Supporting Information

J774.1A mouse peritoneal macrophage-like cell lines were obtained from the American Type Culture Collection. All cells were grown on individual 100-mm culture plates at 37°C in 10 mL of DMEM (Dulbecco's modified eagle's medium, high glucose) solution supplemented with 10% fetal bovine serum, penicillin (100 IU/mL), streptomycin (100 μg/mL), and L-glutamine (2mM) in a 95% air-5% CO_2 humidified incubator. We prepared aqueous suspensions of individual HiPco-grown SWNT using the dispersal, sonication, and centrifugation procedure described previously,[1] except that a nonionic bio-compatible surfactant, Pluronic F108, was substituted for sodium dodecylsulfate (SDS). The resulting stock solution contained ca. 80 μg/mL of SWNT suspended in 1 wt.% Pluronic F108. The HiPco sample included significant quantities of at least 30 nanotube (*n*,*m*) species spanning a variety of diameters and chiral angles. Each of these species emits fluorescence at a distinct near-infrared wavelength,[2] but their various visible-wavelength E_{22} absorptions have relatively long tails that allow many species to be excited using a single excitation wavelength.

To study the variation of nanotube uptake with incubation time, replicate samples of macrophage cells (each containing ca. 1 x 10^7 cells of 14.8 μm average diameter) were placed in culture plates containing 10 mL of growth medium and 1 mL of the SWNT stock solution and then incubated at 37°C for 4, 8, 12, 18, or 24 h. Another set of culture plates were incubated for 24 h with various SWNT concentrations ranging between zero and the 7.3 μg/mL concentration used for the variable incubation time series. Following incubation, the cells in each plate were scraped and centrifuged at 700 rpm at 4°C for 10 min. The supernatant was then discarded and the cells were washed three times in 5 mL portions of phosphate buffer saline (PBS) before resuspension in 1 mL of PBS. Before spectrofluorimetric measurement, we mixed each cell suspension with 25 μL of 10% aqueous SDS solution to obtain a homogeneous sample for quantitative analysis. This sample was then transferred into a 500 μL fused silica cuvette mounted in a J-Y Spex Fluorolog 3-211 spectrofluorometer equipped with an InGaAs detector. Corrected emission spectra were recorded from 800 to 1500 nm using approximately 60 mW of 660 nm light from an external diode laser as the excitation source. Specimens for microscopic imaging were prepared by pipetting washed resuspended cells onto culture chamber slides coated with fibronectin, or onto uncoated glass slides, and fixing with 5% glutaraldehyde. To quantify the uptake of nanotubes from the growth medium, we prepared another macrophage sample with 1 x 10^8 cells in 11

mL of culture medium containing 11 ng/mL of SWNT. After 0, 8, 18, and 24 h of incubation at 37°C, 200 μL aliquots were withdrawn from this sample and their first spin supernatants were treated with SDS and fluorimetrically analyzed for relative SWNT concentration. Samples for microscopic imaging were prepared by incubating cells for 24 h with 7.3 μg/mL SWNT, washing and resuspending as described above, pipetting them onto glass slides, and then fixing with 1 mL of 5% glutaraldehyde.

A Zeiss Axioplan 2 microscope was modified to allow near-infrared fluorescence imaging. We substituted a thermoelectrically-cooled InGaAs camera (Indigo Alpha) for the normal Si camera, externally mounted a 660 nm diode laser to provide epi-illumination of the sample, and installed custom dielectric optics (a beamsplitter to reflect excitation light and transmit near-infrared emission, and a dielectric barrier filter transparent from 1125 nm to the 1600 nm upper limit of the InGaAs camera). Initial images were obtained with a Zeiss 20x air objective and a 2.5x optovar (secondary) lens. The image displayed in Fig 3 used a Zeiss 63x / 1.4 oil-immersion objective and a 2.0x optovar lens to give a total magnification of 126x onto the camera. Optical excitation power at the sample was 22 mW. Images of empty slides were digitally subtracted from sample images to provide background correction of detector dark noise and weak substrate luminescence.

References

(1) O'Connell, M.; Bachilo, S. M.; Huffman, C. B.; Moore, V.; Strano, M. S.; Haroz, E.; Rialon, K.; Boul, P. J.; Noon, W. H.; Kittrell, C.; Ma, J.; Hauge, R. H.; Weisman, R. B.; Smalley, R. E. *Science* **2002,** *297*, 593-596.

