First step in developing SWNT nano-sensor for C17.2 neural stem cells. TETYANA IGNATOVA, Lehigh University, MASSOOMA PIRBHAI, Susquehanna University, SWETHA CHANDRASEKAR, SLAVA V. ROTKIN, SABRINA JEDLICKA, Lehigh University — Nanomaterials are widely used for biomedical applications and diagnostics, including as drug and gene delivery agents, imaging objects, and biosensors. As single-wall carbon nanotubes (SWNTs) possess a size similar to intracellular components, including fibrillar proteins and some organelles, the potential for use in a wide variety of intracellular applications is significant. However, implementation of an SWNT based nano-sensor is difficult due to lack of understanding of SWNT-cell interaction on both the cellular and molecular level. In this study, C17.2 neural stem cells have been tested after uptake of SWNTs wrapped with ssDNA over a wide variety of time periods, allowing for broad localization of SWNTs inside of the cells over long time periods. The localization data is being used to develop a predictive model of how, upon uptake of SWNT, the cytoskeleton and other cellular structures of the adherent cells is perturbed.

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