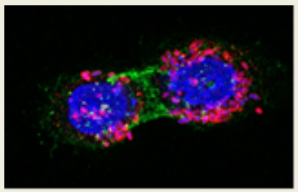
Bacterial treatment for cancer

Bacteria for cancer treatment with cell tumor-binding specificity and the ability to inject proteins into their cytoplasm with antitumor effects



Engineered E. coli bacteria (red fluorescence) targeting a tumor cell with a specific surface antigen (green fluorescence)

Problem addressed – Need

Cancer remains a disease with a high morbidity and mortality rate. It is crucial to develop new therapies that minimize unwanted side effects and resistance that may arise with current treatments. One of the main limitations of existing cancer therapies lies in their lack of specificity and efficacy in treating the tumor.

Proposed solution

A new generation of cancer therapies is emerging based on the use of engineered bacteria as vehicles capable of delivering therapeutic proteins specifically to target tumor cells. The design and incorporation of modified functional modules into a safe bacterial chassis through synthetic biology methods allow for the customized design of sophisticated new therapies.

The developed bacterial strains have shown high potential as antitumor agents. They enable the specific delivery of antitumor proteins into the cytoplasm of tumor cells through bacterial injectisomes. In addition to their demonstrated efficacy, these microorganisms ensure precise control over the expression and production of the delivery machinery, preventing failures in the administration of antitumor proteins

Innovative aspects – Key advantages

- Selective and effective cancer therapy, with lower toxicity and fewer side effects than other current treatments.
- Easily modifiable to target different types of tumor cells.
- Treatment can be halted at any time using commonly available antibiotics
- This technology can be combined with other therapeutic proteins to generate even more potent cancer therapies.
- The technology has the potential to be adapted to other diseases, for example by selectively delivering proteins to cells of the immune system in the development of vaccines or to modulate the immune response.

Stage of Development

Demonstrating effectiveness against human tumors in both in vitro and in vivo models

Intellectual Property

Patent filed in USA and EU.

Intended collaboration

Licensing and/or co-development

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