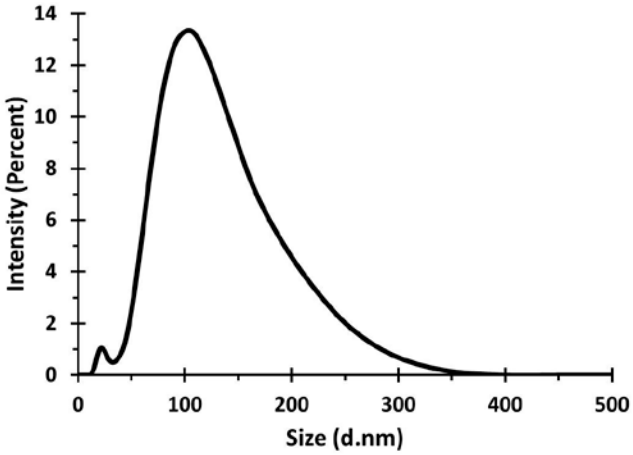

Figure S1. Determination of particle size distribution using dynamic light scattering. The state of agglomeration of SWNTs non-covalently functionalized with PL-PEG-FA is indicated by the particle size distribution in hydrodynamic diameter (HD) and the polydispersity index (PDI), measured by dynamic light scattering. The SWNT-PL-PEG-FAwere diluted in PBS to a final concentration of 20 µg/mL and analyzed using the Malvern Zetasizer Nano ZS as described in the Materials and Methods. The mean particle HD was 101.75 ± 4.69 nm and the PDI was 0.24 ± 0.04. The results were the average of three independent experiments ± SEM.

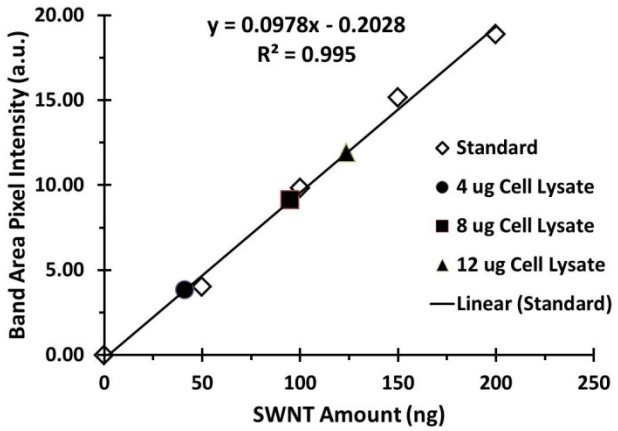

Figure S2. Calibration curve to determine the amount of SWNTs per cell by SDS-PAGE. The amount of SWNTs per cell (i.e., internalized or cell surface bound) was obtained by incubating cells with SWNTs at a specific concentration, incubation temperature and time. These cells were lysed and the total cellular protein concentration in the lysate was determined using a BCA assay. The concentration of total cellular protein in a lysate sample is proportional to the number of cells in the lysate. For FR (+) NRK cells, the cellular protein content is 3.84×10^{-4} µg per cell, and in FR (-) NRK cells, the cellular protein content is 1.29×10^{-4} µg per cell. The amount of SWNTs in cell lysates were then quantified using the SDS-PAGE method, as described in the Materials and Methods. Known amounts of standard SWNTs were loaded on the gel at 0, 50, 100, 150, and 200 ng and various amounts of cell lysates that contain 4, 8, and 12 µg cellular proteins with unknown amounts of SWNTs extracted from these cells were loaded in adjacent lanes of the same gel. After electrophoresis, the gel band intensities were acquired using a flat-bed scanner and quantified using ImageJ software. A calibration curve was constructed by plotting the gel band pixel intensities with the known amounts of SWNT standards loaded in the gel. The unknown SWNT amounts in the cell lysate samples were determined based on the linear regression of the SWNT standard calibration curve. The amount

of SWNTs present in the cell lysate was divided by the number of cells from which the lysate was prepared to give the average amount of SWNTs associated with a cell in the population.

