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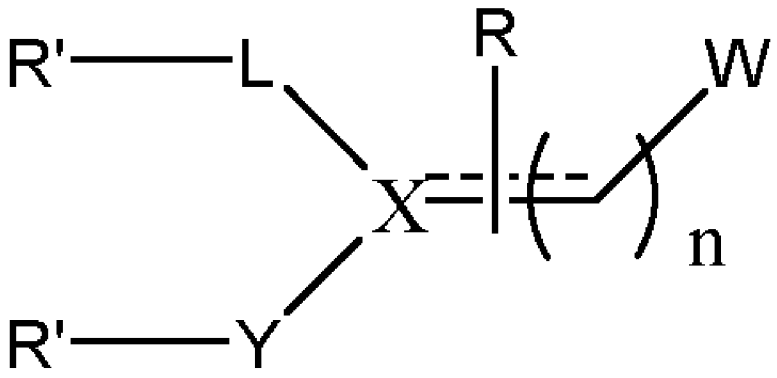

(I)

(57) Abstract: A compound of the formula:(I) or a pharmaceutically acceptable salt thereof, wherein: L is a 5-membered nitrogen-containing heteroaryl which is optionally fused to a benzene; Y is a 5, 6 or 7-membered nitrogen-containing heteroaryl, which is optionally fused to a benzene; and W is a zinc-binding group. The compounds are HDAC inhibitors and therefore have potential utility in therapy.

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NOVEL HISTONE DEACETYLASE INHIBITORS AND THEIR USE IN THERAPY

Field of the Invention

The present invention relates to novel compounds which are inhibitors of histone deacetylase (HDAC) and therefore have therapeutic utility.

Background of the Invention

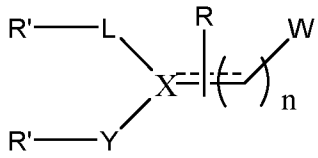
HDACs are zinc metalloenzymes that catalyse the hydrolysis of acetylated lysine residues. In histones, this returns lysines to their protonated state and is a global mechanism of eukaryotic transcriptional control, resulting in tight packaging of DNA in the nucleosome. Additionally, reversible lysine acetylation is an important regulatory process for non-histone proteins. Thus, compounds which are able to modulate HDAC have important therapeutic potential.

WO2010/086646 discloses compounds which act as inhibitors of HDAC. In the claims, L is defined broadly as being a "nitrogen-containing" heteroaryl. All the exemplified compounds require that L is pyridyl or benzofused pyridyl.

Summary of the Invention

It has surprisingly been found that replacing one of the "L" groups of the compounds disclosed in WO2010/086646 with a 5-membered heteroaryl, results in compounds with improved bioavailability. Without wishing to be bound by theory, it is believed that substitution of one of the "L" groups by the 5-membered isosteres disclosed herein makes the compounds of the invention less susceptible to oxidative turnover.

Therefore, the present invention is a compound of the formula



wherein:

… is a double bond and X is C; or

… is a single bond and X is N, CH or CQR_1; and

wherein:

n is 1 to 10;

R is H or QR_1;

each R' is independently selected from H and QR_1;

each Q is independently selected from a bond, CO, CO_2, NH, S, SO, SO_2 or O;

each R_1 is independently selected from H, C_1-C_{10} alkyl, C_2-C_{10} alkenyl, C_2-C_{10} alkynyl, aryl, heteroaryl, C_1-C_{10} cycloalkyl, halogen, C_1-C_{10} alkylaryl, C_1-C_{10} alkyl heteroaryl, C_1-C_{10} heterocycloalkyl or trifluoromethyl;

L is a 5-membered nitrogen-containing heteroaryl which is optionally fused to a benzene;

Y is a 5, 6 or 7-membered nitrogen-containing heteroaryl, which is optionally fused to a benzene;

W is a zinc-binding group; and

each aryl or heteroaryl may be substituted by up to five substituents selected from C_1-C_6 alkyl, hydroxy, C_1-C_3 hydroxyalkyl, C_1-C_3 alkoxy, C_1-C_3 haloalkoxy, amino, C_1-C_3 mono alkylamino, C_1-C_3 bis alkylamino, C_1-C_3 acylamino, C_1-C_3 aminoalkyl, mono (C_1-C_3 alkyl) amino C_1-C_3 alkyl, bis(C_1-C_3 alkyl) amino C_1-C_3 alkyl, C_1-C_3-acylamino, C_1-C_3 alkyl sulfonylamino, halo, nitro, cyano, trifluoromethyl, carboxy, C_1-C_3 alkoxycarbonyl, aminocarbonyl, mono C_1-C_3 alkyl aminocarbonyl, bis C_1-C_3 alkyl aminocarbonyl, $-SO_3H$, C_1-C_3 alkylsulfonyl, aminosulfonyl, mono C_1-C_3 alkyl aminosulfonyl and bis C_1-C_3-alkyl aminosulfonyl,

or a pharmaceutically acceptable salt thereof.

The compounds of the invention may be useful as an inhibitor of HDAC, i.e. in they may be used in a method of treating a disease associated with an over-expression of HDAC.

Description of the Invention

Definitions

As used herein, "alkyl" means a C_1-C_{10} alkyl group, which can be linear or branched. Preferably, it is a C_1-C_6 alkyl moiety. More preferably, it is a C_1-C_4 alkyl moiety. Examples include methyl, ethyl, n-propyl and t-butyl. It may be divalent, e.g. propylene.

As used herein, "cycloalkyl" contains from 3 to 10 carbon atoms. It may be monovalent or divalent.

As used herein, "alkenyl" means a C_2-C_{10} alkenyl group. Preferably, it is a C_2-C_6 alkenyl group. More preferably, it is a C_2-C_4 alkenyl group. The alkenyl radicals may be mono- or di-saturated, more preferably monosaturated.

Examples include vinyl, allyl, 1-propenyl, isopropenyl and 1-butenyl. It may be divalent, e.g. propenylene

As used herein, "alkynyl" is a C_2-C_{10} alkynyl group which can be linear or branched. Preferably, it is a C_2-C_4 alkynyl group or moiety. It may be divalent.

Each of the C_1-C_{10} alkyl, C_2-C_{10} alkenyl and C_2-C_{10} alkynyl groups may be optionally substituted with each other, i.e. C_1-C_{10} alkyl optionally substituted with C_2-C_{10} alkenyl. They may also be optionally substituted with aryl, cycloalkyl (preferably C_3-C_{10}), aryl or heteroaryl. They may also be substituted with halogen (e.g. F, Cl), NH_2, NO_2 or hydroxyl. Preferably, they may be substituted with up to 10 halogen atoms or more preferably up to 5 halogens. For example, they may be substituted by 1, 2, 3, 4 or 5 halogen atoms. Preferably, the halogen is fluorine.

As used herein, "aryl" means a monocyclic, bicyclic, or tricyclic monovalent or divalent (as appropriate) aromatic radical, such as phenyl, biphenyl, naphthyl, anthracenyl, which can be optionally substituted with up to five substituents preferably selected from the group of C_1-C_6 alkyl, hydroxy, C_1-C_3 hydroxyalkyl, C_1-C_3 alkoxy, C_1-C_3 haloalkoxy, amino, C_1-C_3 mono alkylamino, C_1-C_3 bis alkylamino, C_1-C_3 acylamino, C_1-C_3 aminoalkyl, mono (C_1-C_3 alkyl) amino C_1-C_3 alkyl, bis(C_1-C_3 alkyl) amino C_1-C_3 alkyl, C_1-C_3-acylamino, C_1-C_3 alkyl sulfonylamino, halo, nitro, cyano, trifluoromethyl, carboxy, C_1-C_3 alkoxycarbonyl, aminocarbonyl, mono C_1-C_3 alkyl aminocarbonyl, bis C_1-C_3 alkyl aminocarbonyl, -SO_3H, C_1-C_3 alkylsulfonyl, aminosulfonyl, mono C_1-C_3 alkyl aminosulfonyl and bis C_1-C_3-alkyl aminosulfonyl.

As used herein, heteroaryl means a monocyclic, bicyclic or tricyclic monovalent or divalent (as appropriate) aromatic radical containing up to four heteroatoms selected from oxygen, nitrogen and sulfur, such as thiazolyl, isothiazolyl, tetrazolyl, imidazolyl, oxazolyl, isoxazolyl, thienyl, pyrazolyl, pyridinyl, pyrazinyl, pyrimidinyl, indolyl, quinolyl, isoquinolyl, triazolyl, thiadiazolyl, oxadiazolyl, said radical being optionally substituted with up to three substituents preferably selected from the group of C_1-C_6 alkyl, hydroxy, C_1-C_3 hydroxyalkyl, C_1-C_3 alkoxy, C_1-C_3 haloalkoxy, amino, C_1-C_3 mono alkylamino, C_1-C_3 bis alkylamino, C_1-C_3 acylamino, C_1-C_3 aminoalkyl, mono (C_1-C_3 alkyl) amino C_1-C_3 alkyl, bis (C_1-C_3 alkyl) amino C_1-C_3 alkyl, C_1-C_3-acylamino, C_1-C_3 alkyl sulfonylamino, halo, nitro, cyano, trifluoromethyl, carboxy, C_1-C_3 alkoxycarbonyl, aminocarbonyl, mono C_1-C_3 alkyl aminocarbonyl, bis C_1-C_3 alkyl aminocarbonyl,

-SO_3H, C_1-C_3 alkylsulfonyl, aminosulfonyl, mono C_1-C_3 alkyl aminosulfonyl and bis C_1-C_3-alkyl aminosulfonyl.

Preferred L groups are thiazolyl, imidazolyl, oxazolyl, pyrazolyl, thiadiazolyl and oxadiazolyl.

In the compounds of the invention, certain heteroaryl groups (i.e. L or Y) are attached to R'. However, they may still be substituted by up to three additional substituents, selected from the groups defined above.

As used herein, the term “heterocycle” or “heterocycloalkyl” is a mono- or di-valent carbocyclic radical containing up to 4 heteroatoms selected from oxygen, nitrogen and sulfur. It may be monocyclic or bicyclic. It is preferably saturated. The word ‘linker’ has been used herein to mean di-valent. If the heterocycle is a di-valent linker, the heterocycle may be attached to neighbouring groups through a carbon atom, or through on of the heteroatoms, e.g. a N. Examples of heterocycles are piperazine or morpholine.

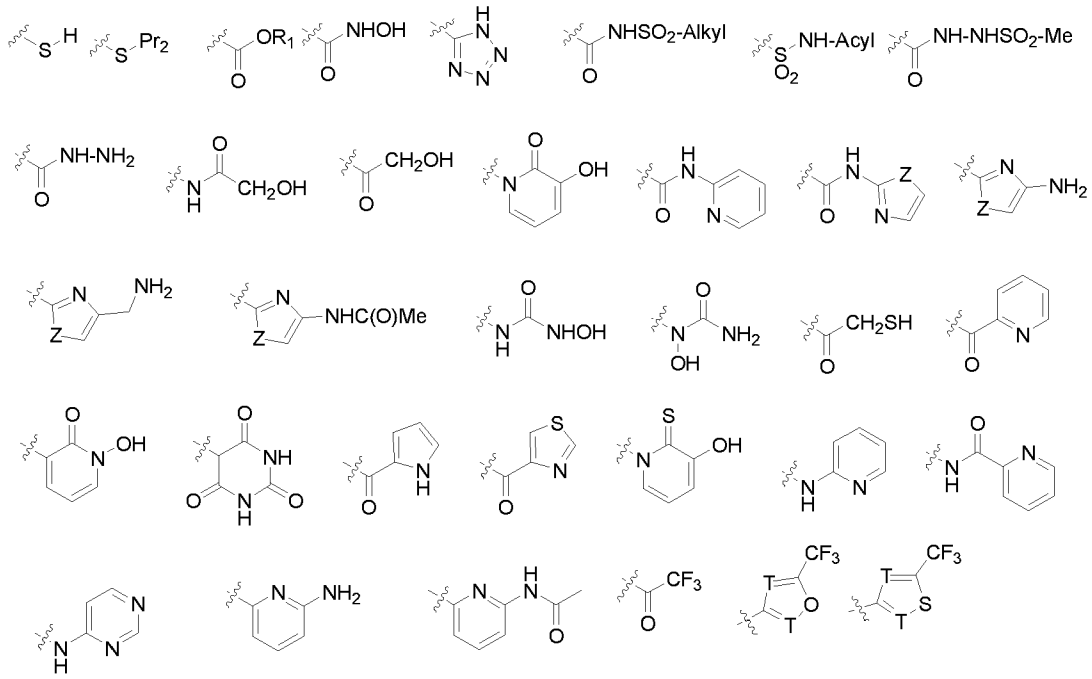
The heterocyclic ring may be mono- or di-unsaturated. The radical may be optionally substituted with up to three substituents independently selected from C_1-C_6 alkyl, hydroxy, C_1-C_3 hydroxyalkyl, C_1-C_3 alkoxy, C_1-C_3 haloalkoxy, amino, C_1-C_3 mono alkylamino, C_1-C_3 bis alkylamino, C_1-C_3 acylamino, C_1-C_3 aminoalkyl, mono (C_1-C_3 alkyl) amino C_1-C_3 alkyl , bis (C_1-C_3 alkyl) amino C_1-C_3 alkyl, C_1-C_3-acylamino, C_1-C_3 alkyl sulfonylamino, halo e.g. F, nitro, cyano, trifluoromethyl, carboxy, C_1-C_3 alkoxycarbonyl, aminocarbonyl, mono C_1-C_3 alkyl aminocarbonyl, bis C_1-C_3 alkyl aminocarbonyl, -SO_3H, C_1-C_3 alkylsulfonyl, aminosulfonyl, mono C_1-C_3 alkyl aminosulfonyl and bis C_1-C_3-alkyl aminosulfonyl.

As used herein, the above groups can be followed by the suffix -ene. This means that the group is divalent, i.e. a linker group.

Preferred groups of the invention

The group W is a zinc-chelating residue, i.e. a metallophile capable of binding with zinc in the active site of HDAC. Suitable metallophiles are known to those skilled in the art.

In a preferred embodiment, W is selected from:



wherein R_1 is as defined in claim 1, Pr^2 is H or a thiol protecting group, Z is selected from O, S or NH and T is N or CH.

When W is $COOR_1$, preferably R_1 is not halogen. More preferably, when W is $COOR_1$, R_1 is H or C_1-C_{10} alkyl.

Preferably, W is -COOH, COOMe, -CONHOH, $-CONHSO_2CH_3$, $-CONHNHSO_2CH_3$, $-CONHNH_2$, -CONH(2-pyridyl), –NHCONHOH, tetrazole, hydroxypyridin-2-thione or hydroxypyridin-2-one. Preferably W is not $COOR_1$. More preferably, W is COOMe, -CONHOH, $CONHSO_2CH_3$, $-CONHNHSO_2CH_3$, $-CONHNH_2$, -CONH(2-pyridyl) –NHCONHOH, tetrazole, hydroxypyridin-2-thione or hydroxypyridin-2-one. Even more preferably, W is –CONHOH, tetrazole, hydroxypyridin-2-thione or hydroxypyridin-2-one. Most preferably, W is –CONHOH.

Preferably, n is 3 to 7. More preferably, n is 6 or 7.

In a preferred embodiment, X... is N- or , X... is C=. Preferably, X... is N.

In a preferred embodiment, at least one $R^{/}$ is H, halogen (preferably F), C_1-C_{10} alkyl or O-(C_1-C_{10} alkyl). Preferably, at least one $R^{/}$ is substituted or unsubstituted aryl or O-(substituted or unsubstituted aryl). Preferably, at least one $R^{/}$ is aryl or O-aryl, each of which may be substituted with a halogen, amino or C_1-C_{10} alkyl. The aryl may be substituted in any position. The aryl may be mono-, bis-, or tri-substituted.

In a preferred embodiment, at least one $R^{/}$ is H, C_1-C_{10} alkyl or O-(C_1-C_{10} alkyl). Preferably, at least one $R^{/}$ is substituted or unsubstituted aryl or O-

(substituted or unsubstituted aryl). Preferably, at least one $R^{/}$ is aryl or O-aryl, each of which may be substituted with a halogen, amino or C_1-C_{10} alkyl. The aryl may be substituted in any position. The aryl may be mono-, bis-, or tri-substituted.

$R^{/}$ may be substituted onto any of the ring atoms of the L or Y groups, i.e. the nitrogen-containing heteroaryl group. The nitrogen-containing heteroaryl may be benzofused, and the $R^{/}$ may be substituted onto the benzo-portion of the L or Y group.

Preferably, Q is a direct bond or –O-. More preferably, Q is a direct bond.

Preferably, R_1 is halogen (preferably F), C_1-C_{10} alkyl, C_2-C_{10} alkenyl or C_2-C_{10} alkynyl, preferably substituted with halogen, NH_2, NO_2 or hydroxyl. More preferably, R_1 is C_1-C_{10} alkyl substituted with halogen which is preferably fluorine. The C_1-C_{10} alkyl group may be substituted by up to 10 halogen atoms or preferably, by up to 5 halogen atoms, i.e., 1, 2, 3, 4 or 5 halogen atoms. For example, R_1 may be CF_3, CHF_2, CH_2CF_3, CH_2CHF_2 or CF_2CF_3. This means that $R^{/}$ may be CF_3, CHF_2, CH_2CF_3, CH_2CHF_2 or CF_2CF_3 or OCF_3, $OCHF_2$, OCH_2CF_3, OCH_2CHF_2 or OCF_2CF_3.

Preferably, R_1 is C_1-C_{10} alkyl, C_2-C_{10} alkenyl or C_2-C_{10} alkynyl, preferably substituted with halogen, NH_2, NO_2 or hydroxyl. More preferably, R_1 is C_1-C_{10} alkyl substituted with halogen which is preferably fluorine. The C_1-C_{10} alkyl group may be substituted by up to 10 halogen atoms or preferably, by up to 5 halogen atoms, i.e., 1, 2, 3, 4 or 5 halogen atoms. For example, R_1 may be CF_3, CHF_2, CH_2CF_3, CH_2CHF_2 or CF_2CF_3. This means that $R^{/}$ may be CF_3, CHF_2, CH_2CF_3, CH_2CHF_2 or CF_2CF_3 or OCF_3, $OCHF_2$, OCH_2CF_3, OCH_2CHF_2 or OCF_2CF_3.

In a preferred embodiment, R is H or C_1 to C_6 alkyl.

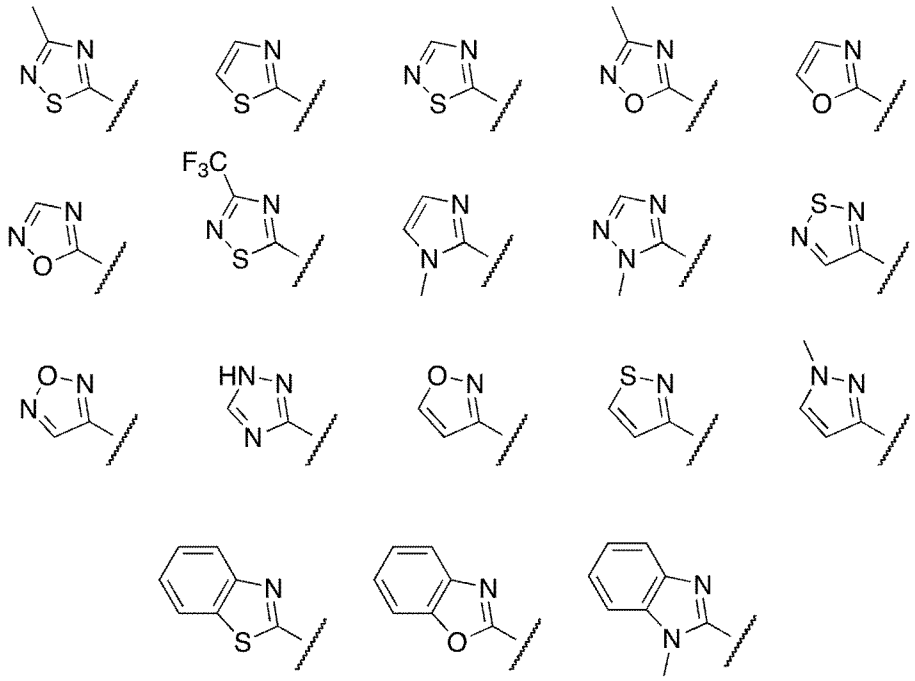
In a preferred embodiment, L and/or Y is a hydrogen bond-acceptor, and preferably not also a hydrogen bond donor. Preferably, L and/or Y does not have a hydrogen atom attached to an electronegative atom, such as N or O. More preferably, L is not pyrrole or benzofused pyrrole. More preferably, L, most preferably L and Y, are hydrogen-bond acceptors.

The definitions of hydrogen bond acceptors/donors are known to those skilled in the art. For example, a hydrogen bond donor will have a hydrogen attached to an electronegative atom, such as N or O. For example, a hydrogen bond acceptor will have a N or O, which has a free lone pair..

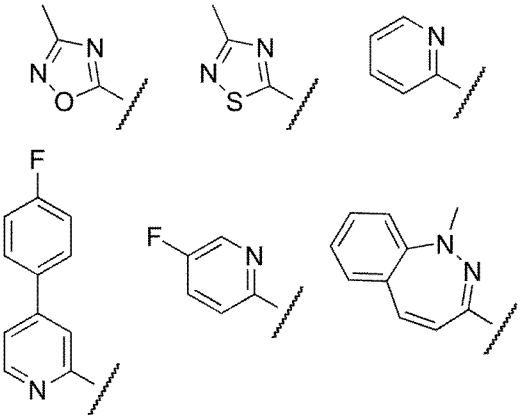
Preferably in at least one, preferably both, of L and Y, the atom that is directly bonded to X is a carbon, and at least one nitrogen atom is directly bonded to said carbon (preferably via a double bond). More preferably, said nitrogen atom is a hydrogen bond acceptor.

Preferably, in addition to a N atom, L contains at least one other heteroatom in the heteroaryl ring which is selected from N, O or S.

In a preferred embodiment, L is:



In a preferred embodiment, Y is:



A pharmaceutical composition of the invention comprises a compound as defined above, and a pharmaceutically acceptable carrier or diluent. A pharmaceutical composition of the invention typically contains up to 85 wt% of a compound of the invention. More typically, it contains up to 50 wt% of a compound of the invention. Preferred pharmaceutical compositions are sterile and pyrogen-free. Further, the pharmaceutical compositions provided by the

invention typically contain a compound of the invention which is a substantially pure optical isomer. Preferably, the pharmaceutical composition comprises a pharmaceutically acceptable salt form of a compound of the invention.

As used herein, a pharmaceutically acceptable salt is a salt with a pharmaceutically acceptable acid or base. Pharmaceutically acceptable acids include both inorganic acids such as hydrochloric, sulfuric, phosphoric, diphosphoric, hydrobromic or nitric acid and organic acids such as citric, fumaric, maleic, malic, ascorbic, succinic, tartaric, benzoic, acetic, methanesulfonic, ethanesulfonic, ethanedisulfonic, salicylic, stearic, benzenesulfonic or *p*-toluenesulfonic acid. Pharmaceutically acceptable bases include alkali metal (e.g. sodium or potassium) and alkali earth metal (e.g. calcium or magnesium) hydroxides and organic bases such as alkyl amines, aryl amines or heterocyclic amines.

For the avoidance of doubt, the present invention also embraces prodrugs which react *in vivo* to give a compound of the present invention.

The compounds of the present invention are found to be inhibitors of HDAC. The compounds of the present invention are therefore therapeutically useful in the treatment of conditions affected by HDAC activity.

The compounds of the invention may be prepared by synthetic routes that will be apparent to those skilled in the art, e.g. based on the Examples.

The compounds of the present invention are found to be inhibitors of HDAC. The compounds of the present invention are therefore therapeutically useful.

The compounds of the invention and compositions comprising them may be administered in a variety of dosage forms. In one embodiment, a pharmaceutical composition comprising a compound of the invention may be formulated in a format suitable for oral, rectal, parenteral, intranasal or transdermal administration or administration by inhalation or by suppository. Typical routes of administration are parenteral, intranasal or transdermal administration or administration by inhalation.

The compounds of the invention can be administered orally, for example as tablets, troches, lozenges, aqueous or oily suspensions, dispersible powders or granules. Preferred pharmaceutical compositions of the invention are compositions suitable for oral administration, for example tablets and capsules.

The compounds of the invention may also be administered parenterally, whether subcutaneously, intravenously, intramuscularly, intrasternally, transdermally or by infusion techniques. The compounds may also be administered as suppositories.

The compounds of the invention may also be administered by inhalation. An advantage of inhaled medications is their direct delivery to the area of rich blood supply in comparison to many medications taken by oral route. Thus, the absorption is very rapid as the alveoli have an enormous surface area and rich blood supply and first pass metabolism is bypassed. A further advantage may be to treat diseases of the pulmonary system, such that delivering drugs by inhalation delivers them to the proximity of the cells which are required to be treated.

The present invention also provides an inhalation device containing such a pharmaceutical composition. Typically said device is a metered dose inhaler (MDI), which contains a pharmaceutically acceptable chemical propellant to push the medication out of the inhaler.

The compounds of the invention may also be administered by intranasal administration. The nasal cavity's highly permeable tissue is very receptive to medication and absorbs it quickly and efficiently, more so than drugs in tablet form. Nasal drug delivery is less painful and invasive than injections, generating less anxiety among patients. By this method absorption is very rapid and first pass metabolism is usually bypassed, thus reducing inter-patient variability. Further, the present invention also provides an intranasal device containing such a pharmaceutical composition.

The compounds of the invention may also be administered by transdermal administration. The present invention therefore also provides a transdermal patch containing a compound of the invention.

The compounds of the invention may also be administered by sublingual administration. The present invention therefore also provides a sub-lingual tablet comprising a compound of the invention.

A compound of the invention may also be formulated with an agent which reduces degradation of the substance by processes other than the normal metabolism of the patient, such as anti-bacterial agents, or inhibitors of protease enzymes which might be the present in the patient or in commensural or parasite

organisms living on or within the patient, and which are capable of degrading the compound.

Liquid dispersions for oral administration may be syrups, emulsions and suspensions.

Suspensions and emulsions may contain as carrier, for example a natural gum, agar, sodium alginate, pectin, methylcellulose, carboxymethylcellulose, or polyvinyl alcohol. The suspension or solutions for intramuscular injections may contain, together with the active compound, a pharmaceutically acceptable carrier, e.g. sterile water, olive oil, ethyl oleate, glycols, e.g. propylene glycol, and if desired, a suitable amount of lidocaine hydrochloride.

Solutions for injection or infusion may contain as carrier, for example, sterile water or preferably they may be in the form of sterile, aqueous, isotonic saline solutions.

In one embodiment the compounds of the present invention may be used in combination with another known inhibitor of HDAC, such as SAHA. In this embodiment, the combination product may be formulated such that it comprises each of the medicaments for simultaneous, separate or sequential use.

The compounds of the present invention can be used in both the treatment and prevention of cancer and can be used in a monotherapy or in a combination therapy. When used in a combination therapy, the compounds of the present invention are typically used together with small chemical compounds such as platinum complexes, anti-metabolites, DNA topoisomerase inhibitors, radiation, antibody-based therapies (for example herceptin and rituximab), anti-cancer vaccination, gene therapy, cellular therapies, hormone therapies or cytokine therapy.

In one embodiment of the invention a compound of the invention is used in combination with another chemotherapeutic or antineoplastic agent in the treatment of a cancer. Examples of such other chemotherapeutic or antineoplastic agents include platinum complexes including cisplatin and carboplatin, mitoxantrone, vinca alkaloids for example vincristine and vinblastine, anthracycline antibiotics for example daunorubicin and doxorubicin, alkylating agents for example chlorambucil and melphalan, taxanes for example paclitaxel, antifolates for example methotrexate and tomudex, epipodophyllotoxins for example etoposide, camptothecins for example irinotecan and its active

metabolite SN38 and DNA methylation inhibitors for example the DNA methylation inhibitors disclosed in WO02/085400.

According to the invention, therefore, products are provided which contain a compound of the invention and another chemotherapeutic or antineoplastic agent as a combined preparation for simultaneous, separate or sequential use in alleviating a cancer. Also provided according to the invention is the use of compound of the invention in the manufacture of a medicament for use in the alleviation of cancer by coadministration with another chemotherapeutic or antineoplastic agent. The compound of the invention and the said other agent may be administrated in any order. In both these cases the compound of the invention and the other agent may be administered together or, if separately, in any order as determined by a physician.

HDAC is believed to contribute to the pathology and/or symptomology of several different diseases such that reduction of the activity of HDAC in a subject through inhibition of HDAC may be used to therapeutically address these disease states. Examples of various diseases that may be treated using the HDAC inhibitors of the present invention are described herein.

One set of indications that HDAC inhibitors of the present invention may be used to treat is those involving undesirable or uncontrolled cell proliferation. Such indications include benign tumours, various types of cancers such as primary tumours and tumour metastasis, restenosis (e.g. coronary, carotid, and cerebral lesions), abnormal stimulation of endothelial cells (atherosclerosis), insults to body tissue due to surgery, abnormal wound healing, abnormal angiogenesis, diseases that produce fibrosis of tissue, repetitive motion disorders, disorders of tissues that are not highly vascularized, and proliferative responses associated with organ transplants. More specific indications for HDAC inhibitors include, but are not limited to prostate cancer, lung cancer, acute leukaemia, multiple myeloma, bladder carcinoma, renal carcinoma, breast carcinoma, colorectal carcinoma, neuroblastoma and melanoma.

In one embodiment, a method is provided for treating diseases associated with undesired and uncontrolled cell proliferation. The method comprises administering to a subject suffering from uncontrolled cell proliferation a therapeutically effective amount of a HDAC inhibitor according to the present invention, such that said uncontrolled cell proliferation is reduced. The particular dosage of the inhibitor to be used will depend on the severity of the disease

state, the route of administration, and related factors that can be determined by the attending physician. Generally, acceptable and effective daily doses are amounts sufficient to effectively slow or eliminate uncontrolled cell proliferation.

HDAC inhibitors according to the present invention may also be used in conjunction with other agents to inhibit undesirable and uncontrolled cell proliferation. Examples of other anti-cell proliferation agents that may be used in conjunction with the HDAC inhibitors of the present invention include, but are not limited to, retinoid acid and derivatives thereof, 2-methoxyestradiol, Angiostatin™ protein, Endostatin™ protein, suramin, squalamine, tissue inhibitor of metalloproteinase-I, tissue inhibitor of metalloproteinase-2, plasminogen activator inhibitor-1, plasminogen activator inhibitor-2, cartilage-derived inhibitor, paclitaxel, platelet factor 4, protamine sulfate (clupeine), sulfated chitin derivatives (prepared from queen crab shells), sulfated polysaccharide peptidoglycan complex (sp-pg), staurosporine, modulators of matrix metabolism, including for example, proline analogs ((1-azetidine-2-carboxylic acid (LACA), cishydroxyproline, d,l-3,4-dehydroproline, thiaproline), beta-aminopropionitrile fumarate, 4-propyl-5-(4-pyridinyl)-2(3H)-oxazolone; methotrexate, mitoxantrone, heparin, interferons, 2 macroglobulin-serum, chimp-3, chymostatin, beta-cyclodextrin tetradecasulfate, eponemycin; fumagillin, gold sodium thiomalate, d-penicillamine (CDPT), beta-1-anticollagenase-serum, alpha-2-antiplasmin, bisantrene, lobenzarit disodium, n-(2-carboxyphenyl-4-chloroanthronilic acid disodium or "CCA", thalidomide; angiostatic steroid, carboxyaminoimidazole; metalloproteinase inhibitors such as BB94. Other anti-angiogenesis agents that may be used include antibodies, preferably monoclonal antibodies against these angiogenic growth factors: bFGF, aFGF, FGF-5, VEGF isoforms, VEGF-C, HGF/SF and Ang-1/Ang-2. Ferrara N. and Alitalo, K. "Clinical application of angiogenic growth factors and their inhibitors" (1999) Nature Medicine 5:1359-1364.

Generally, cells in benign tumours retain their differentiated features and do not divide in a completely uncontrolled manner. A benign tumour is usually localized and nonmetastatic. Specific types of benign tumours that can be treated using HDAC inhibitors of the present invention include hemangiomas, hepatocellular adenoma, cavernous haemangioma, focal nodular hyperplasia, acoustic neuromas, neurofibroma, bile duct adenoma, bile duct cystanoma,

fibroma, lipomas, leiomyomas, mesotheliomas, teratomas, myxomas, nodular regenerative hyperplasia, trachomas and pyogenic granulomas.

