Supplementary material

Table S1. The primer sequences used for qRT-PCR analyses.

Gene	Primer sequences	Primer annealing temperature (°C)
CD36	F: TGGGACCATTGGTGATGAGAAG	60
	R: ACATCACCACACCAACACTG	
CD68	F: AAGAGCCACAAAACCACCAC	60
	R: AACTGTGACGTTCCATGGC	
DR4	F: TCCAGCAAATGGTGCTGAC	62
	R: GAGTCAAAGGGCACGATGTT	
DR5	F: CCAGCAAATGAAGGTGATCC	62
	R: GCACCAAGTCTGCAAAGTCA	
GALNT14	F: TAGCATCATCATCACCTTCCAC	60
	R: TTACAGTCATCAGGGTCATTGC	
FUT6	F: CCCGAGTCCCTCTAGCATCT	60
	R: GGTCAGAGTATCTGCTGCCG	
TRAIL-R3	F: AAAGTTCCTGCACCATGACC	62
	R: GTTTCCACAGTGGCATTGG	
TRAIL-R4	F: AGGATTATTGGGGCTTACCC	62
	R: AGGCAACCCATGTAAACAGC	
GAPDH	F: TCACTGCCACCCAGAAGACT	60
	R: TTCTAGACGGCAGGTCAGGT	

Table S2. The hydrodynamic diameter and zeta potential of various nanogolds (G3, G13, and G30) and nanogold-TRAIL complexes (G3T, G13T, and G30T) prepared in the study

Samples	**Hydrodynamic diameter (nm)**	**Zeta potential (mV)**	**Polydispersions index (pdi)**
G3	7.1±0.5	-41.2±0.7	0.238
G3T	24.2±2.6	-33.7±2.1	0.261
G13	21.4±1.1	-34.9±0.4	0.218
G13T	45.9±1.6	-25.1±0.6	0.262
G30	51.9±2.9	-20.1±1.4	0.277
G30T	81.3±3.2	-2.5±0.7	0.182

Table S3. The properties of various nanogolds GNT30 (TEM size 30 nm) and SPIO (TEM size 5 nm) analyzed by light scattering.

Samples	**Hydrodynamic diameter (nm)**	**Zeta potential (mV)**	**Polydispersions index (pdi)**
GNT30	35.6±4.1	-31.3±1.2	0.274
GNT30T	43.3±1.5	-20.3±1.5	0.242
SPIO	56.6±3.7	-50.6±4.6	0.168
SPIO-T	60.6±1.5	-41.6±1.2	0.176

＊ GNT30 was bare nanogold. SPIO was stabilized by sodium oleate.

