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SUPPORTING INFORMATION

Nanowire lasers as intracellular probes

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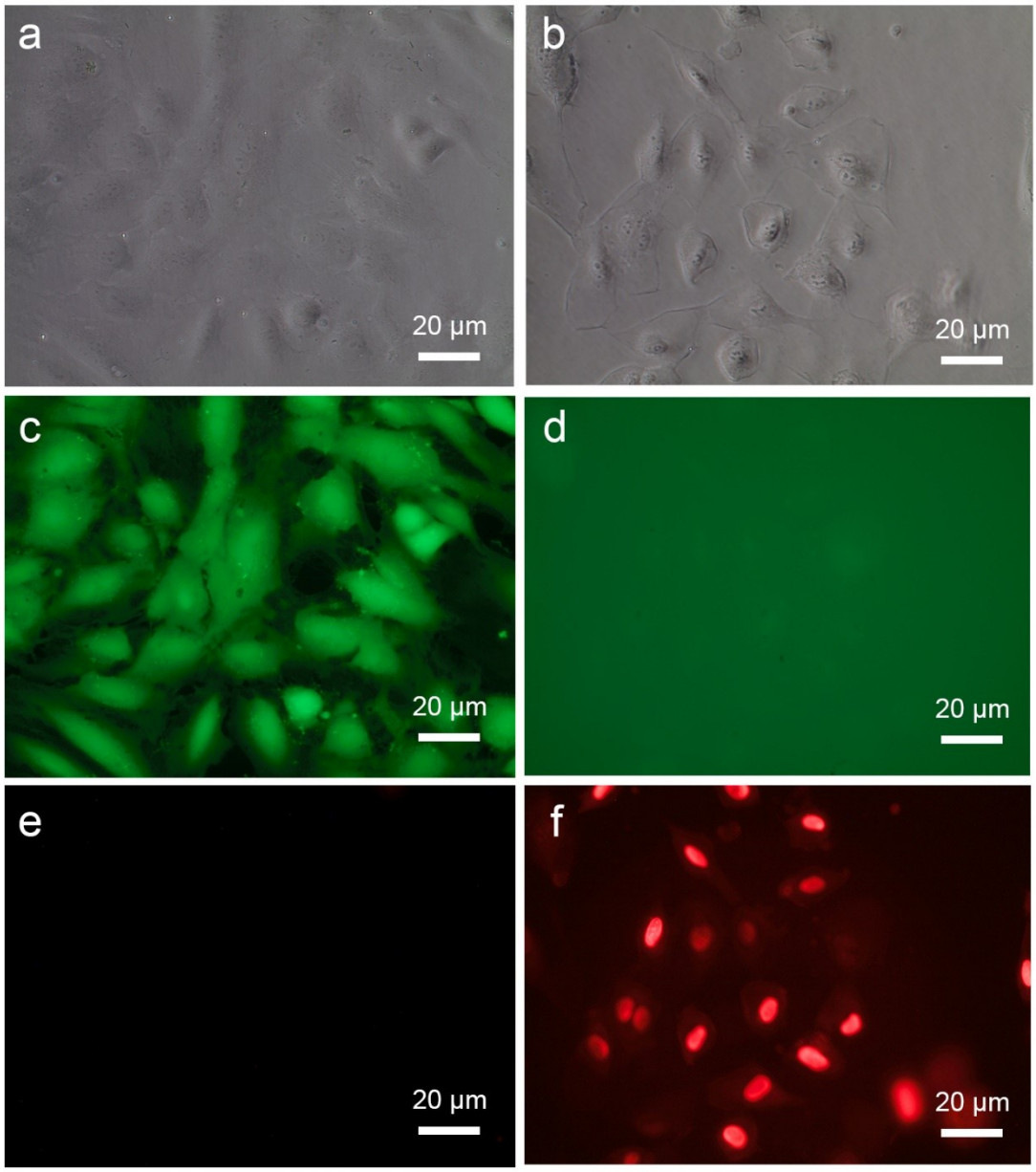