In the case of malignant tumors, cells become undifferentiated, do not respond to the body's growth control signals, and multiply in an uncontrolled manner. Malignant tumors are invasive and capable of spreading to distant sites (metastasizing). Malignant tumors are generally divided into two categories: primary and secondary. Primary tumors arise directly from the tissue in which they are found. Secondary tumours, or metastases, are tumours that originated elsewhere in the body but have now spread to distant organs. Common routes for metastasis are direct growth into adjacent structures, spread through the vascular or lymphatic systems, and tracking along tissue planes and body spaces (peritoneal fluid, cerebrospinal fluid, etc.).

Specific types of cancers or malignant tumours, either primary or secondary, that can be treated using the HDAC inhibitors of the present invention include, but are not limited to, leukaemia, breast cancer, skin cancer, bone cancer, prostate cancer, liver cancer, lung cancer, brain cancer, cancer of the larynx, gallbladder, pancreas, rectum, parathyroid, thyroid, adrenal, neural tissue, head and neck, colon, stomach, bronchi, kidneys, basal cell carcinoma, squamous cell carcinoma of both ulcerating and papillary type, metastatic skin carcinoma, osteo sarcoma, Ewing's sarcoma, veticulum cell sarcoma, myeloma, giant cell tumour, small-cell lung tumour, gallstones, islet cell tumour, primary brain tumour, acute and chronic lymphocytic and granulocytic tumours, hairy-cell tumour, adenoma, hyperplasia, medullary carcinoma, pheochromocytoma, mucosal neuromas, intestinal ganglloneuromas, hyperplastic corneal nerve tumour, marfanoid habitus tumour, Wilms' tumour, seminoma, ovarian tumour, leiomyomater tumour, cervical dysplasia and in situ carcinoma, neuroblastoma, retinoblastoma, soft tissue sarcoma, malignant carcinoid, topical skin lesion, mycosis fungoide, rhabdomyosarcoma, Kaposi's sarcoma, osteogenic and other sarcoma, malignant hypercalcemia, renal cell tumour, polycythermia vera, adenocarcinoma, glioblastoma multiforme, leukemias, lymphomas, malignant melanomas, epidermoid carcinomas, and other carcinomas and sarcomas.

The HDAC inhibitors of the present invention may also be used to treat abnormal cell proliferation due to insults to body tissue during surgery. These insults may arise as a result of a variety of surgical procedures such as joint surgery, bowel surgery, and cheloid scarring. Diseases that produce fibrotic

tissue that may be treated using the HDAC inhibitors of the present invention include emphysema. Repetitive motion disorders that may be treated using the present invention include carpal tunnel syndrome. An example of a cell proliferative disorder that may be treated using the invention is a bone tumour.

Proliferative responses associated with organ transplantation that may be treated using HDAC inhibitors of the invention include proliferative responses contributing to potential organ rejections or associated complications. Specifically, these proliferative responses may occur during transplantation of the heart, lung, liver, kidney, and other body organs or organ systems.

Abnormal angiogenesis that may be treated using this invention include those abnormal angiogenesis accompanying rheumatoid arthritis, ischemic-reperfusion related brain edema and injury, cortical ischemia, ovarian hyperplasia and hypervascularity, polycystic ovary syndrome, endometriosis, psoriasis, diabetic retinopathy, and other ocular angiogenic diseases such as retinopathy of prematurity (retrolental fibroplastic), macular degeneration, corneal graft rejection, neuroscular glaucoma and Oster Webber syndrome.

Examples of diseases associated with uncontrolled angiogenesis that may be treated according to the present invention include, but are not limited to retinal/choroidal neovascularization and corneal neovascularization. Examples of diseases which include some component of retinal/choroidal neovascularization include, but are not limited to, Best's diseases, myopia, optic pits, Stargart's diseases, Paget's disease, vein occlusion, artery occlusion, sickle cell anemia, sarcoid, syphilis, pseudoxanthoma elasticum carotid apo structive diseases, chronic uveitis/vitritis, mycobacterial infections, Lyme's disease, systemic lupus erythematosus, retinopathy of prematurity, Eale's disease, diabetic retinopathy, macular degeneration, Bechet's diseases, infections causing a retinitis or chroiditis, presumed ocular histoplasmosis, pars planitis, chronic retinal detachment, hyperviscosity syndromes, toxoplasmosis, trauma and post-laser complications, diseases associated with rubesis (neovascularization of the angle) and diseases caused by the abnormal proliferation of fibrovascular or fibrous tissue including all forms of proliferative vitreoretinopathy. Examples of corneal neovascularization include, but are not limited to, epidemic keratoconjunctivitis, Vitamin A deficiency, contact lens overwear, atopic keratitis, superior limbic keratitis, pterygium keratitis sicca, sjogrens, acne rosacea, phylectenulosis, diabetic retinopathy, retinopathy of prematurity, corneal graft

rejection, Mooren ulcer, Terrien's marginal degeneration, marginal keratolysis, polyarteritis, Wegener sarcoidosis, Scleritis, periphigoid radial keratotomy, neovascular glaucoma and retrolental fibroplasia, syphilis, Mycobacteria infections, lipid degeneration, chemical burns, bacterial ulcers, fungal ulcers, Herpes simplex infections, Herpes zoster infections, protozoan infections and Kaposi sarcoma.

Chronic inflammatory diseases associated with uncontrolled angiogenesis may also be treated using HDAC inhibitors of the present invention. Chronic inflammation depends on continuous formation of capillary sprouts to maintain an influx of inflammatory cells. The influx and presence of the inflammatory cells produce granulomas and thus maintains the chronic inflammatory state. Inhibition of angiogenesis using a HDAC inhibitor alone or in conjunction with other anti-inflammatory agents may prevent the formation of the granulosmas and thus alleviate the disease. Examples of chronic inflammatory diseases include, but are not limited to, inflammatory bowel diseases such as Crohn's disease and ulcerative colitis, psoriasis, sarcoidosis, and rheumatoid arthritis.

Inflammatory bowel diseases such as Crohn's disease and ulcerative colitis are characterized by chronic inflammation and angiogenesis at various sites in the gastrointestinal tract. For example, Crohn's disease occurs as a chronic transmural inflammatory disease that most commonly affects the distal ileum and colon but may also occur in any part of the gastrointestinal tract from the mouth to the anus and perianal area. Patients with Crohn's disease generally have chronic diarrhoea associated with abdominal pain, fever, anorexia, weight loss and abdominal swelling. Ulcerative colitis is also a chronic, nonspecific, inflammatory and ulcerative disease arising in the colonic mucosa and is characterized by the presence of bloody diarrhoea. These inflammatory bowel diseases are generally caused by chronic granulomatous inflammation throughout the gastrointestinal tract, involving new capillary sprouts surrounded by a cylinder of inflammatory cells. Inhibition of angiogenesis by these inhibitors should inhibit the formation of the sprouts and prevent the formation of granulomas. Inflammatory bowel diseases also exhibit extra intestinal manifestations, such as skin lesions. Such lesions are characterized by inflammation and angiogenesis and can occur at many sites other the gastrointestinal tract. Inhibition of angiogenesis by HDAC inhibitors according to

the present invention can reduce the influx of inflammatory cells and prevent lesion formation.

Sarcoidosis, another chronic inflammatory disease, is characterized as a multisystem granulomatous disorder. The granulomas of this disease can form anywhere in the body. Thus, the symptoms depend on the site of the granulomas and whether the disease is active. The granulomas are created by the angiogenic capillary sprouts providing a constant supply of inflammatory cells. By using HDAC inhibitors according to the present invention to inhibit angiogenesis, such granulomas formation can be inhibited. Psoriasis, also a chronic and recurrent inflammatory disease, is characterized by papules and plaques of various sizes. Treatment using these inhibitors alone or in conjunction with other anti-inflammatory agents should prevent the formation of new blood vessels necessary to maintain the characteristic lesions and provide the patient relief from the symptoms.

Rheumatoid arthritis (RA) is also a chronic inflammatory disease characterized by non-specific inflammation of the peripheral joints. It is believed that the blood vessels in the synovial lining of the joints undergo angiogenesis. In addition to forming new vascular networks, the endothelial cells release factors and reactive oxygen species that lead to pannus growth and cartilage destruction. The factors involved in angiogenesis may actively contribute to, and help maintain, the chronically inflamed state of rheumatoid arthritis. Treatment using HDAC inhibitors according to the present invention alone or in conjunction with other anti-RA agents may prevent the formation of new blood vessels necessary to maintain the chronic inflammation.

The compounds of the present invention can further be used in the treatment of cardiac/vasculature diseases such as hypertrophy, hypertension, myocardial infarction, reperfusion, ischaemic heart disease, angina, arryhtmias, hypercholesterolemia, atherosclerosis and stroke. The compounds can further be used to treat neurodegenerative disorders/CNS disorders such as acute and chronic neurological diseases, including stroke, Huntington's disease, Amyotrophic Lateral Sclerosis and Alzheimer's disease.

The compounds of the present invention can also be used as antimicrobial agents, for example antibacterial agents. The invention therefore also provides a compound for use in the treatment of a bacterial infection. The compounds of the present invention can be used as anti-infectious compounds

against viral, bacterial, fungal and parasitic infections. Examples of infections include protozoal parasitic infections (including plasmodium, cryptosporidium parvum, toxoplasma gondii, sarcocystis neurona and Eimeria sp.)

The compounds of the present invention are particularly suitable for the treatment of undesirable or uncontrolled cell proliferation, preferably for the treatment of benign tumours/hyperplasias and malignant tumours, more preferably for the treatment of malignant tumours and most preferably for the treatment of chronic lymphocytic leukaemia (CLL), breast cancer, prostate cancer, ovarian cancer, mesothelioma, T-cell lymphoma.

In a preferred embodiment of the invention, the compounds of the invention are used to alleviate cancer, cardiac hypertrophy, chronic heart failure, an inflammatory condition, a cardiovascular disease, a haemoglobinopathy, a thalassemia, a sickle cell disease, a CNS disorder, an autoimmune disease, organ transplant rejection, diabetes, osteoporosis, MDS, benign prostatic hyperplasia, oral leukoplakia, a genentically related metabolic disorder, an infection, Rubens-Taybi, fragile X syndrome, or alpha-1 antitrypsin deficiency, or to accelerate wound healing, to protect hair follicles or as an immunosuppressant.

Typically, said inflammatory condition is a skin inflammatory condition (for example psoriasis, acne and eczema), asthma, chronic obstructive pulmonary disease (COPD), rheumatoid arthritis (RA), inflammatory bowel disease (IBD), Crohn's disease or colitis.

Typically, said cancer is chronic lymphocytic leukaemia, breast cancer, prostate cancer, ovarian cancer, mesothelioma or T-cell lymphoma.

Typically, said cardiovascular disease is hypertension, myocardial infarction (MI), ischemic heart disease (IHD) (reperfusion), angina pectoris, arrhythmia, hypercholesterolemia, hyperlipidaemia, atherosclerosis, stroke, myocarditis, congestive heart failure, primary and secondary i.e. dilated (congestive) cardiomyopathy, hypertrophic cardiomyopathy, restrictive cardiomyopathy, peripheral vascular disease, tachycardia, high blood pressure or thrombosis.

Typically, said genentically related metabolic disorder is cystic fibrosis (CF), peroxisome biogenesis disorder or adrenoleukodystrophy.

Typically, the compounds of the invention are used as an immunosuppressant following organ transplant.

Typically, said infection is a viral, bacterial, fungal or parasitic infection, in particular an infection by S aureus, P acne, candida or aspergillus.

Typically, said CNS disorder is Huntingdon's disease, Alzheimer's disease, multiple sclerosis or amyotrophic lateral sclerosis.

In this embodiment, the compounds of the invention may be used to alleviate cancer, cardiac hypertrophy, chronic heart failure, an inflammatory condition, a cardiovascular disease, a haemoglobinopathy, a thalassemia, a sickle cell disease, a CNS disorder, an autoimmune disease, diabetes or osteoporosis, or are used as an immunosuppressant.

The compounds of the invention may also be used to alleviate chronic lymphocytic leukaemia (CLL), breast cancer, prostate cancer, ovarian cancer, mesothelioma, T-cell lymphoma, cardiac hypertrophy, chronic heart failure or a skin inflammatory condition, in particular psoriasis, acne or eczema.

The compounds of the present invention can be used in the treatment of animals, preferably in the treatment of mammals and more preferably in the treatment of humans.

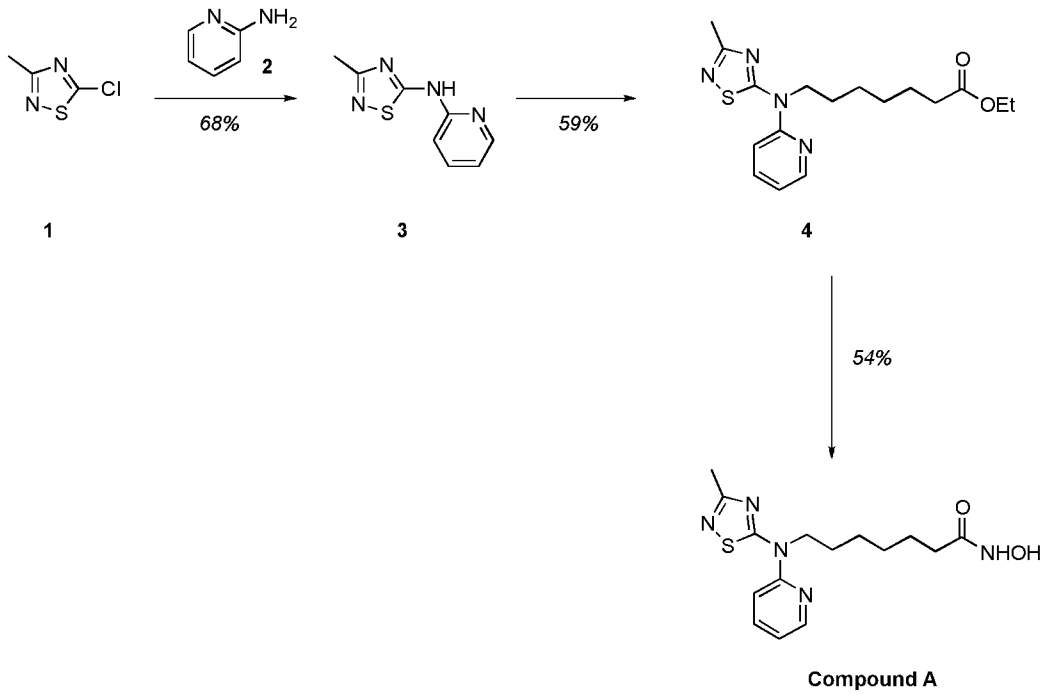
The compounds of the invention may, where appropriate, be used prophylactically to reduce the incidence of such conditions.

In use, a therapeutically effective amount of a compound of the invention is administered to a patient. A typical dose is from about 0.001 to 50 mg per kg of body weight, according to the activity of the specific compound, the age, weight and conditions of the subject to be treated, the type and severity of the disease and the frequency and route of administration.

Compounds of the invention may be tested for HDAC inhibitory activity by any suitable assay, e.g. the assay described in WO2008/062201.

The following Examples illustrate the invention.

Example A: N-Hydroxy-7-[(3-methyl-1,2,4-thiadiazol-5-yl)(pyridin-2-yl)amino]heptanamide



*a. N-(3-Methyl-1,2,4-thiadiazol-5-yl)pyridin-2-amine (**3**)*

5-Chloro-3-methyl-1,2,4-thiadiazole, **1** (362mg, 2.69mmol), 2-aminopyridine, **2** (460mg, 2.69mmol), tBuOK (453mg, 4.03mmol), (±) BINAP (67mg, 0.10mmol) and $Pd_2(dba)_3$ (61mg, 0.07mmol) were stirred in toluene (5mL) at 90ºC under Ar(g) for 25h. The reaction mixture was subsequently diluted with CH_2Cl_2 (5mL); silica was then added and the solvent was removed by evaporation under reduced pressure. The resulting dry loaded material was purified by silica gel column chromatography, eluting with hexanes/EtOAc (6:1-2:1) to furnish **3** as a white solid (360mg, 68%).

LCMS (ES): found 193.1 $[MH]^+$.

*b. Ethyl-7-[(3-Methyl-1,2,4-thiadiazol-5-yl)(pyridin-2-yl)amino]heptanoate (**4**)*

NaH (75mg, 1.97mmol) was added to N-(3-methyl-1,2,4-thiadiazol-5-yl)pyridin-2-amine, **3** (360mg, 1.87mmol) in DMF (10mL) at rt. After 15 min, ethyl-7-iodoheptanoate (690mg, 2.43mmol) was added, and the resulting reaction mixture was stirred at 90°C for 3h under Ar(g). Once cooled to rt, the reaction mixture was poured onto brine (100mL) and was then extracted twice with EtOAc (2 x 25mL). The organic phases were combined, dried over $MgSO_4$, filtered, and subsequently evaporated under reduced pressure. The resulting residue was purified by silica gel column chromatography, eluting with hexanes/EtOAc (9:1-4:1) to furnish **4** as colourless oil (385mg, 59%).

LCMS (ES): found 349.3 $[MH]^+$.

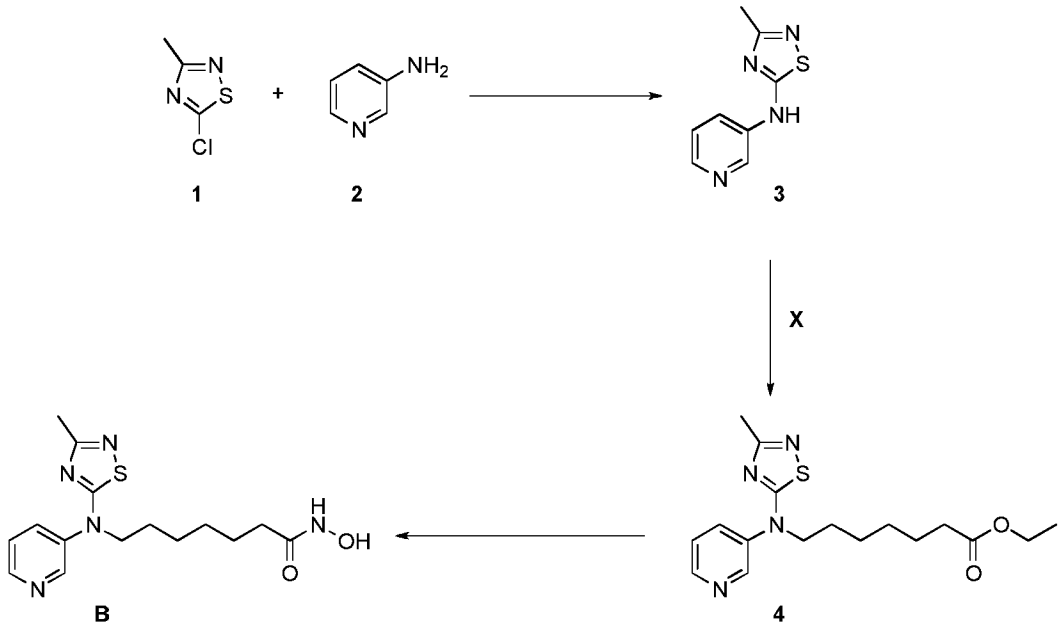
*c. N-Hydroxy-7-[(3-methyl-1,2,4-thiadiazol-5-yl)(pyridin-2-yl)amino]heptanamide (**Example A**)*

A freshly prepared solution of NH_2OH in MeOH (1M, 25mL) was added to 7-[(3-methyl-1,2,4-thiadiazol-5-yl)(pyridin-2-yl)amino]heptanoate, **4** (355 mg, 1.02mmol) at 0°C followed by KOH solubilised in MeOH (2M, 5mL). The reaction mixture was then stirred at rt for 21h, was subsequently concentrated *in vacuo* (to 5mL), then poured onto brine (50mL), and extracted with EtOAc (3 x 25mL). The organic phases were combined, dried over $MgSO_4$, filtered, and subsequently evaporated under reduced pressure. The resulting residue was purified by silica gel column chromatography, eluting with CH_2Cl_2/MeOH (25:1-20:1), to provide N-hydroxy-7-[(3-methyl-1,2,4-thiadiazol-5-yl)(pyridin-2-yl)amino]heptanamide, **Example A**, as a white solid (184mg, 54%).

^1H NMR (400 MHz, Methanol-d_4) δ_H (ppm): 1.37–1.53 (m, 4H), 1.64 (dt, *J*=14.7Hz, 7.1Hz, 2H), 1.81 (dt, *J*=14.3Hz, 7.3Hz, 2H), 2.10 (t, *J*=7.3Hz, 2H), 2.48 (s, 3H), 4.45 (t, *J*=7.6Hz, 2H), 7.12 (dd, *J*=7.3, 5.3Hz, 1H), 7.37 (d, *J*=8.6Hz, 1H), 7.92 (ddd, *J*=8.7Hz, 7.2Hz, 1.8Hz, 1H), 8.49 (d, *J*=5.1Hz, 1H). LCMS (ES): found 336.0 $[MH]^+$.

Example B:

N-Hydroxy-7-[(3-methyl-1,2,4-thiadiazol-5-yl)(pyridin-3-yl)amino]heptanamide



*i. Ethyl 7-iodoheptanoate **(X)***

Sodium iodide (1.0g, 6.67mmol) was added to ethyl 7-bromoheptanoate (1.5g, 5.97mmol) in acetone (30mL) and stirred with heating at 60°C for 18h. On cooling, TBME (30mL) was added and the salts were filtered-off and washed with TBME (2 x 20mL). The filtrate was then evaporated and the residue was treated with TBME (30mL); this was then filtered, washed with TBME (2 x 20mL) and evaporated, to afford **(X)** as an oil (1.8g, 91%).

*ii. N-Hydroxy-7-[(3-methyl-1,2,4-thiadiazol-5-yl)(pyridin-3-yl)amino]heptanamide **(B)***

A mixture of 3-aminopyridine **(2)** (0.32g, 3.4mmol), 5-chloro-3-methyl-1,2,4-thiadiazole (**1**) (0.45g, 3.34mmol), potassium *t*-butoxide (0.57g, 5.1mmol) and ±BINAP (85mg, 4mol%) in toluene (10mL) was degassed by bubbling N_2(g) through for 10min. $Pd_2(dba)_3$ (78mg, 2.5mol%) was added and degassed by bubbling N_2(g) through for 10min, and the reaction mixture was then heated with stirring at 90°C. After 18h, the reaction mixture was cooled, diluted with CH_2Cl_2 and evaporated onto silica. Purification on silica, eluting with petrol/EtOAc (1:1-

0:1), afforded a yellow solid. This solid was subsequently dissolved in CH_2Cl_2/methanol (1:1) (100mL) and was gently stirred with MP-TMT resin (0.57g). After 1 day, the resin was removed by filtration, and the filtrate was evaporated to furnish **(3)** as a solid (340mg, 51%).

LCMS (ES): found 193.0 $[MH]^+$.

NaH (60% in oil) (78mg) was added to a solution of N-(3-methyl-1,2,4-thiadiazol-5-yl)pyridin-3-amine **(3)** (340mg, 1.77mmol) in DMF (10mL). After 1h, ethyl 7-iodoheptanoate **(X)** (650mg, 2.2mmol) in DMF (2mL) was added, and the reaction mixture heated under N_2(g) with stirring, at 70°C. After 18h, the reaction mixture was cooled, poured onto saturated brine solution and extracted with EtOAc (x 3). The combined organic fractions were washed with saturated brine solution, dried over sodium sulfate, filtered and evaporated. Purification on silica eluting with petrol/EtOAc (1:1-1:3) furnished **(4)** an orange oil (500mg, 81%).

LCMS (ES): found 349.0 $[MH]^+$.

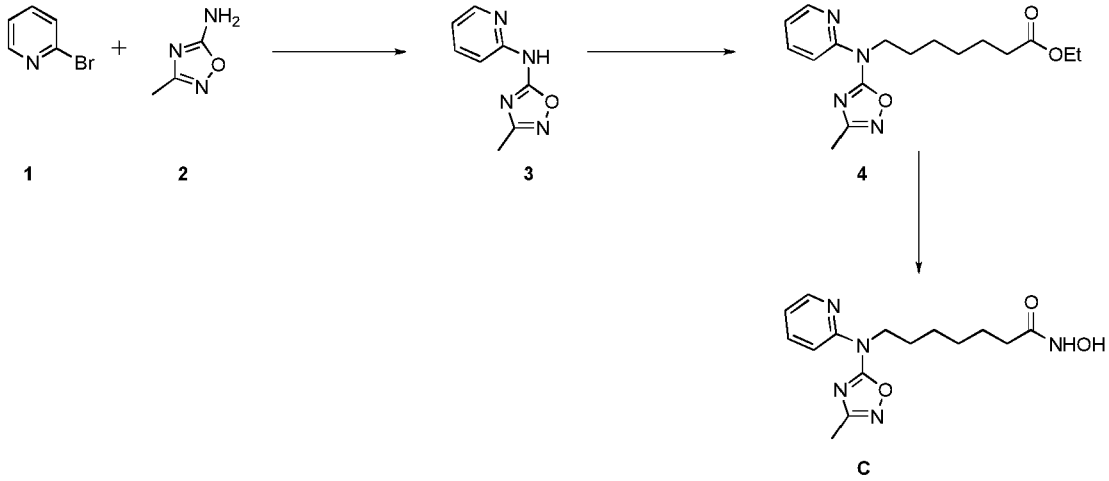
50% Hydroxylamine aqueous solution (4mL) was added to a solution of ethyl 7-[(3-methyl-1,2,4-thiadiazol-5-yl)(pyridin-3-yl)amino]heptanoate **(4)** (250mg, 0.71mmol) in methanol (4mL), and the resulting solution was stirred at 30°C for 24h. Further 50% hydroxylamine aqueous solution (2mL) was then added, and heating was continued at 30°C for an additional 24h. The reaction mixture was evaporated and azeotroped with toluene (x 2). Purification on silica, eluting with CH_2Cl_2/MeOH(1:0-8:1), afforded N-hydroxy-7-[(3-methyl-1,2,4-thiadiazol-5-yl)(pyridin-3-yl)amino]heptanamide, **Example B**, as an orange oil (5mg, 2%).

^{1}H NMR (400 MHz, CHLOROFORM-d) δ: 8.49-8.79 (m, 2H), 7.84 (d, *J*=7.6 Hz, 1H), 7.46 (d, *J*=5.5 Hz, 1H), 3.93 (t, *J*=6.2 Hz, 3H), 2.43 (s, 3H), 2.04-2.24 (m, 2H), 1.55-1.75 (m, 4H), 1.28-1.42 (m, 4H).

LCMS (ES): found 336.0 $[MH]^+$.

Example C:

N-Hydroxy-7-((3-methyl-1,2,4-oxadiazol-5-yl)(pyridin-2-yl)amino)heptanamide



1 2 3 4 C

2-Bromopyridine **(1)** (1.0g, 6.32mmol), 3-methyl-1,2,4-oxadiazol-5-amine (**2**) (0.94g, 9.49mmol), Xantphos (0.37g, 0.63mmol), and Cs_2CO_3 (4.1g, 12.64mmol) were combined in dry 1,4-dioxane (15mL). The reaction mixture was degassed with N_2(g) and placed under vacuum for 10min. $Pd_2(dba)_3$ (0.28g, 0.31mmol) was then added to the reaction mixture, which was heated at 90°C for 30h. It was then poured into demineralized water (200mL) and extracted with EtOAc (3 x 100mL). The organic phases were combined, dried over Na_2SO_4, filtered and subsequently evaporated under vacuum. The resulting residue was purified by flash chromatography, eluting with EtOAc/Hexane (1:1) to provide 3-methyl-N-(pyridin-2-yl)1,2,4-oxadiazol-5-amine **(3)** as a white solid (0.70g, 63%).
LCMS (ES): Found 177.1 [MH]+.

NaH (60%) (42mg, 1.01mmol) was added portion-wise to 3-methyl-N-(pyridin-2-yl)1,2,4-oxadiazol-5-amine **(3)** (178mg, 1.01mmol) in DMF (5mL) at 5°C under Ar(g). The reaction mixture was then stirred for 20min, and ethyl-7-iodoheptanoate (373mg, 1.3mmol) was then added. The reaction mixture was stirred at 80°C under Ar(g) for 1h in dark. The reaction mixture was then poured onto demineralized water (100mL), and extracted with EtOAc (3 x 50mL). The organic phases were combined, dried over Na_2SO_4, filtered and subsequently evaporated under vacuum. The resulting residue was purified by flash chromatography, eluting with EtOAc/Hexane (1:1) to ethyl 7-((3-methyl-1,2,4-oxadiazol-5-yl)(pyridin-2-yl)amino)heptanoate **(4)** as a white solid (134mg, 40%).

LCMS (ES): Found 333.3 [MH]+.

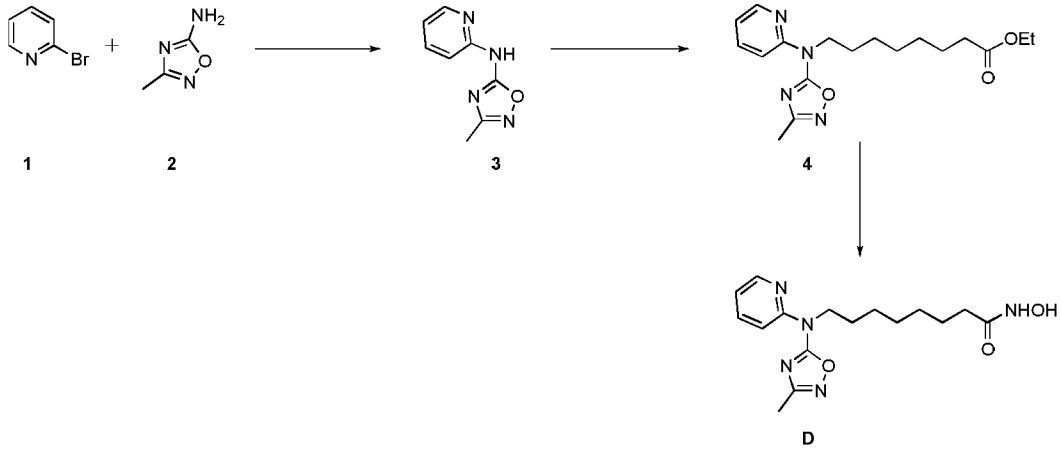
A fresh solution of NH_2OH in MeOH was prepared [KOH (1.13g, 20.18mmol) in MeOH (10mL) was added to $NH_2OH.HCl$ (1.40g, 20.18mmol) in MeOH (10mL) at 0°C]. The reaction mixture was stirred for 20min at 0°C, then filtered to remove salts; it was then added to **(4)** (134mg, 0.40mmol), and was then treated with KOH (226mg, 4.03mmol) solubilised in MeOH (5mL). The reaction mixture was stirred at rt for 21h, and then concentrated *in vacuo,* poured onto brine/H_2O (15mL/35mL), and extracted with CH_2Cl_2 (3 x 50mL). The organic phases were combined, dried over $MgSO_4$, filtered, and subsequently evaporated under vacuum. The resulting residue was purified by silica gel column chromatography, eluting with MeOH/CH_2Cl_2 (1:9) to provide N-hydroxy-7-((3-methyl-1,2,4-oxadiazol-5-yl)(pyridin-2-yl)amino)heptanamide, **Example C**, as a light yellow solid (46mg, 40%).

^{1}H NMR (400 MHz, DMSO-d_6) δ: 10.33 (br. s., 1H), 8.66 (br. s., 1H), 8.42-8.49 (m, 1H), 7.84-7.94 (m, 2H), 7.20-7.25 (m, 1H), 4.15 (t, *J*=7.4 Hz, 2H), 2.23 (s, 3H), 1.90 (t, *J*=7.3 Hz, 2H), 1.57-1.68 (m, 2H), 1.40-1.50 (m, 2H), 1.19-1.32 (m, 4H).

LCMS (ES): Found 320.1[MH]+.

