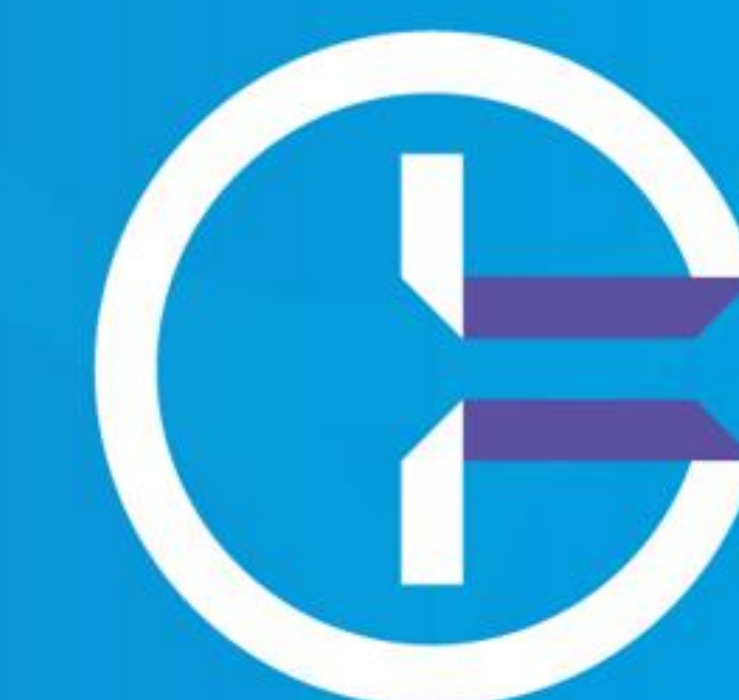


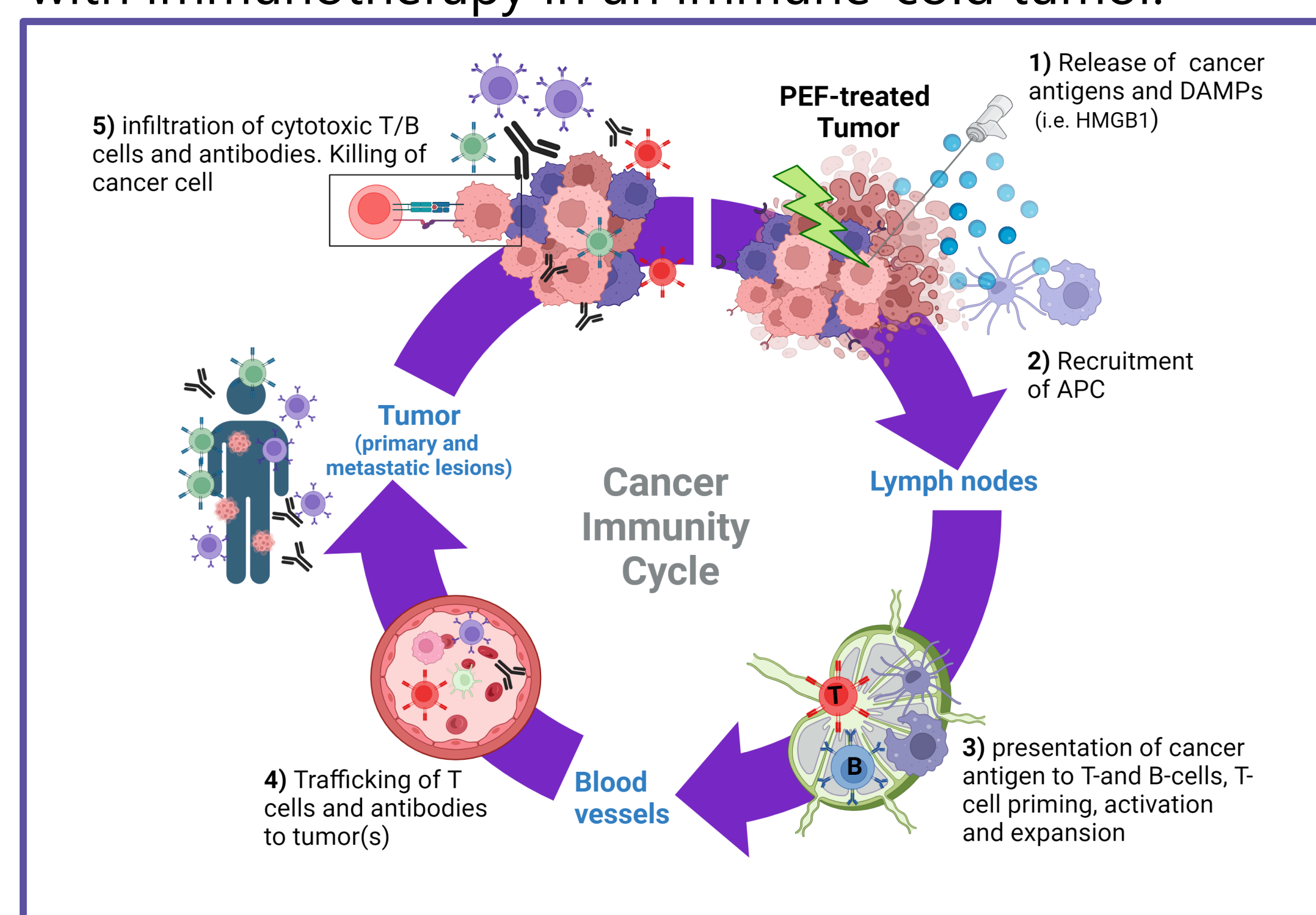
Aliya™ Pulsed Electric Field Therapy Enhances Survival in Murine Breast Cancer Models Relative to Thermal Ablation



