

# Introduction to Cellminer

Augustin Luna  
17 January, 2016

Research Fellow  
Department of Biostatistics and Computational Biology  
Dana-Farber Cancer Institute

# 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](mailto:webadmin@discover.nci.nih.gov)
- rcellminer
  - Augustin Luna: aluna [AT] jimmy [DOT] harvard [DOT] edu
  - Vinodh Rajapakse: vinodh [DOT] rajapakse [AT] nih [DOT] gov