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Intellectual Property Status: Patent Pending

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Methods and Compositions for Using Bleomycin-Derivatized Microbubbles AzTE Case # M09-039

Invention Description

ASU researchers have identified new methods and compositions to directly target therapeutics to tumors while also performing diagnostic imaging. Ultrasound contrast agent materials are combined with glycopeptide-based antibiotics in a unique formulation capable of simultaneous targeting of therapeutics and selective imaging.

Traditionally used with ultrasound technology for in-vivo imaging, microbubbles typically consist of a shell comprised of albumin, galactose or lipids enclosing a gas core. Microbubbles are administrated intravenously to the systemic circulation, their echogenocity allows contrast-enhanced ultrasound and improved medical sonography. In medical imaging, these agents have applications in radiology and cardiology.

By utilizing a new and novel combination of antibiotic therapeutic and attachment chemistries, ASU researchers have created a range of new materials useful for drug delivery to tumor sites, while offering the capability for selective in-vivo imaging and therapy monitoring. Appropriate selection of microbubble functionalization enables targeting of the delivery agent, therapy delivery and treatment monitoring. Chemistries can be selected to enable one, or a combination of these functions.

Although the current focus is on existing clinical therapeutics for use in treating malignant cancer cells, the platform offers significant flexibility in type and number of therapeutic agents, and attachment methodologies for various diagnostic and therapeutic applications.

Potential Applications

- Cancer-therapeutics
- Drug-delivery
- Therapeutic monitoring
- Tissue Imaging

Benefits and Advantages

- Ease of use Does not use radionuclides
- Builds on well-established technologies for tissue imaging
- Flexibility platform for expansion of therapeutic / diagnostic application

