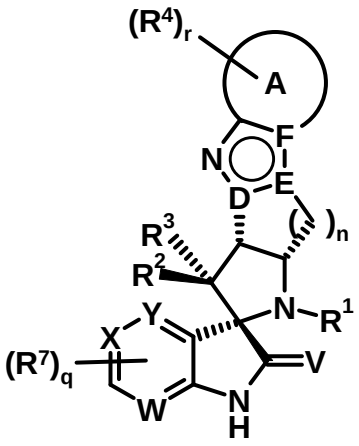
and **(Ic),** is in itself unprecedented and needs highly sophisticated synthetic approaches to obtain these compounds of high structural complexity.

Summary

In one aspect, there is provided a compound of formula **(I)**



(I) , wherein

--

R^1 is a group, optionally substituted by one or more, identical or different **R^{b1}** and/or **R^{c1}**, selected from among C_{1-6}alkyl, C_{2-6}alkenyl, C_{2-6}alkynyl, C_{1-6}haloalkyl, C_{3-7}cycloalkyl, C_{4-7}cycloalkenyl, C_{6-10}aryl, 5-10 membered heteroaryl and 3-10 membered heterocyclyl;

each **R^{b1}** is independently selected from among $-OR^{c1}$, $-NR^{c1}R^{c1}$, halogen, -CN, $-C(O)R^{c1}$, $-C(O)OR^{c1}$, $-C(O)NR^{c1}R^{c1}$, $-S(O)_2R^{c1}$, $-S(O)_2NR^{c1}R^{c1}$,

$-NHC(O)R^{c1}$, $-N(C_{1-4}alkyl)C(O)R^{c1}$ and the bivalent substituent =O, while =O may only be a substituent in non-aromatic ring systems;

each **R^{c1}** independently of one another denotes hydrogen or a group, optionally substituted by one or more, identical or different **R^{d1}** and/or **R^{e1}**, selected from among C_{1-6}alkyl, C_{2-6}alkenyl, C_{2-6}alkynyl, C_{1-6}haloalkyl, C_{3-7}cycloalkyl, C_{4-7}cycloalkenyl, C_{6-10}aryl, 5-10 membered heteroaryl and 3-10 membered heterocyclyl;

each **R^{d1}** is independently selected from among $-OR^{e1}$, $-NR^{e1}R^{e1}$, halogen, -CN, $-C(O)R^{e1}$, $-C(O)OR^{e1}$, $-C(O)NR^{e1}R^{e1}$, $-S(O)_2R^{e1}$, $-S(O)_2NR^{e1}R^{e1}$,

-NHC(O)R^{e1}, -N(C_{1-4}alkyl)C(O)R^{e1} and the bivalent substituent =O, while =O may only be a substituent in non-aromatic ring systems;

each **R^{e1}** independently of one another denotes hydrogen or a group, optionally substituted by one or more, identical or different **R^{f1}** and/or **R^{g1}**, selected from among C_{1-6}alkyl, C_{2-6}alkenyl, C_{2-6}alkynyl, C_{1-6}haloalkyl, C_{3-7}cycloalkyl, C_{4-7}cycloalkenyl, C_{6-10}aryl, 5-10 membered heteroaryl and 3-10 membered heterocyclyl;

each **R^{f1}** is independently selected from among -OR^{g1}, -N$R^{g1}R^{g1}$, halogen, -CN, -C(O)R^{g1}, -C(O)OR^{g1}, -C(O)N$R^{g1}R^{g1}$, -S(O)$_2R^{g1}$, -S(O)$_2$N$R^{g1}R^{g1}$,

-NHC(O)R^{g1}, -N(C_{1-4}alkyl)C(O)R^{g1} and the bivalent substituent =O, while =O may only be a substituent in non-aromatic ring systems;

each **R^{g1}** is independently selected from among hydrogen, C_{1-6}alkyl, C_{2-6}alkenyl, C_{2-6}alkynyl, C_{1-6}haloalkyl, C_{3-7}cycloalkyl, C_{4-7}cycloalkenyl, C_{6-10}aryl, 5-10 membered heteroaryl and 3-10 membered heterocyclyl;

--

R^2 and **R^3**, each independently, is selected from among hydrogen, C_{6-10}aryl, 5-10 membered heteroaryl and 3-10 membered heterocyclyl, wherein said C_{6-10}aryl, 5-10 membered heteroaryl and 3-10 membered heterocyclyl is optionally substituted by one or more, identical or different **R^{b2}** and/or **R^{c2}**;

each **R^{b2}** is independently selected from among -OR^{c2}, -N$R^{c2}R^{c2}$, halogen, -CN, -C(O)R^{c2}, -C(O)OR^{c2}, -C(O)N$R^{c2}R^{c2}$, -S(O)$_2R^{c2}$, -S(O)$_2$N$R^{c2}R^{c2}$,

-NHC(O)R^{c2}, -N(C_{1-4}alkyl)C(O)R^{c2} and the bivalent substituent =O, while =O may only be a substituent in non-aromatic ring systems;

each **R^{c2}** independently of one another denotes hydrogen or a group, optionally substituted by one or more, identical or different **R^{d2}** and/or **R^{e2}**, selected from among C_{1-6}alkyl, C_{2-6}alkenyl, C_{2-6}alkynyl, C_{1-6}haloalkyl, C_{3-6}cycloalkyl, C_{4-6}cycloalkenyl, C_{6-10}aryl, 5-10 membered heteroaryl and 3-10 membered heterocyclyl;

each **R^{d2}** is independently selected from among -OR^{e2}, -$NR^{e2}R^{e2}$, halogen, -CN, -$C(O)R^{e2}$, -$C(O)OR^{e2}$, -$C(O)NR^{e2}R^{e2}$, -$S(O)_2R^{e2}$, -$S(O)_2NR^{e2}R^{e2}$,

-$NHC(O)R^{e2}$, -$N(C_{1-4}alkyl)C(O)R^{e2}$ and the bivalent substituent =O, while =O may only be a substituent in non-aromatic ring systems;

each **R^{e2}** independently of one another denotes hydrogen or a group selected from among C_{1-6}alkyl, C_{2-6}alkenyl, C_{2-6}alkynyl, C_{1-6}haloalkyl, C_{3-6}cycloalkyl, C_{4-6}cycloalkenyl, C_{6-10}aryl, 5-10 membered heteroaryl and 3-10 membered heterocyclyl;

--

A is selected from among phenyl and 5-6 membered heteroaryl if **F** is carbon or

A is 5-6 membered, nitrogen-containing heteroaryl if **F** is nitrogen;

each **R^4** is independently selected from among **R^{a4}** and **R^{b4}**;

each **R^{a4}** independently of one another is a group, optionally substituted by one or more, identical or different **R^{b4}** and/or **R^{c4}**, selected from among C_{1-6}alkyl, C_{2-6}alkenyl, C_{2-6}alkynyl, C_{1-6}haloalkyl, C_{3-7}cycloalkyl, C_{4-7}cycloalkenyl, C_{6-10}aryl, 5-10 membered heteroaryl and 3-10 membered heterocyclyl;

each **R^{b4}** is independently selected from among -OR^{c4}, -$NR^{c4}R^{c4}$, halogen, -CN, -$C(O)R^{c4}$, -$C(O)OR^{c4}$, -$C(O)NR^{c4}R^{c4}$, -$C(O)NR^{g4}OR^{c4}$, -$S(O)_2R^{c4}$,

-$S(O)_2NR^{c4}R^{c4}$, -$NHSO_2R^{c4}$, -$N(C_{1-4}alkyl)SO_2R^{c4}$, -$NHC(O)R^{c4}$ and -$N(C_{1-4}alkyl)C(O)R^{c4}$;

each **R^{c4}** independently of one another denotes hydrogen or a group, optionally substituted by one or more, identical or different **R^{d4}** and/or **R^{e4}**, selected from among C_{1-6}alkyl, C_{2-6}alkenyl, C_{2-6}alkynyl, C_{1-6}haloalkyl, C_{3-7}cycloalkyl, C_{4-7}cycloalkenyl, C_{6-10}aryl, 5-10 membered heteroaryl and 3-10 membered heterocyclyl;

each **R^{d4}** is independently selected from among -OR^{e4}, -$NR^{e4}R^{e4}$, halogen, -CN, -$C(O)R^{e4}$, -$C(O)OR^{e4}$, -$C(O)NR^{e4}R^{e4}$, -$C(O)NR^{g4}OR^{e4}$, -$S(O)_2R^{e4}$,

-$S(O)_2NR^{e4}R^{e4}$, -$NHC(O)R^{e4}$ and -$N(C_{1-4}alkyl)C(O)R^{e4}$;

each **R^{e4}** independently of one another denotes hydrogen or a group, optionally substituted by one or more, identical or different **R^{f4}** and/or **R^{g4}**, selected from among C_{1-6}alkyl, C_{2-6}alkenyl, C_{2-6}alkynyl, C_{1-6}haloalkyl, C_{3-7}cycloalkyl, C_{4-7}cycloalkenyl, C_{6-10}aryl, 5-10 membered heteroaryl and 3-10 membered heterocyclyl;

each **R^{f4}** is independently selected from among $-OR^{g4}$, $-NR^{g4}R^{g4}$, halogen, -CN, $-C(O)R^{g4}$, $-C(O)OR^{g4}$, $-C(O)NR^{g4}R^{g4}$, $-C(O)NR^{g4}OR^{g4}$, $-S(O)_2R^{g4}$,

$-S(O)_2NR^{g4}R^{g4}$, $-NHC(O)R^{g4}$ and $-N(C_{1-4}alkyl)C(O)R^{g4}$;

each **R^{g4}** is independently selected from among hydrogen, C_{1-6}alkyl, C_{2-6}alkenyl, C_{2-6}alkynyl, C_{1-6}haloalkyl, C_{3-7}cycloalkyl, C_{4-7}cycloalkenyl, C_{6-10}aryl, 5-10 membered heteroaryl and 3-10 membered heterocyclyl;

r denotes the number 0, 1, 2 or 3;

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n denotes the number 1, 2 or 3;

--

each **R^7** is independently selected from among halogen, C_{1-4}alkyl, -CN, C_{1-4}haloalkyl, $-OC_{1-4}$alkyl and $-OC_{1-4}$haloalkyl;

q denotes the number 0, 1, 2 or 3;

--

W, **X** and **Y** is each–CH=, wherein the hydrogen in each –CH= may be replaced by a substituent **R^7**;

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V is oxygen or sulfur;

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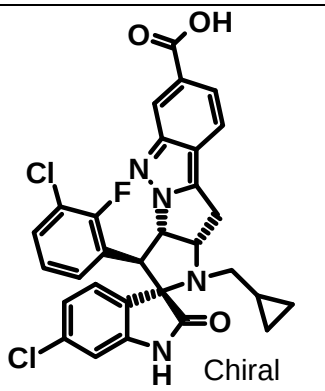
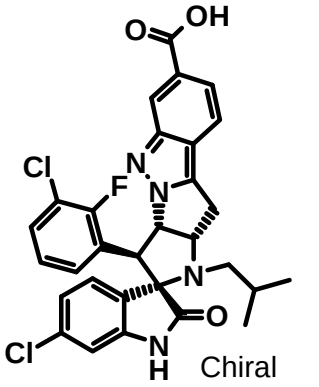
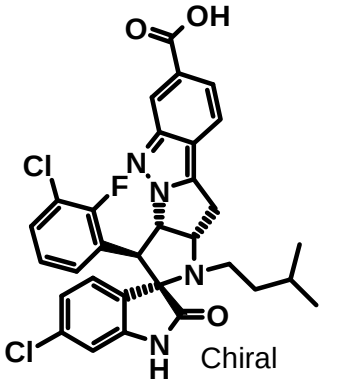
D is nitrogen, **E** is carbon and **F** is carbon; or

