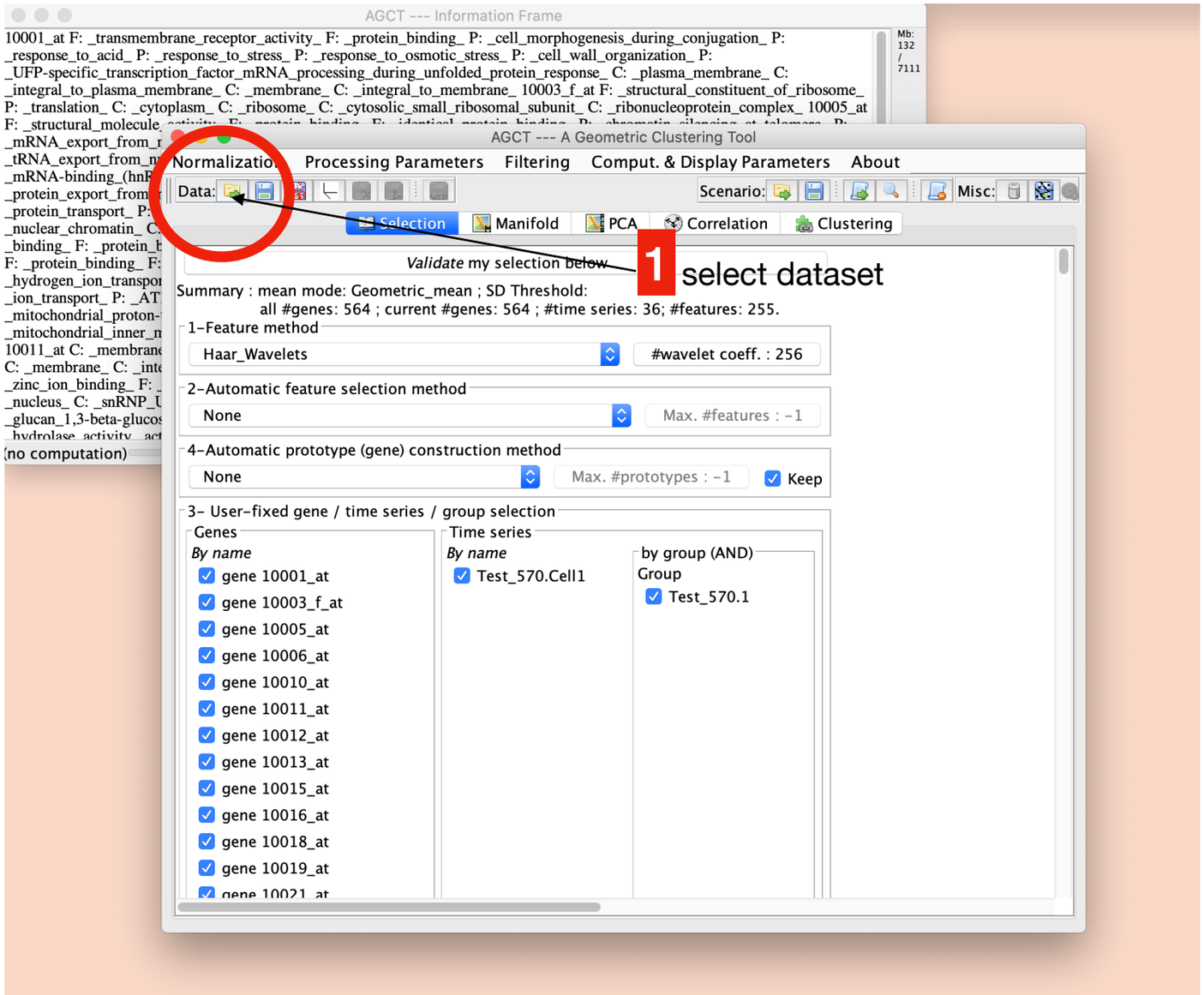
AGCT dataset

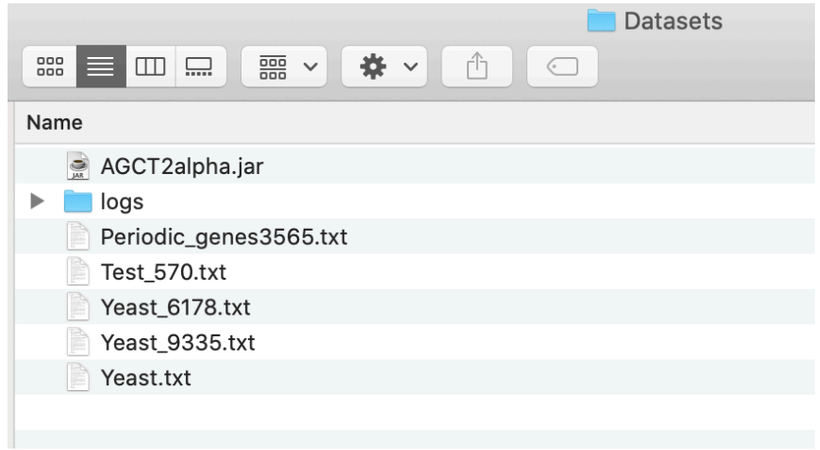
```
Species Yeast.txt
E (entity)      1       Cell1
EG (entity grouping)    1       1
T (time)        36      1       2       3       4       5       6       7       8       9       10      11
R (replicate)   1
Data    564
10001_at        1.994324565     1.805780292     1.173666358     1.147356629     0.940516353     0.930283248
10003_f_at      22.51645851     11.07745647     19.84449577     17.49943733     17.20314407     18.38671112
10005_at        2.220204353     1.906358242     2.366628885     1.8436445       1.734006763     1.860566497
10006_at        0.657207727     0.635838151     0.656072617     0.905511856     1.127946138     1.001089334
10010_at        29.91146469     26.66589737     32.16685486     22.47244263     15.67227936     10.69390011
10011_at        0.264472187     0.116763011     0.17026107      0.15185602      0.14927049      0.077342048
10012_at        1.585698009     3.213872671     3.719636917     3.665916681     4.057239056     4.177559853
10013_at        0.700340509     0.897109807     1.055618644     0.942632198     0.940516353     1       0.97
10015_at        4.947786808     9.030056953     14.13961411     9.087739944     9.347924232     6.636165619
10016_at        3.312145233     2.530635595     2.947786808     3.011248827     2.66554451      2.198257208
10018_at        43.29738998     25.93988419     41.94778824     43.53430939     36.99775696     33.83224487
10019_at        40.52213287     39.93179321     34.62996674     26.75140572     24.3254776      23.30827904
10021_at        0.60839951      0.893641651     0.679909229     0.782902122     0.912458003     0.751634002
10026_at        1.220204353     2.546820879     1.316685557     2.213723421     2.059483767     1.745097995
10027_at        6.491487503     10.24624252     7.511918068     8.645668983     8.375982285     7.60566473
10028_at        0.648127139     0.582658947     0.740068078     0.373453349     0.718294084     0.698257089
10029_at        2.457434654     2.38959527      2.039727449     1.480315089     0.854096532     0.957516372
10031_at        1.404086232     1.365317822     1.769580007     1.519685149     1.904601574     1.624183059
10032_at        0.936435878     1.253179193     1.657207727     1.600674987     1.722783446     1.318082809
10036_at        1.644721866     1.964161754     2.013620853     2.424072027     2.099887848     2.165577412
10040_at        1.405221343     1.531791925     1.38138473      1.394825697     1.564534187     1.310457587
10043_at        9.01816082      19.66589546     13.46765041     11.17660332     11.27833939     9.603485107
