L1000	Approved Drug Library	2040	cpds

Traditional de novo drug discovery and development involves an HTS campaign for de novo candidate hits and requires highly specialized screening facilities and compound libraries containing several million compounds. It is a time consuming and expensive process. As the regulation for drug safety and efficacy is increasingly getting complex, the cost of developing new drugs is keeping skyrocket. Drug repositioning, also known as old drugs for new uses, is an effective strategy to find new indications for existing drugs and has recently drawn attention and has led to several blockbuster drugs because of its high efficiency and low-cost. High-content screens, new biomarkers, noninvasive imaging techniques, and advanced in bioinformatics have created new opportunities for pursuing novel indications for approved compounds.

Approved drugs all have known and well-characterized bioactivities, safety and bioavailability – properties which could dramatically accelerate drug development and optimization. Hits from this set will provide a significant head start in any drug optimization program.

In addition, a growing number of compounds have been identified from this library that can functionally replace reprogramming transcription factors, enhance efficiency of iPSC generation and accelerate the reprogramming process by single use or a combination of several molecules.

- A unique collection of 2040 approved drugs for high throughput screening (HTS) and high content screening (HCS);
- All compounds collected in this library are drugs approved by Food and Drug Administration (FDA), the European Medicine Agency (EMA), or China Food and Drug Administration (CFDA), or included in the US Pharmacopeia (USP) Dictionary, the British Pharmacopoeia (BP), the European Pharmacopoeia (EP), the Japanese Pharmacopoeia (JP), or Chinese Pharmacopoeia (CP) Dictionary;
- An effective tool for discovering new with old drugs and new drug target identification;
- Covers various research areas, such as Cancer, Cardiovascular disease, GPCR/G protein, Neuroscience, Membrane Transporter/Ion Channel, Microbiology & Virology, Immunology/Inflammation, Tyrosine Kinase/Adaptors, etc.
- More detailed compound information with structure, target, activity, IC50 value, and brief introduction;
- Structurally diverse, medicinally active, and cell permeable;
- NMR and HPLC validated to ensure high purity and quality;

L1200	Epigenetics Compound Library	380	cpds

Epigenetics is the study of molecular processes that influence the flow of information between a constant DNA sequence and variable gene expression patterns. This includes investigation of nuclear organization, DNA methylation, histone modification and RNA transcription. Epigenetic processes can result in intergenerational (heritable) effects as well as clonal propagation of cell identity without any mutational change in DNA sequence. Epigenetics has the potential to be a key element in a paradigm change of our understanding of aging, development, cancer, heart disease, psychological disorders, and other diseases. For example, Epigenetic modifications have a considerable effect on cancer. Changes in the pattern of histone modifications in the promoter sequences as epigenetic regulation lead to changes in chromatin structure thus may be the cause of altered gene expression by activation of oncogenes.

The Epigenetics Compound Library by TargetMol, containing 380 compounds related to epigenetic regulation, can be used for research in epigenetics, high throughput screening and high content screening for new drugs in epigenetic modification.

- A unique collection of 380 compounds related to epigenetic regulation for high throughput screening (HTS) and high content screening (HCS) for new drugs;
- Bioactivity and safety confirmed by pre-clinical research and clinical trials, and some of them are approved by FDA;
- Targets include HDAC, SIRT, HAT, and HMT, etc;
- Detailed compound information with structure, target, activity, IC50 value, and biological activity description;
- Structurally diverse, medicinally active, and cell permeable;
- NMR and HPLC validated to ensure high purity and quality;

