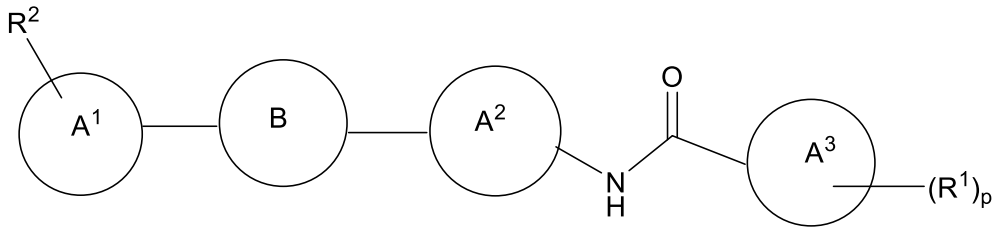
of Formula I as tracers in PET imaging to study alpha-synuclein deposits in brain *in vivo* to allow diagnosis of neurodegenerative diseases characterized by alpha-synuclein pathology. The invention further relates to a method of measuring clinical efficacy of therapeutic agents targeting alpha-synuclein pathology.

SUMMARY

[0008] The disclosure is directed to compounds of Formula I, pharmaceutical salts thereof, pharmaceutical compositions comprising them, diagnostic and therapeutic uses and processes for making such compounds. One aspect of the disclosure provides a compound of Formula I:



I

or a pharmaceutically acceptable salt thereof wherein;

R is independently selected from H, $–C_{1-6}$alkyl, OR^c or halo, where said alkyl is optionally substituted with one to three groups from $–C_{1-6}$alkyl, OR^c or halo;

R^a is independently selected from unsubstituted or substituted $–C_{1-6}$alkyl, said alkyl optionally substituted with 1 to 3 groups of R;

R^b is independently selected from $–C_{1-6}$alkyl, halo, $-(CH_2)_nOR^c$, -CN, $-NR^c_2$, $-(CH_2)_n$halogen, or $-O(CH_2)_n$halo;

R^c is independently selected from H or $–C_{1-6}$alkyl, where said alkyl is optionally substituted with one to three groups from $–C_{1-6}$alkyl, OR^d or halo;

R^d is independently selected from H or $–C_{1-6}$alkyl;

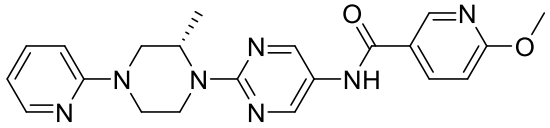
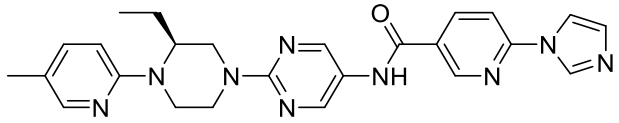
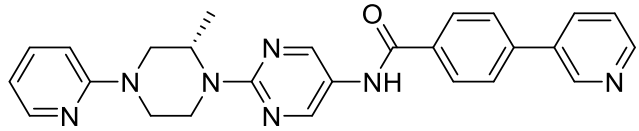
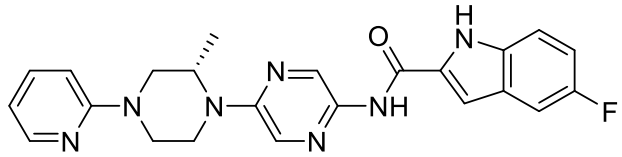
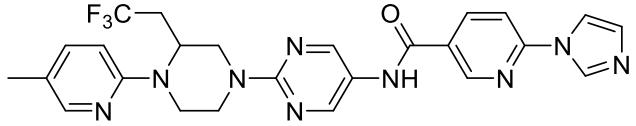
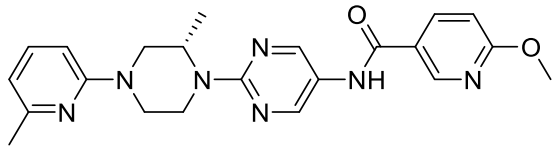
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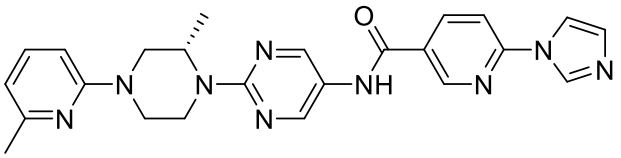
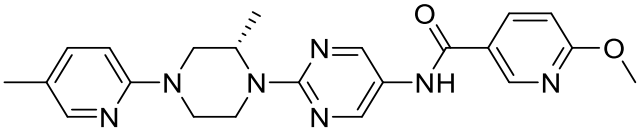
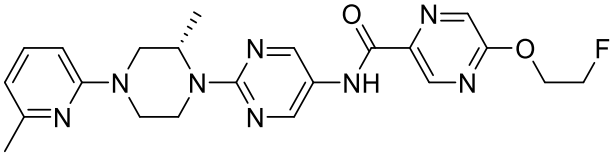
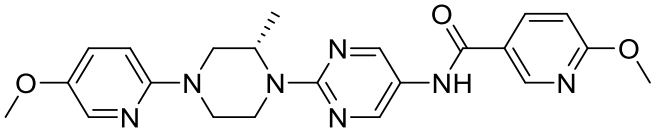
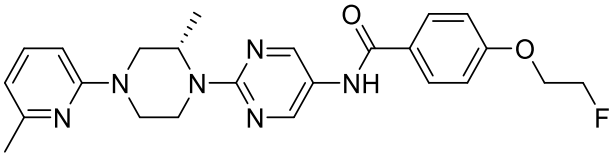
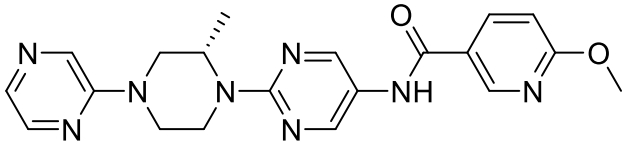
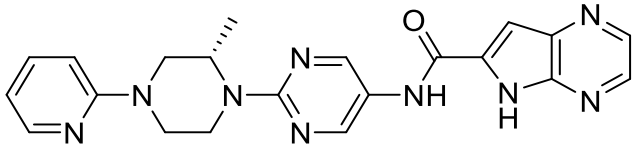
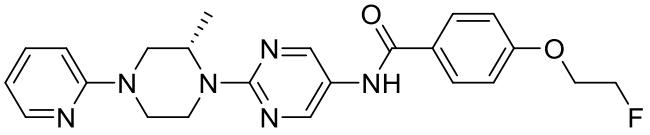
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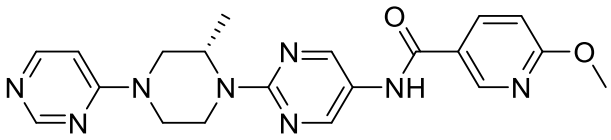
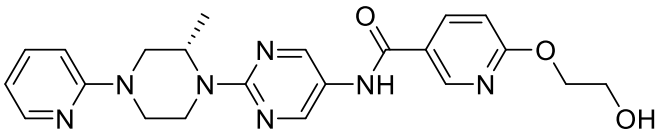
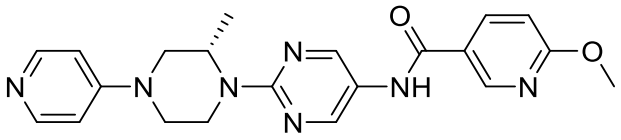
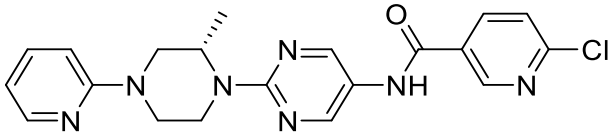
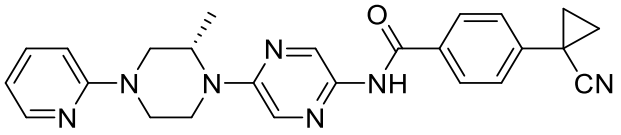
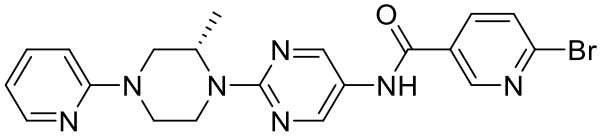
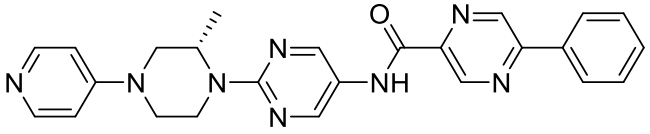
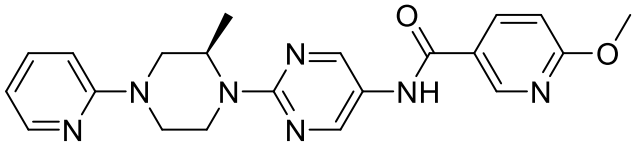
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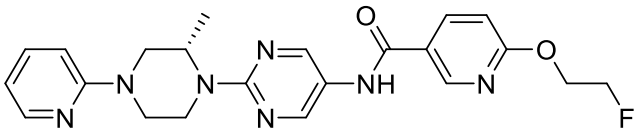
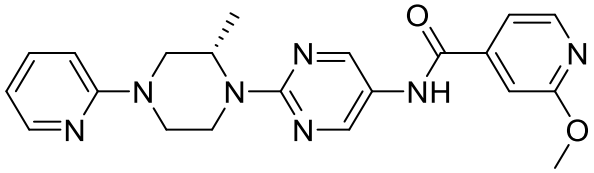
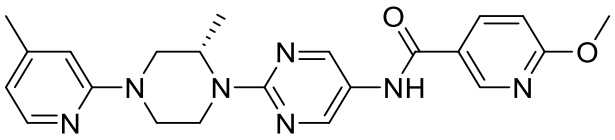
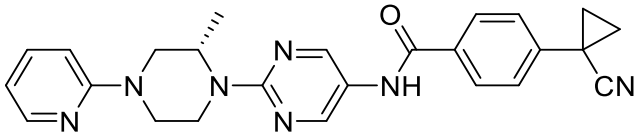
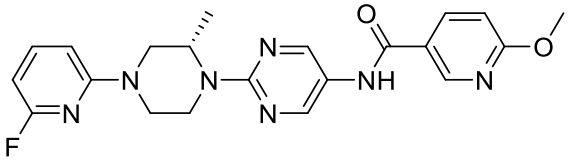
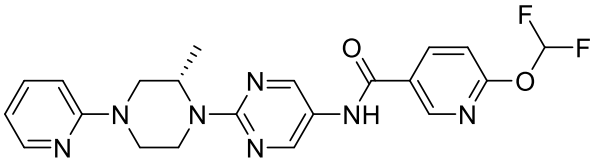
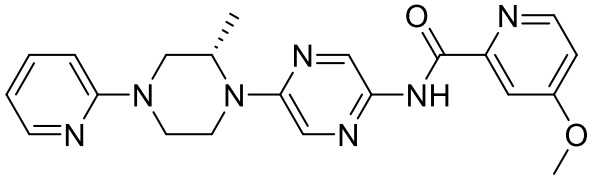
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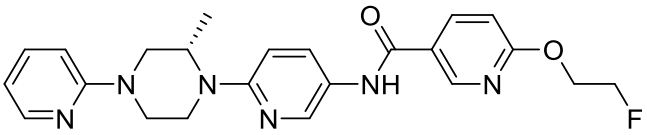
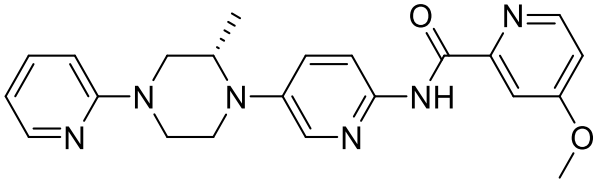
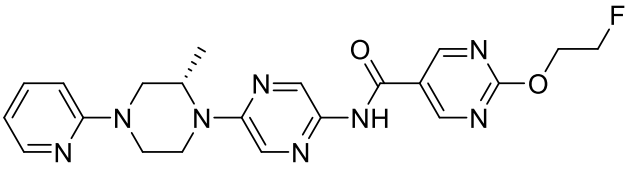
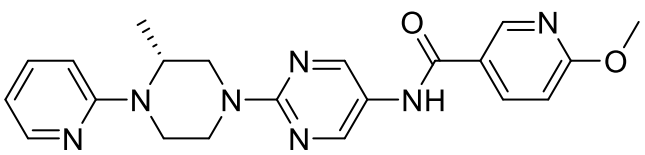
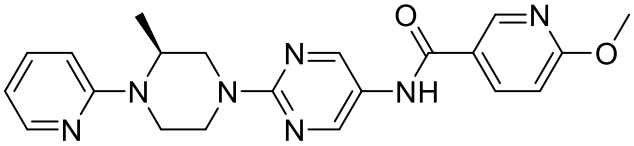
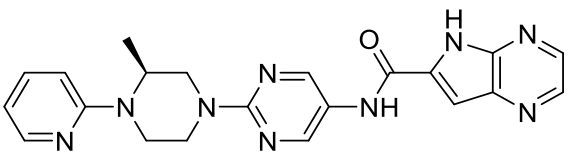
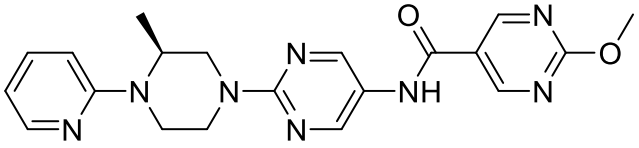
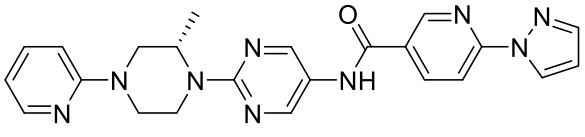
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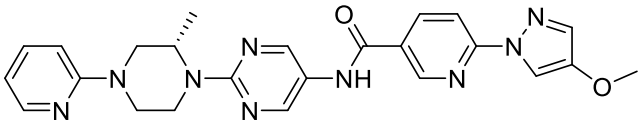
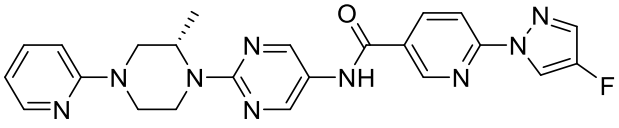
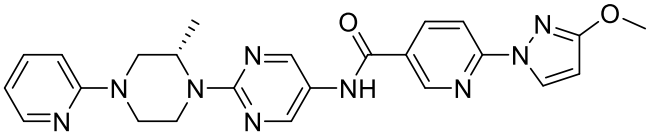
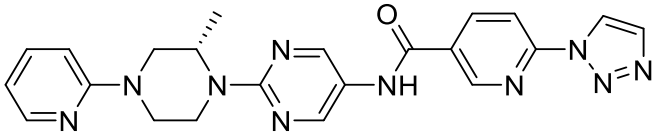
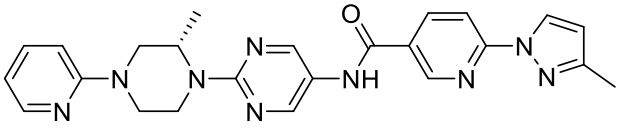
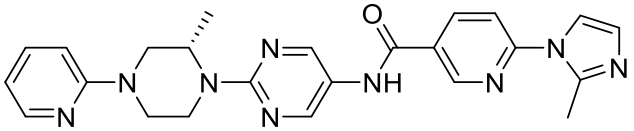
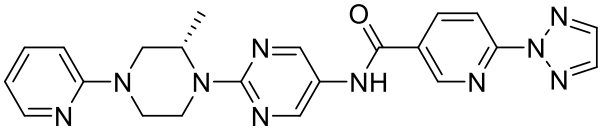
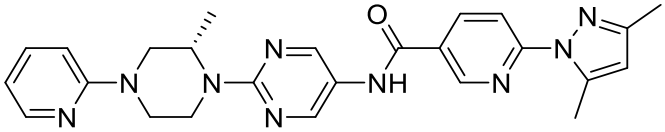
Ex. No.	Structure	Name
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2		N-[2-[(3S)-3-ethyl-4-(5-methyl-2-pyridyl)piperazin-1-yl]pyrimidin-5-yl]-6-imidazol-1-yl-pyridine-3-carboxamide
3		N-[2-[(2S)-2-methyl-4-(2-pyridyl)piperazin-1-yl]pyrimidin-5-yl]-4-(3-pyridyl)benzamide
4		5-fluoro-N-[5-[(2S)-2-methyl-4-(2-pyridyl)piperazin-1-yl]pyrazin-2-yl]-1H-indole-2-carboxamide
5		6-imidazol-1-yl-N-[2-[4-(5-methyl-2-pyridyl)-3-(2,2,2-trifluoroethyl)piperazin-1-yl]pyrimidin-5-yl]pyridine-3-carboxamide
6		6-methoxy-N-[2-[(2S)-2-methyl-4-(6-methyl-2-pyridyl)piperazin-1-yl]pyrimidin-5-yl]pyridine-3-carboxamide

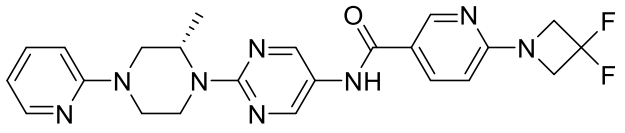
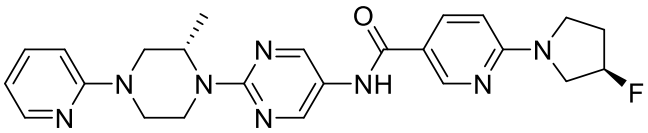
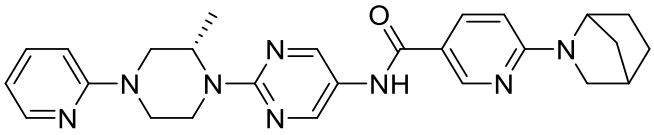
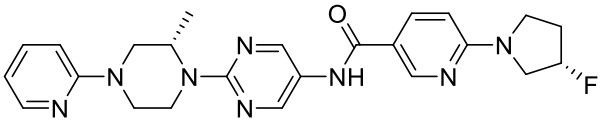
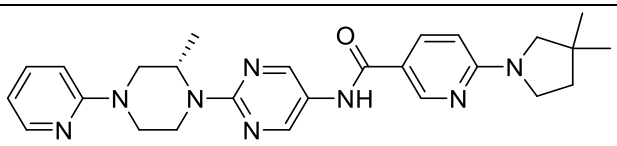
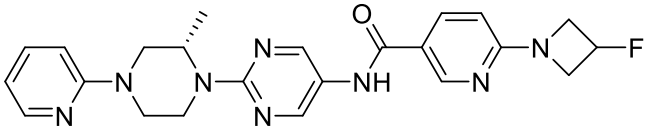
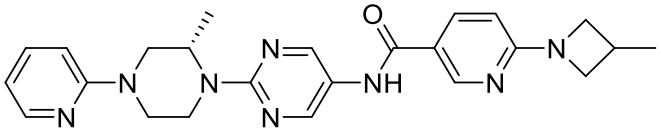
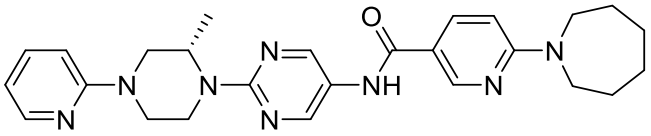
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8		6-methoxy-N-[2-[(2S)-2-methyl-4-(5-methyl-2-pyridyl)piperazin-1-yl]pyrimidin-5-yl]pyridine-3-carboxamide
9		5-(2-fluoroethoxy)-N-[2-[(2S)-2-methyl-4-(6-methyl-2-pyridyl)piperazin-1-yl]pyrimidin-5-yl]pyrazine-2-carboxamide
10		6-methoxy-N-[2-[(2S)-4-(5-methoxy-2-pyridyl)-2-methyl-piperazin-1-yl]pyrimidin-5-yl]pyridine-3-carboxamide
11		4-(2-fluoroethoxy)-N-[2-[(2S)-2-methyl-4-(6-methyl-2-pyridyl)piperazin-1-yl]pyrimidin-5-yl]benzamide
12		6-methoxy-N-[2-[(2S)-2-methyl-4-pyrazin-2-yl-piperazin-1-yl]pyrimidin-5-yl]pyridine-3-carboxamide
13		N-[5-[(2S)-2-methyl-4-(2-pyridyl)piperazin-1-yl]pyrazin-2-yl]-5H-pyrrolo[2,3-b]pyrazine-6-carboxamide
14		4-(2-fluoroethoxy)-N-[2-[(2S)-2-methyl-4-(2-pyridyl)piperazin-1-yl]pyrimidin-5-yl]benzamide

