

**A**

**Mkrn1** ATGCGGAGGCTGCGGCTCCCGGAACAACAGCCACAACATCAGGAGCAGGAGCGGCAGCGGCGGCGGTGGCAGCGGCCTCCCTCACCTCTATCCCACAGTCG  
**Mkrn1-p1** aagagatgtggccttgACAACATCA-----GCAGCGGAAAGCAGTGGCAGTGGCCTCCCTCACTTCTATCCCACAGTCG

**Mkrn1** CTGCCCCGTCCCCGGGGGCGGGAGGAGGGGGCGGCGG---CAGCGACGGCAGCGGCGGC---GGCTGGACGAAACAGGTACCTGCAGATACTTTATGCATGG  
**Mkrn1-p1** CTGC CCGTCACCGGGGTGGGAGGAGGGGGCAGAGGTGGCAGCAATGGCAGCAGCAGCGGCTGAACAAAACAGATCACCTGCAGATATTTTATCTGTGG

**Mkrn1** GTTTGTAAAGGAAGGCGATAAAGTGTGATACTCTCATGACCTCTCTGACAGTCCATACGGCGTAGTGTGCAAGTATTTTCAAAGAGGGTACTGTGTTTTATGGA  
**Mkrn1-p1** GTTTGTAAAGGAAGGCGATAAAGTGTCAATACTCTCATGACCTCTCTGACAGTCCATACGGTGTAGTGTGCAAGTATTTTCAAAGAGGATACTGTGTTTTATGGA

**Mkrn1** GACCGCTGCAGATACGAACACAGCAAGCCACTGAAACAGGAAGAAGTGACTGCTACTGATCTGAGTGCAAAACCATCCCTCGCTGCTTCCTCAAGTCTCTCTT  
**Mkrn1-p1** GACCGCTGCAGACACGAACACAGCAAGCCACTGAAACATGCAGAAGTGACTGCTACAGATCTGAGTGCAAAACCATCCCTCACTGCTTCCTCAAGTCTCTCTT

**Mkrn1** CTGGTGTGGATCACTTGTGAAATGAATTCAGGCGAAGCTGAGTACGAAACCCAAGCTTTCCAAGTGTAGGAGCAGGTTTCCAGAGGACTGGGTGAATGCCAT  
**Mkrn1-p1** CTGGTGTGGATCACTTGTGAAATGAATTCAGGCGAAGCTGAGTACGAAACCCAAGCTTTCCAAGTGTAGGAGCAGGTTTCCAGAGGACTGGGTGAATGCCAT

**Mkrn1** TGAGTTTGTCCCTGGGCAGCCCTACTGTGGCCGTAAGTCCCTTCCCTGCACTGAAGTACCCCGCAGGGTTTCCAGTACCAAGGAAGAGACAGAGAAGGAGCCA  
**Mkrn1-p1** TGAGTTTGTCCCTGGGCACTCCCTACTGTGGCCTTACTGCCCCCTCCCTGCACTGAAGTACCCCGCAGGGTTTCCAGTACCAAGGAAGAGACAGAGAAGGAGCCA

**Mkrn1** ACTACGGTGGAGACAAAAGAAGCAGCTTTGCCCTATGCTGCAGTGGGAGAGTGTGCTATGGGGAAAAGTGTGTGATCTCCACGGAGACTCGTGTGACATGT  
**Mkrn1-p1** ACTACGGTGGAGACAAAAGAAGCAGCTTTGCCCTATGCTGCAGTGGGAGAGTGTGCTACGGGGAAAAGTGTGT--ATCTCCACGGAGACTCATGTGACATGT

**Mkrn1** GTGGCCTGCAGGTCTACACCCAGTGGATGCTGCCAGAGGTACAGCACATAAAATCTTGCATTGAGGCCCATGAGAAGGACATGGAGCTCTCTTTTGTGCTGT  
**Mkrn1-p1** GTGGCCTGCAGGTCTACACTCAGTGGATGCTGCCAGAGGTACAGCACATAAAATCTTGCATTGAGGCCCATGAGAAGGACATGGAGCTCTCTTTTGTGCTGT

