First-in-Class Antibody Therapy Targeting Platelet-Driven Cancer Metastasis

The first therapeutic strategy designed to selectively disrupt platelet–tumor cell interactions, a key driver of cancer metastasis and post-surgical tumor spread.

Technology

This technology is based on a humanized single-chain monoclonal antibody (A11) that selectively binds to a defined epitope (GPIIIa49–66) on activated platelets. By targeting activated platelet–tumor cell aggregates, the antibody induces their disruption and lysis, thereby preventing tumor cells from evading immune surveillance and forming metastatic lesions. Unlike conventional anti-platelet or anti-angiogenic therapies, this approach selectively targets pathological platelet activation associated with tumors while preserving resting platelets, offering a highly specific and novel anti-metastatic mechanism. The technology can be administered systemically or locally in conjunction with surgical tumor resection to inhibit metastatic spread.

Background

Metastasis is responsible for over 90% of cancer-related deaths and remains a major unmet medical challenge across solid tumors, including lung, breast, kidney, and gastrointestinal cancers. The global oncology therapeutics market is estimated to exceed $300 billion by 2030, with targeted biologics and immunotherapies representing the fastest-growing segments. Despite advances in checkpoint inhibitors and targeted therapies, there are currently no approved drugs specifically designed to prevent platelet-mediated tumor metastasis, positioning this technology in a novel and differentiated therapeutic niche within the metastasis-prevention and perioperative oncology markets.

Development Stage

NYU has generated preclinical proof-of-concept data demonstrating that targeting GPIIIa49–66 on activated platelets disrupts platelet–tumor cell aggregates and inhibits metastatic processes in experimental models. NYU is seeking partners interested in developing first-in-class biologics for metastasis prevention in solid tumors, particularly in the perioperative and adjuvant oncology setting.

Applications

Technology ID

WIS02-12

Category

Life Sciences/Therapeutics/Oncology

Sofia Bakogianni

Authors

Thomas Wisniewski, MD

View online

- **Therapeutic:** Treatment to inhibit metastatic spread in patients with solid tumors (lung, breast, kidney, and gastrointestinal cancers).
- **Adjuvant Therapy:** Perioperative administration to prevent surgery-induced tumor dissemination.
- **Combination Therapy:** Use alongside chemotherapy or immunotherapy to enhance anti-metastatic efficacy.
- **Prophylactic:** Prevention of metastasis in high-risk cancer patients.

Advantages

- **First-in-class mechanism:** Targets activated platelet–tumor aggregates rather than tumor cells alone.
- **High specificity:** Selective binding to activated platelets reduces off-target effects on normal platelets.
- **Broad oncology applicability:** Relevant across multiple solid tumor types.
- **Complementary therapy:** Can be combined with existing cancer treatments.
- **Perioperative utility:** Addresses a critical window when metastasis risk is elevated following surgery.

Intellectual Property

NYU has filed U.S. provisional patent applications covering methods of inhibiting tumor metastasis and treating cancer using antibodies.