Histone deacetylases (HDACs), that may be called protein deacetylases (PDAC) as some of their targets are non-histone proteins, are a family of eleven zinc-dependent enzymes that have gained major interest as therapeutic targets, mainly in cancer research. Their abnormal expression in many cancer cells modifies the expression of tumour suppressor genes (TSG) and genes involved in normal cellular functions.
**Rocilinostat**

Description: Rocilinostat, previously known as ACY-1215, is an orally bioavailable, specific inhibitor of histone deacetylase 6 (HDAC6) with potential antineoplastic activity. ACY-1215 selectively targets and binds to HDAC6, thereby disrupting the Hsp90 protein chaperone system through hyperacetylation of Hsp90 and preventing the subsequent aggresomal protein degradation. Compared to non-selective HDAC inhibitor, ACY-1215 is able to reduce the toxic effects on normal, healthy cells.

Molecular Weight: 406.36
Molecular Formula: C20H17F3N2O4

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**PTACH**

Description: PTACH is a SAHA-based novel inhibitor of histone deacytelase (HDAC). It exerts potent growth inhibition against various human cancer cells, with EC50 values ranging from 1.1 to 9.1 μM. It shows strong activity in cancer cell growth inhibition assay. It inhibits various cancer cells with EC50 of 2.3, 9.1, 3.0, 2.6, 1.1, 4.5, 2.4, 5.0, and 4.5 μM for MDA-MB-231 breast cancer, SNB-78 central nervous system, HCT116 colon cancer, NCI-H226 lung cancer. It could inhibit the cell growth of a variety of lymphoid malignant cells through apoptosis induction, more effectively than SAHA.

Molecular Weight: 390.56
Molecular Formula: C20H26N2O2S2

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**Tacedinaline**

Description: Tacedinaline, also known as CI-944, is an orally bioavailable substituted benzamide derivative with potential antineoplastic activity. Tacedinaline inhibits histone deacetylation, which may result in histone hyperacetylation, followed by the induction of differentiation, the inhibition of cell proliferation, and apoptosis in susceptible tumor cell populations. Check for active clinical trials or closed clinical trials using this agent.

Molecular Weight: 269.30
Molecular Formula: C15H15N3O2

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**Mocetinostat**

Description: Mocetinostat is a rationally designed, orally available, Class 1-selective, small molecule, 2-aminobenzamide HDAC inhibitor with potential antineoplastic activity. Mocetinostat binds to and inhibits Class 1 isoforms of HDAC, specifically HDAC 1, 2 and 3, which may result in epigenetic changes in tumor cells and so tumor cell death; although the exact mechanism has yet to be defined, tumor cell death may occur through the induction of apoptosis, differentiation, cell cycle arrest; inhibition of DNA repair, upregulation of tumor suppressors, down regulation of growth factors, oxidative stress, and autophagy, among others.

Molecular Weight: 396.44
Molecular Formula: C23H20N6O

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**MC1568**

Description: MC1568 is a selective class II (IIa) histone deacetylases (HDAC II) inhibitor with IC50 of 220 nM and 176-fold class II selectivity (against class I). In human breast cancer ZR-75-1 cell lysates, MC1568 (5 μM) shows no inhibitory activity against HDAC1 but is able to inhibit HDAC4. In MCF-7 cells, MC1568 (20 μM) increases the accumulation of acetylated H3 and H4 histones, as well as the levels of acetyl-tubulin, which indicates a inhibitory effect of MC1568 on HDAC6.

Molecular Weight: 314.31
Molecular Formula: C17H15FN2O3

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**Tasquinimod**

Catalog number: B0084-182348

Description: Tasquinimod is a quinoline-3-carboxamide linomide analogue with antiangiogenic and potential antineoplastic activities. Tasquinimod has been shown to decrease blood vessel density but the exact mechanism of action is not known. This agent has also been shown to augment the antineoplastic effects of docetaxel and androgen ablation in a murine model of prostate cancer involving human prostate cancer xenografts.

Molecular Weight: 406.36
Molecular Formula: C20H17F3N2O4

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**WT-161-CAS 1206731-57-8**

Description: WT-161 is a potent and specific HDAC6 inhibitor (IC50= 0.40 nM). Consistent with WT-161 mediated hyperacetylation and inhibition of hsp90 chaperone function, treatment with WT-161 increased the intracellular levels of polyubiquitylated proteins in the cultured MCL JeKo-1 and Z138 cells. WT-161 was also noted to dose-dependently deplete the levels of cyclin D1 in the cultured MCL cells.

