

Abstract Submitted  
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**Effect of cell donor age on the cellular response to nanoparticle exposure.** FAN YANG, MIRIAM RAFAILOVICH, TATSIANA MIRONAVA, Stony Brook University — As human age there are many significant changes that occur in the skin. Here we investigate how the age-dependent changes in dermal fibroblast mechanics affect cell response to the AuNPs nanoparticles. To analyze these processes we exposed cells from donors of different age groups to AuNPs of two different sizes. Our results indicate that there are significant changes in cell rigidity with age, which in turn lead to different penetration rates of AuNPs through cell membrane and overall nanoparticle toxicity. Cell proliferation results revealed that all cell groups exposed to the same concentration of AuNPs had a very similar decrease in cell proliferation and similar impact on cell morphology. However, recovery data demonstrated that the rate of recovery from the damage is much faster for neonatal cells as compared to 30- and 80-years old cell group. Therefore, we conclude that nanoparticle uptake depends on cell membrane mechanics that in turn is a function of cell donor age.

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