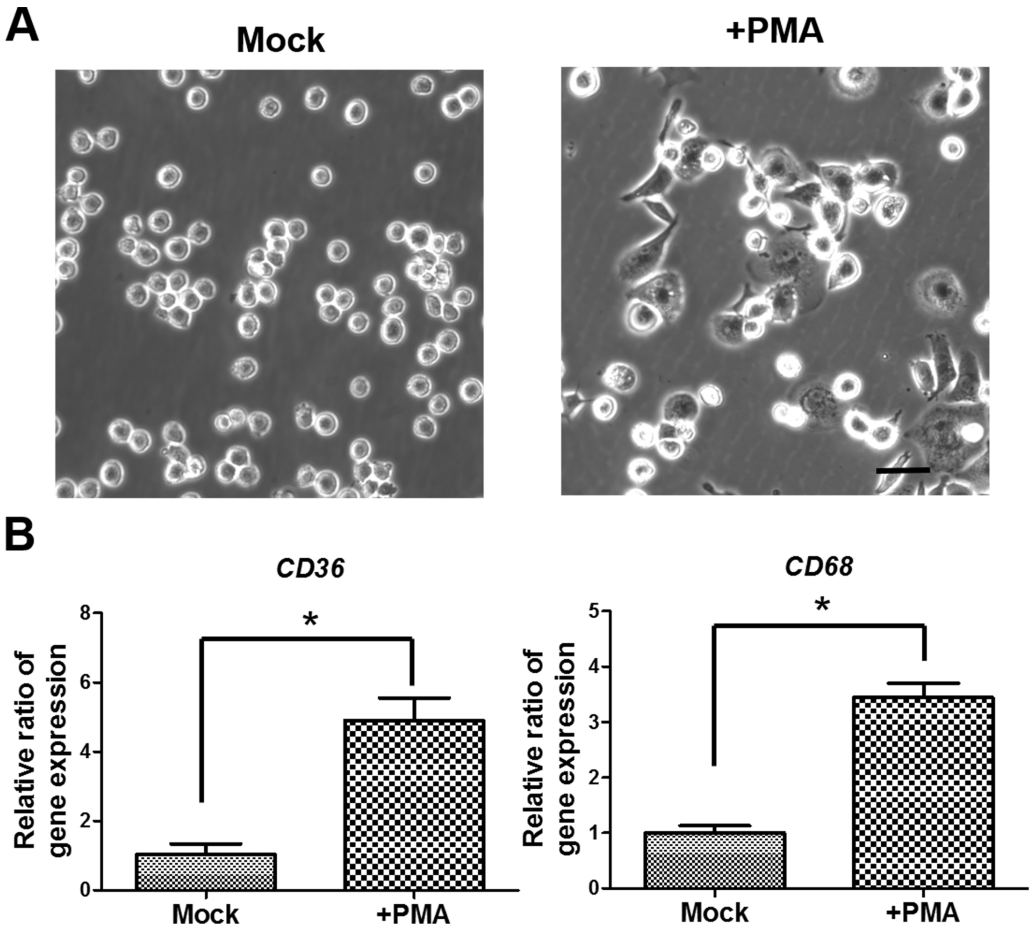

Figure S1. THP-1 monocyte differentiation induced by PMA. **(A)** The cell morphology of THP-1 monocytes after treatment with PMA (200 nM) for 48 h. The scale bar represents 20 μm. **(B)** The mRNA expressions of marker genes for macrophages after treatment with PMA (200 nM) for 48 h. *$p < 0.05$, among the indicated groups.

