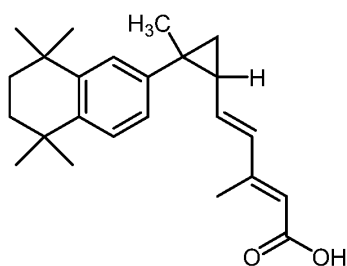


## CLAIMS

What is claimed is:

1. A compound, wherein the compound is Compound 38,

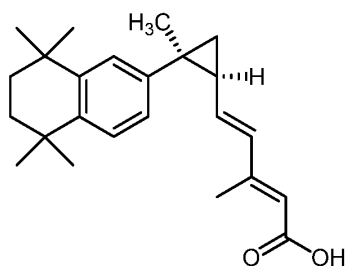


Compound 38,

or a pharmaceutically acceptable salt thereof,

wherein:

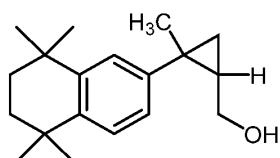
Compound 38 has an enantiomeric excess of Compound A,



Compound A,

of least about 98.0 %; and

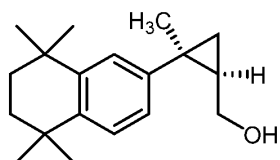
the compound is prepared by a synthetic process, and the synthetic process includes a process of preparing an intermediate compound, wherein the intermediate compound is Formula (XIa),



(XIa),

or a hydrate or a solvate thereof,

wherein the intermediate compound has an enantiomeric excess of a compound of Formula (XI),



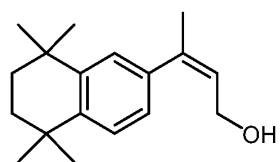
(XI),

or a hydrate or a solvate thereof,

of at least about 80.0 %.

2. The compound of claim 1, wherein the process of preparing the intermediate compound, comprises:

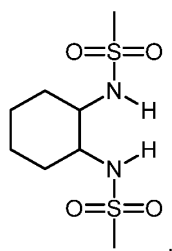
contacting a compound of Formula (XII),



(XII),

or a solvate thereof,

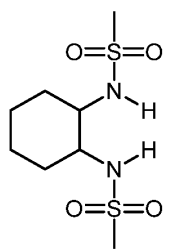
with  $\text{CH}_2\text{I}_2$ ,  $\text{Et}_2\text{Zn}$ ,  $\text{ZnI}_2$ , and



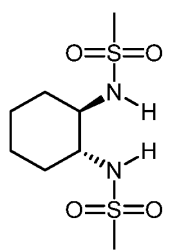
or a solvate thereof,

such that the intermediate compound is formed.

3. The compound of claim 2, wherein the



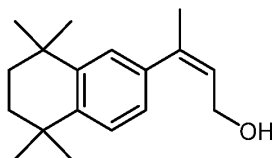
or a solvate thereof, is



or a solvate thereof.

4. The compound of claim 1, wherein the process of preparing the intermediate compound, comprises:

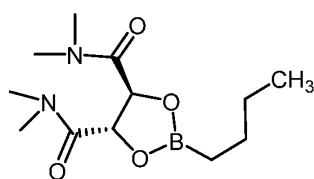
(i) contacting a compound of Formula (XII),



(XII),

or a solvate thereof,

with a compound of Formula (XIII),



(XIII),

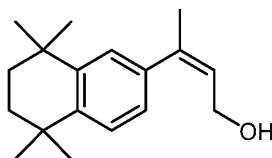
or a solvate thereof,

in a solution in the presence of  $\text{CH}_2\text{I}_2$  and  $\text{Et}_2\text{Zn}$  to form a reaction product of the compound of Formula (XII), or a solvate thereof; and

(ii) subsequently, contacting reaction product of the compound of Formula (XII), or a solvate thereof, of step (i) with  $\text{H}_2\text{O}_2$ , such that the intermediate compound is prepared.

