A Revolutionary Approach Harnessing T Cells to Cure Cancer

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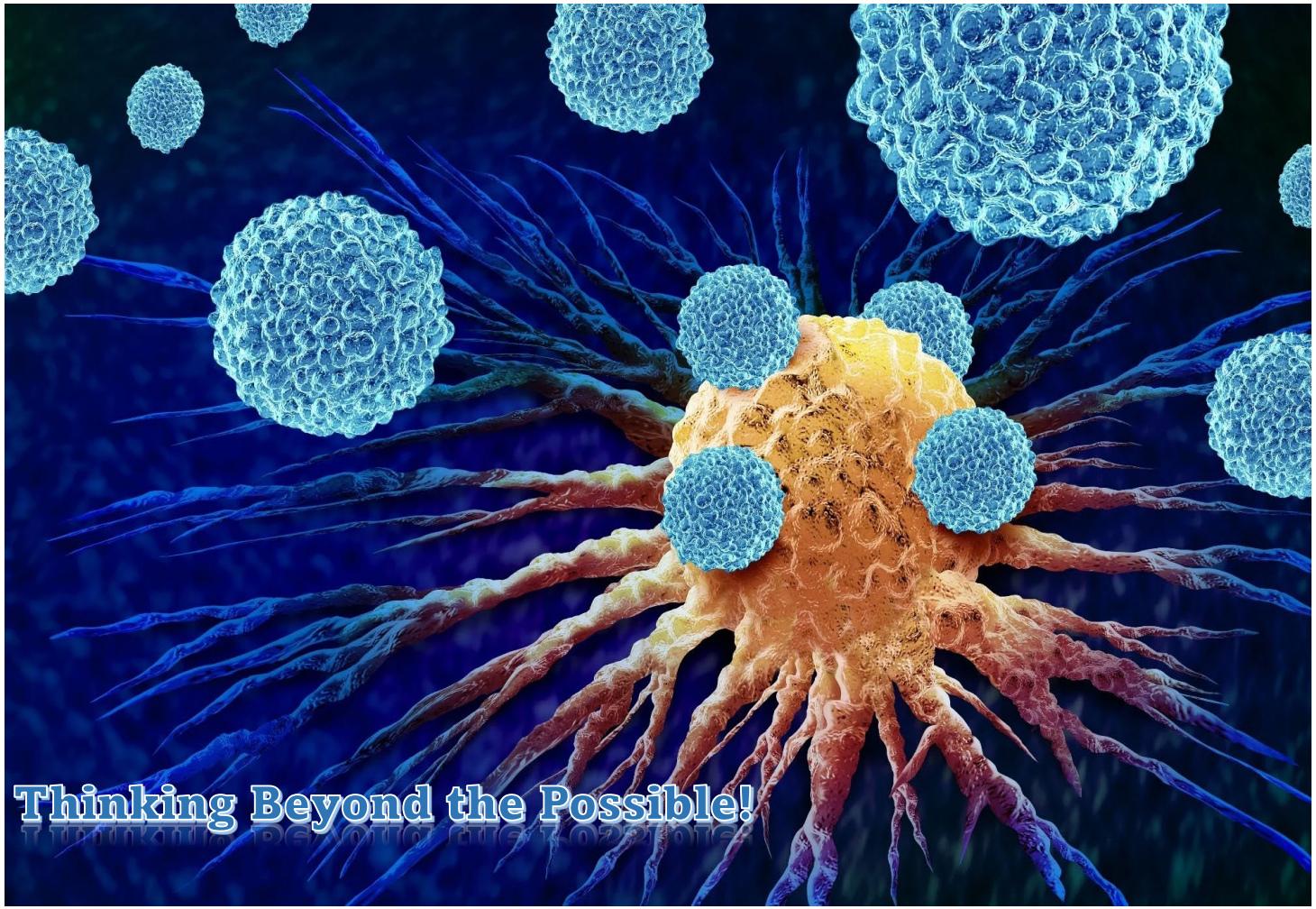
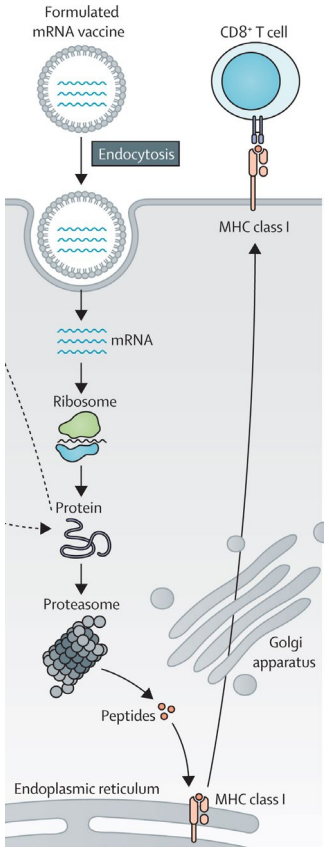
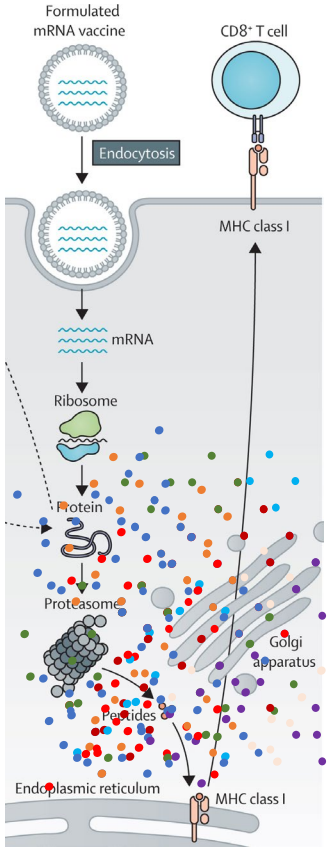


