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DRUG-FREE TARGETED TUMOR KILLING WITH MULTIMERIC ANTIBODY CONJUGATE

THERAPEUTICS

Antibody treatment therapy that binds therapeutics to graphene oxide, thereby increasing the visibility of B cells and directly targeting cancer cells with 1000x more potency.

TECHNOLOGY TYPE

Drug Delivery
Antibody and Peptides
Biologics
Nanoparticles
Platform Method

STAGE OF DEVELOPMENT

- Proof of concept established in animal models.

- Collaboration established with Huntsman Cancer Institute for extended validation and biological characterization.

IP PROTECTION

PCT Pending

A nanomaterial complex comprising graphene oxide associated with a therapeutic agent and methods of use
WO2017066583A1

LEARN MORE

Reference Numbers: U-5880, U-5888

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TECHNOLOGY SUMMARY

Monoclonal antibodies show limited clinical efficacy as a single agent therapy for solid and blood cancers. The requisite high doses result in undesired adverse immunogenicity and toxicity. Conjugating antibodies to cytotoxic drug shows durable clinical response. However antibody drug conjugate designing is complex, with knowledge of linkers, drug and antibody combinations in the context of a specific cancer. The novel therapy describes a new approach for modifying and improving antibody avidity by using graphene oxide (GO) as a targeted delivery scaffold. The GO-based aqueous composition allows non-covalent association of multiple antibody molecules on individual GO molecules, resulting in high efficacy antibodies.

FEATURES AND BENEFITS

- Improves avidity for antigen by 10 fold.
- Increases efficacy for anti-CD20 and anti-HER2 in osteosarcoma, lymphoma and pancreatic xenograft tumor models.
- Decreases required dose for effective tumor killing with minimal to no adverse effects.
- Composition involves easy, reproducible, non-covalent and stable ratio-metric formulation.

RECENT PUBLICATIONS

Luo, C., Deng, Z. Li, L., Clayton, F., Chen, A.L., Wei, R., Miles, R., Stephens, D.M., Glenn, M., Wang, X., Jensen, P.E., and Chen, X. (2016). Association of rituximab with graphene oxide confers direct cytotoxicity for CD20-positive lymphoma cells. *Oncotarget.* 7(11):12806-22. doi: 10.18632/oncotarget.7230.

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