FLIPr-Mediated Antigen Targeting to Dendritic Cells

TargAg

Principle

- Innovation
- High value
- Healthcare solutions

Technology

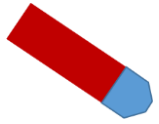
- Targeted Antigen Delivery System
- Increasing Ab & T-cell
- Cancer Immunotherapy
- Prophylactic vaccine & Mucosal Vaccine

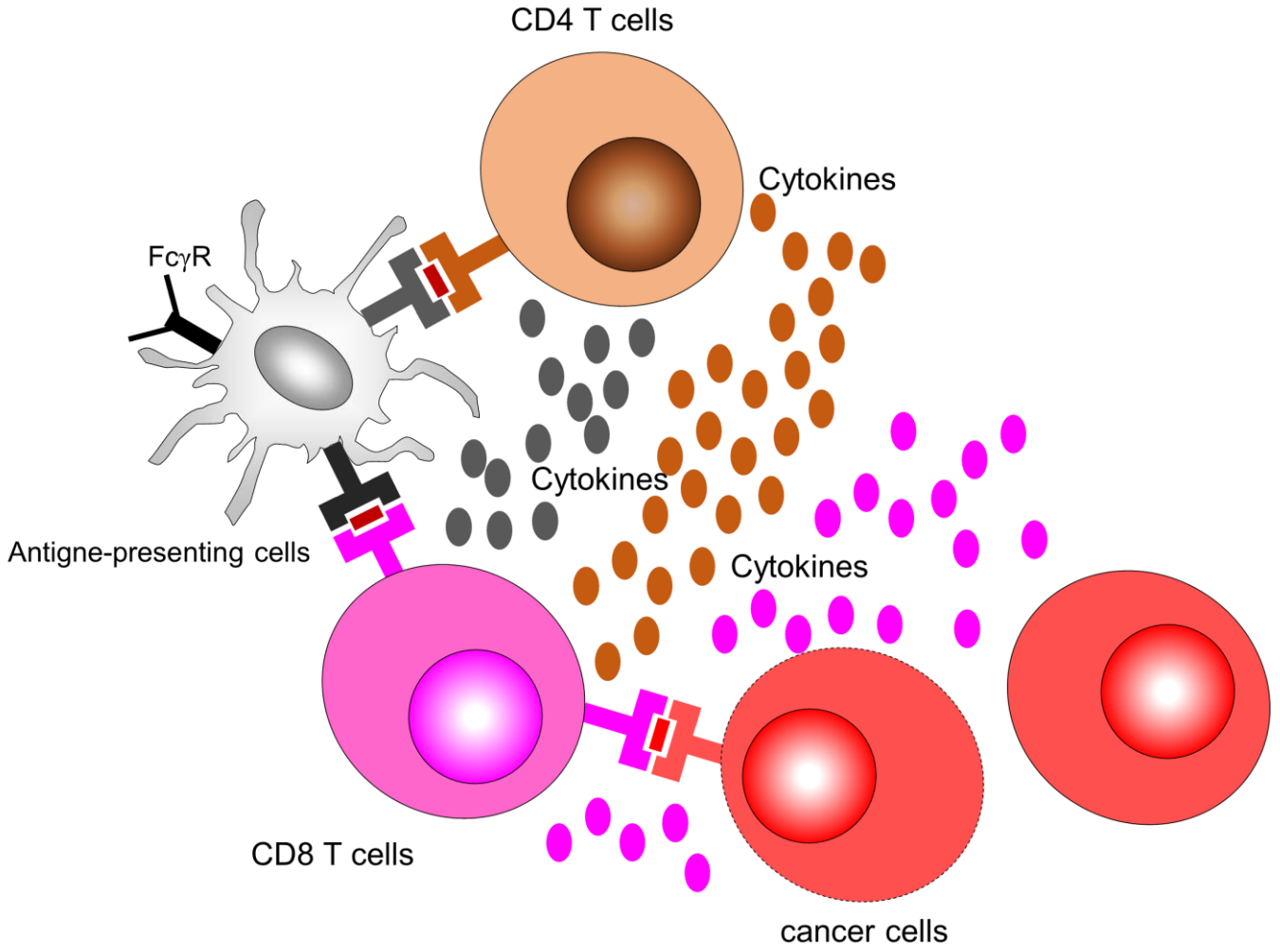
April, 2024

Cancer vaccine based on recombinant antigen-FLIPr fusion protein

Formyl peptide receptor-like 1 inhibitory protein (FLIPr), secreted by *S. aureus*, can bind to Fcγ receptors and act as an antagonist. FLIPr can guide **antigen-FLIPr fusion protein** to Fcγ receptors increasing antigen uptake by antigen-presenting cells and facilitate antigen processing and presentation, then promote antigen-specific immune responses.

Antigen-FLIPr fusion protein





The recombinant Survivin-FLIPr (rSur-FLIPr) cancer vaccine as a solution for cancer immunotherapy

World Health Organization

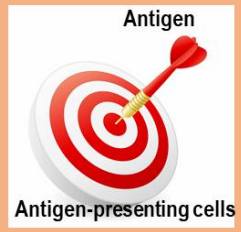
