Introduction to Cellminer

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Topics to be Covered

- Introduction to CellMiner
- Introduction to rcellminer

What is CellMiner?

- Website:

  - http://discover.nci.nih.gov/cellminer

- Retrieval and integration for NCI-60 datasets: molecular and pharmacological

- NCI-60

  - 60 human cancer cell lines from 9 tissues of origin: breast, central nervous system, colon, leukemia, melanoma, non-small cell lung, ovarian, prostate, and renal

  - Used by the Developmental Therapeutics Program of the National Cancer Institute to screen over 100,000 chemical compounds and natural products

- A subset of ~21,000 drugs is provided by CellMiner

- Drug activity levels expressed as 50% growth-inhibitory levels (GI50) were determined at 48 hours using the sulforhodamine B (SRB) assay

  - Determines cell density based on the measurement of total cellular protein

What is rcellminer?

- Website and Tutorial (Vignette):

    - https://www.bioconductor.org/packages/release/bioc/html/rcellminer.html

- Provides programmatic access to CellMiner NCI-60 data

- Data Types

    - Gene and protein expression

    - Copy number

    - Whole exome mutations

    - Activity data for ~21K compounds and information on their structure, mechanism of action, and repeat screens

- Easy visualization of compound structures, activity patterns, and molecular feature profiles

- Embedded R Shiny applications allow interactive data exploration

Embedded Shiny Applications

- Simplified web applications to do common data exploration tasks

  - Compare any two molecular and drug profiles

  - Find related structures

  - View information on repeat screening for drug compounds

Getting Help

- CellMiner
  - webadmin@discover.nci.nih.gov
- rcellminer
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