

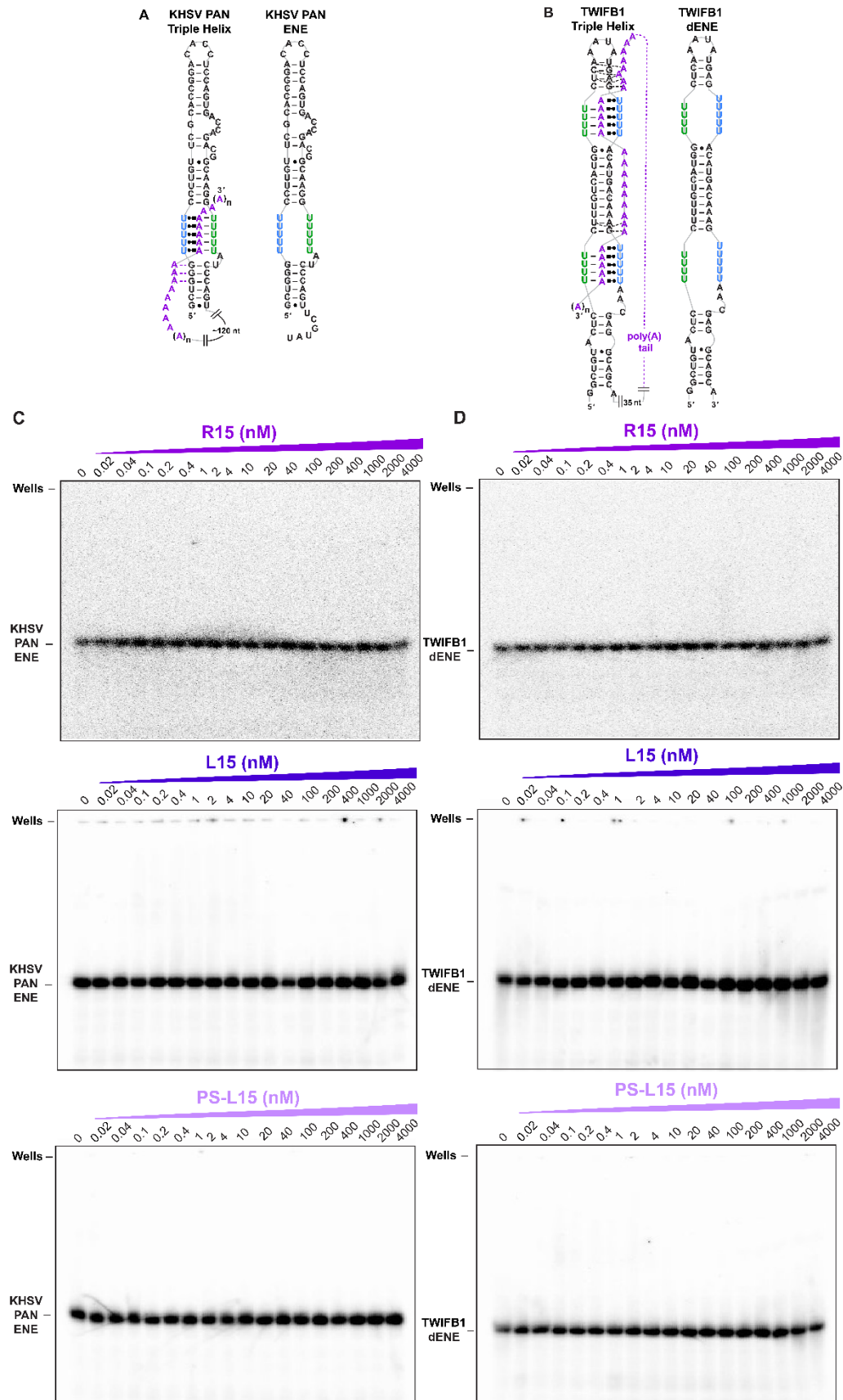
# SUPPLEMENTARY MATERIAL

## Locked Nucleic Acid Oligonucleotides Facilitate RNA•LNA-RNA Triple-Helix Formation and Reduce *MALAT1* Levels

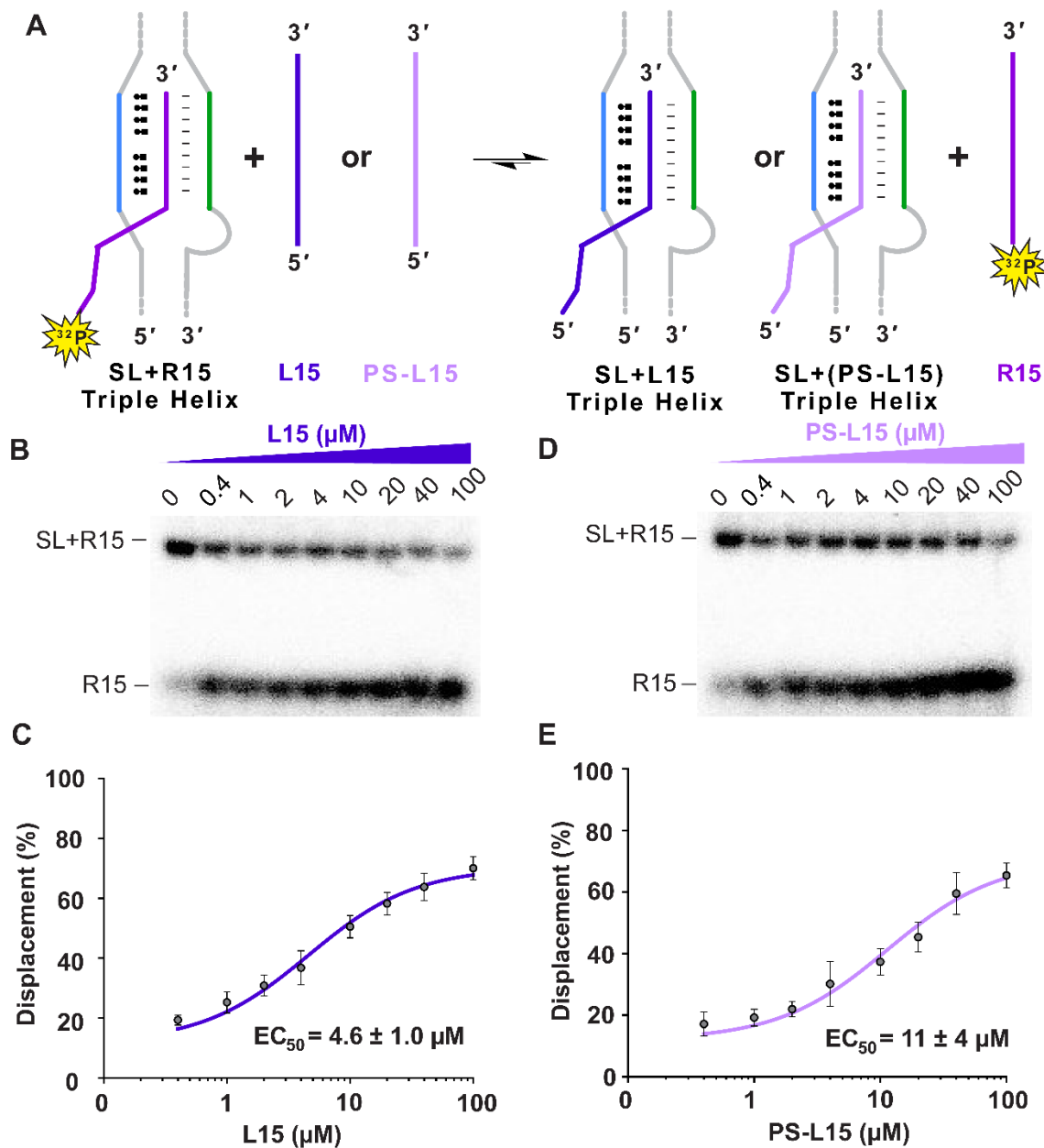
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Table S1. Oligonucleotides and RNAs used in this study.	
Synthesized oligonucleotides	
R15	5' - AAAAAAAAAAGCAAAA - 3'
L15	5' - [+A] [+A] [+A] [+A] [+A] [+A] [+A] [+A] [+A] [+G] [+C] [+A] [+A] [+A] [+A] - 3'
PS-L15	5' - [+A] * [+A] * [+A] * [+A] * [+A] * [+A] * [+A] * [+A] * [+A] * [+A] * [+G] * [+C] * [+A] * [+A] * [+A] * [+A] - 3'
A <sub>28</sub>	5' - AAAAAAAAAAAAAAAAAAAAAAAAAAAAAA - 3'
<i>In vitro</i> transcribed RNAs	