Example D:

N-Hydroxy-8-((3-methyl-1,2,4-oxadiazol-5-yl)(pyridin-2-yl)amino)octanamide



i. Ethyl 8-iodooctanoate

A mixture of ethyl 8-bromooctanoate (5g, 19.9mmol) and sodium iodide (2.98g, 19.9mmol) in Acetone (50mL) was heated at 60°C under nitrogen for 18h. The

reaction mixture was then concentrated under vacuum. Purification by silica gel column chromatography, using EtOAc/Hexane (1:90) as eluant, provided ethyl 8-iodooctanoate as a colourless liquid (5.5g, 93.2 %).

LCMS (ES): Found 299.2 [MH]+.

ii. N-hydroxy-8-((3-methyl-1,2,4-oxadiazol-5-yl)(pyridin-2-yl)amino)octanamide ***(D)***

NaH (60%) (35mg, 0.85mmol) was added portion-wise to 3-methyl-N-(pyridin-2-yl)1,2,4-oxadiazol-5-amine **(3)** (150mg, 0.85mmol) in DMF (5mL) at 5°C under Ar(g). The reaction mixture was then stirred for 20min, and ethyl-8-iodooctanoate (330mg, 1.1mmol) was then added. The reaction mixture was stirred at 80°C under Ar(g) for 1h in dark, then poured onto demineralized water (100mL), and extracted with EtOAc (3 x 50mL). The organic phases were combined, dried over Na_2SO_4, filtered and subsequently evaporated under vacuum. The resulting residue was purified by flash chromatography, eluting with EtOAc/Hexane (1:1) to furnish ethyl 8-((3-methyl-1,2,4-oxadiazol-5-yl)(pyridin-2-yl)amino)octanoate **(4)** as a white solid (134mg, 40%).

LCMS (ES): Found 347.2 [MH]+.

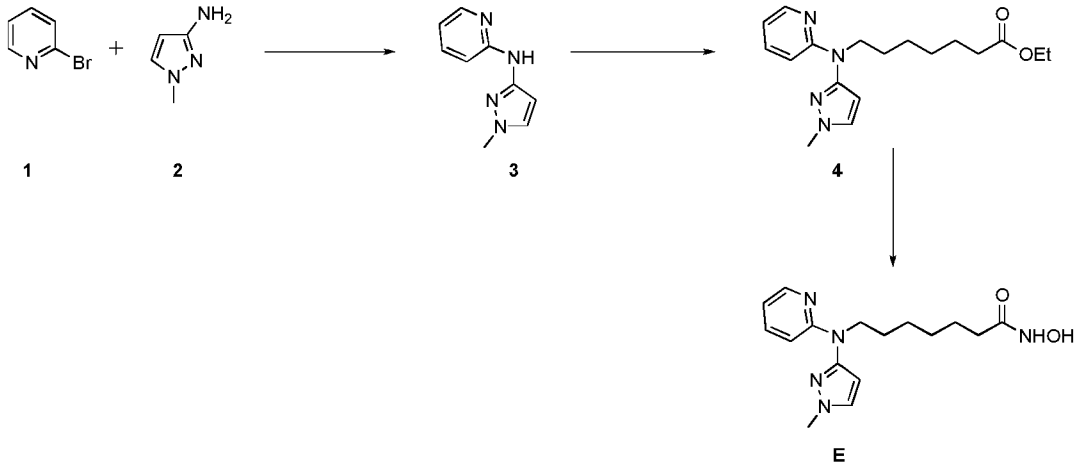
A fresh solution of NH_2OH in MeOH was prepared [KOH (1.09g, 19.50mmol) in MeOH (10mL) was added to $NH_2OH.HCl$ (1.35g, 19.50mmol) in MeOH (10mL) at 0°C]. The reaction mixture was stirred for 20min at 0°C, then filtered to remove salts; the filtrate was then added to **(4)** (135mg, 0.39mmol), and was then treated with KOH (218mg, 3.9mmol) solubilised in MeOH (5mL). The reaction mixture was stirred at rt for 21h, and then concentrated *in vacuo,* poured onto brine/H_2O (15mL/35mL), and extracted with EtOAc (3 x 300mL). The organic phases were combined, dried over $MgSO_4$, filtered, and subsequently evaporated under vacuum. The resulting residue was purified by silica gel column chromatography, eluting with MeOH/CH_2Cl_2 (1:9) provide N-hydroxy-8-((3-methyl-1,2,4-oxadiazol-5-yl)(pyridin-2-yl)amino)octanamide, **Example D**, as a yellow solid (12.2mg, 40%).

^{1}H NMR (400 MHz, METHANOL-d_4) δ: 8.44 (dt, *J*=4.7, 1.4 Hz, 1H), 7.82-7.87 (m, 2H), 7.21 (td, *J*=5.1, 2.9 Hz, 1H), 4.16-4.25 (m, 2H), 2.26 (s, 3H), 2.06 (t, *J*=7.4 Hz, 2H), 1.66-1.76 (m, 2H), 1.53-1.64 (m, 2H), 1.30-1.41 (m, 6H).

LCMS (ES): Found 334.3 [MH]+.

Example E:

N-Hydroxy-7-((1-methyl-1H-pyrazol-3-yl)(pyridin-2-yl)amino)heptanamide



1 2 3 4 E

2-Bromopyridine **(1)** (1.0g, 6.3mmol), 1-methyl-1H-pyrazol-3-amine **(2)** (0.79g, 8.2mmol), Xantphos (0.37g, 0.63mmol), and Cs_2CO_3 (4.1g, 12.6mmol) were combined in dry 1,4-dioxane (15mL). The reaction mixture was then degassed with N_2(g), and placed under vacuum for 10min. $Pd_2(dba)_3$ (0.29g, 0.31mmol) was added and the resulting reaction mixture was heated at 90°C for 30h. It was then poured onto demineralized water (200mL), and extracted with EtOAc (3 x 100mL). The organic phases were combined, dried over Na_2SO_4, filtered and subsequently evaporated under vacuum. The resulting residue was purified by flash chromatography, eluting with EtOAc/Hexane (1:1) to provide N-(1-methyl-1H-pyrazol-3-yl)pyridin-2-amine **(3)** as a yellow solid (0.75g, 68%).

LCMS (ES): Found 175.2 $[MH]^+$.

NaH (60%) (48mg, 1.2mmol) was added portion-wise to N-(1-methyl-1H-pyrazol-3-yl)pyridin-2-amine **(3)** (200mg, 1.1mmol) in DMF (8mL) at 5°C under Ar(g). The resulting reaction mixture was stirred for 20min, and ethyl-7-iodoheptanoate (428mg, 1.5mmol) was added. The reaction mixture was then stirred at 70°C under Ar(g) for 1h in the dark; it was then poured onto demineralized water (100mL), and extracted with EtOAc (3 x 50mL). The organic phases were combined, dried over Na_2SO_4, filtered and subsequently evaporated under vacuum. The resulting residue was purified by flash chromatography, eluting with EtOAc/Hexane (3:7) to furnish ethyl 7-((1-methyl-1H-pyrazol-3-yl)(pyridin-2-yl)amino)heptanoate **(4)** as a yellow solid (170mg, 44%).

LCMS (ES): Found 331.4 [MH]+.

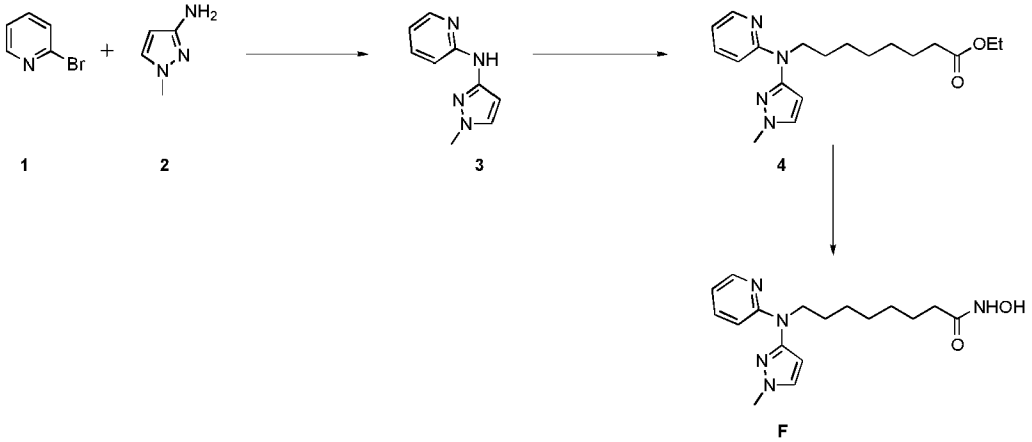
A fresh solution of NH_2OH in MeOH was prepared [KOH (1.44g, 25.7mmol) in MeOH (5mL) was added to $NH_2OH.HCl$ (1.7g, 25.7mmol) in MeOH (15mL) at 0°C]. The reaction mixture was stirred for 20min at 0°C, then filtered to remove salts; it was then added to **(4)** (170mg, 0.51mmol), and was then treated with KOH (288mg, 5.1mmol) solubilised in MeOH (5mL). The reaction mixture was stirred at rt for 21h, and then concentrated *in vacuo* (*ca.* 200mL), poured onto brine/H_2O (30mL/70mL), and extracted with CH_2Cl_2 (3 x 50mL). The organic phases were combined, dried over $MgSO_4$, filtered, and subsequently evaporated under vacuum. The resulting residue was purified by silica gel column chromatography, eluting with MeOH/CH_2Cl_2 (1:9) to provide N-hydroxy-7-((1-methyl-1H-pyrazol-3-yl)(pyridin-2-yl)amino)heptanamide, **Example E**, as a yellow liquid (45mg, 26%).

^{1}H NMR (400 MHz, DMSO-d_6) δ: 10.32 (br. s, 1H), 8.66 (br. s., 1H), 8.14 (dd, *J*=4.8, 1.1 Hz, 1H), 7.68 (d, *J*=2.1 Hz, 1H), 7.44 (t, *J*=7.0 Hz, 1H), 6.79 (d, *J*=8.5 Hz, 1H), 6.65 (dd, *J*=6.4, 5.3 Hz, 1H), 6.12 (d, *J*=2.1 Hz, 1H), 3.82-3.90 (m, 2H), 3.79 (s, 3H), 1.91 (t, *J*=7.4 Hz, 2H), 1.55 (br. s., 1H), 1.39-1.50 (m, 2H), 1.11-1.33 (m, 4H).

LCMS (ES): Found 318.2 [MH]+.

Example F:

N-Hydroxy-8-((1-methyl-1H-pyrazol-3-yl)(pyridin-2-yl)amino)octanamide



2-Bromopyridine **(1)** (1.0g, 6.3mmol), 1-methyl-1H-pyrazol-3-amine **(2)** (0.79g, 8.2mmol), Xantphos (0.366g, 0.63mmol), and Cs_2CO_3 (4.1g, 12.6mmol) were combined in dry 1,4-dioxane (15mL). The reaction mixture was degassed with N_2(g) and placed under vacuum for 10min. $Pd_2(dba)_3$ (0.289g, 0.31mmol) was

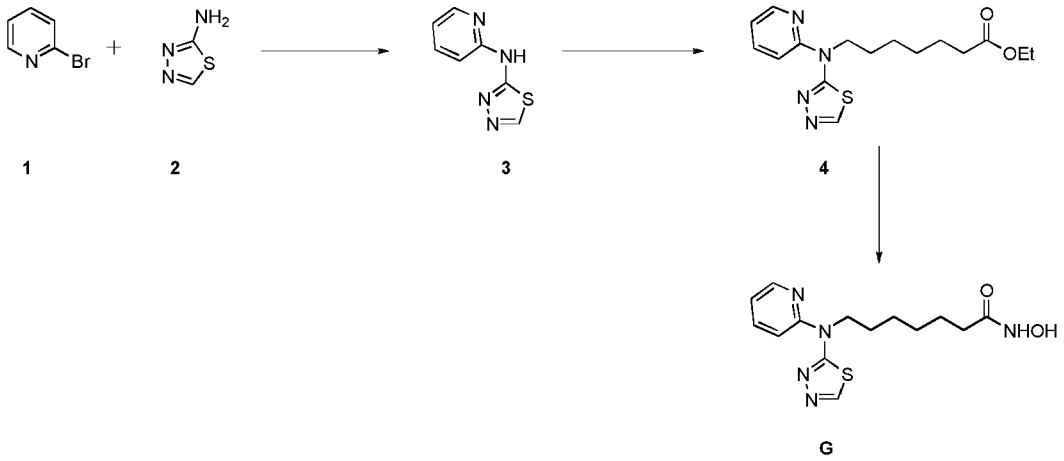
then added and the resulting reaction mixture was then heated at 90°C for 30h. It was then poured onto demineralized water (200mL), and extracted with EtOAc (3 x 100mL). The organic phases were combined, dried over Na_2SO_4, filtered and subsequently evaporated under vacuum. The resulting residue was purified by flash chromatography, eluting with EtOAc/Hexane (1:1) to provide N-(1-methyl-1H-pyrazol-3-yl)pyridin-2-amine **(3)** as a yellow solid (0.75g, 68%).
LCMS (ES): Found 175.2 [MH]+.

NaH (60%) (60.3mg, 1.5mmol) was added portion-wise to **(3)** (250mg, 1.4mmol) in DMF (10mL) at 5°C under Ar(g). The reaction mixture was then stirred for 20min, and ethyl-8-iodooctanoate (556mg, 1.8mmol) was added. It was then stirred at 70°C under Ar(g) for 1h in dark, then poured onto demineralized water (100mL), and extracted with EtOAc (3 x 50mL). The organic phases were combined, dried over Na_2SO_4, filtered and subsequently evaporated under vacuum. The resulting residue was purified by flash chromatography, eluting with EtOAc/Hexane (3:70) to furnish ethyl 8-((1-methyl-1H-pyrazol-3-yl)(pyridin-2-yl)amino)octanoate **(4)** as a yellow solid (60mg, 20%).
LCMS (ES): Found 345.2 [MH]+.

A fresh solution of NH_2OH in MeOH was prepared [KOH (578mg, 10.3mmol) in MeOH (10mL) was added to $NH_2OH.HCl$ (716mg, 10.3mmol) in MeOH (10mL) at 0°C]. The reaction mixture was stirred for 20min at 0°C, then filtered to remove salts; the filtrate was then added to **(4)** (71mg, 0.20mmol), and was then treated with KOH (115mg, 2.06mmol) solubilised in MeOH (5mL). The reaction mixture was stirred at rt for 21h, and then concentrated *in vacuo*, poured onto brine/H_2O (30mL/70mL), and extracted with CH_2Cl_2 (3 x 50mL). The organic phases were combined, dried over $MgSO_4$, filtered, and subsequently evaporated under vacuum. The resulting residue was purified by silica gel column chromatography, eluting with MeOH/CH_2Cl_2 (1:9) to provide N-hydroxy-8-((1-methyl-1H-pyrazol-3-yl)(pyridin-2-yl)amino)octanamide, **Example F**, as a light yellow semi solid (15mg, 21%).
^{1}H NMR (400 MHz, METHANOL-d_4) δ: 8.08 (d, *J*=4.0 Hz, 1H), 7.60 (d, *J*=2.1 Hz, 1H), 7.39-7.47 (m, 1H), 6.62-6.74 (m, 2H), 6.12 (d, *J*=2.1 Hz, 1H), 3.82-3.91 (m, 5H), 2.07 (t, *J*=7.4 Hz, 2H), 1.51-1.70 (m, 4H), 1.22-1.40 (m, 6H).
LCMS (ES): Found 332.2 [MH]+.

Example G

N-Hydroxy-7-(pyridin-2-yl(1,3,4-thiadiazol-2-yl)amino)heptanamide



1 2 3 4 G

2-Bromopyridine **(1)** (1.0g, 6.3mmol), 1,3,4-thiadiazol-2-amine **(2)** (0.64g, 6.3mmol), Xantphos (0.366g, 0.63mmol), and Cs_2CO_3 (3.09g, 9.4mmol) were combined in dry 1,4-dioxane (15mL). The reaction mixture was degassed with N_2(g) and placed under vacuum for 10min. $Pd_2(dba)_3$ (0.289g, 0.31mmol) was then added and the resulting reaction mixture was then heated at 90°C for 30h. It was then poured onto demineralized water (200mL), and extracted with EtOAc (3 x 100mL). The organic phases were combined, dried over Na_2SO_4, filtered and subsequently evaporated under vacuum. The resulting residue was purified by flash chromatography, eluting with EtOAc/Hexane (1:1) to provide N-(pyridin-2-yl)-1,3,4-thiadiazol-2-amine **(3)** as a yellow solid (0.33g, 30%).

LCMS (ES): Found 179.0 [MH]+.

NaH (60%) (32.8mg, 0.8mmol) was added portion-wise to **(3)** (126mg, 0.78mmol) in DMF (5mL) at 5°C under Ar(g). The reaction mixture was then stirred for 20min, and ethyl-7-iodoheptanoate (288mg, 1.0mmol) was added. The reaction mixture was stirred at 70°C under Ar(g) for 1h in the dark, then poured onto demineralized water (100mL), and extracted with EtOAc (3 x 50mL). The organic phases were combined, dried over Na_2SO_4, filtered and subsequently evaporated under vacuum. The resulting residue was purified by flash chromatography, eluting with EtOAc/Hexane (3:7) to furnish ethyl 7-(pyridin-2-yl(1,3,4-thiadiazol-2-yl)amino)heptanoate as a yellowish semi solid (110mg, 44%).

LCMS (ES): Found 335.2 [MH]+.

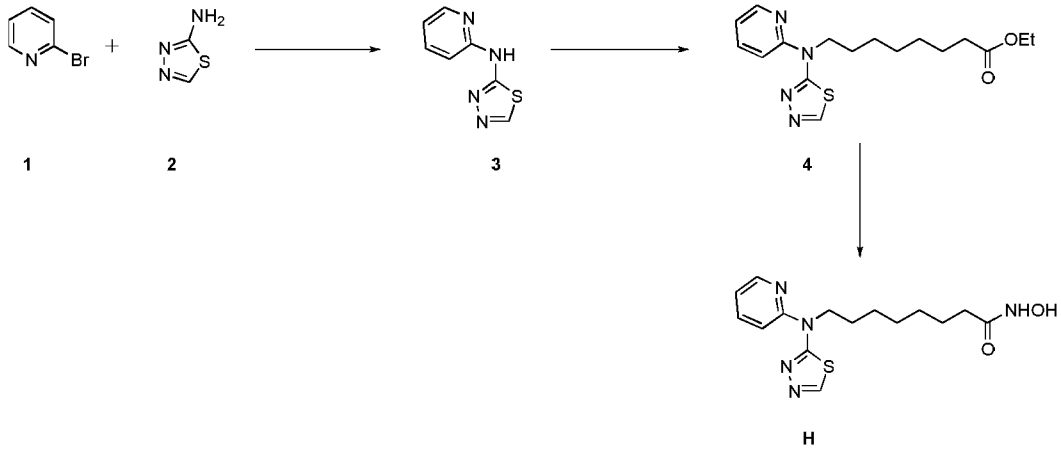
A fresh solution of NH_2OH in MeOH was prepared: [KOH (1.84g, 32.9mmol) in MeOH (15mL) was added to $NH_2OH.HCl$ (2.28g, 32.9mmol) in MeOH (15mL) at 0°C]. The mixture was stirred for 20min at 0°C, then filtered to remove salts; the filtrate was then added to ethyl 7-(pyridin-2-yl(1,3,4-thiadiazol-2-yl)amino)heptanoate **(4)** (220mg, 0.65mmol) followed by KOH (369mg, 6.58mmol) solubilized in MeOH (5mL). The reaction mixture was stirred at rt for 21h, then concentrated *in vacuo*, poured onto brine/H_2O (30mL / 70mL), and extracted with CH_2Cl_2 (3 x 50mL). The organic phases were combined, dried over Na_2SO_4, filtered and subsequently evaporated under vacuum. The resulting residue was purified by flash chromatography, eluting with MeOH/CH_2Cl_2 1:9) to provide N-hydroxy-7-(pyridin-2-yl(1,3,4-thiadiazol-2-yl)amino)heptanamide, **Example G**, as a yellow liquid (7mg, 3%).

^{1}H NMR (400 MHz, METHANOL-d_4) δ: 8.89 (s, 1H), 8.41 (dd, *J*=4.8, 1.0 Hz, 1H), 7.88 (ddd, *J*=8.6, 7.2, 1.8 Hz, 1H), 7.30 (d, *J*=8.5 Hz, 1H), 7.09 (dd, *J*=7.0, 5.0 Hz, 1H), 4.37-4.48 (m, 2H), 2.10 (t, *J*=7.4 Hz, 2H), 1.82 (dt, *J*=15.0, 7.6 Hz, 2H), 1.64 (dt, *J*=14.5, 7.3 Hz, 2H), 1.37-1.54 (m, 4H).

LCMS (ES): Found 322.1 [MH]+.

Example H

N-Hydroxy-8-(pyridin-2-yl(1,3,4-thiadiazol-2-yl)amino)octanamide

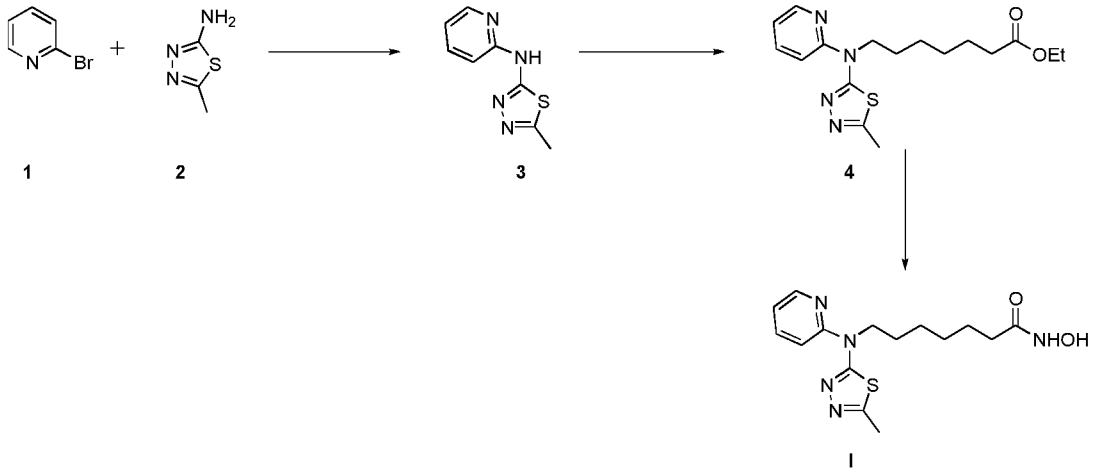


NaH (60%) (41.0mg, 1.03mmol) was added portion-wise to N-(pyridin-2-yl)-1,3,4-thiadiazol-2-amine **(3)** (as per Example G above) (176mg, 0.98mmol) in DMF (5mL) at 5°C under Ar(g). The reaction mixture was then stirred for 20min, and ethyl-8-iodooctanoate (382mg, 1.2mmol) was added. The reaction mixture was stirred at 70°C under Ar(g) for 1h in the dark, then poured onto

demineralized water (100mL), and extracted with EtOAc (3 x 50mL). The organic phases were combined, dried over Na_2SO_4, filtered and subsequently evaporated under vacuum. The resulting residue was purified by flash chromatography, eluting with EtOAc/Hexane (3:7) to furnish ethyl 8-(pyridin-2-yl(1,3,4-thiadiazol-2-yl)amino)octanoate **(4)** as a yellow solid (66mg, 19%).
LCMS (ES): Found 349.1 [MH]+.

A fresh solution of NH_2OH in MeOH was prepared: [KOH (531mg, 9.46mmol) in MeOH (10mL) was added to $NH_2OH.HCl$ (657mg, 9.46mmol) in MeOH (10mL) at 0°C]. The mixture was stirred for 20min at 0°C, then filtered to remove salts; the filtrate was then added to ethyl 8-(pyridin-2-yl(1,3,4-thiadiazol-2-yl)amino)octanoate **(4)** (66mg, 0.18mmol) followed by KOH (106mg, 1.8mmol) solubilized in MeOH (5mL). The reaction mixture was stirred at rt for 21h, then concentrated *in vacuo*, poured onto brine/H_2O (30mL/70mL), and extracted with CH_2Cl_2 (3 x 50mL). The organic phases were combined, dried over Na_2SO_4, filtered and subsequently evaporated under vacuum. The resulting residue was purified by flash chromatography, eluting with MeOH/CH_2Cl_2 (1:9) to provide N-hydroxy-8-(pyridin-2-yl(1,3,4-thiadiazol-2-yl)amino)octanamide, **Example H**, as a light yellow solid (15mg, 23%).
^{1}H NMR (400 MHz, METHANOL-d_4) δ: 8.89 (s, 1H), 8.40 (dd, *J*=4.7, 0.9 Hz, 1H), 7.79-7.94 (m, 1H), 7.29 (d, *J*=8.6 Hz, 1H), 7.08 (dd, *J*=7.1, 5.0 Hz, 1H), 4.42 (t, *J*=7.8 Hz, 2H), 2.09 (t, *J*=7.3 Hz, 2H), 1.81 (quin, *J*=7.2 Hz, 2H), 1.62 (quin, *J*=7.3 Hz, 2H), 1.24-1.52 (m, 6H).
LCMS (ES): Found 336.1[MH]+.

Example I
N-Hydroxy-7-((5-methyl-1,3,4-thiadiazol-2-yl)(pyridin-2-yl)amino)heptanamide



2-Bromopyridine **(1)** (1.0g, 6.3mmol), 5-methyl-1,3,4-thiadiazol-2-amine **(2)** (0.947g, 8.2mmol), Xantphos (0.366g, 0.63mmol), and Cs_2CO_3 (3.09g, 9.4mmol) were combined in dry 1,4-dioxane (15mL). The reaction mixture was degassed with N_2(g) and placed under vacuum for 10min. $Pd_2(dba)_3$ (0.289g, 0.31mmol) was then added and the resulting reaction mixture was heated at 90°C for 30h. It was then poured onto demineralized water (200mL), and extracted with EtOAc (3 x 100mL). The organic phases were combined, dried over Na_2SO_4, filtered and subsequently evaporated under vacuum. The resulting residue was purified by flash chromatography, eluting with EtOAc/Hexane (1:1) to provide 5-methyl-N-(pyridin-2-yl)-1,3,4-thiadiazol-2-amine **(3)** as a yellow solid (0.22g, 18%).
LCMS (ES): Found 193.2 [MH]+.

NaH (60%) (43.7mg, 1.0mmol) was added portion-wise to 5-methyl-N-(pyridin-2-yl)-1,3,4-thiadiazol-2-amine **(3)** (220mg, 1.0mmol) in DMF (5mL) at 5°C under Ar(g). The reaction mixture was then stirred for 20min, and ethyl-7-iodoheptanoate (403mg, 1.3mmol) was added. The reaction mixture was stirred at 70°C under Ar(g) for 1h in the dark, then poured onto demineralized water (100mL), and extracted with EtOAc (3 x 50mL). The organic phases were combined, dried over Na_2SO_4, filtered and subsequently evaporated under vacuum. The resulting residue was purified by flash chromatography, eluting with EtOAc/Hexane (3:7) to furnish ethyl 7-((5-methyl-1,3,4-thiadiazol-2-yl)(pyridin-2-yl)amino)heptanoate **(4)** as a yellow solid (128mg, 33%).
LCMS (ES): Found 349.1 [MH]+.

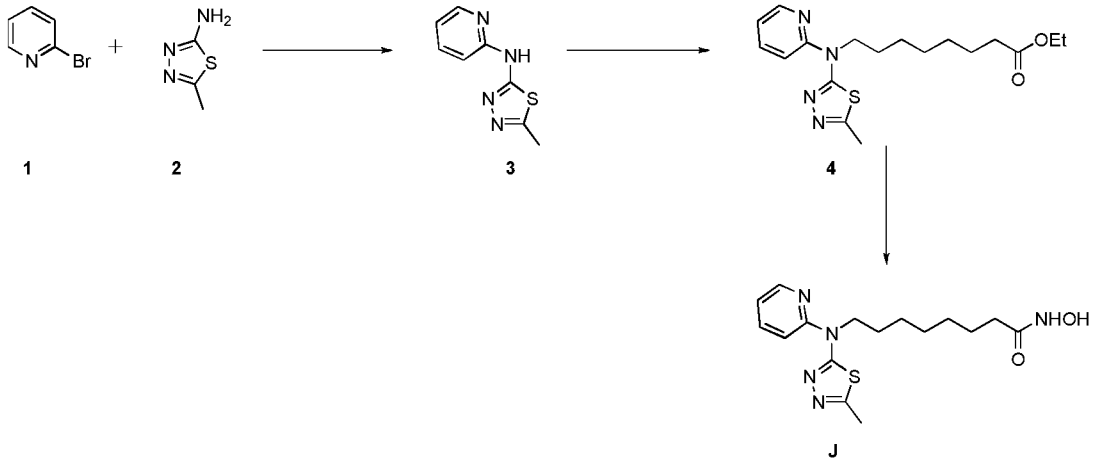
A fresh solution of NH_2OH in MeOH was prepared: [KOH (1.03g, 18.5mmol) in MeOH (15mL) was added to $NH_2OH.HCl$ (1.28g, 18.5mmol) in MeOH (15mL) at 0°C]. The mixture was stirred for 20min at 0°C, then filtered to remove salts; the filtrate was then added to ethyl 7-((5-methyl-1,3,4-thiadiazol-2-yl)(pyridin-2-yl)amino)heptanoate **(4)** (128mg, 0.37mmol) followed by KOH (207mg, 3.7mmol) solubilized in MeOH (5mL). The reaction mixture was stirred at rt for 21h, then concentrated *in vacuo*, poured onto brine/H_2O (30mL/70mL), and extracted with CH_2Cl_2 (3 x 50mL). The organic phases were combined, dried over Na_2SO_4, filtered and subsequently evaporated under vacuum. The resulting residue was purified by flash chromatography, eluting with MeOH/CH_2Cl_2 (1:9) to provide N-hydroxy-7-((5-methyl-1,3,4-thiadiazol-2-yl)(pyridin-2-yl)amino)heptanamide, **Example I**, as a light yellow liquid (22mg, 17.8%).

^1H NMR (400 MHz, METHANOL-d_4) δ: 8.38 (dd, *J*=4.9, 1.0 Hz, 1H), 7.86 (ddd, *J*=8.7, 7.2, 1.8 Hz, 1H), 7.26 (d, *J*=8.6 Hz, 1H), 7.06 (dd, *J*=6.9, 5.0 Hz, 1H), 4.31-4.41 (m, 2H), 3.63-3.70 (m, 1H), 3.52-3.58 (m, 1H), 2.62 (s, 3H), 2.10 (t, *J*=7.4 Hz, 2H), 1.80 (dt, *J*=15.1, 7.6 Hz, 2H), 1.64 (dt, *J*=14.5, 7.4 Hz, 2H), 1.37-1.53 (m, 2H).

LCMS (ES): Found 336.4 [MH]+.

Example J

N-Hydroxy-8-((5-methyl-1,3,4-thiadiazol-2-yl)(pyridin-2-yl)amino)octanamide



1 2 3 4

J

NaH (60%) (42.0mg, 1.0mmol) was added portion-wise to 5-methyl-N-(pyridin-2-yl)-1,3,4-thiadiazol-2-amine **(3)** (as per Example I above) (195mg, 1.0mmol) in DMF (5mL) at 5°C under Ar(g). The reaction mixture was then stirred for 20min,

and ethyl-8-iodooctanoate (393mg, 1.3mmol) was added. The reaction mixture was stirred at 70°C under Ar(g) for 1h in the dark, then poured onto demineralized water (100mL), and extracted with EtOAc (3 x 50mL). The organic phases were combined, dried over Na_2SO_4, filtered and subsequently evaporated under vacuum. The resulting residue was purified by flash chromatography, eluting with EtOAc/Hexane (3:7) to furnish **(4)** as a yellow solid (76mg, 20%).

LCMS (ES): Found 362.5 [MH]+.

