



# Multimeric Immunotoxins for Cancer Treatment and Graft vs Host Disease

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**Technology ID**

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**Category**

Life Sciences/Pharmaceuticals

## Multimeric Immunotoxins with Cytokines Localize in Cancer Target Tissue

A technique has been created to produce multimeric immunotoxins. These immunotoxins are recombinant proteins formed using c-terminal bridging techniques. By adding a second antibody for antigens expressed on cancer target cells, the researchers can narrow the spectrum of cells that the toxin can enter, thus improving the efficacy of treatment and reducing nontarget treatment. Immunotoxins have a major advantage of killing both dividing and non-dividing target cells and are directed against the protein synthesis machinery of the cell. Potent anti-cancer cytokine immunotoxins can be expressed as single chain recombinant proteins by splicing genes of potent catalytic toxins to cytokine genes that selectively bind target cells and kill them. These multimeric immunotoxins also show potential for overcoming rejection in graft versus host disease (GVHD).

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## Immunotoxins for Cancer Treatment

Immunotoxins are one approach to improving the delivery of cancer drugs, reducing non target treatment and side effects. Immunotoxins are synthesized proteins that provide targeted delivery of toxins by pairing them with an antibody. The antibody binds to an antigen on the surface of the cancer target cell and the toxin is taken into the cell by endocytosis. Such agents have shown promise in previous clinical studies, but they have been limited by two major problems: 1) failure to localize in adequate concentrations in cancer target tissue 2) localization in nontarget organs such as the kidneys limiting the tolerated dose and collapsing the therapeutic window.

## **BENEFITS OF RECOMBINANT PROTEIN MULTIMERIC IMMUNOTOXINS FOR CANCER TREATMENT AND GVHD:**

- Immunotoxins localize to the cancer target, increasing effectiveness and lowering the toxic side effects of treatment
- Therapeutic dose has decreased renal toxicity
- Creates therapeutic window where none existed before by increasing the tolerable dosage
- Bridging technique can be applied to other immunotoxins
- Multimeric immunotoxins help overcome GVHD and could become a more effective anti-rejection medication allowing transplanted cells to survive long after implantation

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