

The NCI-60 and cell miner as important resources for the field for personalized medicine

William C. Reinhold

Genomics and Bioinformatics Group, USA

Molecular biology and pharmacology are increasingly integrating high-throughput data, with the goal of a more personalized form of medicine. However, impediments in the field include rapid access to the data in a usable format, and the ability to integrate multiple forms of data in a manner usable by the non-bioinformaticist. We have begun to address these issues for the NCI-60, 60 cancerous cell lines from nine tissues-of-origin using our CellMiner web-application (<http://discover.nci.nih.gov/cellminer>). Currently 16 databases are made available using our “Query Genomic Data” tools. Integration of these datasets is facilitated by the “NCI-60 Analysis Tools”. These enhance integration for data including transcript expression of 26,065 genes and 360 microRNAs, and drug activity of 20,602 compounds including 110 Food and Drug Administration (FDA)-approved and 54 in clinical trial drugs. 143,501 genetic variants (SNPs and somatic mutations) are identified. Tools for simple DNA copy number recognition are in preparation. The “Pattern Comparisons” tool, permits the user to search for potential relationships in a manner specific to their area of expertise and interest. Expertise in computer science or bioinformatics is not required. Examples of prior translational results include the identification of a novel gene of pharmacological importance (SLFN11 for DNA-damaging agents), 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). The data is available at no cost to the scientific public.

Biography

William Reinhold is currently operating as facility head of the Genomics and Bioinformatics Group in the Laboratory of Molecular Pharmacology at the NCI. He has been central in generating multiple datasets for the NCI-60 cancerous cell lines, as well as having guided the development of the CellMiner web-application (<http://discover.nci.nih.gov/cellminer/>). His activities include running the web site, dissemination and interpretation of this data, facilitating collaborations, and providing direction for the development of systems pharmacology effort within the group. He received his B.S. in Biochemistry from the University of Maryland in 1978, and currently has 69 peer-reviewed publications.

wcr@mail.nih.gov