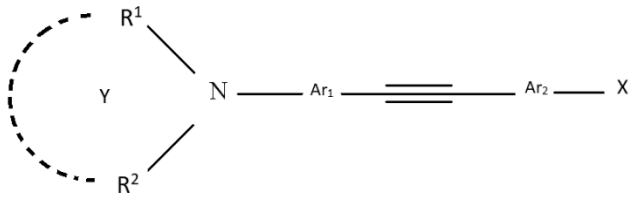
Claims:

1. A compound of formula I:

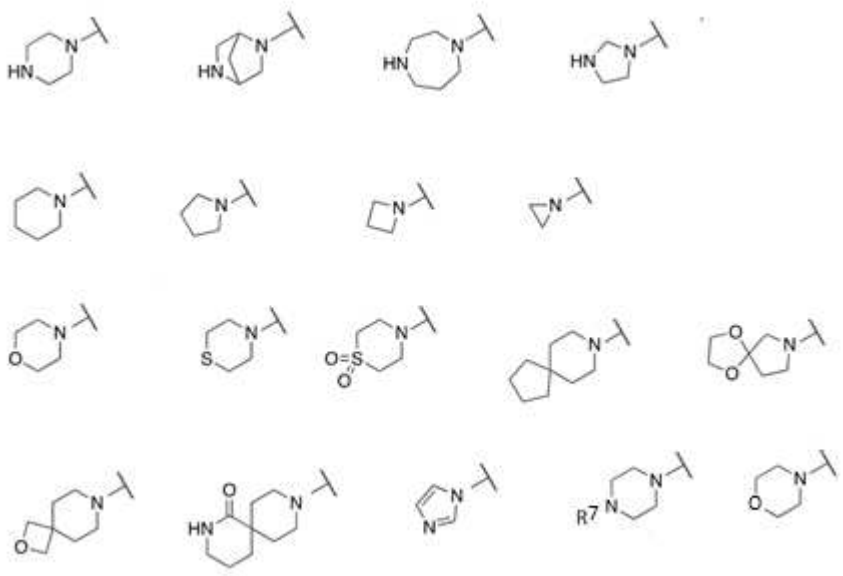


I

in which:

R^1 is H or an alkyl group comprising from 1 to 10 carbon atoms, optionally substituted with one or more N atoms, and R^2 is selected from an alkyl group comprising from 1 to 10 carbon atoms, optionally substituted with one or more N atoms, $-(CH_2)_nR^3$, $-(CH_2)_nNHR^3$, and $-(CH_2)_2(COCH_2)_nR^3$ in which n is an integer from 1 to 10 and R^3 is $-NH_2$, -OH, $-SO_2PhCH_3$, or -COOH, or R^2 is $-C(O)(CH_2)_nC(O)R^8$, $-C(O)(CH_2)_mO(CH_2)_mC(O)R^8$, $-C(O)(CH_2)_nCH(CH_3)C(O)R^8$, $-S(O)_2(CH_2)_nC(=O)R^8$, $-S^+(O^-)(CH_2)_nC(=O)R^8$ or $-(CH_2)_nPPh_3^+Br^-$, in which R^8 is -OH or -NHOH, n is an integer from 1 to 8, and m is an integer from 1 to 4; or