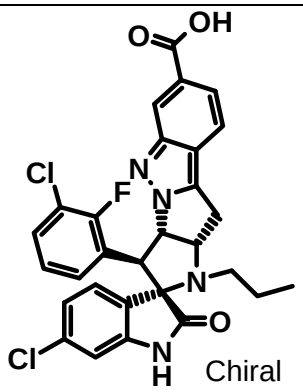
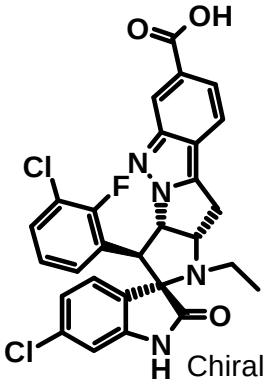
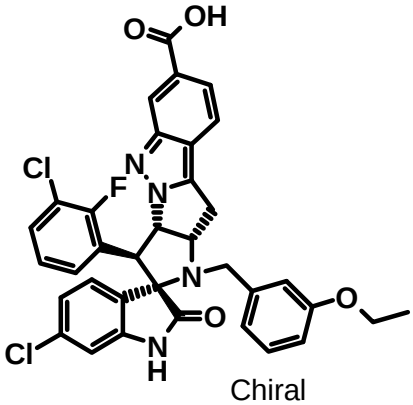
D is carbon, **E** is nitrogen and **F** is carbon; or

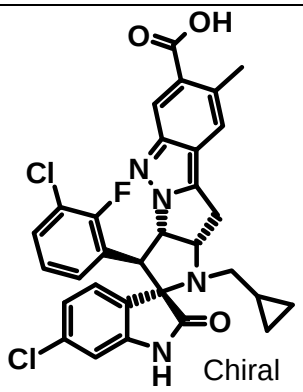
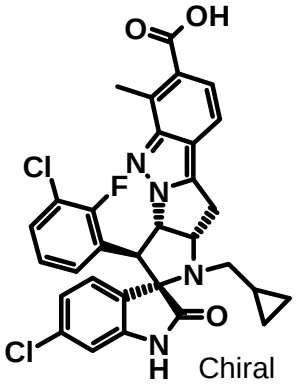
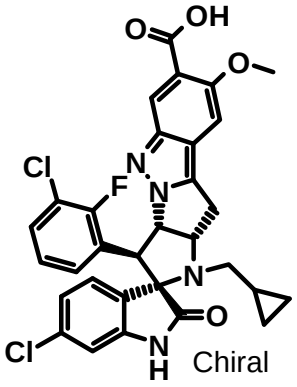
D is carbon, **E** is carbon and **F** is nitrogen;

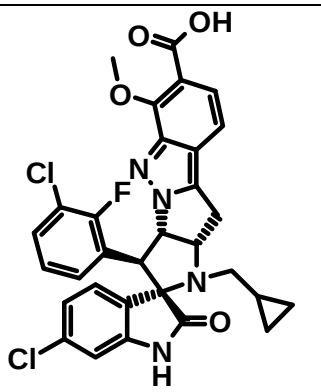
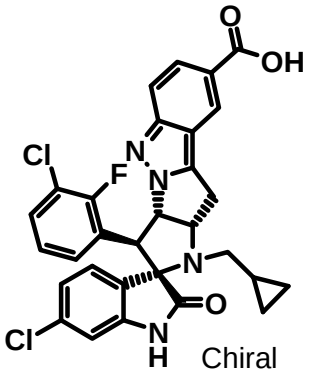
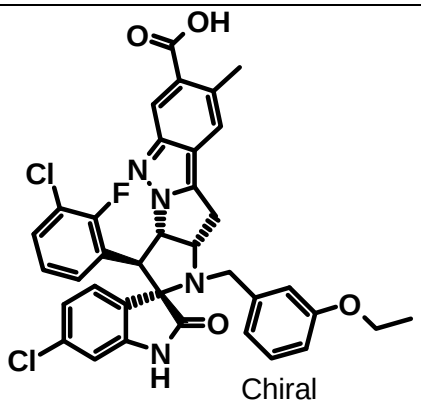
or a salt thereof.

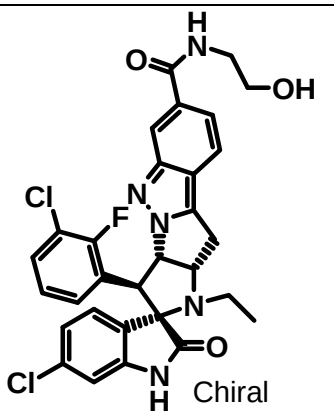
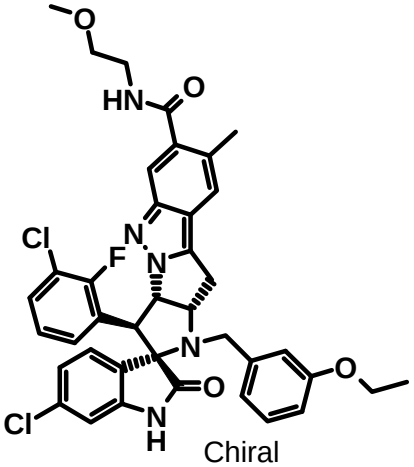
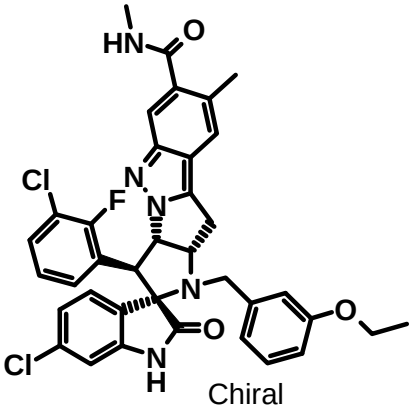
In another aspect, there is provided a compound selected from a group consisting of

Ia-25	 Chiral ,
Ia-27	 Chiral ,
Ia-28	 Chiral ,

Ia-29	 Chiral ,
Ia-30	 Chiral ,
Ia-32	 Chiral ,

Ia-33	 Chiral ,
Ia-34	 Chiral ,
Ia-35	 Chiral ,

Ia-36	 ,
Ia-38	 Chiral ,
Ia-40	 Chiral ,

Ia-50	 Chiral ,
Ia-55	 Chiral and
Ia-56	 Chiral ;

or a salt thereof.

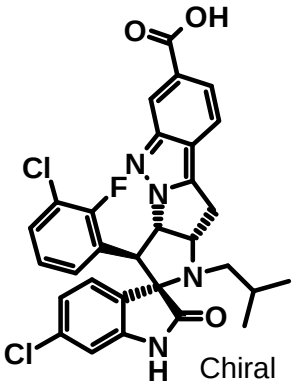
In another aspect, there is provided a compound or a pharmaceutically acceptable salt as defined herein for use as a medicament.

In another aspect, there is provided use of a compound or a pharmaceutically acceptable salt as defined herein in the manufacture of a medicament for the treatment of cancer.

In another aspect, there is provided a pharmaceutical composition comprising at least one compound as defined herein or a pharmaceutically acceptable salt thereof and a pharmaceutically acceptable carrier.

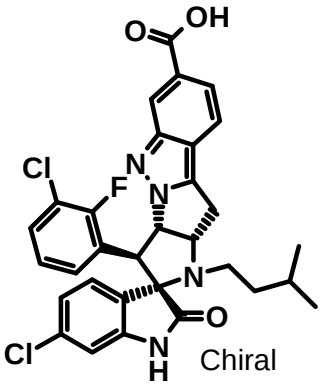
In another aspect, there is provided a pharmaceutical preparation comprising a compound as defined herein or a pharmaceutically acceptable salt thereof and at least one other cytostatic and/or cytotoxic active substance.

In another aspect, there is provided a compound of formula Ia-27 or a pharmaceutically acceptable salt thereof



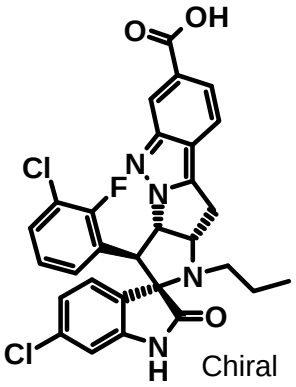
Chiral

In another aspect, there is provided a compound of formula Ia-28 or a pharmaceutically acceptable salt thereof



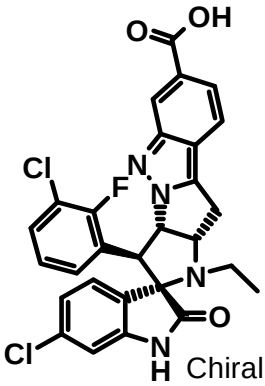
Chiral

In another aspect, there is provided a compound of formula Ia-29 or a pharmaceutically acceptable salt thereof



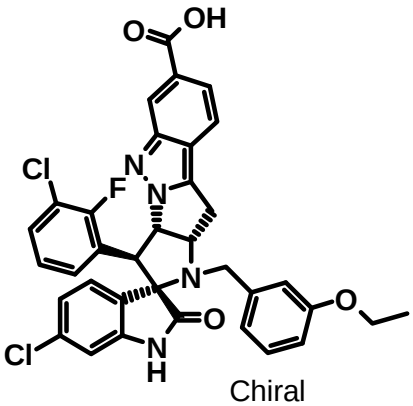
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In another aspect, there is provided a compound of formula Ia-30 or a pharmaceutically acceptable salt thereof



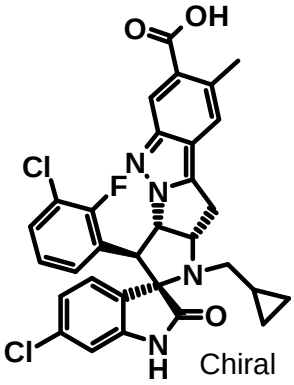
Chiral

In another aspect, there is provided a compound of formula Ia-32 or a pharmaceutically acceptable salt thereof



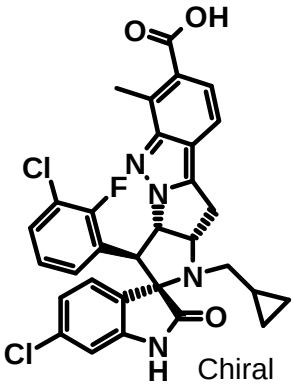
Chiral

In another aspect, there is provided a compound of formula Ia-33 or a pharmaceutically acceptable salt thereof



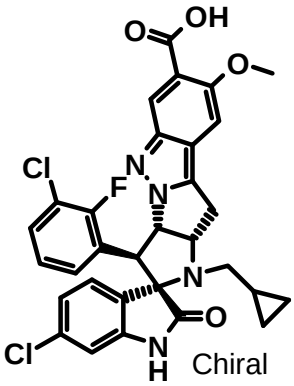
Chiral

In another aspect, there is provided a compound of formula Ia-34 or a pharmaceutically acceptable salt thereof