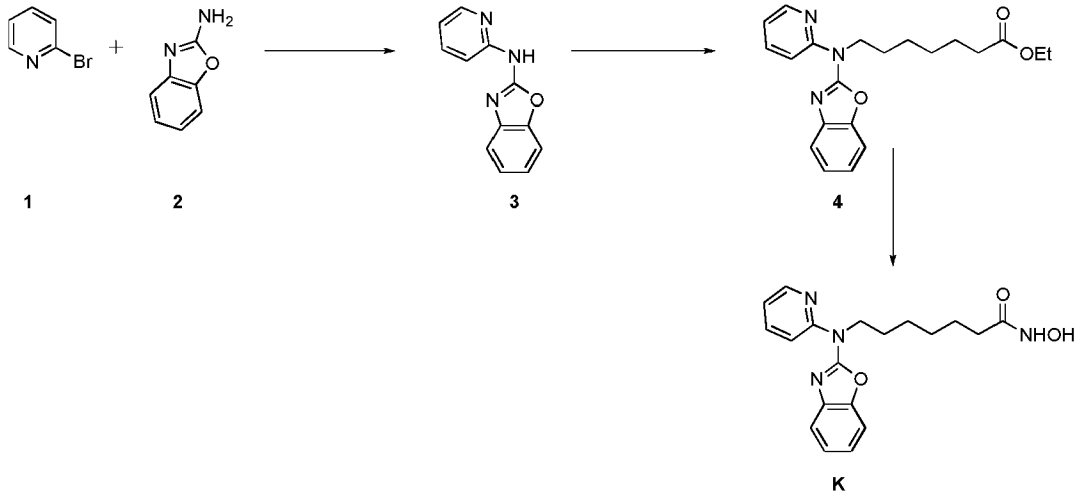
A fresh solution of NH_2OH in MeOH was prepared: [KOH (588mg, 10.4mmol) in MeOH (10mL) was added to $NH_2OH.HCl$ (729mg, 10.4mmol) in MeOH (10mL) at 0°C]. The mixture was stirred for 20min at 0°C, then filtered to remove salts; the filtrate was then added to ethyl 8-((5-methyl-1,3,4-thiadiazol-2-yl)(pyridin-2-yl)amino)octanoate **(4)** (76mg, 0.2mmol) followed by KOH (117mg, 2.0mmol) solubilized in MeOH (5mL). The reaction mixture was stirred at rt for 21h, then concentrated *in vacuo*, poured onto brine/H_2O (30mL/70mL), and extracted with CH_2Cl_2 (3 x 50mL). The organic phases were combined, dried over Na_2SO_4, filtered and subsequently evaporated under vacuum. The resulting residue was purified by flash chromatography, eluting with MeOH/CH_2Cl_2 (1:9) to provide N-hydroxy-8-((5-methyl-1,3,4-thiadiazol-2-yl)(pyridin-2-yl)amino)octanamide, **Example J**, as a light yellow solid (8mg, 11%).

^1H NMR (METHANOL-d_4) δ: 8.38 (ddd, *J*=4.9, 1.8, 0.9 Hz, 1H), 7.86 (ddd, *J*=8.7, 7.1, 1.9 Hz, 1H), 7.26 (d, *J*=8.6 Hz, 1H), 7.06 (ddd, *J*=7.2, 4.9, 0.6 Hz, 1H), 4.32-4.40 (m, 2H), 2.62 (s, 3H), 2.09 (t, *J*=7.4 Hz, 2H), 1.80 (quin, *J*=7.5 Hz, 2H), 1.62 (quin, *J*=7.4 Hz, 2H), 1.32-1.51 (m, 6H).

LCMS (ES): Found 350.1 [MH]+.

Example K

7-(Benzo[d]oxazol-2-yl(pyridin-2-yl)amino)-N-hydroxyheptanamide



1 2 3 4 K

2-Bromopyridine **(1)** (1.0g, 6.3mmol), benzo[d]oxazol-2-amine **(2)** (0.871g, 6.4mmol), Xantphos (0.366g, 0.63mmol), and Cs_2CO_3 (3.09g, 9.4mmol) were combined in dry 1,4-dioxane (15mL). The reaction mixture was degassed with N_2(g) and placed under vacuum for 10min. $Pd_2(dba)_3$ (0.289g, 0.31mmol) was then added and the resulting reaction mixture was heated at 90°C for 30h. It was then poured onto demineralized water (200mL), and extracted with EtOAc (3 x 100mL). The organic phases were combined, dried over Na_2SO_4, filtered and subsequently evaporated under vacuum. The resulting residue was purified by flash chromatography, eluting with EtOAc/Hexane (1:1) to provide N-(pyridin-2-yl)benzo[d]oxazol-2-amine **(3)** as a yellow solid (0.8g, 60%).

LCMS (ES): Found 212.1 [MH]+.

NaH (60%) (35.3mg, 0.50mmol) was added portion-wise to N-(pyridin-2-yl)benzo[d]oxazol-2-amine **(3)** (162mg, 0.48mmol) in DMF (5mL) at 5°C under Ar(g). The reaction mixture was then stirred for 20min, and ethyl-7-iodoheptanoate (179mg, 1.3mmol) was added. The reaction mixture was stirred at 70°C under Ar(g) for 1h in the dark, then poured onto demineralized water (100mL), and extracted with EtOAc (3 x 50mL). The organic phases were combined, dried over Na_2SO_4, filtered and subsequently evaporated under vacuum. The resulting residue was purified by flash chromatography, eluting with EtOAc/Hexane (3:7) to furnish ethyl 7-(benzo[d]oxazol-2-yl(pyridin-2-yl)amino)heptanoate as a yellow solid (80mg, 28%).

LCMS (ES): Found 368.1 [MH]+.

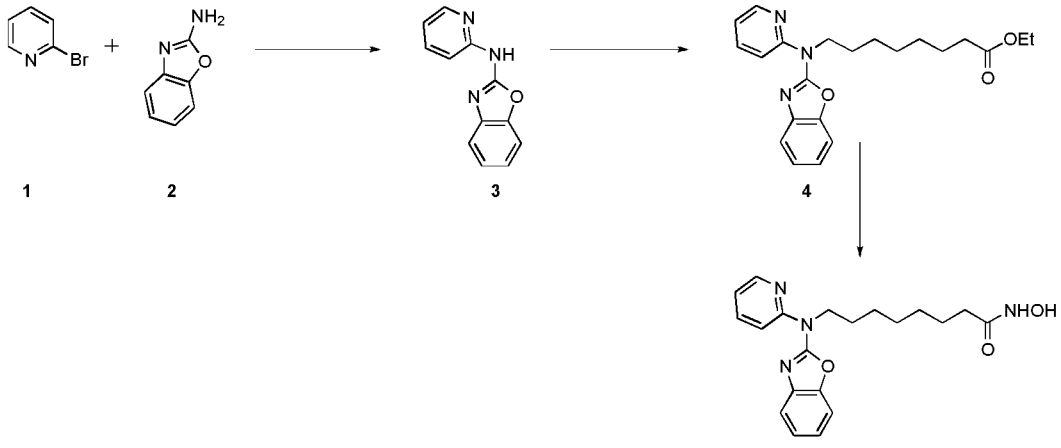
A fresh solution of NH_2OH in MeOH was prepared: [KOH (1.06g, 18.9mmol) in MeOH (15mL) was added to $NH_2OH.HCl$ (1.31g, 18.9mmol) in MeOH (15mL) at 0°C]. The mixture was stirred for 20min at 0°C, then filtered to remove salts; the filtrate was then added to ethyl 7-(benzo[d]oxazol-2-yl(pyridin-2-yl)amino)heptanoate **(3)** (80mg, 0.37mmol) followed by KOH (212mg, 3.7mmol) solubilized in MeOH (5mL). The reaction mixture was stirred at rt for 21h, then concentrated *in vacuo*, poured onto brine/H_2O (30mL/70mL), and extracted with CH_2Cl_2 (3 x 50mL). The organic phases were combined, dried over Na_2SO_4, filtered and subsequently evaporated under vacuum. The resulting residue was purified by flash chromatography, eluting with MeOH/CH_2Cl_2 (1:9) to provide 7-(benzo[d]oxazol-2-yl(pyridin-2-yl)amino)-N-hydroxyheptanamide, **Example K**, as an off-white liquid (20mg, 25%).

^{1}H NMR (400 MHz, METHANOL-d_4) δ: 8.43-8.47 (m, 1H), 7.84-7.88 (m, 2H), 7.39-7.44 (m, 2H), 7.25 (td, *J*=7.7, 1.1 Hz, 1H), 7.21 (ddd, *J*=5.9, 5.0, 2.4 Hz, 1H), 7.13-7.19 (m, 1H), 4.24-4.32 (m, 2H), 2.07 (t, *J*=7.4 Hz, 2H), 1.79 (quin, *J*=7.4 Hz, 2H), 1.60 (dt, *J*=14.4, 7.2 Hz, 2H), 1.33-1.47 (m, 4H).

LCMS (ES): Found 355.4 [MH]+.

Example L

8-(Benzo[d]oxazol-2-yl(pyridin-2-yl)amino)-N-hydroxyoctanamide



1 2 3 4 L

NaH (60%) (53.7mg, 1.34mmol) was added portion-wise to N-(pyridin-2-yl)benzo[d]oxazol-2-amine **(3)** (as per Example K above) (265mg, 1.28mmol) in DMF (8mL) at 5°C under Ar(g). The reaction mixture was then stirred for 20min, and ethyl-8-iodooctanoate (495mg, 1.66mmol) was added. The reaction mixture was stirred at 70°C under Ar(g) for 1h in the dark, then poured onto

demineralized water (100mL), and extracted with EtOAc (3 x 50mL). The organic phases were combined, dried over Na_2SO_4, filtered and subsequently evaporated under vacuum. The resulting residue was purified by flash chromatography, eluting with EtOAc/Hexane (3:7) to furnish ethyl 8-(benzo[d]oxazol-2-yl(pyridin-2-yl)amino)octanoate **(4)** as a yellow solid (210mg, 43%).

LCMS (ES): Found 382.4 [MH]+.

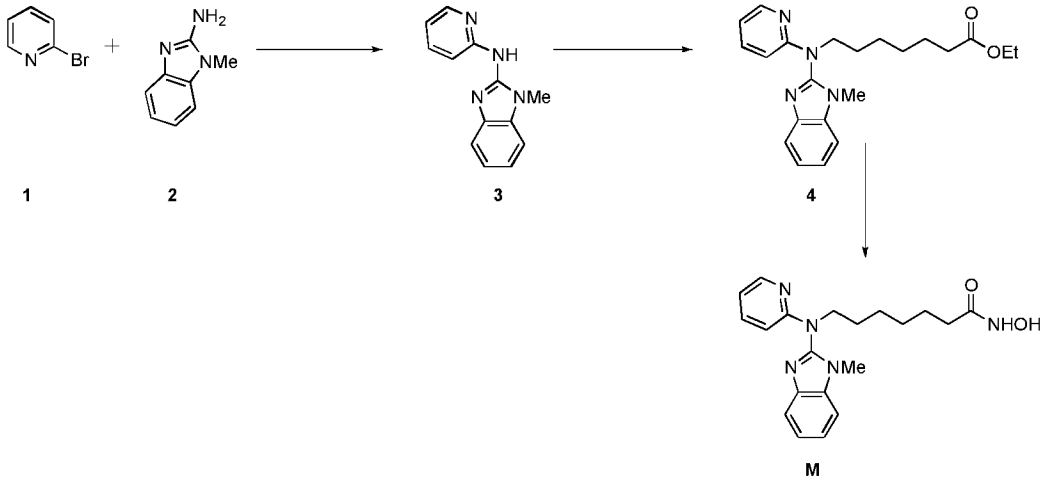
A fresh solution of NH_2OH in MeOH was prepared: [KOH (1.56mg, 27.8mmol) in MeOH (15mL) was added to $NH_2OH.HCl$ (1.94g, 27.8mmol) in MeOH (15mL) at 0°C]. The reaction mixture was stirred for 20min at 0°C, then filtered to remove salts; the filtrate was then added to ethyl 8-(benzo[d]oxazol-2-yl(pyridin-2-yl)amino)octanoate **(4)** (210mg, 0.55mmol) followed by KOH (313mg, 5.57mmol) solubilized in MeOH (5mL). The reaction mixture was stirred at rt for 21h, then concentrated *in vacuo*, poured onto brine/H_2O (30mL/70mL), and extracted with CH_2Cl_2 (3 x 50mL). The organic phases were combined, dried over Na_2SO_4, filtered and subsequently evaporated under vacuum. The resulting residue was purified by flash chromatography, eluting with MeOH/CH_2Cl_2 (1:9) to provide 8-(benzo[d]oxazol-2-yl(pyridin-2-yl)amino)-N-hydroxyoctanamide, **Example L**, as a light brown solid (67mg, 33%).

^1H NMR (400 MHz, DMSO-d_6) δ: 10.33 (br. s., 1H), 8.68 (br. s., 1H), 8.46 (ddd, *J*=4.8, 1.8, 1.1 Hz, 1H), 8.01 (d, *J*=8.4 Hz, 1H), 7.88 (td, *J*=7.8, 2.0 Hz, 1H), 7.51 (dd, *J*=18.6, 7.4 Hz, 2H), 7.25 (td, *J*=7.7, 1.1 Hz, 1H), 7.12-7.21 (m, 2H), 4.20-4.31 (m, 2H), 1.90 (t, *J*=7.4 Hz, 2H), 1.64-1.75 (m, 2H), 1.45 (dt, *J*=14.6, 7.3 Hz, 2H), 1.14-1.36 (m, 6H).

LCMS (ES): Found 369.1 [MH]+.

Example M

N-Hydroxy-7-((1-methyl-1H-benzo[d]imidazol-2-yl)(pyridin-2-yl)amino)heptanamide



1 2 3 4 M

2-Bromopyridine **(1)** (1.0g, 6.3mmol), 2-amino-1-methylbenzimidazole **(2)** (1.21g, 6.9mmol), Xantphos (0.37g, 0.63mmol), and Cs_2CO_3 (4.1g, 12.6mmol) were combined in dry 1,4-dioxane (15mL). The reaction mixture was degassed with N_2(g) and placed under vacuum for 10min. $Pd_2(dba)_3$ (0.289g, 0.31mmol) was then added and the resulting reaction mixture was heated at 90°C for 30h. It was then poured onto demineralized water (200mL), and extracted with EtOAc (3 x 100mL). The organic phases were combined, dried over Na_2SO_4, filtered and subsequently evaporated under vacuum. The resulting residue was purified by flash chromatography, eluting with EtOAc/Hexane (1:1) to provide 1-methyl-N-(pyridin-2-yl)-1H-benzo[d]imidazol-2-amine **(3)** as a yellow solid (0.35g, 25%). LCMS (ES): Found 225.1 [MH]+.

NaH (60%) (27mg, 0.68mmol) was added portion-wise to 1-methyl-N-(pyridin-2-yl)-1H-benzo[d]imidazol-2-amine **(3)** (147mg, 0.65mmol) in DMF (5mL) at 5°C under Ar(g). The reaction mixture was then stirred for 20min, and ethyl-7-iodoheptanoate (242mg, 0.84mmol) was added. The reaction mixture was stirred at 70°C under Ar(g) for 1h in the dark, then poured onto demineralized water (100mL), and extracted with EtOAc (3 x 50mL). The organic phases were combined, dried over Na_2SO_4, filtered and subsequently evaporated under vacuum. The resulting residue was purified by flash chromatography, eluting with EtOAc/Hexane (3:7) to furnish ethyl 7-((1-methyl-1H-benzo[d]imidazol-2-yl)(pyridin-2-yl)amino)heptanoate **(4)** as a yellow solid (160mg, 64%).

LCMS (ES): Found 381.2 [MH]+.

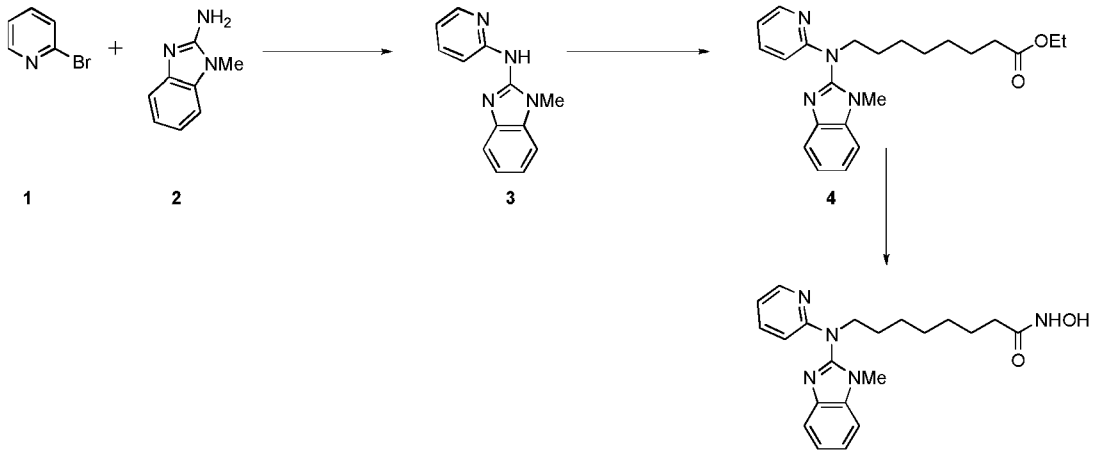
A fresh solution of NH_2OH in MeOH was prepared: [KOH (0.59g, 10.5mmol) in MeOH (15mL) was added to $NH_2OH.HCl$ (0.73g, 10.5mmol) in MeOH (15mL) at 0°C]. The mixture was stirred for 20min at 0°C, then filtered to remove salts; the filtrate was then added to ethyl 7-((1-methyl-1H-benzo[d]imidazol-2-yl)(pyridin-2-yl)amino)heptanoate **(4)** (160mg, 0.42mmol) followed by KOH (236mg, 4.2mmol) solubilized in MeOH (5mL). The reaction mixture was stirred at rt for 21h, then concentrated *in vacuo*, poured onto brine/H_2O (30mL/70mL), and extracted with CH_2Cl_2 (3 x 50mL). The organic phases were combined, dried over Na_2SO_4, filtered and subsequently evaporated under vacuum. The resulting residue was purified by flash chromatography, eluting with MeOH/CH_2Cl_2 (1:90) to provide N-hydroxy-7-((1-methyl-1H-benzo[d]imidazol-2-yl)(pyridin-2-yl)amino)heptanamide, **Example M**, as a light yellow liquid (10mg, 6%).

^{1}H NMR (400 MHz, DMSO-d_6) δ: 10.32 (br. s, 1H), 8.65 (br. s, 1H), 8.15-8.20 (m, 1H), 7.60-7.64 (m, 1H), 7.58 (d, *J*=7.1 Hz, 1H), 7.47-7.52 (m, 1H), 7.23 (dtd, *J*=18.1, 7.4, 1.2 Hz, 2H), 6.86 (dd, *J*=7.0, 5.2 Hz, 1H), 6.57 (d, *J*=8.6 Hz, 1H), 3.93-4.00 (m, 2H), 3.50 (s, 3H), 1.90 (t, *J*=7.2 Hz, 2H), 1.59-1.70 (m, 2H), 1.40-1.50 (m, 2H), 1.28 (d, *J*=9.8 Hz, 4H).

LCMS (ES): Found 368.2 [MH]+

Example N

N-Hydroxy-8-((1-methyl-1H-benzo[d]imidazol-2-yl)(pyridin-2-yl)amino)octanamide



1 2 3 4 N

NaH (60%) (32.8mg, 0.82mmol) was added portion-wise to 1-methyl-N-(pyridin-2-yl)-1H-benzo[d]imidazol-2-amine **(3)** (as per Example M above) (175mg, 0.78mmol) in DMF (5mL) at 5°C under Ar(g). The reaction mixture was then stirred for 20min, and ethyl-8-iodooctanoate (302mg, 1.01mmol) was added. The reaction mixture was stirred at 70°C under Ar(g) for 1h in the dark, then poured onto demineralized water (100mL), extracted with EtOAc (3 x 50mL). The organic phases were combined, dried over Na_2SO_4, filtered and subsequently evaporated under vacuum. The resulting residue was purified by flash chromatography, eluting with EtOAc/Hexane (3:7) to furnish ethyl 8-((1-methyl-1H-benzo[d]imidazol-2-yl)(pyridin-2-yl)amino)octanoate **(4)** as a yellow solid (60mg, 19%).

LCMS (ES): Found 395.2 [MH]+.

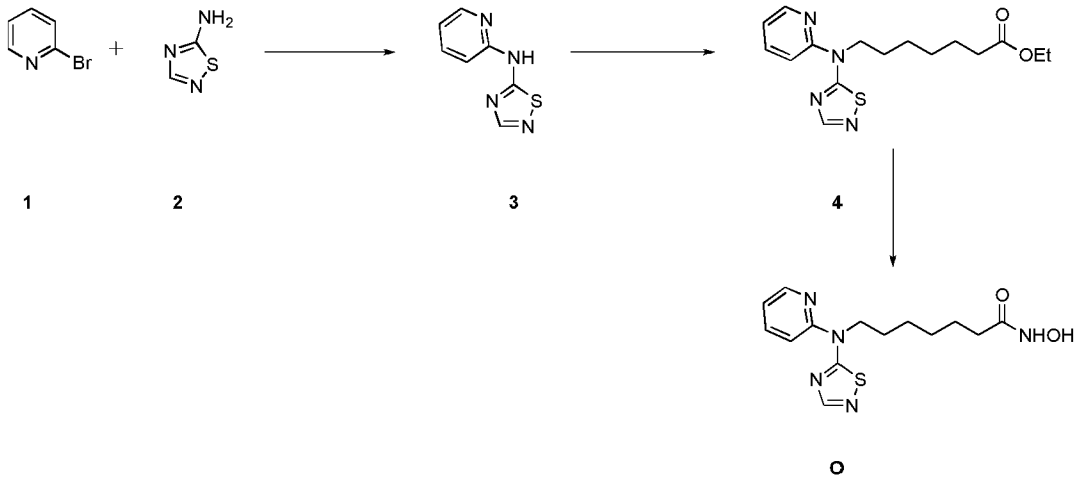
A fresh solution of NH_2OH in MeOH was prepared: [KOH (426mg, 7.6mmol) in MeOH (10mL) was added to $NH_2OH.HCl$ (526mg, 7.6mmol) in MeOH (10mL) at 0°C. The mixture was stirred for 20min at 0°C, then filtered to remove salts; the filtrate was then added to ethyl 8-((1-methyl-1H-benzo[d]imidazol-2-yl)(pyridin-2-yl)amino)octanoate **(4)** (60mg, 0.15mmol) followed by KOH (85.2mg, 1.52mmol) solubilized in MeOH (5mL). The reaction mixture was stirred at rt for 21h, then concentrated *in vacuo*, poured onto brine/H_2O (30mL/70mL), and extracted with CH_2Cl_2 (3 x 50mL). The organic phases were combined, dried over Na_2SO_4, filtered and subsequently evaporated under vacuum. The resulting residue was purified by flash chromatography, eluting with MeOH/CH_2Cl_2 (1:9) to provide N-hydroxy-8-((1-methyl-1H-benzo[d]imidazol-2-yl)(pyridin-2-yl)amino)octanamide, **Example N**, as a light yellow solid (11mg, 18%).

^{1}H NMR (400 MHz, METHANOL-d_4) δ: 8.17 (d, *J*=4.0 Hz, 1H), 7.57-7.67 (m, 2H), 7.47 (d, *J*=7.6 Hz, 1H), 7.25-7.36 (m, 2H), 6.87 (dd, *J*=6.9, 5.2 Hz, 1H), 6.59 (d, *J*=8.5 Hz, 1H), 4.01-4.08 (m, 2H), 3.50 (s, 3H), 2.04 (t, *J*=7.4 Hz, 2H), 1.73 (quin, *J*=7.1 Hz, 2H), 1.56 (quin, *J*=7.2 Hz, 2H), 1.29-1.43 (m, 6H).

LCMS (ES): Found 382.4 [MH]+.

Example O

N-Hydroxy-7-(pyridin-2-yl(1,2,4-thiadiazol-5-yl)amino)heptanamide



1 2 3 4

O

2-Bromopyridine **(1)** (1.0g, 6.3mmol), 1,2,4-thiadiazol-5-amine **(2)** (0.830g, 8.22mmol), Xantphos (0.366g, 0.63mmol), and Cs_2CO_3 (3.09g, 9.4mmol) were combined in dry 1,4-dioxane (15mL). The reaction mixture was degassed with N_2(g) and placed under vacuum for 10min. $Pd_2(dba)_3$ (0.289g, 0.31mmol) was then added and the resulting reaction mixture was heated at 90°C for 30h. It was then poured onto demineralized water (200mL), and extracted with EtOAc (3 x 100mL). The organic phases were combined, dried over Na_2SO_4, filtered and subsequently evaporated under vacuum. The resulting residue was purified by flash chromatography, eluting with EtOAc/Hexane (1:1) to provide N-(pyridin-2-yl)1,2,4-thiadiazol-5-amine **(3)** as a yellow solid (0.188g, 16%).

LCMS (ES): Found 179.0 $[MH]^+$

NaH (60%) (43.6mg, 1.09mmol) was added portion-wise to N-(pyridin-2-yl)1,2,4-thiadiazol-5-amine **(3)** (185mg, 1.03mmol) in DMF (5mL) at 5°C under Ar(g). The reaction mixture was then stirred for 20min, and ethyl-7-iodoheptanoate (383mg, 1.3mmol) was added. The reaction mixture was stirred at 70°C under Ar(g) for 1h in the dark, then poured onto demineralized water (100mL), and extracted with EtOAc (3 x 50mL). The organic phases were combined, dried over Na_2SO_4, filtered and subsequently evaporated under vacuum. The resulting residue was purified by flash chromatography, eluting with EtOAc/Hexane (3:7) to furnish ethyl 7-(pyridin-2-yl(1,2,4-thiadiazol-5-yl)amino)heptanoate as a yellow solid (139mg, 39%).

LCMS (ES): Found 335.1 $[MH]^+$

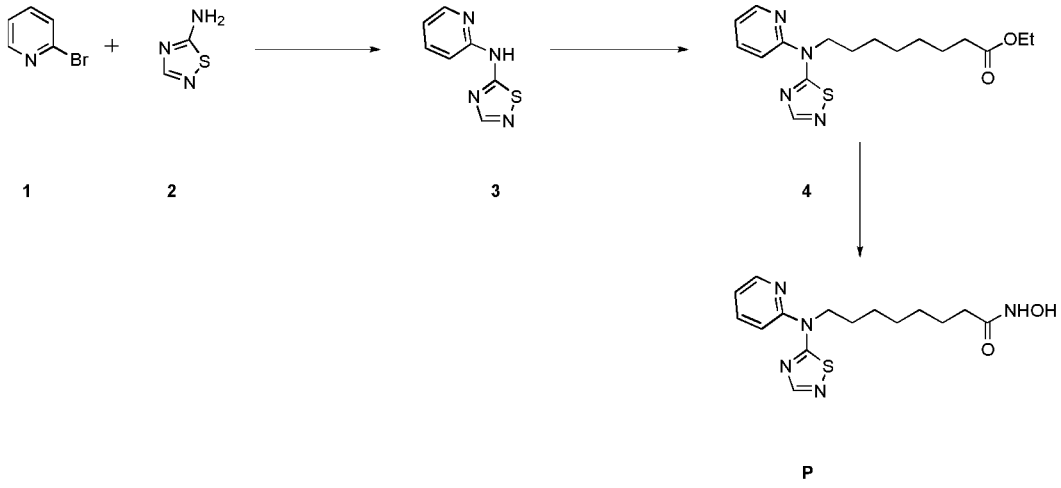
A fresh solution of NH_2OH in MeOH was prepared: [KOH (1.16g, 20.8mmol) in MeOH (15mL) was added to $NH_2OH.HCl$ (1.4g, 20.8mmol) in MeOH (15mL) at 0°C]. The mixture was stirred for 20min at 0°C, then filtered to remove salts; the filtrate was then added to ethyl 7-(pyridin-2-yl(1,2,4-thiadiazol-5-yl)amino)heptanoate **(4)** (139mg, 0.41mmol) followed by KOH (233mg, 4.1mmol) solubilized in MeOH (5mL). The reaction mixture was stirred at rt for 21h, then concentrated *in vacuo*, poured onto brine/H_2O (30mL/70mL), and extracted with CH_2Cl_2 (3 x 50mL). The organic phases were combined, dried over Na_2SO_4, filtered and subsequently evaporated under vacuum. The resulting residue was purified by flash chromatography, eluting with MeOH/CH_2Cl_2 (1:9) to provide N-hydroxy-7-(pyridin-2-yl(1,2,4-thiadiazol-5-yl)amino)heptanamide, **Example O**, as an off-white liquid (13mg, 10%).

^{1}H NMR (400 MHz, METHANOL-d_4) δ: 8.46-8.53 (m, 1H), 8.27 (s, 1H), 7.88-7.97 (m, 1H), 7.39 (d, *J*=8.5 Hz, 1H), 7.13 (dd, *J*=7.1, 5.0 Hz, 1H), 4.39-4.50 (m, 2H), 2.10 (t, *J*=7.3 Hz, 2H), 1.79 (dt, *J*=14.8, 7.5 Hz, 2H), 1.63 (quin, *J*=7.2 Hz, 2H), 1.36-1.52 (m, 4H).

LCMS (ES): Found 322.2 [MH]+.

Example P

N-Hydroxy-8-(pyridin-2-yl(1,2,4-thiadiazol-5-yl)amino)octanamide



NaH (60%) (49mg, 1.2mmol) was added portion-wise to N-(pyridin-2-yl)1,2,4-thiadiazol-5-amine **(3)** (as per Example O above) (210mg, 1.1mmol) in DMF (8mL) at 5°C under Ar(g). The reaction mixture was then stirred for 20min, and ethyl-8-iodooctanoate (561mg, 1.5mmol) was added. The reaction mixture was

stirred at 70°C under Ar(g) for 1h in the dark, then poured onto demineralized water (100mL), and extracted with EtOAc (3 x 50mL). The organic phases were combined, dried over Na_2SO_4, filtered and subsequently evaporated under vacuum. The resulting residue was purified by flash chromatography, eluting with EtOAc/Hexane (3:7) to furnish ethyl 8-(pyridin-2-yl(1,2,4-thiadiazol-5-yl)amino)octanoate **(4)** as a yellow solid (140mg, 34%).

LCMS (ES): Found 349.1 [MH]+.

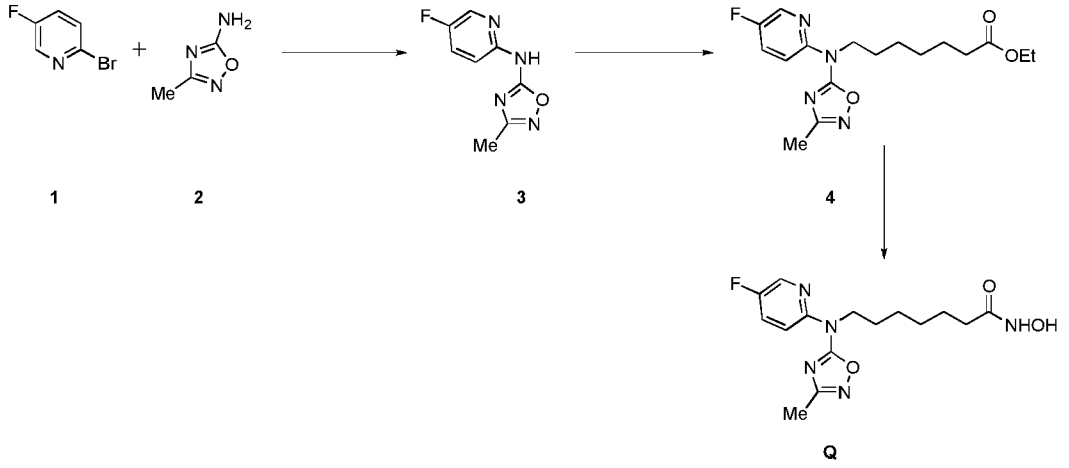
A fresh solution of NH_2OH in MeOH was prepared: [KOH (1.12mg, 20.0mmol) in MeOH (15mL) was added to $NH_2OH.HCl$ (1.38g, 20.0mmol) in MeOH (15mL) at 0°C]. The mixture was stirred for 20min at 0°C, then filtered to remove salts; the filtrate was then added to ethyl 8-(pyridin-2-yl(1,2,4-thiadiazol-5-yl)amino)octanoate **(4)** (140mg, 0.4mmol) followed by KOH (224mg, 4.0mmol) solubilized in MeOH (5mL). The reaction mixture was stirred at rt for 21h, then concentrated *in vacuo*, poured onto brine/H_2O (30mL/70mL), and extracted with CH_2Cl_2 (3 x 50mL). The organic phases were combined, dried over Na_2SO_4, filtered and subsequently evaporated under vacuum. The resulting residue was purified by flash chromatography, eluting with MeOH/CH_2Cl_2 (1:9) to provide N-hydroxy-8-(pyridin-2-yl(1,2,4-thiadiazol-5-yl)amino)octanamide, **Example P**, as a light brown solid (55mg, 41%).

