S1 File. Synthesis of compounds 136 and 211.

Anhydrous THF and dioxane were distilled from sodium-benzophenone, and dichloromethane was distilled from calcium hydride. All starting materials were purchased from either J&K Chemicals Co. or Sigma Aldrich Chemical Co.. P25H2 was purchased from ChemDiv, Inc. Water was distilled and purified through a Milli-Q water system (Millipore Corp., Bedford, MA). All reactions were carried out under a nitrogen atmosphere with dry solvents under anhydrous conditions, unless otherwise noted. Reactions were monitored by thin-layer chromatography (TLC) carried out on 0.25 mm Tsingdao silica gel plates (60F-254) using UV light as visualizing agent and an ethanolic solution of phosphomolybdic acid and potassium permanganate, and heat as developing agents. Tsingdao silica gel (60, particle size 0.040–0.063 mm) was used for flash column chromatography to purified compounds. Yields refer to chromatographically, unless otherwise stated. All compounds were characterized by $^1$H and $^{13}$C-NMR using Bruker 300 MHz NMR and/or Bruker 400 MHz NMR spectrometers. Chemical shifts are reported in ppm (δ) relative to the residual solvent peak in the corresponding spectra; chloroform δ 7.26 and δ 75.5, DMSO-d$_6$ δ 2.54 and δ 39.5, and coupling constants (J) are reported in hertz (Hz) (where, s = singlet, b = broad, d = doublet, dd = double doublet, bd = broad doublet, ddd = double doublet of doublet, t = triplet, td = double triplet, q = quartet, m = multiplet). Mass spectra values are reported as m/z.

Abbreviations: NaH = sodium hydride, PPh$_3$ = trilphenylphosphine, DIAD = diisopropyl diazene-1,2-dicarboxylate, THF = tetrahydrofuran, DCM = dichloromethane, EA = ethyl acetate, DMF = dimethylformamide.

- General procedure for the synthesis of (Z)-(+-)-exo-3-(bicyclo[2.2.1]heptan-2-yl)-5-((5-(4-chlorophenyl)-3-(5-(piperazin-1-yl)-penty1)furan-2-yl)methylene)-2-thioxothiazolidin-4-one dihydrochloride 136;
Synthetic route of inhibitor 136

Synthesis of (+/-)-exo-3-(bicyclo[2.2.1]heptan-2-yl)-2-thioxothiazolidin-4-one 3:

To a solution of triphenylphosphine (6.3 g, 24 mmol) in THF (150 mL) was added DIAD (5.2 g, 24 mmol) at -78 °C within 2 minutes, and the resultant mixture was stirred at the same temperature for 10 minutes followed by the addition of 1-bicyclo[2.2.1]-heptan-2-ol (mixture of endo and exo, purchased from Sigma Aldrich Chemical Co., 3.4 g, 30 mmol) at the same temperature. After stirring for 10 minutes rhodanine (2.7 g, 20 mmol) was added to the above solution at -78 °C, and the resultant mixture was first stirred at -78 °C for 10 minutes, and then warmed to room temperature, and stirred for 12 h. The reaction was worked up by addition of water (30 mL), and the formed solid was filtered off, and the aqueous phase was extracted with ethyl acetate (3 x 30 mL). The combined organic extracts were washed with brine (20 mL), and dried over anhydrous Na₂SO₄. After removal of the solvent under vacuum, the residue was purified by a flash column chromatography on silica gel (ethyl acetate-hexane) to give (+/-)-exo-3-(bicyclo[2.2.1]heptan-2-yl)-2-thioxothiazolidin-4-one 3 (3.6 g) in 80% yield as pale yellow solids; ¹H NMR (300 MHz, CDCl₃) δ 4.78 (td, J = 8.4, 6.3 Hz, 1H), 3.84 (s, 1H), 2.46 (s, 1H), 2.42 (s, 1H), 2.25-2.13 (m, 2H), 1.76-1.56 (m, 4H), 1.40-1.10 (m, 2H); HRMS (ESI) calcd for C₁₀H₁₄NOS₂ [M + H]+ 228.0517, found 228.0510.