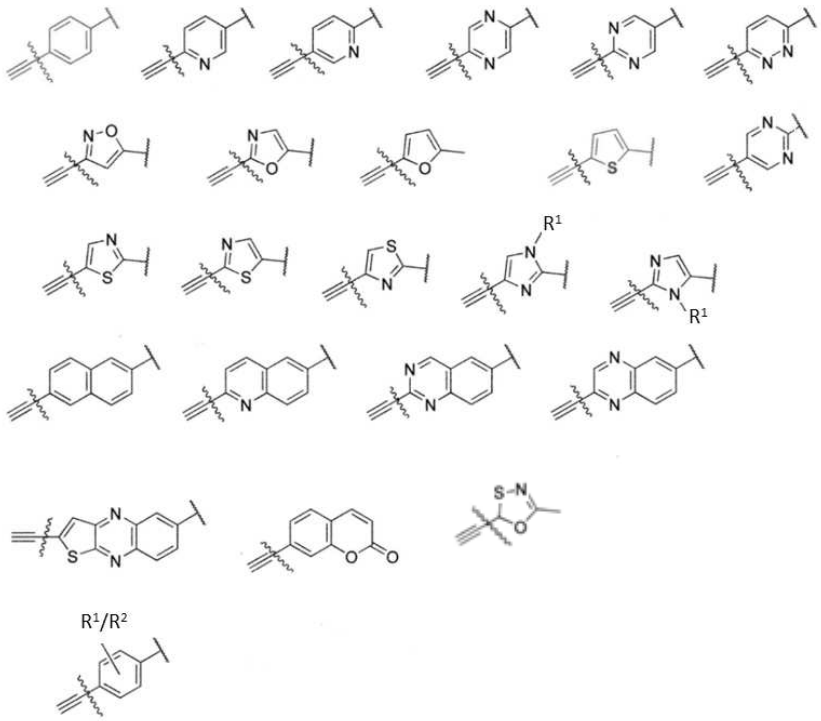
R^1 and R^2 form part of a heterocyclic group Y having from 3 to 12 ring members, wherein Y is selected from;



in which R^7 is an alkyl group, $-COCH_3$, $-C(O)(CH_2)_nC(O)R^8$, $-C(O)(CH_2)_mO(CH_2)_mC(O)R^8$, $-C(O)(CH_2)_nCH(CH_3)C(O)R^8$, $-S(O)_2(CH_2)_nC(=O)R^8$, $-S^+(O^-)(CH_2)_nC(=O)R^8$ or $-(CH_2)_nPPh_3^+Br^-$, in which R^8 is -OH or -NHOH, n is an integer from 1 to 8, and m is an integer from 1 to 4;

Ar_1 ~~and Ar_2 are each, independently,~~is an aromatic group selected from a phenyl, pyridine, pyrimidine, thiophene, furan, benzofuran or thiazole group;

Ar_2 is an aromatic group selected from:

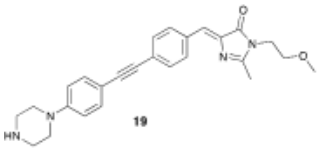


and

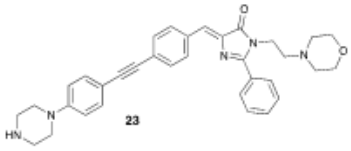
X is selected from unsaturated esters, ~~ketones,~~ carboxylic acids, and imidazolones~~, pyridines, oxazolones, oxazolidinones, barbituric acids and thiobarbituric acids~~;

with the proviso that when Ar_1 is phenyl and R^1 and R^2 form part of a heterocyclic group Y having from 3 to 12 ring members, the N of the heterocyclic group is in a para position relative to the acetylene group of the compound of formula I;

or formula I is a compound of formula 19, 23 or 34:

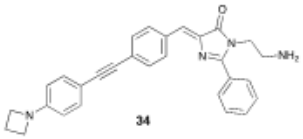


19



23

or



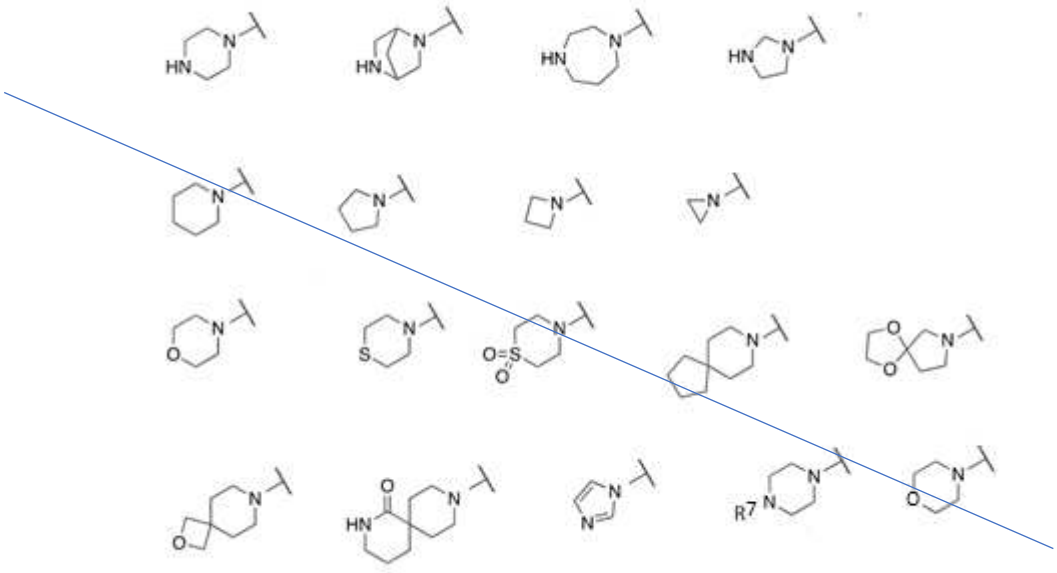
34

and diastereoisomers thereof,

in free or salt form.

2. ~~A~~ The compound of formula I as claimed in claim 1 in which R^1 and R^2 form part of heterocyclic ring group Y.

~~3. A compound of formula I as claimed in claim 2, in which heterocyclic ring group Y is selected from:~~



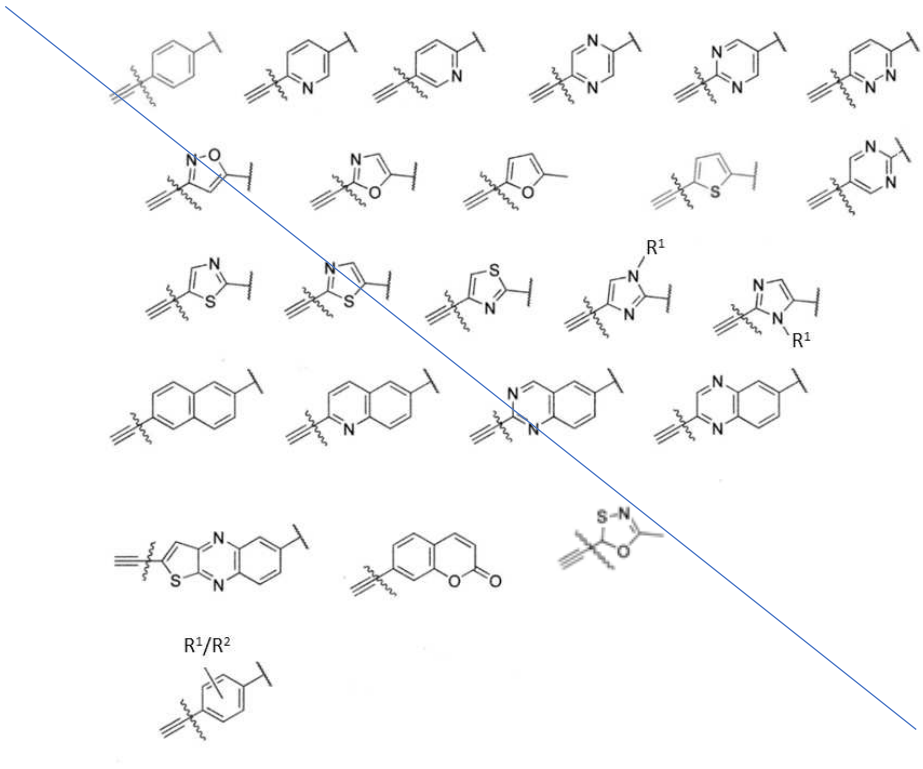
~~In which R^7 is an alkyl group, $-COCH_3$, $-C(O)(CH_2)_nC(O)R^8$, $-C(O)(CH_2)_mO(CH_2)_mC(O)R^8$, $-C(O)(CH_2)_nCH(CH_3)C(O)R^8$, $-S(O)_2(CH_2)_nC(=O)R^8$, $-S^+(O^-)(CH_2)_nC(=O)R^8$ or $-(CH_2)_nPPh_3^+Br^-$, in which R^8 is -OH or -NHOH, n is an integer from 1 to 8, and m is an integer from 1 to 4.~~

