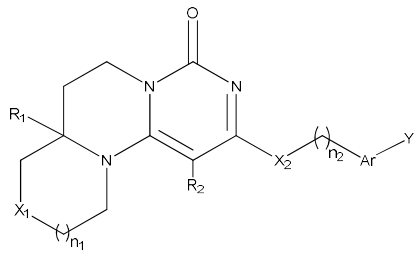
What is claimed is:

1. A compound of Formula (I) or a pharmaceutically acceptable salt thereof,



(I)

wherein

n_1 is 1;

n_2 is 0, 1, or 2;

R_1 is selected from -H, alkyl, deuterated alkyl, deuterated alkoxy, haloalkyl, haloalkoxy, alkoxy;

R_2 is selected from -H, halogen, alkyl, deuterated alkyl, deuterated alkoxy, haloalkyl, haloalkoxy, alkoxy;

X_1 and X_2 are each independently selected from -O-, -S-, or -NR'-,

R' is selected from -H, alkyl, or deuterated alkyl;

Ar is an arylene group or a heteroarylene group，wherein hydrogen atoms in the arylene or heteroarylene are optionally substituted by 1 or more substituents, and the substituents are each independently selected from halogen, alkyl, deuteroalkyl, haloalkyl, alkoxy, deuteroalkoxy, haloalkoxy, cycloalkyl;

Y is -H, halogen or -OAr';

Ar' is selected from aryl or heteroaryl, wherein hydrogen atoms in the aryl or heteroaryl are optionally substituted with one or more substituents, the substituents are each independently selected from halogen, alkyl, deuterated alkyl, haloalkyl, alkoxy, haloalkoxy, deuteroalkyl, deuterated alkoxy.

halogens in the "halogen" "haloalkyl" and "haloalkoxy" are each independently selected from F, Cl, Br, or I;

alkyls in the "alkyl" "deuterated alkyl" "deuterated alkoxy" "haloalkyl" "haloalkoxy",

"alkoxy" are each independently C_1-C_{10} linear or branched alkyl; optionally each independently C_1-C_7 linear or branched alkyl; optionally each independently C_1-C_4 linear or branched alkyl; and optionally selected from methyl, ethyl, n-propyl, isopropyl, n-butyl, isobutyl, tert-butyl, sec-butyl, n-pentyl, 1-methylbutyl, 2-methylbutyl, 3-methylbutyl, isopentyl, 1-ethylpropyl, neopentyl, n-hexyl, 1-methylpentyl, 2-methylpentyl, 3-methylpentyl, isohexyl, 1,1-dimethylbutyl, 2,2-dimethylbutyl, 3,3-dimethylbutyl, 1,2-dimethylbutyl, 1,3-dimethylbutyl, 2,3-dimethylbutyl, 2-ethylbutyl, n-heptyl, 2-methylhexyl, 3-methylhexyl, 2,2-dimethylpentyl, 3,3-dimethylpentyl, 2,3-dimethylpentyl, 2,4-dimethylpentyl, 3-ethylpentyl, or 2,2,3-trimethylbutyl;

"cycloalkyl" is C_3-C_7 monocyclic cycloalkyl, and optionally cyclopropyl, cyclobutyl, cyclopentyl, cyclohexyl, or cycloheptyl;

"heterocyclyl" is 3- to 10-membered non-aromatic heterocycle ring containing 1, 2, or 3 heteroatoms selected from N, O, and S; optionally 3- to 10-membered non-aromatic ring containing 1 or 2 heteroatoms selected from N and O; optionally 3- to 6-membered non-aromatic ring containing 1 or 2 heteroatoms selected from N and O; optionally 3- to 10-membered non-aromatic ring containing 1 or 2 heteroatoms selected from N and S; and optionally 3- to 6-membered non-aromatic ring containing 1 or 2 heteroatoms selected from N and S;

"aryl" is 6- to 10-membered aryl; optionally phenyl or naphthyl, and

phenyl is1-naphthyl, or 2-naphthyl;

"arylene" is 6- to 10-membered arylene; and optionally phenylene or naphthylene;