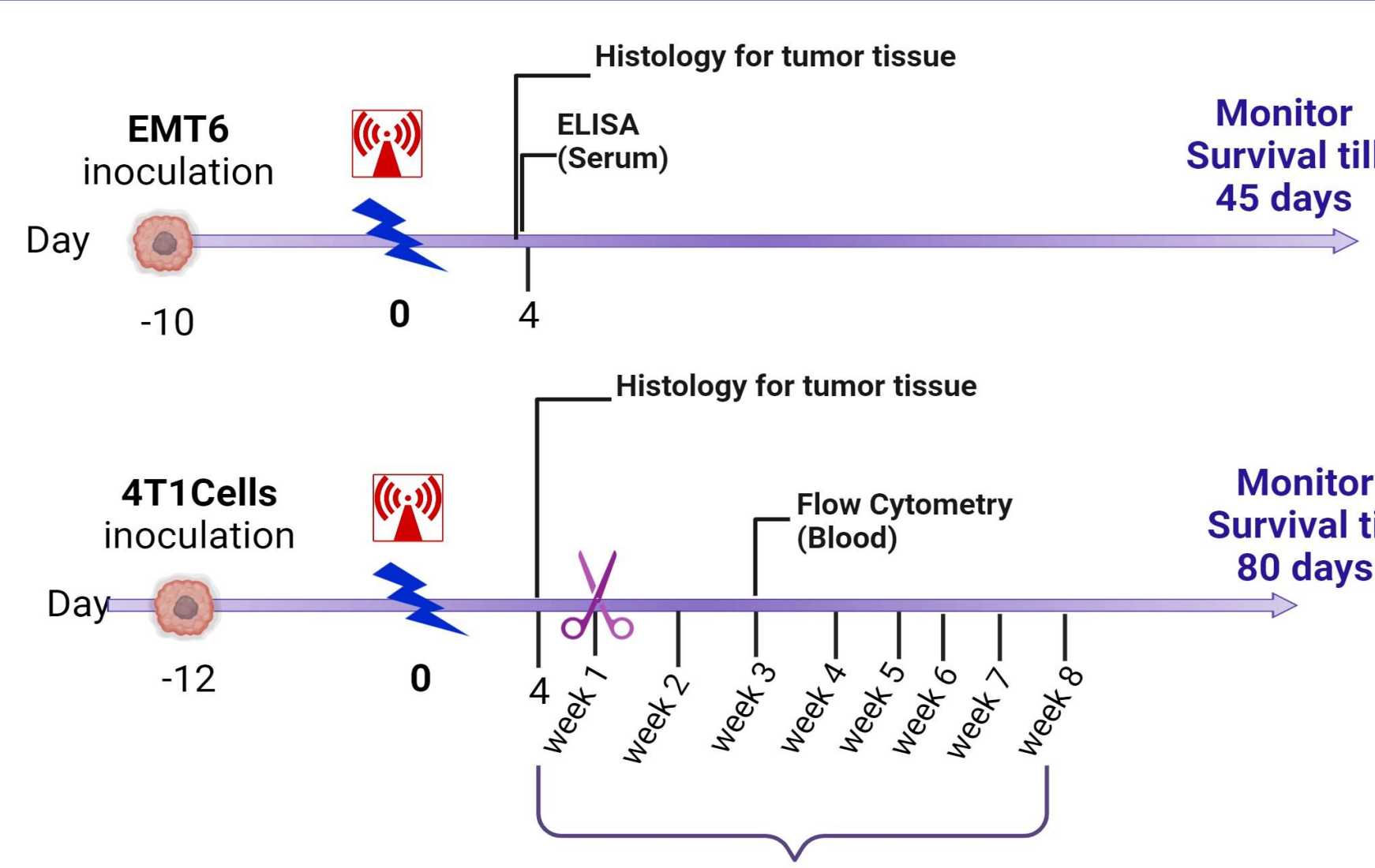
¹Ebtesam Nafie, ¹Chiara Pastori, ¹Ella Goldschmidt, ¹Mukta Wagh, ¹Robert Neal
¹Oncology Department, Galvanize Therapeutics, Inc., Redwood City, CA, USA.