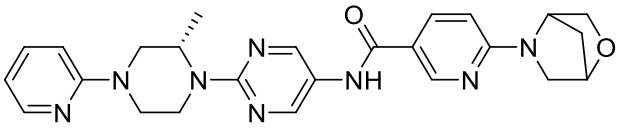
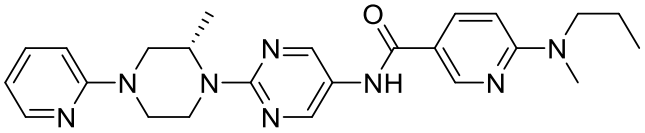
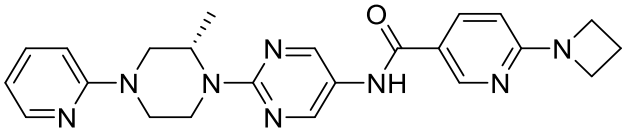
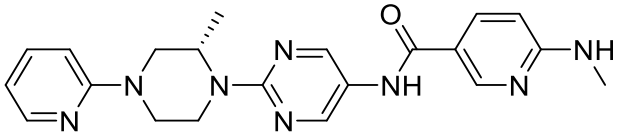
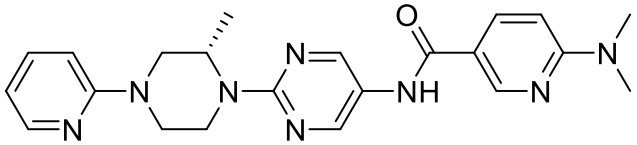
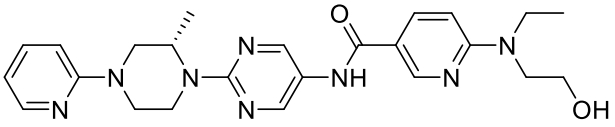
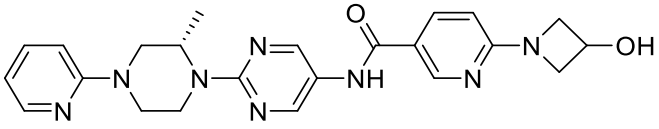
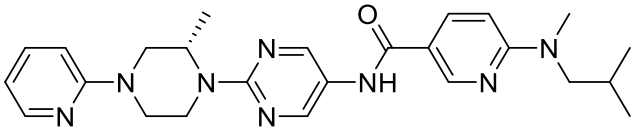
15		6-methoxy-N-[2-[(2S)-2-methyl-4-pyrimidin-4-yl-piperazin-1-yl]pyrimidin-5-yl]pyridine-3-carboxamide
16		6-(2-hydroxyethoxy)-N-[2-[(2S)-2-methyl-4-(2-pyridyl)piperazin-1-yl]pyrimidin-5-yl]pyridine-3-carboxamide
17		6-methoxy-N-[2-[(2S)-2-methyl-4-(4-pyridyl)piperazin-1-yl]pyrimidin-5-yl]pyridine-3-carboxamide
18		6-chloro-N-[2-[(2S)-2-methyl-4-(2-pyridyl)piperazin-1-yl]pyrimidin-5-yl]pyridine-3-carboxamide
19		4-(1-cyanocyclopropyl)-N-[5-[(2S)-2-methyl-4-(2-pyridyl)piperazin-1-yl]pyrazin-2-yl]benzamide
20		6-bromo-N-[2-[(2S)-2-methyl-4-(2-pyridyl)piperazin-1-yl]pyrimidin-5-yl]pyridine-3-carboxamide
21		N-[2-[(2S)-2-methyl-4-(2-pyridyl)piperazin-1-yl]pyrimidin-5-yl]-5-phenyl-pyrazine-2-carboxamide
22		6-methoxy-N-[2-[(2R)-2-methyl-4-(2-pyridyl)piperazin-1-yl]pyrimidin-5-yl]pyridine-3-carboxamide

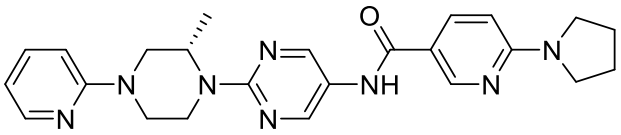
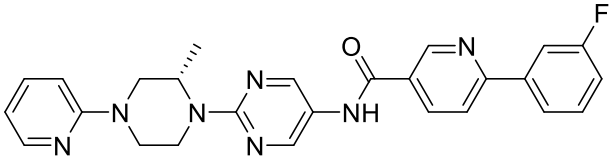
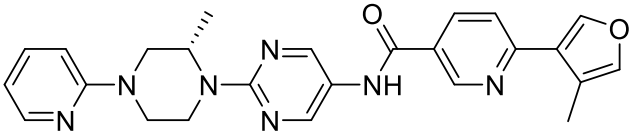
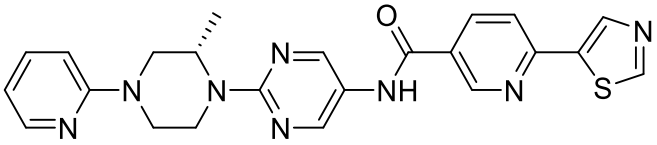
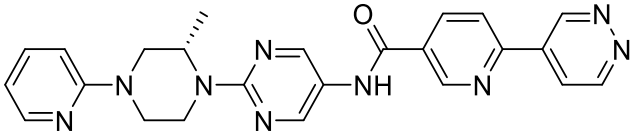
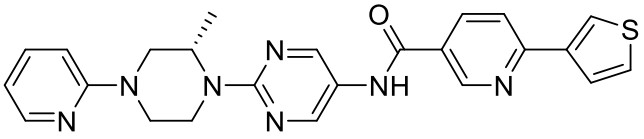
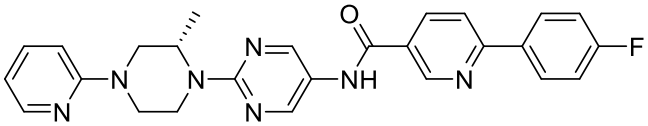
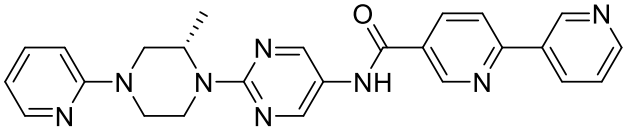
23		6-(2-fluoroethoxy)-N-[2-[(2S)-2-methyl-4-(2-pyridyl)piperazin-1-yl]pyrimidin-5-yl]pyridine-3-carboxamide
24		2-methoxy-N-[2-[(2S)-2-methyl-4-(2-pyridyl)piperazin-1-yl]pyrimidin-5-yl]pyridine-4-carboxamide
25		6-methoxy-N-[2-[(2S)-2-methyl-4-(4-methyl-2-pyridyl)piperazin-1-yl]pyrimidin-5-yl]pyridine-3-carboxamide
26		4-(1-cyanocyclopropyl)-N-[2-[(2S)-2-methyl-4-(2-pyridyl)piperazin-1-yl]pyrimidin-5-yl]benzamide
27		N-[2-[(2S)-4-(6-fluoro-2-pyridyl)-2-methyl-piperazin-1-yl]pyrimidin-5-yl]-6-methoxy-pyridine-3-carboxamide
28		6-(difluoromethoxy)-N-[2-[(2S)-2-methyl-4-(2-pyridyl)piperazin-1-yl]pyrimidin-5-yl]pyridine-3-carboxamide
29		4-methoxy-N-[5-[(2S)-2-methyl-4-(2-pyridyl)piperazin-1-yl]pyrazin-2-yl]pyridine-2-carboxamide

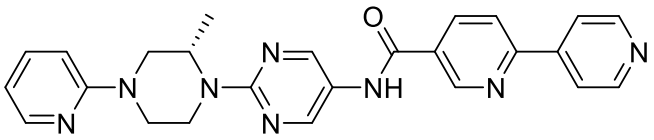
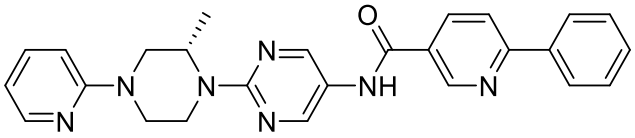
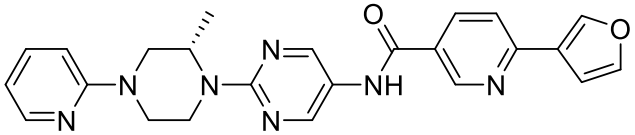
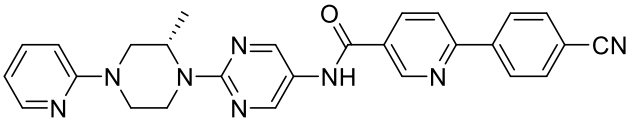
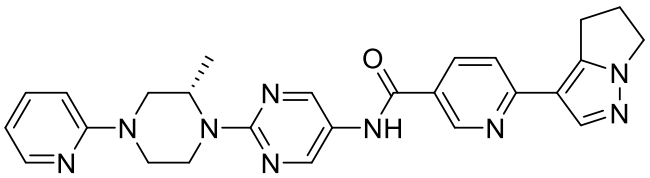
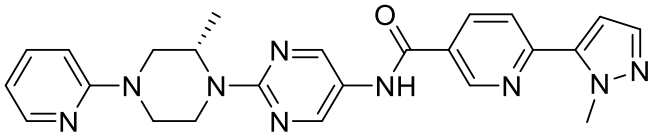
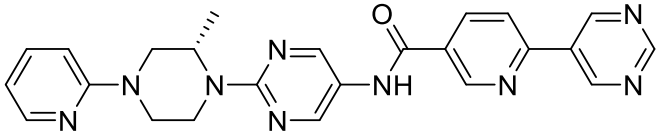
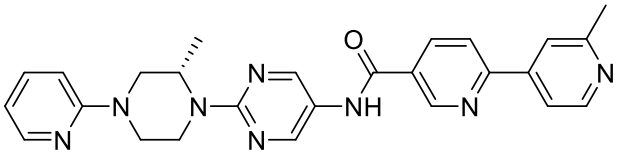
30		6-(2-fluoroethoxy)-N-[6-[(2S)-2-methyl-4-(2-pyridyl)piperazin-1-yl]-3-pyridyl]pyridine-3-carboxamide
31		4-methoxy-N-[5-[(2S)-2-methyl-4-(2-pyridyl)piperazin-1-yl]-2-pyridyl]pyridine-2-carboxamide
32		2-(2-fluoroethoxy)-N-[5-[(2S)-2-methyl-4-(2-pyridyl)piperazin-1-yl]pyrazin-2-yl]pyrimidine-5-carboxamide
33		6-methoxy-N-[2-[(3R)-3-methyl-4-(2-pyridyl)piperazin-1-yl]pyrimidin-5-yl]pyridine-3-carboxamide
34		6-methoxy-N-[2-[(3S)-3-methyl-4-(2-pyridyl)piperazin-1-yl]pyrimidin-5-yl]pyridine-3-carboxamide
35		N-[2-[(3S)-3-methyl-4-(2-pyridyl)piperazin-1-yl]pyrimidin-5-yl]-5H-pyrrolo[2,3-b]pyrazine-6-carboxamide
36		2-methoxy-N-[2-[(3S)-3-methyl-4-(2-pyridyl)piperazin-1-yl]pyrimidin-5-yl]pyrimidine-5-carboxamide
37		N-[2-[(2S)-2-methyl-4-(2-pyridyl)piperazin-1-yl]pyrimidin-5-yl]-6-pyrazol-1-yl-pyridine-3-carboxamide

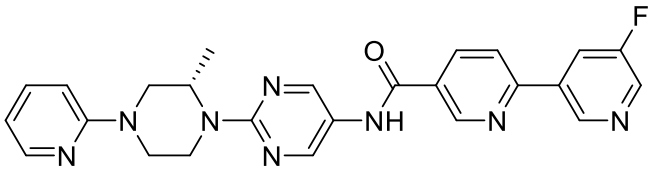
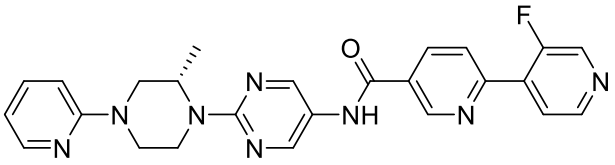
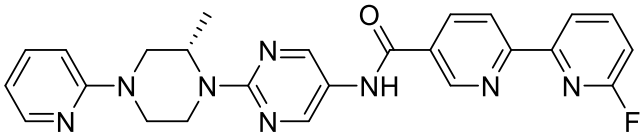
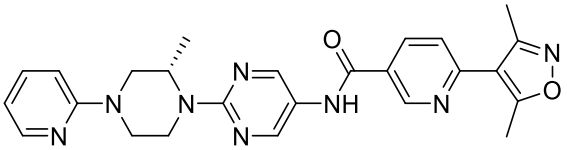
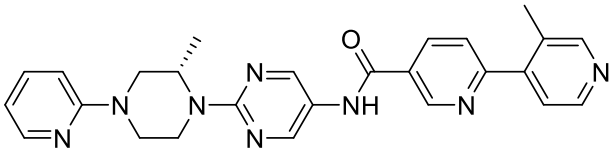
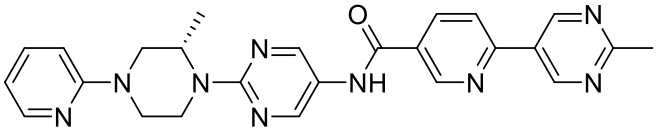
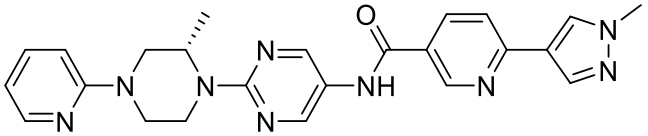
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39		6-(4-fluoropyrazol-1-yl)-N-[2-[(2S)-2-methyl-4-(2-pyridyl)piperazin-1-yl]pyrimidin-5-yl]pyridine-3-carboxamide
40		6-(3-methoxypyrazol-1-yl)-N-[2-[(2S)-2-methyl-4-(2-pyridyl)piperazin-1-yl]pyrimidin-5-yl]pyridine-3-carboxamide
41		N-[2-[(2S)-2-methyl-4-(2-pyridyl)piperazin-1-yl]pyrimidin-5-yl]-6-(triazol-1-yl)pyridine-3-carboxamide
42		6-(3-methylpyrazol-1-yl)-N-[2-[(2S)-2-methyl-4-(2-pyridyl)piperazin-1-yl]pyrimidin-5-yl]pyridine-3-carboxamide
43		6-(2-methylimidazol-1-yl)-N-[2-[(2S)-2-methyl-4-(2-pyridyl)piperazin-1-yl]pyrimidin-5-yl]pyridine-3-carboxamide
44		(S)-N-(2-(2-methyl-4-(pyridin-2-yl)piperazin-1-yl)pyrimidin-5-yl)-6-(2H-1,2,3-triazol-2-yl)nicotinamide
45		6-(3,5-dimethylpyrazol-1-yl)-N-[2-[(2S)-2-methyl-4-(2-pyridyl)piperazin-1-yl]pyrimidin-5-yl]pyridine-3-carboxamide

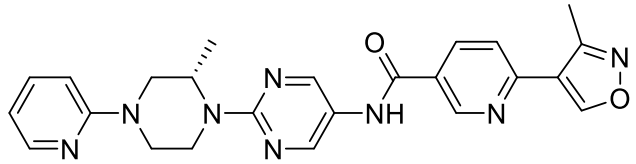
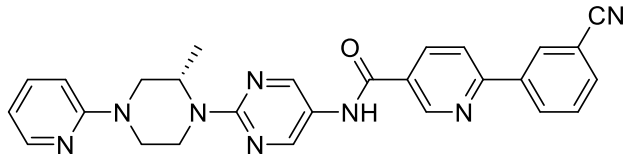
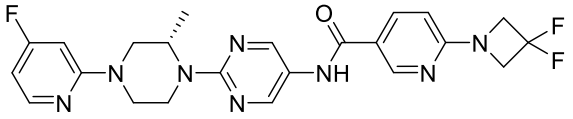
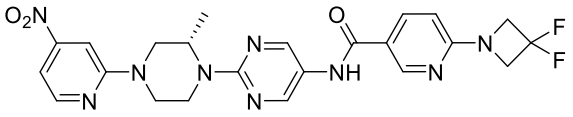
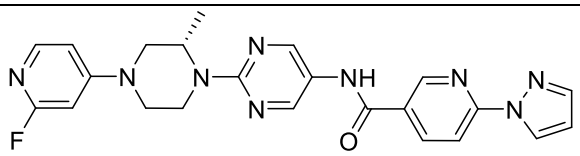
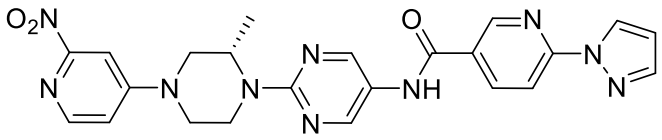
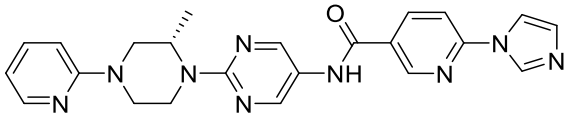
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47		6-[(3R)-3-fluoropyrrolidin-1-yl]-N-[2-[(2S)-2-methyl-4-(2-pyridyl)piperazin-1-yl]pyrimidin-5-yl]pyridine-3-carboxamide
48		6-[rac-(4S)-2-azabicyclo[2.2.1]heptan-2-yl]-N-[2-[rac-(2S)-2-methyl-4-(2-pyridyl)piperazin-1-yl]pyrimidin-5-yl]pyridine-3-carboxamide
49		6-[(3S)-3-fluoropyrrolidin-1-yl]-N-[2-[(2S)-2-methyl-4-(2-pyridyl)piperazin-1-yl]pyrimidin-5-yl]pyridine-3-carboxamide
50		6-(3,3-dimethylpyrrolidin-1-yl)-N-[2-[(2S)-2-methyl-4-(2-pyridyl)piperazin-1-yl]pyrimidin-5-yl]pyridine-3-carboxamide
51		6-(3-fluoroazetidin-1-yl)-N-[2-[(2S)-2-methyl-4-(6-methyl-2-pyridyl)piperazin-1-yl]pyrimidin-5-yl]pyridine-3-carboxamide
52		6-(3-methylazetidin-1-yl)-N-[2-[(2S)-2-methyl-4-(2-pyridyl)piperazin-1-yl]pyrimidin-5-yl]pyridine-3-carboxamide
53		6-(azepan-1-yl)-N-[2-[(2S)-2-methyl-4-(2-pyridyl)piperazin-1-yl]pyrimidin-5-yl]pyridine-3-carboxamide

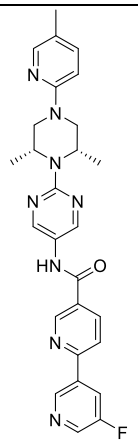
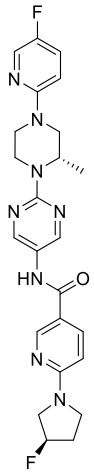
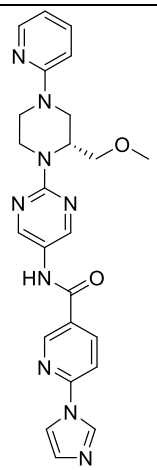
54		6-(2-oxa-5-azabicyclo[2.2.1]heptan-5-yl)-N-[2-[rac-(2S)-2-methyl-4-(2-pyridyl)piperazin-1-yl]pyrimidin-5-yl]pyridine-3-carboxamide
55		6-[methyl(propyl)amino]-N-[2-[(2S)-2-methyl-4-(2-pyridyl)piperazin-1-yl]pyrimidin-5-yl]pyridine-3-carboxamide
56		6-(azetidin-1-yl)-N-[2-[(2S)-2-methyl-4-(2-pyridyl)piperazin-1-yl]pyrimidin-5-yl]pyridine-3-carboxamide
57		6-(methylamino)-N-[2-[(2S)-2-methyl-4-(2-pyridyl)piperazin-1-yl]pyrimidin-5-yl]pyridine-3-carboxamide
58		6-(dimethylamino)-N-[2-[(2S)-2-methyl-4-(6-methyl-2-pyridyl)piperazin-1-yl]pyrimidin-5-yl]pyridine-3-carboxamide
59		6-[ethyl(2-hydroxyethyl)amino]-N-[2-[(2S)-2-methyl-4-(2-pyridyl)piperazin-1-yl]pyrimidin-5-yl]pyridine-3-carboxamide
60		6-(3-hydroxyazetidin-1-yl)-N-[2-[(2S)-2-methyl-4-(2-pyridyl)piperazin-1-yl]pyrimidin-5-yl]pyridine-3-carboxamide
61		6-[isobutyl(methyl)amino]-N-[2-[(2S)-2-methyl-4-(2-pyridyl)piperazin-1-yl]pyrimidin-5-yl]pyridine-3-carboxamide