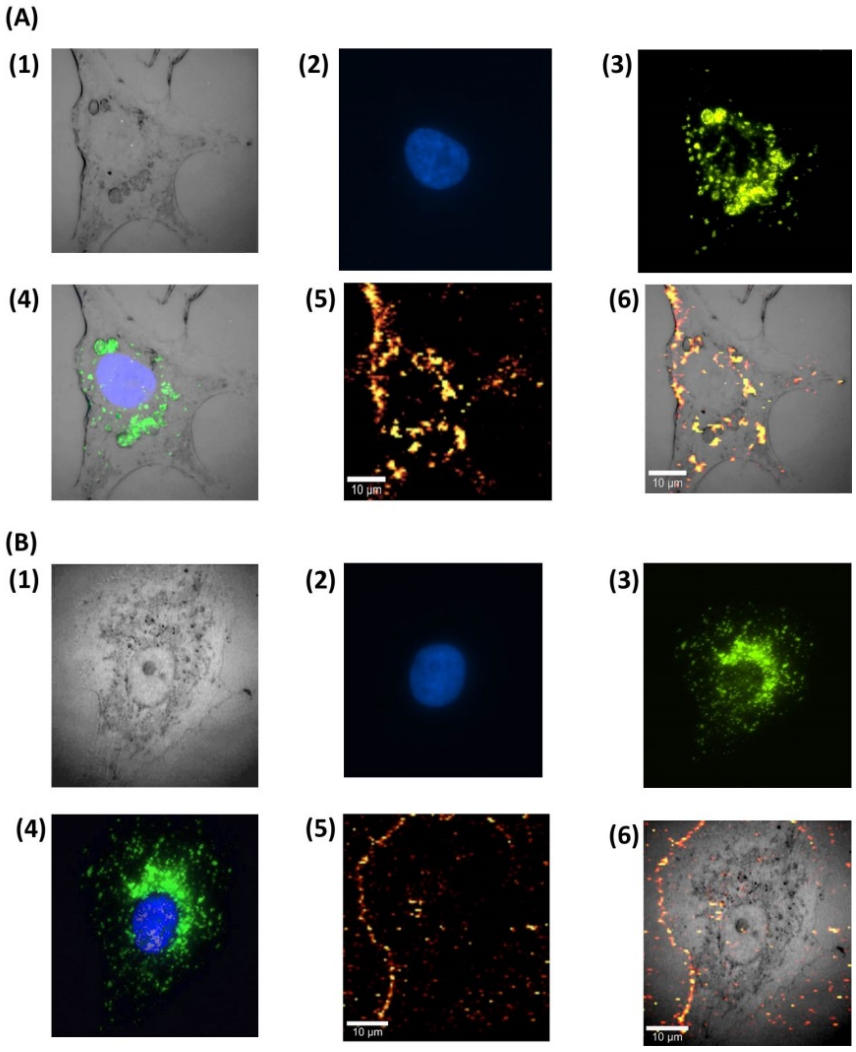

Figure S3. Assessing the subcellular location of SWNTs by combining Raman and immunofluorescence imaging. To identify the locations of SWNT in cells, immunofluorescence imaging was performed for known sub-cellular organelles and Raman spectroscopy was performed on the same cells to identify SWNT locations as described in the Materials and Methods. The images were then overlaid using Adobe Photoshop CS6 software to identify the SWNT locations relative to the locations of the sub-cellular organelles. Images (A1)–(A6) were acquired from a representative cell among a population of FR (+) NRK cells