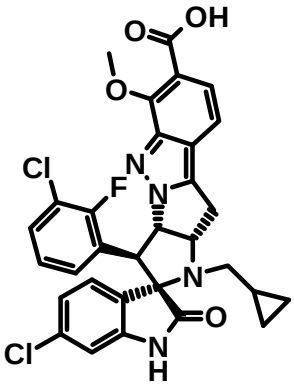
Chiral

In another aspect, there is provided a compound of formula Ia-35 or a pharmaceutically acceptable salt thereof

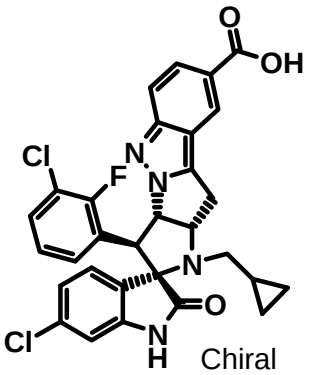


Chiral

In another aspect, there is provided a compound of formula Ia-36 or a pharmaceutically acceptable salt thereof

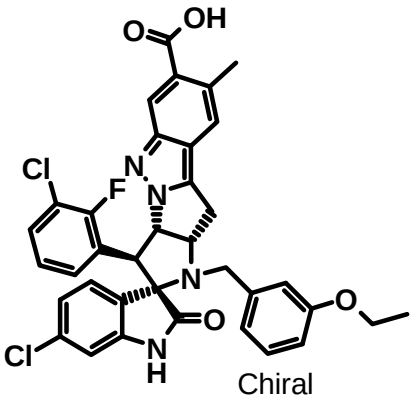


In another aspect, there is provided a compound of formula Ia-38 or a pharmaceutically acceptable salt thereof



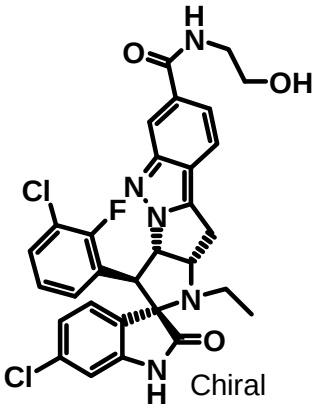
Chiral

In another aspect, there is provided a compound of formula Ia-40 or a pharmaceutically acceptable salt thereof



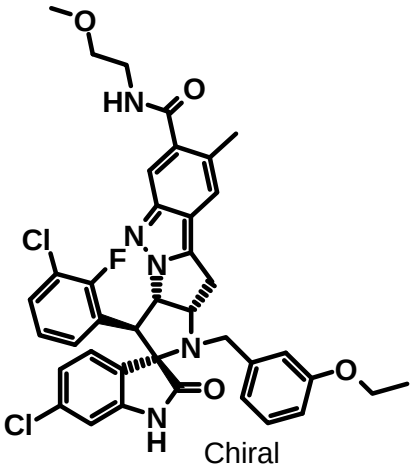
Chiral

In another aspect, there is provided a compound of formula Ia-50 or a pharmaceutically acceptable salt thereof



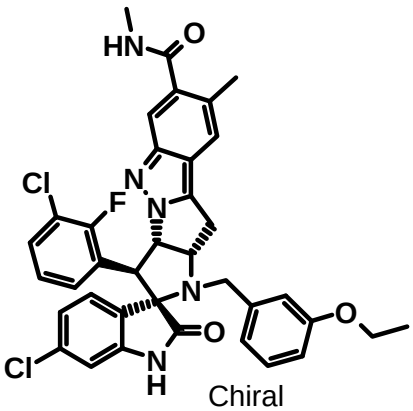
Chiral

In another aspect, there is provided a compound of formula Ia-55 or a pharmaceutically acceptable salt thereof



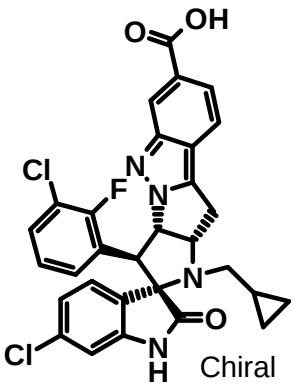
Chiral

In another aspect, there is provided a compound of formula Ia-56 or a pharmaceutically acceptable salt thereof



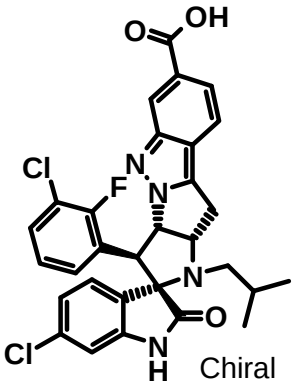
Chiral

In another aspect, there is provided a compound of formula



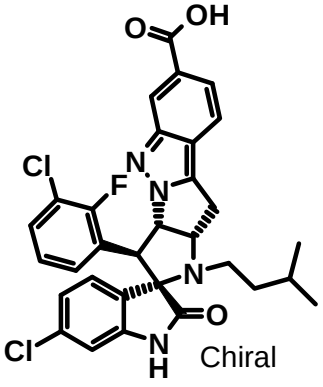
Chiral

In another aspect, there is provided a compound of formula



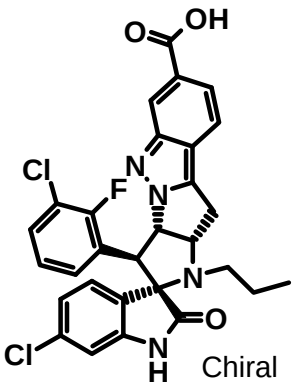
Chiral

In another aspect, there is provided a compound of formula



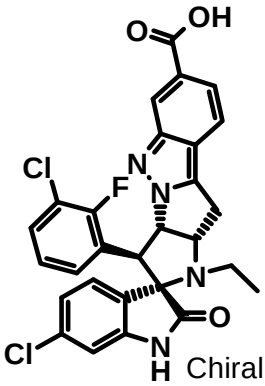
Chiral

In another aspect, there is provided a compound of formula



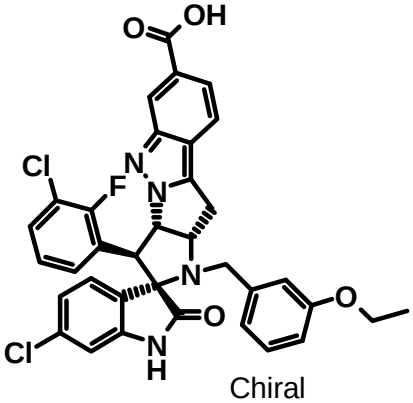
Chiral

In another aspect, there is provided a compound of formula



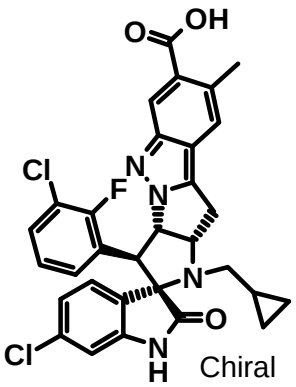
Chiral

In another aspect, there is provided a compound of formula



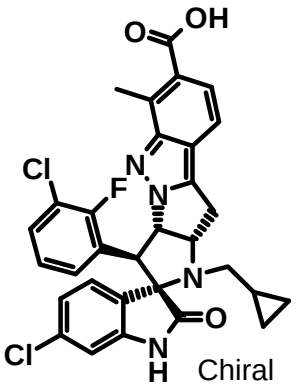
Chiral

In another aspect, there is provided a compound of formula



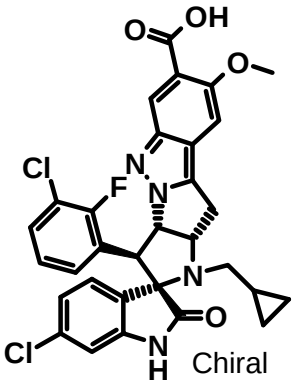
Chiral

In another aspect, there is provided a compound of formula



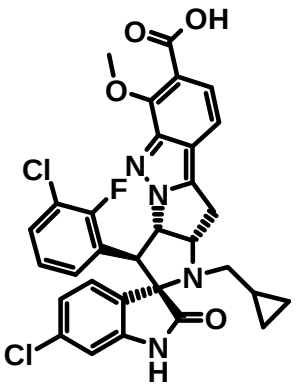
Chiral

In another aspect, there is provided a compound of formula

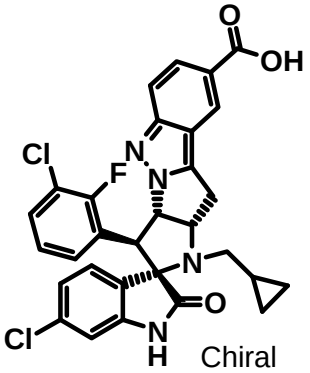


Chiral

In another aspect, there is provided a compound of formula

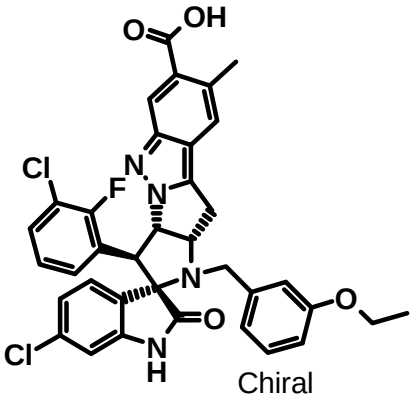


In another aspect, there is provided a compound of formula



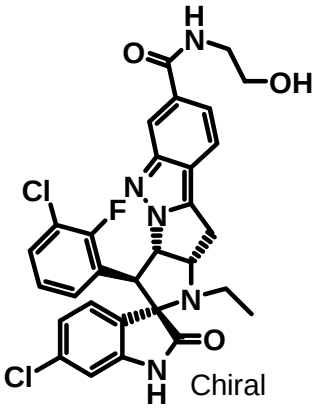
Chiral

In another aspect, there is provided a compound of formula



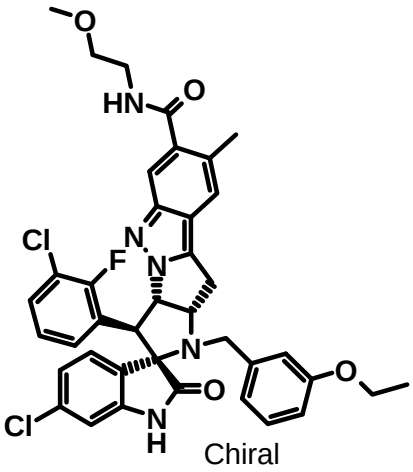
Chiral

In another aspect, there is provided a compound of formula



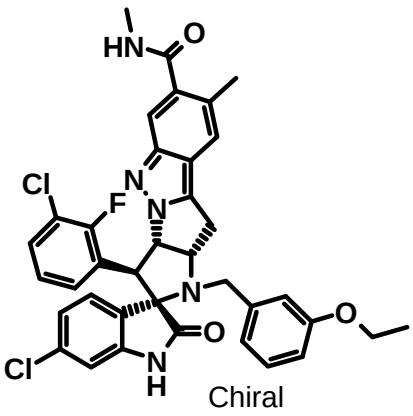
Chiral

In another aspect, there is provided a compound of formula



Chiral

In another aspect, there is provided a compound of formula



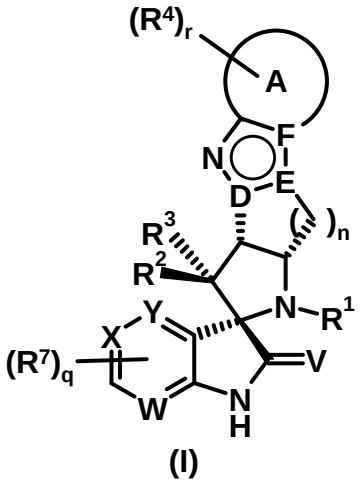
Chiral

In another aspect, there is provided a pharmaceutical composition comprising the compound as defined herein and a pharmaceutically acceptable carrier.