Synthesis of 2-(4-chlorophenyl)-4-iodofuran 6:

To a stirred solution of THP-protected propargylic alcohol 4 (16.8 g, 0.12 mol) in dry THF (100 mL) was added n-BuLi (0.12 mol, 2.5 M in hexane) at -78°C, and the mixture was stirred for 30 min at -30°C, followed by addition of the aldehyde 5 (14.0 g, 0.10 mol) in THF
(50 mL) at -78 °C. The mixture was stirred for 30 min at -78°C, followed by reaction at 0°C for 30 min at 0 °C. The reaction was worked up by addition of a saturated ice/water solution of NH₄Cl (100 mL), followed by Et₂O (100 mL) and the mixture was extracted with ethyl acetate (3 x 50 mL). The combined organic extracts were washed with saturated brine, and then dried with MgSO₄. The solvent was removed under vacuum, and the residue was dissolved in DCM (50 mL). To this solution was added to a solution of a solution of active MnO₂ (3.0 mol) in DCM (100 mL) at room temperature, and the mixture was stirred for 12 h. The reaction was worked up by filtration, and the filtrate was dried with MgSO₄.

The solvent was removed under vacuum, and the residue was redissolved in methanol (100 mL). To this solution was added sodium iodide (75.0 g, 0.50 mol), p-toluenesulfonic acid monohydrate (19.0 g, 0.10 mol) at room temperature, and the reaction mixture was stirred at the same temperature for 2 h. The reaction mixture was worked up by addition of a saturated solution of NaHCO₃ and Na₂SO₃, and the resultant mixture was extracted with CH₂Cl₂. The combined organic extracts were dried with MgSO₄. The solvent was concentrated under vacuum, and the residue was purified by a flash chromatography on neutral alumina oxide (hexane/ethyl acetate) to give 4-iodo-2-(4-chlorophenyl)-4-iodofuran 6 (18.2 g, 60%) as pale yellow solid. ¹H NMR (300 MHz, CDCl₃) δ 7.56 (d, J = 13 Hz, 2H), 7.46 (s, 1H), 7.35 (d, J = 11 Hz, 2H), 6.71 (s, 1H); HRMS (ESI) calcd for C₁₀H₇ClIO [M + H]⁺ 304.9230, found 304.9228.

Synthesis of 5-(5-(4-chlorophenyl)furan-3-yl)pent-4-yn-1-ol 7:

To a solution of 2-(4-chlorophenyl)-4-iodofuran 6 (3.04 g, 10.0 mmol) and pent-4-yn-1-ol (1.68 g, 20.0 mmol) in degassed THF (80 mL) was sequentially added Pd(PPh₃)Cl₂ (0.70 g, 1.0 mmol), CuI (0.38 g, 2.0 mmol) and Et₃N (5.05 g, 50.0 mmol), and the reaction mixture was stirred for 10 h under refluxing conditions. The reaction was worked up by removal of the solvent under vacuum, and the residue was purified by a flash chromatography (hexane/ethyl acetate) on silica gel to give 5-(5-(4-chlorophenyl)furan-3-yl)pent-4-yn-1-ol 7 (2.47 g, 95%) as yellow oil. ¹H NMR (300 MHz, CDCl₃) δ 7.55 (d, J = 6.5 Hz, 2H), 7.33 (d, J = 6.5 Hz, 2H), 7.26 (s, 1H), 6.53 (d, J = 1.8 Hz, 1H), 3.72 –3.69 (m, 2H), 2.56 –2.53 (m, 2H), 1.89–1.82 (m, 2H), 1.67 (board, 1H); HRMS (ESI) calcd for C₁₃H₁₄ClO₂ [M + H]⁺ 261.0682, found 261.0680.

Synthesis of 5-(5-(4-chlorophenyl)furan-3-yl)pentan-1-ol 8:

To a solution of 5-(5-(4-chlorophenyl)furan-3-yl)pent-4-yn-1-ol 7 (2.00 g, 7.7 mmol) in EtOH (50 mL) was added 10% Pd/C (0.20 g), and the mixture was stirred under a balloon pressure of hydrogen for 12 h. The reaction was worked up by filtration of the reaction mixture, and the filtrate was concentrated, and the residue was purified by a flash chromatography (hexane/ethyl acetate) on silica gel to give 5-(5-(4-chlorophenyl)furan-3-yl)pentan-1-ol 8 (2.03 g, ~100%) as the pale yellow oil. ¹H NMR (300 MHz, CDCl₃) δ 7.55 (d, J = 8.7 Hz, 2H), 7.33 (d, J = 8.7 Hz, 2H), 7.23 (d, J = 0.9 Hz, 1H), 6.53 (s, 1H), 3.66 (t, J = 6.0 Hz, 2H), 2.45 (t, J =7.5 Hz, 2H), 1.65–1.56 (m, 6H), 1.49–1.40 (m, 2H); HRMS (ESI) calcd for C₁₅H₁₈ClO₂ [M + H]⁺ 265.0995, found 265.0999.