L1300	PI3K-AKT-mTOR Compound Library	190	cpds

ThePI3K/AKT/mTOR pathway is an intracellular signaling pathway important in regulating the cell cycle. Therefore, it is directly related to cellular quiescence, proliferation, cancer, and longevity. Phosphatidylinositol 3-kinase (PI3K), AKT, a serine/threonine protein kinase also known as protein kinase B (PKB), and mammalian target of rapamycin (mTOR) are 3 major nodes in the pathway. PI3Kactivationphosphorylatesand activates AKT, localizing it in the plasma membrane. AKT can have a number of downstream effects such as activating CREB, inhibiting p27, localizing FOXO in the cytoplasm, activating PtdIns-3ps, and activating mTOR which can affect transcription of p70 or 4EBP1. mTOR is a component of the PI3K/AKT cell survival pathway that monitors the availability of nutrients, mitogenic signals and cellular energy and oxygen levels, a major regulator of the autophagic process, and alterations in components of the mTOR pathway have a major role in tumor progression. Therefore, mTOR is an appealing therapeutic target in many tumors. Encouraging data from preclinical studies have offered new opportunities to fully exploit the therapeutic potential of mTOR targeting in cancer.

The PI3K/Akt/mTOR Compound Library by TargetMol, containing 190 compounds targeting PI3K/Akt/mTOR signaling, can be used for high throughput screening and high content screening for new drugs.

- A unique collection of 190 compounds targeting PI3K/Akt/mTOR signaling for research in PI3K/Akt/mTOR signaling, and drug discovery in diseases involved with PI3K/Akt/mTOR signaling;
- Effective tool for studying cell growth, proliferation, and apoptosis;
- Targets include AKT, AMPK, mTOR, PI3K, ATR/ATM, etc;
- Detailed compound information with structure, target, activity, IC50 value, and biological activity description;
- Structurally diverse, medicinally active, and cell permeable;
- NMR and HPLC validated to ensure high purity and quality;

L1400	MAPK Inhibitor Library	140	cpds

Mitogen-activated protein kinases (MAPKs) are a highly conserved family of serine/threonine protein kinases involved in a variety of fundamental cellular processes such as proliferation, differentiation, motility, stress response, apoptosis, and survival. A broad range of extracellular stimuli including mitogens, cytokines, growth factors, and environmental stressors stimulate the activation of one or more MAPKK kinases (MAPKKKs) via receptor-dependent and -independent mechanisms. MAPKKKs then phosphorylate and activate a downstream MAPK kinase (MAPKK), which in turn phosphorylates and activates MAPKs.

The MAPK Inhibitor Library by TargetMol, containing 140 compounds targeting MAPK signaling, can be used for research in MAPK signaling, and drug screening for related diseases.

- A unique collection of 140 compounds targeting MAPK signaling for drug discovery in MAPK related diseases;
- Bioactivity and safety confirmed by pre-clinical research and clinical trials, and some of them are approved by FDA;
- Targets include ERK, JNK, MEK, p38, MAPK, Raf, RSK, MNK, etc;
- Detailed compound information with structure, target, activity, IC50 value, and biological activity description;
- Structurally diverse, medicinally active, and cell permeable;
- NMR and HPLC validated to ensure high purity and quality;

L2200	Tyrosine kinase inhibitor library	339	cpds

A protein kinase is a kinase enzyme that modifies other molecules, mostly proteins, by chemically adding phosphate groups to them (phosphorylation) to regulate the majority of cellular pathways, especially those involved in signal transduction. Phosphorylation usually results in a functional change of the target protein (substrate) by changing enzyme activity, cellular location, or association with other proteins. Of the 518 known kinases, the most successful class for drug targeting is the tyrosine kinase family consisting of 90 distinct and diverse members. Abnormal expression of PTK usually leads to cell proliferation disorders, and is closely related to tumor invasion, metastasis and tumor angiogenesis. More recently, PTKs play a pivotal role in inflammatory diseases such as idiopathic pulmonary fibrosis.

The Tyrosine Kinase Inhibitors Library by TargetMol, containing 339 tyrosine kinase inhibitors, can be used for research in tyrosine kinase signaling, and drug screening for related diseases.