Molecular Weight: 458.55
Molecular Formula: C27H30N4O3

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**EDO-S101-CAS 1236199-60-2**

Description: EDO-S101 is a pan HDAC inhibitor (IC50= 9, 9 and 25 nM for HDAC1, HDAC2 and HDAC3, respectively). EDO-S101 is a first-in-class fusion molecule that combines DNA damaging effect of bendamustine with the pan-HDACi vorinostat.

Molecular Weight: 415.36
Molecular Formula: C19H28Cl2N4O2

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**Sodium Phenylbutyrate-CAS 1716-12-7**

Description: Phenylbutyrate is a well-known HDAC inhibitor, which increases gene transcription of a number of genes, and also exerts neuroprotective effects.

Molecular Weight: 186.18
Molecular Formula: C10H11O2•Na

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**Givinostat-CAS 497833-27-9**

Description: Givinostat (INN) or gavinostat, also known as ITF2357, is a histone deacetylase inhibitor with potential anti-inflammatory, anti-angiogenic, and antineoplastic activities. It is a hydroxamate used in the form of its hydrochloride. Givinostat is in numerous phase II clinical trials (including for relapsed leukemias and myelomas), and has been granted orphan drug designation in the European Union for the treatment of systemic juvenile idiopathic arthritis and polycythaemia vera.

Molecular Weight: 421.49
Molecular Formula: C24H27N3O4

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**Sirtinol-CAS 410536-97-9**

Description: Sirtinol is a SIRT inhibitor. Sirtinol significantly increased the acetylation of p53, which has been reported to be a target of SIRT1/2. Sirtinol significantly increased the G1 phase of the cell cycle.

Molecular Weight: 394.17
Molecular Formula: C26H22N2O2
**Abexinostat-CAS 783355-60-2**
Description: Abexinostat, also known as PCI-24781 or CRA-024781, is novel, broad-spectrum hydroxamic acid-based inhibitor of histone deacetylase (HDAC) with potential antineoplastic activity. Abexinostat inhibits several isoforms of HDAC, resulting in an accumulation of highly acetylated histones, followed by the induction of chromatin remodeling.
Molecular Weight: 397.42
Molecular Formula: C21H23N3O5

**Pracinostat-CAS 929016-96-6**
Description: Pracinostat (SB939) is an orally bioavailable, small-molecule histone deacetylase (HDAC) inhibitor with potential antineoplastic activity. Pracinostat inhibits HDACs, which may result in the accumulation of highly acetylated histones, followed by the induction of chromatin remodeling; the selective transcription of tumor suppressor genes; the tumor suppressor protein-mediated inhibition of tumor cell division; and, finally, the induction of tumor cell apoptosis. This agent may possess improved metabolic, pharmacokinetic and pharmacological properties compared to other HDAC inhibitors.
Molecular Weight: 358.48
Molecular Formula: C20H30N4O2

**Tubastatin A HCl salt-CAS 1310693-92-5**
Description: Tubastatin A is a potent and selective HDAC6 inhibitor. Tubastatin A was substantially more selective than the known HDAC6 inhibitor Tubacin at all isozymes except HDAC8. Tubastatin A is a potent HDAC6 inhibitor with an IC50 value of 15 nM. Tubastatin A induces α-tubulin hyperacetylation at 2.5 μM in primary cortical neuron cultures. In a model of oxidative stress induced by glutathione depletion, tubastatin A displays dose-dependent neuronal protection of primary cortical neuron cultures at 5-10 μM.
Molecular Weight: 371.86
Molecular Formula: C20H21N3O2•HCl

**Nexturastat A-CAS 1403783-31-2**
Description: Nexturastat A is an aryl urea derivative that acts as a potent and highly selective inhibitor of histone deacetylase 6 (HDAC6) (IC50= 5.02 +/- 0.60 nM). Nexturastat A possesses antiproliferative effects against melanoma cells. Histone deacetylases (HDACs) mediate regulation of gene expression via changes in nucleosome conformation. Dysregulation of histone acetylation can lead to the development of cancers. There is renewed interest in capitalizing on new breakthroughs in epigenetic research to address oncology therapy.
Molecular Weight: 341.4
Molecular Formula: C19H23N3O3

**4SC-202-CAS 910462-43-0**
Description: 4SC-202 is a selective and potent, orally available inhibitor of histone deacetylases (HDAC) specific for class 1 HDAC isoenzymes, with IC50 of 1.20 μM, 1.12 μM, and 0.57 μM for HDAC1, HDAC2, and HDAC3, respectively. 4SC-202 also displays inhibitory activity against Lysine specific demethylase 1 (LSD1). In addition, 4SC-202 shows a broad anti-proliferative activity towards human cancer cell lines with a mean IC50 of 0.7 μM.
Molecular Weight: 447.51
Molecular Formula: C23H21N5O3S

