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Supplementary information

Structures and mechanisms of tRNA methylation by METTL1–WDR4

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Supplementary Information for:

Structures and Mechanisms of tRNA Methylation by METTL1-WDR4

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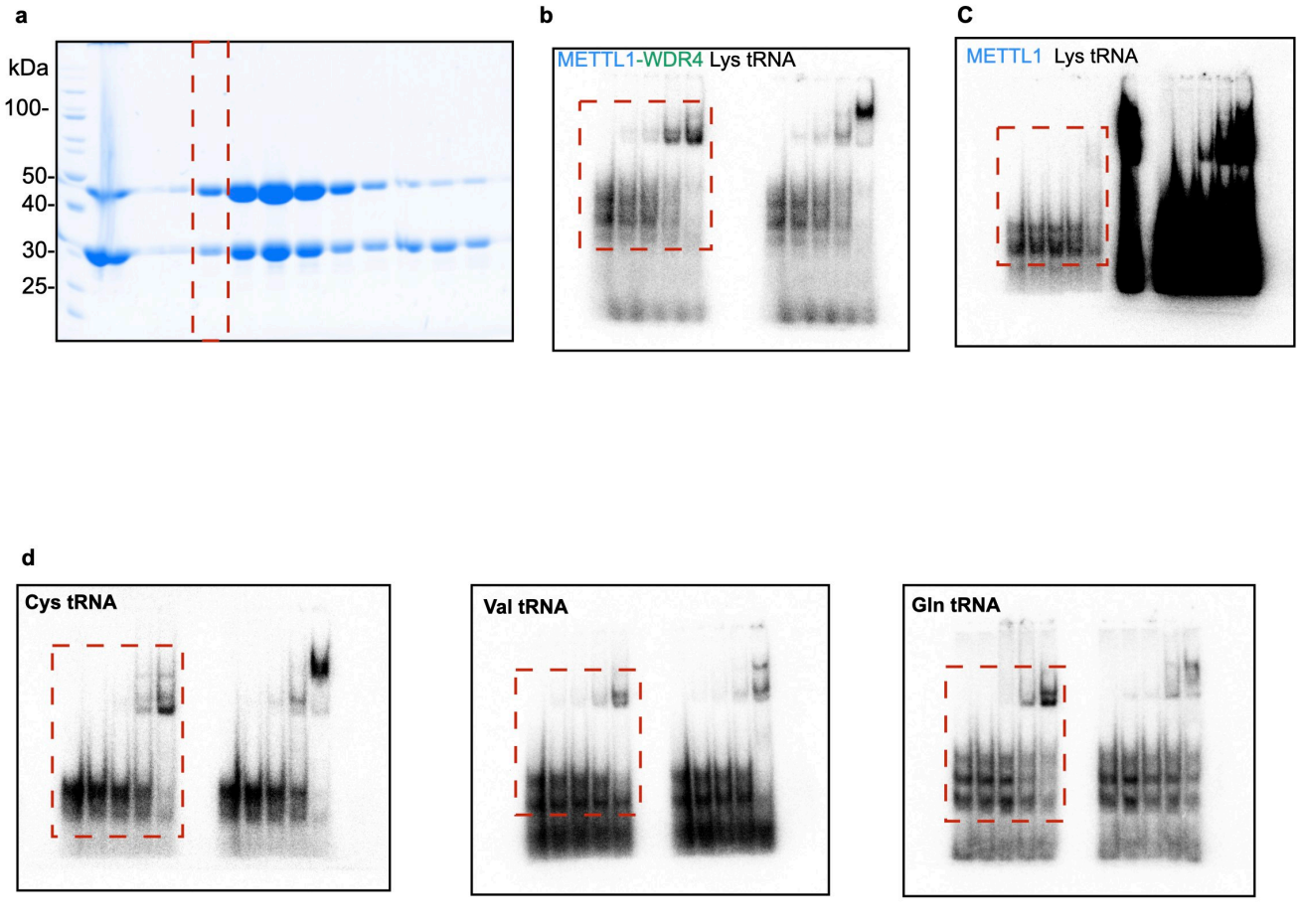
WT tRNA	Sequence (5'-3')
Ala_AGC-Full	GGGGATGTAGCTCAGTGGTAGAGCGCATGCTTAGCATGCATGAGGTCCCGGGTTCGATCCCCAGCATCTCCA
Fw_Ala-AGC	GCGAAATTAATACGACTCACTATAGGGGATGTAGCTCAGTGGTAGAGCGCATGCTTAGC
Rv_Ala-AGC	TGGAGATGCTGGGGATCGAACCCGGGACCTCATGCATGCTAAGCATGCGCTCTACCAC
Val-AAC	GTTTCCGTAGTGTAGTGGTTATCACGTTCGCCTAACACGCGAAAGGTCCCCGGTTCGAAACCGGGCGGAAACA
Fw_Val-AAC	GCGAAATTAATACGACTCACTATAGTTTCCGTAGTGTAGTGGTTATCACGTTCGCCTAA
Rv_Val-AAC	TGTTTCCGCCCGGTTTCGAACCGGGGACCTTTCGCGTGTTAGGCGAACGTGATAACCACT
Phe-GAA	GCCGAAATAGCTCAGTTGGGAGAGCGTTAGACTGAAGATCTAAAGGTCCCTGGTTCGATCCCGGGTTTCGGCA
Fw_Phe-GAA	GCGAAATTAATACGACTCACTATAGCCGAAATAGCTCAGTTGGGAGAGCGTTAGACTGA
Rv_Phe-GAA	TGCCGAAACCCGGGATCGAACCAGGGACCTTTAGATCTTCAGTCTAACGCTCTCCCAACT
Cys-GCA	GGGGGTATAGCTC AGGTGGTAGAGCATTTGACTGCAGATCAAGAGGTCCCCGGTTCAAATCCGGGTGCCCCCT
Fw_Cys-GCA	GCGAAATTAATACGACTCACTATAGGGGGTATAGCTCAGGTGGTAGAGCATTTGACTGC
Rv_Cys-GCA	AGGGGGCACCCGGATTTGAACCGGGGACCTCTTGATCTGCAGTCAAATGCTCTACCACCT