<i>MALAT1</i> SL	5' - GGAAGGUUUUUCUUUCCUGAGAAAACAACACGUUUU GUUUUCUCAGGUUUUGCUUUUUGGCCUUUU - 3'
<i>MALAT1</i> triple helix	5' - GGAAGGUUUUUCUUUCCUGAGAAAACAACACGUUUU GUUUUCUCAGGUUUUGCUUUUUGGCCUUUUUCUAGCUUAA AAAAAAAAAAGCAAAA - 3'
<i>MENβ</i> SL	5' - AGGUGUUUCUUUUACUGAGUGCAGCCCAUGGCCGCACU CAGGUUUUGCUUUUCACCUUCC - 3'
<i>MENβ</i> triple helix	5' - AGGUGUUUCUUUUACUGAGUGCAGCCCAUGGCCGCACU CAGGUUUUGCUUUUCACCUUCCCAUCUGUGAAAGAGUGAGCAGGAAA AAGCAAAA - 3'
KHSV <i>PAN</i> ENE	5' - GGCUGGGUUUUUCCUUGUUCGCACCGGACACCUCAGU GACCAGACGGCAAGGUUUUUAUCCAGUUCGUUU - 3'
<i>TWIF1</i> dENE	5' - GGCUGUACUCUUUUCUUUGUCAUGGUUUUCUCAAUA UGAGUUUUUACAUGACAAAGUUUUUAACGAGGCAGCA - 3'
The “+” sign inside a square bracket [+] indicates locked nucleic acid modification, whereas the asterisk (*) denotes phosphorothioate backbone.	