Detailed description of the invention

It has now been found that, surprisingly, compounds of formula **(I)** wherein the groups $\mathbf{R^1}$ to $\mathbf{R^4}$, $\mathbf{R^7}$, **A**, **D**, **E**, **F**, **V**, **W**, **X**, **Y**, **n**, **r** and **q** have the meanings given hereinafter act as inhibitors of the interaction of specific proteins which are involved in controlling cell proliferation. Thus, the compounds according to the invention may be used for example for the treatment of diseases connected with this protein-protein interaction and characterised by excessive or abnormal cell proliferation.

The present invention therefore relates to a compound of formula **(I)**



(I) , wherein

[A0]

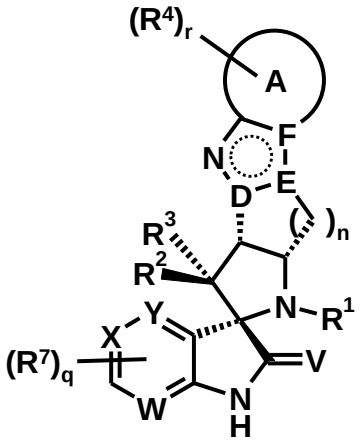
R^1 is a group, optionally substituted by one or more, identical or different **R^{b1}** and/or **R^{c1}**, selected from among C_{1-6}alkyl, C_{2-6}alkenyl, C_{2-6}alkynyl, C_{1-6}haloalkyl, C_{3-7}cycloalkyl, C_{4-7}cycloalkenyl, C_{6-10}aryl, 5-10 membered heteroaryl and 3-10 membered heterocyclyl;

each **R^{b1}** is independently selected from among $-OR^{c1}$, $-NR^{c1}R^{c1}$, halogen, -CN, $-C(O)R^{c1}$, $-C(O)OR^{c1}$, $-C(O)NR^{c1}R^{c1}$, $-S(O)_2R^{c1}$, $-S(O)_2NR^{c1}R^{c1}$, $-NHC(O)R^{c1}$, $-N(C_{1-4}alkyl)C(O)R^{c1}$ and the bivalent substituent =O, while =O may only be a substituent in non-aromatic ring systems;

each **R^{c1}** independently of one another denotes hydrogen or a group, optionally substituted by one or more, identical or different **R^{d1}** and/or **R^{e1}**, selected from among C_{1-6}alkyl, C_{2-6}alkenyl, C_{2-6}alkynyl, C_{1-6}haloalkyl, C_{3-7}cycloalkyl, C_{4-7}cycloalkenyl, C_{6-10}aryl, 5-10 membered heteroaryl and 3-10 membered heterocyclyl;

Claims

1. A compound of formula **(I)**



(I) , wherein

--

R^1 is a group, optionally substituted by one or more, identical or different **R^{b1}** and/or **R^{c1}**, selected from among C_{1-6}alkyl, C_{2-6}alkenyl, C_{2-6}alkynyl, C_{1-6}haloalkyl, C_{3-7}cycloalkyl, C_{4-7}cycloalkenyl, C_{6-10}aryl, 5-10 membered heteroaryl and 3-10 membered heterocyclyl;

each **R^{b1}** is independently selected from among $-OR^{c1}$, $-NR^{c1}R^{c1}$, halogen, -CN, $-C(O)R^{c1}$, $-C(O)OR^{c1}$, $-C(O)NR^{c1}R^{c1}$, $-S(O)_2R^{c1}$, $-S(O)_2NR^{c1}R^{c1}$, $-NHC(O)R^{c1}$, $-N(C_{1-4}alkyl)C(O)R^{c1}$ and the bivalent substituent =O, while =O may only be a substituent in non-aromatic ring systems;

each **R^{c1}** independently of one another denotes hydrogen or a group, optionally substituted by one or more, identical or different **R^{d1}** and/or **R^{e1}**, selected from among C_{1-6}alkyl, C_{2-6}alkenyl, C_{2-6}alkynyl, C_{1-6}haloalkyl, C_{3-7}cycloalkyl, C_{4-7}cycloalkenyl, C_{6-10}aryl, 5-10 membered heteroaryl and 3-10 membered heterocyclyl;

each **R^{d1}** is independently selected from among $-OR^{e1}$, $-NR^{e1}R^{e1}$, halogen, -CN, $-C(O)R^{e1}$, $-C(O)OR^{e1}$, $-C(O)NR^{e1}R^{e1}$, $-S(O)_2R^{e1}$, $-S(O)_2NR^{e1}R^{e1}$, $-NHC(O)R^{e1}$, $-N(C_{1-4}alkyl)C(O)R^{e1}$ and the bivalent substituent =O, while =O may only be a substituent in non-aromatic ring systems;

each **R^{e1}** independently of one another denotes hydrogen or a group, optionally substituted by one or more, identical or different **R^{f1}** and/or **R^{g1}**, selected from among C_{1-6}alkyl, C_{2-6}alkenyl, C_{2-6}alkynyl, C_{1-6}haloalkyl, C_{3-7}cycloalkyl, C_{4-7}cycloalkenyl, C_{6-10}aryl, 5-10 membered heteroaryl and 3-10 membered heterocyclyl;

each $\mathbf{R^{f1}}$ is independently selected from among -OR^{g1}, -$NR^{g1}R^{g1}$, halogen, -CN, -$C(O)R^{g1}$, -$C(O)OR^{g1}$, -$C(O)NR^{g1}R^{g1}$, -$S(O)_2R^{g1}$, -$S(O)_2NR^{g1}R^{g1}$, -$NHC(O)R^{g1}$, -$N(C_{1-4}alkyl)C(O)R^{g1}$ and the bivalent substituent =O, while =O may only be a substituent in non-aromatic ring systems;

each $\mathbf{R^{g1}}$ is independently selected from among hydrogen, C_{1-6}alkyl, C_{2-6}alkenyl, C_{2-6}alkynyl, C_{1-6}haloalkyl, C_{3-7}cycloalkyl, C_{4-7}cycloalkenyl, C_{6-10}aryl, 5-10 membered heteroaryl and 3-10 membered heterocyclyl;

--

$\mathbf{R^2}$ and $\mathbf{R^3}$, each independently, is selected from among hydrogen, C_{6-10}aryl, 5-10 membered heteroaryl and 3-10 membered heterocyclyl, wherein said C_{6-10}aryl, 5-10 membered heteroaryl and 3-10 membered heterocyclyl is optionally substituted by one or more, identical or different $\mathbf{R^{b2}}$ and/or $\mathbf{R^{c2}}$;

each $\mathbf{R^{b2}}$ is independently selected from among -OR^{c2}, -$NR^{c2}R^{c2}$, halogen, -CN, -$C(O)R^{c2}$, -$C(O)OR^{c2}$, -$C(O)NR^{c2}R^{c2}$, -$S(O)_2R^{c2}$, -$S(O)_2NR^{c2}R^{c2}$, -$NHC(O)R^{c2}$, -$N(C_{1-4}alkyl)C(O)R^{c2}$ and the bivalent substituent =O, while =O may only be a substituent in non-aromatic ring systems;

each $\mathbf{R^{c2}}$ independently of one another denotes hydrogen or a group, optionally substituted by one or more, identical or different $\mathbf{R^{d2}}$ and/or $\mathbf{R^{e2}}$, selected from among C_{1-6}alkyl, C_{2-6}alkenyl, C_{2-6}alkynyl, C_{1-6}haloalkyl, C_{3-6}cycloalkyl, C_{4-6}cycloalkenyl, C_{6-10}aryl, 5-10 membered heteroaryl and 3-10 membered heterocyclyl;

each $\mathbf{R^{d2}}$ is independently selected from among -OR^{e2}, -$NR^{e2}R^{e2}$, halogen, -CN, -$C(O)R^{e2}$, -$C(O)OR^{e2}$, -$C(O)NR^{e2}R^{e2}$, -$S(O)_2R^{e2}$, -$S(O)_2NR^{e2}R^{e2}$, -$NHC(O)R^{e2}$, -$N(C_{1-4}alkyl)C(O)R^{e2}$ and the bivalent substituent =O, while =O may only be a substituent in non-aromatic ring systems;

each $\mathbf{R^{e2}}$ independently of one another denotes hydrogen or a group selected from among C_{1-6}alkyl, C_{2-6}alkenyl, C_{2-6}alkynyl, C_{1-6}haloalkyl, C_{3-6}cycloalkyl, C_{4-6}cycloalkenyl, C_{6-10}aryl, 5-10 membered heteroaryl and 3-10 membered heterocyclyl;

--

A is selected from among phenyl and 5-6 membered heteroaryl if **F** is carbon or

A is 5-6 membered, nitrogen-containing heteroaryl if **F** is nitrogen;

each $\mathbf{R^4}$ is independently selected from among $\mathbf{R^{a4}}$ and $\mathbf{R^{b4}}$;

each $\mathbf{R^{a4}}$ independently of one another is a group, optionally substituted by one or more, identical or different $\mathbf{R^{b4}}$ and/or $\mathbf{R^{c4}}$, selected from among C_{1-6}alkyl, C_{2-6}alkenyl, C_{2-6}alkynyl, C_{1-6}haloalkyl, C_{3-7}cycloalkyl, C_{4-7}cycloalkenyl, C_{6-10}aryl, 5-10 membered heteroaryl and 3-10 membered heterocyclyl;

each $\mathbf{R^{b4}}$ is independently selected from among $-OR^{c4}$, $-NR^{c4}R^{c4}$, halogen, -CN, $-C(O)R^{c4}$, $-C(O)OR^{c4}$, $-C(O)NR^{c4}R^{c4}$, $-C(O)NR^{g4}OR^{c4}$, $-S(O)_2R^{c4}$, $-S(O)_2NR^{c4}R^{c4}$, $-NHSO_2R^{c4}$, $-N(C_{1-4}alkyl)SO_2R^{c4}$, $-NHC(O)R^{c4}$ and $-N(C_{1-4}alkyl)C(O)R^{c4}$;

each $\mathbf{R^{c4}}$ independently of one another denotes hydrogen or a group, optionally substituted by one or more, identical or different $\mathbf{R^{d4}}$ and/or $\mathbf{R^{e4}}$, selected from among C_{1-6}alkyl, C_{2-6}alkenyl, C_{2-6}alkynyl, C_{1-6}haloalkyl, C_{3-7}cycloalkyl, C_{4-7}cycloalkenyl, C_{6-10}aryl, 5-10 membered heteroaryl and 3-10 membered heterocyclyl;