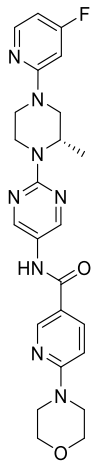
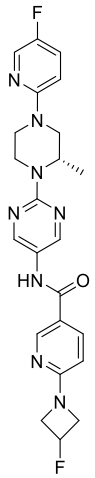
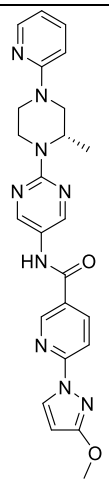
62		N-[2-[(2S)-2-methyl-4-(2-pyridyl)piperazin-1-yl]pyrimidin-5-yl]-6-pyrrolidin-1-yl-pyridine-3-carboxamide
63		6-(3-fluorophenyl)-N-[2-[(2S)-2-methyl-4-(2-pyridyl)piperazin-1-yl]pyrimidin-5-yl]pyridine-3-carboxamide
64		6-(4-methyl-3-furyl)-N-[2-[(2S)-2-methyl-4-(2-pyridyl)piperazin-1-yl]pyrimidin-5-yl]pyridine-3-carboxamide
65		N-[2-[(2S)-2-methyl-4-(2-pyridyl)piperazin-1-yl]pyrimidin-5-yl]-6-thiazol-5-yl-pyridine-3-carboxamide
66		N-[2-[(2S)-2-methyl-4-(2-pyridyl)piperazin-1-yl]pyrimidin-5-yl]-6-pyridazin-4-yl-pyridine-3-carboxamide
67		N-[2-[(2S)-2-methyl-4-(2-pyridyl)piperazin-1-yl]pyrimidin-5-yl]-6-(3-thienyl)pyridine-3-carboxamide
68		6-(4-fluorophenyl)-N-[2-[(2S)-2-methyl-4-(2-pyridyl)piperazin-1-yl]pyrimidin-5-yl]pyridine-3-carboxamide
69		N-[2-[(2S)-2-methyl-4-(2-pyridyl)piperazin-1-yl]pyrimidin-5-yl]-6-(3-pyridyl)pyridine-3-carboxamide

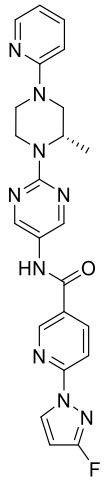
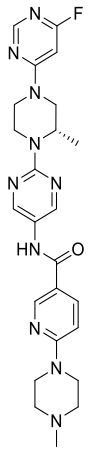
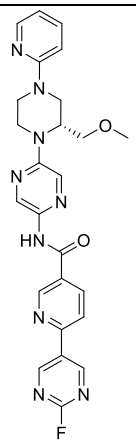
70		N-[2-[(2S)-2-methyl-4-(2-pyridyl)piperazin-1-yl]pyrimidin-5-yl]-6-(4-pyridyl)pyridine-3-carboxamide
71		N-[2-[(2S)-2-methyl-4-(2-pyridyl)piperazin-1-yl]pyrimidin-5-yl]-6-phenyl-pyridine-3-carboxamide
72		6-(3-furyl)-N-[2-[(2S)-2-methyl-4-(2-pyridyl)piperazin-1-yl]pyrimidin-5-yl]pyridine-3-carboxamide
73		6-(4-cyanophenyl)-N-[2-[(2S)-2-methyl-4-(2-pyridyl)piperazin-1-yl]pyrimidin-5-yl]pyridine-3-carboxamide
74		6-(5,6-dihydro-4H-pyrrolo[1,2-b]pyrazol-3-yl)-N-[2-[(2S)-2-methyl-4-(2-pyridyl)piperazin-1-yl]pyrimidin-5-yl]pyridine-3-carboxamide
75		6-(2-methylpyrazol-3-yl)-N-[2-[(2S)-2-methyl-4-(2-pyridyl)piperazin-1-yl]pyrimidin-5-yl]pyridine-3-carboxamide
76		N-[2-[(2S)-2-methyl-4-(2-pyridyl)piperazin-1-yl]pyrimidin-5-yl]-6-pyrimidin-5-yl-pyridine-3-carboxamide
77		6-(2-methyl-4-pyridyl)-N-[2-[(2S)-2-methyl-4-(2-pyridyl)piperazin-1-yl]pyrimidin-5-yl]pyridine-3-carboxamide

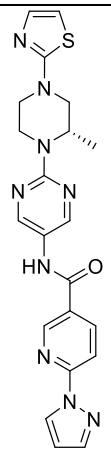
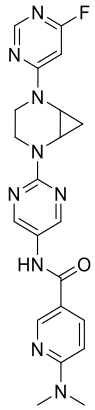
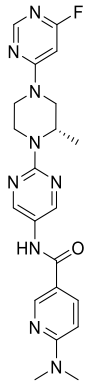
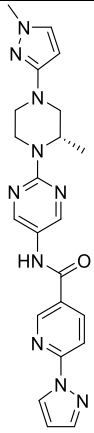
78		6-(5-fluoro-3-pyridyl)-N-[2-[(2S)-2-methyl-4-(2-pyridyl)piperazin-1-yl]pyrimidin-5-yl]pyridine-3-carboxamide
79		6-(3-fluoro-4-pyridyl)-N-[2-[(2S)-2-methyl-4-(2-pyridyl)piperazin-1-yl]pyrimidin-5-yl]pyridine-3-carboxamide
80		6-(6-fluoro-2-pyridyl)-N-[2-[(2S)-2-methyl-4-(2-pyridyl)piperazin-1-yl]pyrimidin-5-yl]pyridine-3-carboxamide
81		6-(3,5-dimethylisoxazol-4-yl)-N-[2-[(2S)-2-methyl-4-(2-pyridyl)piperazin-1-yl]pyrimidin-5-yl]pyridine-3-carboxamide
82		6-(3-methyl-4-pyridyl)-N-[2-[(2S)-2-methyl-4-(2-pyridyl)piperazin-1-yl]pyrimidin-5-yl]pyridine-3-carboxamide
83		N-[2-[(2S)-2-methyl-4-(2-pyridyl)piperazin-1-yl]pyrimidin-5-yl]-6-(2-methylpyrimidin-5-yl)pyridine-3-carboxamide
84		6-(1-methylpyrazol-4-yl)-N-[2-[(2S)-2-methyl-4-(2-pyridyl)piperazin-1-yl]pyrimidin-5-yl]pyridine-3-carboxamide

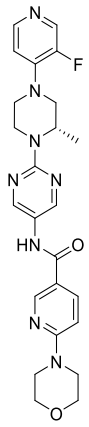
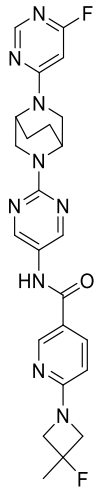
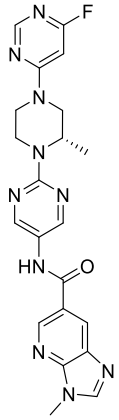
85		6-(3-methylisoxazol-4-yl)-N-[2-[(2S)-2-methyl-4-(2-pyridyl)piperazin-1-yl]pyrimidin-5-yl]pyridine-3-carboxamide
86		4-(3-cyanophenyl)-N-[2-[(2S)-2-methyl-4-(2-pyridyl)piperazin-1-yl]pyrimidin-5-yl]benzamide
87		(S)-6-(3,3-difluoroazetidin-1-yl)-N-(2-(4-(4-fluoropyridin-2-yl)-2-methylpiperazin-1-yl)pyrimidin-5-yl)nicotinamide
88		(S)-6-(3,3-difluoroazetidin-1-yl)-N-(2-(2-methyl-4-(4-nitropyridin-2-yl)piperazin-1-yl)pyrimidin-5-yl)nicotinamide
89		(S)-N-(2-(4-(2-fluoropyridin-4-yl)-2-methylpiperazin-1-yl)pyrimidin-5-yl)-6-(1H-pyrazol-1-yl)nicotinamide
90		(S)-N-(2-(2-methyl-4-(2-nitropyridin-4-yl)piperazin-1-yl)pyrimidin-5-yl)-6-(1H-pyrazol-1-yl)nicotinamide
91		(S)-6-(1H-imidazol-1-yl)-N-(2-(2-methyl-4-(pyridin-2-yl)piperazin-1-yl)pyrimidin-5-yl)nicotinamide

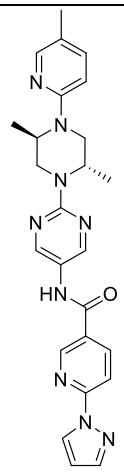
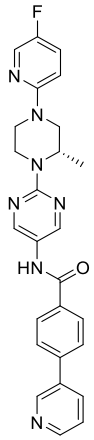
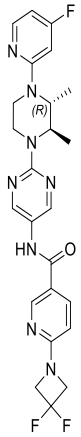
92		N-(2-((2S,6R)-2,6-dimethyl-4-(5-methylpyridin-2-yl)piperazin-1-yl)pyrimidin-5-yl)-5'-fluoro-[2,3'-bipyridine]-5-carboxamide
93		N-(2-((S)-4-(5-fluoropyridin-2-yl)-2-methylpiperazin-1-yl)pyrimidin-5-yl)-6-((R)-3-fluoropyrrolidin-1-yl)nicotinamide
94		(R)-6-(1H-imidazol-1-yl)-N-(2-(2-(methoxymethyl)-4-(pyridin-2-yl)piperazin-1-yl)pyrimidin-5-yl)nicotinamide

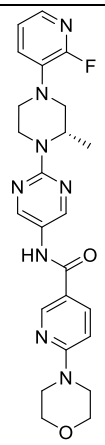
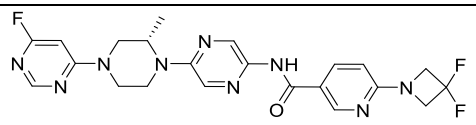
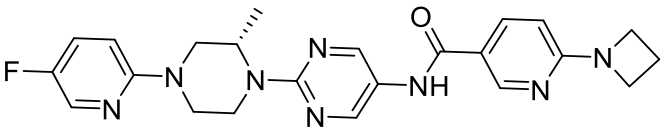
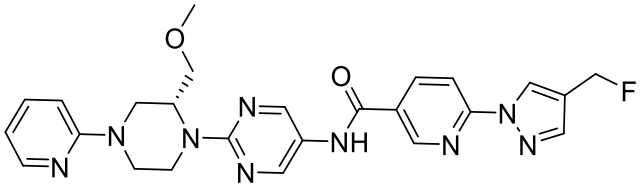
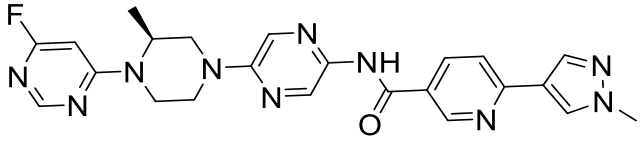
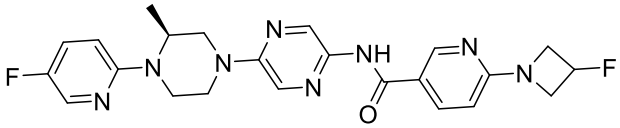
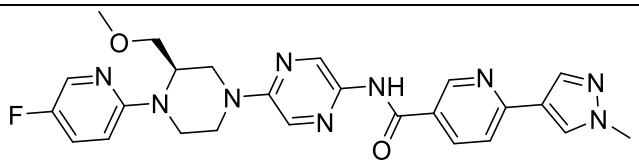
95		(S)-N-(2-(4-(4-fluoropyridin-2-yl)-2-methylpiperazin-1-yl)pyrimidin-5-yl)-6-morpholinonicotinamide
96		(S)-6-(3-fluoroazetidin-1-yl)-N-(2-(4-(5-fluoropyridin-2-yl)-2-methylpiperazin-1-yl)pyrimidin-5-yl)nicotinamide
97		(S)-6-(3-methoxy-1H-pyrazol-1-yl)-N-(2-(2-methyl-4-(pyridin-2-yl)piperazin-1-yl)pyrimidin-5-yl)nicotinamide

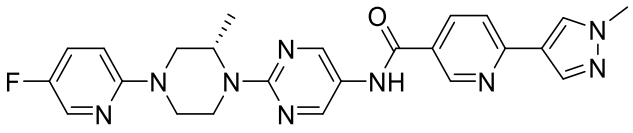
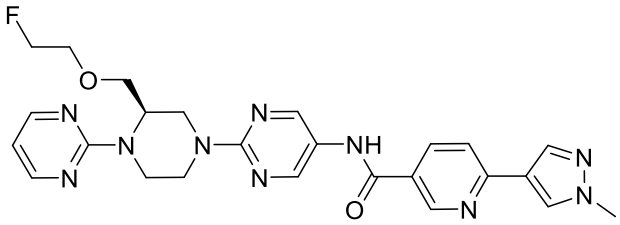
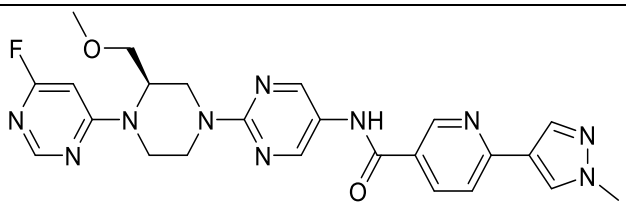
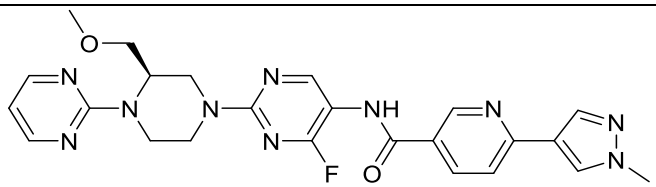
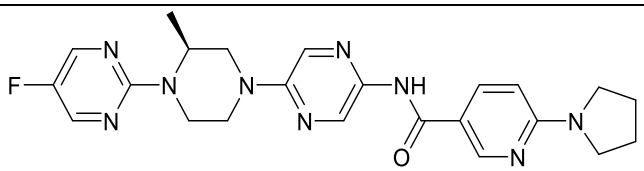
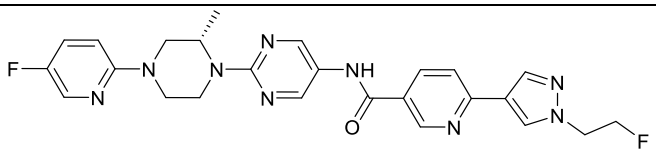
98		(S)-6-(3-fluoro-1H-pyrazol-1-yl)-N-(2-(2-methyl-4-(pyridin-2-yl)piperazin-1-yl)pyrimidin-5-yl)nicotinamide
99		(S)-N-(2-(4-(6-fluoropyrimidin-4-yl)-2-methylpiperazin-1-yl)pyrimidin-5-yl)-6-(4-methylpiperazin-1-yl)nicotinamide
100		(R)-6-(2-fluoropyrimidin-5-yl)-N-(5-(2-(methoxymethyl)-4-(pyridin-2-yl)piperazin-1-yl)pyrazin-2-yl)nicotinamide

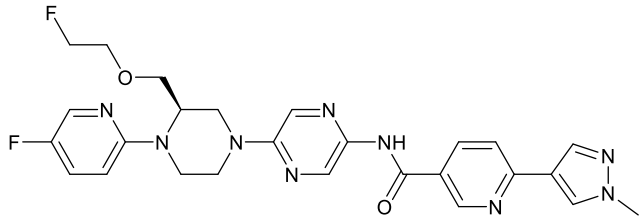
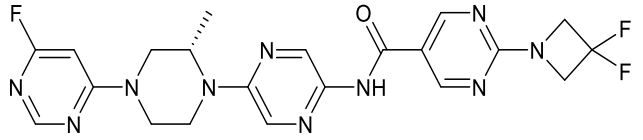
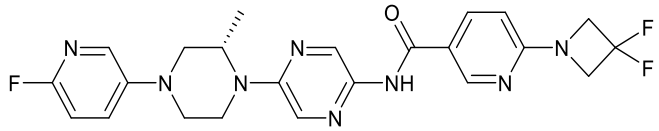
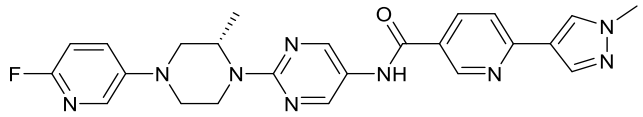
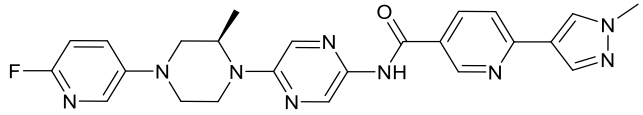
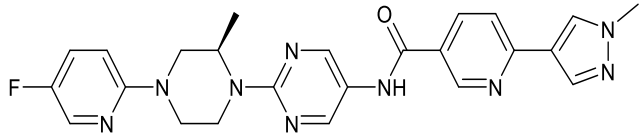
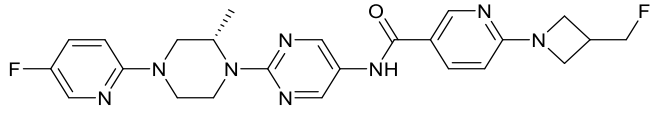
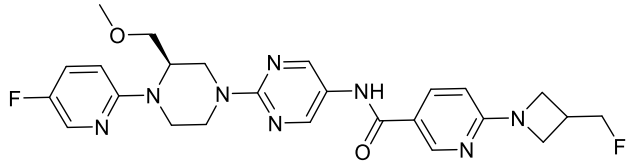
101		(S)-N-(2-(2-methyl-4-(thiazol-2-yl)piperazin-1-yl)pyrimidin-5-yl)-6-(1H-pyrazol-1-yl)nicotinamide
102		6-(dimethylamino)-N-(2-(5-(6-fluoropyrimidin-4-yl)-2,5-diazabicyclo[4.1.0]heptan-2-yl)pyrimidin-5-yl)nicotinamide
103		(S)-6-(dimethylamino)-N-(2-(4-(6-fluoropyrimidin-4-yl)-2-methylpiperazin-1-yl)pyrimidin-5-yl)nicotinamide
104		(S)-N-(2-(2-methyl-4-(1-methyl-1H-pyrazol-3-yl)piperazin-1-yl)pyrimidin-5-yl)-6-(1H-pyrazol-1-yl)nicotinamide

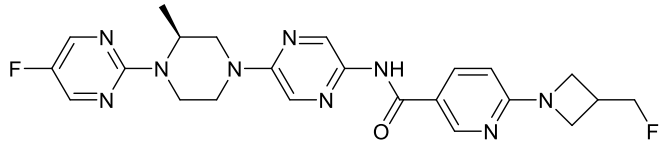
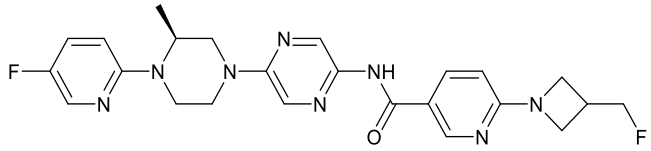
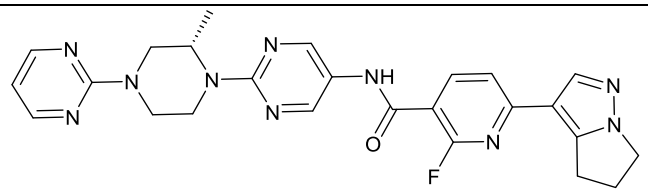
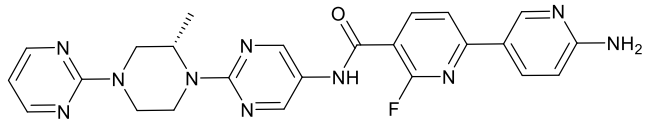
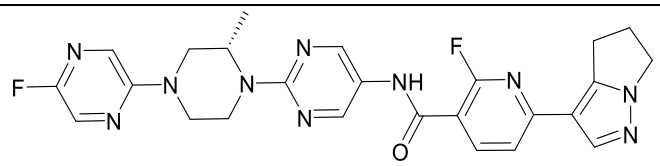
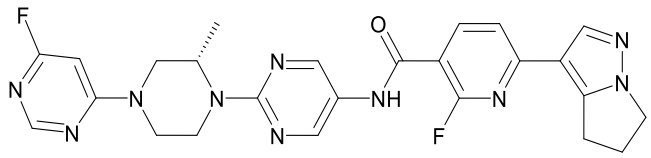
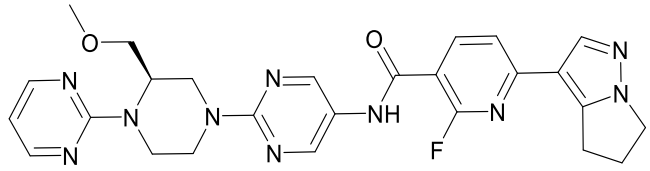
105		(S)-N-(2-(4-(3-fluoropyridin-4-yl)-2-methylpiperazin-1-yl)pyrimidin-5-yl)-6-morpholinonicotinamide
106		6-(3-fluoro-3-methylazetidin-1-yl)-N-(2-(5-(6-fluoropyrimidin-4-yl)-2,5-diazabicyclo[2.2.2]octan-2-yl)pyrimidin-5-yl)nicotinamide
107		(S)-N-(2-(4-(6-fluoropyrimidin-4-yl)-2-methylpiperazin-1-yl)pyrimidin-5-yl)-3-methyl-3H-imidazo[4,5-b]pyridine-6-carboxamide