- A unique collection of 339 tyrosine kinase inhibitors for high throughput screening and high content screening for drug discovery in tyrosine kinase related diseases;

- Bioactivity and safety confirmed by pre-clinical research and clinical trials, and some of them are approved by FDA;
- Targets include c-Kit, c-Met, EGFR, FGFR, SRC, JAK, SYK, Btk, Bcr-Abl, etc;
- Detailed compound information with structure, target, activity, IC50 value, and biological activity description;
- Structurally diverse, medicinally active, and cell permeable;
- NMR and HPLC validated to ensure high purity and quality;

L2300	Ion Channel Inhibitor Library	362	cpds

Given the central functional role that the ion channel superfamily plays in human physiology, its membrane localization, and the diverse tissue distribution of different members of the family, it represents an attractive potential target class for drug discovery. Ion channels play a fundamental role in the way cells communicate. This communication between cells allows for the orchestration of physical and mental activities in humans. A number of diseases occur when ion channels do not function properly. Some examples are diabetes, neuropathic pain, cardiovascular diseases, asthma, epilepsy, and neurodegenerative disease, etc.

The Ion Channel Inhibitor Library by TargetMol, containing 362 compounds targeting ion channels, can be used for research in ion channel, high throughput screening and high content screening for ion channel drug discovery.

- A unique collection of 362 compounds targeting ion channels for research in ion channels-related diseases and ion channel drug discovery;
- Bioactivity and safety confirmed by pre-clinical research and clinical trials, and some of them are approved by FDA;
- Targets include potassium channel, calcium channel, sodium channel, Proton pump, etc;
- Detailed compound information with structure, target, activity, IC50 value, and biological activity description;
- Structurally diverse, medicinally active, and cell permeable;
- NMR and HPLC validated to ensure high purity and quality;

L2400	Endocrinology-Hormones Library	297	cpds

Endocrine glands are made of a group of cells that secrete their products, hormones, directly into the blood rather than through a duct. Hormones are transported by the circulatory system to target distant organs to regulate physiology and behavior, such as metabolism, growth, development, and reproduction. Hormones have diverse chemical structures, mainly of 3 classes: eicosanoids, steroids, and amino acid/protein derivatives. Endocrine disease is characterized by irregulated hormone release, inappropriate response to signaling, lack of a gland, or structural enlargement in a critical site such as the thyroid.

The Endocrinology-Hormones Compound Library by TargetMol, containing 297 compounds targeting endocrine system, can be used for research in endocrine system, high throughput screening and high content screening for new drugs in endocrine diseases.

- A unique collection of 297 compounds targeting endocrine system for high throughput screening (HTS) and high content screening (HCS) for new drugs;
- Bioactivity and safety confirmed by pre-clinical research and clinical trials;
- Targets include Estrogen receptor, thyroid hormone receptor, Adrenergic receptors, etc;
- Detailed compound information with structure, target, activity, IC50 value, and biological activity description;
- Structurally diverse, medicinally active, and cell permeable;
- NMR and HPLC validated to ensure high purity and quality;

L2600	Neuronal Signaling Compound Library	840	cpds

Communication between and within neurons is critical for all functions of the nervous system, from development to aging, through health and disease. The last decade has seen huge advances in our knowledge of the molecular, cellular and systematic signaling pathways within the nervous system. There have been significant breakthroughs in studies on the signaling pathways that underlie neurogenesis, addiction and autism spectrum disorders, as well as the pathophysiology and treatment of mood disorders. G protein-coupled receptors (GPCRs), including 5-HT receptors, histamine receptors, opioid receptors, are the largest family of signaling proteins to neuronal signaling. Changes in the GPCRs functioning can cause diseases many Neurological

Disorders; Notch signaling is essential for proliferation, survival, self-renew, and differentiation of neural stem cells (NSCs). Notch signaling in neurons, glia and NSCs may be involved in pathological changes that occur in disorders such as stroke, Alzheimer's disease and CNS tumors. Therefore, the potential of agents that target notch signaling could be used as therapeutic interventions for several different CNS disorders.

The Neuronal Signaling Compound Library by TargetMol, containing 840 compounds targeting CNS signaling, can be used for high throughput screening and high content screening for new drugs in neurological disorders.