each $\mathbf{R^{d4}}$ is independently selected from among $-OR^{e4}$, $-NR^{e4}R^{e4}$, halogen, -CN, $-C(O)R^{e4}$, $-C(O)OR^{e4}$, $-C(O)NR^{e4}R^{e4}$, $-C(O)NR^{g4}OR^{e4}$, $-S(O)_2R^{e4}$, $-S(O)_2NR^{e4}R^{e4}$, $-NHC(O)R^{e4}$ and $-N(C_{1-4}alkyl)C(O)R^{e4}$;

each $\mathbf{R^{e4}}$ independently of one another denotes hydrogen or a group, optionally substituted by one or more, identical or different $\mathbf{R^{f4}}$ and/or $\mathbf{R^{g4}}$, selected from among C_{1-6}alkyl, C_{2-6}alkenyl, C_{2-6}alkynyl, C_{1-6}haloalkyl, C_{3-7}cycloalkyl, C_{4-7}cycloalkenyl, C_{6-10}aryl, 5-10 membered heteroaryl and 3-10 membered heterocyclyl;

each $\mathbf{R^{f4}}$ is independently selected from among $-OR^{g4}$, $-NR^{g4}R^{g4}$, halogen, -CN, $-C(O)R^{g4}$, $-C(O)OR^{g4}$, $-C(O)NR^{g4}R^{g4}$, $-C(O)NR^{g4}OR^{g4}$, $-S(O)_2R^{g4}$, $-S(O)_2NR^{g4}R^{g4}$, $-NHC(O)R^{g4}$ and $-N(C_{1-4}alkyl)C(O)R^{g4}$;

each $\mathbf{R^{g4}}$ is independently selected from among hydrogen, C_{1-6}alkyl, C_{2-6}alkenyl, C_{2-6}alkynyl, C_{1-6}haloalkyl, C_{3-7}cycloalkyl, C_{4-7}cycloalkenyl, C_{6-10}aryl, 5-10 membered heteroaryl and 3-10 membered heterocyclyl;

r denotes the number 0, 1, 2 or 3;

--

n denotes the number 1, 2 or 3;

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each $\mathbf{R^7}$ is independently selected from among halogen, C_{1-4}alkyl, -CN, C_{1-4}haloalkyl, $-OC_{1-4}$alkyl and $-OC_{1-4}$haloalkyl;

q denotes the number 0, 1, 2 or 3;

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W, **X** and **Y** is each–CH=, wherein

the hydrogen in each –CH= may be replaced by a substituent $\mathbf{R^7}$;

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V is oxygen or sulfur;

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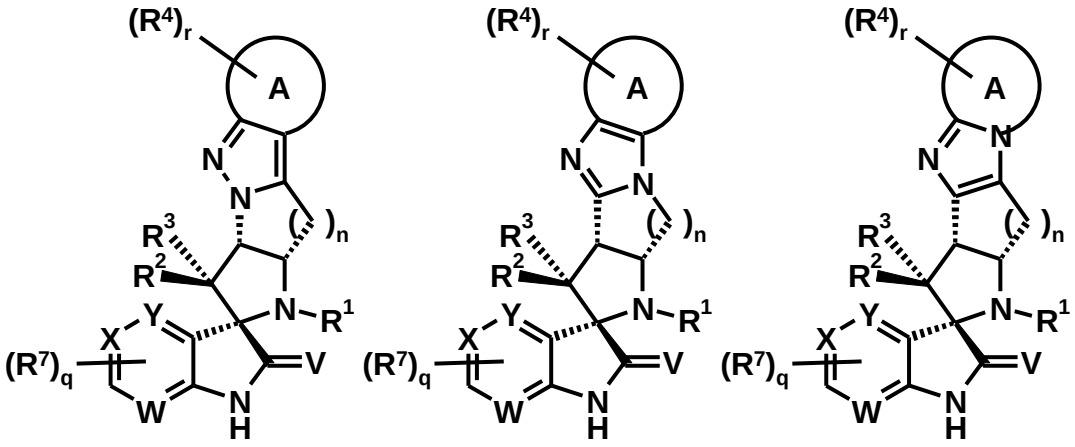
D is nitrogen, **E** is carbon and **F** is carbon; or

D is carbon, **E** is nitrogen and **F** is carbon; or

D is carbon, **E** is carbon and **F** is nitrogen;

or a salt thereof.

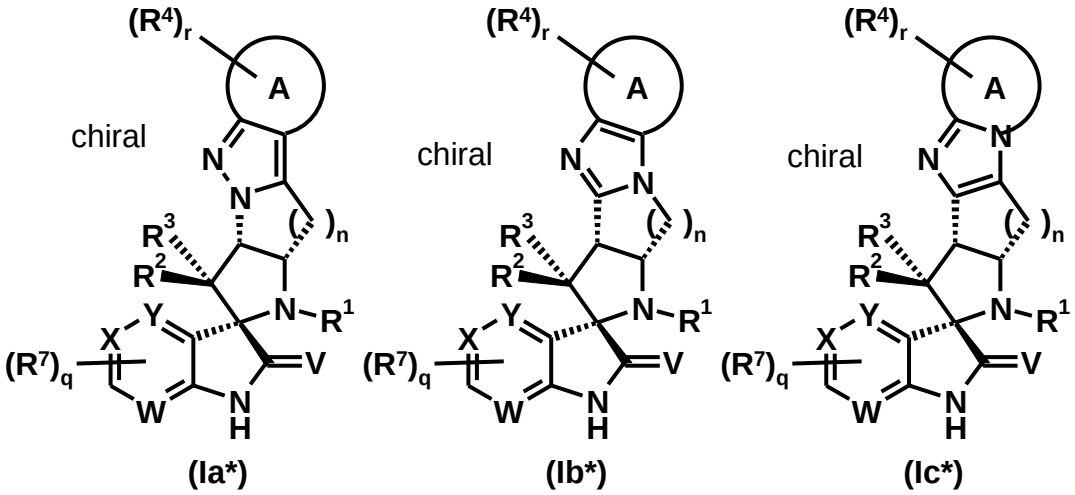
2. The compound according to claim 1 of formula **(Ia)** or **(Ib)** or **(Ic)**



(Ia) **(Ib)** **(Ic)**

or a salt therof.

3. The compound according to claim 2 of formula **(Ia*)** or **(Ib*)** or **(Ic*)**



(Ia*) **(Ib*)** **(Ic*)**

or a salt therof.

4. The compound according to claim 1, wherein

R^1 is a group, optionally substituted by one or more, identical or different **R^{b1}** and/or **R^{c1}**, selected from among C_{1-6}alkyl, C_{2-6}alkenyl, C_{2-6}alkynyl, C_{1-6}haloalkyl, C_{3-7}cycloalkyl, C_{4-7}cycloalkenyl, C_{6-10}aryl, 5-10 membered heteroaryl and 3-10 membered heterocyclyl;

each **R^{b1}** is independently selected from among $-OR^{c1}$, $-NR^{c1}R^{c1}$, halogen, -CN, $-C(O)R^{c1}$, $-C(O)OR^{c1}$, $-C(O)NR^{c1}R^{c1}$, $-S(O)_2R^{c1}$, $-S(O)_2NR^{c1}R^{c1}$, $-NHC(O)R^{c1}$ and $-N(C_{1-4}alkyl)C(O)R^{c1}$;

each **R^{c1}** independently of one another denotes hydrogen or a group, optionally substituted by one or more, identical or different **R^{d1}** and/or **R^{e1}**, selected from among C_{1-6}alkyl, C_{2-6}alkenyl, C_{2-6}alkynyl, C_{1-6}haloalkyl, C_{3-7}cycloalkyl, C_{4-7}cycloalkenyl, C_{6-10}aryl, 5-10 membered heteroaryl and 3-10 membered heterocyclyl;

each **R^{d1}** is independently selected from among $-OR^{e1}$, $-NR^{e1}R^{e1}$, halogen, -CN, $-C(O)R^{e1}$, $-C(O)OR^{e1}$, $-C(O)NR^{e1}R^{e1}$, $-S(O)_2R^{e1}$, $-S(O)_2NR^{e1}R^{e1}$, $-NHC(O)R^{e1}$ and $-N(C_{1-4}alkyl)C(O)R^{e1}$;

each **R^{e1}** independently of one another denotes hydrogen or a group, optionally substituted by one or more, identical or different **R^{f1}** and/or **R^{g1}**, selected from among C_{1-6}alkyl, C_{2-6}alkenyl, C_{2-6}alkynyl, C_{1-6}haloalkyl, C_{3-7}cycloalkyl, C_{4-7}cycloalkenyl, C_{6-10}aryl, 5-10 membered heteroaryl and 3-10 membered heterocyclyl;

each **R^{f1}** is independently selected from among -OR^{g1}, -$NR^{g1}R^{g1}$, halogen, -CN, -$C(O)R^{g1}$, -$C(O)OR^{g1}$, -$C(O)NR^{g1}R^{g1}$, -$S(O)_2R^{g1}$, -$S(O)_2NR^{g1}R^{g1}$, -$NHC(O)R^{g1}$ and -$N(C_{1-4}alkyl)C(O)R^{g1}$;

each **R^{g1}** is independently selected from among hydrogen, C_{1-6}alkyl, C_{2-6}alkenyl, C_{2-6}alkynyl, C_{1-6}haloalkyl, C_{3-7}cycloalkyl, C_{4-7}cycloalkenyl, C_{6-10}aryl, 5-10 membered heteroaryl and 3-10 membered heterocyclyl;

or a salt thereof.

5. The compound according to claim 1, wherein

R^2 and **R^3**, each independently, is selected from among hydrogen, C_{6-10}aryl, 5-10 membered heteroaryl and 3-10 membered heterocyclyl, wherein said C_{6-10}aryl, 5-10 membered heteroaryl and 3-10 membered heterocyclyl is optionally substituted by one or more, identical or different **R^{b2}** and/or **R^{c2}**;

each **R^{b2}** is independently selected from among -OR^{c2}, -$NR^{c2}R^{c2}$, halogen, -CN, -$C(O)R^{c2}$, -$C(O)OR^{c2}$, -$C(O)NR^{c2}R^{c2}$, -$S(O)_2R^{c2}$, -$S(O)_2NR^{c2}R^{c2}$, -$NHC(O)R^{c2}$ and -$N(C_{1-4}alkyl)C(O)R^{c2}$;

each **R^{c2}** independently of one another denotes hydrogen or a group, optionally substituted by one or more, identical or different **R^{d2}** and/or **R^{e2}**, selected from among C_{1-6}alkyl, C_{2-6}alkenyl, C_{2-6}alkynyl, C_{1-6}haloalkyl, C_{3-6}cycloalkyl, C_{4-6}cycloalkenyl, C_{6-10}aryl, 5-10 membered heteroaryl and 3-10 membered heterocyclyl;

each **R^{d2}** is independently selected from among -OR^{e2}, -$NR^{e2}R^{e2}$, halogen, -CN, -$C(O)R^{e2}$, -$C(O)OR^{e2}$, -$C(O)NR^{e2}R^{e2}$, -$S(O)_2R^{e2}$, -$S(O)_2NR^{e2}R^{e2}$, -$NHC(O)R^{e2}$ and -$N(C_{1-4}alkyl)C(O)R^{e2}$;

each **R^{e2}** independently of one another denotes hydrogen or a group selected from among C_{1-6}alkyl, C_{2-6}alkenyl, C_{2-6}alkynyl, C_{1-6}haloalkyl, C_{3-6}cycloalkyl, C_{4-6}cycloalkenyl, C_{6-10}aryl, 5-10 membered heteroaryl and 3-10 membered heterocyclyl;

or a salt thereof.