"heteroaryl" is 5- to 10-membered heteroaryl ring containing 1-3 heteroatoms selected from N, O, and S; optionally 5- to 10-membered heteroaryl ring containing 1-2 heteroatoms selected from N, O, and S; optionally the heteroaryl ring is selected from pyridine ring, pyrrole ring, pyrazole ring, pyrimidine ring, pyrazine ring, pyridazine ring, thiophene ring, and furan ring; optionally selected from pyridin-2-yl, pyridin-3-yl, pyridin-4-yl, pyridazin-3-yl, pyridazin-4-yl, pyrimidin-2-yl, pyrimidin-4-yl, pyrimidin-5-yl, pyrazin-2-yl, pyrazin-3-yl, indolyl, isoindolyl, indazolyl, indolizinyl, purinyl, quinolizinyl, quinolinyl, isoquinolinyl, cinnolinyl, phthalazinyl, naphthyridinyl, quinazolinyl, quinoxalinyl, thieno[2,3-b] furanyl, furo[3,2-b]-pyranyl, pyrido[2,3-d]oxazinyl, pyrazolo[4,3-d]oxazolyl, imidazo[4,5-d]thiazolyl, pyrazino[2,3-d]pyridazinyl, imidazo[2,1-b]thiazolyl, imidazo[1,2-b][l,2,4]triazinyl, benzothienyl,

benzoxazolyl, benzimidazolyl, benzothiazolyl, benzoxepinyl, benzoxazinyl, benzofuranyl, benzotriazolyl, pyrrolo[2,3-b]pyridyl, pyrrolo[3,2-c]pyridinyl, pyrrolo[3,2-b]pyridyl, imidazo[4,5-b]pyridyl, imidazo[4,5-c]pyridyl, pyrazolo[4,3-d]pyridyl, pyrazolo[4,3-c]pyridyl, pyrazolo[3,4-c]pyridinyl, pyrazolo[3,4-d]pyridyl, pyrazolo[3,4-b] pyridinyl, imidazo[1,2-a]pyridinyl, pyrazolo[1,5-a]pyridinyl, pyrrolo[1,2-b]pyridazinyl, imidazo[1,2-c]pyrimidinyl, pyrido[3,2-d]pyrimidinyl, pyrido[4,3-d]pyrimidinyl, pyrido[3,4-d]pyrimidinyl, pyrido[2,3-d]pyrimidinyl, pyrido[2,3-b]pyrazinyl, pyrido[3,4-b]pyrazinyl, pyrimido[5,4-d]pyrimidinyl, pyrazolo[2,3-b]pyrazinyl, or pyrimido[4,5-d]pyrimidinyl; and is optionally selected from pyridin-2-yl, pyridin-3-yl, pyridin-4-yl, pyrimidin-2-yl, pyrimidin-4-yl, or pyrimidin-5-yl;

"heteroarylene" is 5- to 10-membered heteroarylene ring containing 1-3 heteroatoms selected from N, O, and S; optionally 5- to 10-membered heteroaromatic ring containing 1-2 heteroatoms selected from N, O, and S; and optionally the heteroarylene ring is selected from pyridine ring, pyrrole ring, pyrazole ring, pyrimidine ring, pyrazine ring, pyridazine ring, thiophene ring, furan ring;

the compound represented by the formula (I) is in the form of tautomers, mesomers, racemates, enantiomers, diastereoisomers, or mixtures of these isomers.

2. The compound or a salt thereof according to claim 1, wherein

n_1 is 1; n_2 is 1.

R_1 and R_2 are each independently selected from -H, C_1-C_7 alkyl (such as methyl, ethyl, n-propyl, isopropyl, n-butyl, isobutyl, tert-butyl, sec-butyl, n-pentyl, 1-methylbutyl, 2-methylbutyl, 3-methylbutyl, isopentyl, 1-ethylpropyl, neopentyl, n-hexyl, 1-methylpentyl, 2-methylpentyl, 3-methylpentyl, isohexyl, 1,1-dimethylbutyl, 2,2-dimethylbutyl, 3,3-dimethylbutyl, 1,2-dimethylbutyl, 1,3-dimethylbutyl, 2,3-dimethylbutyl, 2-ethylbutyl, n-heptyl, 2-methylhexyl, 3-methylhexyl, 2,2-dimethylpentyl, 3,3-dimethylpentyl, 2,3-dimethylpentyl, 2,4-dimethylpentyl, 3-ethylpentyl, or 2,2,3-trimethylbutyl), C_1-C_3 deuteroalkyl (such as $-CD_3$, $-C_2D_5$, or $-C_3D_7$), C_1-C_3 deuteroalkoxyl (such as $-OCD_3$, $-OC_2D_5$, or $-OC_3D_7$), C_1-C_3 haloalkyl (such as $-CF_3$, $-C_2F_5$, or $-C_3F_7$), C_1-C_7 haloalkoxy, C_1-C_7 alkoxy; optionally, R_1 is -H, $-CH_3$, or $-C_2H_5$; and optionally, R_1 is-H，R_2 is-H;