- A unique collection of 840 compounds targeting CNS signaling for high throughput screening (HTS) and high content screening (HCS) for new drugs;
- Bioactivity and safety confirmed by pre-clinical research and clinical trials;
- Targets include 5-HT receptor, AChR, Histamine receptor, dopamine receptor, Opioid receptor, etc;
- Detailed compound information with structure, target, activity, IC50 value, and biological activity description;
- Structurally diverse, medicinally active, and cell permeable;
- NMR and HPLC validated to ensure high purity and quality;

L2900	Oxidation-Reduction Compound Library	118	cpds

L3200	Autophagy Compound Library	623	cpds

Autophagy is the natural, regulated mechanism of the cell that disassembles unnecessary or dysfunctional components. Targeted damaged cytoplasmic constituents are isolated from the rest of the cell within a double-membraned vesicle known as an autophagosome. The autophagosome eventually fuses with lysosomes and the contents are degraded and recycled. Autophagy, cellular senescence, and apoptosis are three key responses of a cell facing a stress, correlating with each other. It has been reported that defects of autophagy are associated with genomic damage, metabolic stress, and tumorigenesis. The Autophagy Compound library by TargetMol contains 623 compounds with defined autophagy-inducing or -inhibitory activity, and is a useful tool for studying the roles of pro- and anti-autophagic molecules in cells as well as for use in in vitro applications.

- A unique collection of 623 compounds with defined autophagy-inducing or -inhibitory activity for research in autophagy, high throughput screening (HTS) and high content screening (HCS) for new drugs;
- Bioactivity and safety confirmed by pre-clinical research and clinical trials;
- Targets include Autophagy inducers, Autophagy inhibitors, Proteasome, HIF, HDAC, Aurora Kinase, E3 Ligase, mTOR, etc;
- Detailed compound information with structure, target, activity, IC50 value, and biological activity description;
- Structurally diverse, medicinally active, and cell permeable;
- NMR and HPLC validated to ensure high purity and quality;

L3700	JAK STAT Compound Library	145	cpds

Cell signal transduction is the transmission of molecular signals via various proteins in a signaling cascade, which carries and amplifies the signal. The JAK-STAT signaling pathway communicates information from chemical signals outside of a cell to the cell nucleus, resulting in the activation of genes through a process called transcription. There are three key parts of JAK-STAT signaling: Janus kinases (JAKs), Signal Transducer and Activator of Transcription proteins (STATs), and receptors (which bind the chemical signals). JAK-STAT signaling pathway is a chain of interactions between proteins in a cell, and is involved in processes such as immunity, cell division, cell death and tumor formation. Disrupted JAK-STAT signaling may lead to a variety of diseases, such as skin conditions, cancers, and disorders affecting the immune system. There are 4 JAK proteins: JAK1, JAK2, JAK3andTYK2, and there are 7 STAT proteins: STAT1, STAT2, STAT3, STAT4, STAT5A, STAT5BandSTAT6.

JAK/STAT Compound Library from TargetMol, a unique collection of 145 compounds targeting JAK/STAT signaling, can be used for research in JAK/STAT signaling and related drug screening (high throughput and high content screening).

- A unique collection of 145 JAK/STAT signaling targeted compounds for high throughput and high content screening;
- Effective tool for studying the JAK/STAT targets;
- Bioactivity and safety confirmed by pre-clinical research and clinical trials;

- Detailed compound information with structure, target, activity, IC50 value, and biological activity description;
- Structurally diverse, medicinally active, and cell permeable;
- NMR and HPLC validated to ensure high purity and quality;

L3900	DNA Damage _ Repair Compound Library	475	cpds

A significant barrier to effective cancer therapy is the development of resistance to the drugs utilized, therefore, identifying new biological targets and designing new drugs becomes one of the most important strategies. Among the various potential targets, DNA damage and repair system in cancer cells is one of the most pivotal targets. The use of unspecific antibiotics to treat bacterial infections has caused a great deal of multiple resistant strains making less effective the current therapies with antibiotics. Developing inhibitors of DNA repair and related pathways in pathogens will have utility in the treatment of infections.