Figure S1. Control experiments for cell viability test. Brightfield (**a**), green-fluorescence-channel (**c**), and red-fluorescence-channel (**e**) microscopic images for healthy cells stained with live/dead fluorescent kit (calcein AM and ethidium homodimer). It can be seen that the healthy cells show bight green fluorescence in green channel, whereas weak or no red fluorescence in red channel microscopic images. Brightfield (**a**), green-fluorescence-channel (**c**), and red-fluorescence-channel (**e**) microscope images for cells treated with ethanol for 3 hours. Cells are stained with fluorescent kit before being treated with ethanol. It can be seen that the dead cells show no particular localization of green fluorescence inside the cells but only uniform green fluorescence background in green channel, whereas strong red fluorescence inside the cells, particularly from cell nucleus, in red channel microscope images can be observed. Scale bar, 20 μm.

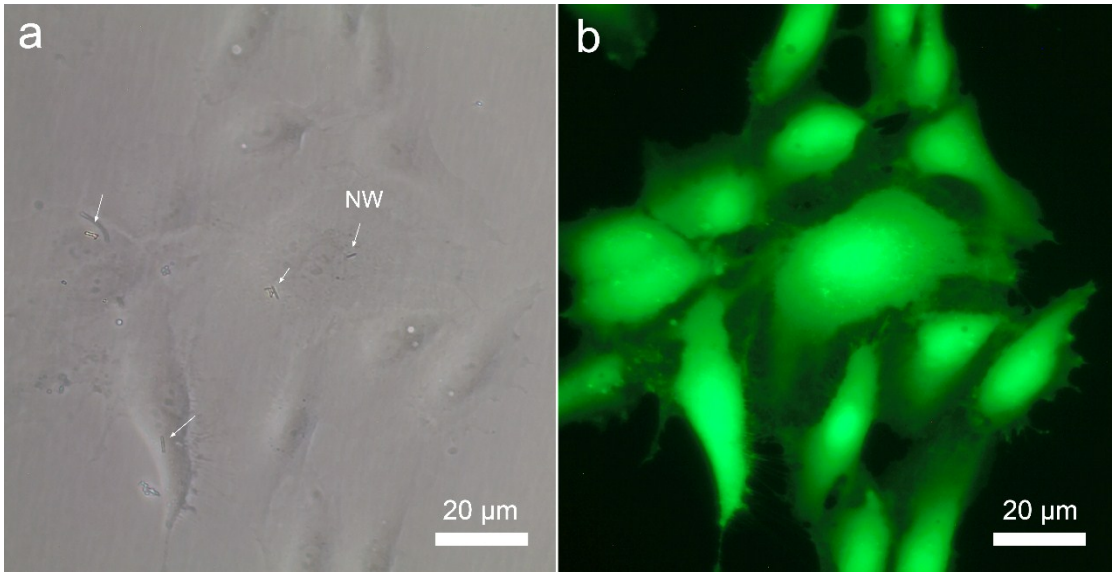

Figure S2. Viability test of the cells subcultured from the 5th day NW-treated cells (the same batch as in Figure 5e). In the subculture process, cells are dislodged from the surface of the original petridish and seeded onto four new petridishes. These cells are cultured for another 24 hours since subculturing and no new NWs are added in this process. This figure shows that the NW-internalized cells have good capability for subculture and proliferation. Scale bar, 20 μm.