Synthesis of 5-(5-(4-chlorophenyl)-2-formylfuran-3-yl)pentyl acetate 9:

To a solution of 5-(5-(4-chlorophenyl)-2-formylfuran-3-yl)pentan-1-ol 8 (2.03 g, 7.7 mmol) in DCM (50 mL) was added Ac₂O (3.11 g, 30.8 mmol) and DMAP (0.10 g, 0.8 mmol) at room
temperature, and the mixture was stirred at the same temperature for 2 h. The reaction was quenched by addition of H₂O (50 mL), and the mixture was extracted by ethyl acetate (3 x 50 mL). The combined organic extracts were washed with saturated NaHCO₃, and dried with MgSO₄, the solvent was removed under vacuum, and the residue was purified by a flash chromatography (hexane/ethyl acetate) on silica gel to give 2.35 g of 5-(5-(4-chlorophenyl)furan-3-yl)pentyl acetate as the pale yellow oil in the quantitative yield.

To a solution of 5-(5-(4-chlorophenyl)furan-3-yl)pentyl acetate (1.53 g, 5.0 mmol) in N,N-dimethyl formamide (25 mL) was added a solution of N,N-dimethyl formamide (10 mL) and phosphorus oxychloride (0.92 g, 6.0 mmol) at 0°C under nitrogen, and the resultant mixture was first stirred at room temperature for 30 min, and then at 60°C for 2 h. The reaction was worked by addition of a saturated solution of Na₂CO₃ at 0°C to neutralize to pH 6, and the mixture was extracted with ethyl acetate twice. The combined organic extracts was washed with saturated NaHCO₃, and then dried with MgSO₄. The solvent was removed under vacuum, and the residue was purified by a flash chromatography (hexane/ethyl acetate) on silica gel to give 5-(5-(4-chlorophenyl)-2-formylfuran-3-yl)pentyl acetate 9 (1.34 g, 80% in two steps) as pale yellow oil. ¹H NMR (300 MHz, CDCl₃) δ 9.76 (s, 1H), 7.72 (d, J = 8.7 Hz, 2H), 7.41 (d, J = 11 Hz, 2H), 6.70 (s, 1H), 4.06 (t, J = 6.0 Hz, 2H), 2.84 (t, J = 6.0 Hz, 2H), 2.03 (s, 3H), 1.72-1.63 (m, 4H), 1.49-1.41 (m, 2H); HRMS (ESI) calcd for C₁₃H₂₀ClO₄ [M + H]+ 335.1050, found 335.1043.

Synthesis of 5-(4-chlorophenyl)-3-(5-hydroxypentyl)furan-2-carbaldehyde 10:

To the solution of 5-(5-(4-chlorophenyl)-2-formylfuran-3-yl)pentyl acetate 9 (1.0 g, 3.0 mmol) in MeOH was added K₂CO₃ (2.07 g, 15.0 mmol), the suspension was stirred at room temperature until 9 was fully consumed (1 h). The reaction was worked up by addition of H₂O, the resultant mixture was extracted with EA. The combined organic phases were concentrated; the residue was purified by a flash chromatography (hexane/ethyl acetate) on silica gel to give 5-(4-chlorophenyl)-3-(5-hydroxypentyl)furan-2-carbaldehyde 10 (0.88 g, ~100%) as pale yellow oil. ¹H NMR (300 MHz, CDCl₃) δ 9.73 (s, 1H), 7.72 (d, J = 13 Hz, 2H), 7.37 (d, J = 13 Hz, 2H), 6.69 (s, 1H), 3.64 (t, J = 6.3 Hz, 2H), 2.81 (t, J = 7.2 Hz, 2H), 1.89 (broad, 1H), 1.71-1.56 (m, 4H), 1.49-1.41 (m, 2H); HRMS (ESI) calcd for C₁₃H₁₆ClO₃ [M + H]+ 293.0944, found 293.0937.

