Self-Quiz Sampler for Students

Do you truly understand how clustering is performed?
Can your students efficiently read color displays of microarray data?

Multiple Choice

1) If you change the correlation threshold for "cutting the tree" in hierarchical clustering from 0.8 to 0.5, you can be certain that the number of genes per cluster will:

a) decrease
b) increase
c) stay the same
d) not decrease
e) not increase
f) not stay the same

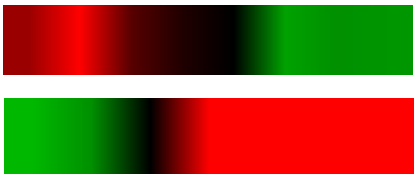
2) If you change the correlation threshold for "cutting the tree" in hierarchical clustering from 0.95 to 0.2, the number of clusters is likely to:

a) decrease
b) increase
c) stay the same
d) you cannot tell without seeing the data

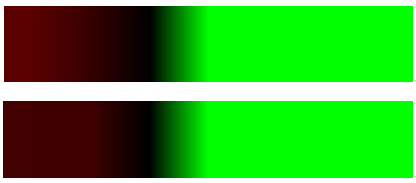
3) Which gene pair is likely to cluster together if the correlation threshold for "cutting the tree" in hierarchical clustering is set for 0.90?

A.

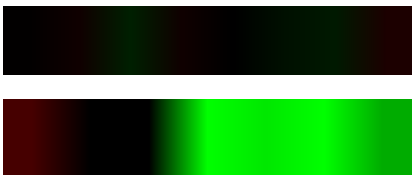
C.



B.



D.



True-False

1) Genes with similar function (*e.g.*, cell cycle regulation) will likely have a correlation coefficient greater than 0.5.
2) Any two genes can be forced to be in the same cluster by decreasing the correlation threshold.
3) Two genes that cluster together under one set of experimental conditions will still cluster together under another set of experimental conditions at the same correlation threshold.

Open-ended Questions for Exploration

Using the Online Clustering Web Page, see if you can choose appropriate genes, conditions and correlation threshold to discover the following:

1) Six genes such that 3 are in one cluster and 3 are in a second cluster.
2) Six genes that fall into 6 different clusters, with a correlation threshold no greater than 0.7.
3) Under condition Heat Shock 1 (include all), genes YNL174W, YOL077C and YOR095C in
    a) one cluster
    b) two clusters
    c) three clusters
4) Five genes that cluster with YNL174W using a correlation threshold of 0.75.