**ACY-738-CAS 1375465-91-0**
Description: ACY-738 is a potent and selective HDAC6 inhibitor with improved brain bioavailability. ACY-738 inhibits HDAC6 with low nanomolar potency and a selectivity of 60- to 1500-fold over class I HDACs.
Molecular Weight: 270.29
Molecular Formula: C14H14N4O2
**Givinostat hydrochloride-CAS 199657-29-9**

Description: Givinostat hydrochloride is the hydrochloride salt form of Givinostat. Givinostat, also called as GVS or ITF2357, a potent HDAC inhibitor for Maize HD2 (IC50= 10 nM), HD1-B (IC50= 7.5 nM) and HD1-A (IC50= 16 nM), has antiproliferative and proapoptotic.

Molecular Weight: 457.95
Molecular Formula: C24H28ClN3O4

**ACY-775-CAS 1375466-18-4**

Description: ACY-775 is a selective Histone Deacetylase 6 (HDAC6) inhibitor with low nanomolar potency and a selectivity of 60- to 1500-fold over class I HDACs. ACY-775 has the antidepressant-like properties of other HDAC inhibitors.

Molecular Weight: 330.36
Molecular Formula: C17H19FN4O2

**MI-192-CAS 1415340-63-4**

Description: MI-192 is a selectively histone deacetylases inhibitor (HDACs) that preferentially inhibits HDAC2 with IC50 value of 30 nM and HDAC3 with IC50 value of 16 nM over HDAC1, 4, 6, 7, and 8 (IC50s = 4.8, 5, >10, 4.1, and >10 μM, respectively). MI-192 can promote apoptosis of leukemia cell lines in vitro. It also can attenuate IL-6 production in rheumatoid arthritis PBMCs in vitro.

Molecular Weight: 383.45
Molecular Formula: C24H21N3O2

**ST7612AA1-CAS 1428535-92-5**

Description: ST7612AA1 is a potent Histone deacetylase (HDCA) inhibitor. It showed an in vitro activity in the nanomolar range associated with a remarkable in vivo antitumor activity.

Molecular Weight: 405.51
Molecular Formula: C20H27N3O4S

**Valproic acid sodium salt-CAS 1069-66-5**

Description: Valproic acid is a HDAC inhibitor by selectively inducing proteasomal degradation of HDAC2, used in the treatment of epilepsy, bipolar disorder and prevention of migraine headaches.

Molecular Weight: 166.19
Molecular Formula: C8H15NaO2
Romidepsin-CAS 128517-07-7
Description: Romidepsin strongly inhibits HDAC1 and HDAC2 with IC50 of 1.6 nM and 3.9 nM, respectively, but is relatively weak in inhibiting HDAC4 and HDAC6 with IC50 25 nM and 790 nM, respectively.
Molecular Weight: 421.49
Molecular Formula: C24H36N4O6S2

NKL-22-CAS 537034-15-4
Description: NKL-22 is a HDAC inhibitor with IC 50 value of 78 uM. It is a cell-permeable pimeloylanilide compound which acts as a FXN-(frataxin gene) specific HDAC inhibitor. It increase frataxin protein concentrations. It increase FXN mRNA in FRDA lymphocytes.
Molecular Weight: 325.40
Molecular Formula: C19H23N3O2

Resminostat-CAS 864814-88-0
Description: Resminostat is an orally bioavailable inhibitor of histone deacetylases (HDACs) with potential antineoplastic activity. Resminostat binds to and inhibits HDACs leading to an accumulation of highly acetylated histones. This may result in an induction of chromatin remodeling, inhibition of the transcription of tumor suppressor genes, inhibition of tumor cell division and the induction of tumor cell apoptosis. HDACs, upregulated in many tumor types, are a class of enzymes that deacetylate chromatin histone proteins.
Molecular Weight: 349.40
Molecular Formula: C16H19N3O4S

Belinostat-CAS 866323-14-0
Description: Belinostat is a novel pan-HDAC inhibitor with IC50 of 27 nM, with activity demonstrated in cisplatin-resistant tumors. It inhibits the growth of tumor cells with IC50 from 0.2-0.66 μM in vitro. It shows low activity in A2780/cp70 and 2780AD cells, which are cisplatin and doxorubicin-resistant derivatives of A2780 cells. It could induce apoptosis through PARP cleavage and acetylation of histones H3/H4, it inhibits bladder cancer cell growth, especially in 5637 cells. It could enhance the growth inhibitory activity of docetaxel or carboplatin in OVCAR-3 and A2780 cells. It also shows enhanced tubulin acetylation in ovarian cancer cell lines.
Molecular Weight: 318.35
Molecular Formula: C15H14N2O4S