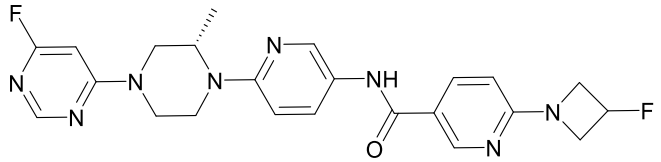
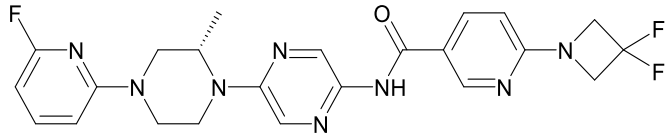
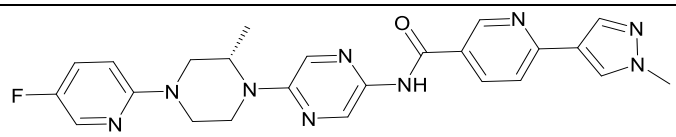
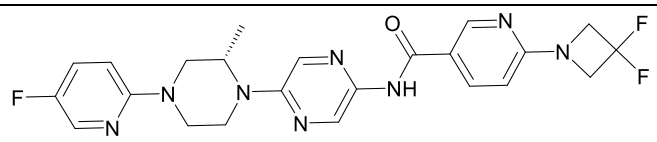
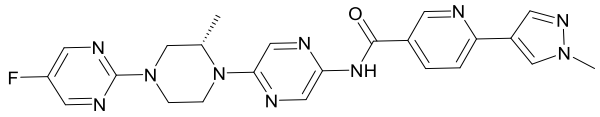
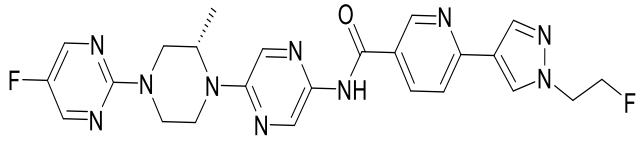
108		N-(2-((2S,5R)-2,5-dimethyl-4-(5-methylpyridin-2-yl)piperazin-1-yl)pyrimidin-5-yl)-6-(1H-pyrazol-1-yl)nicotinamide
109		(S)-N-(2-(4-(5-fluoropyridin-2-yl)-2-methylpiperazin-1-yl)pyrimidin-5-yl)-4-(pyridin-3-yl)benzamide
110		6-(3,3-difluoroazetidin-1-yl)-N-(2-((2R,3R)-4-(4-fluoropyridin-2-yl)-2,3-dimethylpiperazin-1-yl)pyrimidin-5-yl)nicotinamide

111		(S)-N-(2-(4-(2-fluoropyridin-3-yl)-2-methylpiperazin-1-yl)pyrimidin-5-yl)-6-morpholinonicotinamide
112		(S)-6-(3,3-difluoroazetidin-1-yl)-N-(5-(4-(6-fluoropyrimidin-4-yl)-2-methylpiperazin-1-yl)pyrazin-2-yl)nicotinamide
113		(S)-6-(azetidin-1-yl)-N-(2-(4-(5-fluoropyridin-2-yl)-2-methylpiperazin-1-yl)pyrimidin-5-yl)nicotinamide
114		(R)-6-(4-(fluoromethyl)-1H-pyrazol-1-yl)-N-(2-(2-(methoxymethyl)-4-(pyridin-2-yl)piperazin-1-yl)pyrimidin-5-yl)nicotinamide
115		(S)-N-(5-(4-(6-fluoropyrimidin-4-yl)-3-methylpiperazin-1-yl)pyrazin-2-yl)-6-(1-methyl-1H-pyrazol-4-yl)nicotinamide
116		(S)-6-(3-fluoroazetidin-1-yl)-N-(5-(4-(5-fluoropyridin-2-yl)-3-methylpiperazin-1-yl)pyrazin-2-yl)nicotinamide
117		(R)-N-(5-(4-(5-fluoropyridin-2-yl)-3-(methoxymethyl)piperazin-

		1-yl)pyrazin-2-yl)-6-(1-methyl-1H-pyrazol-4-yl)nicotinamide
118		(S)-N-(2-(4-(5-fluoropyridin-2-yl)-2-methylpiperazin-1-yl)pyrimidin-5-yl)-6-(1-methyl-1H-pyrazol-4-yl)nicotinamide
119		(R)-N-(2-(3-((2-fluoroethoxy)methyl)-4-(pyrimidin-2-yl)piperazin-1-yl)pyrimidin-5-yl)-6-(1-methyl-1H-pyrazol-4-yl)nicotinamide
120		(R)-N-(2-(4-(6-fluoropyrimidin-4-yl)-3-(methoxymethyl)piperazin-1-yl)pyrimidin-5-yl)-6-(1-methyl-1H-pyrazol-4-yl)nicotinamide
121		(R)-N-(4-fluoro-2-(3-(methoxymethyl)-4-(pyrimidin-2-yl)piperazin-1-yl)pyrimidin-5-yl)-6-(1-methyl-1H-pyrazol-4-yl)nicotinamide
122		(S)-N-(5-(4-(5-fluoropyrimidin-2-yl)-3-methylpiperazin-1-yl)pyrazin-2-yl)-6-(pyrrolidin-1-yl)nicotinamide
123		(S)-6-(1-(2-fluoroethyl)-1H-pyrazol-4-yl)-N-(2-(4-(5-fluoropyridin-2-yl)-2-methylpiperazin-1-yl)pyrimidin-5-yl)nicotinamide

124		(R)-N-(5-(3-((2-fluoroethoxy)methyl)-4-(5-fluoropyridin-2-yl)piperazin-1-yl)pyrazin-2-yl)-6-(1-methyl-1H-pyrazol-4-yl)nicotinamide
125		(S)-2-(3,3-difluoroazetidin-1-yl)-N-(5-(4-(6-fluoropyrimidin-4-yl)-2-methylpiperazin-1-yl)pyrazin-2-yl)pyrimidine-5-carboxamide
126		(S)-6-(3,3-difluoroazetidin-1-yl)-N-(5-(4-(6-fluoropyridin-3-yl)-2-methylpiperazin-1-yl)pyrazin-2-yl)nicotinamide
127		(S)-N-(2-(4-(6-fluoropyridin-3-yl)-2-methylpiperazin-1-yl)pyrimidin-5-yl)-6-(1-methyl-1H-pyrazol-4-yl)nicotinamide
128		(R)-N-(5-(4-(6-fluoropyridin-3-yl)-2-methylpiperazin-1-yl)pyrazin-2-yl)-6-(1-methyl-1H-pyrazol-4-yl)nicotinamide
129		(R)-N-(2-(4-(5-fluoropyridin-2-yl)-2-methylpiperazin-1-yl)pyrimidin-5-yl)-6-(1-methyl-1H-pyrazol-4-yl)nicotinamide
130		(S)-6-(3-(fluoromethyl)azetidin-1-yl)-N-(2-(4-(5-fluoropyridin-2-yl)-2-methylpiperazin-1-yl)pyrimidin-5-yl)nicotinamide
131		(R)-6-(3-(fluoromethyl)azetidin-1-yl)-N-(2-(4-(5-fluoropyridin-2-yl)-3-(methoxymethyl)piperazin-1-yl)pyrimidin-5-yl)nicotinamide

132		(S)-6-(3-(fluoromethyl)azetidin-1-yl)-N-(5-(4-(5-fluoropyrimidin-2-yl)-3-methylpiperazin-1-yl)pyrazin-2-yl)nicotinamide
133		(S)-6-(3-(fluoromethyl)azetidin-1-yl)-N-(5-(4-(5-fluoropyridin-2-yl)-3-methylpiperazin-1-yl)pyrazin-2-yl)nicotinamide
134		(S)-6-(5,6-dihydro-4H-pyrrolo[1,2-b]pyrazol-3-yl)-2-fluoro-N-(2-(2-methyl-4-(pyrimidin-2-yl)piperazin-1-yl)pyrimidin-5-yl)nicotinamide
135		(S)-6'-amino-6-fluoro-N-(2-(2-methyl-4-(pyrimidin-2-yl)piperazin-1-yl)pyrimidin-5-yl)-[2,3'-bipyridine]-5-carboxamide
136		(S)-6-(5,6-dihydro-4H-pyrrolo[1,2-b]pyrazol-3-yl)-2-fluoro-N-(2-(4-(5-fluoropyrazin-2-yl)-2-methylpiperazin-1-yl)pyrimidin-5-yl)nicotinamide
137		(S)-6-(5,6-dihydro-4H-pyrrolo[1,2-b]pyrazol-3-yl)-2-fluoro-N-(2-(4-(6-fluoropyrimidin-4-yl)-2-methylpiperazin-1-yl)pyrimidin-5-yl)nicotinamide
138		(R)-6-(5,6-dihydro-4H-pyrrolo[1,2-b]pyrazol-3-yl)-2-fluoro-N-(2-(3-(methoxymethyl)-4-(pyrimidin-2-yl)piperazin-1-yl)pyrimidin-5-yl)nicotinamide

139		(S)-6-(3-fluoroazetidin-1-yl)-N-(6-(4-(6-fluoropyrimidin-4-yl)-2-methylpiperazin-1-yl)pyridin-3-yl)nicotinamide
140		(S)-6-(3,3-difluoroazetidin-1-yl)-N-(5-(4-(6-fluoropyridin-2-yl)-2-methylpiperazin-1-yl)pyrazin-2-yl)nicotinamide
141		(S)-N-(5-(4-(5-fluoropyridin-2-yl)-2-methylpiperazin-1-yl)pyrazin-2-yl)-6-(1-methyl-1H-pyrazol-4-yl)nicotinamide
142		(S)-6-(3,3-difluoroazetidin-1-yl)-N-(5-(4-(5-fluoropyridin-2-yl)-2-methylpiperazin-1-yl)pyrazin-2-yl)nicotinamide
143		(S)-N-(5-(4-(5-fluoropyrimidin-2-yl)-2-methylpiperazin-1-yl)pyrazin-2-yl)-6-(1-methyl-1H-pyrazol-4-yl)nicotinamide
144		(S)-6-(1-(2-fluoroethyl)-1H-pyrazol-4-yl)-N-(5-(4-(5-fluoropyrimidin-2-yl)-2-methylpiperazin-1-yl)pyrazin-2-yl)nicotinamide

or a pharmaceutically acceptable salt thereof.

[0009] The present disclosure is also directed to isotopically-labeled compounds of Formula I. Additionally, the present disclosure provides pharmaceutical compositions comprising a compound of Formula I and at least one pharmaceutically acceptable carrier. Another aspect of the disclosure provides a pharmaceutical composition comprising a compound as defined herein, or a pharmaceutically acceptable salt thereof, and at least one pharmaceutical excipient.

[0010] The present disclosure is directed to compounds of Formula I which may be useful for binding alpha-synuclein aggregated proteins and/or tau aggregated proteins, and hence are useful in binding and imaging alpha-synuclein aggregated protein pathology in PD and non-PD synucleinopathy patients as well as aggregated Tau protein pathology Alzheimer's Disease (AD) and non-AD tauopathy patients via PET imaging techniques known commonly in the field (see *J. Nucl. Med.* 2019, *60*, 93-99 and 107-114). This disclosure also relates to methods of using compounds of Formula I to identify patients with abnormal levels of aggregated alpha-synuclein pathology in the brain. This disclosure also relates to methods of using a compound of Formula I as a to measure progression of alpha-synuclein pathology over time as a biomarker in clinical assessment of potential therapeutic agents that can modify Parkinson's Disease progression.

[0010a] Another aspect of the disclosure provides a method of measuring the clinical efficacy of therapeutic agents for Parkinson's disease comprising the steps of a) measuring the amount of alpha-synuclein aggregate formation in the brain tissue of a patient diagnosed with PD and who had been administered an isotopically-labeled compound of Formula I, as defined herein, before treatment with said therapeutic agent, b) measuring the amount of alpha-synuclein aggregate formation in the brain tissue of the patient who had been administered the isotopically-labeled compound of Formula I, as defined herein, after treatment with said therapeutic agent, and c) analyzing whether said therapeutic agent stopped or decreased the progression of alpha-synuclein aggregate formation in the patient's brain tissue.

[0010b] Another aspect of the disclosure provides a compound as defined herein, or a pharmaceutically acceptable salt thereof, for use as an imaging agent.

[0011] Compounds of this disclosure may also be useful for imaging and detecting for other neurodegenerative diseases characterized by the deposition of alpha-synuclein aggregates such as multiple system atrophy (MSA) and dementia with Lewy Bodies (DLB).

BRIEF DESCRIPTION OF THE DRAWINGS

[0012] FIG. 1: Saturation binding experiment in aggregated beta-amyloid rich AD tissue homogenate for **[^{3}H]-105**.

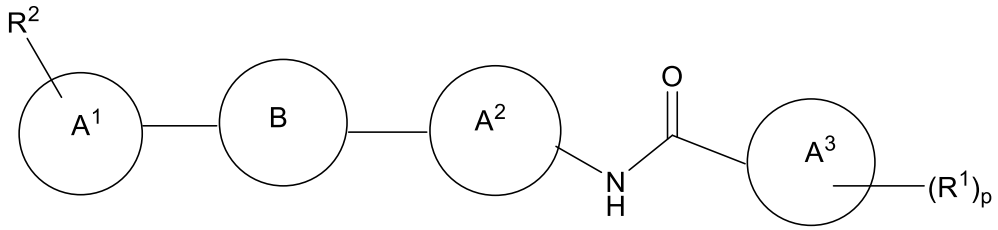
[0013] FIG. 2: Saturation binding experiment in triton-insoluble fraction from PD tissue homogenate enriched in aggregated alpha-synuclein for **[^{3}H]-1**.

[0014] FIG. 3: **[^{3}H]-1** radioligand saturation binding data in human cortical PD tissue homogenate enriched in aggregated alpha-synuclein pathology.

[0015] FIG. 4: **[^{3}H]-1** radioligand saturation binding data in human cortical AD tissue homogenate enriched in aggregated Aβ.

WHAT IS CLAIMED IS:

1. A compound of Formula I:



I

or a pharmaceutically acceptable salt thereof wherein;

R is independently selected from H, $–C_{1-6}$alkyl, OR^c or halo, where said alkyl is optionally substituted with one to three groups from $–C_{1-6}$alkyl, OR^c or halo;

R^a is independently selected from unsubstituted or substituted $–C_{1-6}$alkyl, said alkyl optionally substituted with 1 to 3 groups of R;

R^b is independently selected from $–C_{1-6}$alkyl, halo, $-(CH_2)_nOR^c$, -CN, $-NR^c{}_2$, $-(CH_2)_n$halogen, or $-O(CH_2)_n$halo;

R^c is independently selected from H or $–C_{1-6}$alkyl, where said alkyl is optionally substituted with one to three groups from $–C_{1-6}$alkyl, OR^d or halo;

R^d is independently selected from H or $–C_{1-6}$alkyl;

R^1 is independently selected from $-(CH_2)_nOR^c$, $-(CH_2)_nO(CH_2)_nR$, $-(CH_2)_nO(CH_2)_nOR^c$, halo, NR_2, unsubstituted or substituted C_{1-6}alkyl, unsubstituted or substituted phenyl, unsubstituted or substituted C_3-C_{10} cycloalkyl, unsubstituted or substituted heteroaryl or unsubstituted or

substituted heterocyclyl, wherein said alkyl, cycloalkyl, phenyl, heteroaryl or heterocyclyl can be substituted with one to three groups of R^b;

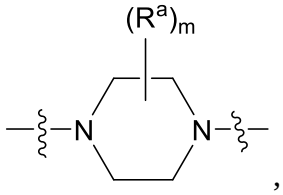
R^2 is selected from hydrogen, OR^c, NO_2, halo or -C_{1-6}alkyl;

Ring A^1 is selected from pyridyl, pyrazinyl, thiazolyl, pyrazolyl, oxazolyl or pyrimidinyl;

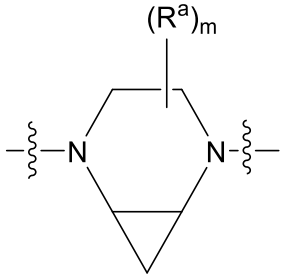
Ring A^2 is selected from pyrimidinyl, phenyl, pyridyl, pyrazinyl or pyridazinyl, where said pyrimidinyl, phenyl, pyridyl, pyrazinyl or pyridazinyl is optionally substituted with 1 to 3 groups of R;

Ring A^3 is selected from pyridyl, pyrazinyl, pyrimidinyl, indolyl, imidazolyl, pyrrolopyrazinyl, oxadiazolyl, triazolyl, thiazolyl, isoxazolyl, oxazolyl, imidazopyridinyl, 3,4-dihydro-*2H*-pyrido[3,2,*b*][1,4]oxazine or phenyl;

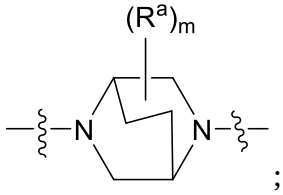
Ring B is selected from

a) 

,

b) 

, or

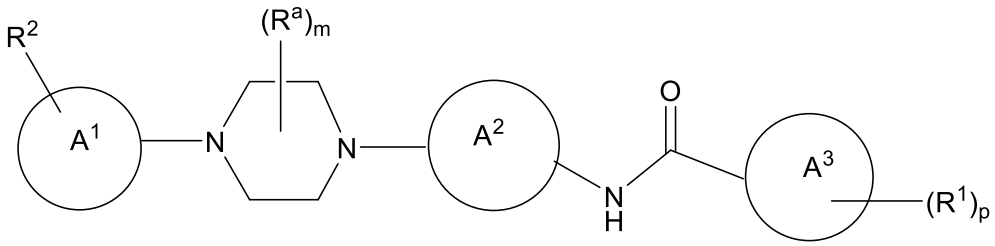
c) 

;

m is selected from 1, 2 or 3;
n is independently selected from 0, 1, 2, 3 or 4;
p is selected from 0, 1, 2 or 3; and

q is selected from 1, 2 or 3.

2. The compound of Claim 1, having the structure of Formula IA:



IA

or a pharmaceutically acceptable salt thereof, wherein;

R is independently selected from H, $-C_{1-6}$alkyl or halo, where said alkyl is optionally substituted with one to three groups from $-C_{1-6}$alkyl, OR^c or halo;

R^a is independently selected from unsubstituted or substituted $-C_{1-6}$alkyl, said alkyl optionally substituted with 1 to 3 groups of R;

R^b is independently selected from $-C_{1-6}$alkyl, halo, $-(CH_2)_nOR^c$, -CN, $-NR^c_2$, $-(CH_2)_n$halogen, or $-O(CH_2)_n$halo;

R^c is independently selected from H or $-C_{1-6}$alkyl, where said alkyl is optionally substituted with one to three groups from $-C_{1-6}$alkyl, OR^d or halo;

R^d is independently selected from H or $-C_{1-6}$alkyl;

R^1 is independently selected from $-(CH_2)_nOR^c$, $-(CH_2)_nO(CH_2)_nR$, $-(CH_2)_nO(CH_2)_nOR^c$, halo, $-NR_2$, unsubstituted or substituted C_{1-6}alkyl, unsubstituted or substituted phenyl, unsubstituted or substituted C_3-C_{10} cycloalkyl, unsubstituted or substituted heteroaryl or unsubstituted or substituted heterocyclyl, wherein said alkyl, cycloalkyl, phenyl, heteroaryl or heterocyclyl can be substituted with one to three groups of R^b;

R^2 is selected from hydrogen, OR^c, halo or -C_{1-6}alkyl;
Ring A^1 is selected from pyridyl, pyrazinyl, thiazolyl, pyrazolyl, oxazolyl or pyrimidinyl;

Ring A^2 is selected from pyrimidinyl, phenyl, pyridyl, pyrazinyl or pyridazinyl, where said pyrimidinyl, phenyl, pyridyl, pyrazinyl or pyridazinyl is optionally substituted with 1 to 3 groups of R;

Ring A^3 is selected from pyridyl, pyrazinyl, pyrimidinyl, indolyl, imidazolyl, pyrrolopyrazinyl, oxadiazolyl, triazolyl, thiazolyl, isoxazolyl, oxazolyl, 3,4-dihydro-*2H*-pyrido[3,2,*b*][1,4]oxazine or phenyl;

m is selected from 1, 2 or 3;
n is independently selected from 0, 1, 2, 3 or 4; and
p is selected from 0, 1, 2 or 3.

3. The compound of Claim 1 wherein:

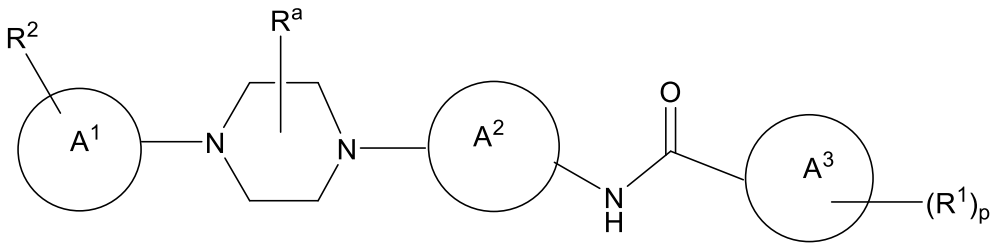
Ring A^1 is selected from pyridyl, pyrazinyl or pyrimidinyl;

Ring A^2 is selected from pyrimidinyl, phenyl, or pyridyl, where said pyrimidinyl, phenyl, or pyridyl is optionally substituted with 1 to 3 groups of R;

Ring A^3 is selected from pyridyl, pyrazinyl, pyrimidinyl, imidazolyl, triazolyl or phenyl;

m is selected from 1 or 2; and
p is selected from 0, 1 or 2;
or a pharmaceutically acceptable salt thereof.