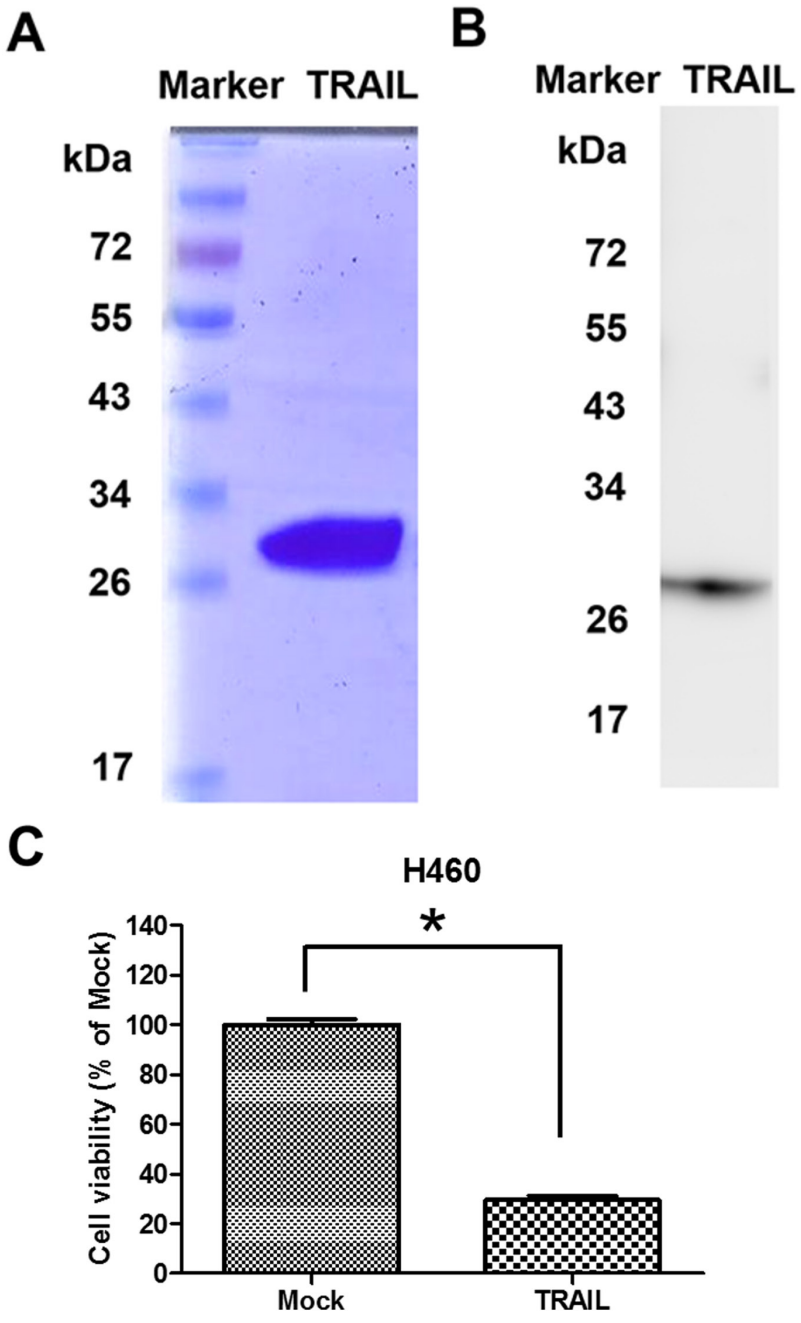

Figure S2. Identification of the purified recombinant human TRAIL with the expected molecule weight. (A) Coomassie blue staining of recombinant human TRAIL. (B) Western blot of recombinant human TRAIL by anti-His monoclonal antibody. (C) The cell viability of H460 cells after TRAIL (500 ng/ml) treatment for 24 h.

