



## COMBINATION TUMOR THERAPY WITH THROMBOSIS INITIATION AND PLATELET RECRUITMENT

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### The Invention

UW-Madison researchers have created a “cellular hive” that addresses the shortcomings of existing immune checkpoint blockade (ICB)-based immunotherapy. In short, the inventors leverage a two-part system that mimics the coagulation process to create a local environment near the tumor that actively recruits modified platelets, which serves to restore T cell function. The first component is a fused protein, tTF-RGD, which targets tumor angiogenic blood vessel endothelial cells and initiates the coagulation cascade locoregionally at the tumor site. The second component are anti-PD1 antibody-engineered platelets (i.e., P-aPD-1) that naturally migrate to the tumor site (via attraction to the coagulation site to participate in thrombus formation) where they unload their therapeutic cargo (i.e., aPD-1 antibody or chemotherapeutic agent). In the case of aPD-1, the antibodies are released and block the PD1/PDL1 pathway resulting in a reactivation of T cells. In the case of chemotherapeutic agents, a platelet membrane-coated nanoparticle (PM-NP) with an active payload (i.e., Paclitaxel) accumulate at the tumor site after tTF-RGD treatment, resulting in improved delivery and anti-tumor efficacy.

#### Tech Fields

- [Therapeutics & Vaccines : Oncology](#)

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