Targeted drug delivery system for cancer detection and treatment

Technology #cu15144

This technology is an adaptable drug delivery system for enhanced diagnosis and treatment of cancer.

Unmet Need: Targeted cancer therapy for reduced toxicity to patients

Many cancers are either untreated by traditional chemotherapies or are only treatable by therapies with high toxicity to patients. Additionally, many promising new therapies are deemed too toxic for traditional administration methods. Recent technologies, such as antibody-drug conjugates, seek to improve targeted cancer therapy, but have encountered significant problems with aggregation, poor pharmacokinetics, loss of immune reactivity, development of resistance by cancer cells, and dose-limiting toxicity.

This Technology: Flexible system combines three mature technologies in one for more efficacious cancer treatment

This technology is a drug delivery system that combines three well-established modules: an antibody or aptamer specific to a receptor on a cancer cell, a drug payload designed to target cancer-specific protein or nucleoside targets, and a linker connecting them, which is designed to be proteolytically cleaved in the cytoplasm. This system can be used to deliver either tumor deliverable iron drugs for enhanced detection of tumors and sensitization to radio- and chemotherapy, or anti-cancer protein synthesis inhibitors. A significant advantage of this technology is the adaptability of the modules for tailored targeting of different cancer types, even potentially allowing the use of more toxic but efficacious drugs. Because the drug will not be released until it reaches the tumor, the risk of off-target cytotoxicity is significantly reduced.

Applications:

- Treatment to sensitize cancers that are not responsive to traditional chemotherapies
- Reduction of toxicity of traditional chemotherapies
- Cancer diagnosis tool
- Drug delivery platform for cancer therapeutics
Advantages:

• Adaptability of targeting module for different cancer types
• Simultaneous enhanced detection of cancer and tumor sensitization to radiation and chemotherapy
• Improved efficacy and specificity of chemotherapy drugs
• Reduced off-target toxicity and chemotherapy drug side-effects
• May be combined with drugs that already have proven efficacy
• May allow for the use of previously unusable, toxic cancer therapeutics

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Related Publications:

Tech Ventures Reference:

• IR CU15144
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