5. The compound of claim 1, wherein the process of preparing the intermediate compound, comprises:

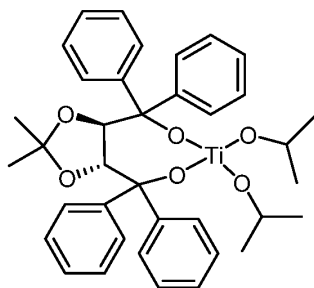
contacting a compound of Formula (XII),



(XII),

or a solvate thereof,

with a compound of Formula (XIV) or its enantiomer,



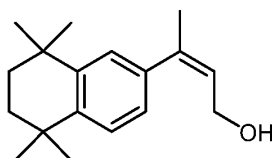
(XIV),

or a solvate thereof,

in the presence of  $\text{CH}_2\text{I}_2$  and dialkylzinc such that the intermediate compound is prepared.

6. The compound of claim 1, wherein the process of preparing the intermediate compound, comprises:

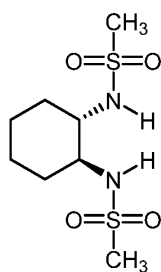
contacting a compound of Formula (XII),



(XII),

or a solvate thereof,

with a compound of Formula (XV) or its enantiomer,



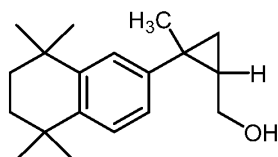
(XV),

or a solvate thereof,

in the presence of  $\text{CH}_2\text{I}_2$  and  $\text{Et}_2\text{Zn}$  at about 0 °C such that the intermediate compound is prepared.

7. A composition comprising the compound of claim 1.
8. A pharmaceutical composition comprising the compound of claim 1, and a pharmaceutically acceptable excipient or carrier.
9. A method of treating cancer comprising, administering to a subject in need thereof the compound of claim 1, at a therapeutically effective dose from about 0.1 to about 20 mg/m<sup>2</sup>/day.
10. The method of claim 9, wherein the therapeutically effective dose of the rxr agonist is a dose below the retinoic acid receptor (RAR) activating threshold and at or above the RXR effective dose.
11. The method of claim 9, wherein the cancer is a hematologic malignancy, lung cancer, prostate cancer, breast cancer, pancreatic cancer, colon cancer, or cervical cancer.
12. The method of claim 9, wherein the treating further comprises administration of thyroid hormone.
13. The method of claim 9, wherein the compound has an enantiomeric excess of Compound A that essentially eliminates, or reduces to an undetectable level, RAR activation by Compound B.
14. A method of treating a nervous system disorder, a muscular disorder, a demyelinating disease, or an autoimmune disease in a subject in need thereof, comprising, administering to the subject a therapeutically effective amount of the compound of claim 1, wherein the therapeutically effective amount is from 0.001 mg/kg/day to about 100 mg/kg/day.
15. The method of claim 14, wherein the nervous system disorder is Parkinson's disease, Alzheimer's disease, multiple sclerosis, schizophrenia, amyotrophic lateral sclerosis, ischemic injury, traumatic injury, a depressive disorder, or age-related neurodegeneration.

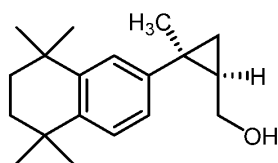
16. The method of claim 14, wherein the treating further comprises administration of thyroid hormone.
17. The method of claim 14, wherein the therapeutically effective amount is about 0.001 mg/kg/day to about 0.2 mg/kg/day.
18. The method of claim 14, wherein the therapeutically effective amount is about 0.1 mg/kg/day to about 3.0 mg/kg/day.
19. The method of claim 14, wherein the compound has an enantiomeric excess of Compound A that essentially eliminates, or reduces to an undetectable level, RAR activation by Compound B.
20. A kit, comprising the compound of claim 1, and instructions for use thereof.
21. An article of manufacture, comprising the compound of claim 1.
22. The article of manufacture of claim 21, further comprising instructions for use thereof.
23. A compound, wherein the compound is Formula (XIa),



(XIa),

or a hydrate or a solvate thereof,

wherein the compound has an enantiomeric excess of a compound of Formula (XI),



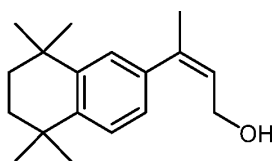
(XI),

or a hydrate or a solvate thereof,

of at least about 80.0 %.