Background

Aliya™ Pulsed Electric Field (PEF) therapy induces cell death without relying on thermal processes, preserving the extracellular matrix and neoantigens that may support an anti-cancer immune response. This study compares tumor growth, metastatic progression, and survival between Aliya PEF and Radiofrequency Ablation (RFA) size-matched partial ablation in murine cancer models, including synergy with immunotherapy in an immune-cold tumor.



Methods



Experimental group	Tumor Model	Number of animals
Sham	EMT6	14
PEF	EMT6	14
RFA	EMT6	14
Sham(IgG)	4T1	10
PEF	4T1	10
PEF+aPD-1	4T1	10
RFA	4T1	10
RFA+aPD-1	4T1	10

Take Away Message

Aliya PEF ablation enhanced tumor response and improved survival relative to RFA of the same size, especially when combined with anti-PD1 checkpoint inhibition in a murine model.

These differences may relate to differences in post-ablation tumor microenvironment cytokines and increased antigen-specific CD8+ T-cells.

Results

- Aliya PEF-treated tumors exhibited slower treated tumor growth for size-matched partial Aliya PEF and RFA ablation volumes both for immune-warm (EMT6) and immune-cold (4T1) orthotopic murine breast cancer models.
- Aliya PEF-treated mice had greater survival in both models, indicating better treated tumor response, as well as systemic adaptive immunity clearance of metastases.
- The post-ablation tumor microenvironment showed reduced VEGF, c-Met, and HIF-1α (markers for tumor progression, angiogenesis, and metastasis) for Aliya PEF relative to RFA and sham.
- An increase in antigen-specific cytotoxic T-cells for Aliya PEF was observed, which may further provide systemic protection against metastatic disease, even in immune-cold tumors, and was positively correlated with survival.

Future Directions

Clinical trials are essential to validate the potential of this Aliya Pulsed Electric Field (PEF) therapy to stimulate the immune response and improve outcomes in human cancer patients. Ongoing preclinical research should explore PEF protocols and procedural workflows for optimal translation into clinical use.

Figures

Figure 1: Aliya PEF reduces tumor growth and prolongs survival in comparison with RFA and Sham in EMT6 murine tumor model.

