Supporting Information for:
Synthesis and anti-cancer activities of a water soluble gold(III) porphyrin

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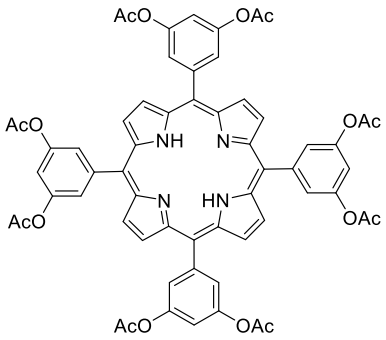
General Experimental

Proton and ^{13}C NMR spectra were recorded on 400 MHz Varian instruments. Spectra measured in $CDCl_3$ were calibrated to the residual protic solvent peaks at 7.27 and 77.16 ppm for ^{1}H and ^{13}C, respectively. Spectra measured in d_4-MeOH were calibrated to the residual solvent peak at 2.50 and 39.52 ppm for ^{1}H and ^{13}C, respectively. Proton assignments were performed using MestReNova "multiplet reporter script", and were edited by hand. Chemical shifts (δ) are reported in parts per million (ppm). Coupling constants (*J*) are reported in Hz. HRMS were measured on an Agilent Technologies 6530 Accurate Mass QTofLC/MSmass spectrometer. All chemical drying was performed with Na_2SO_4 unless otherwise noted.

Synthesis and Characterization

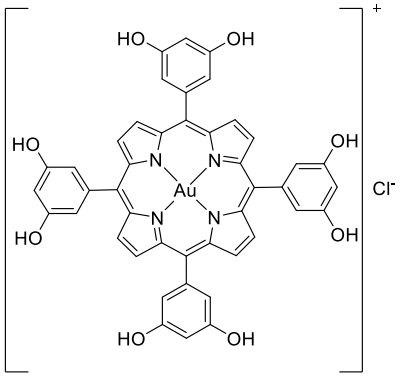
Compounds **3**, and **4** were produced by previously reported literature methods and in similar yields to those reported earlier [1]. Structures were confirmed by NMR spectroscopy and mass spectrometry (MS). Purity was confirmed by HPLC.

(3,5-*bis*-Acetoxy)tetraphenylporphyrin: Hydroxyporphyrin **3** (1.5 g, 1.4 mmol) was dissolved in 500 mL CH_2Cl_2. Triethylamine (8 mL, 57 mmol) was added, followed by acetic anhydride (4 mL, 42 mmol). The resulting solution was stirred for 16 h at RT. The solution was washed with saturated aqueous sodium bicarbonate and then brine. The resulting purple crystals were recrystallized from CH_2Cl_2 and MeOH. Yield: 2.08 g, 96%. ^{1}H NMR (400 MHz, $CDCl_3$) δ -2.96 (2H, s, pyrrole N*H*), 2.49 (28H, s, CH_3), 7.43 (4H, t, *J* = 7.4, Ph), 7.87 (8H, d, *J* = 7.4, Ph), 9.02 (8H, s, pyrrole-*H*); ^{13}C NMR (101 MHz, $CDCl_3$) δ 21.4, 115.1, 118.4, 125.7, 143.6, 149.5, 169.3; UV-Vis ($CHCl_3$) λ_{max}, nm (log ε) 419 (4.64), 515 (3.27), 549 (2.80), 588 (2.74), 644 (2.45); (10% TFA $CHCl_3$) HRMS calc'd for $[C_{60}H_{46}N_4O_{16}+2Na]^{2+}$ m/z= 562.1342. Observed 562.1347.



(3,5-*bis*-hydroxy)tetraphenylporphyrin gold(III) chloride (6): Acetoxy porphyrin **6** (200 mg, 0.18 mmol) was added to 50 mL acetic acid and 500 mg sodium acetate. The resulting solution was heated at reflux for 1 h. The solution was then washed with water twice, and extracted with dichloromethane. The combined organic layers were washed with saturated aqueous sodium bicarbonate and then brine. The resulting material was subject to column chromatography over silica gel, using first ethyl acetate and methanol (100:1) as the eluent so as to remove the nonmetalated hydroxyporphyrin (**3**). When then ethyl acetate and methanol ratio is 50:1, complex 6 could be eluted

from the column readily. Recrystallization from CH_3OH and CH_2Cl_2 gives purple crystals; 48 mg, 27%. ^1H NMR (400 MHz, CD_3OD) δ 6.83 (4H, t, *J* = 7.3 Hz, Ph), 7.19 (8H, d, *J* = 7.3 Hz , Ph), 9.50 (8H, s, pyrrole-*H*), the OH protons were not observed, presumably due to exchange with solvent.; ^{13}C NMR (101 MHz, CD_3OD) δ 112.5, 121.6, 130.1, 143.0, 155.7; UV-Vis (EA) λ_{max}, nm (log ε) 413 (4.25), 527 (3.48); HRMS calc'd for $C_{44}H_{28}AuN_4O_8^+$ m/z = 937.1567. Observed – 937.1558