X_1 is $-CH_2-$, or -O-; optionally, X_1 is -O-;

X_2 is -O- or -S-;optionally, X_2 is -O-;

Ar is phenylene or pyridyl, wherein hydrogen atoms in the phenylene or pyridyl are optionally substituted with 1, 2, or 3 substituents, the substituents are each independently selected from F, Cl, Br, I, -CN, -Me, $-CF_3$, $-C_2H_5$, $-C_3H_7$, cyclopropyl, cyclobutyl, cyclopentyl, cyclohexyl, $-CD_3$, $-OCD_3$, -OMe, or $-OCF_3$;

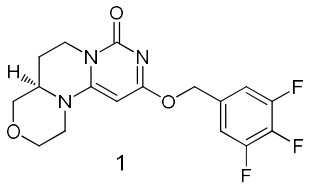
optionally, Ar is phenylene wherein the hydrogen atom in the phenylene is optionally substituted by 1 or 2 substituents, and the substituent is F;

Y is H, halogen, or -OAr'; and optionally, Y is H, -F, or -OAr';

Ar' is selected from phenyl, pyridyl, pyrimidyl, thienyl, pyrrolyl, pyrazolyl, or quinolinyl, wherein hydrogen atoms in the phenyl, pyridyl, pyrimidyl, thienyl, pyrrolyl, pyrazolyl, or quinolinyl ring are each independently optionally substituted with 1, 2, or 3 substituents, the substituents are each independently selected from F, Cl, Br, C_1-C_7 alkyl (optionally, methyl, ethyl, n-propyl, isopropyl, n-butyl, isobutyl, tert-butyl, sec-butyl, n-pentyl, 1-methylbutyl, 2-methylbutyl, 3-methylbutyl, isopentyl, 1-ethylpropyl, neopentyl, n-hexyl, 1-methylpentyl, 2-methylpentyl, 3-methylpentyl, isohexyl, 1,1-dimethylbutyl, 2,2-dimethylbutyl, 3,3-dimethylbutyl, 1,2-dimethylbutyl, 1,3-dimethylbutyl, 2,3-dimethylbutyl, 2-ethylbutyl, n-heptyl, 2-methylhexyl, 3-methylhexyl, 2,2-dimethylpentyl, 3,3-dimethylpentyl, 2,3-dimethylpentyl, 2,4-dimethylpentyl, 3-ethylpentyl, or 2,2,3-trimethylbutyl), $-CD_3$, $-OCD_3$, C_1-C_2 haloalkyl (such as $-CF_3$, $-CHF_2$, $-CH_2F$, $-CH_2CF_3$), $-OCH_3$, $-OC_2H_7$, $-OC_3H_7$, C_1-C_2 haloalkoxy (such as $-OCF_3$, $-OCHF_2$, $-OCH_2F$, $-OCH_2CF_3$);

optionally, Ar' is selected from Phenyl, pyridyl, or pyrimidinyl; optionally, Ar' is selected from phenyl, pyridin-3-yl, pyridin-4-yl, or pyrimidin-5-yl, and is optionally substituted with 1 or 2 substituents, the substituents are selected from F, Cl, Br, C_1-C_4 alkyl (such as methyl, ethyl, n-propyl, isopropyl, n-butyl), haloalkyl (such as $-CF_3$, $-CHF_2$, $-CH_2F$), or haloalkoxy (such as $-OCF_3$, $-OCHF_2$, $-OCH_2F$); optionally, the substituents are selected from F, Cl, $-CH_3$, $-CF_3$, or-OCF_3.