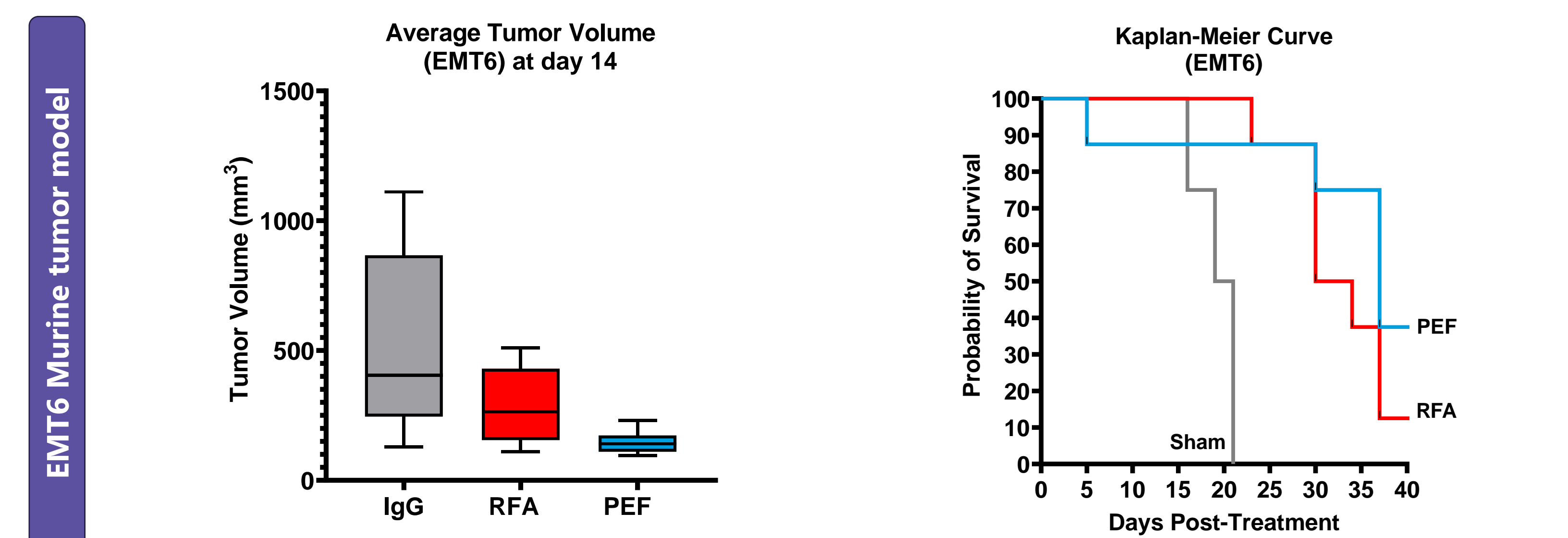


Figure 2: Aliya PEF potentiates anti-PD1 therapy and reduce tumor growth and prolong survival, in comparison with RFA and Sham(IgG) in 4T1 murine tumor model.