4. The compound of Claim 1 having the structure of Formula IB



IB

or a pharmaceutically acceptable salt thereof wherein;

R is independently selected from H, $–C_{1-6}$alkyl or halo, where said alkyl is optionally substituted with one to three groups from $–C_{1-6}$alkyl, OR^c or halo;

R^a is unsubstituted or substituted $–C_{1-6}$alkyl, said alkyl optionally substituted with 1 to 3 groups of R;

R^b is independently selected from $–C_{1-6}$alkyl, halo, $-(CH_2)_nOR^c$, -CN, $-NR^c_2$, $-(CH_2)_n$halogen, or $-O(CH_2)_n$halo;

R^c is independently selected from H or $–C_{1-6}$alkyl;

R^1 is selected from $-(CH_2)_nOR^c$, $-(CH_2)_nO(CH_2)_nR$, $-(CH_2)_nO(CH_2)_nOR^c$, halo, NR_2, unsubstituted or substituted C_{1-6}alkyl, unsubstituted or substituted phenyl, unsubstituted or substituted C_3-C_{10} cycloalkyl, unsubstituted or substituted heteroaryl or unsubstituted or substituted heterocyclyl, wherein said alkyl, phenyl, cycloalkyl, heteroaryl or heterocyclyl can be substituted with one to three groups of R^b;

R^2 is selected from hydrogen, OR^c, halo or $-C_{1-6}$alkyl;

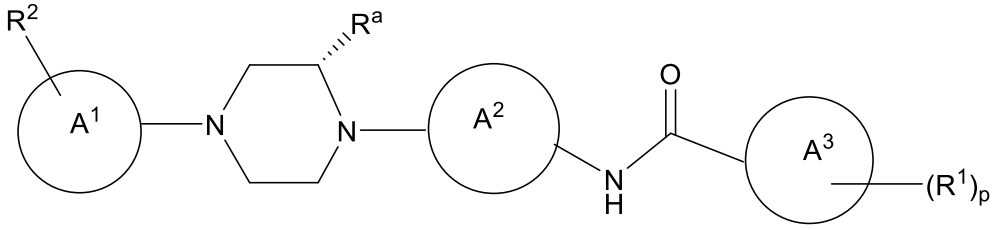
Ring A^1 is selected from pyridyl, pyrazinyl, pyrazolyl, oxazolyl, thiazolyl or pyrimidinyl;

Ring A^2 is selected from pyrimidinyl, phenyl, pyridyl or pyridazinyl, where said pyrimidinyl, phenyl, pyridyl, or pyrazinyl is optionally substituted with 1 to 3 groups of R;

Ring A^3 is selected from pyridyl, pyrazinyl, pyrimidinyl, indolyl, pyrrolopyrazinyl, oxadiazolyl, 3,4-dihydro-*2H*-pyrido[3,2,*b*][1,4]oxazine or phenyl;

n is independently selected from 0, 1, 2, 3 or 4; and
p is selected from 1 or 2.

5. The compound of Claim 1, having the structure of Formula IC



IC

or a pharmaceutically acceptable salt thereof wherein:

R is independently selected from H, $-C_{1-6}$alkyl or halo, where said alkyl is optionally substituted with one to three groups from $-C_{1-6}$alkyl, OR^c or halo;

R^a is independently selected from unsubstituted or substituted $-C_{1-6}$alkyl, said alkyl optionally substituted with 1 to 3 groups of R;

R^b is independently selected from $-C_{1-6}$alkyl, halo, $-(CH_2)_nOR^c$, -CN, $-(CH_2)_n$halogen, or $-O(CH_2)_n$halo;

R^c is independently selected from H or $-C_{1-6}$alkyl;

R^1 is independently selected from $-(CH_2)_nOR^c$, $-(CH_2)_nO(CH_2)_nR$, $-(CH_2)_nO(CH_2)_nOR^c$, halo, NR_2, unsubstituted or substituted C_{1-6}alkyl, unsubstituted or substituted phenyl, unsubstituted or substituted C_3-C_{10} cycloalkyl, unsubstituted or substituted heteroaryl or unsubstituted or substituted heterocyclyl, wherein said alkyl, phenyl, cycloalkyl, heteroaryl or heterocyclyl can be substituted with one to three groups of R^b;

R^2 is selected from hydrogen, OR^c, halo or -C_{1-6}alkyl;

Ring A^1 is selected from pyridyl, pyrazinyl, thiazolyl, pyrazolyl, oxazolyl or pyrimidinyl;

Ring A^2 is selected from pyrimidinyl, phenyl, pyridyl, pyrazinyl or pyridazinyl, where said pyrimidinyl, phenyl, pyridyl, pyrazinyl or pyridazinyl is optionally substituted with 1 to 3 groups of R;

Ring A^3 is selected from pyridyl, pyrazinyl, pyrimidinyl, indolyl, imidazolyl, pyrrolopyrazinyl, oxadiazolyl, triazolyl, thiazolyl, isoxazolyl, oxazolyl, 3,4-dihydro-*2H*-pyrido[3,2,*b*][1,4]oxazine or phenyl;

n is independently selected from 0, 1, 2, 3 or 4; and
p is selected from 0, 1, 2 or 3.

6. The compound of Claim 1, or a pharmaceutically acceptable salt thereof, wherein Ring A^2 is selected from pyrimidinyl, pyridyl or pyrazinyl, where said pyrimidinyl, pyridyl or pyrazinyl is optionally substituted with 1 to 3 groups of R.

7. The compound of Claim 1, or a pharmaceutically acceptable salt thereof, wherein Ring A^2 is pyrimidinyl, where said pyrimidinyl is optionally substituted with 1 to 3 groups of R.

8. The compound of Claim 1, or a pharmaceutically acceptable salt thereof, wherein Ring A^3 is selected from pyridyl, pyrazinyl, pyrimidinyl, imidazolyl, triazolyl or phenyl.

9. The compound of Claim 1, or a pharmaceutically acceptable salt thereof, wherein Ring A^3 is selected from pyridyl, pyrazinyl or phenyl.

10. The compound of Claim 1, or a pharmaceutically acceptable salt thereof, wherein Ring A^1 is selected from pyridyl, pyrazinyl, pyrazolyl or pyrimidinyl.

11. The compound of Claim 1, or a pharmaceutically acceptable salt thereof, wherein Ring A^1 is selected from pyridyl or pyrazinyl.

12. The compound of Claim 1, or a pharmaceutically acceptable salt thereof, wherein R^1 is selected from $-(CH_2)_nOR^c$, $-(CH_2)_nO(CH_2)_nR$, $-(CH_2)_nO(CH_2)_nOR^c$, halo, $-NR_2$, unsubstituted or substituted C_{1-6}alkyl, cyclopropyl, imidazolyl, pyridyl, indolyl, pyrazolyl, triazolyl, azetidinyl, phenyl, azepanyl, pyrrolopyrazinyl, pyrrolidinyl, azabicyclo-heptanyl, furyl, thiazolyl, pyrimidinyl, oxa-azabicycloheptanyl, pyridazinyl, thienyl, isoxazolyl, oxazolyl, dihydropyrrolylpyrazolyl, morpholinyl, tetrazolyl, or piperazinyl, where said alkyl, cyclopropyl, imidazolyl, pyridyl, indolyl, pyrazolyl, triazolyl, azetidinyl, phenyl, azepanyl, pyrrolopyrazinyl, pyrrolidinyl, azabicyclo-heptanyl, furyl, thiazolyl, pyrimidinyl, oxa-azabicycloheptanyl, pyridazinyl, thienyl, isoxazolyl, oxazolyl, dihydropyrrolylpyrazolyl, morpholinyl, tetrazolyl, or piperazinyl can be substituted with one to three groups of R^b.

13. The compound of Claim 1, or a pharmaceutically acceptable salt thereof, wherein R^1 is selected from $-(CH_2)_nOR^c$, $-(CH_2)_nO(CH_2)_nR$, $-NR_2$, pyridyl, pyrazolyl, azetidinyl, pyrrolidinyl, or furyl, where said pyridyl, pyrazolyl, azetidinyl, pyrrolidinyl, or furyl can be substituted with one to three groups of R^b.

14. The compound of Claim 4, wherein

R is independently selected from H, $-C_{1-6}$alkyl or halo, where said alkyl is optionally substituted with one to three groups from $-C_{1-6}$alkyl, OR^c or halo;

R^a is independently selected from unsubstituted or substituted $-C_{1-6}$alkyl, said alkyl optionally substituted with 1 to 3 groups of R;

R^b is independently selected from $-C_{1-6}$alkyl, halo, $-(CH_2)_nOR^c$, -CN, $-(CH_2)_n$halogen, or $-O(CH_2)_n$halo;

R^c is independently selected from H or $-C_{1-6}$alkyl;

R^1 is selected from $-(CH_2)_nOR^c$, $-(CH_2)_nO(CH_2)_nR$, $-NR_2$, pyridyl, pyrazolyl, azetidinyl, pyrrolidinyl, or furyl, where said pyridyl, pyrazolyl, azetidinyl, pyrrolidinyl, or furyl can be substituted with one to three groups of R^b;

R^2 is selected from hydrogen, OR^c, halo or $-C_{1-6}$alkyl;

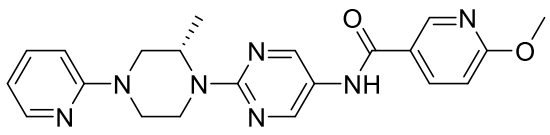
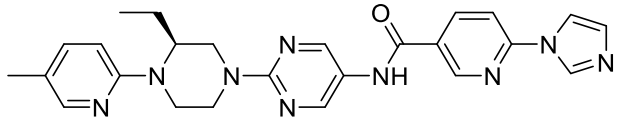
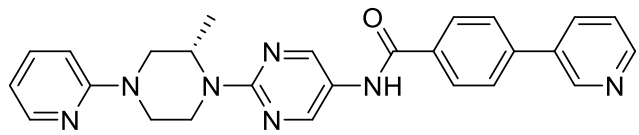
Ring A^1 is selected from pyridyl, pyrazinyl, pyrimidinyl, thiazolyl or pyrazolyl;

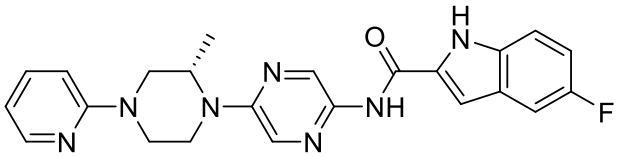
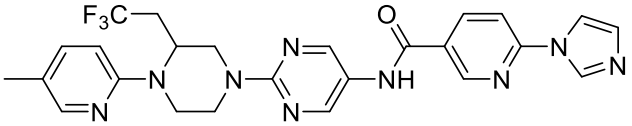
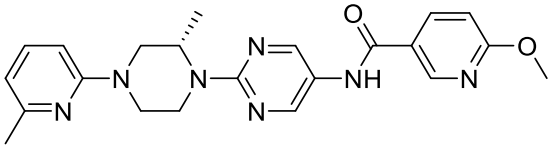
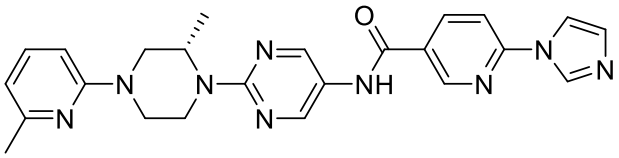
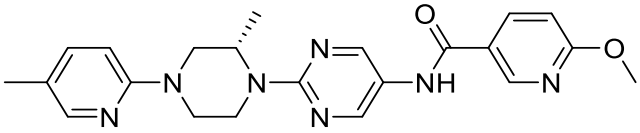
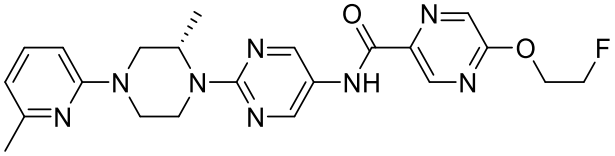
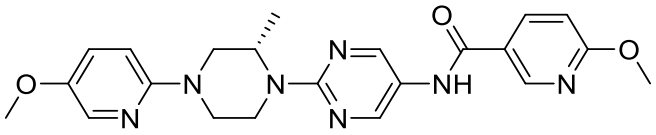
Ring A^2 is selected from pyridyl, pyrazinyl or phenyl, where said pyridyl, pyrazinyl or phenyl is optionally substituted with 1 to 3 groups of R;

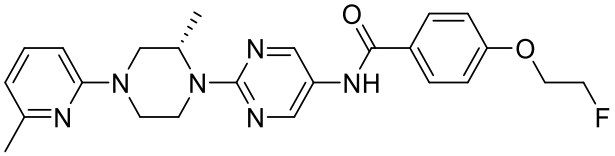
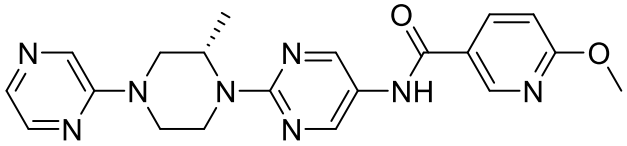
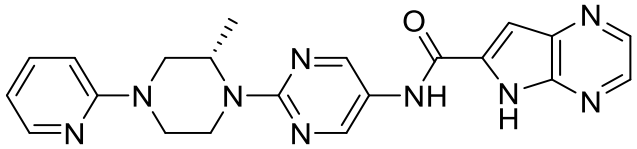
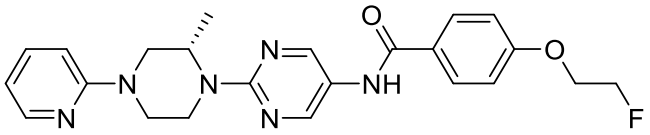
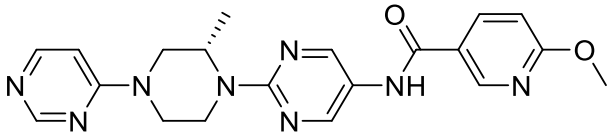
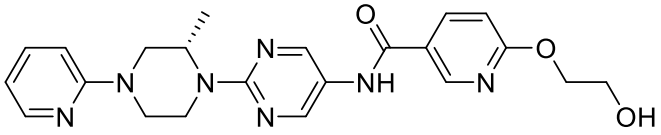
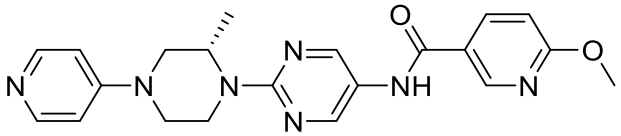
Ring A^3 is selected from pyrimidinyl, pyridyl or pyrazinyl;

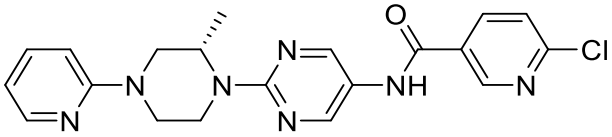
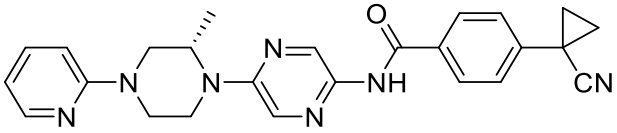
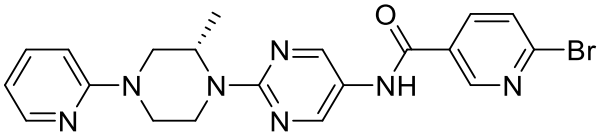
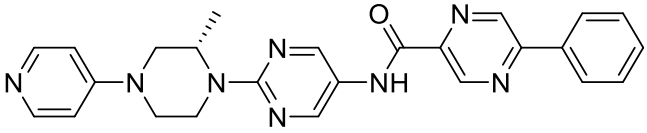
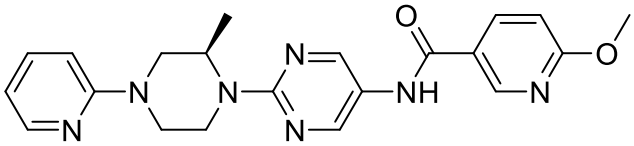
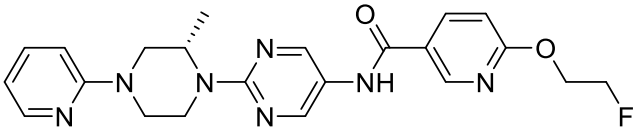
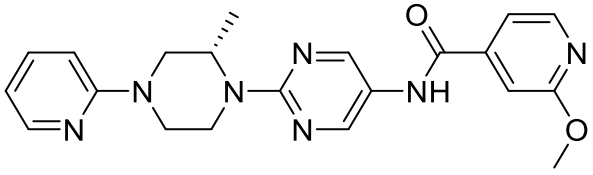
n is independently selected from 0, 1, 2, 3 or 4; and
p is selected from 0, 1, 2 or 3,
or a pharmaceutically acceptable salt thereof.

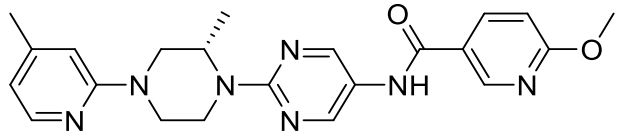
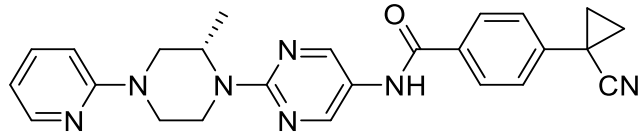
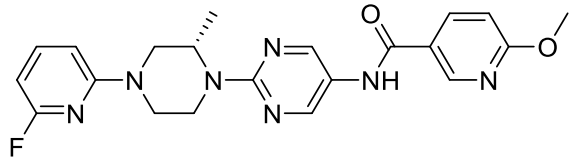
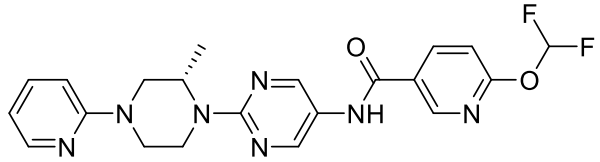
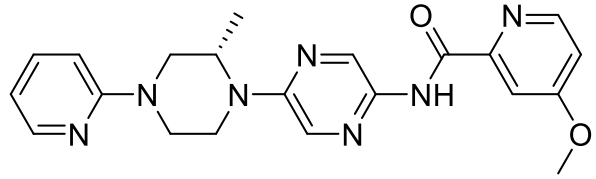
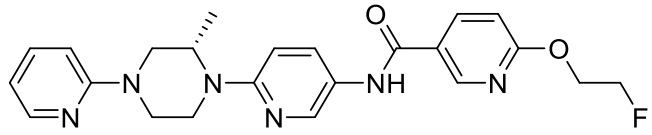
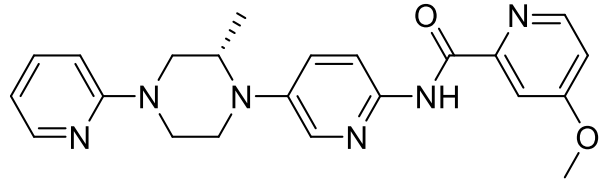
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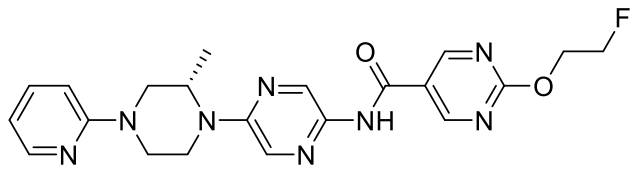
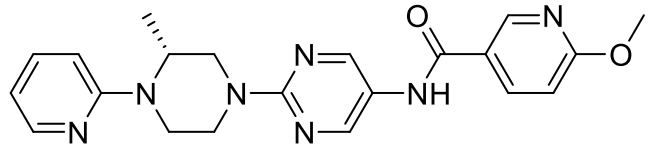
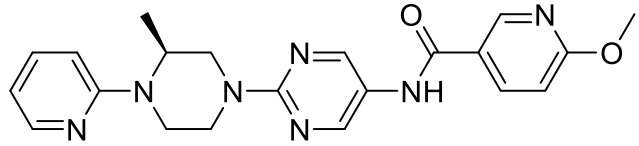
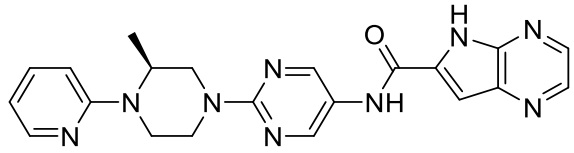
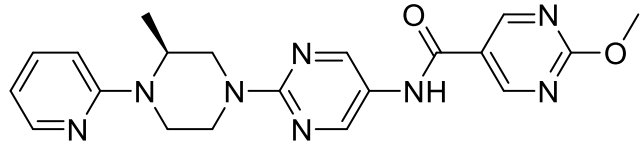
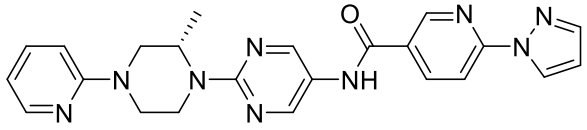
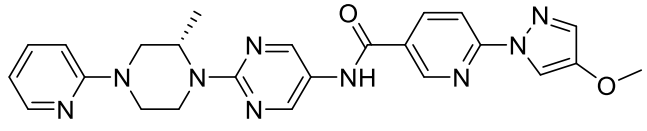
Ex. No.	Structure	Name
1		(S)-6-methoxy-N-(2-(2-methyl-4-(pyridin-2-yl)piperazin-1-yl)pyrimidin-5-yl)nicotinamide
2		N-[2-[(3S)-3-ethyl-4-(5-methyl-2-pyridyl)piperazin-1-yl]pyrimidin-5-yl]-6-imidazol-1-yl-pyridine-3-carboxamide
3		N-[2-[(2S)-2-methyl-4-(2-pyridyl)piperazin-1-yl]pyrimidin-5-yl]-4-(3-pyridyl)benzamide

