

AbstractID: 13601 Title: Targeted Gold Nanoparticles as Contrast Agents in Pancreatic Cancer

Circulating tumor cells are hallmarks of metastatic cancer. The presence of circulating tumor cells in blood stream often correlates with the severity of disease. Photoacoustic imaging (PA) of tumor cells is an attractive technique for potential applications in diagnostic imaging of circulating tumor cells. However, the sensitivity of photoacoustic imaging of tumor cells depends on their photon absorption characteristics. In this context, gold nanoparticle embedded tumor cells offer significant advantages for diagnostic PA of single cells. As the PA absorption is directly proportional to the number of nanoparticles embedded within tumor cells, the propensity of nanoparticles to internalize within tumor cells will dictate the sensitivity for single cell detection. We are developing biocompatible gold nanoparticles to use them as probes as part of our ongoing effort toward the application of X ray CT Imaging, Ultra Sound (US) and photoacoustic imaging of circulating breast, pancreatic and prostate tumor cells. We, herein report our latest results demonstrating that epigallocatechin gallate (EGCG)-conjugated gold nanoparticles (EGCG-AuNPs) internalize selectively within cancer cells and thus provide threshold concentrations required for photo acoustic signals. In this presentation, we will describe, our recent results on the synthesis and characterization of EGCG gold nanoparticles, their cellular internalization and photo acoustic imaging of PC-3 prostate cancer cells and PANC-1 pancreatic cancer cells.