Cancer is a leading cause of death worldwide, accounting for nearly 10 million deaths in 2020, or nearly one in six deaths.

Unmet medical needs

- A significant challenge lies in the fact that many **tumor-associated antigens are nonimmunogenic**.
- Efficiently **triggering robust immune responses** to **tumor-associated antigens** is critical to cancer vaccine development.

Proposed solution

Targeted antigen delivery system



Evidence-based literature

A novel recombinant Fc gamma receptor-targeted survivin combines with chemotherapy for efficient cancer treatment. *Biomedicines.* 2021 Jul 12;9(7):Article number 806.

Survivin is an ideal antigen for cancer immunotherapy

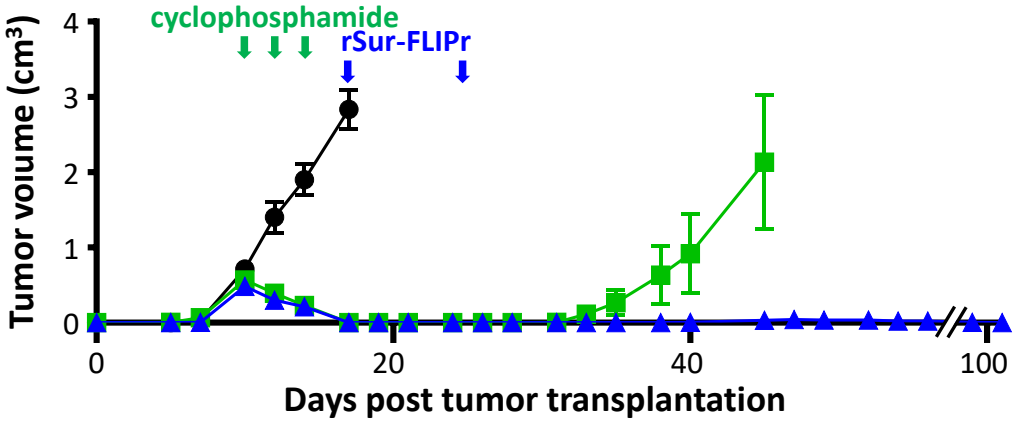
- Survivin is over-expressed in a high percentage of cancer patients with a wide variety of tumors.
- Survivin has limited expression in normal adult tissues.
- Survivin is increased in response to chemotherapies.
- Spontaneous immune responses to survivin and vaccine-induced survivin-specific TILs have been reported in cancer patients.