MS-275 (Entinostat)-CAS 209783-80-2
Description: MS-275 is an inhibitor of histone deacetylases (HDACs) that preferentially inhibits HDAC1 (IC50 = 300 nM) over HDAC3 (IC50 = 8 μM). However, it does not inhibit HDAC8 (IC50 > 100 μM). MS-275 induces cyclin-dependent kinase inhibitor 1A (p21/CIP1/WAF1), slowing cell growth, differentiation, and tumor development in vivo. Recent studies suggest that MS-275 may be particularly useful as an antineoplastic agent when combined with other drugs, like adriamycin, inhibitors of poly (ADP-ribose) polymerase (PARP), or inhibitors of heat shock protein 90 (Hsp90).
Molecular Weight: 376.40
Molecular Formula: C2H20N4O3
**Trichostatin A-CAS 58880-19-6**

Description: Trichostatin A, also known as TSA, is a HDAC inhibitor. TSA inhibits the eukaryotic cell cycle during the beginning of the growth stage. TSA can be used to alter gene expression by interfering with the removal of acetyl groups from histones (histone deacetylases, HDAC) and therefore altering the ability of DNA transcription factors to access the DNA molecules inside chromatin. It is a member of a larger class of histone deacetylase inhibitors (HDIs or HDACs) that have a broad spectrum of epigenetic activities.

Molecular Weight: 302.40
Molecular Formula: C17H22N2O3

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**M344-CAS 251456-60-7**

Description: M344 is a potent HDAC inhibitor, which can also induce expression of the pro-apoptotic genes, Puma and Bax, together with the morphological features of apoptosis, in MCF-7 cells.

Molecular Weight: 307.39
Molecular Formula: C16H25N3O3

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**Scriptaid-CAS 287383-59-9**

Description: Scriptaid is an inhibitor of HDAC. It shows a greater effect on acetylated H4 than H3.

Molecular Weight: 326.35
Molecular Formula: C18H18N2O4

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**Panobinostat-CAS 404950-80-7**

Description: Panobinostat is a cinnamic hydroxamic acid analogue with potential antineoplastic activity. Panobinostat selectively inhibits histone deacetylase (HDAC), inducing hyperacetylation of core histone proteins, which may result in modulation of cell cycle protein expression, cell cycle arrest in the G2/M phase and apoptosis. In addition, this agent appears to modulate the expression of angiogenesis-related genes, such as hypoxia-inducible factor-1alpha (HIF-1α) and vascular endothelial growth factor (VEGF), thus impairing endothelial cell chemotaxis and invasion. HDAC is an enzyme that deacetylates chromatin histone proteins.

Molecular Weight: 349.43
Molecular Formula: C21H23N3O2

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**Dacinostat-CAS 404951-53-7**

Description: Dacinostat, also known as LAQ824, is a hydroxamate histone deacetylase inhibitor with potential anticancer activity. LAQ824 sensitized nonsmall cell lung cancer to the cytotoxic effects of ionizing radiation. LAQ824 reduced clonogenic survival of the H23 and H460 cell lines five-fold compared with controls and four-fold compared with either agent alone (P<0.001). In phase I trials, LAQ824 was well tolerated at doses that induced accumulation of histone acetylation, with higher doses inducing changes consistent with HSP90 inhibition.

Molecular Weight: 379.46
Molecular Formula: C22H25N3O3

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**CUDC-101-CAS 1012054-59-9**

Description: CUDC-101 is a multi-targeted, small-molecule inhibitor of histone deacetylase (HDAC), epidermal growth factor receptor tyrosine kinase (EGFR/ErbB1), and human epidermal growth factor receptor 2 tyrosine kinase (HER2/neu or ErbB2) with potential antineoplastic activity. HDAC/EGFR/HER2 inhibitor CUDC-101 inhibits the activity of these three enzymes but the exact mechanism of action is presently unknown. This agent may help overcome resistance to inhibition of EGFR and Her2 through a simultaneous, synergistic inhibition of EGFR, Her2, and HDAC.

Molecular Weight: 434.49
Molecular Formula: C24H26N4O4
Oxamflatin - CAS 151720-43-3

Description: Oxamflatin, also known as Metacept-3, an aromatic sulfonamide derivative, is a cell-permeable, potent HDAC inhibitor (IC50= 15.7 nM) with antitumor effect.

