ABSTRACT

TITLE:	Studying the Role of RNA Secondary Structure in Human T-Cell Leukemia/Lymphotropic Virus Type 1 (HTLV-1) Gag-Pro -1 Programmed Frameshift Site
AUTHOR(S):	Lindquist-Kleissler, Brent; Joe, Natalie; Chavez, Marlyn; Block, Cooper; Mylroie, Elena; Absher, Nathan; Mouzakis, Kathryn
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ABSTRACT: Viral infections in humans lead to various diseases, and the viral replication mechanism needs to be understood to develop therapeutics that can target a step in replication to stop the virus. Human T-cell Leukemia/Lymphotropic virus type 1 (HTLV-1) is a retrovirus that can cause cancer and translation of all the necessary viral proteins occurs through two -1 programmed ribosomal frameshifts. The slippery sequences that cause frameshifting to occur have been identified and specific RNA secondary structures have been predicted to correlate to its frameshifting efficiency. Therefore, therapeutics can be developed targeting the stability of the RNA secondary structures and these may decrease the virus' ability to replicate. Preliminary data suggests that the first -1 programmed ribosomal frameshift site (gag-pro) has a stem-loop structure, while the second frameshift site (pro-pol) forms a pseudoknot structure. The study being conducted predicts that the thermodynamic stability of the stem-loop structure will be critical to frameshift stimulation. Several variant frameshift sites were designed to investigate this hypothesis. At this time, these constructs have not been successfully clone. This poster presents an overview of the experiments that were conducted in our attempts to complete this study. The information gained from our future experiments will contribute knowledge to the field of retroviral frameshifting, which may lead to the development of targeted antivirals.