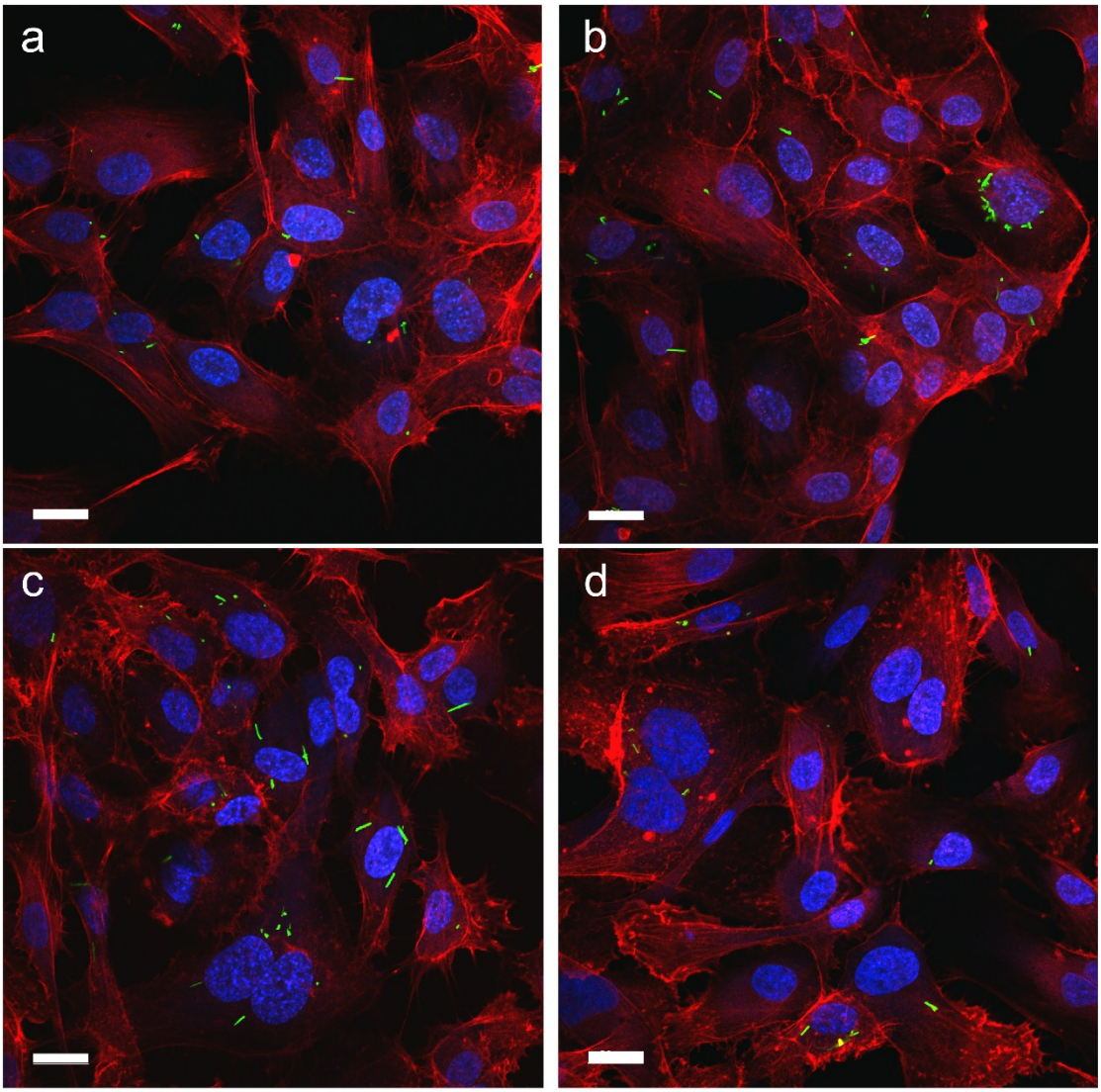

Figure S3. Intracellular localization of CdS NWs. **a-d**, typical confocal microscope images of NW-internalized cells. Cells are stained with tetramethylrhodamine-phalloidin (red fluorescence) for cytoskeleton and Hoechst 33258 (blue fluorescence) for nuclei. NWs are seen as green lines or dots in the images. It can be seen that the NWs are distributed within the cytoplasmic compartment of HUVECs but not in the nucleus (nearly no overlap of green NWs and blue nucleus can be seen in these images). Scale bars, 20 μm.