^1H NMR (400 MHz, DMSO-d_6) δ: 10.34 (br. s., 1H), 8.67 (br. s., 1H), 8.54 (s, 1H), 8.31-8.43 (m, 1H), 7.90-8.06 (m, 1H), 7.45-7.59 (m, 1H), 7.14-7.27 (m, 1H), 4.44 (d, *J*=6.6 Hz, 2H), 3.12-3.20 (m, 2H), 1.87-2.00 (m, 2H), 1.63-1.77 (m, 2H), 1.27-1.57 (m, 6H).

LCMS (ES): Found 336.4 $[MH]^+$

Example Q

7-((5-Fluoropyridin-2-yl)(3-methyl-1,2,4-oxadiazol-5-yl)amino)-N-hydroxyheptanamide



2-Bromo-5-fluoropyridine **(1)** (1.0g, 5.71mmol), 3-methyl-1,2,4-oxadiazol-5-amine **(2)** (566mg, 5.71mmol), Xantphos (0.33g, 0.57mmol), and Cs_2CO_3 (2.79g, 8.56mmol) were combined in dry 1,4-dioxane (15mL). The reaction mixture was degassed with N_2(g) and placed under vacuum for 10min. $Pd_2(dba)_3$ (0.26g, 0.28mmol) was then added and the resulting reaction mixture was heated at 90°C for 30h. It was then poured onto demineralized water (200mL), and extracted with EtOAc (3 x 100mL). The organic phases were combined, dried over Na_2SO_4, filtered and subsequently evaporated under vacuum. The resulting residue was purified by flash chromatography, eluting with EtOAc/Hexane (1:1) to provide N-(5-fluoropyridin-2-yl)-3-methyl-1,2,4-oxadiazol-5-amine **(3)** as a yellow solid (0.70g, 63%).

LCMS (ES): Found 195.0 [MH]+.

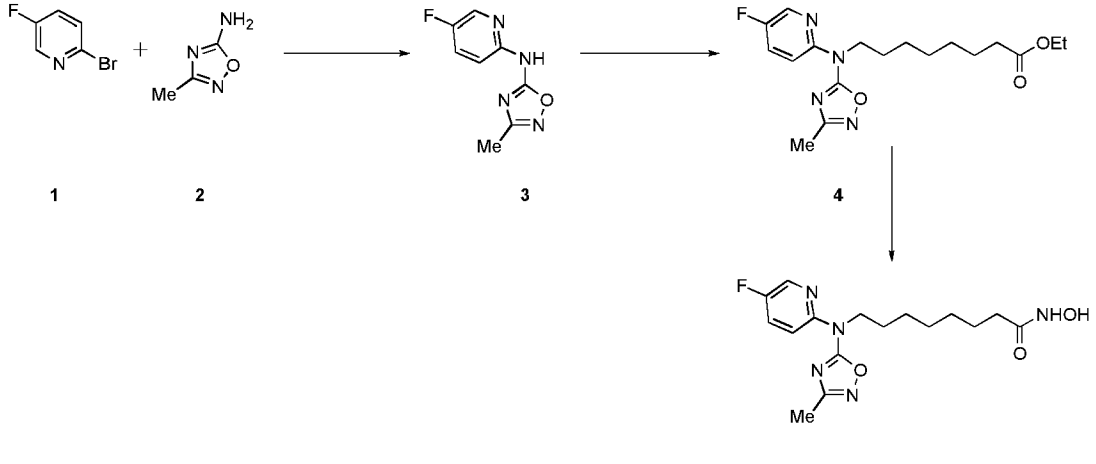
NaH (60%) (43mg, 1.08mmol) was added portion-wise to N-(5-fluoropyridin-2-yl)-3-methyl-1,2,4-oxadiazol-5-amine **(3)** (200mg, 1.03mmol) in DMF (7mL) at 5°C under Ar(g). The reaction mixture was then stirred for 20min, and ethyl-7-iodoheptanoate (380mg, 1.3mmol) was added. The reaction mixture was stirred at 70°C under Ar(g) for 1h in the dark, then poured onto demineralized water (100mL), and extracted with EtOAc (3 x 50mL). The organic phases were combined, dried over Na_2SO_4, filtered and subsequently evaporated under vacuum. The resulting residue was purified by flash chromatography, eluting

with EtOAc/Hexane (3:70) to furnish ethyl 7-((5-fluoropyridin-2-yl)(3-methyl-1,2,4-oxadiazol-5-yl)amino)heptanoate **(4)** as a yellow solid (250mg, 69%).
LCMS (ES): Found 351.1 [MH]+.

A fresh solution of NH_2OH in MeOH was prepared: [KOH (2.0g, 35.7mmol) in MeOH (15mL) was added to $NH_2OH.HCl$ (2.48g, 35.7mmol) in MeOH (15mL) at 0°C]. The mixture was stirred for 20min at 0°C, then filtered to remove salts; the filtrate was then added to ethyl 7-((5-fluoropyridin-2-yl)(3-methyl-1,2,4-oxadiazol-5-yl)amino)heptanoate **(4)** (250mg, 0.71mmol) followed by KOH (400mg, 7.1mmol) solubilized in MeOH (5mL). The reaction mixture was stirred at rt for 21h, then concentrated *in vacuo*, poured onto brine/H_2O (30mL/70mL), and extracted with CH_2Cl_2 (3 x 50mL). The organic phases were combined, dried over Na_2SO_4, filtered and subsequently evaporated under vacuum. The resulting residue was purified by flash chromatography, eluting with MeOH/CH_2Cl_2 (1:9) to provide 7-((5-fluoropyridin-2-yl)(3-methyl-1,2,4-oxadiazol-5-yl)amino)-N-hydroxyheptanamide, **Example Q**, as an off-white solid (45mg, 18.3%).
^{1}H NMR (400 MHz, DMSO-d_6) δ: 10.32 (br. s, 1H), 8.65 (br. s, 1H), 8.47 (d, *J*=3.0 Hz, 1H), 7.96 (dd, *J*=9.2, 3.9 Hz, 1H), 7.86 (ddd, *J*=9.2, 8.1, 3.1 Hz, 1H), 4.06-4.13 (m, 2H), 2.22 (s, 3H), 1.91 (t, *J*=7.3 Hz, 2H), 1.62 (quin, *J*=7.2 Hz, 2H), 1.45 (quin, *J*=7.2 Hz, 2H), 1.18-1.32 (m, 4H).
LCMS (ES): Found 338.5 [MH]+.

Example R

8-((5-Fluoropyridin-2-yl)(3-methyl-1,2,4-oxadiazol-5-yl)amino)-N-hydroxyoctanamide



NaH (60%) (43mg, 1.08mmol) was added portion-wise to N-(5-fluoropyridin-2-yl)-3-methyl-1,2,4-oxadiazol-5-amine **(3)** (as per Example Q above) (200mg, 1.03mmol) in DMF (7mL) at 5°C under Ar(g). The reaction mixture was then stirred for 20min, and ethyl-8-iodooctanoate (399mg, 1.34mmol) was added. The reaction mixture was stirred at 70°C under Ar(g) for 1h in the dark, then poured onto demineralized water (100mL), and extracted with EtOAc (3 x 50mL). The organic phases were combined, dried over Na_2SO_4, filtered and subsequently evaporated under vacuum. The resulting residue was purified by flash chromatography, eluting with EtOAc/Hexane (3:7) to furnish ethyl 8-((5-fluoropyridin-2-yl)(3-methyl-1,2,4-oxadiazol-5-yl)amino)octanoate **(4)** as a yellow solid (250mg, 66%).

LCMS (ES): Found 365.1 [MH]+.

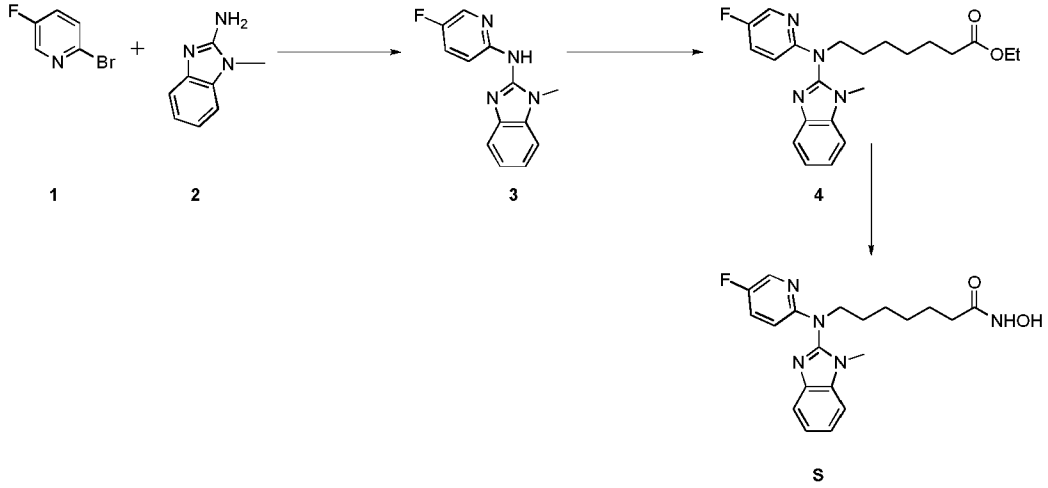
A fresh solution of NH_2OH in MeOH was prepared: [KOH (1.92g, 34.3mmol) in MeOH (15mL) was added to $NH_2OH.HCl$ (2.38g, 34.3mmol) in MeOH (15mL) at 0°C]. The mixture was stirred for 20min at 0°C, then filtered to remove salts; the filtrate was then added to ethyl 8-((5-fluoropyridin-2-yl)(3-methyl-1,2,4-oxadiazol-5-yl)amino)octanoate **(4)** (250mg, 0.68mmol) followed by KOH (384mg, 6.8mmol) solubilized in MeOH (8mL). The reaction mixture was stirred at rt for 21h, then concentrated *in vacuo*, poured onto brine/H_2O (30mL/70mL), and extracted with CH_2Cl_2 (3 x 50mL). The organic phases were combined, dried over Na_2SO_4, filtered and subsequently evaporated under vacuum. The resulting residue was purified by flash chromatography, eluting with MeOH/CH_2Cl_2 (1:9) to provide 8-((5-fluoropyridin-2-yl)(3-methyl-1,2,4-oxadiazol-5-yl)amino)-N-hydroxyoctanamide, **Example R**, as a light brown solid (50mg, 20%).

^1H NMR (400 MHz, DMSO-d_6) δ: 10.31 (br. s., 1H), 8.64 (br. s, 1H), 8.47 (d, *J*=3.0 Hz, 1H), 7.96 (dd, *J*=9.1, 3.9 Hz, 1H), 7.86 (ddd, *J*=9.1, 8.0, 3.1 Hz, 1H), 4.03-4.16 (m, 3H), 2.22 (s, 3H), 1.91 (t, *J*=7.4 Hz, 2H), 1.55-1.69 (m, 2H), 1.37-1.50 (m, 2H), 1.14-1.32 (m, 5H).

LCMS (ES): Found 352.7 [MH]+.

Example S

7-((5-Fluoropyridin-2-yl)(1-methyl-1H-benzo[d]imidazol-2-yl)amino)-N-hydroxyheptanamide



1 2 3 4 S

2-Bromo-5-fluoropyridine **(1)** (1.0g, 5.71mmol), 2-amino-1-methylbenzimidazole **(2)** (840mg, 5.71mmol), Xantphos (0.330g, 0.57mmol), and Cs_2CO_3 (2.79g, 8.56mmol) were combined in dry 1,4-dioxane (15mL). The reaction mixture was degassed with N_2(g) and placed under vacuum for 10min. $Pd_2(dba)_3$ (0.26g, 0.28mmol) was then added and the resulting reaction mixture was heated at 90°C for 30h. It was then poured onto demineralized water (200mL), and extracted with EtOAc (3 x 100mL). The organic phases were combined, dried over Na_2SO_4, filtered and subsequently evaporated under vacuum. The resulting residue was purified by flash chromatography, eluting with EtOAc/Hexane (1:1) to provide N-(5-fluoropyridin-2-yl)-1-methyl-1H-benzo[d]imidazol-2-amine **(3)** as a yellow solid (0.56g, 41%).

LCMS (ES): Found 243.1 $[MH]^+$

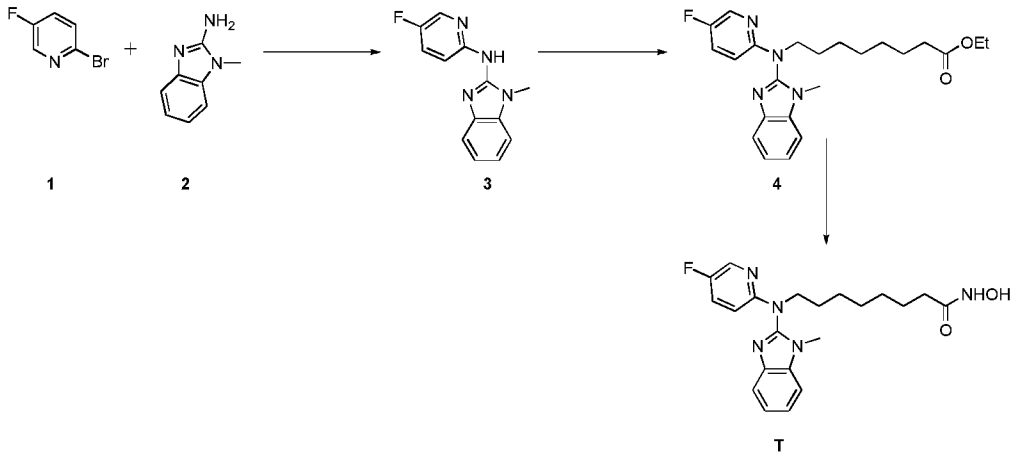
NaH (60%) (36mg, 0.88mmol) was added portion-wise to N-(5-fluoropyridin-2-yl)-1-methyl-1H-benzo[d]imidazol-2-amine **(3)** (205mg, 0.84mmol) in DMF (7mL) at 5°C under Ar(g). The reaction mixture was then stirred for 20min, and ethyl-7-iodoheptanoate (312mg, 1.1mmol) was added. The reaction mixture was stirred at 70°C under Ar(g) for 1h in the dark, then poured onto demineralized water (100mL), and extracted with EtOAc (3 x 50mL). The organic phases were combined, dried over Na_2SO_4, filtered and subsequently evaporated under vacuum. The resulting residue was purified by flash chromatography, eluting

with EtOAc/Hexane (3:7) to furnish ethyl 7-((5-fluoropyridin-2-yl)(1-methyl-1H-benzo[d]imidazol-2-yl)amino)heptanoate **(4)** as a yellow solid (124mg, 36%).
LCMS (ES): Found 399.2 [MH]+.

A fresh solution of NH_2OH in MeOH was prepared: [KOH (0.877g, 15.5mmol) in MeOH (15mL) was added to $NH_2OH.HCl$ (1.08g, 15.5mmol) in MeOH (15mL) at 0°C]. The mixture was stirred for 20min at 0°C, then filtered to remove salts; the filtrate was then added to ethyl 7-((5-fluoropyridin-2-yl)(1-methyl-1H-benzo[d]imidazol-2-yl)amino)heptanoate **(4)** (124mg, 0.31mmol) followed by KOH (174mg, 3.1mmol) solubilized in MeOH (5mL). The reaction mixture was stirred at rt for 21h, then concentrated *in vacuo*, poured onto brine/H_2O (30mL/70mL), and extracted with CH_2Cl_2 (3 x 50mL). The organic phases were combined, dried over Na_2SO_4, filtered and subsequently evaporated under vacuum. The resulting residue was purified by flash chromatography, eluting with MeOH/CH_2Cl_2 (1:9) to provide 7-((5-fluoropyridin-2-yl)(1-methyl-1H-benzo[d]imidazol-2-yl)amino)-N-hydroxyheptanamide **(S)** as a light brown solid (23mg, 19%).
^{1}H NMR (400 MHz, DMSO-d_6) δ: 10.31 (br. s, 1H), 8.64 (s, 1H), 8.19 (d, *J*=3.1 Hz, 1H), 7.55-7.62 (m, 2H), 7.49 (d, *J*=7.2 Hz, 1H), 7.17-7.27 (m, 2H), 6.66 (dd, *J*=9.2, 3.4 Hz, 1H), 3.89-3.99 (m, 2H), 3.42 (s, 3H), 1.90 (t, *J*=7.4 Hz, 2H), 1.58-1.70 (m, 2H), 1.38-1.50 (m, 2H), 1.17-1.35 (m, 4H).
LCMS (ES): Found 386.2 [MH]+.

Example T

8-((5-Fluoropyridin-2-yl)(1-methyl-1H-benzo[d]imidazol-2-yl)amino)-N-hydroxyoctanamide

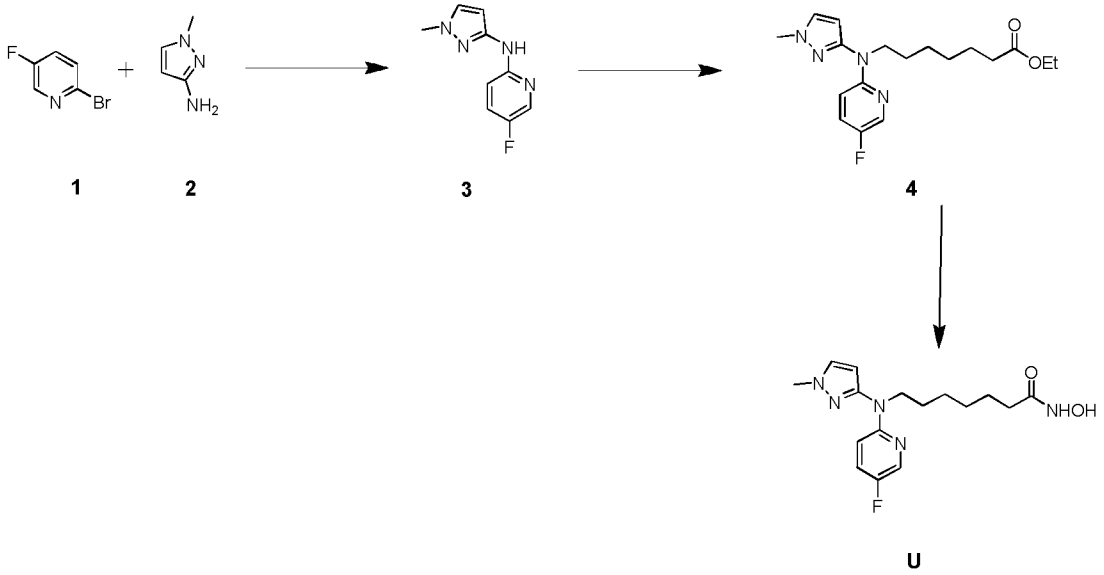


NaH (60%) (36mg, 0.88mmol) was added portion-wise to N-(5-fluoropyridin-2-yl)-1-methyl-1H-benzo[d]imidazol-2-amine **(3)** (as per Example S above) (205mg, 0.84mmol) in DMF (8mL) at 5°C under Ar(g). The reaction mixture was then stirred for 20min, and ethyl-8-iodooctanoate (Intermediate B) (328mg, 1.1mmol) was added. The reaction mixture was stirred at 70°C under Ar(g) for 1h in the dark, then poured onto demineralized water (100mL), and extracted with EtOAc (3 x 50mL). The organic phases were combined, dried over Na_2SO_4, filtered and subsequently evaporated under vacuum. The resulting residue was purified by flash chromatography, eluting with EtOAc/Hexane (3:7) to furnish ethyl 8-((5-fluoropyridin-2-yl)(1-methyl-1H-benzo[d]imidazol-2-yl)amino)octanoate **(4)** as a yellow solid (130mg, 37%).
LCMS (ES): Found 413.2 [MH]+.

A fresh solution of NH_2OH in MeOH was prepared: [KOH (0.88g, 15.7mmol) in MeOH (10mL) was added to $NH_2OH.HCl$ (1.09g, 15.7mmol) in MeOH (10mL) at 0°C]. The mixture was stirred for 20min at 0°C, then filtered to remove salts; the filtrate was then added to ethyl 8-((5-fluoropyridin-2-yl)(1-methyl-1H-benzo[d]imidazol-2-yl)amino)octanoate **(4)** (130mg, 0.31mmol) followed by KOH (176mg, 3.1mmol) solubilized in MeOH (5mL). The reaction mixture was stirred at rt for 21h, then concentrated *in vacuo*, poured onto brine/H_2O (30mL/70mL), and extracted with CH_2Cl_2 (3 x 50mL). The organic phases were combined, dried over Na_2SO_4, filtered and subsequently evaporated under vacuum. The resulting residue was purified by flash chromatography, eluting with MeOH/CH_2Cl_2 (1:9) to provide 8-((5-fluoropyridin-2-yl)(1-methyl-1H-benzo[d]imidazol-2-yl)amino)-N-hydroxyoctanamide, **Example T**, as a light yellow solid (20mg, 16%).
^1H NMR (400 MHz, DMSO-d_6) δ: 10.30 (s, 1H), 8.64 (s, 1H), 8.18 (d, *J*=3.1 Hz, 1H), 7.55-7.62 (m, 1H), 7.49 (d, *J*=7.4 Hz, 1H), 7.22 (dtd, *J*=17.6, 7.4, 1.3 Hz, 1H), 6.66 (dd, *J*=9.2, 3.4 Hz, 1H), 3.88-4.00 (m, 2H), 3.42 (s, 2H), 1.89 (t, *J*=7.3 Hz, 1H), 1.65 (br. s., 2H), 1.44 (dt, *J*=14.5, 7.4 Hz, 2H), 1.12-1.34 (m, 6H).
LCMS (ES): Found 400.2 [MH]+.

Example U

7-((5-Fluoropyridin-2-yl)(1-methyl-1H-pyrazol-3-yl)amino)-N-hydroxyheptanamide



1 2 3 4 U

2-Bromo-5-fluoropyridine **(1)** (1.0g, 5.71mmol), 1-methyl-1H-pyrazol-3-amine **(2)** (554mg, 5.71mmol), Xantphos (0.33g, 0.57mmol), and Cs_2CO_3 (2.79g, 8.56mmol) were combined in dry 1,4-dioxane (15mL). The reaction mixture was degassed with N_2(g) and placed under vacuum for 10min. $Pd_2(dba)_3$ (0.26g, 0.28mmol) was then added and the resulting reaction mixture was heated at 90°C for 30h. It was then poured onto demineralized water (200mL), and extracted with EtOAc (3 x 100mL). The organic phases were combined, dried over Na_2SO_4, filtered and subsequently evaporated under vacuum. The resulting residue was purified by flash chromatography, eluting with EtOAc/Hexane (1:1) to provide 5-fluoro-N-(1-methyl-1H-pyrazol-3-yl)pyridin-2-amine **(3)** as a yellow solid (0.65g, 61%).

LCMS (ES): Found 193.0 [MH]+.

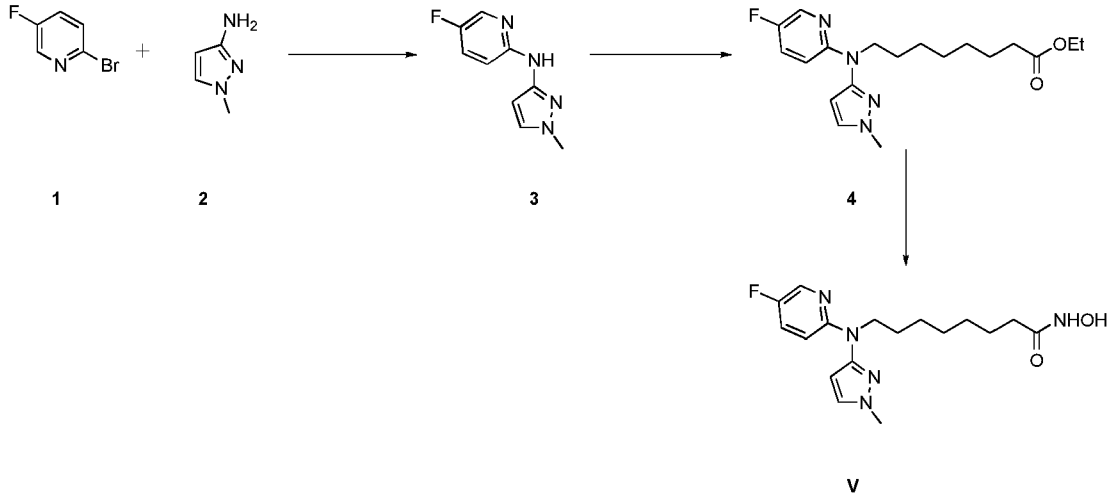
NaH (60%) (44mg, 11.2mmol) was added portion-wise to 5-fluoro-N-(1-methyl-1H-pyrazol-3-yl)pyridin-2-amine **(3)** (205mg, 1.06mmol) in DMF (7mL) at 5°C under Ar(g). The reaction mixture was then stirred for 20min, and ethyl-7-iodoheptanoate (391mg, 1.3mmol) was added. The reaction mixture was stirred at 70°C under Ar(g) for 1h in the dark, then poured onto demineralized water (100mL), and extracted with EtOAc (3 x 50mL). The organic phases were combined, dried over Na_2SO_4, filtered and subsequently evaporated under

vacuum. The resulting residue was purified by flash chromatography, eluting with EtOAc/Hexane (3:7) to furnish ethyl 7-((5-fluoropyridin-2-yl)(1-methyl-1H-pyrazol-3-yl)amino)heptanoate **(4)** as a yellow solid (240mg, 64%).
LCMS (ES): Found 349.2 [MH]+.

A fresh solution of NH_2OH in MeOH was prepared: [KOH (2.0g, 35.7mmol) in MeOH (15mL) was added to $NH_2OH.HCl$ (2.4g, 35.7mmol) in MeOH (15mL) at 0°C]. The mixture was stirred for 20min at 0°C, then filtered to remove salts; the filtrate was then added to ethyl 7-((5-fluoropyridin-2-yl)(1-methyl-1H-pyrazol-3-yl)amino)heptanoate **(4)** (240mg, 0.70mmol) followed by KOH (400mg, 7.0mmol) solubilized in MeOH (5mL). The reaction mixture was stirred at rt for 21h, then concentrated *in vacuo*, poured onto brine/H_2O (30mL/70mL), and extracted with CH_2Cl_2 (3 x 50mL). The organic phases were combined, dried over Na_2SO_4, filtered and subsequently evaporated under vacuum. The resulting residue was purified by flash chromatography, eluting with MeOH/CH_2Cl_2 (1:9) to provide 7-((5-fluoropyridin-2-yl)(1-methyl-1H-pyrazol-3-yl)amino)-N-hydroxyheptanamide, **Example U**, as an off-white solid (45mg, 19%).
^{1}H NMR (400 MHz, DMSO-d_6) δ: 10.32 (s, 1H), 8.65 (s, 1H), 8.12 (d, *J*=3.1 Hz, 1H), 7.67 (d, *J*=2.1 Hz, 1H), 7.42 (ddd, *J*=9.2, 8.4, 3.1 Hz, 1H), 6.89 (dd, *J*=9.3, 3.6 Hz, 1H), 6.10 (d, *J*=2.3 Hz, 1H), 3.80-3.88 (m, 2H), 3.78 (s, 3H), 1.91 (t, *J*=7.4 Hz, 2H), 1.49-1.60 (m, 2H), 1.45 (quin, *J*=7.0 Hz, 2H), 1.17-1.31 (m, 4H).
LCMS (ES): Found 336.1 [MH]+.

Example V

8-((5-Fluoropyridin-2-yl)(1-methyl-1H-pyrazol-3-yl)amino)-N-hydroxyoctanamide



1 2 3 4 V

NaH (60%) (44mg, 1.12mmol) was added portion-wise to 5-fluoro-N-(1-methyl-1H-pyrazol-3-yl)pyridin-2-amine **(3)** (as per Example U above) (205mg, 1.06mmol) in DMF (7mL) at 5°C under Ar(g). The reaction mixture was then stirred for 20min, and ethyl-8-iodooctanoate (399mg, 1.34mmol) was added. The reaction mixture was stirred at 70°C under Ar(g) for 1h in the dark, then poured onto demineralized water (100mL), and extracted with EtOAc (3 x 50mL). The organic phases were combined, dried over Na_2SO_4, filtered and subsequently evaporated under vacuum. The resulting residue was purified by flash chromatography, eluting with EtOAc/Hexane (3:7) to furnish ethyl 8-((5-fluoropyridin-2-yl)(1-methyl-1H-pyrazol-3-yl)amino)octanoate **(4)** as a yellow solid (265mg, 68%).

LCMS (ES): Found 363.4 [MH]+.

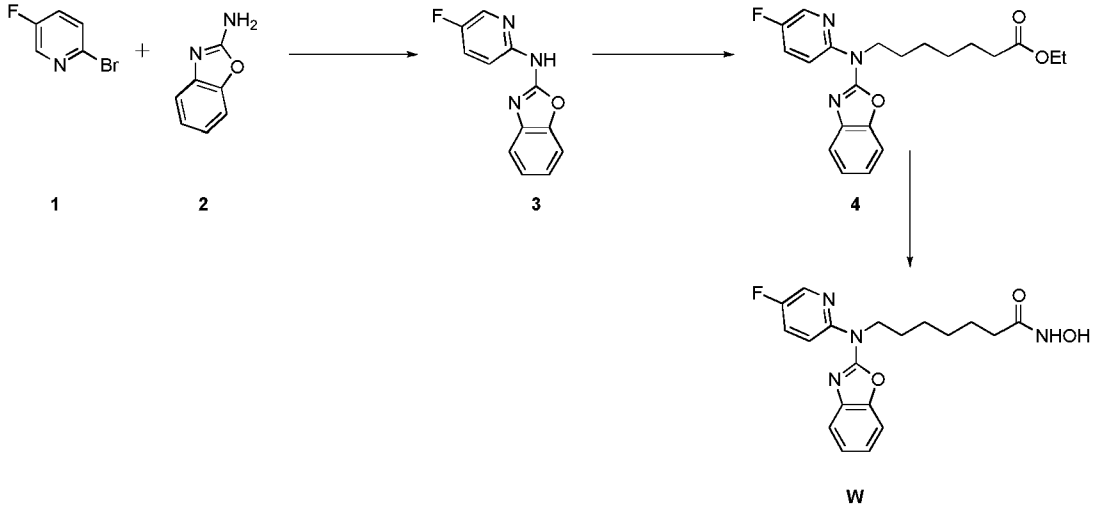
A fresh solution of NH_2OH in MeOH was prepared: [KOH (2.05g, 36.6mmol) in MeOH (15mL) was added to $NH_2OH.HCl$ (2.54g, 36.6mmol) in MeOH (15mL) at 0°C]. The mixture was stirred for 20min at 0°C, then filtered to remove salts; the filtrate was then added to ethyl 8-((5-fluoropyridin-2-yl)(1-methyl-1H-pyrazol-3-yl)amino)octanoate **(4)** (265mg, 0.73mmol) followed by KOH (410mg, 7.3mmol) solubilized in MeOH (8mL). The reaction mixture was stirred at rt for 21h, then concentrated *in vacuo*, poured onto brine/H_2O (30mL/70mL), and extracted with CH_2Cl_2 (3 x 50mL). The organic phases were combined, dried over Na_2SO_4, filtered and subsequently evaporated under vacuum. The resulting residue was purified by flash chromatography, eluting with MeOH/CH_2Cl_2 (1:9) to provide 8-((5-fluoropyridin-2-yl)(1-methyl-1H-pyrazol-3-yl)amino)-N-hydroxyoctanamide, **Example V**, as a light brown solid (75mg, 29%).

^{1}H NMR (400 MHz, DMSO-d_6) δ: 10.31 (s, 1H), 8.65 (s, 1H), 8.12 (d, *J*=3.1 Hz, 1H), 7.67 (d, *J*=2.1 Hz, 1H), 7.42 (ddd, *J*=9.3, 8.3, 3.1 Hz, 1H), 6.89 (dd, *J*=9.4, 3.6 Hz, 1H), 6.10 (d, *J*=2.3 Hz, 1H), 5.76 (s, 1H), 3.80-3.89 (m, 2H), 3.78 (s, 3H), 1.91 (t, *J*=7.4 Hz, 2H), 1.55 (br. s., 2H), 1.45 (quin, *J*=7.1 Hz, 2H), 1.12-1.30 (m, 6H).