10044_at        2.707150936     1.81734097      1.460839987     1.646794081     1.404040456     1.36601305
10045_at        2.922815084     8.425433159     45.61407471     69.77278137     60.65769196     49.42483902
10046_at        0.124858119     0.171098262     0.246311024     0.269966245     0.407407403     0.352941185
10048_at        1.293984175     1.376878619     1.248581171     1.933633208     1.758698106     2.035947561
10049_at        1.916004539     1.108670473     0.555051088     0.73453325      0.59932667      0.636165619
10050_at        3.827468872     4.931791782     3.595913649     5.411698818     2.720538855     5.583877563
10051_at        1.748013616     2.60346818      1.782065868     2.811023712     2.499439001     2.824618578
10052_at        1.860385895     1.643930554     1.703745842     1.830146194     1.493827343     1.503268003
10053_at        8.368899345     4.337572098     9.069239616     7.421822071     9.430976868     6.896513939
10054_at        23.40522194     23.17687798     29.45857048     19.60517502     17.40067482     11.58060932
10055_at        8.177071571     4.02543354      2.634506226     2.452193499     2.268238068     1.979302764
10056_at        2.304199696     5.123699665     3.113507271     4.482564926     4.317620754     3.967320442
10058_at        2.39160037      5.872832298     6.331441402     7.707536697     8.800224304     8.18954277
10059_at        4.858115673     4.272832394     3.374574184     4.865016937     5.373737335     4.647058964
10060_at        3.417707205     12.13410378     9.771850586     11.81439877     9.334456444     8.826797485
10061_at        42.83314514     45.29364014     31.3689003      38.09674072     32.96408844     31.83660316
10068_i_at      14.54370117     7.721387386     13.72077274     16.03599548     18.19079781     15.3932457
10069_f_at      9.527810097     6.567629814     11.72304249     11.0731163      10.35241413     8.009803772
10071_at        0.402951181     0.436994195     0.712826312     0.512935877     0.586980939     0.412854046
10072_at        0.473325789     1.161849737     1.089670897     1.17660296      1.125701547     1.058823466
```

Species - specify Gene Ontology File
E (entity) - number of sets (cells here) to analyze
EG (entity grouping) - number of subgroups (optional, can be ignored)
T (time) - total number of timestamps, followed by a list of stamps
R (replicate) - number of replicates
Data - number of entities in the list (number of probes here)

List of IDs followed by values (in this case: E*EG*T*R=36 tags)
10001_at 1.99432457 1.80578029 1.17366636 1.14735663 ...n=36