6. The compound according to claim 5, wherein

one of **R^2** and **R^3** is hydrogen and the other is selected from among phenyl and 5-6 membered heteroaryl, wherein said phenyl and 5-6 membered heteroaryl is optionally

substituted by one or more, identical or different $\mathbf{R^{b2}}$ and/or $\mathbf{R^{c2}}$;

each $\mathbf{R^{b2}}$ is independently selected from among $-OR^{c2}$, $-NR^{c2}R^{c2}$, halogen, -CN, $-C(O)R^{c2}$, $-C(O)OR^{c2}$, $-C(O)NR^{c2}R^{c2}$, $-S(O)_2R^{c2}$, $-S(O)_2NR^{c2}R^{c2}$, $-NHC(O)R^{c2}$ and $-N(C_{1\text{-}4}alkyl)C(O)R^{c2}$;

each $\mathbf{R^{c2}}$ independently of one another denotes hydrogen or a group selected from among $C_{1\text{-}6}$alkyl, $C_{2\text{-}6}$alkenyl, $C_{2\text{-}6}$alkynyl, $C_{1\text{-}6}$haloalkyl, $C_{3\text{-}6}$cycloalkyl, $C_{4\text{-}6}$cycloalkenyl, phenyl, 5-6 membered heteroaryl and 3-7 membered heterocyclyl;

or a salt thereof.

7. The compound according to claim 6, wherein

one of $\mathbf{R^2}$ and $\mathbf{R^3}$ is hydrogen and the other is selected from among phenyl and 5-6 membered heteroaryl, wherein said phenyl and 5-6 membered heteroaryl is optionally substituted by one or more, identical or different substituents selected from among $-OC_{1\text{-}6}$alkyl, halogen, $C_{1\text{-}6}$alkyl and $C_{1\text{-}6}$haloalkyl;

or a salt thereof.

8. The compound according to any one of the preceding claims, wherein

$\mathbf{R^3}$ is hydrogen;

or a salt thereof.

9. The compound according to any one of the preceding claims, wherein

A is phenyl and **F** is carbon;

each $\mathbf{R^4}$ is independently selected from among $\mathbf{R^{a4}}$ and $\mathbf{R^{b4}}$;

each $\mathbf{R^{a4}}$ independently of one another is a group, optionally substituted by one or more, identical or different $\mathbf{R^{b4}}$ and/or $\mathbf{R^{c4}}$, selected from among $C_{1\text{-}6}$alkyl, $C_{1\text{-}6}$haloalkyl, $C_{3\text{-}7}$cycloalkyl and 3-10 membered heterocyclyl;

each $\mathbf{R^{b4}}$ is independently selected from among $-OR^{c4}$, $-NR^{c4}R^{c4}$, halogen, $-C(O)R^{c4}$, $-C(O)OR^{c4}$, $-C(O)NR^{c4}R^{c4}$, $-C(O)NR^{g4}OR^{c4}$, $-S(O)_2R^{c4}$ and $-NHC(O)R^{c4}$;

each $\mathbf{R^{c4}}$ independently of one another denotes hydrogen or a group, optionally

substituted by one or more, identical or different $\mathbf{R^{d4}}$ and/or $\mathbf{R^{e4}}$, selected from among $C_{1\text{-}6}$alkyl, $C_{1\text{-}6}$haloalkyl, $C_{3\text{-}7}$cycloalkyl and 3-10 membered heterocyclyl;

each $\mathbf{R^{d4}}$ is independently selected from among $-OR^{e4}$, $-NR^{e4}R^{e4}$ and $-S(O)_2R^{e4}$;

each $\mathbf{R^{e4}}$ independently of one another denotes hydrogen or a group, optionally substituted by one or more, identical or different $\mathbf{R^{f4}}$ and/or $\mathbf{R^{g4}}$, selected from among $C_{1\text{-}6}$alkyl and 3-10 membered heterocyclyl;

each $\mathbf{R^{f4}}$ is $-OR^{g4}$;

each $\mathbf{R^{g4}}$ is independently selected from among hydrogen and $C_{1\text{-}6}$alkyl;

r denotes the number 0, 1, 2 or 3;

or a salt therof.

10. The compound according to claim 1, wherein

A is selected from among phenyl and 5-6 membered heteroaryl if **F** is carbon or

A is 5-6 membered, nitrogen-containing heteroaryl if **F** is nitrogen;

each $\mathbf{R^4}$ is independently selected from among $\mathbf{R^{a4}}$ and $\mathbf{R^{b4}}$;

each $\mathbf{R^{a4}}$ independently of one another is a group, optionally substituted by one or more, identical or different $\mathbf{R^{b4}}$ and/or $\mathbf{R^{c4}}$, selected from among $C_{1\text{-}6}$alkyl, $C_{2\text{-}6}$alkenyl, $C_{2\text{-}6}$alkynyl, $C_{1\text{-}6}$haloalkyl, $C_{3\text{-}7}$cycloalkyl, $C_{4\text{-}7}$cycloalkenyl, $C_{6\text{-}10}$aryl, 5-10 membered heteroaryl and 3-10 membered heterocyclyl;

each $\mathbf{R^{b4}}$ is independently selected from among $-OR^{c4}$, $-NR^{c4}R^{c4}$, halogen, -CN, $-C(O)R^{c4}$, $-C(O)OR^{c4}$, $-C(O)NR^{c4}R^{c4}$, $-C(O)NHOR^{c4}$, $-S(O)_2R^{c4}$, $-S(O)_2NR^{c4}R^{c4}$, $-NHSO_2R^{c4}$, $-N(C_{1\text{-}4}\text{alkyl})SO_2R^{c4}$, $-NHC(O)R^{c4}$ and $-N(C_{1\text{-}4}\text{alkyl})C(O)R^{c4}$;

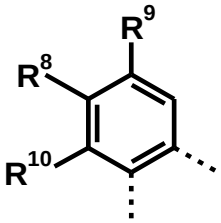
each $\mathbf{R^{c4}}$ independently of one another is selected from among hydrogen, $C_{1\text{-}6}$alkyl, $C_{2\text{-}6}$alkenyl, $C_{2\text{-}6}$alkynyl, $C_{1\text{-}6}$haloalkyl, $C_{3\text{-}7}$cycloalkyl, $C_{4\text{-}7}$cycloalkenyl, $C_{6\text{-}10}$aryl, 5-10 membered heteroaryl and 3-10 membered heterocyclyl;

r denotes the number 0, 1, 2 or 3;

or a salt thereof.

11. The compound according to claim 1, wherein

A together with the **r** substituents $\mathbf{R^4}$ is



;

$\mathbf{R^8}$ is selected from among hydrogen, C_{1-6}alkyl, -OC_{1-6}alkyl, halogen, -CN, -C(O)OH, -C(O)OC_{1-6}alkyl, -C(O)NH_2, -C(O)NHC_{1-6}alkyl, -C(O)N(C_{1-6}alkyl)$_2$ and -S(O)$_2$$C_{1-6}$alkyl;

$\mathbf{R^9}$ is selected from among hydrogen, C_{1-6}alkyl, -OC_{1-6}alkyl, halogen, -CN, -C(O)OH, -C(O)OC_{1-6}alkyl, -C(O)NH_2, -C(O)NHC_{1-6}alkyl, -C(O)N(C_{1-6}alkyl)$_2$ and -S(O)$_2$$C_{1-6}$alkyl;

$\mathbf{R^{10}}$ is selected from among hydrogen, C_{1-6}alkyl, -OC_{1-6}alkyl, halogen, -CN, -C(O)OH, -C(O)OC_{1-6}alkyl, -C(O)NH_2, -C(O)NHC_{1-6}alkyl, -C(O)N(C_{1-6}alkyl)$_2$ and -S(O)$_2$$C_{1-6}$alkyl;

with the proviso that at least one of $\mathbf{R^8}$ to $\mathbf{R^{10}}$ but not all of $\mathbf{R^8}$ to $\mathbf{R^{10}}$ is/are hydrogen;

or a salt thereof.

12. The compound according to any one of the preceding claims, wherein

n denotes the number 1 or 2;

or a salt thereof.

13. The compound according to any one of the preceding claims, wherein

each $\mathbf{R^7}$ independently is halogen or -CN and **q** is 1 or 2;

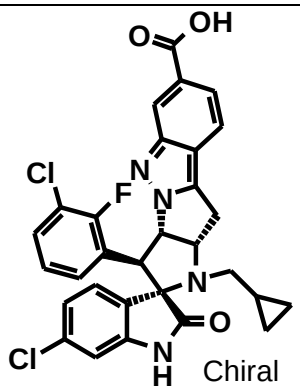
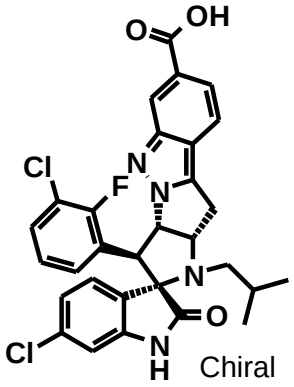
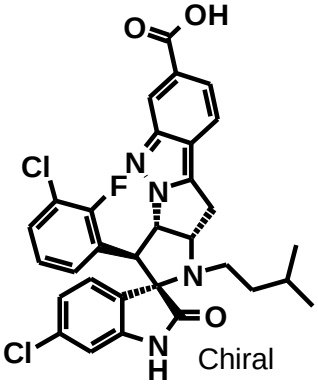
or a salt thereof.