Lys-TTT	GCCCGGATAGCTCAGTCGGTAGAGCATCAGACTTTTAATCTGAGGGTCCAGGGTTCAAGTCCCTGTTCGGGCG
Fw_Lys-TTT	GCGAAATTAATACGACTCACTATAGCCCGGATAGCTCAGTCGGTAGAGCATCAGACTTT
Rv_Lys-TTT	CGCCCGAACAGGGACTTGAACCCTGGACCCTCAGATTAAAAGTCTGATGCTCTACCGACT
Lys-CTT	GCCCGGCTAGCTCA GTCGGTAGAGCATGGGACTCTTAATCCCAGGGTCGTGGGTTCGAGCCCCACGTTGGGCG
Fw_Lys-CTT	GCGAAATTAATACGACTCACTATAGCCCGGCTAGCTCAGTCGGTAGAGCATGGGACTCT
Rv_Lys-CTT	CGCCCAACGTGGGGCTCGAACCCACGACCCTGGGATTAAGAGTCCCATGCTCTACCGAC
Arg-TCT	GTCTCTGTGGCGCAATGGACGAGCGCGCTGGACTTCTAATCCAGAGGTTCCGGGTTCGAGTCCCGGCAGAGATG
Fw_Arg-TCT	GCGAAATTAATACGACTCACTATAGTCTCTGTGGCGCAATGGACGAGCGCGCTGGACTT
Rv_Arg-TCT	CATCTCTGCCGGGACTCGAACCCGGAACCTCTGGATTAGAAGTCCAGCGCGCTCGTCCAT
Trp-CCA	GGCCTCGTGGCGCAAC GGTAGCGCGTCTGACTCCAGATCAGAAGGTTGCGTGTTCAAATCACGTCGGGGTCA
Fw_Trp-CCA	GCGAAATTAATACGACTCACTATAGGCCTCGTGGCGCAACGGTAGCGCGTCTGACTCCA
Rv_Trp-CCA	TGACCCCGACGTGATTTGAACACGCAACCTTCTGATCTGGAGTCAGACGCGCTACC
Tyr-GTA-Full	CCTTCGATAGCTCA GTTGGTAGAGCGGAGGACTGTAGATCCTTAGGTCGCTGGTTCGAATCCGGCTCGAAGGA
Fw_Tyr-GTA	GCGAAATTAATACGACTCACTATACCTTCGATAGCTCAGTTGGTAGAGCGGAGGACTGT
Rv_Tyr-GTA	TCCTTCGAGCCGGATTCGAACCAGCGACCTAAGGATCT ACAGTCCTCCGCTCTACCAAC
Gln-CTG	GGTTCCATGGTGTAATGGTTAGCACTCTGGACTCTGAATCCAGCGATCCGAGTTCAAATCTCGGTGGAACCT
Fw_Gln_CTG	GCGAAATTAATACGACTCACTATAGGTTCCATGGTGTAATGGTTAGCACTCTGGACTCTG
Rv_Gln_CTG	AGGTTCCACCGAGATTTGAACTCGGATCGCTGGATTCAGAGTCCAGAGTGCTAA