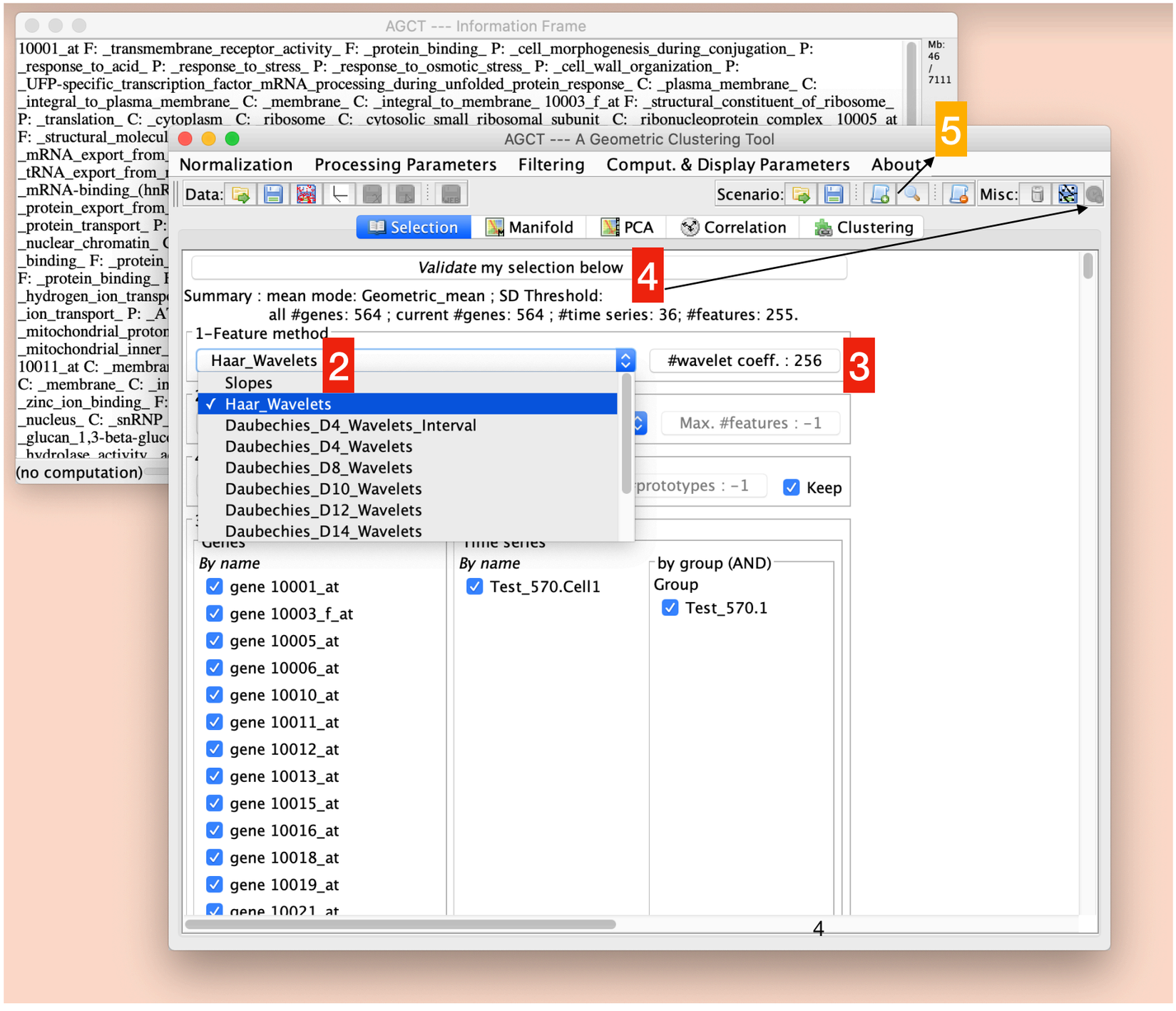
Launch AGCT and loading a dataset





java -d64 -Xmx8000m -jar AGCT2alpha.jar

Execute AGCT on dataset

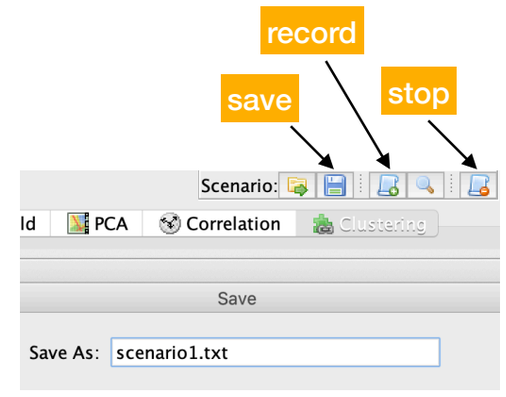


2 Select feature compression method