Cancer vaccines often exhibit limited effectiveness in patients, primarily attributed to inadequate CD8 T cell responses

In an ideal scenario, tumor antigens are processed into peptides, binding to MHC I to activate CD8 T cells.



In reality, these peptides must compete with thousands self-peptides for MHC I, leading to low CD8 T cell response



Low CD8+ T Cell Response:

- **Low affinity of tumor antigen-derived peptides to MHC I.**
- **Tumor peptide competition with thousands self-peptides for binding to MHC I, lack a competitive advantage.**
- Low activation of CD4+ T cells
- Issues with Delivery Efficiency:
  - Protein vaccines do not induce CD8 T-cell responses;
  - Viral vectors induce irrelevant T-cell responses against the virus itself;
  - Poor DNA delivery efficiency;
  - mRNA expression is high, but its efficiency depends on LNP selection.

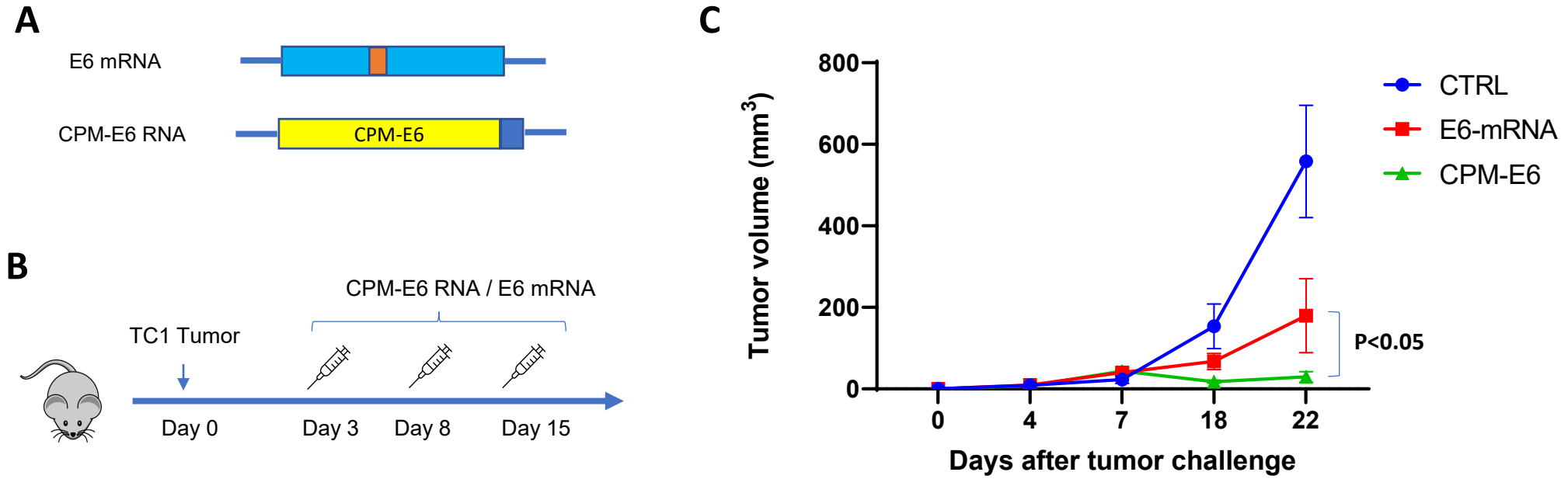
ARV TECHNOLOGIES

CPM-based cancer RNA therapeutic vaccine: A revolutionary approach harnessing T cells to cure cancer

Our Cancer Vaccine Strategy:

- **Utilizing ARV's IP-protected CPM technology to effectively enhance CD8 T cell activation**
  - Eliminate competition with endogenous peptides for MHC I binding.
  - Enhance the binding affinity of tumor peptide and MHC I
- **Simultaneous Expression of Universal CD4+ T Cell Epitopes:**
  - Augment anti-tumor activity by activating CD4+ T cells.
- **ARV Delivery System - L002 LNP:**
  - Ensure effective delivery and expression of mRNA.
  - Target dendritic cells for robust activation of antitumor CD8 T cells

CPM-based tumor mRNA vaccines exhibit significant advantages over comparable products



CPM-E6 mRNA vaccine shows superior inhibition on tumor growth *in vivo* **A**) To determine the CPM-E6 antitumor activity, we designed two mRNAs: **E6 mRNA representing typical mRNA vaccine design** and **CPM-E6 mRNA incorporating ARV CPM technology**. **B**) 8 weeks old C57BL/6 mice were injected with 10^5 TC1 tumor cells, s.c., after three days, mice were immunized with 1 ug of CPM-E6 mRNA or E6 mRNA formulated with ARV-L002 LNP, and **C**) the tumor growth was measured after immunization.

CPM-based mRNA vaccines exhibit superior antitumor activity in both preventive and therapeutic settings