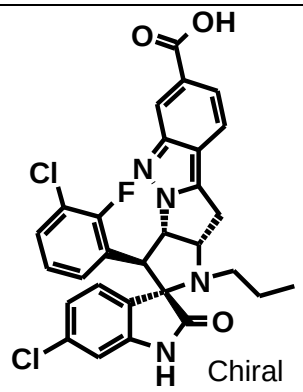
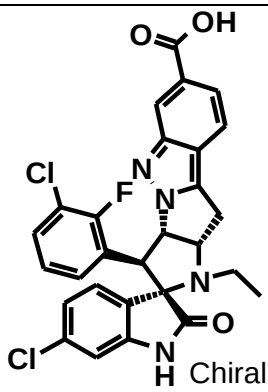
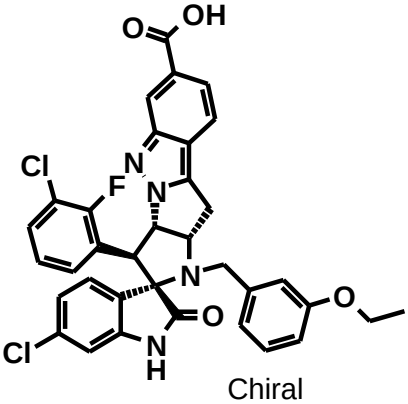
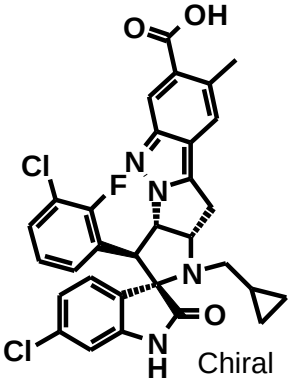
14. The compound according to any one of the preceding claims, wherein

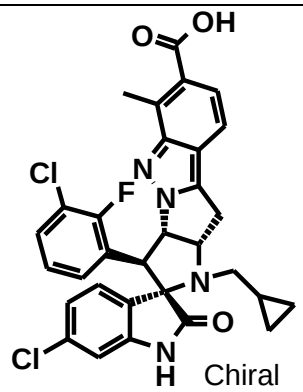
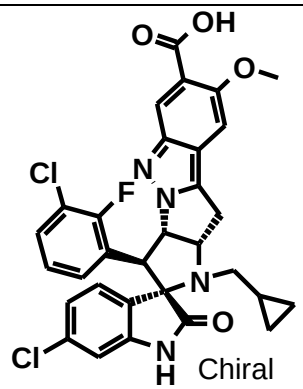
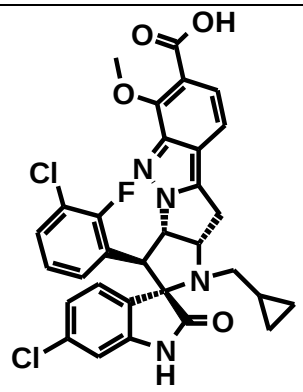
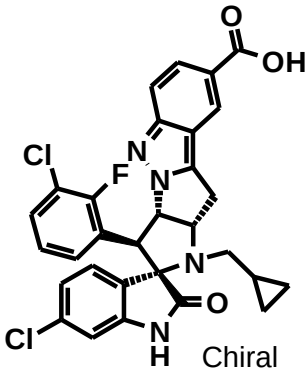
W, **X** and **Y** are –CH= wherein the hydrogen in each –CH= may be replaced by a substituent $\mathbf{R^7}$;

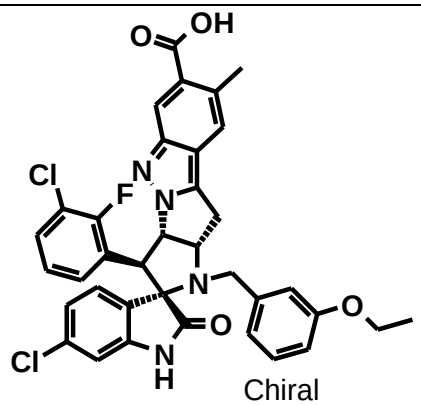
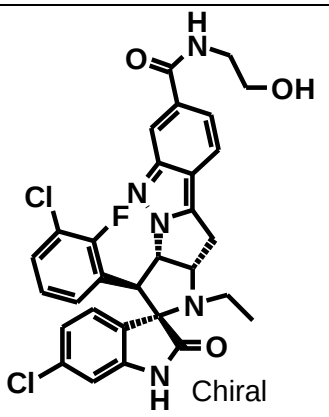
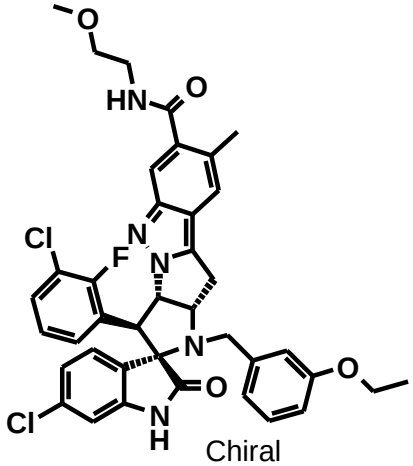
or a salt thereof.

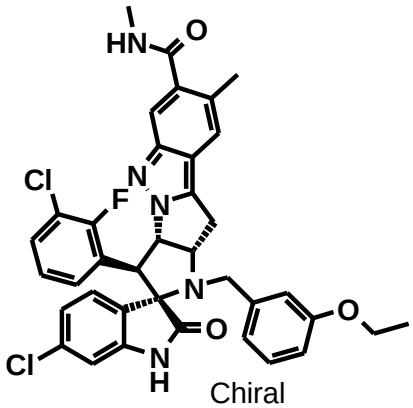
15. A compound selected from a group consisting of

Ia-25	 Chiral ,
Ia-27	 Chiral ,
Ia-28	 Chiral ,

Ia-29	 Chiral ,
Ia-30	 Chiral ,
Ia-32	 Chiral ,
Ia-33	 Chiral ,

Ia-34	 Chiral ,
Ia-35	 Chiral ,
Ia-36	 ,
Ia-38	 Chiral ,

Ia-40	 Chiral ,
Ia-50	 Chiral ,
Ia-55	 Chiral and

Ia-56	 Chiral

;

or a salt thereof.

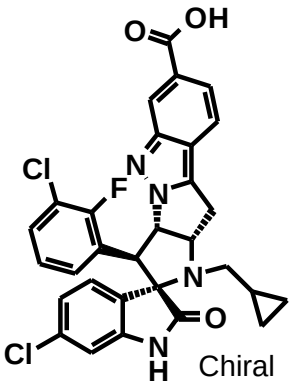
16. A compound or a pharmaceutically acceptable salt according to claim 1 for use as a medicament.

17. Use of a compound or a pharmaceutically acceptable salt according to claim 1 in the manufacture of a medicament for the treatment of cancer.

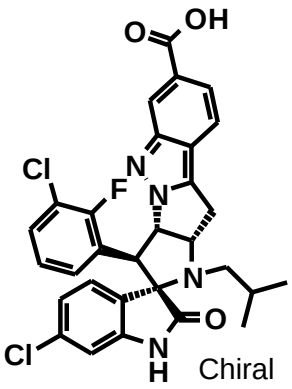
18. A pharmaceutical composition comprising at least one compound according to claim 1 or a pharmaceutically acceptable salt thereof and a pharmaceutically acceptable carrier.

19. A pharmaceutical preparation comprising a compound according to claim 1 or a pharmaceutically acceptable salt thereof and at least one other cytostatic and/or cytotoxic active substance.

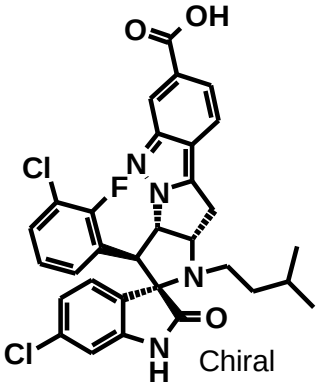
20. A compound of formula Ia-25 or a pharmaceutically acceptable salt thereof

 Chiral

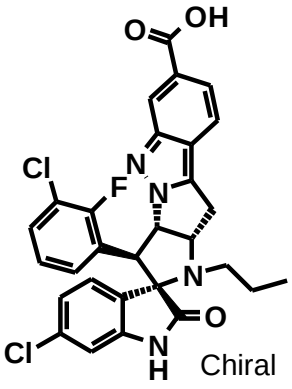
21. A compound of formula Ia-27 or a pharmaceutically acceptable salt thereof



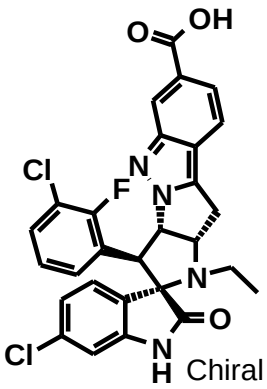
22. A compound of formula Ia-28 or a pharmaceutically acceptable salt thereof



23. A compound of formula Ia-29 or a pharmaceutically acceptable salt thereof

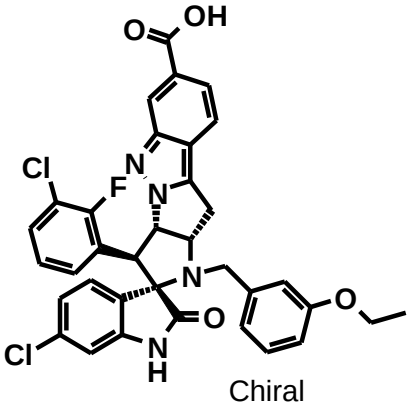


24. A compound of formula Ia-30 or a pharmaceutically acceptable salt thereof



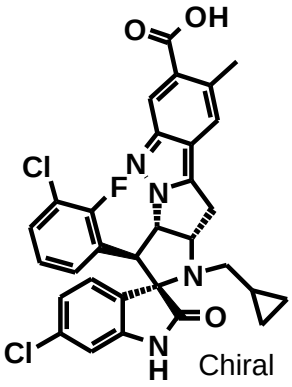
Chiral

25. A compound of formula Ia-32 or a pharmaceutically acceptable salt thereof



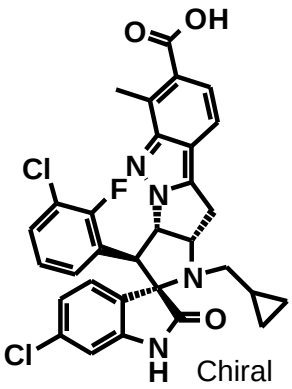
Chiral

26. A compound of formula Ia-33 or a pharmaceutically acceptable salt thereof

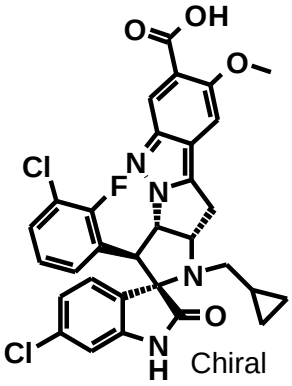


Chiral

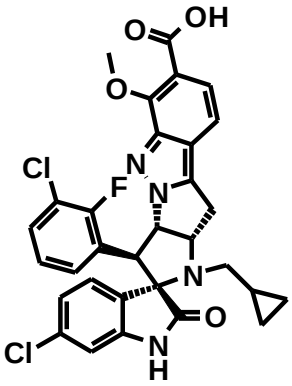
27. A compound of formula Ia-34 or a pharmaceutically acceptable salt thereof



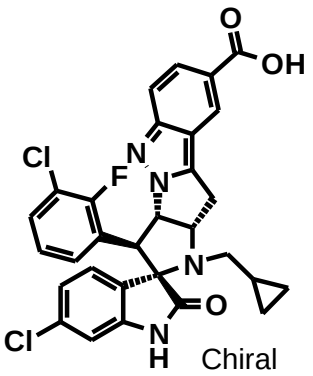
28. A compound of formula Ia-35 or a pharmaceutically acceptable salt thereof



