Package ‘ConnectivityMap’

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Type Package
Title Functional connections between drugs, genes and diseases as revealed by common gene-expression changes
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Author Paul Shannon
Maintainer Paul Shannon<pshannon@systemsbiology.org>
Depends R (>= 2.15.1)
Suggests RUnit, BiocGenerics
Description The Broad Institute’s Connectivity Map (cmap02) is a “large reference catalogue of gene-expression data from cultured human cells perturbed with many chemicals and genetic reagents”, containing more than 7000 gene expression profiles and 1300 small molecules.
biocViews ExperimentData, CancerData, MicroarrayData
License GPL-3
NeedsCompilation no

R topics documented:

ConnectivityMap ConnectivityMap: Functional connections between drugs, genes and diseases as revealed by common gene-expression changes

Description

The Broad Institute’s Connectivity Map (cmap02) http://www.broadinstitute.org/cmap/ is a “large reference catalogue of gene-expression data from cultured human cells perturbed with many chemicals and genetic reagents”, containing more than 7000 gene expression profiles and 1300 small molecules. Quoting further:

To pursue a systematic approach to the discovery of functional connections among diseases, genetic perturbation, and drug action, we have created the first installment of a reference collection of
gene-expression profiles from cultured human cells treated with bioactive small molecules, together with pattern-matching software to mine these data. We demonstrate that this "Connectivity Map" resource can be used to find connections among small molecules sharing a mechanism of action, chemicals and physiological processes, and diseases and drugs. These results indicate the feasibility of the approach and suggest the value of a large-scale community Connectivity Map project.

This data package contains two data objects, obtained with permission from the Broad Institute, transformed very modestly, and presented as serialized 
RData objects:

- rankMatrix: 22283 rows (human Affymetrix probeIDs) x 6100 perturbation "instances"
- instances: 14 columns of metadata describing each of the 6100 instances.

The metadata matrix, instances has these columns:

- instance_id
- batch_id
- cmap_name
- INN1
- concentration (M) (appears as "concentration..M."
- duration (h) (appears as "duration..h.
- cell2
- array3
- perturbation_scan_id
- vehicle_scan_id4
- scanner
- vehicle
- vendor
- catalog_number
- catalog_name

References


Examples

```r
library(ConnectivityMap)
data(rankMatrix)
data(instances)
print(table(instances$cell2))
# identify the perturbations in the rankMatrix from the SKMEL5 skin melanoma cell line
skmel.instance.names <- rownames(subset(instances, cell2=="SKMEL5"))
matrix.skmel <- rankMatrix[, skmel.instance.names]
```
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