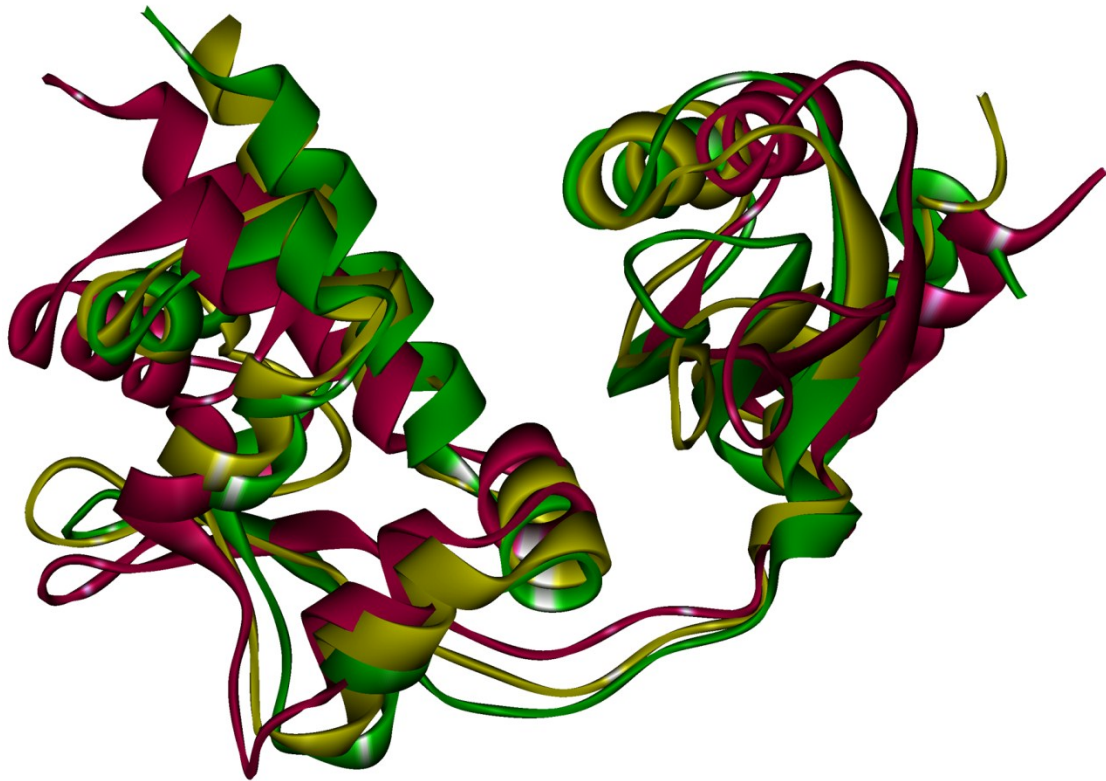


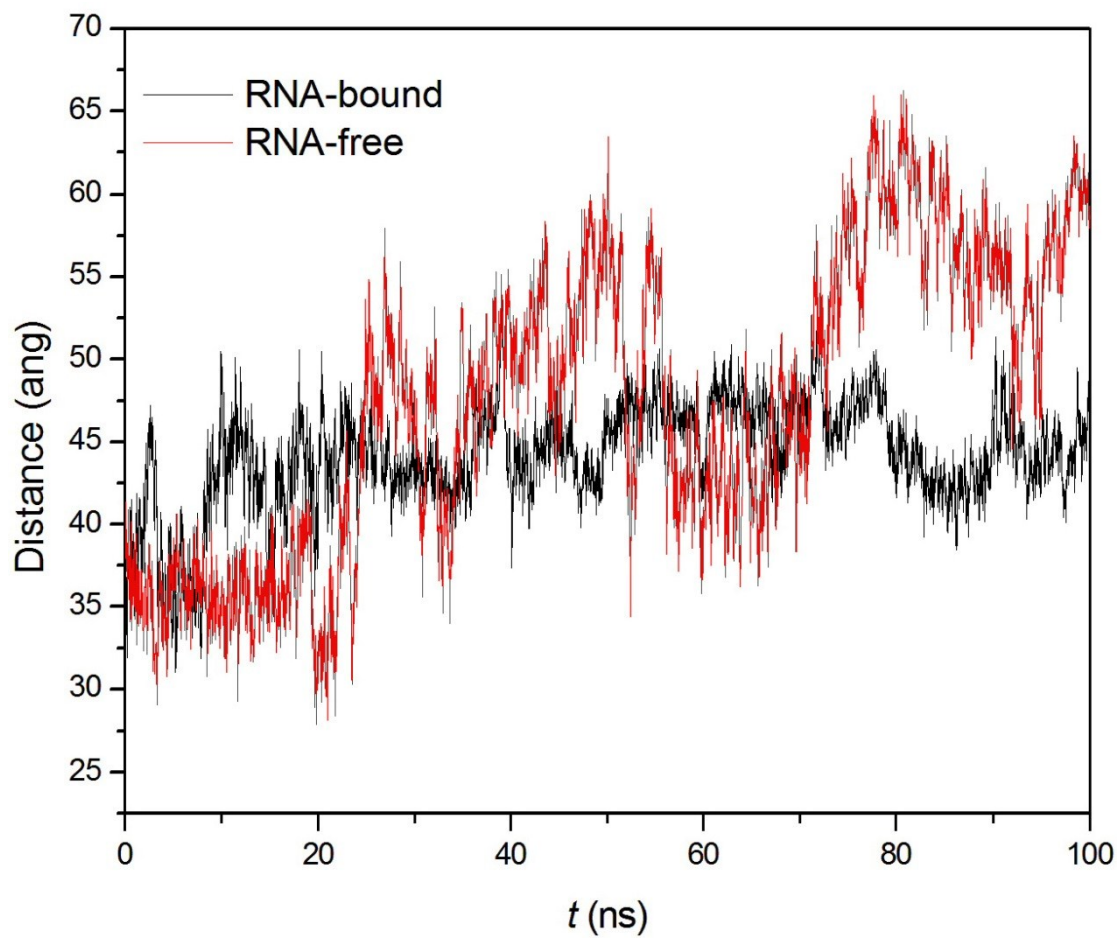
## Supporting Materials

**Table S1.** The cosine contents of the eight PCs in RNA-bound and RNA-free system.

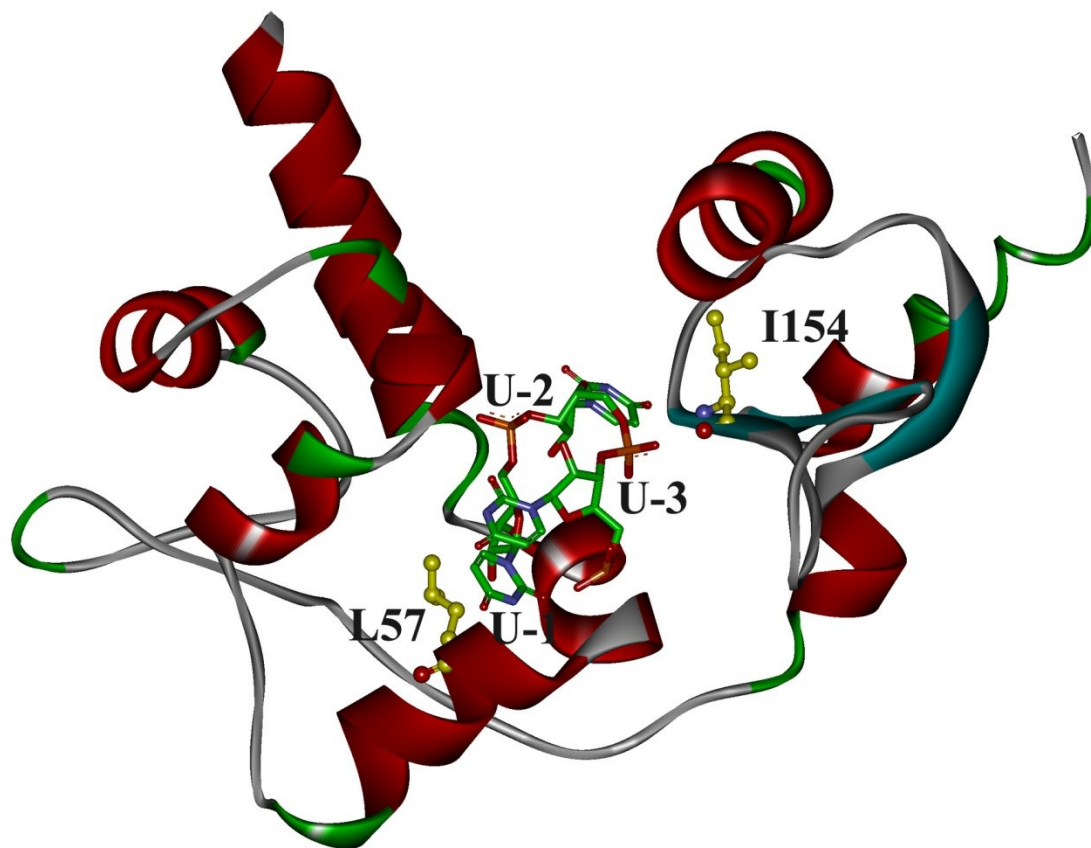
	<b>PC1</b>	<b>PC2</b>	<b>PC3</b>	<b>PC4</b>	<b>PC5</b>	<b>PC6</b>	<b>PC7</b>	<b>PC8</b>
<b>RNA-bound system</b>	0.3158	0.0355	0.0240	0.0435	0.0876	0.0014	0.0121	0.0344
<b>RNA-free system</b>	0.2533	0.1847	0.0538	0.0779	0.0658	0.0008	0.0147	0.0010



**Figure S1.** Comparison of the crystal structure and representative structure of RNA-bound and RNA-free system from the local minima in the FEL map. The ribbon of the crystal structure, the representative structure of RNA-bound and RNA-free system are colored in yellow, green and red respectively.



**Figure S2.** The distance between the geometric centers of Arg30 in the helix  $\alpha 1$  of LAM and Pro189 in the helix  $\alpha 2$  during the MD simulations.



**Figure S3.** The binding interface of 3'-end of RNA 7SK with nonpolar residues Leu57 and Ile154 in the RNA-bound systems. Carbon atoms are colored in yellow and ribbon in red for LARP7, and carbon atoms are colored in green for RNA.