General Biological Experimental

The A2780 cell line was obtained from the Dell Medical Center of The University of Texas at Austin. Cells were grown in RPMI 1640 growth medium supplemented with 10% heat inactivated fetal bovine serum and streptomycin and penicillin. Thiazolyl blue tetrazolium bromide was obtained from Sigma Aldrich. Compounds were dissolved in anhydrous DMSO to give 200 mM stock solutions. Growth inhibition assays were performed in triplicate.

Growth Inhibition Assay

Ovarian A2780 cells (7000 cells/mL) in 0.1 mL of growth medium were added to a 96 well plate. The cells were allowed to adhere for 24 h at 37 ºC. After this time, stock solutions of the porphyrins were dissolved in the growth medium and added to the wells by way of a serial dilution (8 wells/concentration). The cells were incubated with the compounds for 5 days, after this period a 3 mg/mL solution of thiazolyl blue tetrazolium bromide in RPMI 1640 (0.05 mL) was added to each well. The cells were incubated at 37 ºC for 4 h and then the medium was removed by aspiration with care as to avoid the loss of the formazan precipitate. DMSO (0.05 mL) was then added to each well and the absorbance at 570 nm was acquired using an absorbance plate reader. The data was then normalized using data from wells containing undosed cells and fit to the equation $y = 100/(1+10^{(x-IC50)})$, where y is the observed growth as a percent of undosed cells, x is the concentration used in any given experiment, and IC_{50} is the concentration that inhibits growth by 50%. Data from triplicate runs were averaged to generate the reported IC_{50} values.

Compound 3

Concentration (μM)	% growth	% growth	% growth	Average	Std Dev
100	0.00	0.00	0.00	0.00	0
50.0	6.73	45.3	11.2	20.8	0.18
25.0	40.3	69.4	52.9	54.2	0.12
12.5	88.5	86.4	83.8	86.2	0.02
6.25	74.8	100	82.3	85.7	0.11
3.13	84.6	74.3	75.3	78.1	0.05
1.56	80.4	87.6	94.6	87.5	0.06
0.78	83.1	94.7	100	92.6	0.07
0.39	73.8	82.7	91.5	82.6	0.07
0.20	84.0	98.7	98.4	93.7	0.07
0	100	92.2	98.6	96.9	0.03
IC_{50} (μM)	27.7		Error	12.7	

Compound 5

Concentration (μM)	% growth	% growth	% growth	Average	Std Dev
100	0	0	0	0	0
50.0	7.28	2.67	27.6	12.3	0.11
25.0	33.7	52.1	63.4	49.7	0.12
12.5	69.1	62.2	74.9	68.7	0.05
6.25	79.2	70.0	86.5	78.6	0.07
3.13	100	84.2	99.0	94.4	0.05
1.56	91.1	88.7	100	93.0	0.05
0.78	99.9	87.7	91.3	88.9	0.06

0.39	96.6	83.6	83.7	93.3	0.06
0.20	99.3	85.6	94.8	87.3	0.13
0	94.5	100	70.0	86.2	0.14
IC_{50} (μM)	28.5		Error	6.32	

Compound 6

Concentration (μM)	% growth	% growth	% growth	Average	Std Dev
100	0.00	0.14	6.52	4.68	0.03
50.0	0.00	0.04	0.00	0.71	0.01
25.0	0.03	0.00	2.73	2.04	0.01
12.5	27.0	21.6	36.7	28.4	0.06
6.25	69.0	56.8	76.1	67.3	0.08
3.13	90.6	71.9	89.4	83.9	0.09
1.56	85.9	84.7	100	90.2	0.07
0.78	81.9	86.6	94.3	87.6	0.05
0.39	99.1	89.6	92.6	93.8	0.04
0.20	100	100	87.8	95.9	0.06
0	87.8	90.8	72.0	83.5	0.80
IC_{50} (μM)	9.05		Error	0.84	

References

1. Oar MA, Dichtel WR, Serin JM, Fréchet JMJ, Rogers JE, Slagle JE, Fleitz PA, Tan L-S, Ohulchansky TY and Prasad PN. *Chem. Mater*. 2006; 18: 3682.