29. A compound of formula Ia-36 or a pharmaceutically acceptable salt thereof

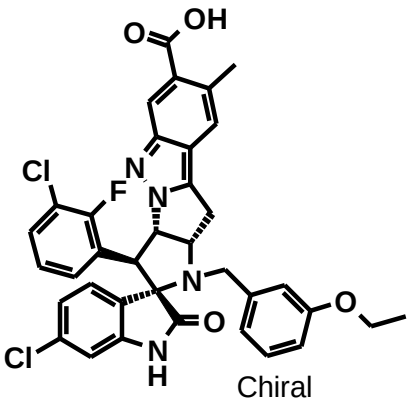


30. A compound of formula Ia-38 or a pharmaceutically acceptable salt thereof



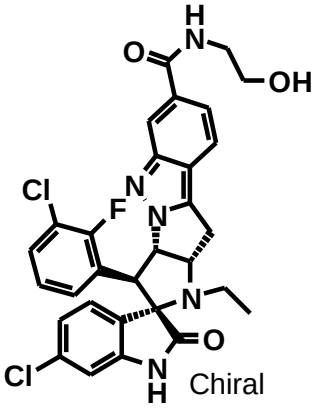
Chiral

31. A compound of formula Ia-40 or a pharmaceutically acceptable salt thereof



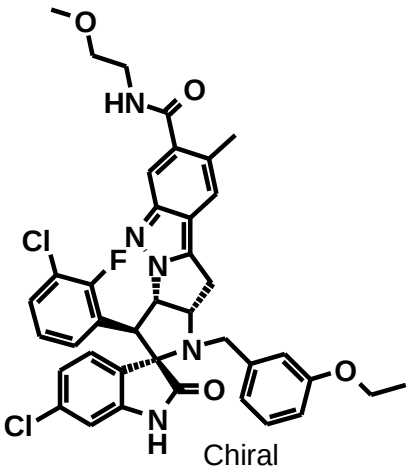
Chiral

32. A compound of formula Ia-50 or a pharmaceutically acceptable salt thereof



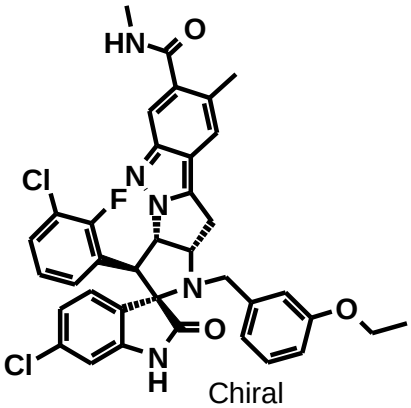
Chiral

33. A compound of formula Ia-55 or a pharmaceutically acceptable salt thereof



Chiral

34. A compound of formula Ia-56 or a pharmaceutically acceptable salt thereof

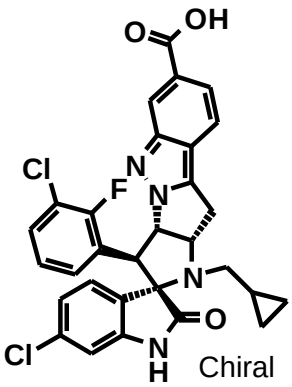


Chiral

35. A pharmaceutical composition comprising at least one compound according to claim 15 or a pharmaceutically acceptable salt thereof and a pharmaceutically acceptable carrier.

36. A pharmaceutical preparation comprising a compound according to claim 15 or a pharmaceutically acceptable salt thereof and at least one other cytostatic and/or cytotoxic active substance.

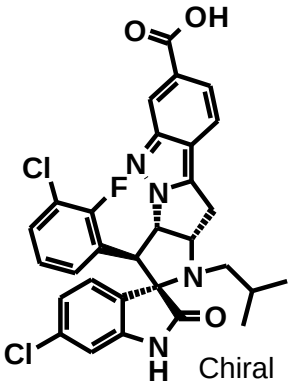
37. A compound of formula



Chiral

38. A pharmaceutical composition comprising the compound according to claim 37 and a pharmaceutically acceptable carrier.

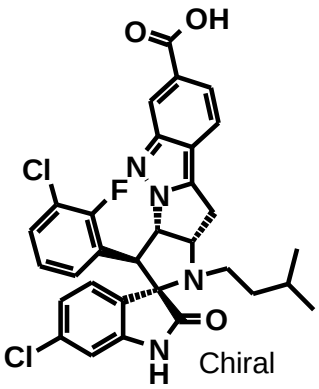
39. A compound of formula



Chiral

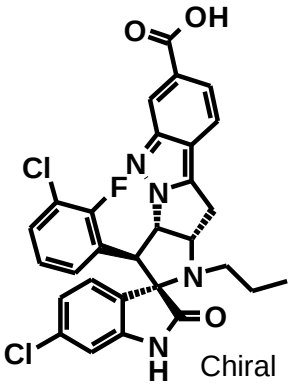
40. A pharmaceutical composition comprising the compound according to claim 38 and a pharmaceutically acceptable carrier.

41. A compound of formula



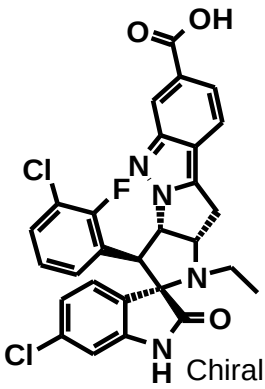
42. A pharmaceutical composition comprising the compound according to claim 41 and a pharmaceutically acceptable carrier.

43. A compound of formula



44. A pharmaceutical composition comprising the compound according to claim 43 and a pharmaceutically acceptable carrier.

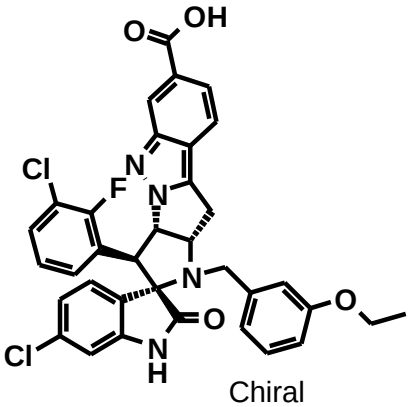
45. A compound of formula



Chiral

46. A pharmaceutical composition comprising the compound according to claim 45 and a pharmaceutically acceptable carrier.

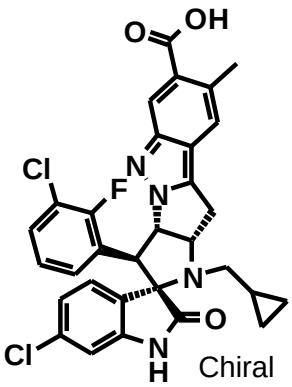
47. A compound of formula



Chiral

48. A pharmaceutical composition comprising the compound according to claim 47 and a pharmaceutically acceptable carrier.

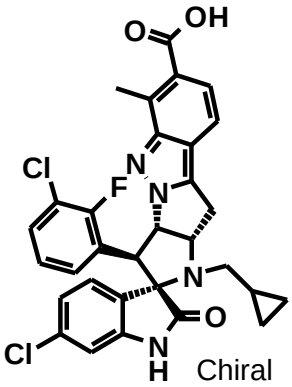
49. A compound of formula



Chiral

50. A pharmaceutical composition comprising the compound according to claim 49 and a pharmaceutically acceptable carrier.

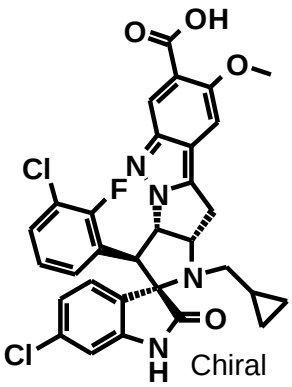
51. A compound of formula



Chiral

52. A pharmaceutical composition comprising the compound according to claim 51 and a pharmaceutically acceptable carrier.

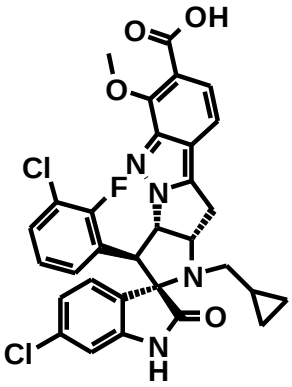
53. A compound of formula



Chiral

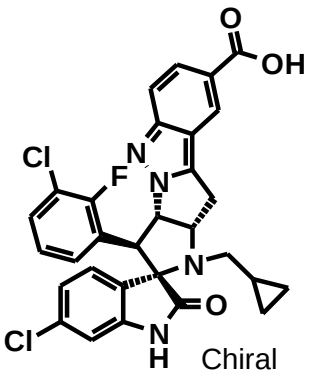
54. A pharmaceutical composition comprising the compound according to claim 53 and a pharmaceutically acceptable carrier.

55. A compound of formula



56. A pharmaceutical composition comprising the compound according to claim 55 and a pharmaceutically acceptable carrier.

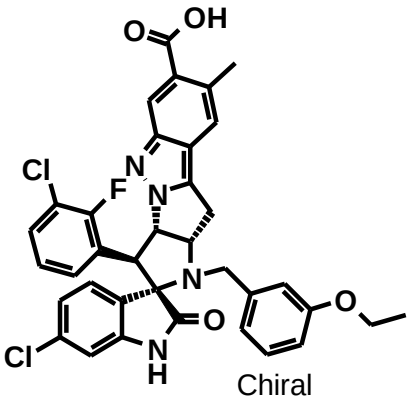
57. A compound of formula



Chiral .

58. A pharmaceutical composition comprising the compound according to claim 57 and a pharmaceutically acceptable carrier.

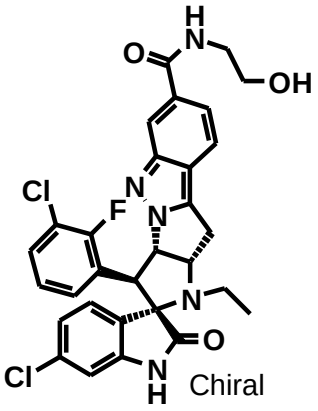
59. A compound of formula



Chiral

60. A pharmaceutical composition comprising the compound according to claim 59 and a pharmaceutically acceptable carrier.

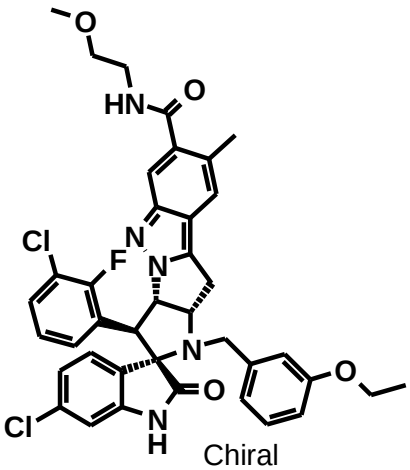
61. A compound of formula



Chiral

62. A pharmaceutical composition comprising the compound according to claim 61 and a pharmaceutically acceptable carrier.

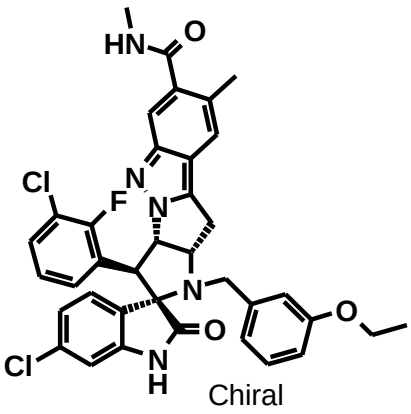
63. A compound of formula



Chiral

64. A pharmaceutical composition comprising the compound according to claim 63 and a pharmaceutically acceptable carrier.

65. A compound of formula



Chiral

66. A pharmaceutical composition comprising the compound according to claim 65 and a pharmaceutically acceptable carrier.