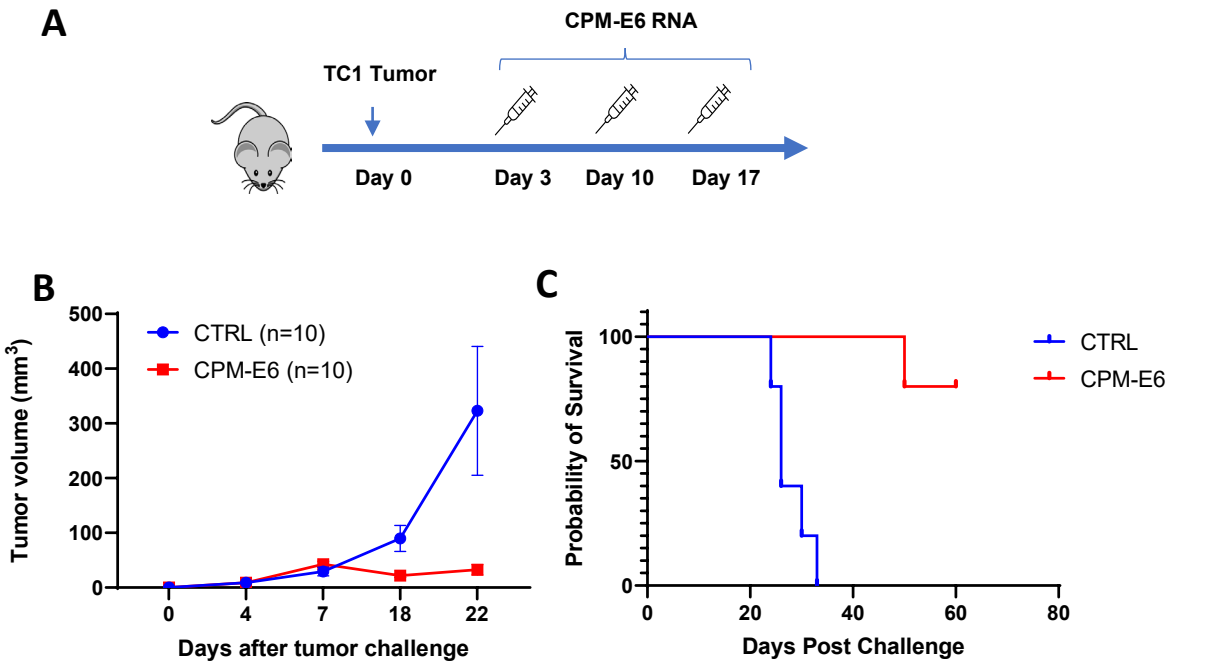


Figure 1. In vivo efficacy of therapeutic administration of mRNA-CPM-E6 vaccine. **A**, 10 female C57BL/6 mice were injected with 2x10^5 TC-1 tumor cells on the frank s.c., day 3, 10 and 17 after tumor challenge, mice were received three doses of immunization of CPM-E6 or PBS. **B**, Tumor progression. **C**, Long-term survival of each experimental group.