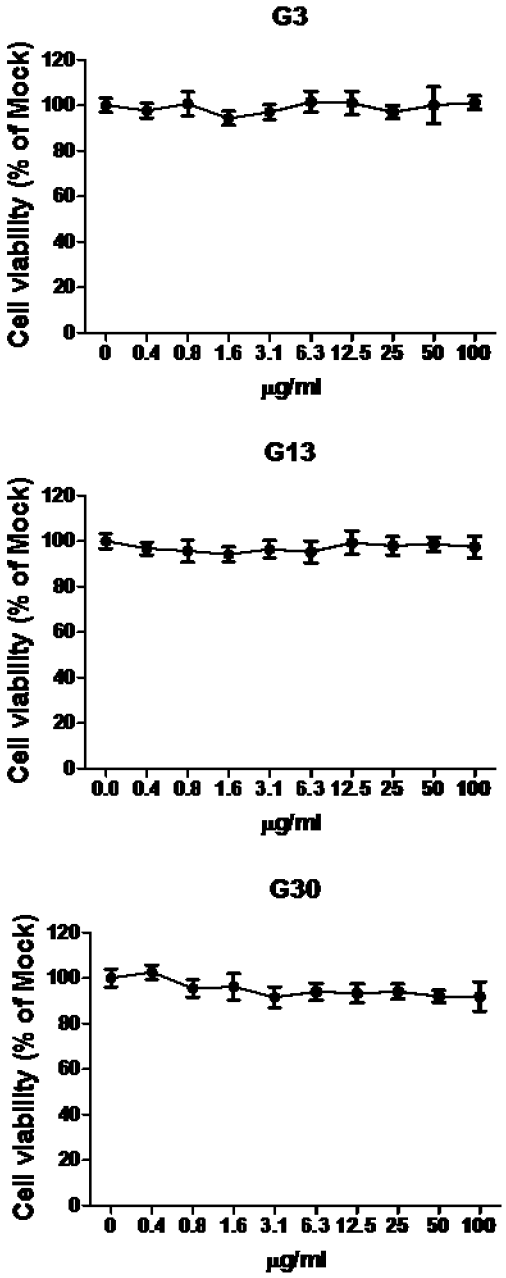

Figure S3. The effect of nanogolds of various sizes on the viability of M2 macrophages, measured after the cells were treated with nanogolds of various concentrations and sizes for 24 h. The cell viability value was determined by the CCK-8 assay.

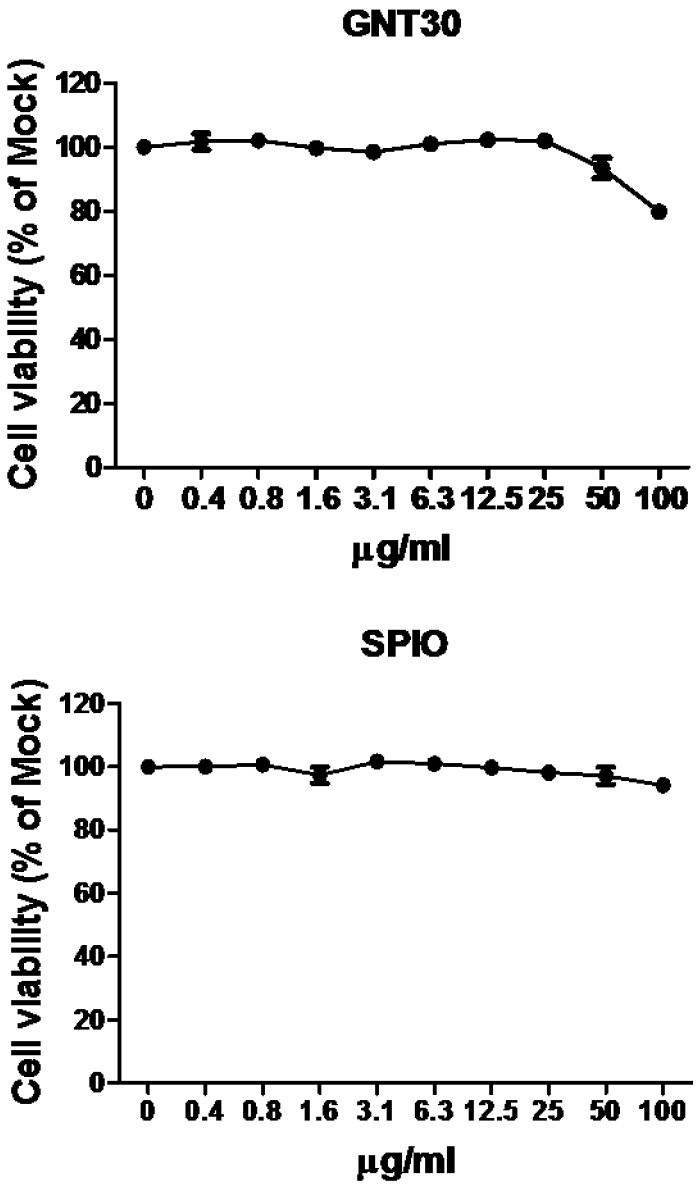

Figure S4. The effect of GNT30 and SPIO on the viability of M2 macrophages, measured after the cells were treated with GNT30 and SPIO of various concentrations and sizes for 24 h. The cell viability value was determined by the CCK-8 assay.

