GCC Chemical Genomics Libraries

Approved Drugs, Investigational Agents and Bioactive Molecules

Cancer Therapy Evaluation Program (CTEP) Collection

48 Compounds, 1 x 96-Well Plate

This collection contains 48 drugs selected from the approximate 63 drugs currently available through the CTEP investigational drug portfolio program for clinical development because of their commercial availability. The CTEP program, part of the National Cancer Institute, coordinates the clinical therapeutics development program of the Division of Cancer Treatment and Diagnosis (DCTD), NCI. Compounds are present at 10mM in DMSO.

Custom Clinical Collection

147 Compounds, 2 x 96-Well Plates

The Custom Clinical Collection contains approximately 147 compounds to a wide variety of targets. Fifty-seven percent of the compounds are currently used in the clinic for the treatment of various forms of cancer and 37% of the compounds are in clinical trials. Compounds are present at 10mM in DMSO.

GPCR Collection

353 Compounds, 6 x 96-Well Plates

The collection is composed of the Selleck GPCR Collection and additional targeted agents from other commercial sources. The collection is a unique collection of small molecules targeting G-protein coupled receptors used in GPCR screening by pharmaceutical and biotechnology companies in various research and drug development projects. The GPCR compound library contains small molecules associated with many receptors including 5-HT Receptor, Dopamine Receptor, Opioid Receptor, Adrenergic Receptors, Cannabinoid Receptor, mGluR, and the ETA-receptor. The compounds are structurally diverse, medicinally active, and cell permeable. All compounds are NMR and HPLC validated. Compounds are present at 10mM in DMSO.

Broad Collection

380 Compounds, 4 x 96-Well Plates

The collection is composed of the compounds described as the "Informer Set" in the publication "Harnessing Connectivity in a Large-Scale Small-Molecule Sensitivity Dataset." by Seashore-Ludlow B, Rees MG, Cheah JH, Cokol M, Price EV, Coletti ME, Jones V, Bodycombe NE, Soule CK, Gould J, Alexander B, Li A, Montgomery P, Wawer MJ, Kuru N, Kotz JD, Hon CS, Munoz B, Liefeld T, Dančík V, Bittker JA, Palmer M, Bradner JE, Shamji AF, Clemons PA, Schreiber SL. Cancer Discov. 2015 Nov;5(11):1210-23. PMID: 26482930. The Informer Set contains all FDA-approved agents, clinical candidates, and small-molecule probes of the Informer Set that were commercially available. Overall, this

Informer Set targets nearly 250 distinct proteins, encompassing a broad range of cell circuitry relevant to cancer cell line growth and survival. These compounds were tested in 16-point concentration response curves for sensitivity in 860 publicly available human cancer cell lines. All of the data from these studies were deposited in a publically accessible Cancer Therapeutic Response Portal (CTRP v2) database. Compounds are present at 10mM in DMSO.

Prestwick Chemical Library — **1,280 Compounds, 16 x 96-Well Plates**

The Prestwick Chemical Library® contains 100% approved drugs (FDA, EMEA and other agencies), presenting a high degree of drug-likeliness. The active compounds were selected for their high chemical and pharmacological diversity as well as for their known bioavailability and safety in humans. Compounds are present at 10mM in DMSO.

Microsource Spectrum Collection — **2,000 Compounds, 25 x 96-Well Plates**

US Drug Collection

The US Drug Collection is an important collection of 1040 drugs that have reached clinical trial stages in the USA. Each compound has been assigned USAN, USP or NF status and is included in the USP Dictionary (U.S. Pharmacopeia, 2005), the authorized list of established names for drugs in the USA. Compounds are present at 10mM in DMSO.

NatProd Collection

The NatProd Collection is the ultimate in chemical diversity. This unique collection of 800 pure natural products and their derivatives, includes simple and complex oxygen heterocycles, alkaloids, sequiterpenes, diterpenes, pentacyclic triterpenes, sterols, and many other diverse representatives. Compounds are present at 10mM in DMSO.

Killer Collection

The Killer Collection comprises a collection of 160 synthetic and natural toxic substances. These reference compounds provide an unprecedented opportunity to tease and test your assay. Inhibitors of DNA/RNA synthesis, cellular respiration, cytotoxic agents, antiproliferatives, immune suppressants, endocrine disruptors, and other experimental and therapeutic agents. Compounds are present at 10mM in DMSO.