3 Select waveletloefficient (if used)

4 Execute job

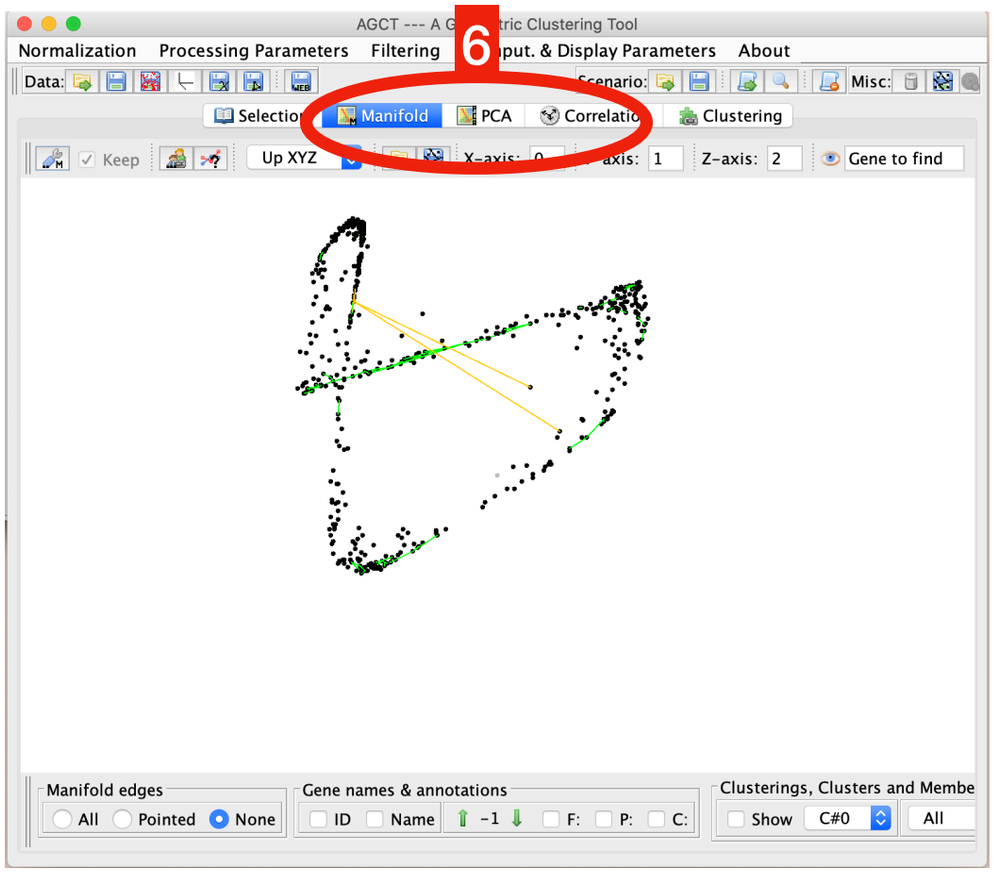
5 Scenario automatically recorded before manually stopped



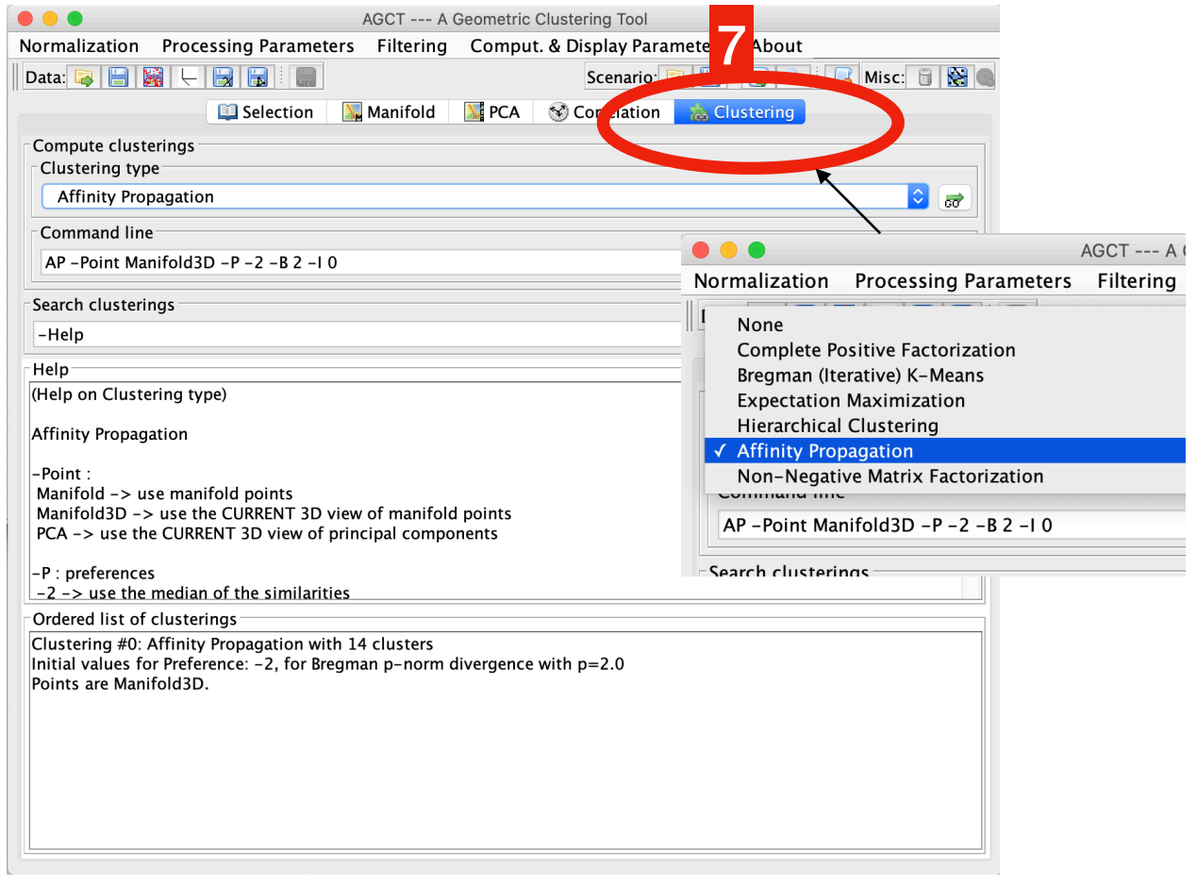
The scenario can be saved to manifold calculation.