Molecular Weight: 342.37
Molecular Formula: C17H14N2O4S

Sodium butyrate - CAS 156-54-7

Description: Sodium butyrate is a short chain fatty acid that has effects at the molecular, cellular, and tissue level. It has long been known as an inhibitor of histone deacetylases (HDACs). In cells, this alters the expression of a select group of genes containing butyrate response elements and may also involve Sp1/Sp3 binding sites. Sodium butyrate also induces growth arrest, differentiation and apoptosis in cancer cells, primarily through its effects on HDAC activity. In addition, it suppresses inflammation, in part by reducing the expression of pro-inflammatory cytokines, including interferon-γ, interleukin (IL)-6, and IL-1β.

Molecular Weight: 110.09
Molecular Formula: C4H7NaO2

Valproic acid - CAS 99-66-1

Description: Valproic acid is an inhibitor of histone deacetylase (HDAC) inhibitor, which has an anticancer effect. It is a branched short-chain fatty acid. It is previously synthesized and used as an inert solvent of organic compounds. It has ability in preventing pentylenetetrazol-induced convulsions in rodents and is used as an antiepileptic drug via inhibiting the activity of GABA. It inhibit the degradation of GABA and increase GABA synthesis as well as inhibit GABA Transaminobutyratre. It also blocks Na+ channels, Ca2+ channels and voltage-gated K+ channels.

Molecular Weight: 144.21
Molecular Formula: C8H16O2

Resminostat hydrochloride - CAS 1187075-34-8

Description: Resminostat is an inhibitor of histone deacetylase (HDAC) with IC50 values of 42.5nM, 50.1nM and 71.8nM, respectively against HDAC1, 3 and 6. As an inhibitor of HDACs, resminostat also inhibits HDAC8 with a weak activity (IC50=877nM). 5μM resminostat induces the acetylation of histone H4 in Jurkat cells. 10μM resminostat completely suppresses the cell growth in human myeloma cell lines, such as OPM-2, RPMI-8226 and U266.

Molecular Weight: 385.87
Molecular Formula: C16H20ClN3O4S

UF010-CAS 537672-41-6

Description: UF-010 is a Class I HDAC inhibitor (IC50 values are 0.06, 0.1, 0.5 and 1.5 μM for HDACs 3, 2, 1 and 8, respectively). UF010 inhibits cancer cell proliferation via class I HDAC inhibition. This causes global changes in protein acetylation and gene expression, resulting in activation of tumor suppressor pathways and concurrent inhibition of several oncogenic pathways. The isotype selectivity coupled with interesting biological activities in suppressing tumor cell proliferation support further preclinical development of the UF010 class of compounds for potential therapeutic applications.

Molecular Weight: 271.16
Molecular Formula: C11H15BrN2O2
### Description:
- **BRD73954** is a small molecule inhibitor that potently inhibits both HDAC6 and HDAC8 (IC50s = 36 and 120 nM, respectively). It is at least 75-fold less effective against other HDAC isoforms. At 10 µM, BRD73954 treatment results in a robust increase in acetylation of α-tubulin, a known HDAC6 substrate, but not histone H3, a substrate for HDAC1, 2, and 3, in HeLa cells.

- **Molecular Weight:** 284.31
- **Molecular Formula:** C16H16N2O3

### Description:
- **Remodelin** is a 2-thiazolylhydrazone derivative, is a novel potent and selective inhibitor of the acetyltransferase protein NAT10, which acetylates both histones and microtubules. It can improve nuclear architecture, chromatin organization, and fitness of both human lamin A/C-depleted cells and HGPS-derived patient cells, and decrease markers of DNA damage in these cells. It is a useful chemical tool to study how NAT10 affects nuclear architecture and suggest alternative strategies for treating laminopathies and aging. It also has cytotoxic effects against some species of the fungus Candida.

- **Molecular Weight:** 282.36
- **Molecular Formula:** C15H14N4S

### Description:
- **Vorinostat** inhibits the activities of HDAC1 and HDAC3 with IC50 of 10 nM and 20 nM, respectively. Vorinostat also results in a marked hyperacetylation of histone H4. Vorinostat inhibits the growth of three prostate cancer cell lines LNCaP, PC-3 and TSU-Pr1 at micromolar concentrations (2.5-7.5 µM), and induces dose-dependent cell death in LNCaP cells. Vorinostat treatment in MCF-7 cells inhibits cell proliferation at an IC50 of 0.75 µM resulting in the accumulation of cells in the G1 and G2-M phase of the cell cycle. Vorinostat also induces differentiation in the estrogen receptor-negative cell line SKBr-3 and the retinoblastoma-negative cell line MDA-468.

- **Molecular Weight:** 264.30
- **Molecular Formula:** C14H20N2O3