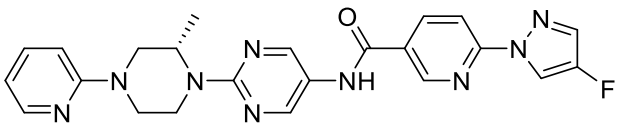
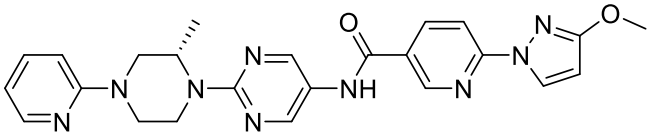
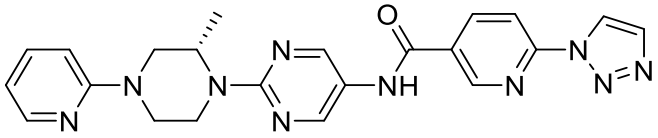
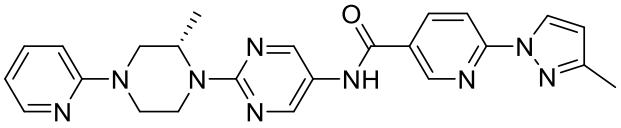
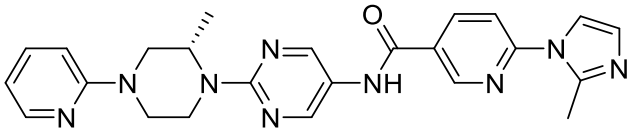
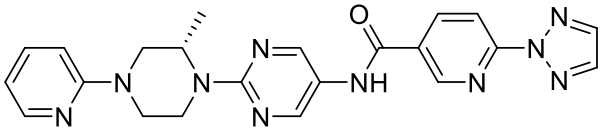
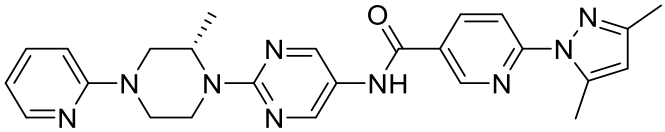
Ex. No.	Structure	Name
4		5-fluoro-N-[5-[(2S)-2-methyl-4-(2-pyridyl)piperazin-1-yl]pyrazin-2-yl]-1H-indole-2-carboxamide
5		6-imidazol-1-yl-N-[2-[4-(5-methyl-2-pyridyl)-3-(2,2,2-trifluoroethyl)piperazin-1-yl]pyrimidin-5-yl]pyridine-3-carboxamide
6		6-methoxy-N-[2-[(2S)-2-methyl-4-(6-methyl-2-pyridyl)piperazin-1-yl]pyrimidin-5-yl]pyridine-3-carboxamide
7		6-imidazol-1-yl-N-[2-[(2S)-2-methyl-4-(6-methyl-2-pyridyl)piperazin-1-yl]pyrimidin-5-yl]pyridine-3-carboxamide
8		6-methoxy-N-[2-[(2S)-2-methyl-4-(5-methyl-2-pyridyl)piperazin-1-yl]pyrimidin-5-yl]pyridine-3-carboxamide
9		5-(2-fluoroethoxy)-N-[2-[(2S)-2-methyl-4-(6-methyl-2-pyridyl)piperazin-1-yl]pyrimidin-5-yl]pyrazine-2-carboxamide
10		6-methoxy-N-[2-[(2S)-4-(5-methoxy-2-pyridyl)-2-methyl-piperazin-1-yl]pyrimidin-5-yl]pyridine-3-carboxamide

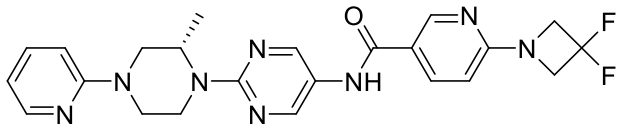
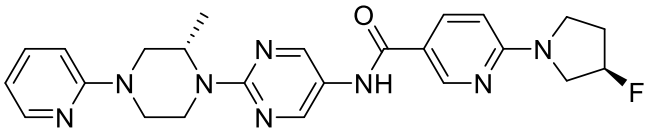
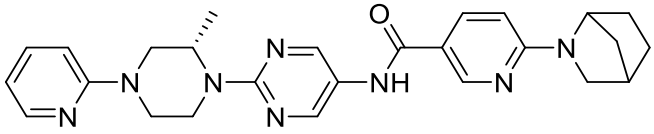
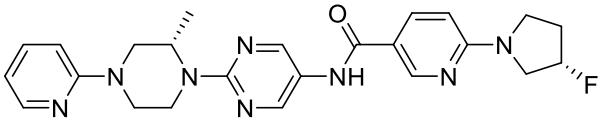
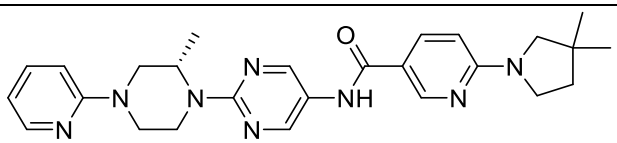
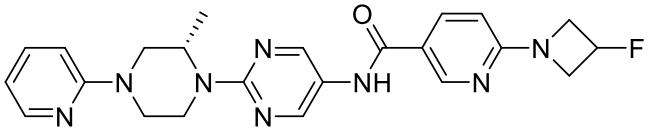
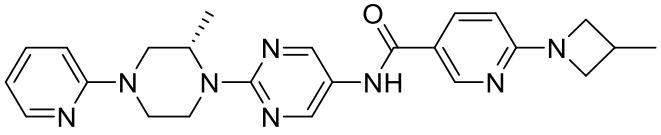
Ex. No.	Structure	Name
11		4-(2-fluoroethoxy)-N-[2-[(2S)-2-methyl-4-(6-methyl-2-pyridyl)piperazin-1-yl]pyrimidin-5-yl]benzamide
12		6-methoxy-N-[2-[(2S)-2-methyl-4-pyrazin-2-yl-piperazin-1-yl]pyrimidin-5-yl]pyridine-3-carboxamide
13		N-[5-[(2S)-2-methyl-4-(2-pyridyl)piperazin-1-yl]pyrazin-2-yl]-5H-pyrrolo[2,3-b]pyrazine-6-carboxamide
14		4-(2-fluoroethoxy)-N-[2-[(2S)-2-methyl-4-(2-pyridyl)piperazin-1-yl]pyrimidin-5-yl]benzamide
15		6-methoxy-N-[2-[(2S)-2-methyl-4-pyrimidin-4-yl-piperazin-1-yl]pyrimidin-5-yl]pyridine-3-carboxamide
16		6-(2-hydroxyethoxy)-N-[2-[(2S)-2-methyl-4-(2-pyridyl)piperazin-1-yl]pyrimidin-5-yl]pyridine-3-carboxamide
17		6-methoxy-N-[2-[(2S)-2-methyl-4-(4-pyridyl)piperazin-1-yl]pyrimidin-5-yl]pyridine-3-carboxamide

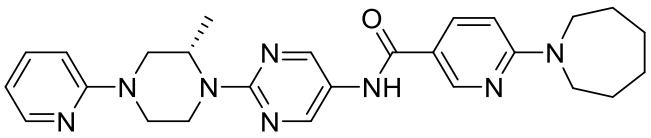
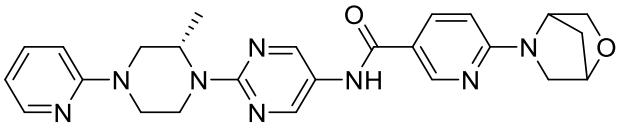
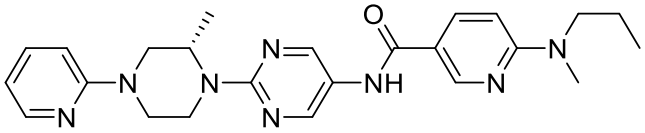
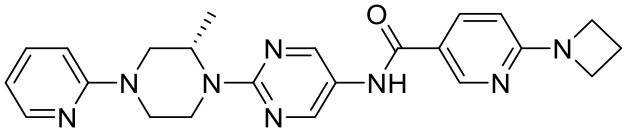
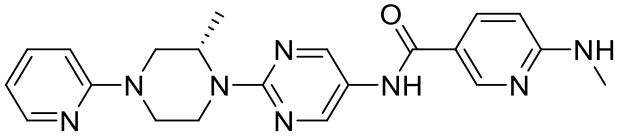
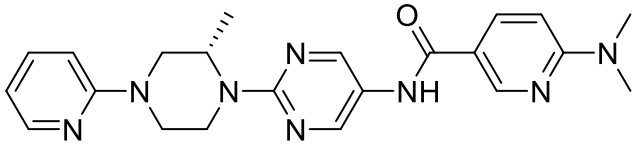
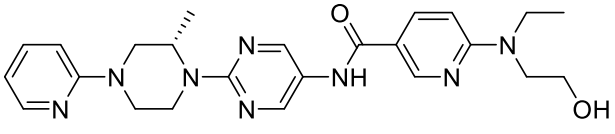
Ex. No.	Structure	Name
18		6-chloro-N-[2-[(2S)-2-methyl-4-(2-pyridyl)piperazin-1-yl]pyrimidin-5-yl]pyridine-3-carboxamide
19		4-(1-cyanocyclopropyl)-N-[5-[(2S)-2-methyl-4-(2-pyridyl)piperazin-1-yl]pyrazin-2-yl]benzamide
20		6-bromo-N-[2-[(2S)-2-methyl-4-(2-pyridyl)piperazin-1-yl]pyrimidin-5-yl]pyridine-3-carboxamide
21		N-[2-[(2S)-2-methyl-4-(2-pyridyl)piperazin-1-yl]pyrimidin-5-yl]-5-phenyl-pyrazine-2-carboxamide
22		6-methoxy-N-[2-[(2R)-2-methyl-4-(2-pyridyl)piperazin-1-yl]pyrimidin-5-yl]pyridine-3-carboxamide
23		6-(2-fluoroethoxy)-N-[2-[(2S)-2-methyl-4-(2-pyridyl)piperazin-1-yl]pyrimidin-5-yl]pyridine-3-carboxamide
24		2-methoxy-N-[2-[(2S)-2-methyl-4-(2-pyridyl)piperazin-1-yl]pyrimidin-5-yl]pyridine-4-carboxamide

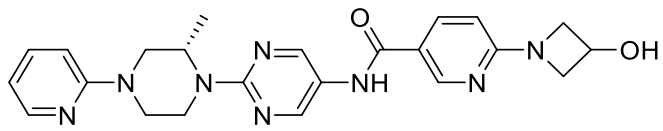
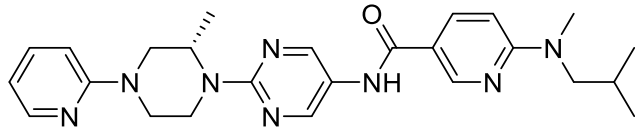
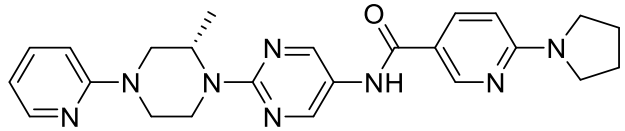
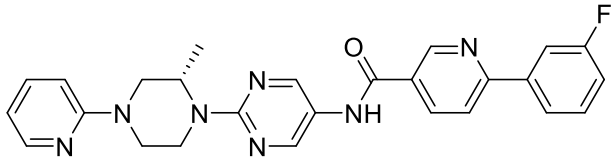
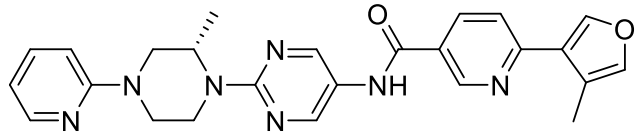
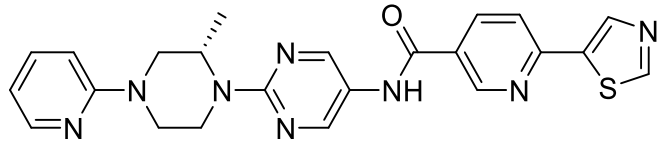
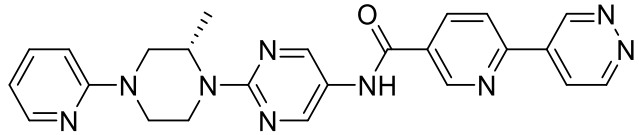
Ex. No.	Structure	Name
25		6-methoxy-N-[2-[(2S)-2-methyl-4-(4-methyl-2-pyridyl)piperazin-1-yl]pyrimidin-5-yl]pyridine-3-carboxamide
26		4-(1-cyanocyclopropyl)-N-[2-[(2S)-2-methyl-4-(2-pyridyl)piperazin-1-yl]pyrimidin-5-yl]benzamide
27		N-[2-[(2S)-4-(6-fluoro-2-pyridyl)-2-methyl-piperazin-1-yl]pyrimidin-5-yl]-6-methoxy-pyridine-3-carboxamide
28		6-(difluoromethoxy)-N-[2-[(2S)-2-methyl-4-(2-pyridyl)piperazin-1-yl]pyrimidin-5-yl]pyridine-3-carboxamide
29		4-methoxy-N-[5-[(2S)-2-methyl-4-(2-pyridyl)piperazin-1-yl]pyrazin-2-yl]pyridine-2-carboxamide
30		6-(2-fluoroethoxy)-N-[6-[(2S)-2-methyl-4-(2-pyridyl)piperazin-1-yl]-3-pyridyl]pyridine-3-carboxamide
31		4-methoxy-N-[5-[(2S)-2-methyl-4-(2-pyridyl)piperazin-1-yl]-2-pyridyl]pyridine-2-carboxamide

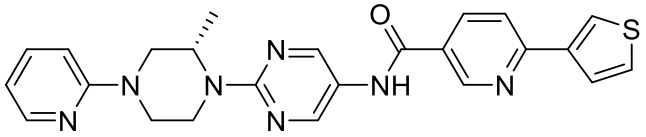
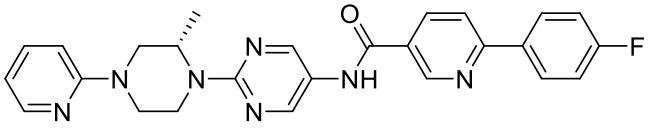
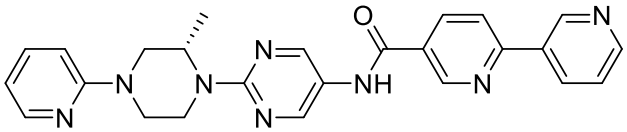
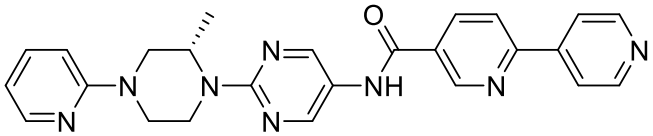
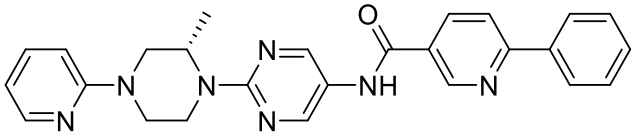
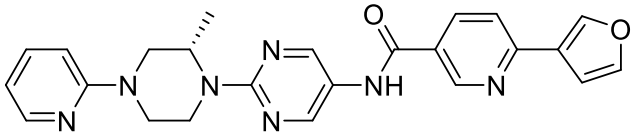
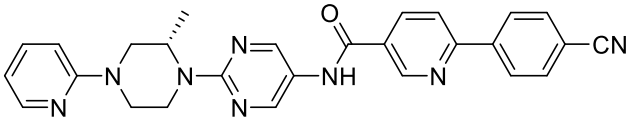
Ex. No.	Structure	Name
32		2-(2-fluoroethoxy)-N-[5-[(2S)-2-methyl-4-(2-pyridyl)piperazin-1-yl]pyrazin-2-yl]pyrimidine-5-carboxamide
33		6-methoxy-N-[2-[(3R)-3-methyl-4-(2-pyridyl)piperazin-1-yl]pyrimidin-5-yl]pyridine-3-carboxamide
34		6-methoxy-N-[2-[(3S)-3-methyl-4-(2-pyridyl)piperazin-1-yl]pyrimidin-5-yl]pyridine-3-carboxamide
35		N-[2-[(3S)-3-methyl-4-(2-pyridyl)piperazin-1-yl]pyrimidin-5-yl]-5H-pyrrolo[2,3-b]pyrazine-6-carboxamide
36		2-methoxy-N-[2-[(3S)-3-methyl-4-(2-pyridyl)piperazin-1-yl]pyrimidin-5-yl]pyrimidine-5-carboxamide
37		N-[2-[(2S)-2-methyl-4-(2-pyridyl)piperazin-1-yl]pyrimidin-5-yl]-6-pyrazol-1-yl-pyridine-3-carboxamide
38		6-(4-methoxypyrazol-1-yl)-N-[2-[(2S)-2-methyl-4-(2-pyridyl)piperazin-1-yl]pyrimidin-5-yl]pyridine-3-carboxamide

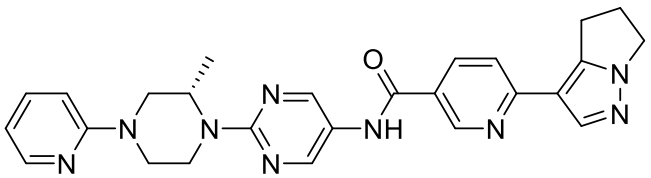
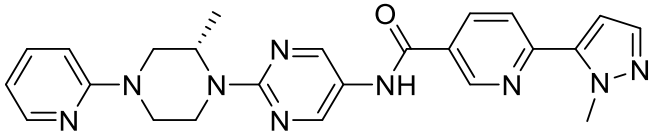
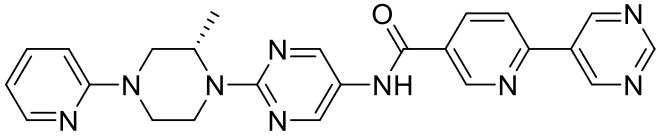
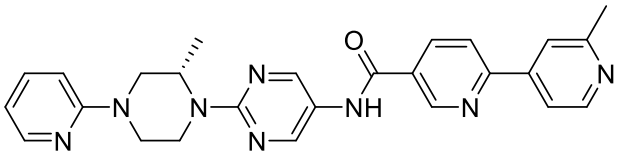
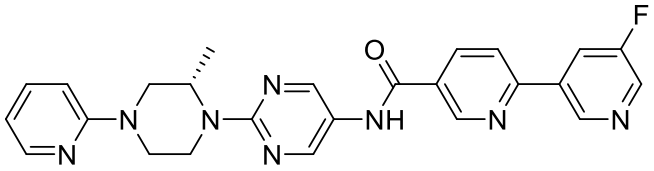
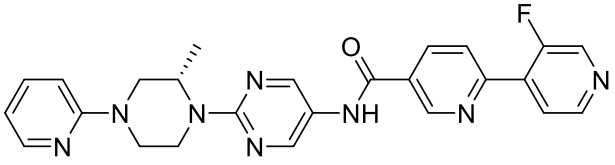
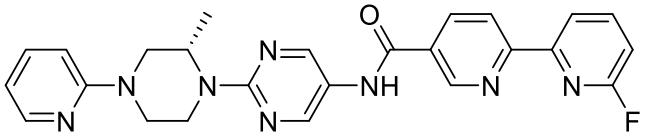
Ex. No.	Structure	Name
39		6-(4-fluoropyrazol-1-yl)-N-[2-[(2S)-2-methyl-4-(2-pyridyl)piperazin-1-yl]pyrimidin-5-yl]pyridine-3-carboxamide
40		6-(3-methoxypyrazol-1-yl)-N-[2-[(2S)-2-methyl-4-(2-pyridyl)piperazin-1-yl]pyrimidin-5-yl]pyridine-3-carboxamide
41		N-[2-[(2S)-2-methyl-4-(2-pyridyl)piperazin-1-yl]pyrimidin-5-yl]-6-(triazol-1-yl)pyridine-3-carboxamide
42		6-(3-methylpyrazol-1-yl)-N-[2-[(2S)-2-methyl-4-(2-pyridyl)piperazin-1-yl]pyrimidin-5-yl]pyridine-3-carboxamide
43		6-(2-methylimidazol-1-yl)-N-[2-[(2S)-2-methyl-4-(2-pyridyl)piperazin-1-yl]pyrimidin-5-yl]pyridine-3-carboxamide
44		(S)-N-(2-(2-methyl-4-(pyridin-2-yl)piperazin-1-yl)pyrimidin-5-yl)-6-(2H-1,2,3-triazol-2-yl)nicotinamide
45		6-(3,5-dimethylpyrazol-1-yl)-N-[2-[(2S)-2-methyl-4-(2-pyridyl)piperazin-1-yl]pyrimidin-5-yl]pyridine-3-carboxamide