Synthesis of (Z)-(+-)-exo-3-(bicyclo[2.2.1]heptan-2-yl)-5-(5-(4-chlorophenyl)-3-(5-hydroxypentyl)-furan-2-yl)methylene)-2-thioxothiazolidin-4-one 11:

To a solution of (+/-)-exo-3-(bicyclo[2.2.1]heptan-2-yl)-2-thioxothiazolidin-4-one 3 (0.14 g, 0.6 mmol) and 5-(4-chlorophenyl)-3-(5-hydroxypentyl)furan-2-carbaldehyde 10 (0.15 g, 0.5 mmol) in EtOH (5 mL) was added a catalytic amount of anhydrous piperidine (two drops) at room temperature, and the mixture was stirred for 12 h. The reaction was worked up by addition of ethyl acetate (50 mL), and the combined organic extracts were washed with water (3 x 10 mL), and then dried over anhydrous Na₂SO₄. The solvent was removed under vacuum, and the residue was purified by a flash chromatography (ethyl acetate/hexane) to afford (Z)-(+-)-exo-3-(bicyclo[2.2.1]heptan-2-yl)-5-(5-(4-chlorophenyl)-3-(5-hydroxypentyl)furan-2-yl)-methylene)-2-thioxothiazolidin-4-one 11 (0.19 g, 75%) as red solid. ¹H NMR (300 MHz, CDCl₃) δ 7.65 (d, J = 8.7 Hz, 2H), 7.43 (d, J = 8.7 Hz, 2H), 7.38 (s, 1H), 6.72 (s, 1H), 4.97 (td, J = 8.4, 6.0 Hz, 1H), 3.66 (t, J = 6.3 Hz, 2H), 2.62 (t, J = 7.2 Hz, 2H), 2.55 (s, 1H), 2.46 (s, 1H), 2.40-2.23 (m, 2H), 1.75 (t, J = 7.3, 2.4 Hz, 1H), 1.76-1.63 (m, 3H),
1.60-1.40 (m, 4H); HRMS (ESI) calcd for C_{26}H_{28}ClNO_{2}S_{2} [M + H]^+ 502.1277, found 502.1265.

Synthesis of (Z)-(+/)-exo-3-(bicyclo[2.2.1]heptan-2-yl)-5-((5-(4-chlorophenyl)-3-(5-iodopentyl)furan-2-yl)-methylene)-2-thioxothiazolidin-4-one 12:

To a solution of (Z)-(+/)-exo-3-(bicyclo[2.2.1]heptan-2-yl)-5-((5-(4-chlorophenyl)-3-(5-hydroxy-pentyl)furan-2-yl)methylene)-2-thioxothiazolidin-4-one 11 (0.15 g, 0.30 mmol), PPh3 (0.12 g, 0.46 mmol) and imidazole (0.04 g, 0.60 mmol) in THF (60 mL) was added I2 (0.10 g, 0.40 mmol), the mixture was stirred at room temperature for 2 h. The solvent were removed, and the residue was extracted with EA, and the combined organic extracts were washed with a saturated solution of Na2S2O3 and then dried MgSO4. The solvent was removed under vacuum, and the residue was purified by a flash chromatography (ethyl acetate/hexane) on silica gel to give (Z)-(+/)-exo-3-(bicyclo[2.2.1]heptan-2-yl)-5-((5-(4-chlorophenyl)-3-(5-iodopentyl)furan-2-yl)-methylene)-2-thioxothiazolidin-4-one 12 (0.13 g, 70%) as yellow oil. 1H NMR (300 MHz, CDCl3) δ 7.67 (d, J = 11 Hz, 1H), 7.43 (d, J = 8.7 Hz, 1H), 7.36 (s, 1H), 6.73 (s, 1H), 6.71 (d, J = 3.6 Hz, 1H), 4.97 (td, J = 8.7, 6.0 Hz, 1H), 2.86 (t, J = 7.2 Hz, 2H), 2.67 (t, J = 7.2 Hz, 2H), 2.46 (s, 1H), 2.40-2.23 (m, 2H), 1.82 (dt, J = 7.3, 2.4 Hz, 1H), 1.76-1.63 (m, 3H), 1.60-1.40 (m, 4H); HRMS (ESI) calcd for C_{26}H_{28}ClNO_{2}S_{2} [M + H]^+ 612.0295, found 612.0285.

Synthesis of (Z)-(+/)-exo-tert-butyl 4-((5-((3-(bicyclo[2.2.1]heptan-2-yl)-4-oxo-2-thioxothiazolidin-5-ylidene)methyl)-5-(4-chlorophenyl)furan-3-yl)pentyl)piperazine-1-carboxylate 13:

To a solution of (Z)-(+/)-exo-3-(bicyclo[2.2.1]heptan-2-yl)-5-((5-(4-chlorophenyl)-3-(5-iodopentyl)furan-2-yl)methylene)-2-thioxothiazolidin-4-one 12 (0.12 g, 0.20 mmol) in dry DCM (10 mL) was added tert-butyl piperazine-1-carboxylate (0.08 g, 0.43 mmol), and the mixture was stirred at room temperature for 12 h. The solvent was removed, and the residue was purified by a flash chromatography (ethyl acetate/hexane) on silica gel to give (Z)-(+/)-exo-tert-butyl 4-((5-((3-(bicyclo[2.2.1]heptan-2-yl)-4-oxo-2-thioxothiazolidin-5-ylidene)methyl)-5-(4-chlorophenyl)furan-3-yl)pentyl)piperazine-1-carboxylate 13 (0.12 g, 90%) as red solid. 1H NMR (300 MHz, CDCl3) δ 7.70 (d, J = 8.7 Hz, 2H), 7.45 (d, J = 8.4 Hz, 2H), 7.39 (s, 1H), 6.74 (s, 1H), 4.90 (dd, J = 8.7, 6.3 Hz, 1H), 3.45 (broad, 4H), 2.64-2.57 (m, 3H), 2.48-2.30 (m, 10H), 1.90-1.53 (m, 7H), 1.50 (s, 9H), 1.48-1.20 (m, 6H); HRMS (ESI) calcd for C_{35}H_{45}ClN_{5}O_{4}S_{2} [M + H]^+ 670.2540, found 670.2542.

Synthesis of (Z)-(+/)-exo-3-(bicyclo[2.2.1]heptan-2-yl)-5-((5-(4-chlorophenyl)-3-(5-(piperazin-1-yl)-pentyl)furan-2-yl)methylene)-2-thioxothiazolidin-4-one dihydrochloride 136:

(Z)-(+/)-exo-tert-butyl 4-((5-((3-(bicyclo[2.2.1]heptan-2-yl)-4-oxo-2-thioxothiazolidin-5-ylidene)-methyl)-5-(4-chlorophenyl)furan-3-yl)pentyl)piperazine-1-carboxylate 13 (0.12 g, 0.18 mmol) was mixed with a saturated solution of HCl (gas) in methanol (20 mL) at 0 °C, and the resultant mixture was stirred at room temperature for 2 h. The reaction was worked up by removal of the organic solvent under vacuum, and the residue was purified by a recrystallization from diethyl ether to give (Z)-(+/)-exo-3-(bicyclo[2.2.1]heptan-2-yl)-5-((5-(4-chlorophenyl)-3-(5-(piperazin-1-yl)-pentyl)furan-2-yl)methylene)-2-thioxothiazolidin-4-one dihydrochloride 136 (0.12 g, ~100%) as reddish brown solid. 1H NMR (300 MHz,
DMSO-\(d_6\) \(\delta\) 11.8 (board, 1H), 9.72 (board, 2H), 7.81 (d, \(J = 9.0\) Hz, 2H), 7.65 (d, \(J = 6.0\) Hz, 2H), 7.46 (s, 1H), 7.37 (s, 1H), 4.85 (t, \(J = 6.0\) Hz, 1H), 3.56-3.53 (m, 2H), 3.48-3.39 (m, 4H), 3.26-3.19 (m, 2H), 3.35-3.12 (m, 4H), 2.66 (t, \(J = 7.2\) Hz, 2H), 2.37 (s, 1H), 2.28-2.19 (m, 2H), 1.74-1.63 (m, 4H), 1.54-1.53 (m, 2H), 1.40-1.36 (m, 2H), 1.25-1.20 (m, 3H); \(^{13}\)C NMR (75.5 MHz, DMSO-\(d_6\)) \(\delta\) 196.1, 167.1, 156.3, 146.2, 137.9, 133.9, 129.6, 127.5, 126.2, 117.4, 115.5, 111.9, 62.4, 55.6, 47.9, 37.8, 36.3, 35.3, 29.3, 28.0, 26.0, 24.6, 23.0; HRMS (ESI) calcd for C\(_{30}\)H\(_{36}\)Cl\(_3\)N\(_3\)O\(_2\)S\(_2\) [M – 2HCl + H]\(^+\) 570.2016, found 570.1943.

