CANCER PREVENTION & RESEARCH INSTITUTE OF TEXAS

Award ID:
RP100708

Project Title:
Development of a novel anti-EGFR antibody-protamine recombinant protein for in vivo delivery of small interfering RNAs for cancer therapy

Award Mechanism:
High Impact/High Risk

Principal Investigator:
Fan, Zhen

Entity:
The University of Texas M.D. Anderson Cancer Center

Lay Summary:

Epidermal growth factor receptor (EGFR) is a cell surface protein that is frequently overexpressed in cancer cells and plays important roles in cancer development and progression. Targeting the EGFR with antibodies has clinical activity and has been approved for treatment of several types of human cancers such as head and neck cancer. However, some cancer cells are intrinsically resistant to EGFR antibodies, and some other cancer cells initially sensitive to the treatment may later become insensitive to the treatment. The objective of this high-impact/high-risk CPRIT proposal is to obtain proof-of-principle evidence supporting rational design and development of a novel recombinant EGFR antibody that is expected to inhibit cancer cell proliferation and kill cancer cells more effectively than the conventional EGFR antibodies currently used for treating patients. Our approach is to develop a new generation of EGFR antibody that, in addition to its known function of blocking EGFR signaling, can carry small interfering ribonucleic acid (siRNA) and deliver the siRNA to the targeted cancer cells, where the siRNA can silence the expression of genes known to cause cancer. Development of such new antibodies will lead to a major breakthrough in the area of molecularly targeted cancer therapy in near future.