

Targeted Cancer Therapy Using Bispecific Nanoconjugates

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THE UNIVERSITY OF
SYDNEY

Therapy - Oncology



> Preclinical

Problem

Despite significant advancements in cancer treatment, one of the most challenging aspects remains effectively targeting and destroying cancer cells while sparing healthy tissue. Monoclonal antibodies have greatly improved cancer treatment; however, their efficacy is often limited by stability issues and short serum half-lives, resulting in frequent dosing and potential for reduced patient compliance.

The need for bispecific binding molecules that can persist longer in the serum, allowing for more effective and less frequent treatments, is clear. Cancer therapies must evolve to overcome these hurdles, providing patients with not only more effective but also more convenient treatment options that enhance their quality of life and clinical outcomes.

Solution

The innovation at hand is a nanoparticle bioconjugate that employs a dual-nanoparticle approach to target and bind to both cancer cells and immune cells. This configuration comprises metallic and magnetic nanoparticles conjugated with binding proteins, creating a platform that brings cancer cells into close proximity with immune cells for targeted destruction. This design used iron and silver-based nanoparticles to act as nanocarriers to deliver a bispecific antibody to EGRF-positive skin cancer cells.

The tailored architecture of the bioconjugate ensures increased stability and serum half-life, thereby enhancing therapeutic efficacy with

potentially reduced dosing frequency. By improving the precision of immunotherapy, this technology represents a significant leap forward in the treatment of cancer, offering hope for more effective, less invasive treatments.

Commercial Opportunity

This is an opportunity to acquire a new bioconjugate with high specificity and stability to target skin cancer cells. This technology has applications in precision oncology treatments and targeted immunotherapies.

Intellectual Property Status

International Application PCT/AU2023/050338 has been published

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Potential Commercial Applications

- Precision oncology treatments
- Targeted immunotherapies
- Minimally invasive cancer therapies
- Combination Therapies with existing cancer treatments

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