Next time, to load **your recorded scenario** you have, first, **to stop the automatic recording** scenario button.

Visualization Manifold/PCA



Clustering method selection

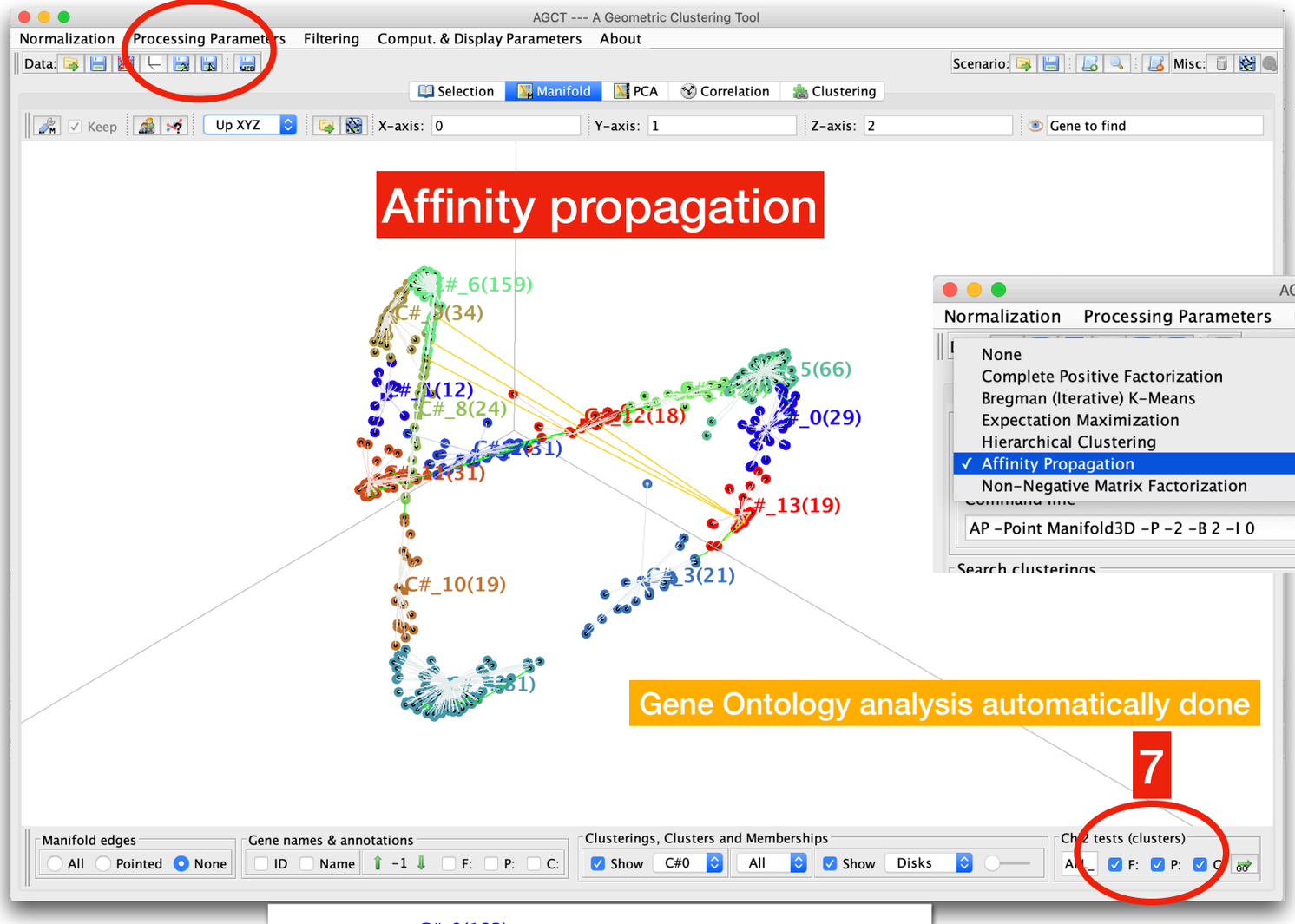


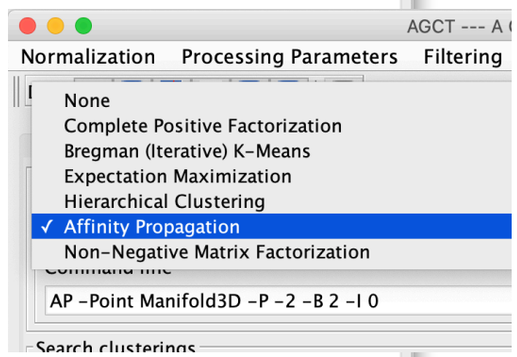
Gene Ontology analysis saved (.txt)