The TargetMol's DNA Damage & Repair Compound Library, a unique collection of 475 DNA Damage & Repair related compounds, can be used for research in DNA damage and repair, and high throughput screening (HTS) and high content screening (HCS).

- A unique collection of 475 DNA Damage & Repair related compounds for high throughput screening (HTS) and high content screening (HCS);
- Targets include HDAC, DNA/RNA synthesis, Topoisomerase, etc.;
- Safety and effectiveness of the small molecules have been demonstrated through preclinical and clinical research;
- Detailed compound information with structure, target, activity, IC50 value, and biological activity description;
- Structurally diverse, medicinally active, and cell permeable;
- NMR and HPLC validated to ensure high purity and quality;

L4300	Wnt_Hedgehog_Notch Compound Library	74	cpds

The Wnt signaling pathway is an ancient and evolutionarily conserved pathway that regulates crucial aspects of cell fate determination, cell migration, cell polarity, neural patterning and organogenesis during embryonic development. Aberrant regulation of the Wnt signaling pathway is a prevalent theme in cancer biology. The Hedgehog (Hh) pathway is a major regulator of many fundamental processes in vertebrate embryonic development including stem cell maintenance, cell differentiation, tissue polarity and cell proliferation. Constitutive activation of the Hh pathway leading to tumorigenesis is seen in basal cell carcinomas and medulloblastoma. A variety of other human cancers, including brain, gastrointestinal, lung, breast and prostate cancers, also demonstrate inappropriate activation of this pathway. Targeting the Hh signaling pathway provides a new and exciting therapeutic option for a broad variety of cancers. The Notch signaling pathway is a highly conserved cell signaling system present in most multicellular organisms. The Notch signaling cascade is critical for cell proliferation, differentiation, development and homeostasis. Deregulated Notch signaling is found in various diseases, such as T-cell leukemia, breast cancer, prostate cancer, colorectal cancer and lung cancer as well as central nervous system (CNS) malignancies, CADASIL, Alagille syndrome, spondylocostal dysostosis, etc.

Wnt/Hedgehog/Notch Compound Library from TargetMol, a unique collection of 74 Wnt/Hedgehog/Notch signaling targeted compounds, can be used for research in Wnt/Hedgehog/Notch signaling and related drug screening (high throughput and high content screening).

- A unique collection of 74 Wnt/Hedgehog/Notch signaling targeted compounds for high throughput and high content screening;
- Bioactivity and safety confirmed by pre-clinical research and clinical trials;
- Detailed compound information with structure, target, activity, IC50 value, and biological activity description;
- Structurally diverse, medicinally active, and cell permeable;
- NMR and HPLC validated to ensure high purity and quality;

L5100	Fluorochemical Library	586	cpds

Fluorine atoms have a unique combination of electronic and physical properties. As such, when incorporated into active pharmaceutical ingredients (APIs), fluorine atoms often influence their protein binding affinity and lipophilicity but not the shape of the resulting fluorochemicals. Fluorination can thus significantly impact the bioavailability or metabolic stability of drug substances.

The pivotal role that the element fluorine plays in modulating the properties of bioactive molecules is reflected by the growth of its presence in approved drugs, as evidenced by the fact that between 15% to 20% of all medicines and agrochemicals on the market contain at least one fluorine atom in their structure. As of 2009, the FDA had approved >140 fluorine-containing drugs, such as fluorouracil, Miglitol, Gemcitabine, Sofosbuvir, atorvastatin, fluoxetine, ciprofloxacin, etc.

The judicious introduction of fluorine into a molecule can productively influence conformation, pKa, intrinsic potency, membrane permeability, metabolic pathways, and pharmacokinetic properties.

Nowadays, the application of specialty fluorochemicals in the pharmaceutical industry has been increasingly widespread. TargetMol's fluorochemical library has become an effective tool for developing new anticancer drugs, anesthetics, antidepressants, antifungals, antiviral drugs, antibiotics, cholesterol lowering agents, and anti-inflammatory agents. In addition, in agricultural uses, the addition of fluorine to many agricultural herbicides, pesticides, and fungicides improves the potency and therefore reduces the required application rate of these substances.

