Award ID:
RP130455

Project Title:
Virus Nanoparticles Programmed To Recognize and Treat Ovarian Carcinoma

Award Mechanism:
High Impact/High Risk

Principal Investigator:
Suh, Junghae

Entity:
Rice University

Lay Summary:

In 2012, there are an estimated 22,280 new cases and 15,500 deaths due to ovarian cancer in the U.S. (American Cancer Society). The high number of deaths relative to new cases underscores the dire need for improved therapies for ovarian cancer patients. Current treatment options include surgical removal, chemotherapy, and radiation. Despite the variety of treatment options, ovarian cancer is still the second leading cause of death in women due to cancer of the reproductive system. A promising therapeutic approach in experimental stages is called gene therapy where nucleic acids are delivered to cancer cells to induce the cells to stop growing or even die. Although a number of potential nucleic acids have been identified that may have efficacy against ovarian cancer, the inability to deliver the therapies to metastatic cancer cells efficiently and specifically has critically prevented the full clinical realization of genetic therapy. In this project, we propose to create virus-based delivery vehicles (virus nanoparticles) that will be able to seek out ovarian cancer cells and deliver nucleic acids that will make the cancer cells die. The virus nanoparticles will detect key molecular signatures unique to ovarian cancer in order to carry out the specific delivery. We will use these intelligent virus nanoparticles to deliver novel therapeutics that have been shown to kill ovarian cancer cells. A more effective, highly targeted gene therapy for ovarian carcinoma will make tremendous positive contributions towards the eradication of this deadly disease and enable more women to become ovarian cancer survivors.