7

Results

Affinity propagation

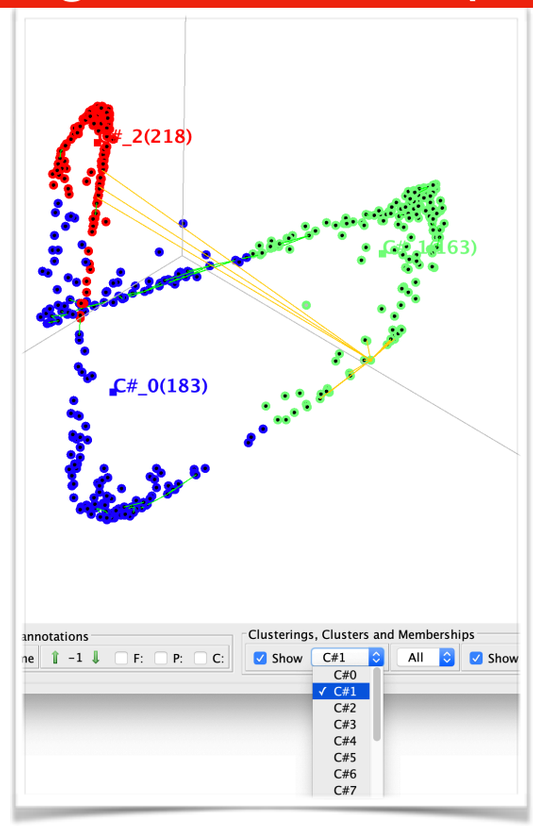




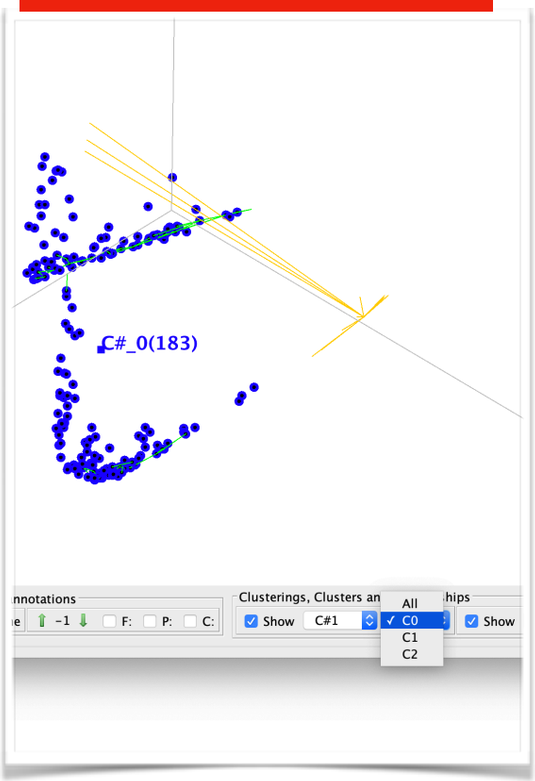
Gene Ontology analysis automatically done

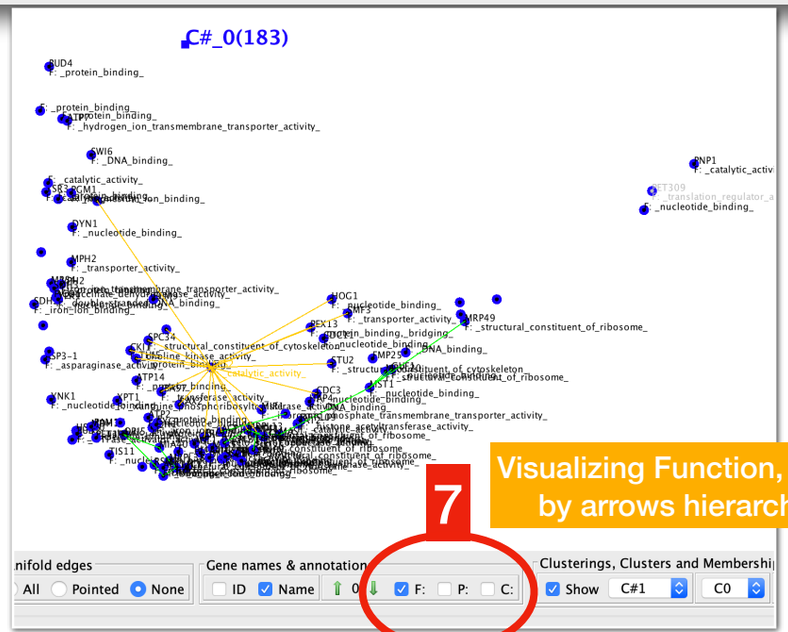
7

Bregman K-means (k=3)