- A unique collection of 586 fluorochemicals that can be used for high through-put screening (HTS) and high content screening (HCS);
- Bioactivity and safety confirmed by pre-clinical research and clinical trials, and some of them are approved by FDA;
- Detailed compound information with structure, target, activity, IC50 value, and biological activity description;
- NMR and HPLC validated to ensure high purity and quality;

L5200	Anti-Metabolism disease Compound Library	816	cpds

Metabolism is the set of life-sustaining chemical reactions involved in maintaining the living state of the cells and the organism, including catabolism and anabolism, and is one way the body maintains homeostasis. The main focus in metabolism research area is the biological regulatory mechanism and its role in obesity, diabetes, cardiovascular diseases, and cancer. The unique collection of 816 small chemicals targeting metabolism diseases will provide the support for metabolism research and related drug screening.

- A unique collection of 816 metabolism diseases related compounds for high throughput screening (HTS) and high content screening (HCS);
- Bioactivity and safety confirmed by pre-clinical research and clinical trials and most of them are approved for marketing by FDA, EMA, or CFDA;
- Covers various major targets including CYP, FAAH, IDO, MAO, etc., in diabetes, obesity, hypertriglyceridemia, hypercholesterolemia, etc.; Effective tool for cell metabolism research;
- Detailed compound information with structure, target, activity, IC50 value, and biological activity description;
- Structurally diverse, medicinally active, and cell permeable;
- NMR and HPLC validated to ensure high purity and quality;

L5300	Mitochondrial Targeting Compound Library	64	cpds

The mitochondrion is a double-membrane-bound discrete organelle found in most eukaryotic organisms, generating most of the cell's supply of adenosine triphosphate (ATP) and controlling the cellular basal metabolic rate, called as the cell's powerhouses. In addition to supplying cellular energy, mitochondria are the major source of ROS (reactive oxygen species) that reflect the level of cellular oxidative stress and play an important role in mitochondria ROS signaling such as apoptosis, proliferation, and aging, etc. In addition, the fine modulation of mitochondrial calcium (Ca^{2+}) homeostasis plays a fundamental role in many of the processes involving this organelle. Mitochondrial Ca^{2+}accumulation is a tightly controlled process, in turn regulating functions as diverse as aerobic metabolism and induction of cell death. Mitochondrial DNA mutations may lead to many mitochondrial metabolic disorders, and are thought to contribute to aging by promoting apoptosis. Mitochondria therefore represent an attractive drug

target for metabolic diseases, neurodegeneration, or hyperproliferative diseases (cancer). A number of pre-clinical and clinical data have shown that mitochondria as drug targets have great potential. Small molecule drugs or biologics can act on mitochondria through various pathways including ETC inhibition, OXPHOS uncoupling, mitochondrial Ca2+modulation, and control of oxidative stress via decrease or increase of mitochondrial ROS accumulation.

Mitochondrial Targeting Compound Library from TargetMol, a unique collection of 64 compounds targeting mitochondria, can be used for research in mitochondrial medicine and related target study.

- A unique collection of 64 promising or approved mitochondria-targeted compounds including Idebenone, the only approved drug targeting mitochondria, for research in mitochondrial medicine;
- Targets include mitochondria related targets, such as ATPase, mitochondria-associated hexokinase, Bcl-2, NADP, etc. and inhibitors for the autophagy initiating factor, ULK1, also include other promising mitochondria-targeted compounds such as lonidamine, paclitaxel, etc;
- Bioactivity and safety confirmed by pre-clinical research and clinical trials;
- Detailed compound information with structure, target, activity, IC50 value, and biological activity description;
- Structurally diverse, medicinally active, and cell permeable;
- NMR and HPLC validated to ensure high purity and quality;

L6000	Natural Compound Library	1680	cpds

Natural products are an unsurpassed source of chemical diversity and an ideal starting point for any screening program for pharmacologically active small molecules. Historically, natural products have been the most successful source of new drugs. From 1981 to date, 79 (80%) out of 99 small molecule anticancer drugs are natural product-based/inspired, with 53 (53%) being either natural products or derived therefrom. Natural products have been proven to be successful modulators of difficult targets such as a range of antibacterial targets and, especially, protein–protein interactions. Furthermore, many researchers consider natural products and their derivatives as a privileged tool for the study and manipulation of protein function.