**Mkrn1** TCAGCGCACGAAGGACATGGTGTGTGGGATCTGCATGGAGGTGGTCTATGAGAAAGCCAACCCAGCAGCGTCCGCTTTGGGATCCTCTCCAACATGCAACCAC  
**Mkrn1-p1** TCAGCGCACGAAGGACATGGTGTGTGGGATCTGCATGGAGGTGGTCTATGAGAAAGCCAACCCAGCAGCGTCCGCTTTGGGATCCTCTCCAACATGCAACCAC

**Mkrn1** ACCTACTGTCTCAAGTGTATTTCGCAAGTGGAGAAGTGCATAAACAATTTGAGAGCAAGATCATAATAAAGTCTGCCCCGAATGCCGGATCACATCTAACTTT  
**Mkrn1-p1** ACCTACTGTCTCAAGTGTATTTCGCAAGTGGAGAAGTGCATAAACAATTTGAGAGCAAGATCATAATAAAGTCTGCCCCGAATGTCAGATCACATCTCACTTT

**Mkrn1** GTCATCCAAGTGAATCACTGGGTGGAGTAGAAAAGAAGAGAGCAGAAAATCATTGAGAAATACAAGGAGGCCATGAGCAACAAGGCGTGCAGGTATTTTGTATG  
**Mkrn1-p1** GTCATCCAAGTGAATCACTGGGTGGAGTAGAAAAGAAGAGAGCAGAAAATCATTGAGAAATACAAGGAGGCCATGAGCAACAAGGCGTGCAGGTATTTTGTATG

**Mkrn1** AAGGACGTGGGAGCTGCCATTTGGAGGGAAGTGTGTTTTACAAGCATGCGTACCCTGATGGCCGTAGAGAGGAGCCACAGAGACAGAAAGTGGGAACATCAAG  
**Mkrn1-p1** AAGACGTGGGAGCAGCCATTTGGAGGGAAGTGTGTTTTACAGCAGCGTACCCTGATGGCCGTAGAGAGGAGCCACAGAGACAGAAAGTGGGAACATCAAG

**Mkrn1** CAGATACCGGGCCCAACGAAGGAGCCACTTCTGGGAGCTCATTGAGGAGAGAGAGAACAACCCCTTTGACAACGACGAAGAGGAGGTGTGCACCTTTGAGCTG  
**Mkrn1-p1** CAGATACCGGGCCCAACGAAGGAGCCACTTCTGGGAGCTCATTGAGGAGAGAGAGAACAACCCCTTTGACAACGATGAAGAGGAGGCTGTGCACCTTTGAGCTG

**Mkrn1** GCGAGATGTTGCTTATGCTTTTGGCTGCAGGTGGGGACGACGAGCTGACAGACTCTGAGGACGAGTGGGACTTGTTTCACGATGAGCTGGAGGACTTTTATG  
**Mkrn1-p1** GCGAGATGTTGCTTATGCTTTTGGCTGCAGGTGGGGAC ----AAGCTGACAGACTCTGAGGACGAGTGGGACTTGTTTCACAATGAGCTGGAGGACTTTTATG

**Mkrn1** ACTTGGATCTATAGCAGCGTTGCGTGGCGCGGGCACTGGTCTGCGGAGCCTCAGACAGTAGCTGTCCCCTGTGCTGTGTGGCAGTGCCTGTGGCTCTCCTAGG  
**Mkrn1-p1** ACTTGGCTCTACAGCAGTGTGCGTGGTGGCGGGCACTGGCTGCAAGAGCCTCAGACAGTAGCTGTCCCCTGTGCTGTGTGGCAGTGCCTGTGGCTCTCCTAGG

**Mkrn1** CAGGCCTCTCAAACCTCCAGGTGCTGTGATCACTTCCCAGGGCCTGTTCCCTCTACCCTCACCT--CCCCAAGAGTGTGTTTGTGTTTCTCTGTTTCAAAGTT  
**Mkrn1-p1** ----CCTCTCAAACCTCCAGGTGCTGTGATCACTACGCAGGGCCTGTTCCCTCTACCCTCACCTTCCCCCACAAGAGTGTGTTGTTTCTCTGTTTCAAAGTT

**Mkrn1** ACAAAAATAAAATCTTAAAAGTT  
**Mkrn1-p1** ACAAAAATAAAATCTTAAAAGTTAAAAAAAAAAAAAAAAA gaggtatggccttg