3. The compound of Formula (I) or a pharmaceutically acceptable salt thereof according to claim 1 or 2, wherein the compound of Formula (I) is selected from the following compounds:



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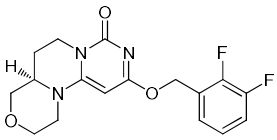

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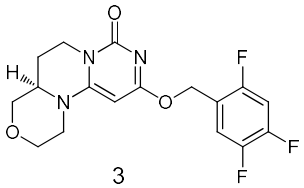

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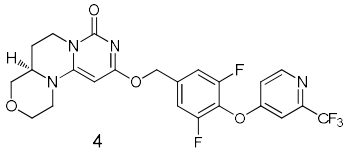

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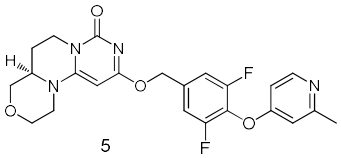

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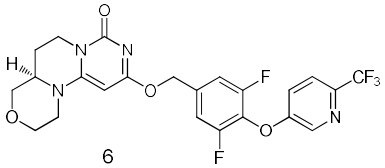

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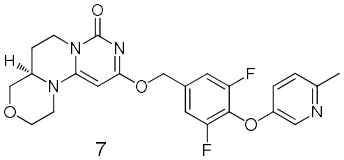

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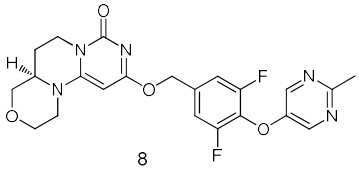

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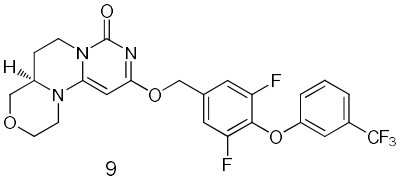

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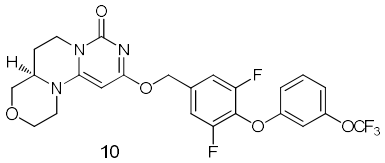

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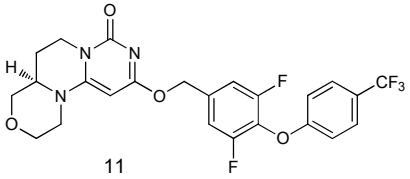

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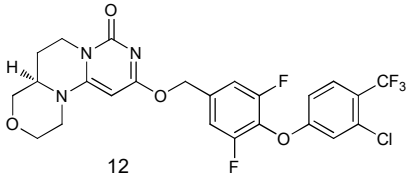

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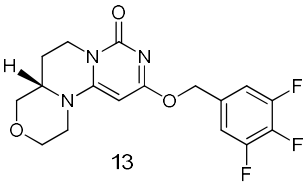

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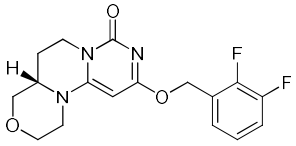

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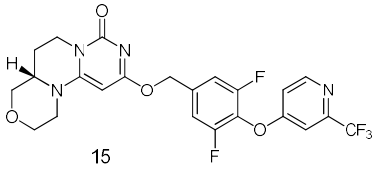

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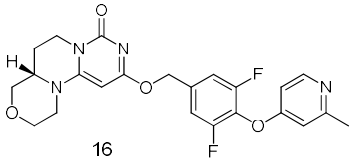

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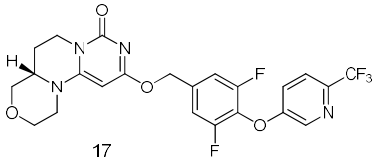

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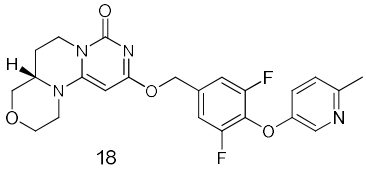

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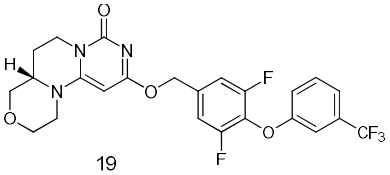

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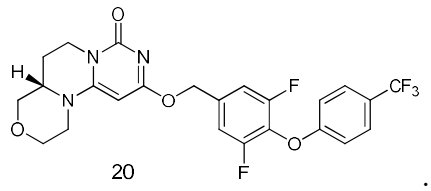

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4. The compound of Formula (I) or a pharmaceutically acceptable salt thereof according to any one of claims 1-3, wherein the pharmaceutically acceptable salt includes an anionic salt or cationic salt of the compound of Formula (I);

the pharmaceutically acceptable salt includes alkali metal salt, alkaline earth metal salt, or ammonium salt of the compound of Formula (I); the alkali metal includes sodium, potassium, lithium, or cesium, and the alkaline earth metal includes magnesium, calcium, or strontium;