The TargetMol's Natural Product Monomers (HTS) Library, a unique collection of 1680 natural products with known bioactivity, wide source, and high cost effectiveness, is a powerful tool for drug discovery, pharmacological study, and stem cell differentiation, etc.

- A unique collection of 1680 pure natural products and their derivatives with known biological activity for drug discovery, pharmacological study, and stem cell differentiation, and can be used for high throughput screening (HTS) and high content screening (HCS);
- All products with known biological activity:
- Documentation with clear source: isolated natural products from plant, animal, microorganism, etc.
- Structurally diverse: 1680 natural products, including more than 30 types of chemicals, such as alkaloids, limonoids, sequiterpenes, diterpenes, pentacyclic triterpenes, sterols, and many other diverse representatives which provide the structural diversity inherent in this group;
- Detailed compound information with structure, solubility, target, activity, IC50 value, and biological activity description;
- Cost-effective and competitive price to save your findings.

L8000	Stem Cell Library	340	cpds

Stem cells can differentiate into other types of cells and can divide to produce more of the same type of stem cells. For example, embryonic stem cells can differentiate into all the specialized cells—ectoderm, endoderm and mesoderm. Somatic stem cells are thought to be limited to differentiating into different cell types of their tissue of origin. To generate enough specialized cells or tissues that can be used for specific purposes such as tissue regeneration, cell-based therapies, drug screening, or disease models, scientists (must control the cell fate of pluripotent stem cells) are currently working on methods to effectively differentiate stem cells into functional specialized cells. Natural and synthetic small molecules have been shown to be useful chemical tools for controlling and manipulating the fates of cells. For example, Glycogen synthase kinase 3β (GSK-3β) inhibitor could induce differentiation of neural progenitor cells (NPCs). Bone marrow stromal stem cells (BMSSCs) may have potential to

differentiate in vitro and in vivo into hepatocytes following the treatment of inhibitor of histone deacetylase and some well-defined cytokines.

Stem Cell Differential Compound Library from TargetMol, a unique collection of 340 stem cell differentiation signaling targeted compounds, can be used for stem cell research and related drug screening (high throughput and high content screening).

- A unique collection of 340 stem cell differentiation signaling targeted compounds for high throughput and high content screening;
- Effective tool for research in regenerative medicine, stem cell differentiation signaling, and drug screening based on stem cells;
- Targets include Wnt, GSK-2, Hedgehog, JAK, ROCK, γ-secretase, etc.;
- Detailed compound information with structure, target, activity, IC50 value, and biological activity description;
- Structurally diverse, medicinally active, and cell permeable;
- NMR and HPLC validated to ensure high purity and quality;

L8100	Cell cycle related compound Library	130	cpds

Cell cycle, the ordered sequence of events that occur in acellin preparation for cell division, is also divided into two periods: interphase and the mitotic(M) phase. Interphase itself is split into different phases: G1 phase, S phase and G2 phase. Cell Cycle related compounds rely on differing mechanisms of action to regulate the normal progression of the cell cycle. Some of these compounds interfere with CDK/cyclin complexes leaving cells stuck at the G2/M phase border, while others affect CaMKII phosphorylation, inducing arrest at the G1phase. Other mechanisms of action include interference with RNA function and inhibition of protein synthesis. Many of these compounds ultimately induce apoptosis as a result of their interruption of the cell cycle. This library can be used for anti-cancer drug screening.

The TargetMol's Cell Cycle Compound Library, a unique collection of 130 cell cycle related compounds, can be used for research in cell cycle and related drug screening.

