Table S1. The Connectivity Map Dataset. An .xls file describing the dataset (build 01), including scan numbers of the raw data files.

Signature File Description

Excel (.xls) files containing the HG-U133A probe sets representing the up- and down- regulated genes in each query signature. Genes were mapped to probe sets with NetAffx (Release 19) and HomoloGene (Release 49.1), as required. For internal signatures, the instances and amplitude thresholds used are provided.

Signature S1. HDAC Inhibitor Signature. This signature was taken from Table 4 (top panel) of Glaser *et al* (*6*).

Signature S2. Estradiol Signature. This signature was taken from Tables 2-5 of Frasor *et al* (*7*).

Signature S3. Internal Phenothiazine Signature. This signature was generated from one instance each of the five phenothiazines in our dataset (*ie* thioridazine, chlorpromazine, fluphenazine, trifluoperazine, prochlorperazine). Gene names and symbols (according to NetAffx Release 20) are provided.

Signature S4. Alternative Phenothiazine Signature #1. This signature was generated from the same instances as those for Signature S3 but with a more stringent amplitude threshold, reducing the total number of probe sets from 68 to 27. Gene names and symbols are provided.

Signature S5. Alternative Phenothiazine Signature #2. This signature was generated from four of the five instances used for Signature S3. The feature selection threshold was selected to give approximately the same number of probe sets (67 here *versus* 68 in Signature S3). Gene names and symbols are provided.

Signature S6. Alternative Phenothiazine Signature #3. This signature was generated from different instances of the five phenothiazines than those used for Signature S3 and includes low-concentration thioridazine and chlorpromazine instances. Gene names and symbols are provided.

Signature S7. Gedunin Signature. This signature was taken from Supplementary Data 3 (labeled 'gedunin signature') of Hieronymus *et al* (*8*).

Signature S8. Diet-Induced Obesity Signature. This signature was taken from supporting online information (black-shaded probe sets from sheets labeled 'Sobreexpresadas' and 'Reprimidas') for López *et al* (*9*) found at http://www.unav.es/fyn/obesity.html.

Signature S9. Alzheimer's Disease Signature (Hata). This signature was taken from Tables 2 and 3 of Hata *et al* (*4*).

Signature S10. Alzheimer's Disease Signature (Ricciarelli). This signature was taken from Table 2 of Ricciarelli *et al* (*5*).

Signature S11. ALL/Dexamethasone Response Signature. This signature was taken from Supplementary Figure 1 (panels A and C) of Wei *et al* (*10*).

Result File Description

Tab-delimited .txt files with the unabridged results from each query. Columns are rank, perturbagen [instance_id], concentration, cell line, connectivity score (*S*), and raw enrichment scores (ks_{up} and ks_{down}).

Result S1. HDAC Inhibitors. Unabridged results with Signature S1.

Result S2. Estradiol. Unabridged results with Signature S2.

Result S3. Phenothiazines. Unabridged results with Signature S3.

Result S4. Phenothiazines (Alternate #1). Unabridged results with Signature S4.

Result S5. Phenothiazines (Alternate #2). Unabridged results with Signature S5.

Result S6. Phenothiazines (Alternate #3). Unabridged results with Signature S6.

Result S7. Gedunin. Unabridged results with Signature S7.

Result S8. Diet-Induced Obesity. Unabridged results with Signature S8.

Result S9. Alzheimer's Disease (Hata). Unabridged results with Signature S9.

Result S10. Alzheimer's Disease (Ricciarelli). Unabridged results with Signature S10.

Result S11. ALL/Dexamethasone Response. Unabridged results with Signature S11.