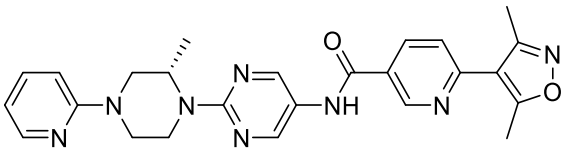
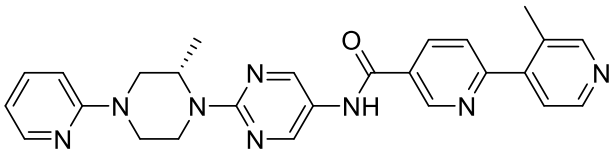
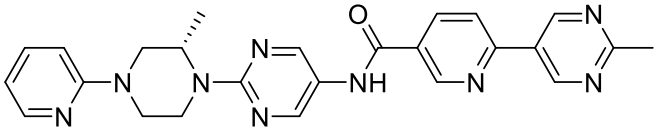
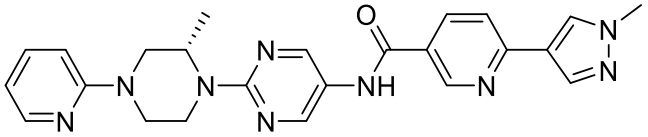
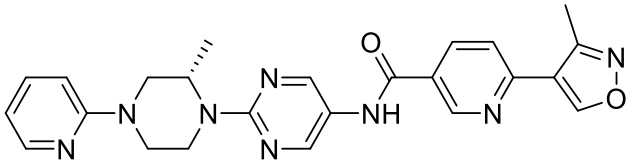
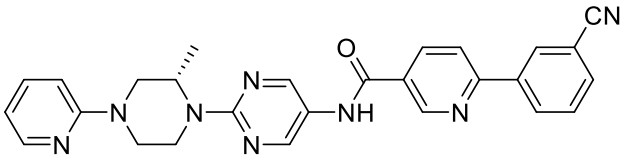
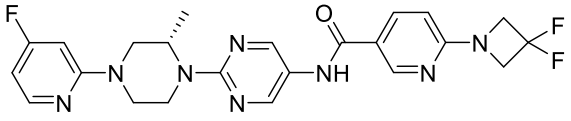
Ex. No.	Structure	Name
46		6-(3,3-difluoroazetidin-1-yl)-N-[2-[(2S)-2-methyl-4-(2-pyridyl)piperazin-1-yl]pyrimidin-5-yl]pyridine-3-carboxamide
47		6-[(3R)-3-fluoropyrrolidin-1-yl]-N-[2-[(2S)-2-methyl-4-(2-pyridyl)piperazin-1-yl]pyrimidin-5-yl]pyridine-3-carboxamide
48		6-[rac-(4S)-2-azabicyclo[2.2.1]heptan-2-yl]-N-[2-[rac-(2S)-2-methyl-4-(2-pyridyl)piperazin-1-yl]pyrimidin-5-yl]pyridine-3-carboxamide
49		6-[(3S)-3-fluoropyrrolidin-1-yl]-N-[2-[(2S)-2-methyl-4-(2-pyridyl)piperazin-1-yl]pyrimidin-5-yl]pyridine-3-carboxamide
50		6-(3,3-dimethylpyrrolidin-1-yl)-N-[2-[(2S)-2-methyl-4-(2-pyridyl)piperazin-1-yl]pyrimidin-5-yl]pyridine-3-carboxamide
51		6-(3-fluoroazetidin-1-yl)-N-[2-[(2S)-2-methyl-4-(6-methyl-2-pyridyl)piperazin-1-yl]pyrimidin-5-yl]pyridine-3-carboxamide
52		6-(3-methylazetidin-1-yl)-N-[2-[(2S)-2-methyl-4-(2-pyridyl)piperazin-1-yl]pyrimidin-5-yl]pyridine-3-carboxamide

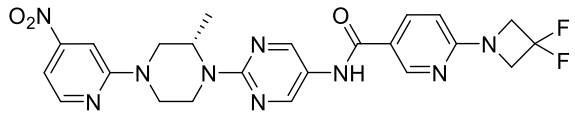
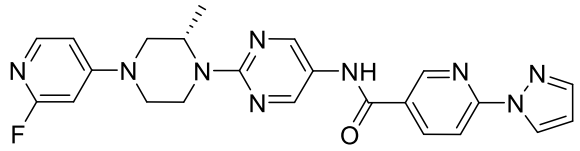
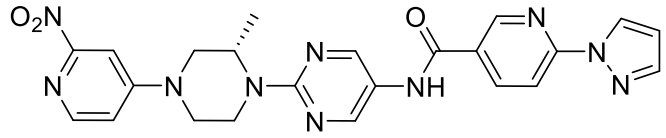
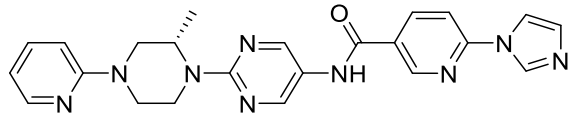
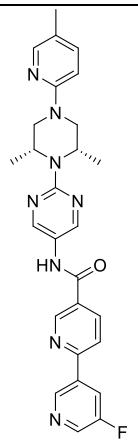
Ex. No.	Structure	Name
53		6-(azepan-1-yl)-N-[2-[(2S)-2-methyl-4-(2-pyridyl)piperazin-1-yl]pyrimidin-5-yl]pyridine-3-carboxamide
54		6-(2-oxa-5-azabicyclo[2.2.1]heptan-5-yl)-N-[2-[rac-(2S)-2-methyl-4-(2-pyridyl)piperazin-1-yl]pyrimidin-5-yl]pyridine-3-carboxamide
55		6-[methyl(propyl)amino]-N-[2-[(2S)-2-methyl-4-(2-pyridyl)piperazin-1-yl]pyrimidin-5-yl]pyridine-3-carboxamide
56		6-(azetidin-1-yl)-N-[2-[(2S)-2-methyl-4-(2-pyridyl)piperazin-1-yl]pyrimidin-5-yl]pyridine-3-carboxamide
57		6-(methylamino)-N-[2-[(2S)-2-methyl-4-(2-pyridyl)piperazin-1-yl]pyrimidin-5-yl]pyridine-3-carboxamide
58		6-(dimethylamino)-N-[2-[(2S)-2-methyl-4-(6-methyl-2-pyridyl)piperazin-1-yl]pyrimidin-5-yl]pyridine-3-carboxamide
59		6-[ethyl(2-hydroxyethyl)amino]-N-[2-[(2S)-2-methyl-4-(2-pyridyl)piperazin-1-yl]pyrimidin-5-yl]pyridine-3-carboxamide

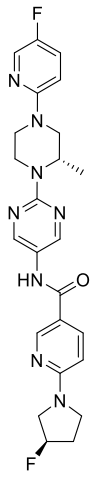
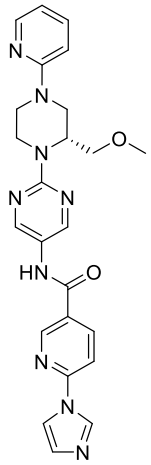
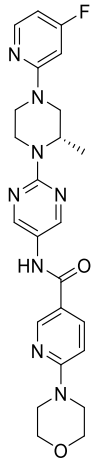
Ex. No.	Structure	Name
60		6-(3-hydroxyazetidin-1-yl)-N-[2-[(2S)-2-methyl-4-(2-pyridyl)piperazin-1-yl]pyrimidin-5-yl]pyridine-3-carboxamide
61		6-[isobutyl(methyl)amino]-N-[2-[(2S)-2-methyl-4-(2-pyridyl)piperazin-1-yl]pyrimidin-5-yl]pyridine-3-carboxamide
62		N-[2-[(2S)-2-methyl-4-(2-pyridyl)piperazin-1-yl]pyrimidin-5-yl]-6-pyrrolidin-1-yl-pyridine-3-carboxamide
63		6-(3-fluorophenyl)-N-[2-[(2S)-2-methyl-4-(2-pyridyl)piperazin-1-yl]pyrimidin-5-yl]pyridine-3-carboxamide
64		6-(4-methyl-3-furyl)-N-[2-[(2S)-2-methyl-4-(2-pyridyl)piperazin-1-yl]pyrimidin-5-yl]pyridine-3-carboxamide
65		N-[2-[(2S)-2-methyl-4-(2-pyridyl)piperazin-1-yl]pyrimidin-5-yl]-6-thiazol-5-yl-pyridine-3-carboxamide
66		N-[2-[(2S)-2-methyl-4-(2-pyridyl)piperazin-1-yl]pyrimidin-5-yl]-6-pyridazin-4-yl-pyridine-3-carboxamide

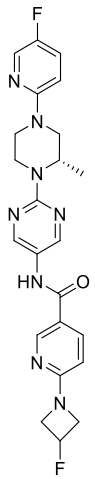
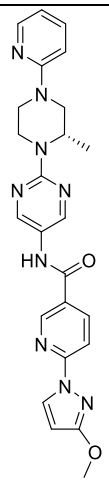
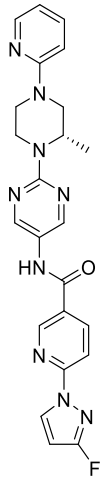
Ex. No.	Structure	Name
67		N-[2-[(2S)-2-methyl-4-(2-pyridyl)piperazin-1-yl]pyrimidin-5-yl]-6-(3-thienyl)pyridine-3-carboxamide
68		6-(4-fluorophenyl)-N-[2-[(2S)-2-methyl-4-(2-pyridyl)piperazin-1-yl]pyrimidin-5-yl]pyridine-3-carboxamide
69		N-[2-[(2S)-2-methyl-4-(2-pyridyl)piperazin-1-yl]pyrimidin-5-yl]-6-(3-pyridyl)pyridine-3-carboxamide
70		N-[2-[(2S)-2-methyl-4-(2-pyridyl)piperazin-1-yl]pyrimidin-5-yl]-6-(4-pyridyl)pyridine-3-carboxamide
71		N-[2-[(2S)-2-methyl-4-(2-pyridyl)piperazin-1-yl]pyrimidin-5-yl]-6-phenyl-pyridine-3-carboxamide
72		6-(3-furyl)-N-[2-[(2S)-2-methyl-4-(2-pyridyl)piperazin-1-yl]pyrimidin-5-yl]pyridine-3-carboxamide
73		6-(4-cyanophenyl)-N-[2-[(2S)-2-methyl-4-(2-pyridyl)piperazin-1-yl]pyrimidin-5-yl]pyridine-3-carboxamide

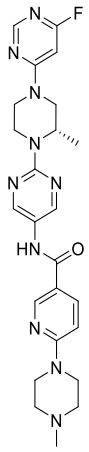
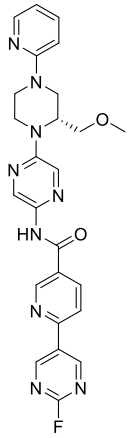
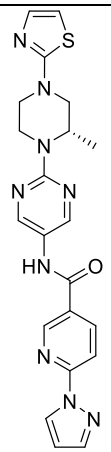
Ex. No.	Structure	Name
74		6-(5,6-dihydro-4H-pyrrolo[1,2-b]pyrazol-3-yl)-N-[2-[(2S)-2-methyl-4-(2-pyridyl)piperazin-1-yl]pyrimidin-5-yl]pyridine-3-carboxamide
75		6-(2-methylpyrazol-3-yl)-N-[2-[(2S)-2-methyl-4-(2-pyridyl)piperazin-1-yl]pyrimidin-5-yl]pyridine-3-carboxamide
76		N-[2-[(2S)-2-methyl-4-(2-pyridyl)piperazin-1-yl]pyrimidin-5-yl]-6-pyrimidin-5-yl-pyridine-3-carboxamide
77		6-(2-methyl-4-pyridyl)-N-[2-[(2S)-2-methyl-4-(2-pyridyl)piperazin-1-yl]pyrimidin-5-yl]pyridine-3-carboxamide
78		6-(5-fluoro-3-pyridyl)-N-[2-[(2S)-2-methyl-4-(2-pyridyl)piperazin-1-yl]pyrimidin-5-yl]pyridine-3-carboxamide
79		6-(3-fluoro-4-pyridyl)-N-[2-[(2S)-2-methyl-4-(2-pyridyl)piperazin-1-yl]pyrimidin-5-yl]pyridine-3-carboxamide
80		6-(6-fluoro-2-pyridyl)-N-[2-[(2S)-2-methyl-4-(2-pyridyl)piperazin-1-yl]pyrimidin-5-yl]pyridine-3-carboxamide
81		6-(3,5-dimethylisoxazol-4-yl)-N-[2-[(2S)-2-methyl-4-(2-

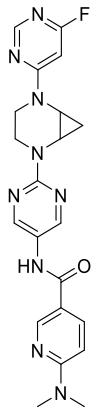
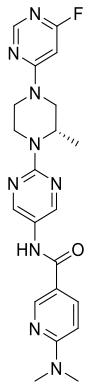
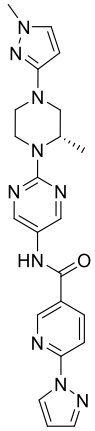
Ex. No.	Structure	Name
		pyridyl)piperazin-1-yl]pyrimidin-5-yl]pyridine-3-carboxamide
82		6-(3-methyl-4-pyridyl)-N-[2-[(2S)-2-methyl-4-(2-pyridyl)piperazin-1-yl]pyrimidin-5-yl]pyridine-3-carboxamide
83		N-[2-[(2S)-2-methyl-4-(2-pyridyl)piperazin-1-yl]pyrimidin-5-yl]-6-(2-methylpyrimidin-5-yl)pyridine-3-carboxamide
84		6-(1-methylpyrazol-4-yl)-N-[2-[(2S)-2-methyl-4-(2-pyridyl)piperazin-1-yl]pyrimidin-5-yl]pyridine-3-carboxamide
85		6-(3-methylisoxazol-4-yl)-N-[2-[(2S)-2-methyl-4-(2-pyridyl)piperazin-1-yl]pyrimidin-5-yl]pyridine-3-carboxamide
86		4-(3-cyanophenyl)-N-[2-[(2S)-2-methyl-4-(2-pyridyl)piperazin-1-yl]pyrimidin-5-yl]benzamide
87		(S)-6-(3,3-difluoroazetidin-1-yl)-N-(2-(4-(4-fluoropyridin-2-yl)-2-methylpiperazin-1-yl)pyrimidin-5-yl)nicotinamide

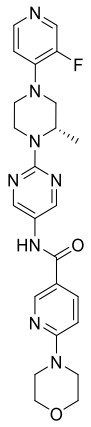
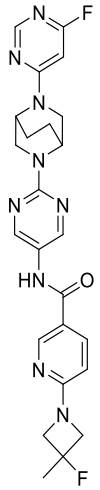
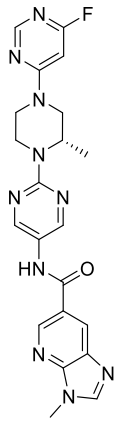
Ex. No.	Structure	Name
88		(S)-6-(3,3-difluoroazetidin-1-yl)-N-(2-(2-methyl-4-(4-nitropyridin-2-yl)piperazin-1-yl)pyrimidin-5-yl)nicotinamide
89		(S)-N-(2-(4-(2-fluoropyridin-4-yl)-2-methylpiperazin-1-yl)pyrimidin-5-yl)-6-(1H-pyrazol-1-yl)nicotinamide
90		(S)-N-(2-(2-methyl-4-(2-nitropyridin-4-yl)piperazin-1-yl)pyrimidin-5-yl)-6-(1H-pyrazol-1-yl)nicotinamide
91		(S)-6-(1H-imidazol-1-yl)-N-(2-(2-methyl-4-(pyridin-2-yl)piperazin-1-yl)pyrimidin-5-yl)nicotinamide
92		N-(2-((2S,6R)-2,6-dimethyl-4-(5-methylpyridin-2-yl)piperazin-1-yl)pyrimidin-5-yl)-5'-fluoro-[2,3'-bipyridine]-5-carboxamide

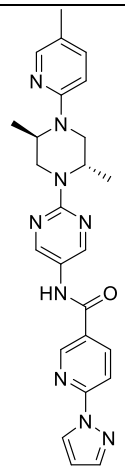
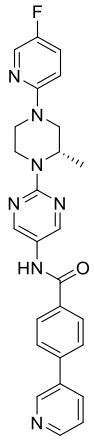
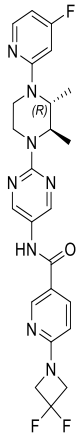
Ex. No.	Structure	Name
93		N-(2-((S)-4-(5-fluoropyridin-2-yl)-2-methylpiperazin-1-yl)pyrimidin-5-yl)-6-((R)-3-fluoropyrrolidin-1-yl)nicotinamide
94		(R)-6-(1H-imidazol-1-yl)-N-(2-(2-(methoxymethyl)-4-(pyridin-2-yl)piperazin-1-yl)pyrimidin-5-yl)nicotinamide
95		(S)-N-(2-(4-(4-fluoropyridin-2-yl)-2-methylpiperazin-1-yl)pyrimidin-5-yl)-6-morpholinonicotinamide

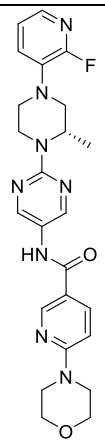
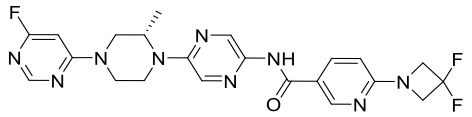
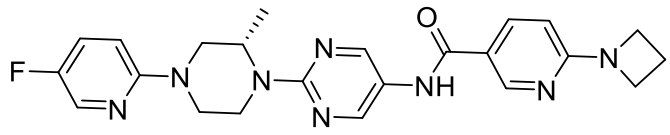
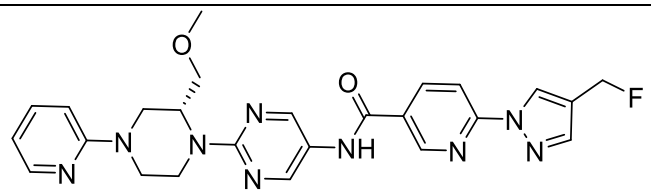
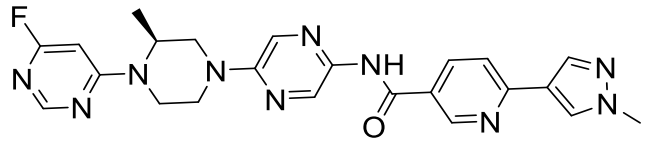
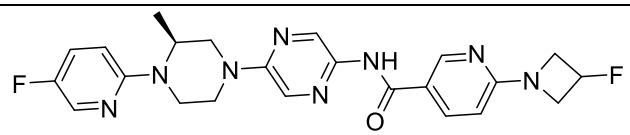
Ex. No.	Structure	Name
96		(S)-6-(3-fluoroazetidin-1-yl)-N-(2-(4-(5-fluoropyridin-2-yl)-2-methylpiperazin-1-yl)pyrimidin-5-yl)nicotinamide
97		(S)-6-(3-methoxy-1H-pyrazol-1-yl)-N-(2-(2-methyl-4-(pyridin-2-yl)piperazin-1-yl)pyrimidin-5-yl)nicotinamide
98		(S)-6-(3-fluoro-1H-pyrazol-1-yl)-N-(2-(2-methyl-4-(pyridin-2-yl)piperazin-1-yl)pyrimidin-5-yl)nicotinamide

