OMICS Group Conferences
Accelerating Scientific Discovery

International Conference on
Omics Studies

September 4-6, 2013 Holiday Inn, Orlando-FL, USA

Using cellminer and the NCI-60 cancerous cell lines for systems pharmacology

William C. Reinhold
National Cancer Institute, USA

Abstract

High-throughput data is increasingly being integrated into the fields of molecular biology and pharmacology. However, a difficult problem has been rapid and fluid access to and integration of the data. One set of cell lines with the potential for benefit from this type of access and integration is the NCI-60 cancerous cell lines. We present here a set of tools within our CellMiner web-application. It currentlycontains 16 databases that may be queried using our "Query Genomic Data" tools. Integration of these datasets is facilitated by the "NCI-60 Analysis Tools". These enhance integration for transcript expression of 26,065 genes and 360 microRNAs, as well as thedrug activity of 20,602 compounds including 102 Food and Drug Administration (FDA)-approved and 53 in clinical trial drugs. Gene DNA copy number andvariant status datasets are in preparation.These molecular and response parameters create patterns across the NCI-60 that can be compared to one another using the "Pattern Comparisons" tool. Together, these tools allow one to query the data for potential relationships in a manner specific to a users area of expertise and interest, in a rapid and flexible manner without the need for expertise in computer science or bioinformatics.Examples of both basic science and translation results will be provided, including the identification of a novel gene of pharmacological importance (SLFN11 for topotecan), and the identification of a novel compound for the treatment of the Core binding factor (CBF) subset of adult acute myeloid (AML) and pediatric acute lymphocytic leukemias (ALL). These data are publicly available at http://discover.nci.nih.gov/cellminer.

Biography

William Reinhold is currently operating as facility head of the Genomics and Bioinformatics Group in the Laboratory of Molecular Pharmacology. He has been a part of this section since April 1998, working with first John N. Weinstein, and then Yves Pommier. He has been central in generating multiple datasets for the NCI-60 cancerous cell lines, available at the CellMiner web-application at http://discover.nci.nih.gov/cellminer/. His activities include running the web site, dissemination and interpretation of this data, encouraging and facilitating collaborations, and providing direction for the development of systems pharmacology within the goup. He received his B.S. in Biochemistry from the University of Maryland in 1978, and currently has 67 peer reviewed publications.