incubated with 10 μg/mL SWNT-PL-PEG-FA in the medium at 37 °C for 6 h. Under this condition, the SWNT-PL-PEG-FA constructs were allowed to bind to folate receptors and internalized such that an average of ~3.5 pg SWNTs were found to be associated with a cell, as demonstrated in Figure 5. (A1) light microscope image of the cell; (A2) DAPI staining of the nucleus; (A3) Alexa Fluor® 488 fluorescence imageof LAMP-1, which stains lysosomes; (A4) merge of (A1), (A2), and (A3) showing the fluorescent labeled nucleus and lysosomes in the cell; (A5) Raman scan image mapping the SWNT G band intensities with a heat scale where yellow is the highest and black is the lowest signal level; and (A6) merge of (A1) and (A5) showing the sub-cellular locations of the internalized SWNTs, partially co-localized with lysosomes identified in (A3) in the cell. Images (B1)–(B6) were acquired from a representative cell from a population of FR+ NRK cells incubated with 90 μg/mL SWNT-PL-PEG-FA in the medium at 4 °C for 30 min. Under this condition, the SWNT-PL-PEG-FA constructs were allowed to bind to folate receptors on the cell surface but endocytosis was not permissive at low temperature and an average of ~3.5 pg SWNTs were found to be associated with a cell, as demonstrated in Figure 4. (B1) light microscope image of the cell; (B2) DAPI staining of the nucleus; (B3) Alexa Fluor® 488 fluorescence image of LAMP-1, which stains lysosomes; (B4) merge of (B1), (B2), and (B3) showing fluorescent labeled nucleus and lysosomes in the cell; (B5) Raman scan image mapping the SWNT G band intensities with a heat scale where yellow is the highest and black is the lowest signal level; and (B6) merge of (B1) and (B5) showing the locations of the surface-bound SWNTs on the cell membrane.

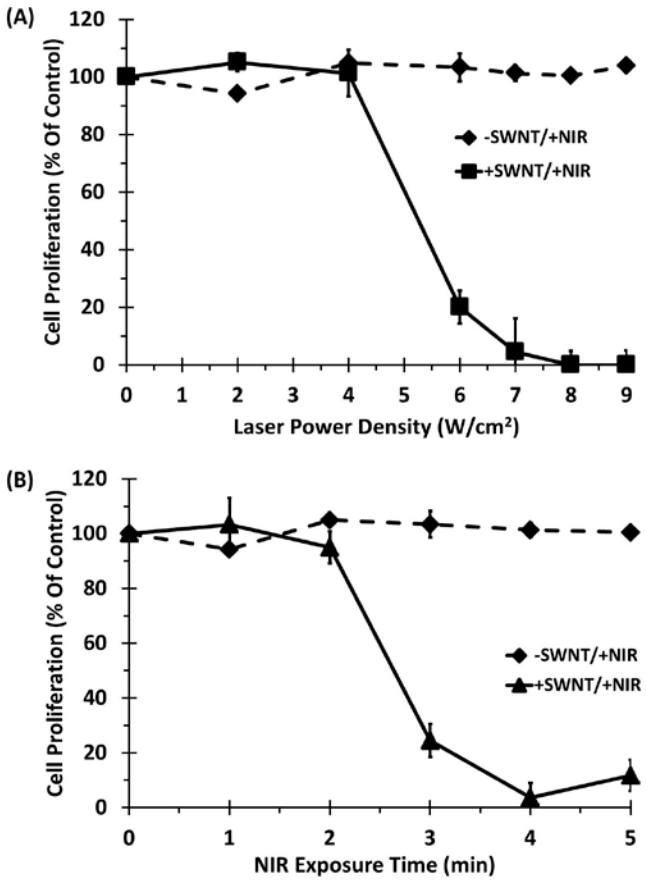

Figure S4. Assessing the effects of laser conditions on the targeted ablation of FR(+) NRK cells using SWNT-PL-PEG-FA. FR(+) NRK cells were incubated with SWNT-PL-PEG-FA at a concentration of 10 μg/mL for 6 h at 37 °C and irradiated at (A) various NIR laser power densities with a constant 5 min laser irradiation time and (B) various NIR laser exposure times with a constant 8 W/cm^2 laser power density. Identical laser power densities or NIR exposure times were applied to cells in control groups not incubated with SWNTs but irradiated (-SWNT/+NIR) as well as to cells in the corresponding experimental groups incubated with SWNTs and irradiated (+SWNT/+NIR). Cell viability after irradiation was determined using the CV assay described in the Materials and Methods. The number of surviving cells in the control group was set as 100% and the number of surviving cells in a corresponding experimental group

relative to the control group was expressed as % of control. Data points are the average of four independent experiments, with quadruplicate repeats in each experiment, ± SEM.