

Preliminary experiment of the *in vitro* silicosis cell model establishment

NR8383 cells in the logarithmic phase were cultured in the Ham'S F12K complete medium for single-cell suspension. Following the cell counting assay, the NR8383 cell suspension was inoculated into a 96-well plate at the density of $5 \times 10^3/100 \mu\text{l}$ (100 μl per well), then transferred into an incubator in the condition of 5% CO_2 and 37°C for 24 h. To identify the optimal dose of SiO_2 exposure for the *in vitro* silicosis cell model establishment, NR8383 cells in the plate were treated with silica suspension of different concentrations and incubated at 37°C for another 12 h (5, 10, 20, 40 and $80 \mu\text{g}/\text{cm}^2$). In contrast to the experimental group, the blank group only contained cell-culture medium, and the control group contained cell suspension and cell-culture medium but without SiO_2 treatment. Before terminating the culture, 20 μl MTT (5 mg/ml; Sigma-Aldrich; Merck KGaA) was added to each well and incubated at 37°C for 4 h. Subsequently, the culture medium was aspirated and 200 μl DMSO (Amresco, LLC) was added to each well to dissolve the formazan crystals. Absorbance was measured at a wavelength of 490 nm using a Multiskan GO (Thermo Fisher Scientific, Inc.). Each group was assessed using six replicates.

Table SI. Survival rate of NR8383 cells treated with different concentrations of silica suspension.

Group	n	Survival rate (%)
5 $\mu\text{g}/\text{cm}^2$	6	93.5 \pm 24.9
10 $\mu\text{g}/\text{cm}^2$	6	92.7 \pm 12.1
20 $\mu\text{g}/\text{cm}^2$	6	90.3 \pm 15.2
40 $\mu\text{g}/\text{cm}^2$	6	87.9 \pm 12.4
80 $\mu\text{g}/\text{cm}^2$	6	62.7 \pm 14.3