Multifunctional Phage as Targeted Delivery Platforms for Therapies and Imaging Reagents

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Technology description

Phage that potently and selectively delivery various cargo to cancer cells, with application to many human and other mammalian cancers.

Innovation Details

Every strategy to identify and combat disease can be improved by selective delivery of cargo specifically to diseased cells. Small molecules and nanoparticles have been used to target many diseases and deliver imaging reagents. There are several problems with existing technologies for delivery of these compounds. These technologies most commonly include immunconjugate (antibody) based approaches that are expensive to produce and store and lack specificity and efficiency.

Using engineered bacteriophages, researchers at Colorado State University have developed a non-toxic, potent, cell type specific delivery system that can target cancer cells. This system has been proven in solutions containing human blood to efficiently target prostate cancer cells using picomolar concentrations. Bacteriophages are inexpensive, stable over long periods, and have the potential to revolutionize targeted small molecule delivery.

This system has a broad suite of applications from delivering therapeutics for human and mammalian diseases, to targeted delivery of iron oxide nanoparticles for MRI and other imaging technologies. Using the phage technology, combinations of protein transduction domains and nanoparticle binding peptides has almost limitless possibilities.

Advantages

• Cell-specific, non-toxic small molecule delivery system.

• Potential for cancer and disease therapeutic, as well as MRI and other bio-imaging.

• Inexpensive to produce, distribute, and store.

Institution

Colorado State University

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