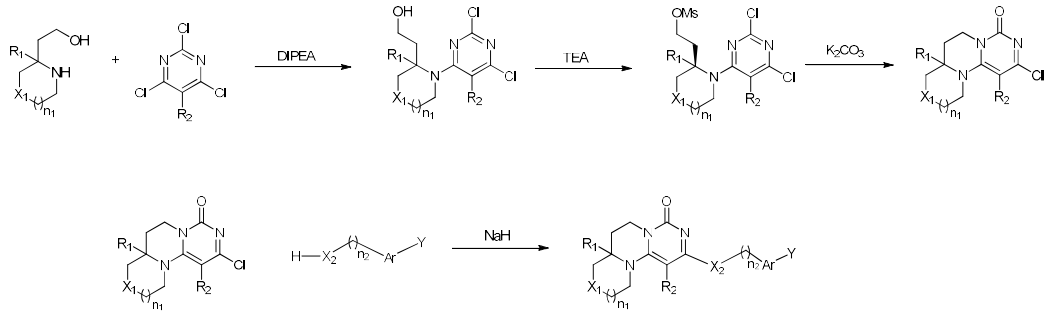
the pharmaceutically acceptable salt includes salt formed by the compound of Formula (I) and an organic base;

the organic base includes trialkylamine, pyridine, quinoline, piperidine, imidazole, picoline, dimethylaminopyridine, dimethylaniline, N-alkylmorpholine, 1,5-diazabicyclo[4.3.0]nonene-5, 1,8-diazabicyclo[5.4.0]undecene-7, 1,4-diazabicyclo[2.2.2] octane; the trialkylamine includes trimethylamine, triethylamine, or N-ethyldiisopropylamine; and the N-alkyl morpholine includes N-methylmorpholine;

the pharmaceutically acceptable salt includes salt formed by the compound of Formula (I) and an acid;

the acid includes inorganic acid, or organic acid; the inorganic acid includes hydrochloric acid, hydrobromic acid, hydroiodic acid, sulfuric acid, nitric acid, phosphoric acid, or carbonic acid; the organic acid includes formic acid, acetic acid, propionic acid, oxalic acid, malonic acid, succinic acid, fumaric acid, maleic acid, lactic acid, malic acid, citric acid, citric acid, tartaric acid, carbonic acid, picric acid, methanesulfonic acid, ethanesulfonic acid, p-toluenesulfonic acid, glutamic acid, or pamoic acid.

5. A preparation method of the compound of Formula (I) or its pharmaceutically acceptable salt according to any one of claims 1-4, comprises the following synthetic route:



In each of the formulas in the preparation method described above, n_1, n_2, R_1, R_2, X_1, X_2, Ar, and Y are defined as described in any one of claims 1-4.

6. A pharmaceutical composition comprises the compound of formula (I) according to any one of claims 1-4 or pharmaceutically acceptable salts thereof, and optionally a pharmaceutically acceptable carrier;

the dosage forms of the pharmaceutical composition include oral formulations, rectal formulations, or parenteral formulations;

the oral formulation includes solid or liquid formulation;

the solid formulation includes tablet, powder, granule, or capsule;

the liquid formulation includes aqueous or oily suspension, or syrup;

the parenteral formulation includes solution for injection, or aqueous or oily suspension.

7. Use of the compound of Formula (I) or a pharmaceutically acceptable salt thereof according to any one of claims 1-4, or the pharmaceutical composition according to claim 6, in the preparation of a Lp-PLA2 inhibitor.

8. Use of the compound of Formula (I) or a pharmaceutically acceptable salt thereof according to any one of claims 1-4, or the pharmaceutical composition according to claim 6, in the preparation of a medicament for treatment of neurodegeneration-related diseases;

optionally, the neurodegeneration-related diseases include Alzheimer's disease (AD), glaucoma, and age-related macular degeneration (AMD).

9. Use of the compound of Formula (I) or a pharmaceutically acceptable salt thereof according to any one of claims 1-4, or the pharmaceutical composition according to claim 6, in the preparation of a medicament for the treatment of cardiovascular diseases, diabetic macular edema (DME), or prostate diseases;

optionally, the cardiovascular diseases include atherosclerosis.