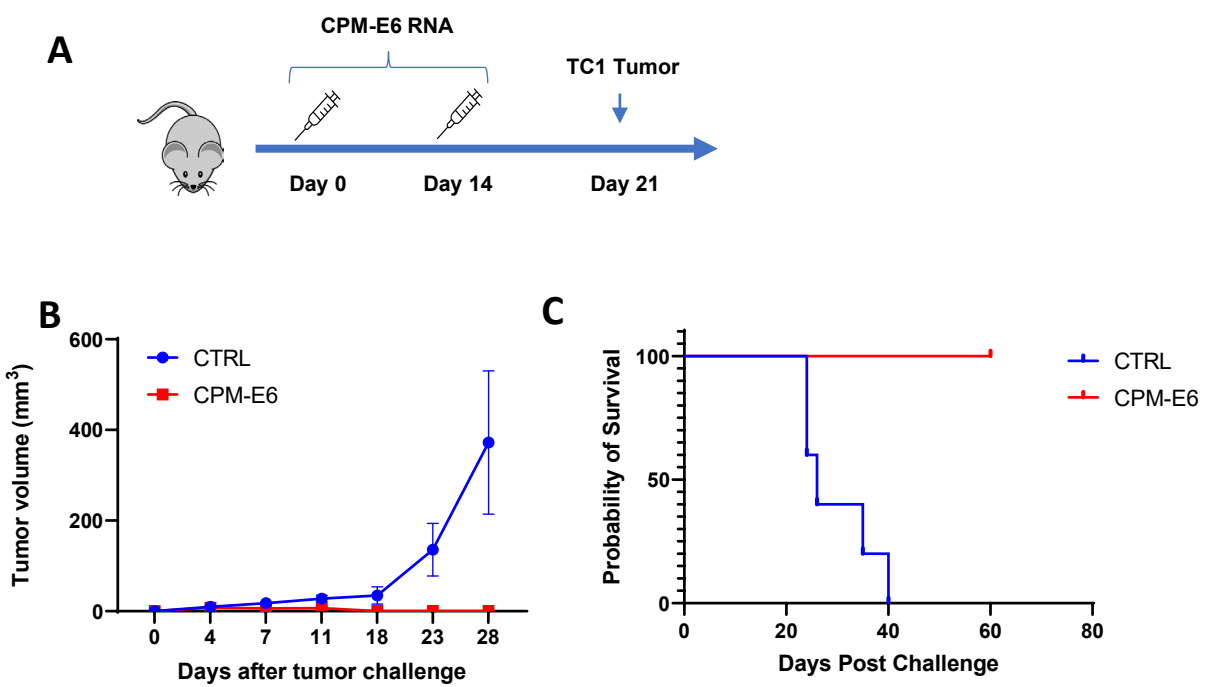
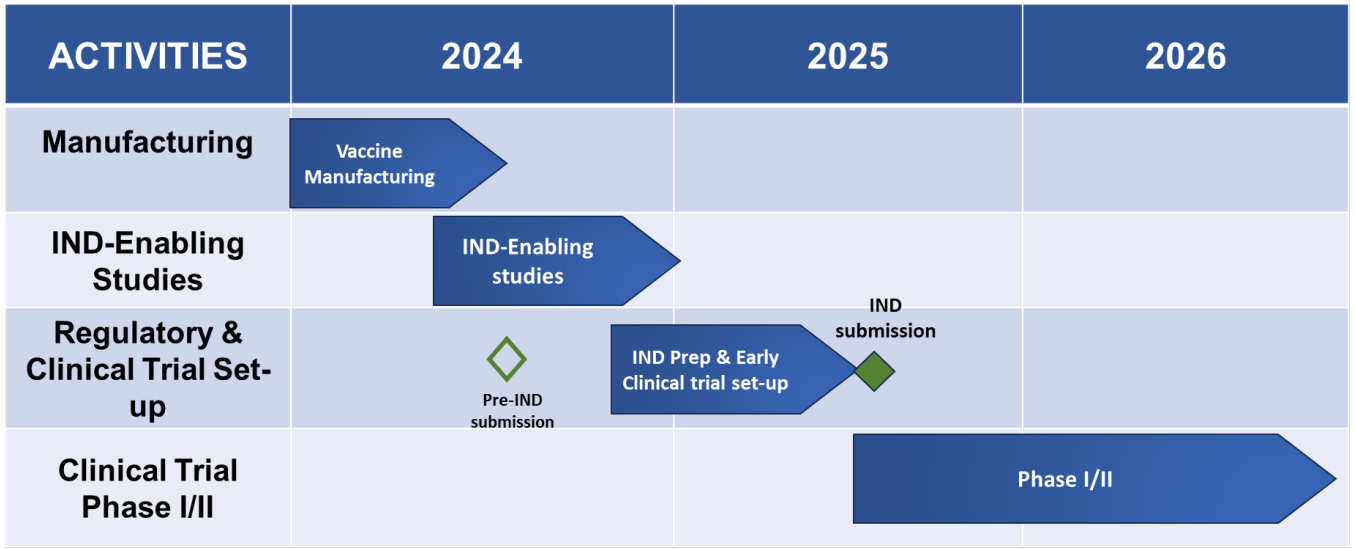


Figure 2. In vivo antitumor efficacy of prophylactic vaccination of mRNA-CPM-E6. As shown in **A,** 5 C57BL/6 mice were immunized with 1 ug of mRNA/CPM-E6 vaccine intramuscular on day 1 and day 14, on day 21, 1x10^5 TC1 tumor cells were injected subcutaneously, the tumor growth (**B**) and survival (**C**) were monitored.

ARV-2001: mRNA therapeutic vaccine to HPV16 positive cervical cancer

- Cervical cancer is the 4th most common cancer among women, ~604,000 new cases each year.
- HPV (HPV16 and HPV18) is responsible for nearly 50% of high-grade cervical precancerous lesions.
- Immunotherapy has not achieved the expected clinical outcomes.
- Few treatment options for patients

Roadmap for ARV-2001 to Phase I in US



Investment Plan and Collaboration Plan

- **CPM Technology** is adaptable and applicable to any cancers with defined tumor epitopes.
- Welcome collaboration or co-development.
- Seek $10M to accelerate the inaugural human study by 2025

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