Sigma-Aldrich LOPAC Collection — **1,280 Compounds, 16 x 96-Well Plates**

A collection of pharmacologically-active Sigma compounds including the latest, drug-like molecules in the fields of cell

signaling and neuroscience against a diverse number of targets such as G-proteins and cyclic nucleotides, gene regulation & expression, apoptosis, on channels, lipid signaling, multi-drug resistance, neurotransmission and phosphorylation. Compounds are present at 10mM in DMSO.

National Cancer Institute **2,815 Compounds, 35 x 96-Well Plates**

Mechanistic Set **11 x 96-Well Plates**

The mechanistic diversity set, which consists of 879 compounds, was derived from the 37,836 open compounds that have been tested in the NCI human tumor 60 cell line screen. In contrast to the original diversity set of 1,990 compounds, which was chosen on the basis of structural diversity, this mechanistic diversity set was chosen to represent a broad range of growth inhibition patterns in the 60 cell line screen, based on the GI50 activity of the compounds. Compounds that have been tested in the 60 cell line screen were clustered using the FASTCLUS procedure in the SAS statistical package. This algorithm is based on MacQueen's k-means algorithm, which minimizes the sum of squared distances from the cluster means. The procedure resulted in 1272 clusters. A single representative compound from each cluster, for which an adequate supply of material was available, was chosen. Some clusters are not represented in the set, as insufficient material was available. All compounds in this set are 1mM in 100% DMSO.

Diversity Set III **20 x 96-Well Plates**

The diversity set was derived from the almost 140,000 compounds available on plates. Only compounds for which at least one gram of material is available were considered. This was done to allow a large number of copies to be made and to assure adequate amounts to supply refill requests. The 80,000 compounds meeting this criterion were then reduced to the final set using the program Chem-X (Oxford Molecular Group). Chem-X uses defined centers (hydrogen bond acceptor, hydrogen bond donor, positive charge, aromatic, hydrophobic, acid, base) and defined distance intervals to create a particular finite set of pharmacophores. 3-point pharmacophores were used with the default settings, resulting in almost 1,000,000 possible pharmacophores. The selection protocol considers each molecule, all its pharmacophores and each of its conformational isomers. During the generation of the diversity set, the pharmacophores for any candidate compound are compared to the set of all pharmacophores found in structures already accepted into the set. If the current structure has more than 5 new pharmacophores, it is added to the set. An additional objective with the NCI Diversity Set III was to create a diverse set of compounds that were amenable to forming structure-based hypotheses. Thus, molecules that were relatively rigid, with 5 or fewer rotatable bonds,

having a tendency to be planar, 1 or less chiral centers, and pharmacologically desirable features (i.e., did not contain: obvious leaving groups, weakly bonded heteroatoms, organometallics, polycyclic aromatic hydrocarbons, etc.) were given priority in the final selection. This resulted in a set of 3046 compounds. This set was sent to the Molecular Libraries Small Molecular Repository where they were checked for purity via LC/Mass Spec. Only compounds with a purity of 90% or better by this method were accepted. This resulted in a final set of 1597 compounds. All compounds in this set are 10mM in 100% DMSO.

Approved Oncology Set VIII **2 x 96-Well Plate**

This plated set (2 microtiter plates/set) contains most current FDA-approved anticancer drugs. The current set (AODIV) consists of 101 agents and is intended to enable cancer research, drug discovery and combination drug studies. All proprietary agents in this set were obtained through commercial sources. This collection was updated in 2018 to contain all of the drugs currently described in the AOD-VIII Collection. All compounds in this set are 10mM in 100% DMSO.

Natural Products Set II **2 x 96-Well Plates**

The Natural Products Set II (successor to the original Natural Products Set) consists of 120 compounds that were selected from the DTP Open Repository collection of 140,000 compounds. Factors in selection were origin, purity (>90% by ELSD, major peak has correct mass ion), structural diversity and availability of compound. This set was created in response to numerous drug discovery research groups that expressed a desired to study a variety of scaffold structures having multiple functional groups.

Small Molecule Diversity Collections for High Throughput Discovery

Maybridge HitFinder Collection **14,400 Compounds, 180 x 96-Well Plates**

The HitFinder Collection maintains the structural diversity of the Maybridge Screening Collection by using an industry standard clustering algorithm based on Daylight Fingerprints and Tanimoto similarity to select a statistically representative sample of the full Collection of over 56,000 smal molecules. Users of the HitFinder™ Collection therefore gain cost-effective access to the richness of the Maybridge Screening Compounds with rapid access to “hit” analogues for validation and follow-up studies. Compounds are present at 10mM in DMSO.

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