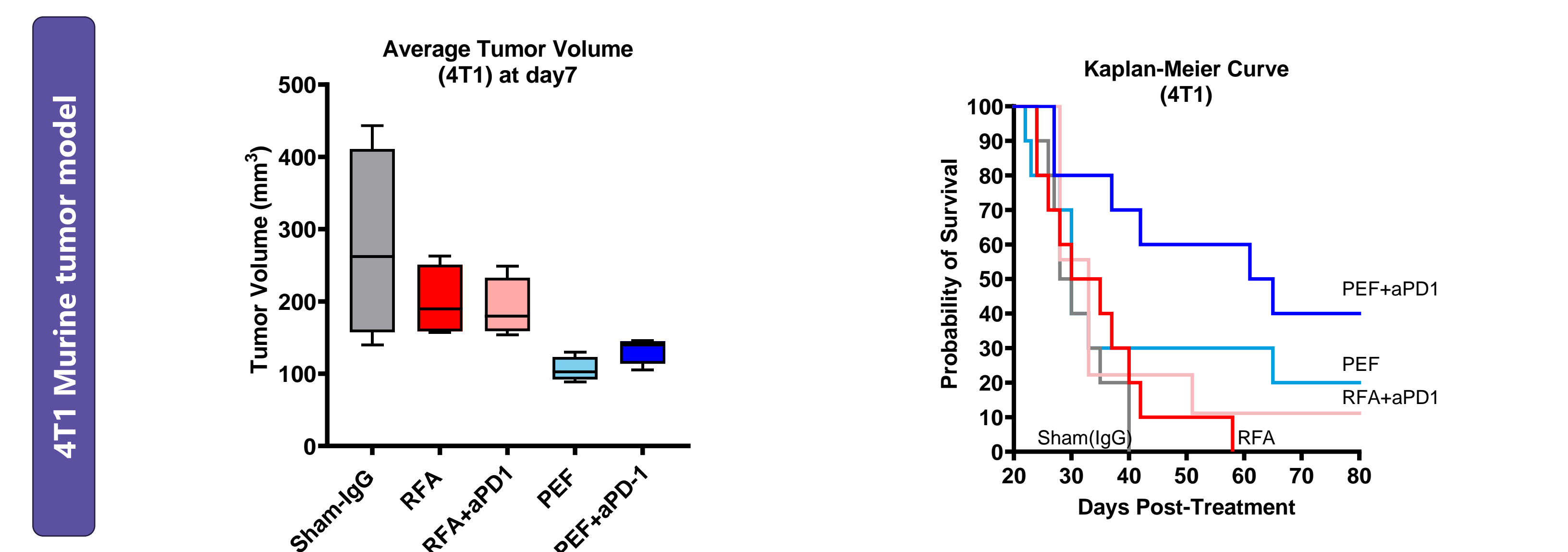


Figure 3: Aliya PEF inhibiting tumor progression, angiogenesis, and metastasis in comparison with RFA.

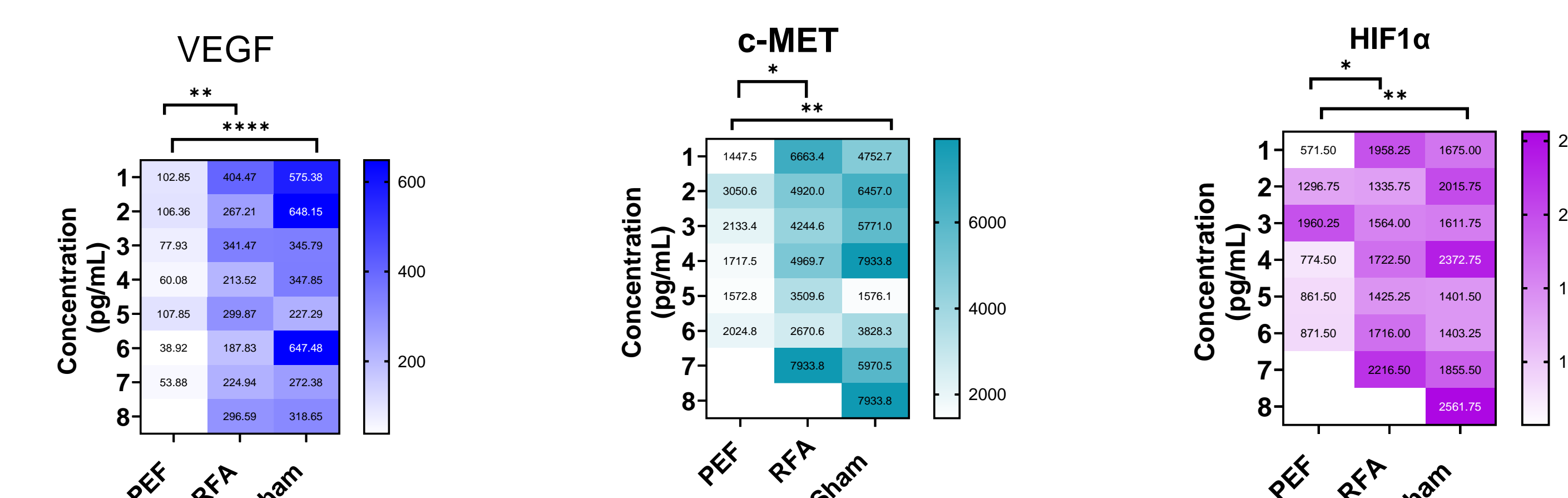


Figure 4: Aliya PEF Treatment Correlates Positively with Survival and Antigen-Specific CD8+ T-Cell Percentage in 4T1-Resected Mice, in comparison with RFA.