- General procedure for the synthesis of (E)-endo/exo-1-(bicyclo[2.2.1]heptan-2-yl)-3-((5-(4-chlorophenyl)-3-(5-hydroxy-pentyl)-furan-2-yl)methylene)pyrrolidine-2,5-dione 211:

![Synthetic route of inhibitor 211](image)

**Synthesis of endo/exo-1-(bicyclo[2.2.1]heptan-2-yl)-1H-pyrrole-2,5-dione 16:**
To a solution of 1-bicyclo[2.2.1]heptan-2-amine 14 (3.36 g, 30.0 mmol, mixture of endo and exo, purchased from J&K Chemicals Co.) and furan-2,5-dione 15 (1.98 g, 20.0 mmol) in toluene (150 mL) was added H\(_2\)SO\(_4\) (5.0 mL) and Et\(_3\)N (5.0 mL) and the mixture was stirred under refluxing conditions for 12h. After removal of the solvents, the residue was resolved in ethyl acetate (150 mL), and the organic phase was washed sequentially with H\(_2\)O, NaHCO\(_3\), and brine (20 mL), and finally dried over anhydrous Na\(_2\)SO\(_4\). After removal of the solvent under vacuum, the crude product was purified by a flash column chromatography on silica gel (ethyl acetate/hexane) to afford endo/exo-1-(bicyclo[2.2.1]heptan-2-yl)-1H-pyrrole-2,5-dione 16 (2.51 g, endo:exo = 5:2, 65%) as whit solid. \(^1\)H NMR (300 MHz, CDCl\(_3\)) \(\delta\) 6.76 (s, 1H), 4.31-4.10 (m, 0.75H), 4.00-3.85 (m, 0.25H), 2.52-2.05 (m, 4H), 1.62-1.50 (m, 3H), 1.40-1.25 (m, 3H); HRMS (ESI) calcd for C\(_{11}\)H\(_{13}\)NO\(_2\)Na [M + Na]\(^+\) 214.0844, found 214.0838.

**Synthesis of (E)-endo/exo-1-(bicyclo[2.2.1]heptan-2-yl)-3-((5-(4-chlorophenyl)-3-(5-hydroxypentyl)-furan-2-yl)methylene)pyrrolidine-2,5-dione 211:**
To a solution of 5-(4-chlorophenyl)-3-(5-hydroxypentyl)furan-2-carb-aldehyde 10 (1.46 g, 5.0 mmol) and endo/exo-1-(bicyclo[2.2.1]heptan-2-yl)-1H-pyrrole-2,5-dione 16 (0.96 g, endo:exo = 5:2, 5.0 mmol) in dry THF (50 mL) was added PPh\(_3\) (1.31 g, 5.0 mmol), and the mixture was stirred under refluxing conditions for 12h. The reaction was worked up by removal of the solvents, and the residue was resolved in ethyl acetate (150 mL), then washed with brine (20 mL), and finally dried over anhydrous Na\(_2\)SO\(_4\). The solvent was removed under vacuum, and the residue was purified by a flash chromatography (ethyl acetate/hexane)
on silica gel to give (E)-endo/exo-1-(bicyclo[2.2.1]-heptan-2-yl)-3-((5-(4-chlorophenyl)-3-(5-hydroxypentyl)furan-2-yl)-methylene)pyrrolidine-2,5-dione 211 (1.05 g, endo:exo = 5:2, 45%) as yellow solid. $^1$H NMR (400 MHz, CDCl$_3$) $\delta$ 7.60 (d, $J = 8.6$ Hz, 2H), 7.41 (d, $J = 8.4$ Hz, 2H), 7.37-7.34 (m, 1H), 6.70 (s, 1H), 4.50-4.39 (m, 0.75H), 4.15-4.05 (m, 0.25H), 3.73 (d, $J = 2.0$ Hz, 1H), 3.70-3.65 (m, 2H), 2.62 (td, $J = 7.2$, 3.2 Hz, 2H), 2.54 (s, 1H), 2.39 (s, 1.4H), 2.30-2.20 (m, 0.75H), 1.90-1.75 (m, 3H), 1.54-1.20 (m, 10H); $^{13}$C NMR (100 MHz, CDCl$_3$) $\delta$ 167.96, 156.73, 146.46, 137.11, 134.88, 129.32, 127.37, 125.80, 118.13, 115.15, 110.00, 62.63, 41.40, 37.93, 36.48, 35.49, 32.33, 30.04, 29.46, 27.90, 25.35, 25.15; HRMS (ESI) calcd for C$_{27}$H$_{30}$ClNO$_4$Na [M + Na]$^+$ 490.1761, found 490.1754.

**Spectrum data of compounds 136 and 211:**

C$_7$H$_{37}$NO$_4$NaCl(+), m/z Error: -0.32 ppm; m/z Error: -0.16 mDa
S1 Fig. The plaque reduction assays of 136 against many different influenza virus strains
S2 Fig. 136 NMR profiles.

S1 Table. 136 does not alter the pH of virus preparations.

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