24. The compound of claim 23, wherein the enantiomeric excess is at least about 98.0 %.

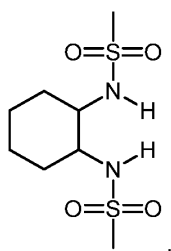
25. The compound of claim 23, wherein the compound is prepared by a process comprising:  
contacting a compound of Formula (XII),



(XII),

or a solvate thereof,

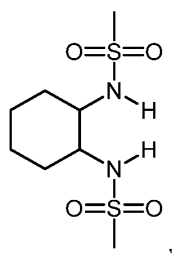
with  $\text{CH}_2\text{I}_2$ ,  $\text{Et}_2\text{Zn}$ ,  $\text{ZnI}_2$ , and



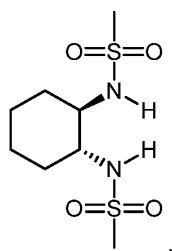
or a solvate thereof,

such that the compound of claim 23 is formed.

26. The compound of claim 25, wherein the



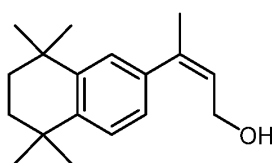
or a solvate thereof, is



or a solvate thereof.

27. The compound of claim 23, wherein the compound is prepared by a process comprising:

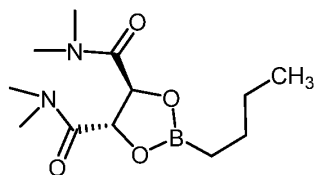
(i) contacting a compound of Formula (XII),



(XII),

or a solvate thereof,

with a compound of Formula (XIII),



(XIII),

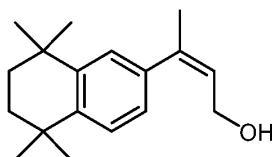
or a solvate thereof,

in a solution in the presence of  $\text{CH}_2\text{I}_2$  and  $\text{Et}_2\text{Zn}$  to form a reaction product of the compound of Formula (XII), or a solvate thereof; and

(ii) subsequently, contacting reaction product of the compound of Formula (XII), or a solvate thereof, of step (i) with  $\text{H}_2\text{O}_2$ , such that the compound of claim 23 is prepared.

28. The compound of claim 23, wherein the compound is prepared by a process comprising:

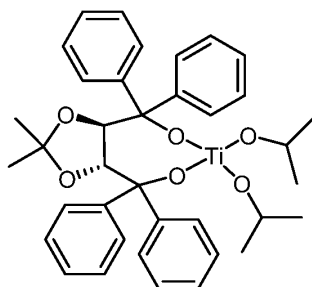
contacting a compound of Formula (XII),



(XII),

or a solvate thereof,

with a compound of Formula (XIV) or its enantiomer,



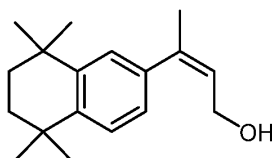
(XIV),

or a solvate thereof,

in the presence of  $\text{CH}_2\text{I}_2$  and dialkylzinc such that the compound of claim 23 is prepared.

29. The compound of claim 23, wherein the compound is prepared by a process comprising:

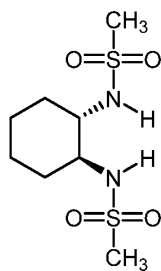
contacting a compound of Formula (XII),



(XII),

or a solvate thereof,

with a compound of Formula (XV) or its enantiomer,



(XV),

or a solvate thereof,

in the presence of  $\text{CH}_2\text{I}_2$  and  $\text{Et}_2\text{Zn}$  at about  $0^\circ\text{C}$  such that the compound of claim 23 is prepared.