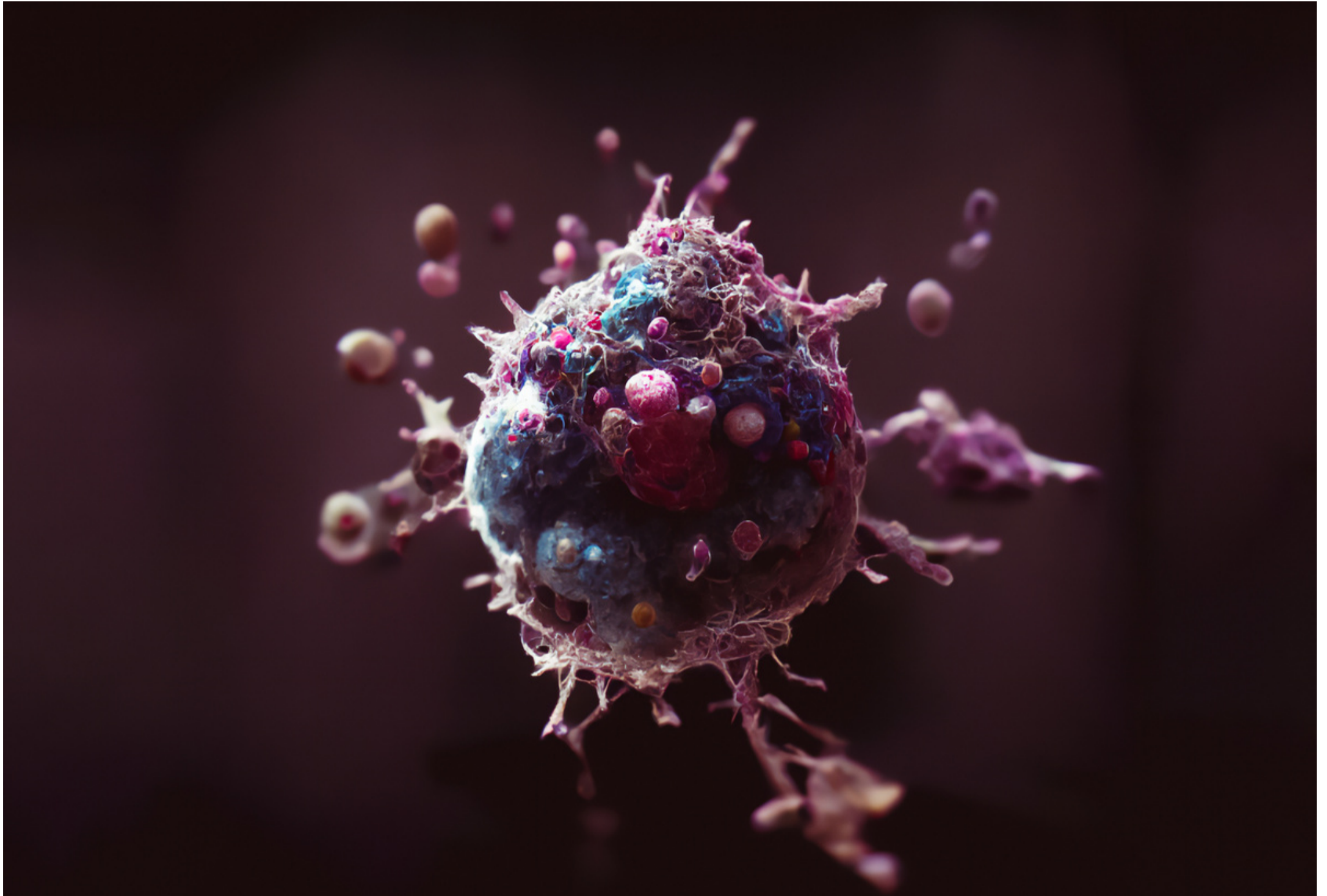


# Novel Immunoproteases

Novel immunotoxins comprising serine protease granzyme M, and methods of using such cytolytic fusion proteins in immunology

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## Background

In the treatment of tumors, autoimmune diseases, allergies and tissue rejection reactions, it is a disadvantage that the currently available medicaments, such as chemotherapeutic agents, corticosteroids and immunosuppressive agents, have a potential of side effects which is sometimes considerable, due to their relative non-specificity. It has been attempted to moderate this by various therapeutical concepts especially the use of immunotherapeutic agents is an approach, which resulted in an increase of the specificity of medicaments, especially in tumor treatment.

Immunotoxins are proteins used to treat e.g., cancer that are composed of an antibody or a fragment thereof linked to a toxin. Refinements over many years have produced recombinant immunotoxins; these therapeutic proteins are made using protein engineering. Individual immunotoxins are designed to treat specific cancers. To date, most success has been achieved treating hematologic tumors. Obstacles to successful treatment of solid tumors include poor penetration into tumor masses and the immune response to the toxin component of the immunotoxin, which limits the number of doses that can be given.

## Technology Overview

The invention includes a fully human immunotoxin (cytolytic fusion protein) comprised of a polypeptide for binding to specific target on surface of diseased cells; and a polypeptide which is serine protease Granzyme M, or variants/fragments, which cause cell death.

## Benefits

An immuno-fusion protein, which binds specifically CD64/30/25/EGFR (cancers) and a cytotoxic enzyme protease (GranzymeM) and its variants with increased activity and decreased sensitivity to inhibitors. This can be used together with GranzymeB variants as a therapeutic agent in cancers (but scope includes inflammatory/autoimmune diseases as well). The invention includes variants (specific mutations in sequence) of human serine protease Granzyme B with increased apoptotic activity and reduced sensitivity to inhibitors. It also includes fusion proteins of these variants (immunoproteases), including a target specific binding domain, specifically to CD64 (blood malignancies) and CD30 (lymphomas).

## Applications

Compositions of the invention contain variants for use in pharmaceutical, diagnostic, and cosmetic applications. These could be designed into targets for the prevention and treatment of allergies, autoimmune diseases, tissue rejection, chronic inflammation, and cancer.

## Opportunity

Licensing; strategic collaboration/development partnership; funding; commercialization options.

### Patents

- [PCT/EP2013/072888](#)

### IP Status

- Patented

### Seeking

- Development partner
- Commercial partner
- Licensing
- Seeking investment