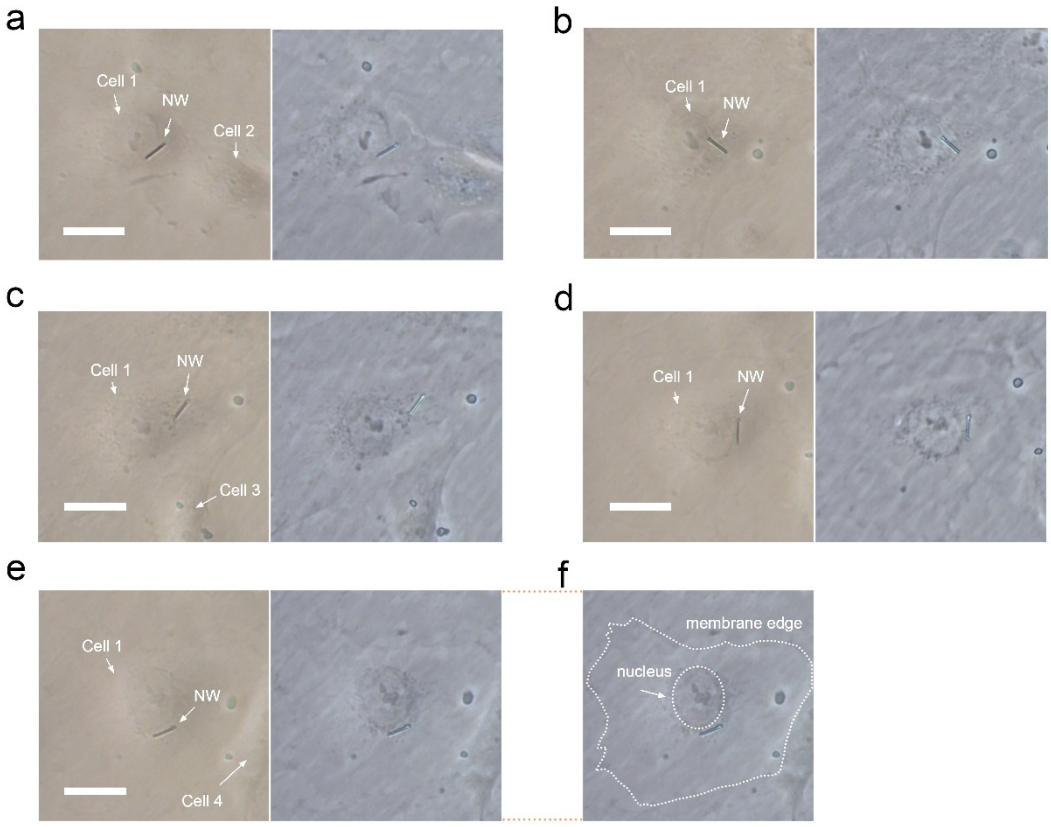

Figure S4. Orientation tracking of a 4 μm long NW inside a cell at different time points of 0 hour (**a**), 1 hour (**b**), 2 hours (**c**), 3 hour (**d**), and 4 hour (**e**), respectively. **a**-**e**, brightfield image (left) and phase contrast image (right). **f** is the same image as the phase contrast image of **e**. The cell membrane and nucleus edge are marked with white dashed lines. The cell is associated with other cells in colonies and thus the membrane edge is hard to tell. Fortunately the nucleus edges can be clearly seen in each phase contrast image (an about 10-μm-diameter dark ring in the center of the image). Cell 2, 3, and 4 may be daughter cells produced by Cell 1. It can be seen that the NW rotates around the outer edge of the nucleus. And during this 4-hour period, the NW keeps staying in the cell 1, while the cell undergoes a mitotic division. Scale bar, 10 μm.