Mutant tRNA primers	Sequence (5'-3')
Lys-TTT G44A	GCCCGGATAGCTCAGTCGGTAGAGCATCAGACTTTTAATCTGAAGGTCCAGGGTTCAAGTCCCTGTTCGGGCG
Fw_Lys-TTT	GCGAAATTAATACGACTCACTATAGCCCGGATAGCTCAGTCGGTAGAGCATCAGACTTT
Rv_Lys-TTT_G44	CGCCCGAACAGGGACTTGAACCCTGGACCTTCAGATTAAAAGTCTGATGCTCTACCGAC
Lys-TTT_G45	GCCCGGATAGCTCAGTCGGTAGAGCATCAGACTTTTAATCTGAGAGTCCAGGGTTCAAGTCCCTGTTCGGGCG
Fw_Lys-TTT	GCGAAATTAATACGACTCACTATAGCCCGGATAGCTCAGTCGGTAGAGCATCAGACTTT
Rv_Lys-TTT_G45	CGCCCGAACAGGGACTTGAACCCTGGACTCTCAGATTAAAAGTCTGATGCTCTACCGAC
Lys-TTT G46A	GCCCGGATAGCTCAGTCGGTAGAGCATCAGACTTTTAATCTGAGGATCCAGGGTTCAAGTCCCTGTTCGGGCG
Fw_Lys-TTT	GCGAAATTAATACGACTCACTATAGCCCGGATAGCTCAGTCGGTAGAGCATCAGACTTT
Rv_Lys-TTT_G46	CGCCCGAACAGGGACTTGAACCCTGGATCCTCAGATTAAAAGTCTGATGCTCTACCGAC
Gln_CTG_CGGUC	GGTTCCATGGTGTAATGGTTAGCACTCTGGACTCTGAATCCAGCGGTCCGAGTTCAAATCTCGGTGGAACCT
Fw_Gln_CTG	GCGAAATTAATACGACTCACTATAGGTTCCATGGTGTAATGGTTAGCACTCTGGACTCTG
Rv_Gln_CTG_CGGUC	AGGTTCCACCGAGATTTGAACTCGGACCGCTGGATTCAGAGTCCAGAGTGCTAACCATTACACCATGG
Gln_CTG_AGGUC	GGTTCCATGGTGTAATGGTTAGCACTCTGGACTCTGAATCCAGAGGTCCGAGTTCAAATCTCGGTGGAACCT
Fw_Gln_CTG	GCGAAATTAATACGACTCACTATAGGTTCCATGGTGTAATGGTTAGCACTCTGGACTCTG
Rv_Gln_CTG_AGGUC	AGGTTCCACCGAGATTTGAACTCGGACCTCTGGATTCAGAGTCCAGAGTGCTAACC
Gln_CTG_GGGUC	GGTTCCATGGTGTAATGGTTAGCACTCTGGACTCTGAATCCAGGGGTCCGAGTTCAAATCTCGGTGGAACCT
Fw_Gln_CTG	GCGAAATTAATACGACTCACTATAGGTTCCATGGTGTAATGGTTAGCACTCTGGACTCTG
Rv_Gln_CTG_GGGUC	AGGTTCCACCGAGATTTGAACTCGGACCCCTGGATTCAGAGTCCAGAGTGCTAACC


a
kDa
100-
50-
40-
30-
25-
b
METTL1-WDR4 Lys tRNA
C
METTL1 Lys tRNA
d
Cys tRNA
Val tRNA
Gln tRNA