- A unique collection of 130 cell cycle related compounds for high throughput screening (HTS) and high content screening (HCS);
- Targets include CDK, ROCK, Aurora Kinase, ATM/ATR, DNA-PK, DNA/RNA Synthesis, etc.;
- Effective tool for research in cell cycle and related diseases, such as cancer, cardiovascular diseases, inflammation, neurodegenerative diseases, etc.;
- Safety and effectiveness of the small molecules have been demonstrated through preclinical and clinical research, and some of them are FDA approved;
- Detailed compound information with structure, target, activity, IC50 value, and biological activity description;
- Structurally diverse, medicinally active, and cell permeable;
- NMR and HPLC/LCMS validated to ensure high purity and quality;

L9000	Apoptosis Compound Library	191	cpds

Apoptosis is a form of programmed cell death that occurs in multicellular organisms. In contrast to necrosis, which is a form of traumatic cell death that results from acute cellular injury, apoptosis is a highly regulated and controlled process that confers advantages during an organism's lifecycle. Apoptosis leads to characteristic cell changes (morphology): the cell breaks apart into multiple vesicles called apoptotic bodies, which undergo phagocytosis. Apoptosis is regulated by both pro-apoptotic (such as Fas receptor and caspases) and anti-apoptotic (such as Bcl-2 and IAP) factors. Disordered apoptosis is implicated in a variety of human diseases. Inhibition of apoptosis can result in a number of cancers, autoimmune diseases, inflammatory diseases, and viral infections. Excessive apoptosis may also be a feature of some conditions such as autoimmune diseases, neurodegenerative diseases, and ischemia-associated injury. Consequently, considerable interest has arisen in therapeutic strategies for cancer, autoimmune diseases, and neurodegenerative diseases by modulating apoptosis pharmacologically.

TargetMol's collection of 191 apoptosis-related compounds, Apoptosis Compound Library, is divided accordingly with compounds designed for either pro- or anti-apoptosis purposes and can be used for research in cancer and neurodegenerative diseases.

- A unique collection of 191 apoptosis-related compounds for apoptosis research, research in tumorigenesis, and anti-cancer drug screening;
- Targets include Bcl-2, Caspase, p53, TNF-alpha, and surviving, etc.;
- Bioactivity and safety confirmed by pre-clinical research and clinical trials, and some of them are approved by FDA;
- Detailed compound information with structure, target, activity, IC50 value, and biological activity description;
- Structurally diverse, medicinally active, and cell permeable;
- NMR and HPLC validated to ensure high purity and quality;

L4000	Bioctive Compound Library	5370	cpds

It contains more than 5370 small molecule compounds, with known biological activities causing biological reaction in cells, tissue even whole body, including Clinical compound library (L3400), Preclinical compound library (L3410), and Approved drug library (L1000). All compounds have clear targets and detailed information description, which is the key point to drug research and development like drug repurposing, small molecule inducing stem cell differentiation, and target identification in mechanism interrogation.

Many scientists have identified small molecules that can regulate cell fate and function, and stem cell differentiation by screening annotated bioactive compound library with confirmed activity and known targets. Recent advances in iPSC technology have made reprogramming of somatic cells towards pluripotency possible and simpler. Using both phenotypic screening and hypothesis-driven approaches, a growing number of compounds have been identified that can functionally replace reprogramming transcription factors, enhance efficiency of iPSC generation and accelerate the reprogramming process by single use or a combination of several molecules with success in cardiomyocyte differentiation and proliferation, neural progenitor cells, etc.

- A collection of 5370 small molecule compounds with validated activity for high throughput screening (HTS), high content screening (HCS), cell induction, and target identification;
- All compounds have clear targets;
- An effective tool for discovering new with old drugs, cell induction, and new drug target screening;
- Covers various disease research areas, such as Cancer, Metabolism, Immunology and Cardiovascular system, etc.
- Detailed compound information with structure, target, activity, IC50 value, and brief introduction;
- Structurally diverse, medicinally active, and cell permeable;
- NMR and HPLC validated to ensure high purity and quality;