LCMS (ES): Found 350.1 [MH]+.

Example W

7-(Benzo[d]oxazol-2-yl(5-fluoropyridin-2-yl)amino)-N-hydroxyheptanamide



2-Bromo-5-fluoropyridine **(1)** (1.0g, 5.71mmol), benzo[d]oxazol-2-amine **(2)** (766mg, 5.71mmol), Xantphos (0.330g, 0.57mmol), and Cs_2CO_3 (2.79g, 8.56mmol) were combined in dry 1,4-dioxane (15mL). The reaction mixture was degassed with N_2(g) and placed under vacuum for 10min. $Pd_2(dba)_3$ (0.261g, 0.28mmol) was then added and the resulting reaction mixture was heated at 90°C for 30h. It was then poured onto demineralized water (200mL), and extracted with EtOAc (3 x 100mL). The organic phases were combined, dried over Na_2SO_4, filtered and subsequently evaporated under vacuum. The resulting residue was purified by flash chromatography, eluting with EtOAc/Hexane (1:1) to provide N-(5-fluoropyridin-2-yl)benzo[d]oxazol-2-amine **(3)** as a yellow solid (0.6g, 46%).

LCMS (ES): Found 230.1 [MH]+.

NaH (60%) (36mg, 0.91mmol) was added portion-wise to N-(5-fluoropyridin-2-yl) benzo[d]oxazol-2-amine **(3)** (200mg, 0.87mmol) in DMF (7mL) at 5°C under Ar(g). The reaction mixture was then stirred for 20min, and ethyl-7-iodoheptanoate (322mg, 1.13mmol) was added. The reaction mixture was stirred at 70°C under Ar(g) for 1h in the dark, then poured onto demineralized water (100mL), and extracted with EtOAc (3 x 50mL). The organic phases were combined, dried over Na_2SO_4, filtered and subsequently evaporated under vacuum. The resulting residue was purified by flash chromatography, eluting with EtOAc/Hexane (3:7) to furnish ethyl 7-(benzo[d]oxazol-2-yl(5-fluoropyridin-2-yl)amino)heptanoate **(4)** as a yellow solid (196mg, 57%).

LCMS (ES): Found 386.1 [MH]+.

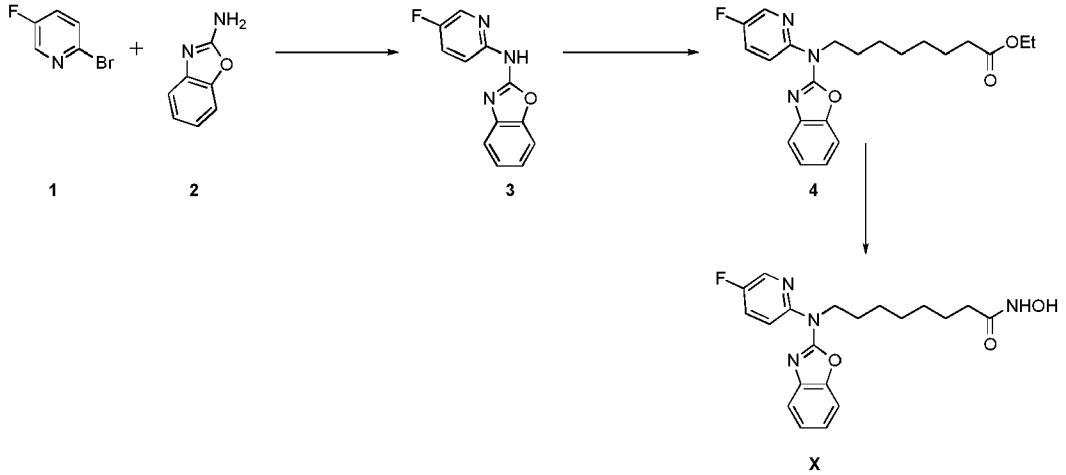
A fresh solution of NH_2OH in MeOH was prepared: [KOH (1.43g, 25.5mmol) in MeOH (15mL) was added to $NH_2OH.HCl$ (1.78g, 25.5mmol) in MeOH (15mL) at 0°C]. The mixture was stirred for 20min at 0°C, then filtered to remove salts; the filtrate was then added to ethyl 7-(benzo[d]oxazol-2-yl(5-fluoropyridin-2-yl)amino)heptanoate **(4)** (196mg, 0.51mmol) followed by KOH (287mg, 5.1mmol) solubilized in MeOH (5mL). The reaction mixture was stirred at rt for 21h, then concentrated *in vacuo*, poured onto brine/H_2O (30mL/70mL), and extracted with CH_2Cl_2 (3 x 50mL). The organic phases were combined, dried over Na_2SO_4, filtered and subsequently evaporated under vacuum. The resulting residue was purified by flash chromatography, eluting with MeOH/CH_2Cl_2 (1:9) to provide 7-(benzo[d]oxazol-2-yl(5-fluoropyridin-2-yl)amino)-N-hydroxyheptanamide, **Example W**, as an orange solid (70mg, 37%).

^{1}H NMR (400 MHz, DMSO-d_6) δ: 10.33 (s, 1H), 8.67 (s, 1H), 8.47 (d, *J*=3.1 Hz, 1H), 8.09 (dd, *J*=9.2, 3.9 Hz, 1H), 7.86 (ddd, *J*=9.1, 8.2, 3.1 Hz, 1H), 7.46-7.56 (m, 2H), 7.25 (td, *J*=7.7, 1.1 Hz, 1H), 7.13-7.18 (m, 1H), 4.21 (t, *J*=7.4 Hz, 2H), 1.91 (t, *J*=7.3 Hz, 2H), 1.63-1.76 (m, 2H), 1.46 (dt, *J*=14.1, 7.2 Hz, 2H), 1.23-1.37 (m, 4H).

LCMS (ES): Found 373.1 [MH]+.

Example X

8-(Benzo[d]oxazol-2-yl(5-fluoropyridin-2-yl)amino)-N-hydroxyoctanamide



NaH (60%) (92mg, 2.29mmol) was added portion-wise to N-(5-fluoropyridin-2-yl)benzo[d]oxazol-2-amine **(3)** (as per Example W above) (500mg, 1.06mmol) in DMF (10mL) at 5°C under Ar(g). The reaction mixture was then stirred for 20min, and ethyl-8-iodooctanoate (845mg, 2.8mmol) was added. The reaction mixture was stirred at 70°C under Ar(g) for 1h in the dark, then poured onto demineralized water (100mL), and extracted with EtOAc (3 x 50mL). The organic phases were combined, dried over Na_2SO_4, filtered and subsequently evaporated under vacuum. The resulting residue was purified by flash chromatography, eluting with EtOAc/Hexane (3:7) to furnish ethyl 8-(benzo[d]oxazol-2-yl(5-fluoropyridin-2-yl)amino)octanoate **(4)** as a yellow solid (510mg, 58%).

LCMS (ES): Found 400.2 $[MH]^+$

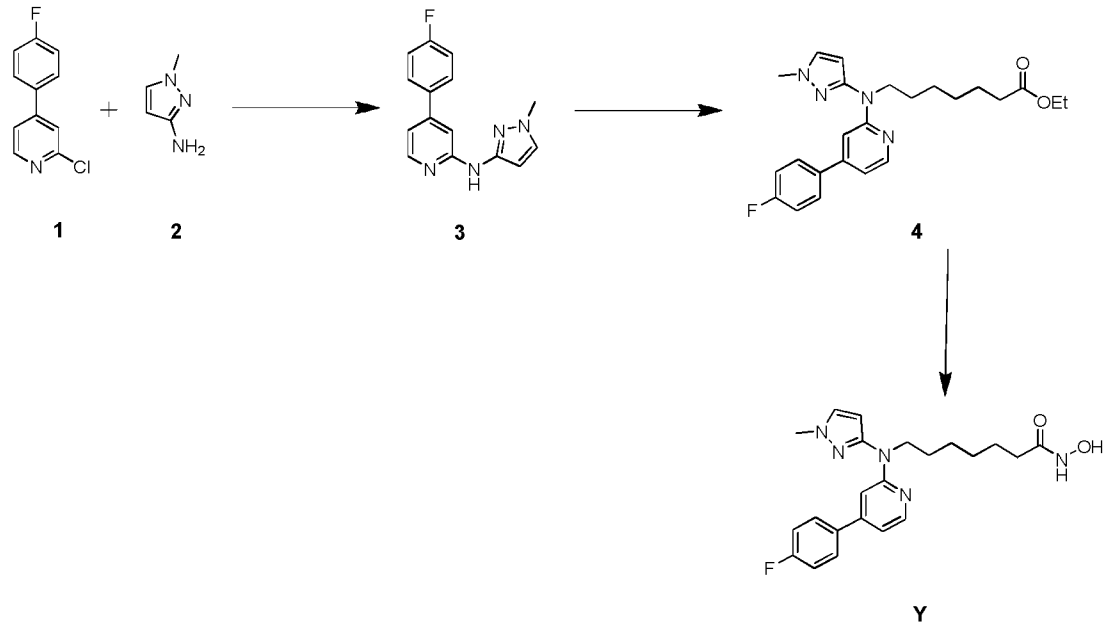
A fresh solution of NH_2OH in MeOH was prepared: [KOH (3.58g, 63.9mmol) in MeOH (20mL) was added to $NH_2OH.HCl$ (4.44g, 63.9mmol) in MeOH (20mL) at 0°C]. The mixture was stirred for 20min at 0°C, then filtered to remove salts; the filtrate was then added to ethyl 8-(benzo[d]oxazol-2-yl(5-fluoropyridin-2-yl)amino)octanoate **(4)** (510mg, 1.27mmol) followed by KOH (712mg, 12.7mmol) solubilized in MeOH (10mL). The reaction mixture was stirred at rt for 21h, then concentrated *in vacuo*, poured onto brine/H_2O (30mL/70mL), and extracted with CH_2Cl_2 (3 x 50mL). The organic phases were combined, dried over Na_2SO_4, filtered and subsequently evaporated under vacuum. The resulting residue was purified by flash chromatography, eluting with MeOH/CH_2Cl_2 (1:9) to provide 8-(benzo[d]oxazol-2-yl(5-fluoropyridin-2-yl)amino)-N-hydroxyoctanamide **(X)** as a light yellow solid (45mg, 9%).

^1H NMR (400 MHz, DMSO-d_6) δ: 10.32 (br. s., 1H), 8.65 (br. s., 1H), 8.47 (d, *J*=3.1 Hz, 1H), 8.08 (dd, *J*=9.1, 3.9 Hz, 1H), 7.85 (ddd, *J*=9.1, 8.2, 3.1 Hz, 1H), 7.50 (dd, *J*=19.7, 7.4 Hz, 2H), 7.25 (td, *J*=7.6, 1.1 Hz, 1H), 7.12-7.18 (m, 1H), 4.18-4.25 (m, 2H), 1.91 (t, *J*=7.4 Hz, 2H), 1.64-1.75 (m, 2H), 1.45 (dt, *J*=14.7, 7.5 Hz, 2H), 1.15-1.37 (m, 6H).

LCMS (ES): Found 387.1 [MH]+.

Example Y

7-((4-(4-Fluorophenyl)pyridin-2-yl)(1-methyl-1H-pyrazol-3-yl)amino)-N-hydroxyheptanamide



1 2 3 4 Y

2-Chloro-4-(4-fluorophenyl)pyridine **(1)** (1.0g, 4.8mmol), 1-methyl-1H-pyrazol-3-amine **(2)** (469mg, 4.8mmol), Xantphos (0.28g, 0.48mmol), and Cs_2CO_3 (2.35g, 7.24mmol) were combined in dry 1,4-dioxane (15mL). The reaction mixture was degassed with N_2(g) and placed under vacuum for 10min. $Pd_2(dba)_3$ (0.22g, 0.24mmol) was then added and the resulting reaction mixture was heated at 90°C for 30h. It was then poured onto demineralized water (200mL), and extracted with EtOAc (3 x 100mL). The organic phases were combined, dried over Na_2SO_4, filtered and subsequently evaporated under vacuum. The resulting residue was purified by flash chromatography, eluting with EtOAc/Hexane (1:1) to provide 4-(4-fluorophenyl)-N-(1-methyl-1H-pyrazol-3-yl)pyridin-2-amine **(3)** as a yellow solid (1.0g, 71%).

LCMS (ES): Found 269.1 [MH]+.

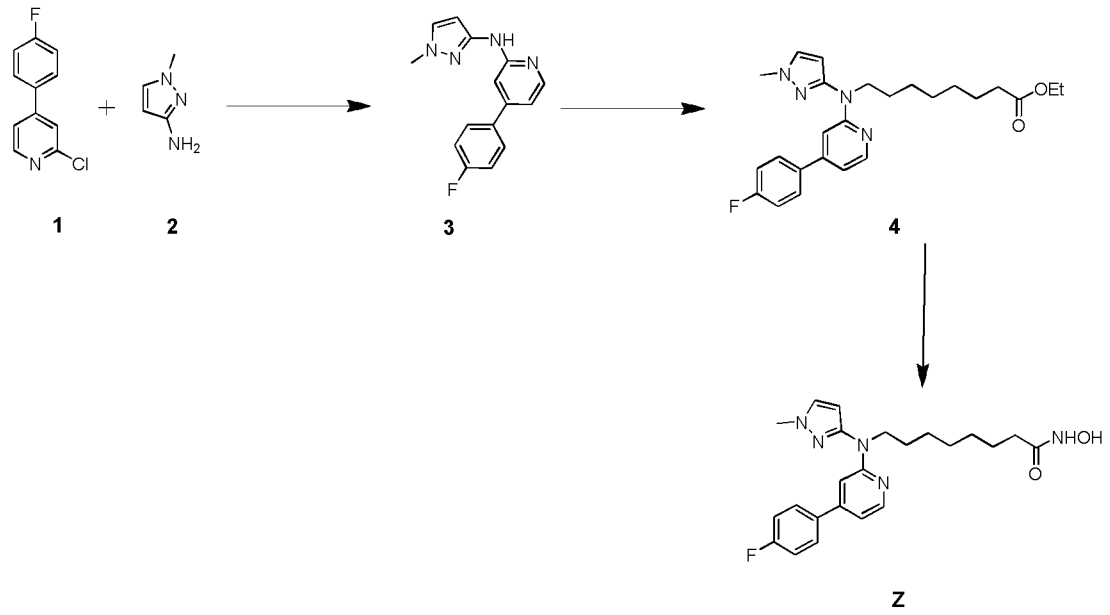
NaH (60%) (37mg, 0.93mmol) was added portion-wise to 4-(4-fluorophenyl)-N-(1-methyl-1H-pyrazol-3-yl) pyridin-2-amine **(3)** (250mg, 0.93mmol) in DMF (10mL) at 5°C under Ar(g). The reaction mixture was then stirred for 20min, and ethyl-7-iodoheptanoate (344mg, 1.21mmol) was added. The reaction mixture was stirred at 70°C under Ar(g) for 1h in the dark, then poured onto demineralized water (100mL), extracted with EtOAc (3 x 50mL). The organic

phases were combined, dried over Na_2SO_4, filtered and subsequently evaporated under vacuum. The resulting residue was purified by flash chromatography, eluting with EtOAc/Hexane (3:7) to furnish ethyl 7-((4-(4-fluorophenyl) pyridin-2-yl)(1-methyl-1H-pyrazol-3-yl)amino)heptanoate **(4)** as a yellow solid (296mg, 63%).
LCMS (ES): Found 425.4 [MH]+.

A fresh solution of NH_2OH in MeOH was prepared: [KOH (1.95g, 34.8mmol) in MeOH (15mL) was added to $NH_2OH.HCl$ (2.42g, 34.8mmol) in MeOH (15mL) at 0°C]. The mixture was stirred for 20min at 0°C, then filtered to remove salts; the filtrate was then added to ethyl 7-((4-(4-fluorophenyl)pyridin-2-yl)(1-methyl-1H-pyrazol-3-yl)amino)heptanoate **(4)** (296mg, 0.69mmol) followed by KOH (391mg, 6.9mmol) solubilized in MeOH (8mL). The reaction mixture was stirred at rt for 21h, then concentrated *in vacuo*, poured onto brine/H_2O (30mL/70mL), and extracted with CH_2Cl_2 (3 x 50mL). The organic phases were combined, dried over Na_2SO_4, filtered and subsequently evaporated under vacuum. The resulting residue was purified by flash chromatography, eluting with MeOH/CH_2Cl_2 (1:9) to provide 7-((4-(4-fluorophenyl)pyridin-2-yl)(1-methyl-1H-pyrazol-3-yl)amino)-N-hydroxyheptanamide, **Example Y**, as light yellow solid (31mg, 10%).
^1H NMR (400 MHz, DMSO-d_6) δ: 10.33 (br. s., 1H), 8.66 (br. s., 1H), 8.21 (d, *J*=5.0 Hz, 1H), 7.69 (s, 1H), 7.56-7.65 (m, 2H), 7.29 (t, *J*=8.8 Hz, 2H), 6.99 (s, 1H), 6.94 (d, *J*=5.0 Hz, 1H), 6.20 (s, 1H), 3.92 (t, *J*=7.3 Hz, 2H), 3.80 (s, 3H), 1.92 (t, *J*=7.4 Hz, 2H), 1.52-1.66 (m, 2H), 1.39-1.51 (m, 2H), 1.18-1.34 (m, 4H).
LCMS (ES): Found 412.2 [MH]+.

Example Z

8-((4-(4-Fluorophenyl)pyridin-2-yl)(1-methyl-1H-pyrazol-3-yl)amino)-N-hydroxyoctanamide



1 2 3 4

Z

NaH (60%) (37mg, 0.93mmol) was added portion-wise to 4-(4-fluorophenyl)-N-(1-methyl-1H-pyrazol-3-yl)pyridin-2-amine **(3)** (as per Example Y above) (250mg, 1.05mmol) in DMF (8mL) at 5°C under Ar(g). The reaction mixture was then stirred for 20min, and ethyl-8-iodooctanoate (360mg, 1.21mmol) was added. The reaction mixture was stirred at 70°C under Ar(g) for 1h in the dark, then poured onto demineralized water (100mL), and extracted with EtOAc (3 x 50mL). The organic phases were combined, dried over Na_2SO_4, filtered and subsequently evaporated under vacuum. The resulting residue was purified by flash chromatography, eluting with EtOAc/Hexane (3:7) to furnish ethyl 8-((4-(4-fluorophenyl)pyridin-2-yl)(1-methyl-1H-pyrazol-3-yl)amino)octanoate **(4)** as a light yellow solid (288mg, 70%).

LCMS (ES): Found 439.3 [MH]+.

A fresh solution of NH_2OH in MeOH was prepared: [KOH (1.84g, 32.8mmol) in MeOH (15mL) was added to $NH_2OH.HCl$ (2.28g, 32.8mmol) in MeOH (15mL) at 0°C]. The mixture was stirred for 20min at 0°C, then filtered to remove salts; the filtrate was then added to ethyl 8-((4-(4-fluorophenyl)pyridin-2-yl)(1-methyl-1H-pyrazol-3-yl)amino)octanoate **(4)** (288mg, 0.65mmol) followed by KOH (368mg, 6.5mmol) solubilized in MeOH (10mL). The reaction mixture was stirred at rt for 21h, then concentrated *in vacuo*, poured onto brine/H_2O (30mL/70mL), and extracted with CH_2Cl_2 (3 x 50mL). The organic phases were combined, dried over Na_2SO_4, filtered and subsequently evaporated under vacuum. The resulting residue was purified by flash chromatography, eluting with MeOH/CH_2Cl_2 (1:9) to

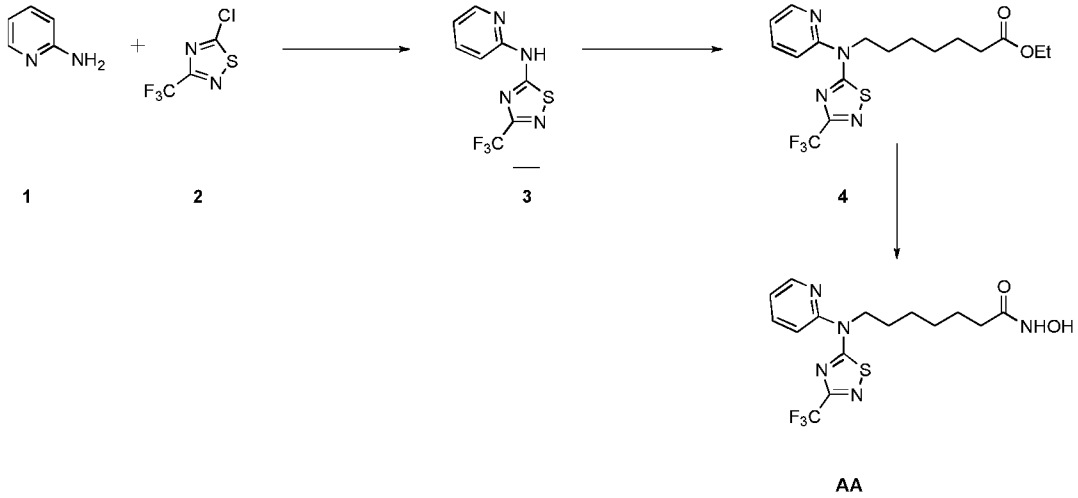
provide 8-((4-(4-fluorophenyl)pyridin-2-yl)(1-methyl-1H-pyrazol-3-yl)amino)-N-hydroxyoctanamide, **Example Z**, as a light brown solid (100mg, 35%).

^{1}H NMR (400 MHz, DMSO-d_6) δ: 10.33 (br. s, 1H), 8.66 (br. s., 1H), 8.21 (d, *J*=5.3 Hz, 1H), 7.69 (d, *J*=2.2 Hz, 1H), 7.58-7.64 (m, 2H), 7.26-7.33 (m, 2H), 6.98-7.01 (m, 1H), 6.94 (dd, *J*=5.3, 1.5 Hz, 1H), 6.21 (d, *J*=2.3 Hz, 1H), 3.87-3.98 (m, 2H), 3.80 (s, 3H), 1.91 (t, *J*=7.4 Hz, 2H), 1.53-1.65 (m, 2H), 1.45 (quin, *J*=7.2 Hz, 2H), 1.14-1.33 (m, 6H).

LCMS (ES): Found 426.2 [MH]+.

Example AA

7-((5-Fluoropyridin-2-yl)(3-(trifluoromethyl)1,2,4-thiadiazol-5-yl)amino)-N-hydroxyheptanamide



1 2 3 4

AA

Pyridin-2-amine **(1)** (1.0g, 10.6mmol), 5-chloro-3-(trifluoromethyl)1,2,4-thiadiazole **(2)** (1.82g, 10.6mmol), Xantphos (0.62g, 1.06mmol), and Cs_2CO_3 (5.18g, 15.9mmol) were combined in dry 1,4-dioxane (15mL). The reaction mixture was degassed with N_2(g) and placed under vacuum for 10min. $Pd_2(dba)_3$ (0.47g, 0.53mmol) was then added and the resulting reaction mixture was heated at 90°C for 30h. It was then poured onto demineralized water (200mL), and extracted with EtOAc (3 x 100mL). The organic phases were combined, dried over Na_2SO_4, filtered and subsequently evaporated under vacuum. The resulting residue was purified by flash chromatography, eluting with EtOAc/Hexane (1:1) to provide N-(pyridin-2-yl)-3-(trifluoromethyl)1,2,4-thiadiazol-5-amine **(3)** as a yellow solid (1.4g, 57%).

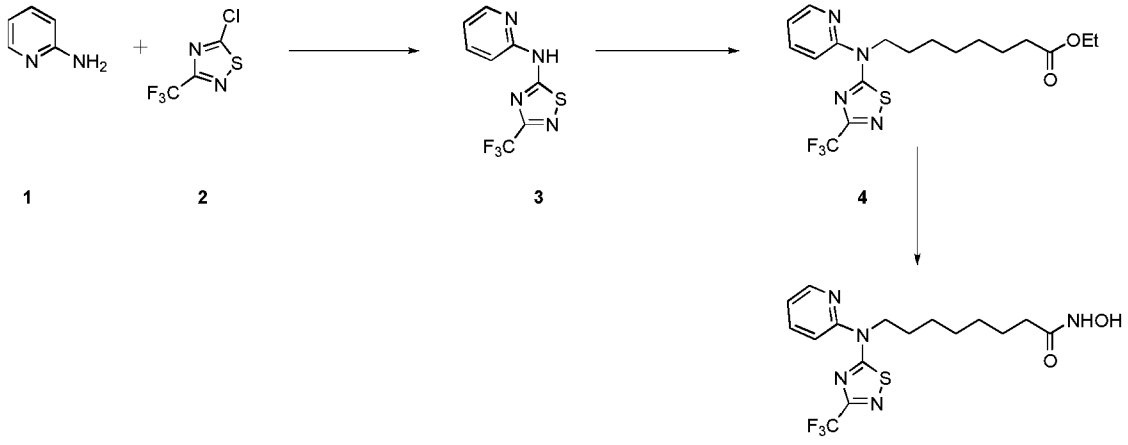
LCMS (ES): Found 247.2 [MH]+.

NaH (60%) (49mg, 1.21mmol) was added portion-wise to N-(pyridin-2-yl)-3-(trifluoromethyl)1,2,4-thiadiazol-5-amine **(3)** (300mg, 1.21mmol) in DMF (7mL) at 5°C under Ar(g). The reaction mixture was then stirred for 20min, and ethyl-7-iodoheptanoate (450mg, 1.58mmol) was added. The reaction mixture was stirred at 70°C under Ar(g) for 1h in the dark, then poured onto demineralized water (100mL), and extracted with EtOAc (3 x 50mL). The organic phases were combined, dried over Na_2SO_4, filtered and subsequently evaporated under vacuum. The resulting residue was purified by flash chromatography, eluting with EtOAc/Hexane (3:7), to furnish ethyl 7-(pyridin-2-yl(3-(trifluoromethyl)1,2,4-thiadiazol-5-yl)amino)heptanoate **(4)** as a yellow solid (440mg, 89%).
LCMS (ES): Found 403.4 [MH]+.

A fresh solution of NH_2OH in MeOH was prepared: [KOH (3.69g, 54.7mmol) in MeOH (20mL) was added to $NH_2OH.HCl$ (3.80g, 37.4mmol) in MeOH (20mL) at 0°C]. The mixture was stirred for 20min at 0°C, then filtered to remove salts; the filtrate was then added to ethyl 7-(pyridin-2-yl(3-(trifluoromethyl)1,2,4-thiadiazol-5-yl)amino)heptanoate **(4)** (440mg, 1.1mmol) followed by KOH (610mg, 10.9mmol) solubilized in MeOH (8mL). The reaction mixture was stirred at rt for 21h, then concentrated *in vacuo*, poured onto brine/H_2O (30mL/70mL), and extracted with CH_2Cl_2 (3 x 50mL). The organic phases were combined, dried over Na_2SO_4, filtered and subsequently evaporated under vacuum. The resulting residue was purified by flash chromatography, eluting with MeOH/CH_2Cl_2 (1:9) to provide 7-((5-fluoropyridin-2-yl)(3-(trifluoromethyl)1,2,4-thiadiazol-5-yl)amino)-N-hydroxyheptanamide, **Example AA**, as an off-white solid (50mg, 11 %).
^{1}H NMR (400 MHz, DMSO-d_6) δ: 10.33 (br. s., 1H), 8.49-8.77 (m, 2H), 7.96-8.14 (m, 1H), 7.63 (d, *J*=8.6 Hz, 1H), 7.28 (dd, *J*=7.1, 5.1 Hz, 1H), 4.44 (t, *J*=7.3 Hz, 2H), 1.92 (t, *J*=7.3 Hz, 2H), 1.63-1.80 (m, 2H), 1.47 (dt, *J*=14.2, 7.2 Hz, 2H), 1.25-1.41 (m, 4H).
LCMS (ES): Found 389.94 [MH]+.

Example BB

8-((5-Fluoropyridin-2-yl)(3-(trifluoromethyl)1,2,4-thiadiazol-5-yl)amino)-N-hydroxyoctanamide



1 2 3 4

BB

NaH (60%) (49mg, 1.21mmol) was added portion-wise to N-(pyridin-2-yl)-3-(trifluoromethyl)1,2,4-thiadiazol-5-amine **(3)** (as per Example AA above) (300mg, 1.21mmol) in DMF (8mL) at 5°C under Ar(g). The reaction mixture was then stirred for 20min, and ethyl-8-iodooctanoate (473mg, 1.58mmol) was added. The reaction mixture was stirred at 70°C under Ar(g) for 1h in the dark, then poured onto demineralized water (100mL), and extracted with EtOAc (3 x 50mL). The organic phases were combined, dried over Na_2SO_4, filtered and subsequently evaporated under vacuum. The resulting residue was purified by flash chromatography, eluting with EtOAc/Hexane (3:7) to furnish ethyl 8-(pyridin-2-yl(3-(trifluoromethyl)1,2,4-thiadiazol-5-yl)amino)octanoate **(4)** as a yellow solid (440mg, 86%).

LCMS (ES): Found 417.4 [MH]+.

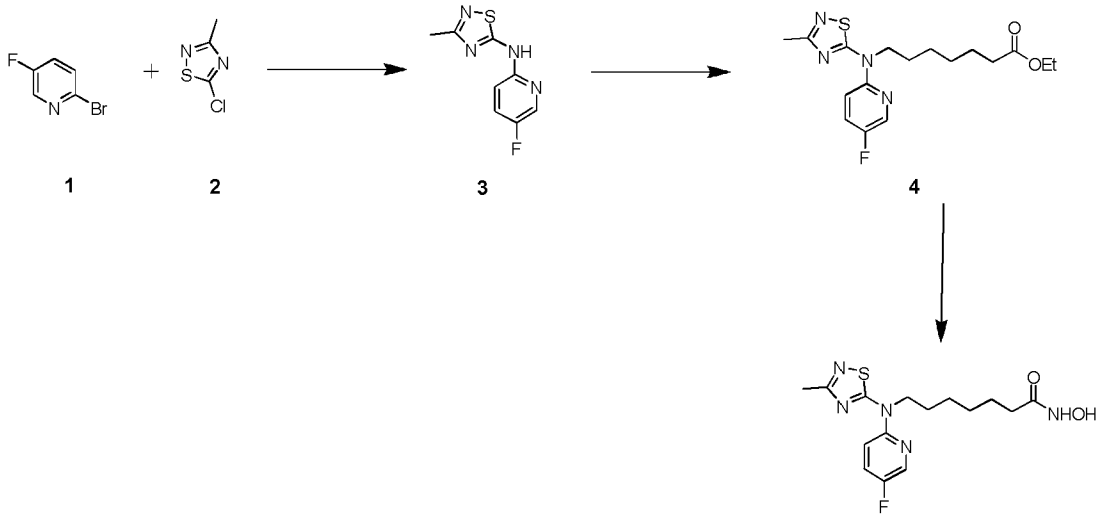
A fresh solution of NH_2OH in MeOH was prepared: [KOH (2.96g, 52.8mmol) in MeOH (20mL) was added to $NH_2OH.HCl$ (3.67g, 52.8mmol) in MeOH (20mL) at 0°C]. The mixture was stirred for 20min at 0°C, then filtered to remove salts; the filtrate was then added to ethyl 8-(pyridin-2-yl(3-(trifluoromethyl)1,2,4-thiadiazol-5-yl)amino)octanoate **(4)** (580mg, 1.3mmol) followed by KOH (589mg, 10.5mmol) solubilized in MeOH (10mL). The reaction mixture was stirred at rt for 21h, then concentrated *in vacuo*, poured onto brine/H_2O (30mL/70mL), and extracted with CH_2Cl_2 (3 x 50mL). The organic phases were combined, dried over Na_2SO_4, filtered and subsequently evaporated under vacuum. The resulting residue was purified by flash chromatography, eluting with MeOH/CH_2Cl_2 (1:9) to provide 8-((5-fluoropyridin-2-yl)(3-(trifluoromethyl)1,2,4-thiadiazol-5-yl)amino)-N-hydroxyoctanamide, **Example BB**, as an off-white solid (60mg, 14%).