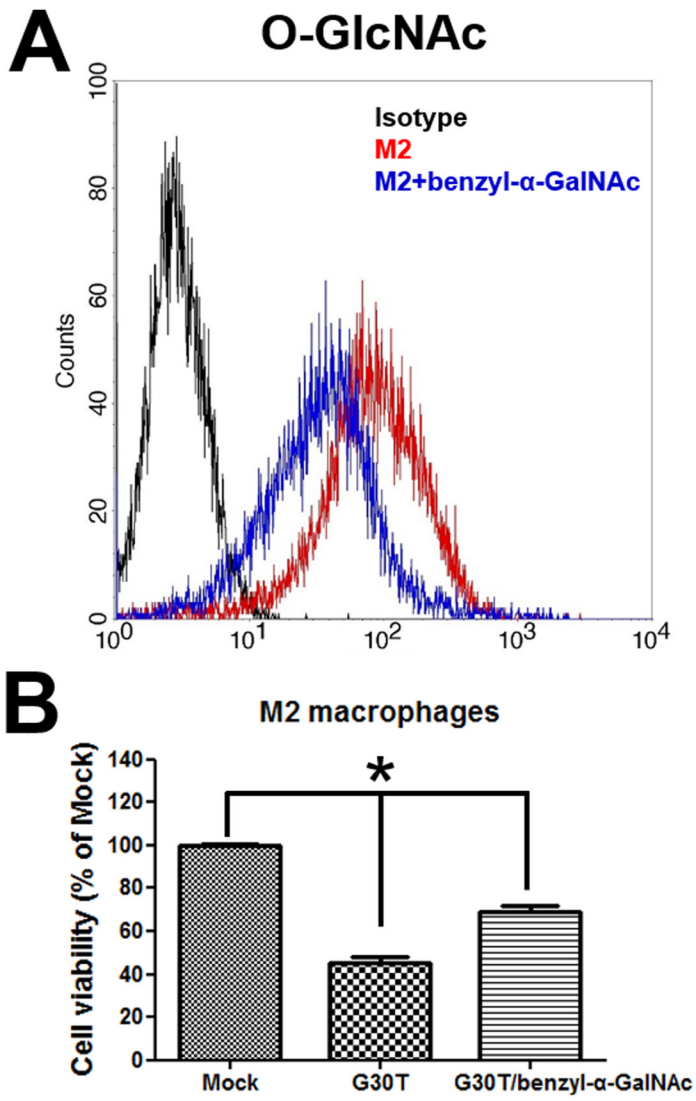

Figure S5. The cytotoxicity of TRAIL-nanogolds in M2 macrophages by O-glycosylation. (A) The levels of O-GlcNAc proteins M2 macrophages after incubation with benzyl-α-GalNAc (2 mM) for 48 h by flow cytometry. (B) The viability of M2 macrophages after incubation with benzyl-α-GalNAc (2 mM) for 48 h and further treatment of TRAIL for 24 h.