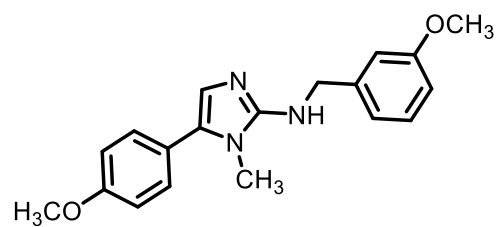
<b>Table S2.</b> Primers used for RT-qPCR experiments.	
<i>MALAT1</i>	Forward: 5' -GATCTAGCACAGACCCTTCAC-3' Reverse: 5' -CGACACCATCGTTACCTTGA-3'
<i>MEN<math>\beta</math></i>	Forward: 5' -GTGTCCACAGGTCTTAGATTCC-3' Reverse: 5' -TCTGTGTAGTAGGGTGGGATAG-3'
<i>HOTAIR</i>	Forward: 5' -GGTAGAAAAAGCAACCACGAAGC-3' Reverse: 5' -ACATAAACCTCTGTCTGTGAGTGCC-3'
<i>U6 snRNA</i>	Forward: 5' -CTCGCTTCGGCAGCACA-3' Reverse: 5' -AACGCTTCACGAATTTGCGT-3'



**Figure S1.** EMSA for R15, L15 and PS-L15 not binding to the Kaposi's sarcoma-associated herpesvirus (KHSV) *PAN* ENE and mRNA element from *Oryza sativa* hAT-type DNA transposon *TWIFBIG1* dENE (*TWIFB1* dENE) RNAs [1,2]. Schematic diagrams of (A) KHSV *PAN* triple helix and its ENE, (B) rice transposase *TWIFB1* triple helix and its dENE. The Watson-Crick and Hoogsteen interactions are represented by a solid line (|) and Leontis-Westhof notation (●■) [3], respectively. Representative gel images for R15, L15 and PS-L15 titrated against (C) KHSV *PAN* ENE and (D) *TWIFB1* dENE.



**Figure S2.** Competitive EMSA for the LNAs (L15 and PS-L15) displacing RNA (R15) from *MENβ* SL+R15 complex. (A) Cartoon schematic showing the displacement of 5'-[<sup>32</sup>P]-radiolabeled R15 (purple) from SL+R15 triple helix by L15 (dark purple) or PS+L1 (light purple) to form SL+L15 or SL+(PS-L15) complexes. (B, D) Representative gel images and (C, E) binding curves for the displacement of R15 by L15 and PS-L15 from *MENβ* SL+R15 complex. The gel images show dissociation of 5'-[<sup>32</sup>P]-radiolabeled R15 from SL+R15 complex as increasing amounts of L15 or PS+L15 are added.



**Figure S3.** The chemical structure of compound **5**, a small molecule previously established to bind to the *MALAT1* triple helix [4].

## REFERENCES

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