^{1}H NMR (400 MHz, DMSO-d_6) δ: 10.34 (br. s., 1H), 8.67 (br. s., 1H), 8.61 (d, *J*=4.1 Hz, 1H), 8.01-8.10 (m, 1H), 7.63 (d, *J*=8.5 Hz, 1H), 7.28 (dd, *J*=7.1, 5.1 Hz, 1H), 4.44 (t, *J*=7.4 Hz, 2H), 1.91 (t, *J*=7.4 Hz, 2H), 1.72 (dt, *J*=13.4, 6.8 Hz, 2H), 1.46 (quin, *J*=7.3 Hz, 2H), 1.27-1.40 (m, 2H), 1.16-1.26 (m, 2H).

LCMS (ES): Found 404.4 [MH]+.

Example CC

7-((5-Fluoropyridin-2-yl)(3-methyl-1,2,4-thiadiazol-5-yl)amino)-N-hydroxyheptanamide



1 2 3 4

cc

5-Fluoropyridin-2-amine **(1)** (1.0g, 8.9mmol), 5-chloro-3-methyl-1,2,4-thiadiazole **(2)** (1.19g, 8.9mmol), Xantphos (0.516g, 0.89mmol), and Cs_2CO_3 (4.35g, 13.3mmol) were combined in dry 1,4-dioxane (15mL). The reaction mixture was degassed with N_2(g) and placed under vacuum for 10min. $Pd_2(dba)_3$ (0.41g, 0.44mmol) was then added and the resulting reaction mixture was heated at 90°C for 30h. It was then poured onto demineralized water (200mL), and extracted with EtOAc (3 x 100mL). The organic phases were combined, dried over Na_2SO_4, filtered and subsequently evaporated under vacuum. The resulting residue was purified by flash chromatography, eluting with EtOAc/Hexane (3:7) to provide N-(5-fluoropyridin-2-yl)-3-methyl-1,2,4-thiadiazol-5-amine **(3)** as a yellow solid (1.2g, 67%).

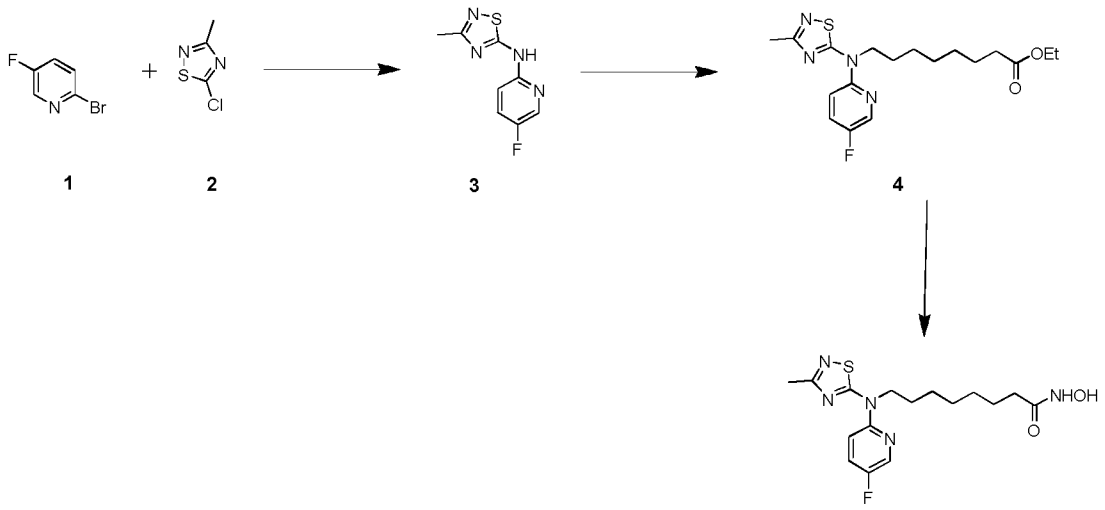
LCMS (ES): Found 211.1 [MH]+.

NaH (60%) (59mg, 1.49mmol) was added portion-wise to N-(5-fluoropyridin-2-yl)-3-methyl-1,2,4-thiadiazol-5-amine **(3)** (300mg, 1.42mmol) in DMF (7mL) at 5°C under Ar(g). The reaction mixture was then stirred for 20min, and ethyl-7-iodoheptanoate (527mg, 1.80mmol) was added. The reaction mixture was stirred at 70°C under Ar(g) for 1h in the dark, then poured onto demineralized water (100mL), extracted with EtOAc (3 x 50mL). The organic phases were combined, dried over Na_2SO_4, filtered and subsequently evaporated under vacuum. The resulting residue was purified by flash chromatography, eluting with EtOAc/Hexane (3:7) to furnish ethyl 7-((5-fluoropyridin-2-yl)(3-methyl-1,2,4-thiadiazol-5-yl)amino)heptanoate **(4)** as a yellow solid (0.22g, 42%).
LCMS (ES): Found 368.7 [MH]+.

A fresh solution of NH_2OH in MeOH was prepared: [KOH (2.08g, 30.05mmol) in MeOH (15mL) was added to $NH_2OH.HCl$ (1.69g, 30.05mmol) in MeOH (15mL) at 0°C]. The mixture was stirred for 20min at 0°C, then filtered to remove salts; the filtrate was then added to ethyl 7-((5-fluoropyridin-2-yl)(3-methyl-1,2,4-thiadiazol-5-yl)amino)heptanoate **(4)** (220mg, 0.60mmol) followed by KOH (337mg, 6.5mmol) solubilized in MeOH (5mL). The reaction mixture was stirred at rt for 21h, then concentrated *in vacuo*, poured onto brine/H_2O (15mL/35mL), and extracted with CH_2Cl_2 (3 x 50mL). The organic phases were combined, dried over Na_2SO_4, filtered and subsequently evaporated under vacuum. The resulting residue was purified by flash chromatography, eluting with MeOH/CH_2Cl_2 (1:9) to provide 7-((5-fluoropyridin-2-yl)(3-methyl-1,2,4-thiadiazol-5-yl)amino)-N-hydroxy heptanamide, **Example CC**, as an off-white solid (44mg, 21%).
^{1}H NMR (400 MHz, DMSO-d_6) δ: 10.35 (br. s., 1H), 8.67 (s, 1H), 8.55 (d, *J*=3.0 Hz, 1H), 7.94 (ddd, *J*=9.2, 8.3, 3.0 Hz, 1H), 7.54 (dd, *J*=9.3, 3.3 Hz, 1H), 4.26-4.50 (m, 2H), 2.42 (s, 3H), 1.93 (t, *J*=7.3 Hz, 2H), 1.60-1.73 (m, 2H), 1.48 (dt, *J*=14.4, 7.4 Hz, 2H), 1.25-1.42 (m, 4H).
LCMS (ES): Found 354.0 [MH]+.

Example DD

8-((5-Fluoropyridin-2-yl)(3-methyl-1,2,4-thiadiazol-5-yl)amino)-N-hydroxyoctanamide



5-Fluoropyridin-2-amine **(1)** (1.0 g, 8.9mmol), 5-chloro-3-methyl-1,2,4-thiadiazole **(2)** (1.19 g, 8.9mmol), Xantphos (0.52 g, 0.89mmol), and Cs_2CO_3 (4.35 g, 13.3mmol) were combined in dry 1,4-dioxane (15mL). The reaction mixture was degassed with N_2(g) and placed under vacuum for 10min. $Pd_2(dba)_3$ (0.41 g, 0.44mmol) was then added and the resulting reaction mixture was heated at 90°C for 30h. The reaction mixture was then poured onto demineralized water (200mL), and extracted with EtOAc (3 x 100mL). The organic phases were combined, dried over Na_2SO_4, filtered and subsequently evaporated under vacuum. The resulting residue was purified by flash chromatography eluting with EtOAc/Hexane (3:7) to provide N-(5-fluoropyridin-2-yl)-3-methyl-1,2,4-thiadiazol-5-amine **(3)** as a yellow solid (1.2g, 67%).

LCMS (ES): Found 211.1 $[MH]^+$

NaH (60%) (59mg, 1.49mmol) was added portion-wise to N-(5-fluoropyridin-2-yl)-3-methyl-1,2,4-thiadiazol-5-amine **(3)** (300mg, 1.42mmol) in DMF (7mL) at 5°C under Ar(g). The reaction mixture was then stirred for 20min, and ethyl-8-iodooctanoate (559mg, 1.85mmol) was added. The reaction mixture was stirred at 70°C under Ar(g) for 1h in the dark, then poured onto demineralized water (100mL), extracted with EtOAc (3 x 50mL). The organic phases were combined, dried over Na_2SO_4, filtered and subsequently evaporated under vacuum. The resulting residue was purified by flash chromatography, eluting with EtOAc/Hexane (3:7) to furnish ethyl 8-((5-fluoropyridin-2-yl)(3-methyl-1,2,4-thiadiazol-5-yl)amino)octanoate **(4)** as a yellow solid (200mg, 37%).

LCMS (ES): Found 381.4 [MH]+.

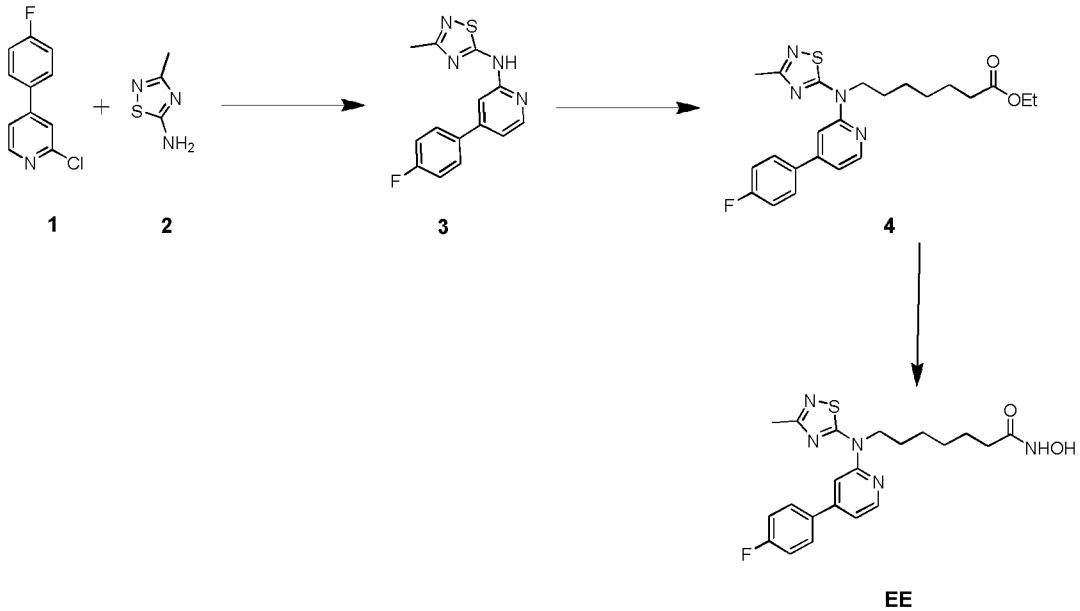
A fresh solution of NH_2OH in MeOH was prepared: [KOH (1.87g, 27.32mmol) in MeOH (12mL) was added to $NH_2OH.HCl$ (1.36g, 19.50mmol) in MeOH (12mL) at 0°C]. The mixture was stirred for 20min at 0°C, then filtered to remove salts; the filtrate was then added to ethyl 8-((5-fluoropyridin-2-yl)(3-methyl-1,2,4-thiadiazol-5-yl)amino)octanoate **(4)** (200mg, 0.54mmol) followed by KOH (306mg, 5.46mmol) solubilized in MeOH (5mL). The reaction mixture was stirred at rt for 21h, then concentrated *in vacuo*, poured onto brine/H_2O (15mL/35mL), and extracted with CH_2Cl_2 (3 x 50mL). The organic phases were combined, dried over Na_2SO_4, filtered and subsequently evaporated under vacuum. The resulting residue was purified by flash chromatography, eluting with MeOH/CH_2Cl_2 (1:9) to provide 8-((5-fluoropyridin-2-yl)(3-methyl-1,2,4-thiadiazol-5-yl)amino)-N-hydroxyoctanamide, **Example DD**, as a light brown solid (47mg, 24%).

^1H NMR (400 MHz, DMSO-d_6) δ: 10.32 (s, 1H), 8.66 (s, 1H), 8.55 (d, *J*=2.9 Hz, 1H), 7.89-8.00 (m, 1H), 7.53 (dd, *J*=9.3, 3.3 Hz, 1H), 4.33-4.45 (m, 2H), 2.42 (s, 3H), 1.92 (t, *J*=7.2 Hz, 2H), 1.61-1.75 (m, 2H), 1.47 (dt, *J*=14.6, 7.3 Hz, 2H), 1.16-1.40 (m, 6H).

LCMS (ES): Found 368.0 [MH]+.

Example EE

7-((4-(4-Fluorophenyl)pyridin-2-yl)(3-methyl-1,2,4-thiadiazol-5-yl)amino)-N-hydroxyheptanamide



1 2 3 4

EE

2-Chloro-4-(4-fluorophenyl)pyridine **(1)** (1.0g, 4.8mmol), 3-methyl-1,2,4-thiadiazol-5-amine **(2)** (556mg, 4.8mmol), Xantphos (279mg, 0.48mmol), and

Cs_2CO_3 (2.35g, 7.24mmol) were combined in dry 1,4-dioxane (15mL). The reaction mixture was degassed with N_2(g) and placed under vacuum for 10min. $Pd_2(dba)_3$ (0.22g, 0.24mmol) was then added and the resulting reaction mixture was heated at 90°C for 30h. It was then poured onto demineralized water (200mL), and extracted with EtOAc (3 x 100mL). The organic phases were combined, dried over Na_2SO_4, filtered and subsequently evaporated under vacuum. The resulting residue was purified by flash chromatography, eluting with EtOAc/Hexane (1:1) to provide N-(4-(4-fluorophenyl)pyridin-2-yl)-3-methyl-1,2,4-thiadiazol-5-amine, **(3)** as a yellow solid (1.1g, 80%).

LCMS (ES): Found 287.1 [MH]+.

NaH (60%) (42mg, 1.04mmol) was added portion-wise to N-(4-(4-fluorophenyl)pyridin-2-yl)-3-methyl-1,2,4-thiadiazol-5-amine **(3)** (300mg, 1.04mmol) in DMF (7mL) at 5°C under Ar(g). The reaction mixture was then stirred for 20min, and ethyl-7-iodoheptanoate (387mg, 1.36mmol) was added. The reaction mixture was stirred at 70°C under Ar(g) for 1h in the dark, then poured onto demineralized water (100mL), and extracted with EtOAc (3 x 50mL). The organic phases were combined, dried over Na_2SO_4, filtered and subsequently evaporated under vacuum. The resulting residue was purified by flash chromatography, eluting with EtOAc/Hexane (3:7) to furnish ethyl 7-((4-(4-fluorophenyl)pyridin-2-yl)(3-methyl-1,2,4-thiadiazol-5-yl)amino)heptanoate **(4)** as a yellow solid (237mg, 54%).

LCMS (ES): Found 443.2 [MH]+.

A fresh solution of NH_2OH in MeOH was prepared: [KOH (1.50g, 26.8mmol) in MeOH (10mL) was added to NH_2OH.HCl (1.86g, 26.8mmol) in MeOH (10mL) at 0°C]. The mixture was stirred for 20min at 0°C, then filtered to remove salts; the filtrate was then added to ethyl 7-((4-(4-fluorophenyl)pyridin-2-yl)(3-methyl-1,2,4-thiadiazol-5-yl)amino)heptanoate **(4)** (237mg, 0.57mmol) followed by KOH (300mg, 5.36mmol) solubilized in MeOH (8mL). The reaction mixture was stirred at rt for 21h, then concentrated *in vacuo*, poured onto brine/H_2O (30mL/70mL), and extracted with CH_2Cl_2 (3 x 50mL). The organic phases were combined, dried over Na_2SO_4, filtered and subsequently evaporated under vacuum. The resulting residue was purified by flash chromatography, eluting with MeOH/CH_2Cl_2 (1:9) to

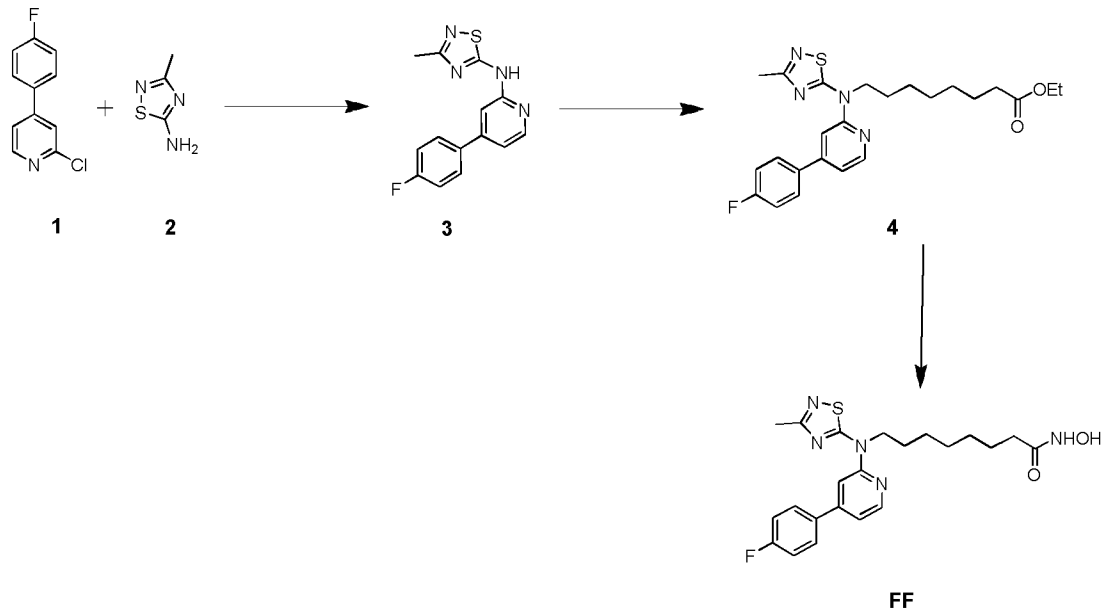
provide 7-((4-(4-fluorophenyl)pyridin-2-yl)(3-methyl-1,2,4-thiadiazol-5-yl)amino)-N-hydroxyheptanamide, **Example EE**, as light yellow solid (51mg, 22%).

^{1}H NMR (400 MHz, DMSO-d_6) δ: 10.35 (br. s, 1H), 8.66 (s, 1H), 8.55 (d, *J*=5.3 Hz, 1H), 7.96 (dd, *J*=8.5, 5.5 Hz, 2H), 7.61 (s, 1H), 7.35-7.50 (m, 3H), 4.53 (t, *J*=7.0 Hz, 2H), 2.43 (s, 3H), 1.93 (t, *J*=7.3 Hz, 2H), 1.66-1.80 (m, 2H), 1.44-1.56 (m, 2H), 1.26-1.43 (m, 4H).

LCMS (ES): Found 430.2 [MH]+.

Example FF

8-((4-(4-Fluorophenyl)-pyridin-2-yl)(3-methyl-1,2,4-thiadiazol-5-yl)amino)-N-hydroxyoctanamide



1 2 3 4 FF

NaH (60%) (42mg, 1.05mmol) was added portion-wise to N-(4-(4-fluorophenyl)pyridin-2-yl)-3-methyl-1,2,4-thiadiazol-5-amine **(3)** (as per Example EE above) (300mg, 1.05mmol) in DMF (8mL) at 5°C under Ar(g). The reaction mixture was then stirred for 20min, and ethyl-8-iodooctanoate (406mg, 1.36mmol) was added. The reaction mixture was stirred at 70°C under Ar(g) for 1h in the dark, then poured onto demineralized water (100mL), and extracted with EtOAc (3 x 50mL). The organic phases were combined, dried over Na_2SO_4, filtered and subsequently evaporated under vacuum. The resulting residue was purified by flash chromatography, eluting with EtOAc/Hexane (3:7) to furnish ethyl 8-((4-(4-fluorophenyl)pyridin-2-yl)(3-methyl-1,2,4-thiadiazol-5-yl)amino)octanoate **(4)** as a light yellow solid (205mg, 43%).

LCMS (ES): Found 457.2 [MH]+.

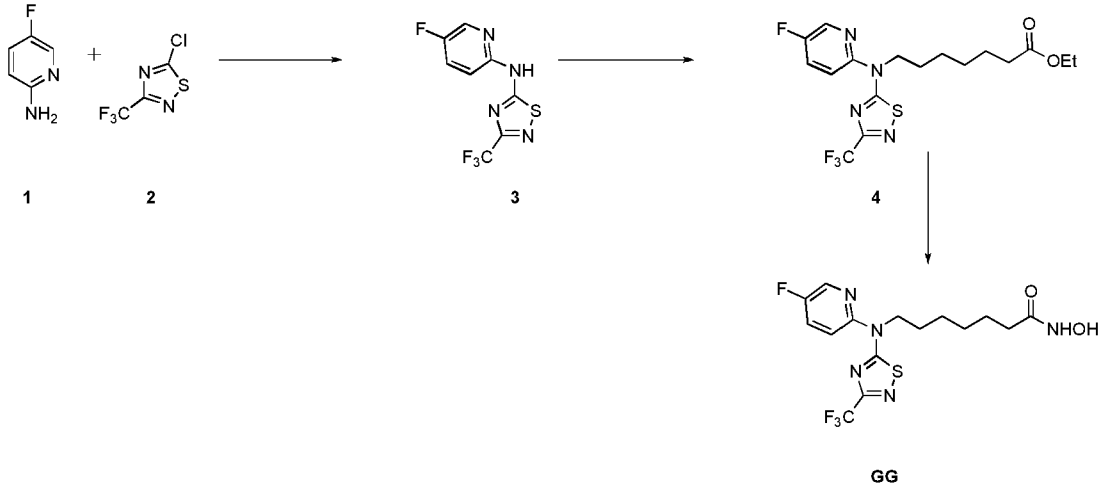
A fresh solution of NH_2OH in MeOH was prepared: [KOH (1.25g, 22.4mmol) in MeOH (10mL) was added to $NH_2OH.HCl$ (1.55 g 22.4mmol) in MeOH (10mL) at 0°C]. The mixture was stirred for 20min at 0°C, then filtered to remove salts; the filtrate was then added to ethyl 8-((4-(4-fluorophenyl)pyridin-2-yl)(3-methyl-1,2,4-thiadiazol-5-yl)amino)octanoate **(4)** (205mg, 0.44mmol) followed by KOH (246mg, 4.4mmol) solubilized in MeOH (10mL). The reaction mixture was stirred at rt for 21h, then concentrated *in vacuo*, poured onto brine/H_2O (30mL/70mL), and extracted with CH_2Cl_2 (3 x 50mL). The organic phases were combined, dried over Na_2SO_4, filtered and subsequently evaporated under vacuum. The resulting residue was purified by flash chromatography, eluting with MeOH/CH_2Cl_2 (1:9) to provide 8-((4-(4-fluorophenyl)pyridin-2-yl)(3-methyl-1,2,4-thiadiazol-5-yl)amino)-N-hydroxyoctanamide, **Example FF**, as a light yellow solid (45mg, 22 %).

^{1}H NMR (400 MHz, DMSO-d_6) δ: 10.32 (br. s, 1H), 8.65 (br. s, 1H), 8.55 (d, *J*=5.3 Hz, 1H), 7.96 (dd, *J*=8.9, 5.4 Hz, 2H), 7.61 (s, 1H), 7.46 (dd, *J*=5.4, 1.0 Hz, 1H), 7.41 (t, *J*=8.9 Hz, 2H), 4.54 (t, *J*=7.5 Hz, 2H), 2.43 (s, 3H), 1.91 (t, *J*=7.4 Hz, 2H), 1.67-1.80 (m, 2H), 1.47 (dt, *J*=14.7, 7.4 Hz, 2H), 1.28-1.42 (m, 4H), 1.18-1.27 (m, 2H).

LCMS (ES): Found 444.2 [MH]+.

Example GG

7-((5-Fluoropyridin-2-yl)(3-(trifluoromethyl)1,2,4-thiadiazol-5-yl)amino)-N-hydroxyheptanamide



1 2 3 4 GG

5-Fluoropyridin-2-amine **(1)** (1.0g, 8.9mmol), 5-chloro-3-(trifluoromethyl)1,2,4-thiadiazole **(2)** (1.68g, 8.9mmol), Xantphos (0.52g, 0.89mmol), and Cs_2CO_3

(4.35g, 13.3mmol) were combined in dry 1,4-dioxane (15mL). The reaction mixture was degassed with N_2(g) and placed under vacuum for 10min. $Pd_2(dba)_3$ (0.41g, 0.44mmol) was then added and the resulting reaction mixture was heated at 90°C for 30h. It was then poured onto demineralized water (200mL), and extracted with EtOAc (3 x 100mL). The organic phases were combined, dried over Na_2SO_4, filtered and subsequently evaporated under vacuum. The resulting residue was purified by flash chromatography, eluting with EtOAc/Hexane (3:7) to provide N-(5-fluoropyridin-2-yl)-3-(trifluoromethyl)1,2,4-thiadiazol-5-amine **(3)** as a yellow solid (900mg, 38%).

LCMS (ES): Found 265.1 [MH]+.

NaH (60%) (45mg, 1.13mmol) was added portion-wise to N-(5-fluoropyridin-2-yl)-3-(trifluoromethyl)-1,2,4-thiadiazol-5-amine **(3)** (300mg, 1.13mmol) in DMF (7mL) at 5°C under Ar(g). The reaction mixture was then stirred for 20min, and ethyl-7-iodoheptanoate (419mg, 1.47mmol) was added. The reaction mixture was stirred at 70°C under Ar(g) for 1h in the dark, then poured onto demineralized water (100mL), and extracted with EtOAc (3 x 50mL). The organic phases were combined, dried over Na_2SO_4, filtered and subsequently evaporated under vacuum. The resulting residue was purified by flash chromatography, eluting with EtOAc/Hexane (3:7) to furnish ethyl 7-((5-fluoropyridin-2-yl)(3-methyl-1,2,4-thiadiazol-5-yl)amino)heptanoate **(4)** as a yellow solid (314mg, 66%).

LCMS (ES): Found 421.4 [MH]+.

A fresh solution of NH_2OH in MeOH was prepared: [KOH (2.09g, 37.4mmol) in MeOH (15mL) was added to NH_2OH.HCl (2.60g, 37.4mmol) in MeOH (15mL) at 0°C]. The mixture was stirred for 20min at 0°C, then filtered to remove salts; the filtrate was then added to ethyl 7-((5-fluoropyridin-2-yl)(3-(trifluoromethyl)1,2,4-thiadiazol-5-yl)amino)heptanoate **(4)** (314mg, 0.74mmol) followed by KOH (419mg, 7.4mmol) solubilized in MeOH (5mL). The reaction mixture was stirred at rt for 21h, then concentrated *in vacuo*, poured onto brine/H_2O (30mL/70mL), and extracted with CH_2Cl_2 (3 x 50mL). The organic phases were combined, dried over Na_2SO_4, filtered and subsequently evaporated under vacuum. The resulting residue was purified by flash chromatography, eluting with MeOH/CH_2Cl_2 (1:9) to

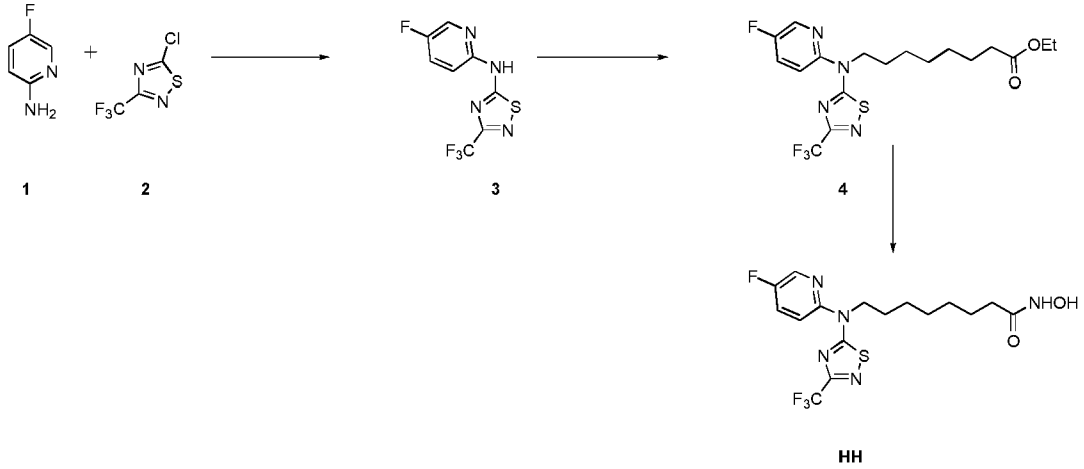
provide 7-((5-fluoropyridin-2-yl)(3-(trifluoromethyl)1,2,4-thiadiazol-5-yl)amino)-N-hydroxyheptanamide, **Example GG**, as a light orange solid (35mg, 12%).

^{1}H NMR (400 MHz, DMSO-d_6) δ: 10.33 (br. s., 1H), 8.52-8.78 (m, 2H), 8.05 (t, *J*=7.7 Hz, 1H), 7.71 (d, *J*=8.9 Hz, 1H), 4.44 (t, *J*=6.5 Hz, 2H), 1.92 (t, *J*=7.0 Hz, 2H), 1.64-1.79 (m, 2H), 1.47 (dt, *J*=13.7, 7.1 Hz, 2H), 1.20-1.41 (m, 4H).

LCMS (ES): Found 408.4 [MH]+.

Example HH

8-((5-Fluoropyridin-2-yl)(3-(trifluoromethyl)1,2,4-thiadiazol-5-yl)amino)-N-hydroxyoctanamide



1 2 3 4 HH

NaH (60%) (61mg, 1.51mmol) was added portion-wise to N-(5-fluoropyridin-2-yl)-3-(trifluoromethyl)1,2,4-thiadiazol-5-amine **(3)** (as per Example GG above) (400mg, 1.51mmol) in DMF (10mL) at 5°C under Ar(g). The reaction mixture was then stirred for 20min, and ethyl-8-iodooctanoate (587mg, 1.96mmol) was added. The reaction mixture was stirred at 70°C under Ar(g) for 1h in the dark, then poured onto demineralized water (100mL), extracted with EtOAc (3 x 50mL). The organic phases were combined, dried over Na_2SO_4, filtered and subsequently evaporated under vacuum. The resulting residue was purified by flash chromatography, eluting with EtOAc/Hexane (3:7) to furnish ethyl 8-((5-fluoropyridin-2-yl)(3-(trifluoromethyl)1,2,4-thiadiazol-5-yl)amino)octanoate **(4)** as a yellow solid (580mg, 85%).

LCMS (ES): Found 435.4 [MH]+.

A fresh solution of NH_2OH in MeOH was prepared: [KOH (3.74g, 66.0mmol) in MeOH (20mL) was added to NH_2OH.HCl (4.61g, 66.0mmol) in MeOH (20mL) at

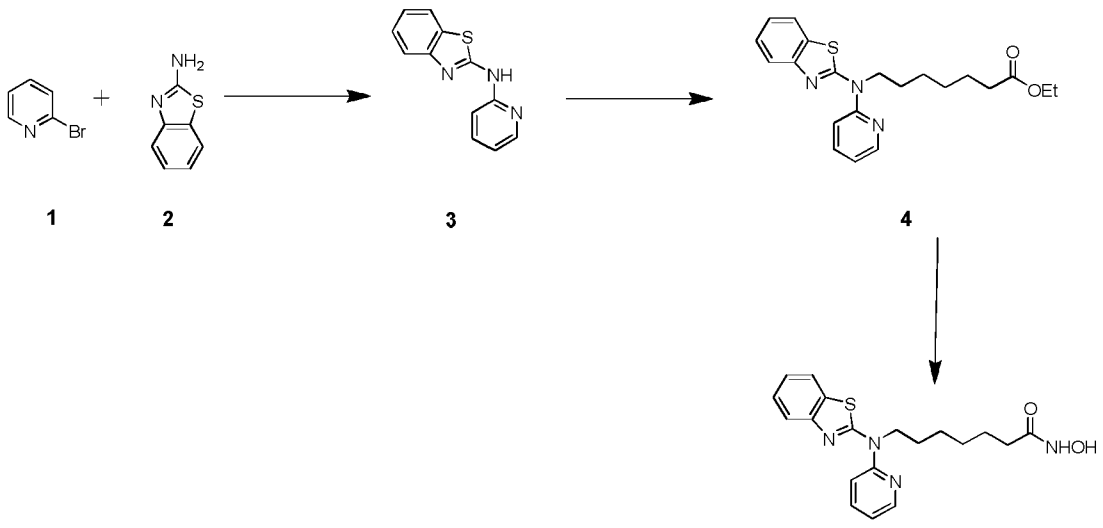
0°C]. The mixture was stirred for 20min at 0°C, then filtered to remove salts; the filtrate was then added to ethyl 8-((5-fluoropyridin-2-yl)(3-(trifluoromethyl)1,2,4-thiadiazol-5-yl)amino)octanoate **(4)** (580mg, 1.3mmol) followed by KOH (748mg, 13.0mmol) solubilized in MeOH (10mL). The reaction mixture was stirred at rt for 21h, then concentrated *in vacuo*, poured onto brine/H_2O (30mL/70mL), and extracted with CH_2Cl_2 (3 x 50mL). The organic phases were combined, dried over Na_2SO_4, filtered and subsequently evaporated under vacuum. The resulting residue was purified by flash chromatography, eluting with MeOH/CH_2Cl_2 (1:9) to provide 8-((5-fluoropyridin-2-yl)(3-(trifluoromethyl)1,2,4-thiadiazol-5-yl)amino)-N-hydroxyoctanamide, **Example HH**, as an off-white solid (22mg, 3.7%).

