Electronic Supplementary Information

Intrinsic fluorescence of Selenium nanoparticles for cellular imaging applications

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Measurement of diffusion coefficient for Se NPs in cells

The diffusion coefficients were calculated for cell-cultured Selenium (Se) nanoparticles (NPs), by recording their trajectories as a function of time. The mean square displacements (r^2) as reported in previous studies,[1, 2] were measured and the linear response of r^2 versus time was linearly fitted. The slope for the line of best fit was used to measure the diffusion coefficient.

A representative plot for mean square displacement versus time is shown in **Figure S1** (a) for one of the Se NPs. The corresponding two dimensional Brownian motion trajectory for the particle is shown in Figure S1 (b).

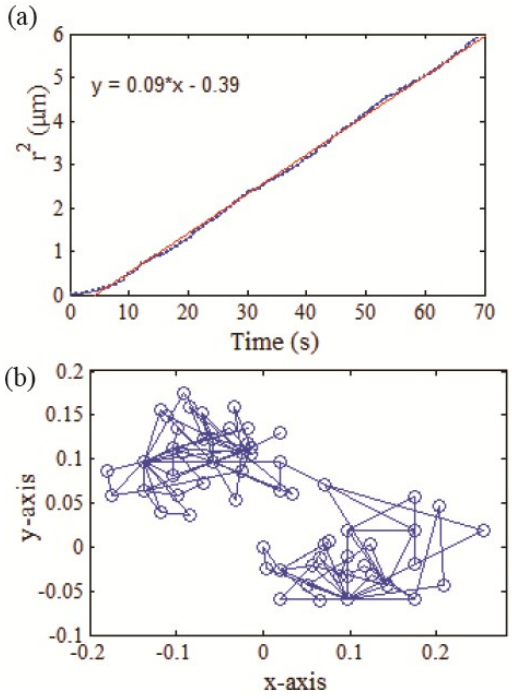

Figure S1: (a) Displacement square versus time plot for one of the Se NPs in cells. The equation for the line of best fit is shown in the inset. (b) Brownian motion trajectory for the labeled particle is shown. The time step between consecutive measurements is 0.15 s.

Cells alone sample monitored a function of time

The images presented in Figure 7 of the manuscript are compared with cells only sample here. The bright field images for a group of cells are shown in Figure S2 (a)-(c). The contours are drawn across two of the cells in each image, showing that the membrane is expanding and contracting within a 3 hours period, which is similar to the cell dynamics shown in Figure 7 (of the manuscript). The wide-field fluorescence image of the sample after 3 hours in shown in Figure S2 (d), showing minimal auto-fluorescence from the cells.

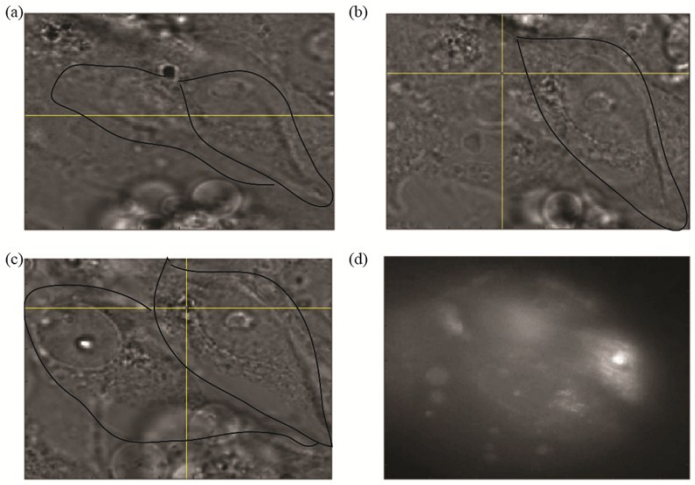

Figure S2: Bright-field images of cells only sample imaged after (a) 0 h, (b) 1 h and (c) 3 h. (d) The corresponding wide-field fluorescence image of the cell taken after 3 h. The contours are drawn to distinguish the cells from the background.

1. O. Faklaris, D. Garrot, V. Joshi, J. P. Boudou, T. Sauvage, P. A. Curmi and F. Treussart, *Journal of the European Optical Society-Rapid Publications*, 2009, **4**.
2. A. Khalid, A. N. Mitropoulos, B. Marelli, D. A. Simpson, P. A. Tran, F. G. Omenetto and S. Tomljenovic-Hanic, *ACS Biomaterials Science & Engineering*, 2015, **1**, 1104-1113.