

Abstract Submitted
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Smart-design of Tunable Nanomaterials for Enhancing Cancer Diagnosis and Radiation Therapy TABBETHA DOBBINS, CRISTINA IFTODE, Rowan University — Gold nanoparticles (AuNPs) will be studied for both cancer diagnosis and treatment. At present, protocols are being established using benign fibroblast cell phenotype. The diagnosis hypothesis is that approaches may be developed to examine differences in intracellular matrices of healthy and tumor cells (or to examine cell metabolic activity) via understanding the absorption and agglomeration state of intracellular AuNPs. The treatment hypothesis is that the efficacy of irradiation with laser light (and monochromatic x-rays) at killing cells after attachment of AuNPs to the external cell wall has a fundamental mechanism which may not be accounted for solely by particle heating under irradiation. It remains unclear whether quantum effects also play a role. This work will ultimately explore phonon-phonon coupling or electron-phonon coupling at the surface of the AuNP and its contribution to the observed enhanced cell death upon irradiation. Early results will be presented.

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