Award ID:
RP100718

Project Title:
Development of small molecules mimicking pro-apoptotic proteins for treating prostate cancer

Award Mechanism:
Individual Investigator

Principal Investigator:
Ahn, Jung-Mo

Entity:
The University of Texas at Dallas

Lay Summary:

Prostate cancer is the second leading cause of cancer-related death in men in US and the majority of mortality is due to the recurrent castration-resistant prostate cancer. Although the current chemotherapeutic treatments for this advanced prostate cancer generally improve the quality of life of patients, curative regiment is not available yet. It is found that castration-resistant prostate cancer derived from cancer stem cell exhibits radio- or chemo-resistant phenotype. The immortality and resistance acquired by cancer stem cell appear to be highly relevant to the elevated expression of anti-apoptotic proteins associated with castration-resistant prostate cancer. Thus, targeting anti-apoptotic proteins will provide a new and effective treatment option for prostate cancer. Based on the structural knowledge of apoptotic protein family, we proposed small molecules that have a capability to disrupt the apoptotic protein complex formation which in turn leads to programmed cell death. A number of small organic molecules derived from various pro-apoptotic proteins will be examined for their targeting efficiency against anti-apoptotic proteins, capability to induce programmed cell death, and cytotoxicity. Selected leading compounds will be evaluated by using a preclinical small animal model. The successful outcome of this project will advance the rational design approach to develop a new generation of cancer therapeutic agents.