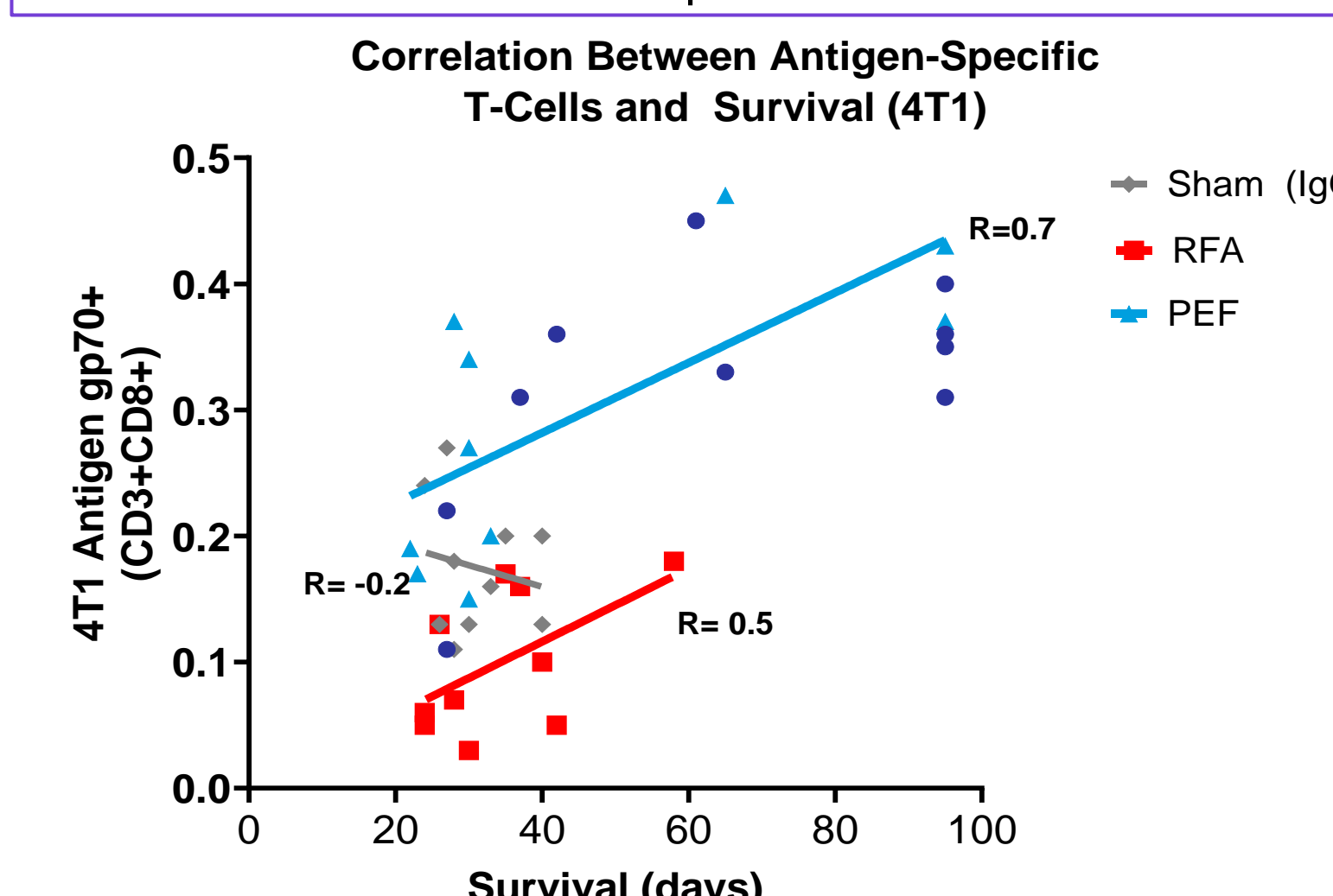


Figure 5: Histological Analysis of Ablated EMT6 Tumors; Four Days Post-Treatment with Aliya PEF and RFA.