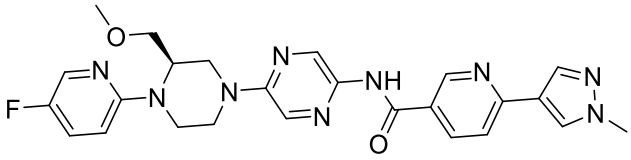
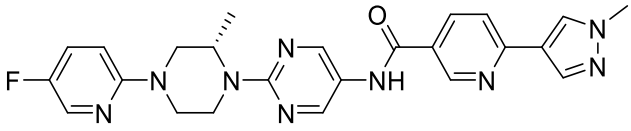
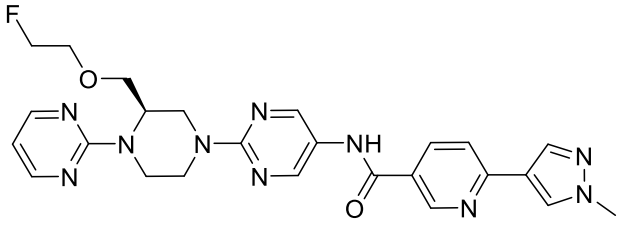
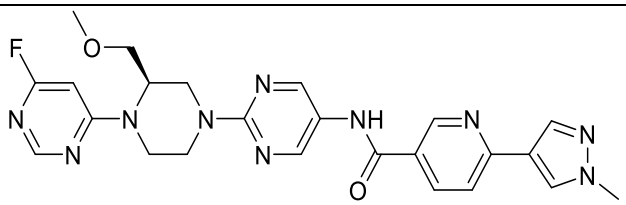
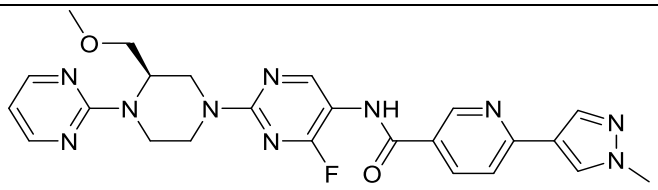
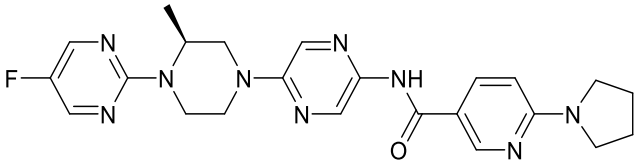
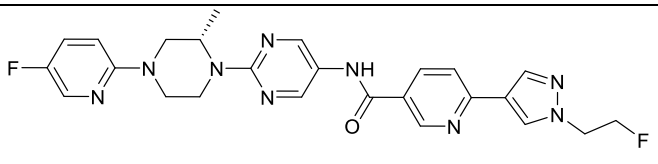
Ex. No.	Structure	Name
99		(S)-N-(2-(4-(6-fluoropyrimidin-4-yl)-2-methylpiperazin-1-yl)pyrimidin-5-yl)-6-(4-methylpiperazin-1-yl)nicotinamide
100		(R)-6-(2-fluoropyrimidin-5-yl)-N-(5-(2-(methoxymethyl)-4-(pyridin-2-yl)piperazin-1-yl)pyrazin-2-yl)nicotinamide
101		(S)-N-(2-(2-methyl-4-(thiazol-2-yl)piperazin-1-yl)pyrimidin-5-yl)-6-(1H-pyrazol-1-yl)nicotinamide

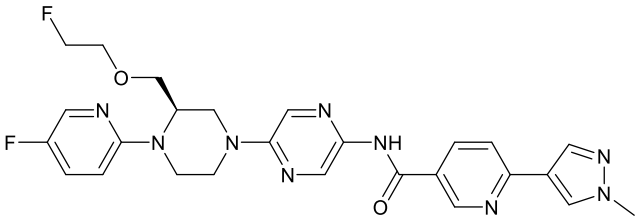
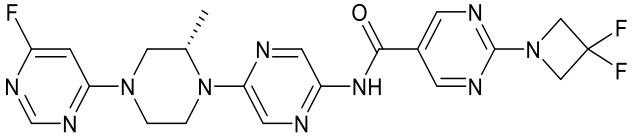
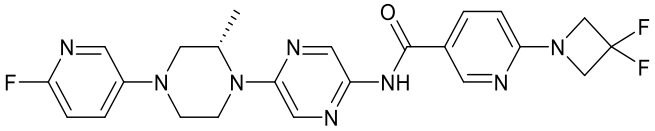
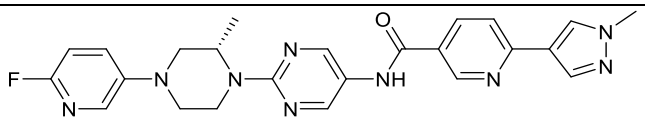
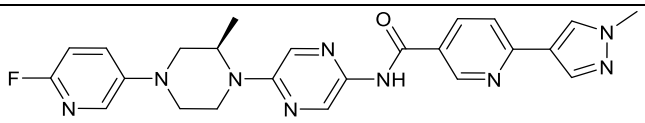
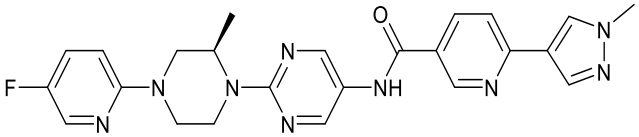
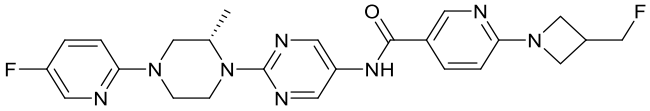
Ex. No.	Structure	Name
102		6-(dimethylamino)-N-(2-(5-(6-fluoropyrimidin-4-yl)-2,5-diazabicyclo[4.1.0]heptan-2-yl)pyrimidin-5-yl)nicotinamide
103		(S)-6-(dimethylamino)-N-(2-(4-(6-fluoropyrimidin-4-yl)-2-methylpiperazin-1-yl)pyrimidin-5-yl)nicotinamide
104		(S)-N-(2-(2-methyl-4-(1-methyl-1H-pyrazol-3-yl)piperazin-1-yl)pyrimidin-5-yl)-6-(1H-pyrazol-1-yl)nicotinamide

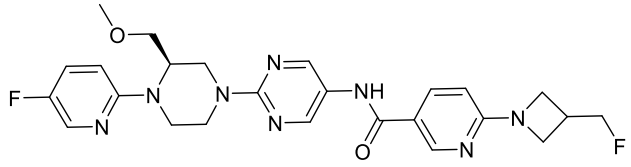
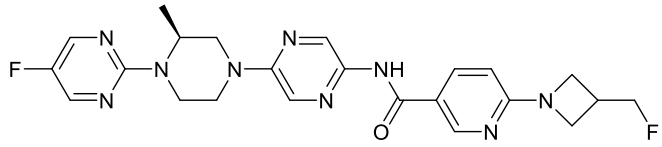
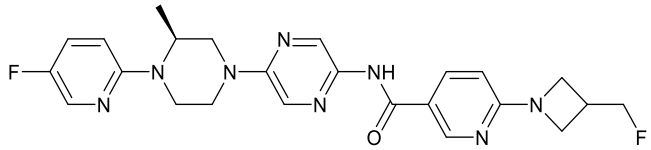
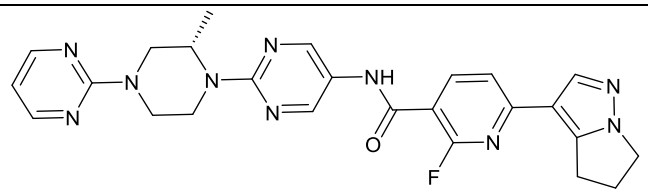
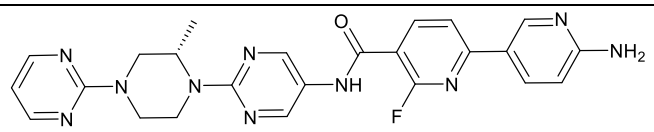
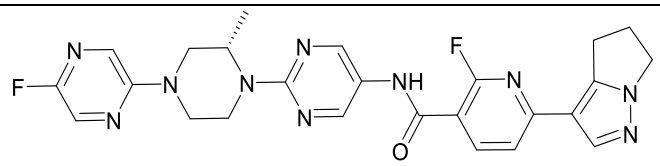
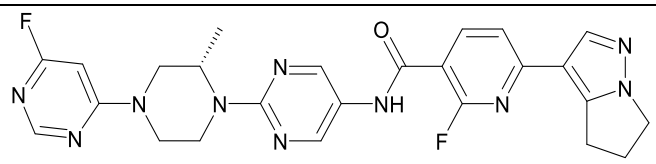
Ex. No.	Structure	Name
105		(S)-N-(2-(4-(3-fluoropyridin-4-yl)-2-methylpiperazin-1-yl)pyrimidin-5-yl)-6-morpholinonicotinamide
106		6-(3-fluoro-3-methylazetidin-1-yl)-N-(2-(5-(6-fluoropyrimidin-4-yl)-2,5-diazabicyclo[2.2.2]octan-2-yl)pyrimidin-5-yl)nicotinamide
107		(S)-N-(2-(4-(6-fluoropyrimidin-4-yl)-2-methylpiperazin-1-yl)pyrimidin-5-yl)-3-methyl-3H-imidazo[4,5-b]pyridine-6-carboxamide

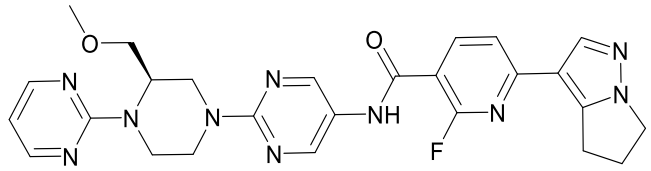
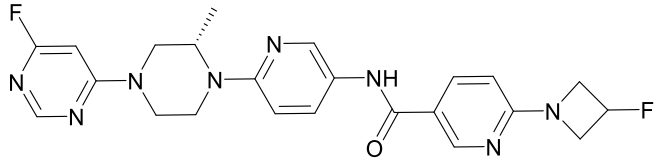
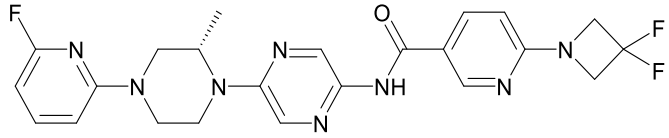
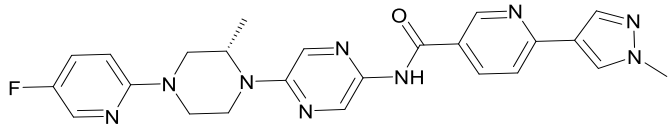
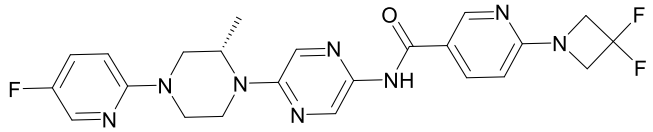
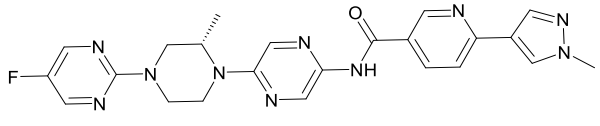
Ex. No.	Structure	Name
108		N-(2-((2S,5R)-2,5-dimethyl-4-(5-methylpyridin-2-yl)piperazin-1-yl)pyrimidin-5-yl)-6-(1H-pyrazol-1-yl)nicotinamide
109		(S)-N-(2-(4-(5-fluoropyridin-2-yl)-2-methylpiperazin-1-yl)pyrimidin-5-yl)-4-(pyridin-3-yl)benzamide
110		6-(3,3-difluoroazetidin-1-yl)-N-(2-((2R,3R)-4-(4-fluoropyridin-2-yl)-2,3-dimethylpiperazin-1-yl)pyrimidin-5-yl)nicotinamide

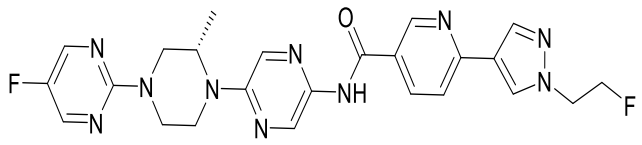
Ex. No.	Structure	Name
111		(S)-N-(2-(4-(2-fluoropyridin-3-yl)-2-methylpiperazin-1-yl)pyrimidin-5-yl)-6-morpholinonicotinamide
112		(S)-6-(3,3-difluoroazetidin-1-yl)-N-(5-(4-(6-fluoropyrimidin-4-yl)-2-methylpiperazin-1-yl)pyrazin-2-yl)nicotinamide
113		(S)-6-(azetidin-1-yl)-N-(2-(4-(5-fluoropyridin-2-yl)-2-methylpiperazin-1-yl)pyrimidin-5-yl)nicotinamide
114		(R)-6-(4-(fluoromethyl)-1H-pyrazol-1-yl)-N-(2-(2-(methoxymethyl)-4-(pyridin-2-yl)piperazin-1-yl)pyrimidin-5-yl)nicotinamide
115		(S)-N-(5-(4-(6-fluoropyrimidin-4-yl)-3-methylpiperazin-1-yl)pyrazin-2-yl)-6-(1-methyl-1H-pyrazol-4-yl)nicotinamide
116		(S)-6-(3-fluoroazetidin-1-yl)-N-(5-(4-(5-fluoropyridin-2-yl)-3-methylpiperazin-1-yl)pyrazin-2-yl)nicotinamide

Ex. No.	Structure	Name
117		(R)-N-(5-(4-(5-fluoropyridin-2-yl)-3-(methoxymethyl)piperazin-1-yl)pyrazin-2-yl)-6-(1-methyl-1H-pyrazol-4-yl)nicotinamide
118		(S)-N-(2-(4-(5-fluoropyridin-2-yl)-2-methylpiperazin-1-yl)pyrimidin-5-yl)-6-(1-methyl-1H-pyrazol-4-yl)nicotinamide
119		(R)-N-(2-(3-((2-fluoroethoxy)methyl)-4-(pyrimidin-2-yl)piperazin-1-yl)pyrimidin-5-yl)-6-(1-methyl-1H-pyrazol-4-yl)nicotinamide
120		(R)-N-(2-(4-(6-fluoropyrimidin-4-yl)-3-(methoxymethyl)piperazin-1-yl)pyrimidin-5-yl)-6-(1-methyl-1H-pyrazol-4-yl)nicotinamide
121		(R)-N-(4-fluoro-2-(3-(methoxymethyl)-4-(pyrimidin-2-yl)piperazin-1-yl)pyrimidin-5-yl)-6-(1-methyl-1H-pyrazol-4-yl)nicotinamide
122		(S)-N-(5-(4-(5-fluoropyrimidin-2-yl)-3-methylpiperazin-1-yl)pyrazin-2-yl)-6-(pyrrolidin-1-yl)nicotinamide
123		(S)-6-(1-(2-fluoroethyl)-1H-pyrazol-4-yl)-N-(2-(4-(5-fluoropyridin-2-yl)-2-methylpiperazin-1-yl)pyrimidin-5-yl)nicotinamide

Ex. No.	Structure	Name
124		(R)-N-(5-(3-((2-fluoroethoxy)methyl)-4-(5-fluoropyridin-2-yl)piperazin-1-yl)pyrazin-2-yl)-6-(1-methyl-1H-pyrazol-4-yl)nicotinamide
125		(S)-2-(3,3-difluoroazetidin-1-yl)-N-(5-(4-(6-fluoropyrimidin-4-yl)-2-methylpiperazin-1-yl)pyrazin-2-yl)pyrimidine-5-carboxamide
126		(S)-6-(3,3-difluoroazetidin-1-yl)-N-(5-(4-(6-fluoropyridin-3-yl)-2-methylpiperazin-1-yl)pyrazin-2-yl)nicotinamide
127		(S)-N-(2-(4-(6-fluoropyridin-3-yl)-2-methylpiperazin-1-yl)pyrimidin-5-yl)-6-(1-methyl-1H-pyrazol-4-yl)nicotinamide
128		(R)-N-(5-(4-(6-fluoropyridin-3-yl)-2-methylpiperazin-1-yl)pyrazin-2-yl)-6-(1-methyl-1H-pyrazol-4-yl)nicotinamide
129		(R)-N-(2-(4-(5-fluoropyridin-2-yl)-2-methylpiperazin-1-yl)pyrimidin-5-yl)-6-(1-methyl-1H-pyrazol-4-yl)nicotinamide
130		(S)-6-(3-(fluoromethyl)azetidin-1-yl)-N-(2-(4-(5-fluoropyridin-2-yl)-2-methylpiperazin-1-yl)pyrimidin-5-yl)nicotinamide

Ex. No.	Structure	Name
131		(R)-6-(3-(fluoromethyl)azetidin-1-yl)-N-(2-(4-(5-fluoropyridin-2-yl)-3-(methoxymethyl)piperazin-1-yl)pyrimidin-5-yl)nicotinamide
132		(S)-6-(3-(fluoromethyl)azetidin-1-yl)-N-(5-(4-(5-fluoropyrimidin-2-yl)-3-methylpiperazin-1-yl)pyrazin-2-yl)nicotinamide
133		(S)-6-(3-(fluoromethyl)azetidin-1-yl)-N-(5-(4-(5-fluoropyridin-2-yl)-3-methylpiperazin-1-yl)pyrazin-2-yl)nicotinamide
134		(S)-6-(5,6-dihydro-4H-pyrrolo[1,2-b]pyrazol-3-yl)-2-fluoro-N-(2-(2-methyl-4-(pyrimidin-2-yl)piperazin-1-yl)pyrimidin-5-yl)nicotinamide
135		(S)-6'-amino-6-fluoro-N-(2-(2-methyl-4-(pyrimidin-2-yl)piperazin-1-yl)pyrimidin-5-yl)-[2,3'-bipyridine]-5-carboxamide
136		(S)-6-(5,6-dihydro-4H-pyrrolo[1,2-b]pyrazol-3-yl)-2-fluoro-N-(2-(4-(5-fluoropyrazin-2-yl)-2-methylpiperazin-1-yl)pyrimidin-5-yl)nicotinamide
137		(S)-6-(5,6-dihydro-4H-pyrrolo[1,2-b]pyrazol-3-yl)-2-fluoro-N-(2-(4-(6-fluoropyrimidin-4-yl)-2-

Ex. No.	Structure	Name
		methylpiperazin-1-yl)pyrimidin-5-yl)nicotinamide
138		(R)-6-(5,6-dihydro-4H-pyrrolo[1,2-b]pyrazol-3-yl)-2-fluoro-N-(2-(3-(methoxymethyl)-4-(pyrimidin-2-yl)piperazin-1-yl)pyrimidin-5-yl)nicotinamide
139		(S)-6-(3-fluoroazetidin-1-yl)-N-(6-(4-(6-fluoropyrimidin-4-yl)-2-methylpiperazin-1-yl)pyridin-3-yl)nicotinamide
140		(S)-6-(3,3-difluoroazetidin-1-yl)-N-(5-(4-(6-fluoropyridin-2-yl)-2-methylpiperazin-1-yl)pyrazin-2-yl)nicotinamide
141		(S)-N-(5-(4-(5-fluoropyridin-2-yl)-2-methylpiperazin-1-yl)pyrazin-2-yl)-6-(1-methyl-1H-pyrazol-4-yl)nicotinamide
142		(S)-6-(3,3-difluoroazetidin-1-yl)-N-(5-(4-(5-fluoropyridin-2-yl)-2-methylpiperazin-1-yl)pyrazin-2-yl)nicotinamide
143		(S)-N-(5-(4-(5-fluoropyrimidin-2-yl)-2-methylpiperazin-1-yl)pyrazin-2-yl)-6-(1-methyl-1H-pyrazol-4-yl)nicotinamide

Ex. No.	Structure	Name
144		(S)-6-(1-(2-fluoroethyl)-1H-pyrazol-4-yl)-N-(5-(4-(5-fluoropyrimidin-2-yl)-2-methylpiperazin-1-yl)pyrazin-2-yl)nicotinamide

or a pharmaceutically acceptable salt thereof.

16. The compound of Claim 15 selected from Ex. No. 1, 6, 9, 11, 12, 37, 39, 47, 51, 57, 58, 64, 72, 75, 78, 79, 80, 91, 96, 112, 113, 115, 116, 118, 134, 138 and 141, or a pharmaceutically acceptable salt thereof.

17. The compound of Claim 15 selected from Ex. No. 39, 47, 51, 78, 79, 96, 112, 116 and 141 or a pharmaceutically acceptable salt thereof.

18. The compound of Claim 1 or 15, or a pharmaceutically acceptable salt thereof, which is labeled with an isotope selected from ^{2}H, ^{3}H, ^{11}C, ^{13}C, ^{14}C, ^{13}N, ^{15}N, ^{15}O, ^{17}O, ^{18}O, ^{18}F, ^{35}S, ^{36}Cl, ^{82}Br, ^{76}Br, ^{77}Br, ^{123}I, ^{124}I or ^{131}I.

19. The compound of Claim 15, or a pharmaceutically acceptable salt thereof, which is isotopically labeled with ^{3}H, ^{11}C or ^{18}F.

20. A pharmaceutical composition comprising a compound of Claim 1, or a pharmaceutically acceptable salt thereof, and at least one pharmaceutical excipient.

21. A method of measuring the clinical efficacy of therapeutic agents for Parkinson's disease comprising the steps of

a) measuring the amount of alpha-synuclein aggregate formation in the brain tissue of a patient diagnosed with PD and who had been administered an isotopically-labeled compound of Formula I, according to Claim 18, before treatment with said therapeutic agent,

b) measuring the amount of alpha-synuclein aggregate formation in the brain tissue of the patient who had been administered the isotopically-labeled compound of Formula I, according to Claim 18, after treatment with said therapeutic agent, and

c) analyzing whether said therapeutic agent stopped or decreased the progression of alpha-synuclein aggregate formation in the patient's brain tissue.

22. A compound of Claim 1, or a pharmaceutically acceptable salt thereof, for use as an imaging agent.

23. A compound of Claim 18, or a pharmaceutically acceptable salt thereof, for use as an imaging agent.