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Title: INSIGHTS INTO THE ROLE OF POST-TRANSCRIPTIONAL MECHANISMS FOR EFFECTOR FUNCTION REGULATION AND HOMEOSTASIS IN MEMORY CD8+ T CELLS.

Abstract

Mammalian immune systems have evolved to provide several layers of protection against pathogens. Immunological memory is critical to protect the body from a previously encountered pathogen. CD8+ Tissue-resident memory (TRM) T cells exhibit long-term persistence in non-lymphoid tissues with unique features that reflect their characteristic function and spatial location relative to other CD8+ T cells. Our gene expression analysis revealed that resting TRM cells express high levels of mRNA molecules encoding effector genes but do not express corresponding detectable protein levels. Furthermore, we observed that these preformed transcripts allow for a higher rate and magnitude of cytokine production upon T-cell receptor-dependent stimulation, potentially enhancing their protective function. Additionally, data will be presented that suggests that the regulation of translational initiation factors' activity dictates the translational efficiency of cytokine transcripts in homeostatic TRM. Extrapolation of these processes observed in vitro into in vivo scenarios will provide novel insights into the role of translational control mechanisms in regulating adaptive immune responses and reveal the potential for therapeutic interventions by small molecule drugs or genetic engineering.