^{1}H NMR (400 MHz, DMSO-d_6) δ: 10.33 (br. s., 1H), 8.69 (d, *J*=2.9 Hz, 1H), 8.65 (br. s., 1H), 8.01-8.10 (m, 1H), 7.71 (dd, *J*=9.3, 3.2 Hz, 1H), 4.40-4.50 (m, 2H), 1.91 (t, *J*=7.4 Hz, 2H), 1.64-1.78 (m, 2H), 1.40-1.52 (m, 2H), 1.27-1.40 (m, 4H), 1.16-1.26 (m, 2H).

LCMS (ES): Found 422.4 [MH]+.

Example II

7-(Benzo[d]thiazol-2-yl(pyridin-2-yl)amino)-N-hydroxyheptanamide



II

2-Bromopyridine **(1)** (1.0g, 6.3mmol), benzo[d]thiazol-2-amine **(2)** (0.974g, 8.22mmol), Xantphos (0.366g, 0.63mmol), and Cs_2CO_3 (3.09g, 9.4mmol) were combined in dry 1,4-dioxane (15mL). The reaction mixture was degassed with N_2(g) and placed under vacuum for 10min. $Pd_2(dba)_3$ (0.29g, 0.31mmol) was then added and the resulting reaction mixture was heated at 90°C for 30h. It was

then poured onto demineralized water (200mL), and extracted with EtOAc (3 x 100mL). The organic phases were combined, dried over Na_2SO_4, filtered and subsequently evaporated under vacuum. The resulting residue was purified by flash chromatography, eluting with EtOAc/Hexane (1:1) to provide N-(pyridin-2-yl)benzo[d]thiazol-2-amine **(3)** as a yellow solid (0.86g, 60%).
LCMS (ES): Found 228.1 [MH]+.

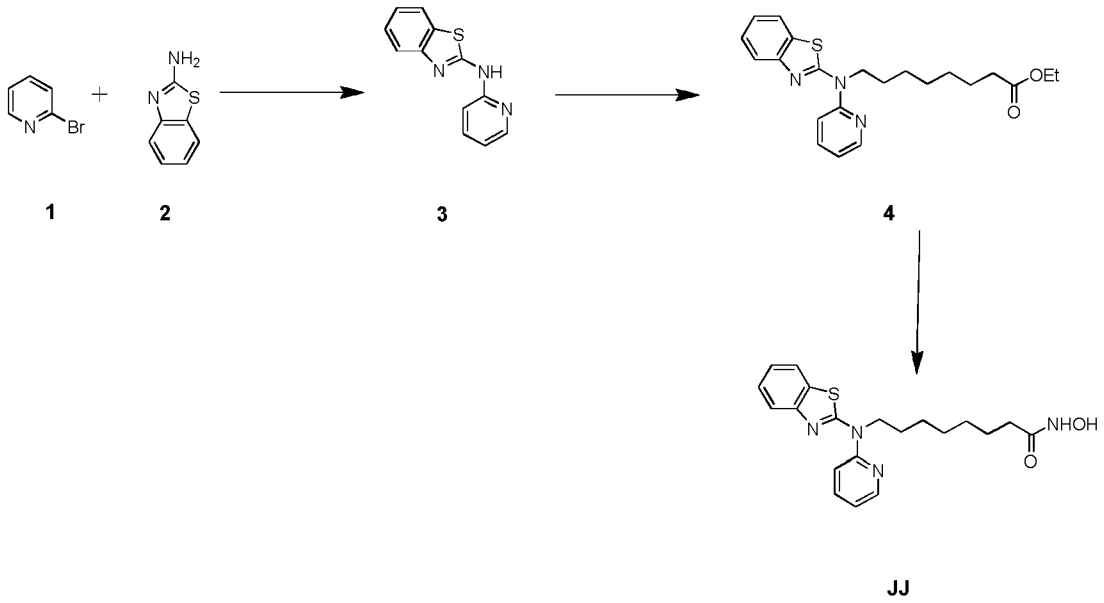
NaH (60%) (34mg, 0.86mmol) was added portion-wise to N-(pyridin-2-yl)benzo[d]thiazol-2-amine **(3)** (188mg, 0.82mmol) in DMF (5mL) at 5°C under Ar(g). The reaction mixture was then stirred for 20min, and ethyl-7-iodoheptanoate (305mg, 1.0mmol) was added. The reaction mixture was stirred at 70°C under Ar(g) for 1h in the dark, then poured onto demineralized water (100mL), and extracted with EtOAc (3 x 50mL). The organic phases were combined, dried over Na_2SO_4, filtered and subsequently evaporated under vacuum. The resulting residue was purified by flash chromatography, eluting with EtOAc/Hexane (3:7) to furnish ethyl 7-(benzo[d]thiazol-2-yl(pyridin-2-yl)amino)heptanoate **(4)** as a yellow solid (106mg, 34%).
LCMS (ES): Found 384.1 [MH]+.

A fresh solution of NH_2OH in MeOH was prepared: [KOH (774mg, 13.8mmol) in MeOH (10mL) was added to $NH_2OH.HCl$ (960mg, 13.8mmol) in MeOH (10mL) at 0°C]. The mixture was stirred for 20min at 0°C, then filtered to remove salts; the filtrate was then added to ethyl 7-(benzo[d]thiazol-2-yl(pyridin-2-yl)amino)heptanoate **(4)** (106mg, 0.27mmol) followed by KOH (154mg, 2.7mmol) solubilized in MeOH (5mL). The reaction mixture was stirred at rt for 21h, then concentrated *in vacuo*, poured onto brine/H_2O (30mL/70mL), and extracted with CH_2Cl_2 (3 x 50mL). The organic phases were combined, dried over Na_2SO_4, filtered and subsequently evaporated under vacuum. The resulting residue was purified by flash chromatography, eluting with MeOH/CH_2Cl_2 (1:9) to provide 7-(benzo[d]thiazol-2-yl(pyridin-2-yl)amino)-N-hydroxyheptanamide, **Example II,** as an off-white liquid (18mg, 17%).
^{1}H NMR (400 MHz, METHANOL-d_4) δ: 8.42 (d, *J*=4.2 Hz, 1H), 7.82 (t, *J*=7.6 Hz, 1H), 7.62-7.75 (m, 2H), 7.34 (t, *J*=7.6 Hz, 1H), 7.29 (d, *J*=8.5 Hz, 1H), 7.18 (t, *J*=7.4 Hz, 1H), 7.07 (dd, *J*=6.8, 5.1 Hz, 1H), 4.28-4.46 (m, 2H), 2.09 (t, *J*=7.3 Hz, 2H), 1.80 (quin, *J*=7.3 Hz, 2H), 1.56-1.69 (m, 2H), 1.33-1.53 (m, 4H).

LCMS (ES): Found 371.1 $[MH]^+$

Example JJ

8-(Benzo[d]thiazol-2-yl(pyridin-2-yl)amino)-N-hydroxyoctanamide



1 2 3 4

JJ

NaH (60%) (75mg, 1.8mmol) was added portion-wise to N-(pyridin-2-yl)benzo[d]thiazol-2-amine **(3)** (as per Example KK above) (430mg, 1.8mmol) in DMF (10mL) at 5°C under Ar(g). The reaction mixture was then stirred for 20min, and ethyl-8-iodooctanoate (733mg, 2.4mmol) was added. The reaction mixture was stirred at 70°C under Ar(g) for 1h in the dark, then poured onto demineralized water (100mL), and extracted with EtOAc (3 x 50mL). The organic phases were combined, dried over Na_2SO_4, filtered and subsequently evaporated under vacuum. The resulting residue was purified by flash chromatography, eluting with EtOAc/Hexane (3:7) to furnish ethyl 8-(benzo[d]thiazol-2-yl(pyridin-2-yl)amino)octanoate **(4)** as a yellow solid (310mg, 41%).

LCMS (ES): Found 398.1 [MH]+.

A fresh solution of NH_2OH in MeOH was prepared: [KOH (2.18g, 39.02mmol) in MeOH (15mL) was added to $NH_2OH.HCl$ (2.71g, 39.02mmol) in MeOH (15mL) at 0°C. The mixture was stirred for 20min at 0°C, then filtered to remove salts; the filtrate was then added to ethyl 8-(benzo[d]thiazol-2-yl(pyridin-2-yl)amino)octanoate **(4)** (310mg, 0.78mmol) followed by KOH (437mg, 7.8mmol)

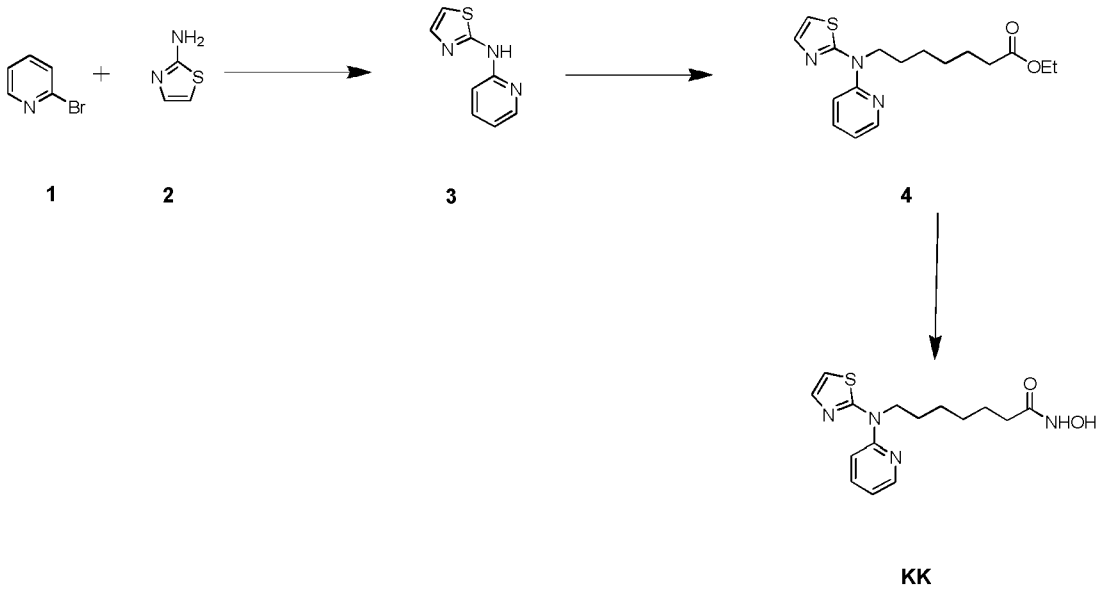
solubilized in MeOH (8mL). The reaction mixture was stirred at rt for 21h, then concentrated *in vacuo*, poured onto brine/H_2O (30mL/70mL), and extracted with CH_2Cl_2 (3 x 50mL). The organic phases were combined, dried over Na_2SO_4, filtered and subsequently evaporated under vacuum. The resulting residue was purified by flash chromatography, eluting with MeOH/CH_2Cl_2 (1:9) to provide 8-(benzo[d]thiazol-2-yl(pyridin-2-yl)amino)-N-hydroxyoctanamide, **Example JJ**, as a yellow solid (43mg, 14%).

^{1}H NMR (400 MHz, DMSO-d_6) δ: 10.33 (s, 1H), 8.66 (s, 1H), 8.47 (d, *J*=3.4 Hz, 1H), 7.89-7.96 (m, 1H), 7.87 (d, *J*=7.6 Hz, 1H), 7.68 (d, *J*=8.0 Hz, 1H), 7.41 (d, *J*=8.5 Hz, 1H), 7.37 (t, *J*=7.7 Hz, 1H), 7.21 (t, *J*=7.3 Hz, 1H), 7.15 (dd, *J*=7.1, 5.0 Hz, 1H), 4.38-4.51 (m, 2H), 1.93 (t, *J*=7.3 Hz, 2H), 1.65-1.81 (m, 2H), 1.49 (dt, *J*=14.6, 7.4 Hz, 2H), 1.30-1.43 (m, 4H), 1.18-1.29 (m, 2H).

LCMS (ES): Found 385.0 [MH]+.

Example KK

N-Hydroxy-7-(pyridin-2-yl(thiazol-2-yl)amino)heptanamide



1 2 3 4

KK

2-Bromopyridine **(1)** (2.0g, 12.6mmol), thiazol-2-amine **(2)** (1.07g, 10.7mmol), Xantphos (0.732g, 0.12mmol), and Cs_2CO_3 (6.17g, 18.9mmol) were combined in dry 1,4-dioxane (15mL). The reaction mixture was degassed with N_2(g) and placed under vacuum for 10min. $Pd_2(dba)_3$ (576mg, 0.63mmol) was then added and the resulting reaction mixture was heated at 90°C for 30h. It was then poured onto demineralized water (200mL), and extracted with EtOAc (3 x

100mL). The organic phases were combined, dried over Na_2SO_4, filtered and subsequently evaporated under vacuum. The resulting residue was purified by flash chromatography, eluting with EtOAc/Hexane (1:1) to provide N-(pyridin-2-yl)thiazol-2-amine **(3)** as a yellow solid (0.8g, 35%).

LCMS (ES): Found 178.1 [MH]+.

NaH (60%) (45mg, 1.12mmol) was added portion-wise to N-(pyridin-2-yl)thiazol-2-amine **(3)** (200mg, 1.12mmol) in DMF (7mL) at 5°C under Ar(g). The reaction mixture was then stirred for 20min, and ethyl-7-iodoheptanoate (417mg, 1.46mmol) was added. The reaction mixture was stirred at 70°C under Ar(g) for 1h in the dark, then poured onto demineralized water (100mL), and extracted with EtOAc (3 x 50mL). The organic phases were combined, dried over Na_2SO_4, filtered and subsequently evaporated under vacuum. The resulting residue was purified by flash chromatography, eluting with EtOAc/Hexane (3:7) to furnish ethyl 7-(pyridin-2-yl(thiazol-2-yl)amino)heptanoate **(4)** as a yellow solid (170mg, 45%).

LCMS (ES): Found 334.1 [MH]+.

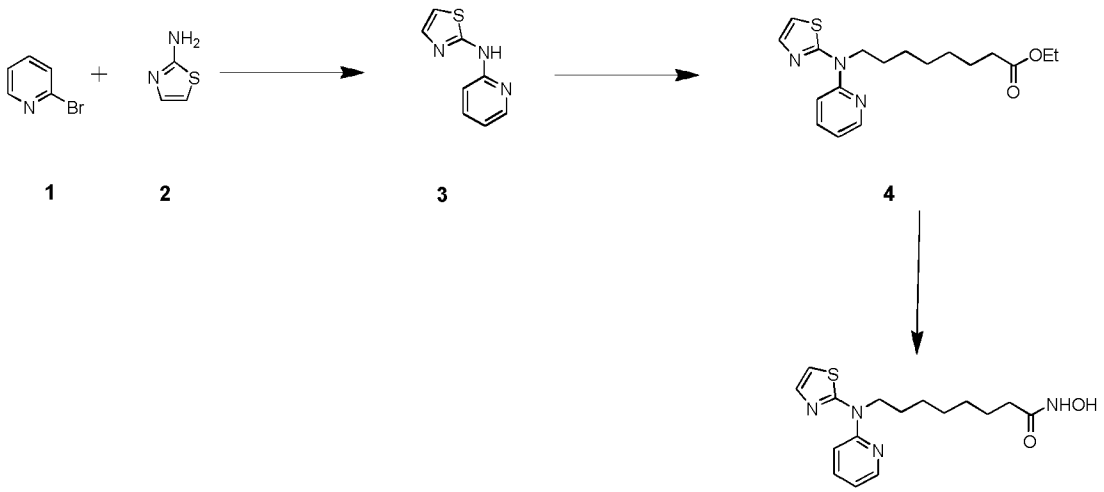
A fresh solution of NH_2OH in MeOH was prepared: [KOH (1.43g, 25.4mmol) in MeOH (15mL) was added to $NH_2OH.HCl$ (1.77g, 25.4mmol) in MeOH (15mL) at 0°C]. The mixture was stirred for 20min at 0°C, then filtered to remove salts; the filtrate was then added to ethyl 7-(pyridin-2-yl(thiazol-2-yl)amino)heptanoate **(4)** (170mg, 0.5mmol) followed by KOH (286mg, 5.0mmol) solubilized in MeOH (8mL). The reaction mixture was stirred at rt for 21h, then concentrated *in vacuo*, poured onto brine/H_2O (30mL/70mL), and extracted with CH_2Cl_2 (3 x 50mL). The organic phases were combined, dried over Na_2SO_4, filtered and subsequently evaporated under vacuum. The resulting residue was purified by flash chromatography, eluting with MeOH/CH_2Cl_2 (1:9) to provide N-hydroxy-7-(pyridin-2-yl(thiazol-2-yl)amino)heptanamide, **Example KK**, as a light brown liquid (10mg, 6%).

^1H NMR (400 MHz, METHANOL-d_4) δ: 8.38 (d, *J*=4.6 Hz, 1H), 7.73-7.84 (m, 1H), 7.40 (d, *J*=3.7 Hz, 1H), 7.21 (dd, *J*=8.5, 3.1 Hz, 1H), 6.95-7.03 (m, 1H), 6.92 (dd, *J*=3.7, 1.1 Hz, 1H), 4.26-4.37 (m, 2H), 2.09 (t, *J*=7.4 Hz, 2H), 1.70-1.83 (m, 2H), 1.63 (quin, *J*=7.2 Hz, 2H), 1.35-1.52 (m, 4H).

LCMS (ES): Found 321.1 [MH]+.

Example LL

N-Hydroxy-8-(pyridin-2-yl(thiazol-2-yl)amino)octanamide



1 2 3 4

LL

NaH (60%) (66mg, 1.69mmol) was added portion-wise to N-(pyridin-2-yl)thiazol-2-amine **(3)** (300mg, 1.69mmol) in DMF (8mL) at 5°C under Ar(g). The reaction mixture was then stirred for 20min, and ethyl-8-iodooctanoate (654mg, 2.20mmol) was added. The reaction mixture was stirred at 70°C under Ar(g) for 1h in the dark, then poured onto demineralized water (100mL), and extracted with EtOAc (3 x 50mL). The organic phases were combined, dried over Na_2SO_4, filtered and subsequently evaporated under vacuum. The resulting residue was purified by flash chromatography, eluting with EtOAc/Hexane (3:7) to furnish ethyl 8-(pyridin-2-yl(thiazol-2-yl)amino)octanoate **(4)** as a yellow solid (180mg, 30%).

LCMS (ES): Found 348.1 $[MH]^+$

A fresh solution of NH_2OH in MeOH was prepared: [KOH (1.42g, 52.8mmol) in MeOH (20mL) was added to $NH_2OH.HCl$ (1.75g, 25.2mmol) in MeOH (20mL) at 0°C]. The mixture was stirred for 20min at 0°C, then filtered to remove salts; the filtrate was then added to ethyl 8-(pyridin-2-yl(thiazol-2-yl)amino)octanoate **(4)** (175mg, 0.5mmol) followed by KOH (283mg, 5.04mmol) solubilized in MeOH (10mL). The reaction mixture was stirred at rt for 21h, then concentrated *in vacuo*, poured onto brine/H_2O (30mL/70mL), and extracted with CH_2Cl_2 (3 x 50mL). The organic phases were combined, dried over Na_2SO_4, filtered and

subsequently evaporated under vacuum. The resulting residue was purified by flash chromatography, eluting with MeOH/CH_2Cl_2 (1:9) to provide N-hydroxy-8-(pyridin-2-yl(thiazol-2-yl)amino)octanamide, **Example LL**, as a light brown solid (65mg, 38%).

^{1}H NMR (400 MHz, DMSO-d_6) δ: 10.33 (s, 1H), 8.66 (br. s., 1H), 8.40 (d, *J*=3.8 Hz, 1H), 7.77-7.91 (m, 1H), 7.46 (d, *J*=3.7 Hz, 1H), 7.28 (d, *J*=8.6 Hz, 1H), 6.99-7.08 (m, 2H), 4.29-4.38 (m, 2H), 1.93 (t, *J*=7.3 Hz, 2H), 1.60-1.73 (m, 2H), 1.48 (quin, *J*=7.2 Hz, 2H), 1.28-1.41 (m, 4H), 1.16-1.27 (m, 2H).

LCMS (ES): Found 335.7 [MH]+.

Biochemical Data

Compounds of the invention may be tested for HDAC inhibitory activity by any suitable assay, e.g. the assay described in WO2008/062201. By this assay, the following data were obtained:

***In Vitro* Biochemical Data**

Example	IC_{50}, HDAC1	IC_{50}, HDAC6
A	* (226.5nM)	* (1.76nM)
B	*	*
C	*	*
D	***	*
E	*	*
F	***	*
G	*	*
H	***	*
I	**	*
J	***	*
K	*	*
L	****	*
M	***	*
N	***	*
O	**	*
P	***	*
Q	****	*
R	***	*
S	**	*
T	***	*
U	***	*
V	****	*
W	***	*
X	***	*
Y	*	*
Z	****	*
AA	***	*
BB	****	*
CC	**	*
DD	***	*
EE	***	*
FF	***	*
GG	**	*
HH	***	*
II	***	*
JJ	***	*
KK	***	*
LL	***	*

Key:

****	≥ 10uM
***	≤ 10uM ≥ 1uM
**	≤ 1uM ≥ 500nM
*	≤ 500nM

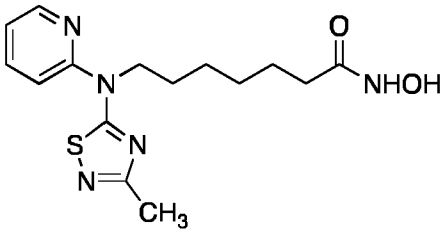
***In Vitro* Cancer Cell Growth Inhibition Data for Compound A**

IC_{50} (μM), A549	IC_{50} (μM), PC-3
1.89	2.32

Comparative Mouse Pharmacokinetic Data for Example A and Example 3 of WO 2010/086646

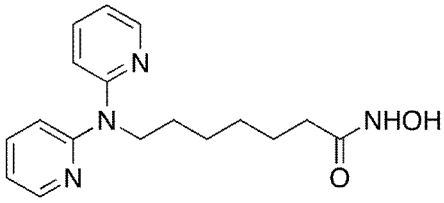
When comparing compounds of the present invention with Examples in WO 2010/086646, it has been shown that compounds of the invention have increased bioavailability (data below for mice).

Example A:



Oral bioavailability, F% = 19

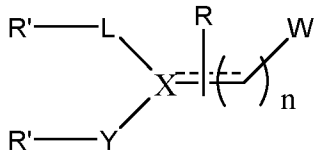
Example 3 of WO/2010/86646



F% = 2

CLAIMS

1. A compound of the formula



wherein:

... is a double bond and X is C; or

... is a single bond and X is N, CH or CQR_1; and

wherein:

n is 1 to 10;

R is H or QR_1;

each R/ is independently selected from H and QR_1;

each Q is independently selected from a bond, CO, CO_2, NH, S, SO, SO_2 or O;

each R_1 is independently selected from H, C_1-C_{10} alkyl, C_2-C_{10} alkenyl, C_2-C_{10} alkynyl, aryl, heteroaryl, C_1-C_{10} cycloalkyl, halogen, C_1-C_{10} alkylaryl, C_1-C_{10} alkyl heteroaryl, C_1-C_{10} heterocycloalkyl or trifluoromethyl;

L is a 5-membered nitrogen-containing heteroaryl which is optionally fused to a benzene;

Y is a 5, 6 or 7-membered nitrogen-containing heteroaryl, which is optionally fused to a benzene;

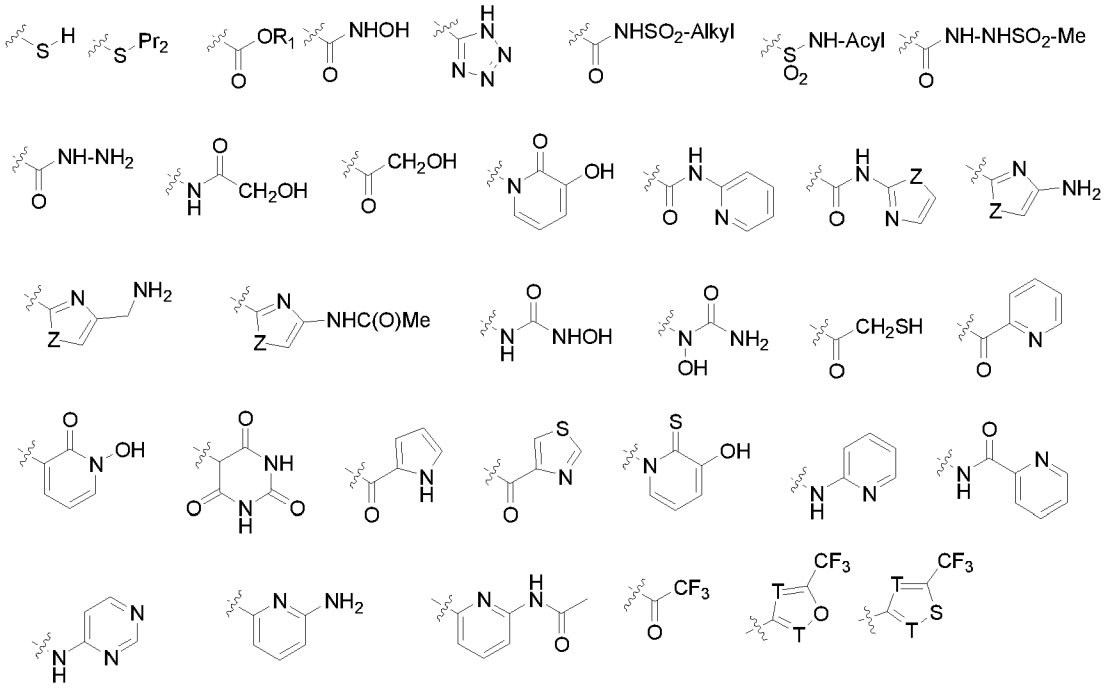
W is a zinc-binding group;

each aryl or heteroaryl may be substituted by up to five substituents selected from C_1-C_6 alkyl, hydroxy, C_1-C_3 hydroxyalkyl, C_1-C_3 alkoxy, C_1-C_3 haloalkoxy, amino, C_1-C_3 mono alkylamino, C_1-C_3 bis alkylamino, C_1-C_3 acylamino, C_1-C_3 aminoalkyl, mono (C_1-C_3 alkyl) amino C_1-C_3 alkyl, bis(C_1-C_3 alkyl) amino C_1-C_3 alkyl, C_1-C_3-acylamino, C_1-C_3 alkyl sulfonylamino, halo, nitro, cyano, trifluoromethyl, carboxy, C_1-C_3 alkoxycarbonyl, aminocarbonyl, mono C_1-C_3 alkyl aminocarbonyl, bis C_1-C_3 alkyl aminocarbonyl, -SO_3H, C_1-C_3 alkylsulfonyl, aminosulfonyl, mono C_1-C_3 alkyl aminosulfonyl and bis C_1-C_3-alkyl aminosulfonyl; and

each alkyl, alkenyl or alkynyl may be optionally substituted with halogen, NH_2, NO_2 or hydroxyl,

or a pharmaceutically acceptable salt thereof.

2. A compound according to claim 1, wherein W is selected from:



wherein R_1 is as defined in claim 1, Pr^2 is H or a thiol protecting group, Z is selected from O, S or NH and T is N or CH, and preferably wherein W is -CONHOH

3. A compound according to claim 1 or claim 2, wherein L and Y are hydrogen bond acceptors.

4. A compound according to any preceding claim, wherein in at least one, preferably both, of L and Y, the atom that is directly bonded to X is a carbon, and at least one nitrogen atom is directly bonded to said carbon.

5. A compound according to any preceding claim, wherein L contains at least two heteroatoms.

6. A compound according to any preceding claim, wherein in addition to a N atom, L contains at least one other heteroatom in the heteroaryl ring which is selected from N, O or S.

7. A compound according to any preceding claim, wherein L is thiazolyl, imidazolyl, oxazolyl, pyrazolyl, thiadiazolyl and oxadiazolyl, each of which may be optionally fused to a benzene.

8. A compound according to any preceding claim, wherein Y is a 6 membered nitrogen-containing heteroaryl.

9. A compound according to any preceding claim, wherein Y is pyridyl or benzofused pyridyl.

10. A compound according to any preceding claim, wherein at least one $R^{/}$ is H, C_1-C_{10} alkyl, O-(C_1-C_{10} alkyl), trifluoromethyl or halogen, preferably wherein the alkyl is substituted with at least one fluorine.

11. A compound according to any of claims 1 to 9, wherein at least one $R^{/}$ is optionally substituted aryl or O-(optionally substituted aryl), wherein the optional substituents are defined in claim 1.

12. A compound according to claim 11, wherein the aryl is substituted with at least one halogen.

13. A compound according to any preceding claim, wherein n is 3 to 7.

14. A compound according to claim 13, wherein n is 5 to 7.

15. A compound according to any preceding claim, wherein X... is N-.

16. A compound according to any preceding claim, wherein R is H.

17. A compound according to any preceding claim, as exemplified herein.

18. A compound according to any preceding claim, for use in therapy.

19. A compound according to any preceding claim, for use in the treatment or prevention of a condition mediated by histone deacetylase (HDAC).

20. A compound according to claim 19, wherein the condition is cancer, cardiac hypertrophy, chronic heart failure, an inflammatory condition, a cardiovascular disease, a haemoglobinopathy, a thalassemia, a sickle cell disease, a CNS disorder, an autoimmune disease, diabetes, osteoporosis, MDS, benign prostatic hyperplasia, endometriosis, oral leukoplakia, a genetically related metabolic disorder, an infection, Rubens-Taybi, fragile X syndrome, or alpha-1 antitrypsin deficiency.

21. A compound according to claim 19 or claim 20, wherein the condition is chronic lymphocytic leukaemia, breast cancer, prostate cancer, ovarian cancer, mesothelioma, T-cell lymphoma, cardiac hypertrophy, chronic heart failure, a skin inflammatory condition (in particular psoriasis, acne or eczema), a musculoskeletal inflammatory condition (in particular rheumatoid arthritis, juvenile rheumatoid arthritis, ankylosing spondylitis or osteoarthritis), or an inflammatory condition of the gastrointestinal tract (in particular inflammatory bowel disease, Crohn's disease, ulcerative colitis, or irritable bowel syndrome).

22. A compound according to any of claims 1 to 17, for use in accelerating wound healing, protecting hair follicles, or as an immunosuppressant.

23. A pharmaceutical composition comprising a compound according to any of claims 1 to 17, and a pharmaceutically acceptable carrier or diluent.

24. A product containing (a) a compound according to any of claims 1 to 17, and (b) another inhibitor of HDAC, for simultaneous, separate or sequential use in the treatment or prevention of a condition mediated by HDAC.

25. A product containing (a) a compound according to any of claims 1 to 17, and (b) another chemotherapeutic or antineoplastic agent, for simultaneous, separate or sequential use in the treatment or prevention of cancer.

26. A method of treating a condition mediated by histone deacetylase (HDAC), comprising administering a pharmaceutically effective amount of a compound, composition or product according to any preceding claim.