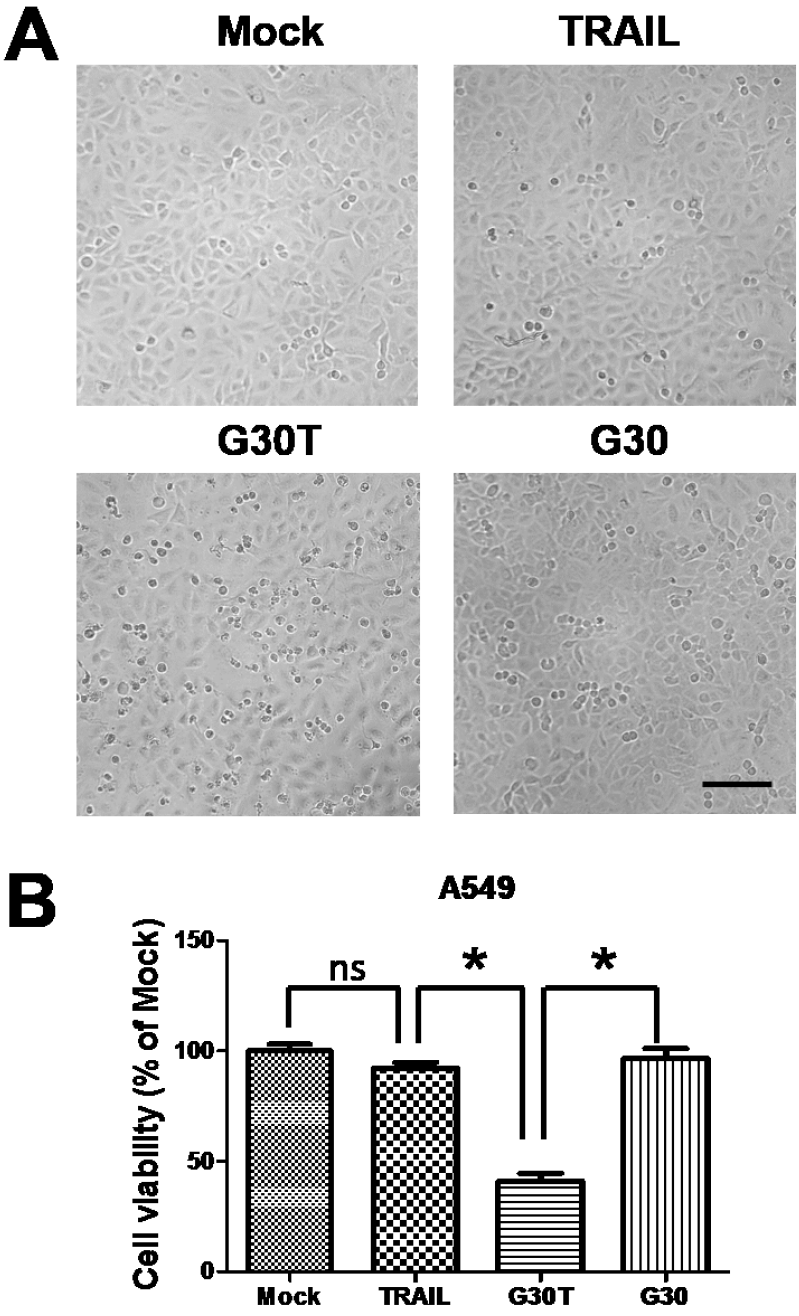

Figure S6. The cytotoxic effect of nanogold-TRAIL complex of A549 lung cancer cells. (A) The morphologies of A549 lung cancer cells after incubation with TRAIL, G30T, and G30 for 24 h. The scale bar represents 200 μm. (B) The cell viability of A549 measured after the cells were treated with TRAIL, G30T, and G30 for 24 h. The cell viability value was determined by the CCK-8 assay.

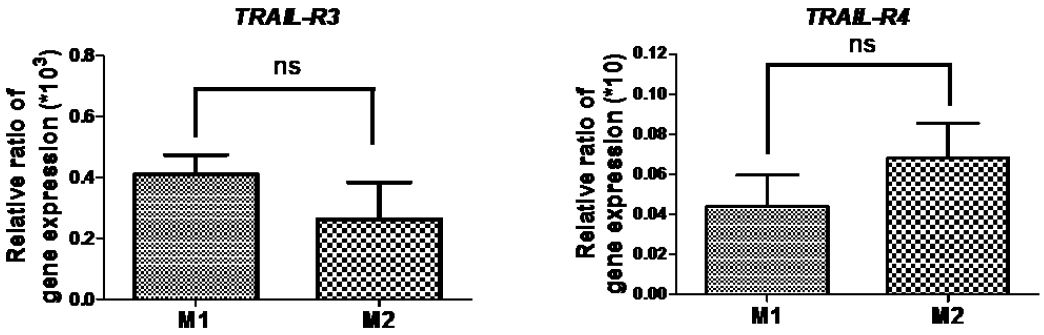

Figure S7. The gene expression of TRAIL-R3 and TRAIL-R4 in M1 and M2 macrophages.