Select one cluster

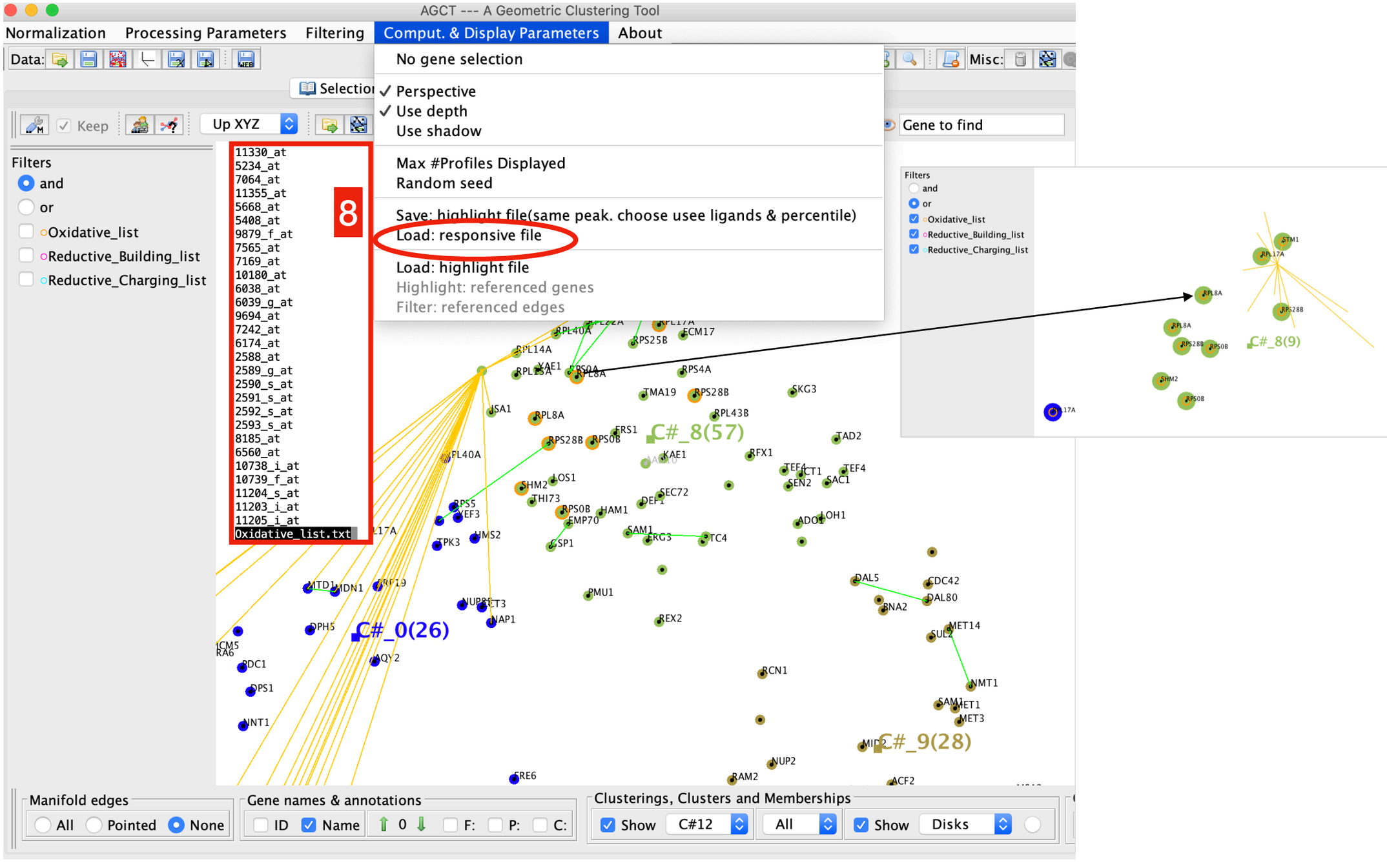




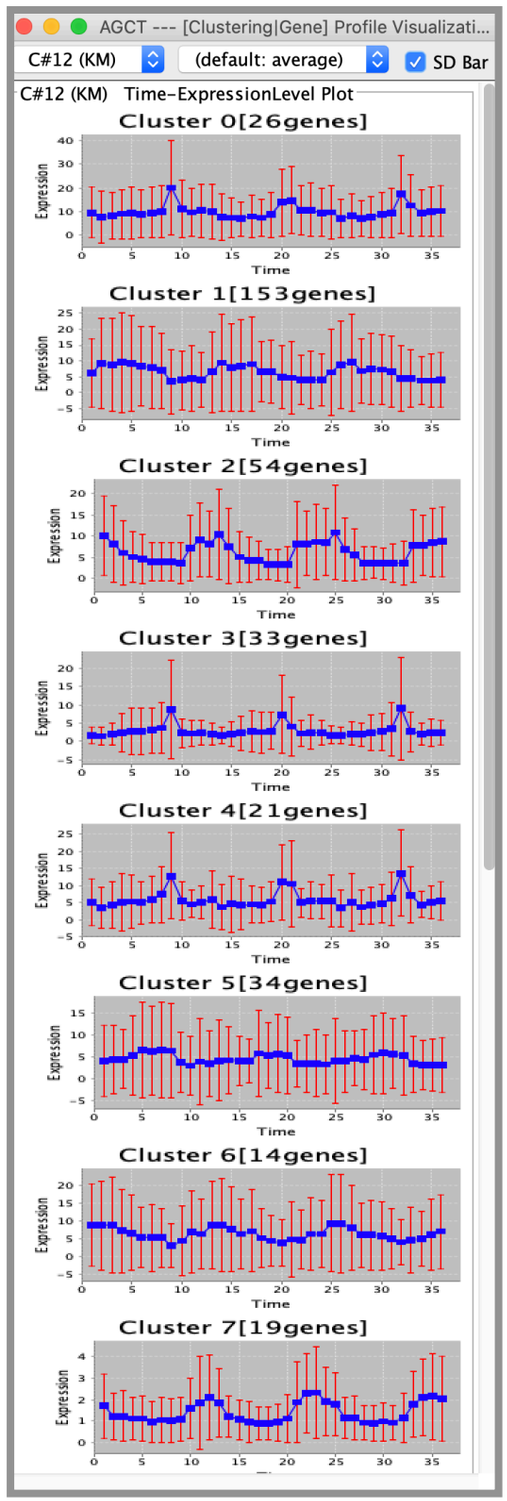
7

Visualizing Function, Process, Component by arrows hierarchy can be changed

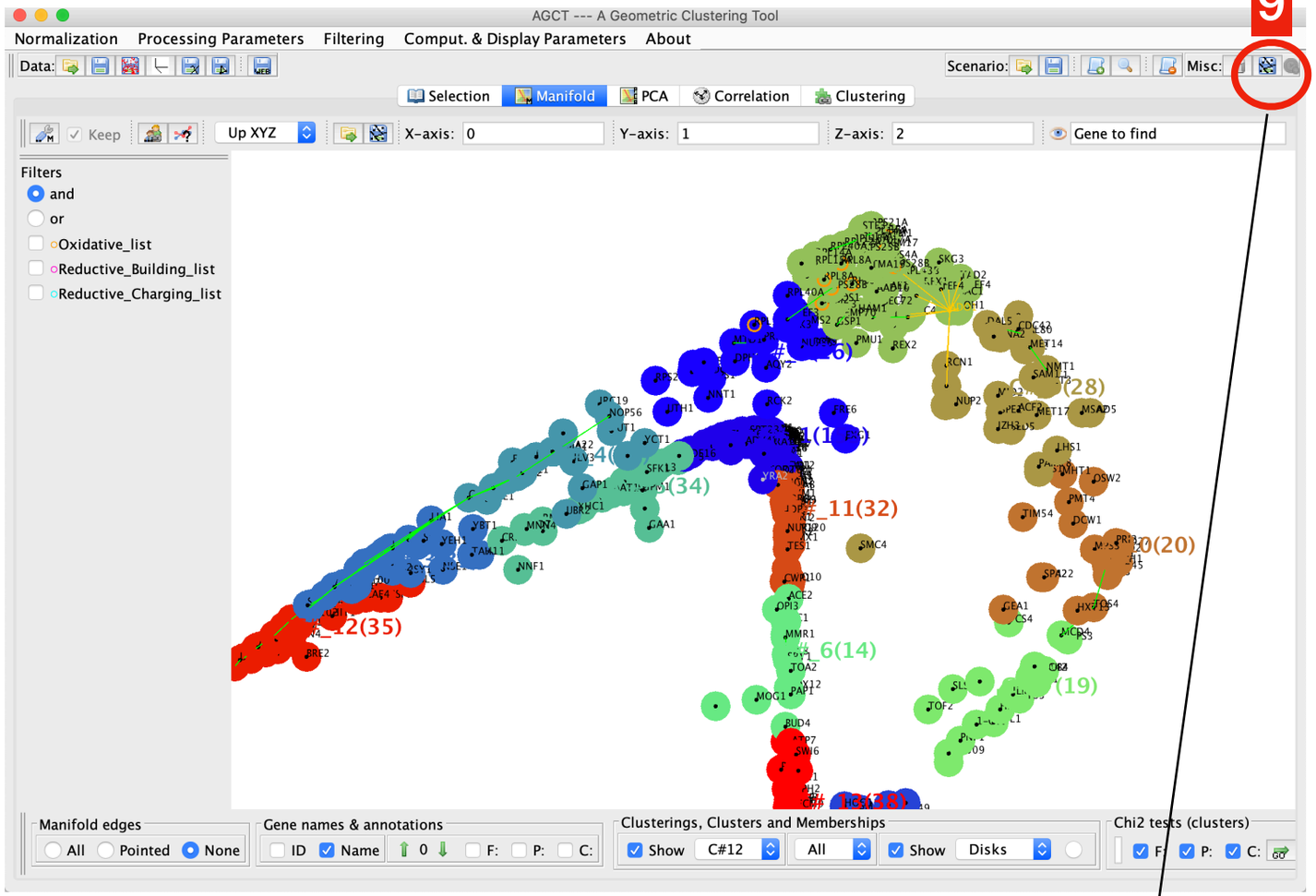
Loading genes to highlight from separate file



Cluster profiles



Cluster saving




```
AGCT2alpha.jar                    Test_570_cluster_4.txt
Periodic_genes3565.txt            Test_570_cluster_5.txt
Test_570.txt                      Test_570_cluster_6.txt
Test_570_clusterProfile.txt       Test_570_cluster_7.txt
Test_570_cluster_1.txt            Test_570_cluster_8.txt
Test_570_cluster_10.txt           Test_570_cluster_9.txt
Test_570_cluster_11.txt           Test_570_grouping.txt
Test_570_cluster_12.txt           Yeast.txt
Test_570_cluster_13.txt           Yeast_6178.txt
Test_570_cluster_14.txt           Yeast_9335.txt
Test_570_cluster_2.txt            logs
Test_570_cluster_3.txt
```