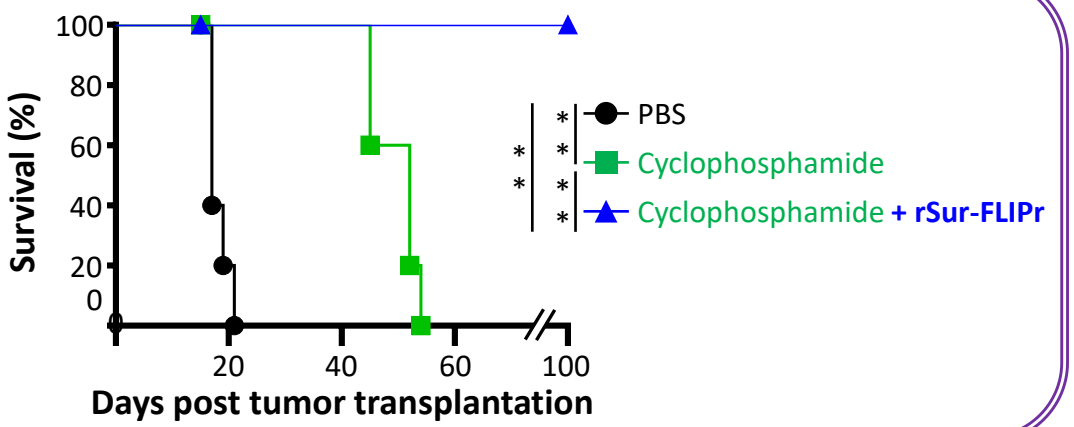
The rSur-FLIPr cancer vaccine can be used to treat tumors with overexpression of Survivin, benefiting an estimated over 80% of cancer patients.

The rSur-FLIPr can be applied to treat multiple cancer types

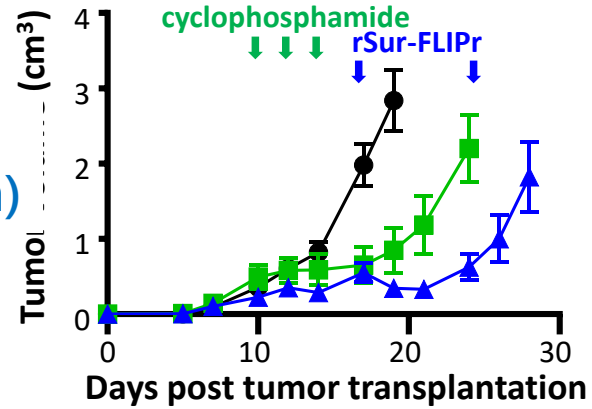
Combination therapy of rSur-FLIPr superior to monotherapy

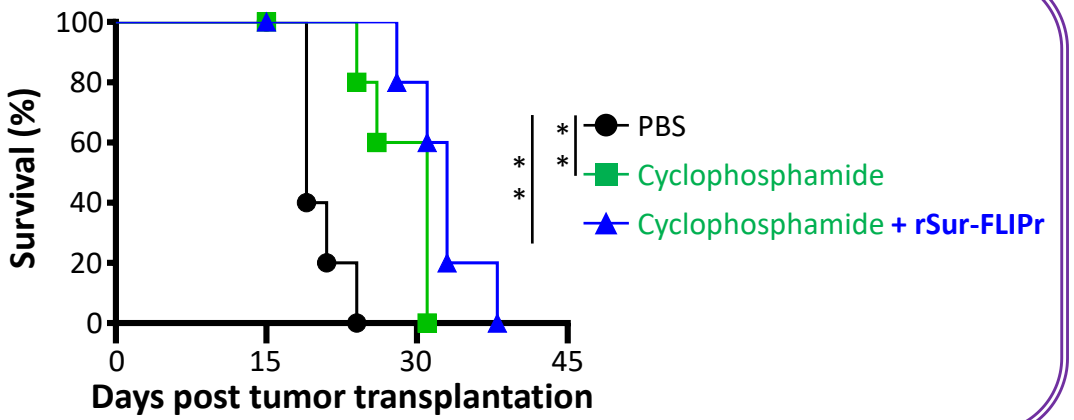
EG7 (Lymphoma)





B16F10 (Melanoma)





Other advantages - Development of mucosal vaccines using targeted antigen delivery system

Unmet medical needs

- **Mucosal vaccines** offer the potential to trigger robust protective immune responses at the **predominant sites of pathogen infection**.
- Most of the vaccines are not optimal for inducing **mucosal immunity**.