(2) Bachilo, S. M.; Strano, M. S.; Kittrell, C.; Hauge, R. H.; Smalley, R. E.; Weisman, R. B. *Science* **2002,** *298*, 2361-2366.

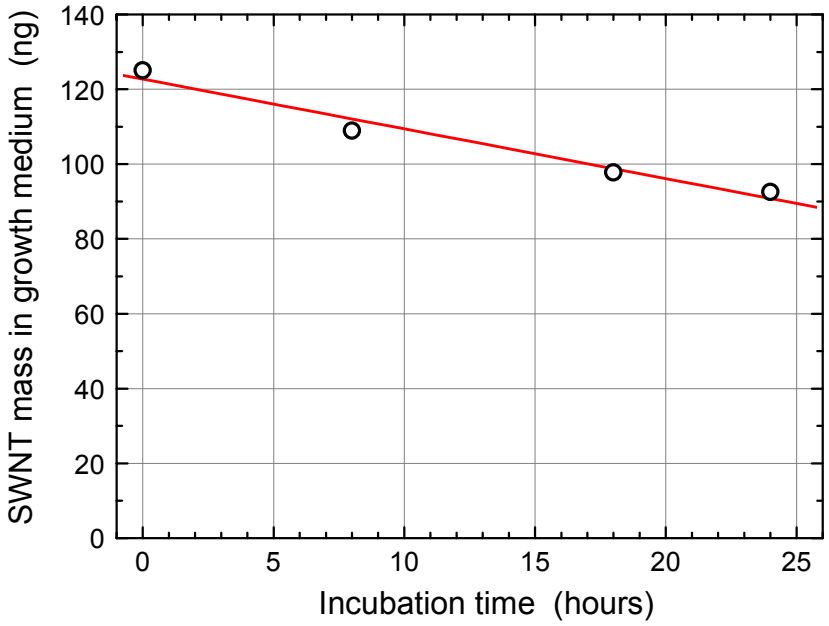

Figure S1. Fluorimetrically deduced SWNT content of a macrophage growth medium sampled at several intervals during incubation. The sample contained 10^8 macrophage cells in an 11 mL volume and an initial SWNT concentration of 11 ng/mL. SWNT contents were analyzed by spectrally integrating SWNT emission from 950 to 1500 nm using 660 nm excitation. Symbols show measured data and the solid curve is a linear best fit.

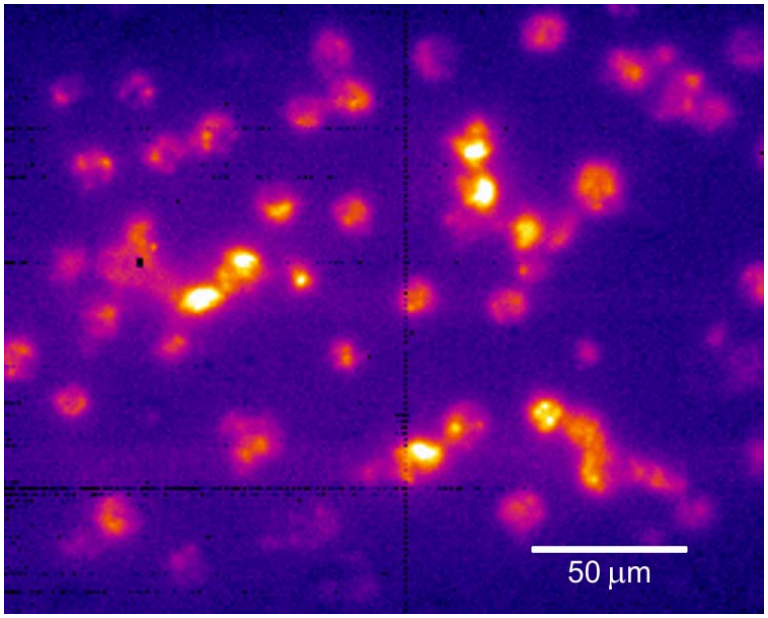

Figure S2. Fluorescence micrograph of a field of macrophage cells incubated in growth medium containing suspended nanotubes. Intensities are coded in false color, with yellow as the highest value. Samples were excited at 660 nm and imaged by nanotube emission from 1125 to 1600 nm. Black lines and spots arise from defects in the InGaAs detector.