~~4~~3. ~~A~~ The compound of formula I as claimed in claim 1, in which R^1 is H or an alkyl group comprising from 1 to 10 carbon atoms, and R^2 is selected from $-(CH_2)_nR^3$ and

$-(CH_2)_2(COCH_2)_nR^3$ in which n is an integer from 1 to 10 and R^3 is $-NH_2$, -OH or -COOH, or R^2 is $-C(O)(CH_2)_nC(O)R^8$, $-C(O)(CH_2)_mO(CH_2)_mC(O)R^8$, $-C(O)(CH_2)_nCH(CH_3)C(O)R^8$, $-S(O)_2(CH_2)_nC(=O)R^8$, $-S^+(O^-)(CH_2)_nC(=O)R^8$ or $-(CH_2)_nPPh_3^+Br^-$, in which R^8 is -OH or -NHOH, n is an integer from 1 to 8, and m is an integer from 1 to 4.

~~5. A compound as claimed in any preceding claim, in which Ar_1 is selected from a phenyl, pyridine, pyrimidine, thiophene, furan, benzofuran or thiazole group.~~

~~6. A compound as claimed in claim any preceding claim, in which Ar_2 is selected from:~~



~~in which R^1 and R^2 are as defined in claim 1.~~

~~7~~4. ~~A~~ The compound of formula I as claimed in any one of claims 1 to 3 for use in fluorescence imaging.

~~8~~5. ~~A~~ The compound of formula I as claimed in any one of claims 1 to 3 for use in Raman imaging.

~~9~~6. A probe comprising ~~a~~ the compound of formula I as claimed in any one of claims 1 to 3.

~~10~~7. A conjugate comprising ~~a~~ the compound of formula I as claimed in any one of claims 1 to 3 and a targeting or active agent.

~~11~~8. ~~A~~ The conjugate as claimed in claim ~~10~~7, wherein the targeting or active agent is selected from a small molecule drug, peptide or protein, saccharide or polysaccharide, aptamer or affimer, or antibody.

~~12~~9. ~~A~~ The compound of formula I as claimed in any one of claims 1 to ~~6~~ 3 or ~~a~~ the conjugate thereof as claimed in claim ~~10~~ 7 or claim ~~11~~8, for use in the control of cellular development.

~~13~~10. ~~A~~ The compound of formula I as claimed in any one of claims 1 to ~~6~~ 3 or ~~a~~ the conjugate thereof as claimed in claim ~~10~~ 7 or claim ~~11~~8, for use in photodynamic therapy.

~~14~~11. A pharmaceutical composition comprising ~~a~~ the compound of formula I as claimed in any one of claims 1 to ~~6~~ 3 or ~~a~~ the conjugate thereof as claimed in claim ~~10~~ 7 or claim ~~11~~8, optionally in combination with one or more pharmaceutically acceptable excipients, diluents or carriers.

~~15~~12. A formulation comprising ~~a~~ the compound of formula I as claimed in any one of claims 1 to ~~6~~ 3 or ~~a~~ the conjugate thereof as claimed in claim ~~10~~ 7 or claim ~~11~~8, optionally in combination with one or more co-formulants.

~~16~~13. Use of ~~a~~ the compound of formula I as claimed in any one of claims 1 to 3 or ~~a~~ the conjugate thereof as claimed in claim 7 or claim 8, in the manufacture of a medicament for the treatment of a disease or condition that benefits from the control of cell proliferation, differentiation or apoptosis, wherein the disease or condition that benefits from the control of cell proliferation, differentiation or apoptosis is selected from cancers, skin disorders and skin wounds.

~~17~~14. Use of ~~a~~ the compound of formula I as claimed in any one of claims 1 to 3 in fluorescence imaging, Raman imaging or fluoRaman imaging.