Proposed solution

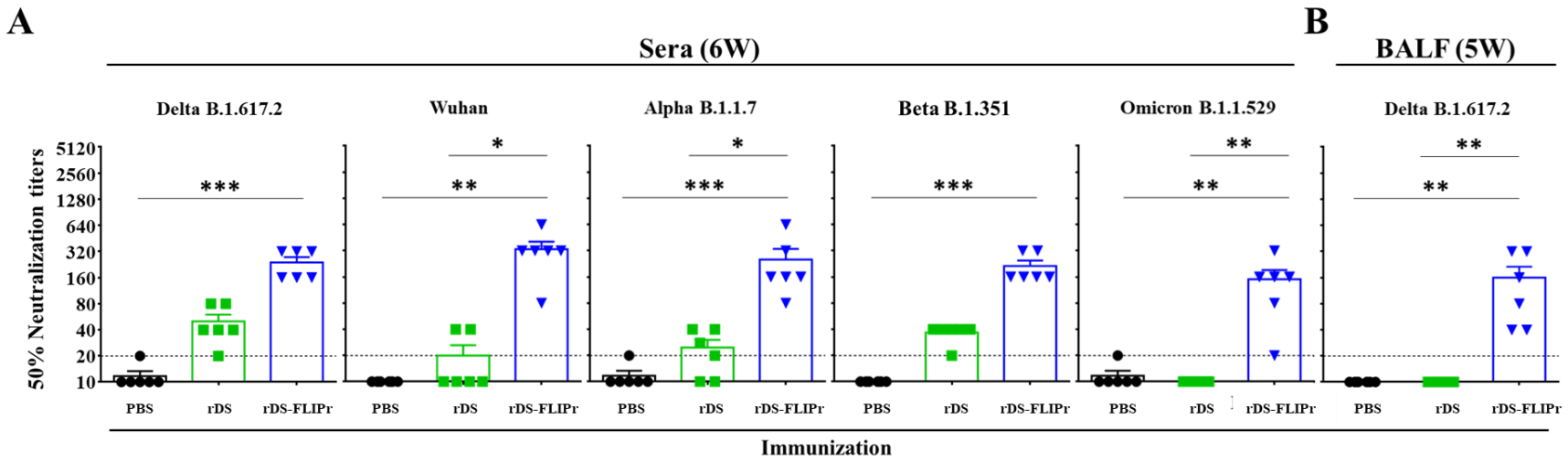
By employing targeted antigen delivery system to prepare antigens for intranasal immunization, not only can mucosal immunity be effectively induced, but also systemic immune responses.

Evidence-based literature

Intranasal vaccination with recombinant antigen-FLIPr fusion protein alone induces long-lasting systemic antibody responses and broad T cell responses *Frontiers in Immunology*. 2021, 12:Article number 751883.

SARS-CoV-2 spike-FLIPr fusion protein plus lipidated FLIPr protects against various SARS-CoV-2 variants in hamsters. *Journal of Virology* 2024, 98:e0154623

The newly developed coronavirus antigen (rDS-FLIPr) prepared using targeted antigen delivery system can induce broad-spectrum antibodies, neutralizing various variant strains of the virus.



Patent status

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Area: China
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Date: 2023-12-08

Area: United States
Status: Granted (US11266728B2)
Date: 2022-03-08

Area: Taiwan
Status: Granted (I660742)
Date: 2019-06-01