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| **PPR\_sequence** |
| GTTGTTGTATGGTTTTGTGGAAGGCTGTTTTTTTTTTTTTAATAAAAAGGTAATAAATTATTTAGTGAGGAGATGTTGAGAGAAGGCTCAGGAAGTAAAGAGGGTTGATACAAAACCTGATGACCTGAGTTCAATCCTCAGGACCCACACAATGAAAAGAACAAACCAACTCCCACAAATTGTCTCTGACTTCTACACATGCACCACTGCATGTGTGAGCCCACATACATCTATACACCTGTATGACTACATGTGTCAGTCCACACACATAAATCATGTGTGAG**CCCCCGCACA**CATACACCCATGAAATAAATGTTAATTTTGTTTGTGTTTTTGTTTTTGTTTTTTGTTTTTTTCAAGACAGGGTTTCTCTATATAGCCCTGGCTATCCTGGAACTAACTCTGTAGACCAGGCTGGCCTCAAACTCAGAATCTGCCTGCCTCTGCCTCCCAAGTGCTAGGATTAAAGGGGTGCCACCACTGCCCGGCTTAATTTTTTATTTTAAAATAAAAAGGTAAATAAGGGCTGGAGAGATGGCTCAGGGGTTAAGACTGCTTTTCCAGAGGTCCTGAGTTCAATTCCCACCACGTGGTGGTTTGCAACCATCTGTAATATGATCTGATGCCCTCTTCTGGTGTGTCTGAAGACAGCTAAAGTGTTCTCATATACATAAAATAAATACATCTATTTTTAAAGGAAAATAAAATAAAATGTACTTTAAACACCTAGTTCAGAAGTGTAAAGTATATTTTATATTTTCTGTAATAGATGATGACCCACCCATTTTAAATGGTCTACCATCACTTGGAGGGCTAGTGTTTGTGTCATTCCTCCTGAACAGCAAGCTGCCTCTTTTTAAGTTGCAACTAAGTTTAAAAAAACATCACAAAAGGTTTAACATTAAAACAAAAAGACAGGAAGATTACTACCAGGAACCTCATCTAAAACAGGGTTCAAAAGCACAAACCAGATCAAGTGCAAAGGTTGAGTCTCTGGCCAAAAGAGAGCGAAGTCATCTGGCTTCTCCCTGAGGCTTTGTTGCCCTTGACAGTTGTGAAGCACAAGACTGCTTTGGTCAAAGCCAAGCAAGCTGAAATGTTGGTTTCCAGACTGGATGCCCAGGAATGTTTGGGATTGGGGAGTGATGAGGACGGGATCCAGGATTCCTTTTAAACACAGCTTCATGATAACGACAACAGATAGGGCTCCGCTGACAACAACAGCTGTCCAGACCTGAGTTCAAGTACTGGTAACTGAGATAAAAAGCTAGCCTGGCCACGTATGATTGTAACCTAGCATGGGAGAAGGGTTGAGACATGCAGATCCCAAGAGCTTGATGGCAGTGCAGTGAGAGACCCTGTTTTAGGACTGAAGCATGTGCATTCATGCACCCACATGCATGTACCACCACATGAACATCACACACGTGCATGTGCACATGCACACACACACACACACACACACACACACACACACGCATGCGTGCCACATCTTTCTCATCCATCACTAAGATGGATAGTCCTAGACAGGACATTCCAGTTCTTGGCAGATTTTACAACTAGAAAACCACTCTGCTCCTATGAACCTGCAGGGAAAGGAGGAGCTCCCAGAACAACATTGGAAAGAATTCAGAGTCCTATAAATTAATTCTACCAGAAGTAGTTGTAATAGTTGCTATTCATATGGAGTGATAGTCTTTCATTTAATCCCCTAAATTAACTAAGTAAATAAATAGATAACAAAGCCCTAAACCAACCAACTAACTAACTAACTAAAGCTCTTAACTAACTAAATAAATAACAAAGCCCTAGGCGATGTCTAGGGGACAGCCTAGAGGCTGCTCCAGGCCCTGGGTTCCCATCCCCAGCACCACAGAACATGGTGACAATGCAAACAACACTTTGCTAGAGAGTACAGTTTAGAGGCAGGGTACCTCGTATACTCTAGGCCCTGGATTCAATCCCCAGCATTGCAAAACCACCTAGGAGAGATGGCAACACTTGTTTACCAGTGAGGAAACCGAGGCACACCGAGGCAAAGCAGCTGGTCGATCCTTTCAGCTAGTCTTATGGCTTCTGAAGAAAGTCGCAAGGTTTTTTTTATTGTATGTTTTTGTTTTTGTTTTTGTTTTTTCTTCTTTTAGAATTTGGAGGAGGCAGGCAGAGAACCCAAGGGCAGAAAGAATTACAGGCATGCAGAGGACACATTCTGCTTCTTTCTGGCAGTTTGGAAGTTCAGGGTAACTCAGTTCATTGTCAGAAGAACTTGCCTCAGCCTCTGCTCAGAGCCTGAAATTTTCAAAAGCTGGGGACAGTGACAATACAGCAAGAAATATCAGTACAGGCATTGCATAAAACAGGGAGGATGGAAAAACAATAAAACTGAACACACGTGTAGTCCTATGATGAAGGAGATGGTGGGTTTAAGTACACCTGGGCTACAAAGAGAGATCCTGATTCAAAACAATCAGTTAGGCTGGGCTATGGCACAATGGCAGAGTATTTACTTAGCATGCATAAGACCCTAGTTCTAATTCCAGTACCAAAAAGATATGATGGCTAGAACCAGCAAGGCAATGGCAGTACAGACTGAAGTGACATTTGTTCTTCTAACTCTGGGTCCTGCTCTGTCTCCTGATTTAGAGTGGCTTTTCTCAGTACTATTGGCCTTGGCATGGGTCAGTTCTCTGGCCCTGTGAAGTATGAGTTCAGCCCACTCTATGCCACTATCCACCATTTCCCAGGTGTGACATCAAAAGAAGGACTAGACACTGACAGATAGCACTCCCAGAAGGAAAACTGCCCCCAGTTTGAAACGGAAACTTTTATTTTGAGATAAGATCTAATGTATTCCAGGCTGGCTTCACATTATTATGTAGCTGGGAATAACTTTAAAGTTCTCCCGAGTGCTGAGATTTTAAGTATACGCTACCATATCTAGTTTCTGGAGTGTTGGAGATCAAACTTGGGGCTTTGTGTATACTAGCCAGACACTCTATGATCTGAGCTTTATTCCCATCACTAAATTGATTATTTTTCATTGACCAATATTTGAGGTACTGGAGATCAAATTTAGGCCTTGTACACGCTCAGTAAATGTTCTACCATTGAGCTACATACACAAGGCCCAAACTGGTCTCAAAGTAGCAATCCTCATGGAGTGTAGGTGTTACCACCATGCCCATCCCCACCCTACACATTGCCTGGATTTTAAATACCATAGAGATCAGAAATAAGTTCTTGGAGCAGAAGCTGAAGTTCACCAAAAGGGACCCAATAATGTCAGTTCTAGTTCAAGGCCACATCTGGGTCTGGAAAGTCACTTGACATACCAGGAGAGGGAAGAGCATGCTACGCACACTAGTTCTTCAAACTCATGCTGCCCCAGGAGGCCTTTGGGACACGAATCTGTTCTTAATCACCATCACATAGCCTTCTCATTCTTGAGACGGGGTCTCCTATAGCCCAAGCTAACCTTGAACTCACTATGTCATCAAAGATGGACTGGAACTGTTTCTTACCATGCCTGGATTGTGTGGTGCTGAGGGTGGAATGCAGGGCTTTGTACGTGCTAGGCGAGTATCCTATCAACTGAGCTACATCTGCTCAGGGCCCCTCTACTCACTGGGCATCAGAGCAGGAGCGGTTCACATTTATGATCTTGATTGTCTTATGAGGGCTCTGTGAAGTGGACATCACTTATATTCCTATTTTTCTATTACTACAACTAAGGTCATAAAAGGTTTTTTTTTTTTAAAAAAGTTTGACCTTTTTGTTAGATTGTTAGATCTAACAGTCCTTTTTGCTCTCAGCAGTAAATCTCTTCTTCACTCCCTGTCCCAATGCCATACACCTCCCTACCATCCCCAGGTCCCCAAGACACCTCCTCAGGAAAAAGAGAGTAAGAACCTGCCCCATCACAATGGCCTGGTAACACTGCCACACACACACTGGGAATCCCAATGGCTTTTCAAGCTGCTTTAGAAGGAAGCTCTTTCCAATGGCTAAGGTGAAATGACTCTGTCTCTCCCACTAAAGGCATTTGGAGATTAAGGAAGAGGGTTATGGGCTGGCAAGTCAGCAATGTGCTTGACGTGCAGACACTTGAAGACCTGAGGTAGAGCTTCAAAAACTATGTTTAAAAGAAAGAGAAAGAAAGAGAGAAAGAAAGAAAGAAAGAAAGAAAGAAAGAAAGGAAGGAAGGAAGGAAGGAAGGAAGAGAGAGAGAAAGAAAAGGAGAGGAAAGGAGAAGAGAGGAGAGGAGAGGAGAGGAGAGGAGAGGAGAGGAGAGGAGAGGAGAGGAGAGGAGAGGAGAGGAGGTGCCCTTAGGGTGGAGGGGAAAGACAGATCCTAGGGGCTCAGGGGCAGCCAGCCTATCCTATTTGGCAAGTTCCAGGCTGGTGAGGGTTCCTGTCTCCAAAAGCAAGGTGGAGGGTACCTGAGAAACAACAGCCAGTCATTGTGGCTTCTACTTGAATGCACACATACACATGAATACCTTCCCCTCCTTGCCTGCCCCCGTCCCTTCTTTCCACTGTCTCCTCTCCCCACTCCACACAACTGAGGTCACCCCTTGTTTAGGGCCTTTGGGTCCTCGGAGCCCCACCATGTTTTACATCTTACAACGCAGGTAAGAGCAATGTTTAAAATAGGTGTTTGAGACACAAGCCTGGCTGGTCCAGGCAGATATCCAGTCTCTTTCAAAGACCACTAAGAGACAGATGCTGATTCCAATGTGCTAGCTATTCACCTCTCTGCTGGGAACTCATGTGATTACAGGAACTCATATTCTTACAAGCCAAGAATATGTATACAAGCTAAATATCCTTACCCCAAAAGGTCTGAAGTCACATAGCTTTCTGAGGGTTAATATTGTGCAAGTGGACAAGTTCATATCTGACTTCATACAGCAGGTCACAATGAAAATGTAGCATCAGAAACATTGAATGTGGGGGCTGGCGAGATGGCTCGGGGGTTAAGAGCACTGACTGCTCTTCCAAAGGTCCTGAGTTCAATTCCCAGCAACTACATGGTGGCTTACAACCATCTGTAATGAGATCTGACTCCCTCTTCTGGAGTGTCTGAAGATAGCTACAGTGTACTTACATATAATAAATAAATAAATAAATAAATAAATAAATAAATAAATAATAAATCTTTAAAAAATAAAAAAGAAAGAAACATTGAGTGTAATGACTGTACAGCCATCTGCATAAAGCAAAGGTGAAACATCAAGATTTGTGCTCACAGCTGGATGTGATGGCTCCCACCATTAATTTTAGCATGTGGGAGGCACAGGCAGGAGGATCTCTATGAGTTCAAGGGCAGCCTGGTCTACAGAGAGCTCCAGGATAGCCAGTACTACATAGAGAGACTTTGTCTAAAAACAAAAATAAAGAAAAAAAGATAAACAACAAAAGTATTAGTGTTCTTGTTTCCAGGATATCTCATTATGAATATGCAAATATCCCAAAATCAAAAAGAATTTAAAAGAAAAGAAAAGGAAAATCCAGATCACTTCTGGTCCTAGGCACTTCTGATAAGCAATAGTTAGCTCCTACATAGGTACTTCCTCAAGCACCACTTATACATGGAGTCATGTGCCAAGTAGATTGTATTAAGAGTATATATTTGGTAAGCTATCAAACTTCCATATAACAGAATACTAGGCACCAGATAAAAAGAAGCATACAATATGAAGAATGATATGAAGATATAGAAAAGATAGTGAAGATTTGTGATAAGGTGAAATATGTTTTGTAAAATGCCAGGATTTGAATAAATGAGAAATTTGGCTTAGAAAAAAATTTAGAATGATATTTAAGAATGTTTGTTAGCCGAGCAGTGGTGGCACATGCCTTTAATCCCAGCAGATTTCTGAGTTTGAGGCCAGCCTGGTCTACAGAGTGAGTTCCAGGACAGCCAGGGCTACACAGAGAAACCCTGTCTCGAAAAACCAAAAATAAAAAATAAAAAAATAAAATAAAACAAAAAAGAATAAAATAAAAAGAATGTTTGTTAGGAAAAAATGGAGGGAAAAAAAAAAGGGAGAAACATGCTTATTTGGAACCAGAGGGATGGCTAGAATGACTTATGGCTTAAGACACTTGTGAGGTTCTCTGTCATTGGTTGCATGTTTTACTAGGGGAGGGGCAGGAAGGGACAGTTATTCTTTGGCCCGTTTCAGGAGCACTTTGTACACCACAATCCACAGATGCTGAAGTCCCTTCCATGACAAGCTGTAGTGTTTGCATAGCATCTTGAGCAACCTCCCAGCTGCCTTGAAGGGTGGCAAACATAGTTCTCCTGCTGCATGACTCAGGGATAGGGACAAAAAAGAAGGTCTGTATGTGTTCAGCTCAGATGCTGTTAAAAATGAACTTCTAGATTACAGTAGACTAGATTCATCTGTAGGGACCCATAGCCCAGAGAGCAAGTGGACCTGAGTGAAACAGGTCAGGTCCCCACCCTGTTGGCCATTCTGATGAGAATGGTTCCCTGAAACTCAGATGCATCATGGTAACCTGACCTTCCCTTGCTAGAATACTGGGCAGTTTCCTTCTCCCTTCAGTTCTAGCTTGCCTTTCTCCAACTCTGTGTCCCCTGGTCCTTAAGGCCTGTAGATCAATGTGATTAAATGTCACCAATGACAAAAAGAGAACCAGGGAGCAAAGGGGCCACTGTAAGAGCCAGGCAGACTTCTACCATGCACAGGAAGGAGATCCAATAAGAGTCTAAAGGAATAGTGATCACAACTGTGCTAGTAGAACTGGTCAGAAAGTATGCTGGTAACATGAGAGGTTTCAAAAAAGGAGCTGGCTTTGAAAAAAGATTTACACAAAAGGAAAATTAGGGGTAAGTTTCTGCTTTAGGGGAAAGACCACACTTTGGATTTTCTGGCTTATTGATACCAGCTGTGTCACACAGAGCACACTCCTAAACATCTCTAGTCATATAAATTACCATCAGATGAACTTTGCTGGTGTCAGCCTTGTGTCAAACCCTTCAAATGGGTCATCTACTGAAAGCTCCCAAAAGGGCATCCCTTAGGCTCTGGAGTTACAAGAACCTTAGTTTGTGAGAGCCCCCATCTTTGATAGATAGAACAAAGATATATATGAATGATTTATTTATTTATTATATATAGGTACACTGTAGCTGTCTTTAGACACTCCAGAAGAAGGGGCATCAGATCTCATTACAGATGGTTGTGAGCCACCATGTGGTTGCTGGGATTTGAACTCAGGACCTTCAGAAGAGCAGTCAGTGCTCTTAACAGCTGAGCCATCTTTCCAGCCCCCTAGAACAAAGTTTTCAAAGCCCACATTTATGAAATGGAGGGAAGACTATTAGTACTGATTCCAAAGGGCTACTGTGCGACTCCAATTAATGAACCTTTCTCTTTTGCTGCAGCCGTGGGAATCCAACCCTAGCTAAGTGATCTTCGACTTCTGAGAAGACTAAGCAAGTGCTACAAAAAACGTTAAGACACTGGCTTGTTCTCAACAGTCCCATTTTGCAGATGGGAAAATGATCAGGGAGGCCAACAGCAACAACATATTTTTAAAGATCAGCTGATTTCCAGGTAGCCCAGGCTGGCTTTGGACTCACTCAGCAGCTGATTTCCAGGTAGCCCAGGCTGGCTTTGGACTCACTCAGCAGCTGATTTCCAGGTAGCCCAGGCTGGCTTTGGACTCACTCAGCAGCTGATATGACCTTGAACTCCTGCCGTCTTACCTCTCAGATGCTGGGGTTGAAGTTGCGCACCATTAGGCTGGGGTTTGATTTTTTTTCCCATTTTTTTTTCCTGAGATAGTGTTTCCTATTGTAGTCCAGGATGGCCTGAACTTGCTATGTATTCCAGGTTAGCCTCAAACTCTCATTAATTCTCTCACCTTAGCCTTCCTTCCAAATGCTAGTATTATAGACATGAGCCACTATACCTGGCAAAATAATGTGGTTAAGACCTTCTGAGTATTTGAAATAGGATATAGTTTTCTAAATTACTCAATGGTTCATCAGATGTAAATACCACCTGTTCTTATTAAATGTATGGAAGACAGGAGCTAATTTCCACCAGAAAAAAATATACAAATAGAACTTCCAAATAAGAAGAGAGAGGGAAAAAAGAGCCTCACTGTCTTCTAAGTGCCCCCCATCTCTACAGGGAAAGACGGTGAAGCACCCAGAACCCAAGCCAGCCAGGCTGCATAGCAAGGCTGGGTGATTGGCCAAGGGGGCTGGGGATGGCCTCGTAGAAAACACTA**CCATACAAGG**GCATGTCTGCCTCCAGCCCAGCCTCTCACAGAAAAGTAATGATAAATCCATAGTGACTACCTTGTACGGAAGAGAGGCTCTATTTCAGATATAACAATGAAAGTCCATAGTGCTTATGAAGCAAACCCACAGGTTTCTCCAGGGTGGCTCAGCACGGGCGTGTTTTGGGGTCACCCAGCCTCATGGACTCCTACCACATCTGTTTCTCTCTAGGGAACAGCCTTTGTCAGTTTAAATTGGTAGAAGGTTTCAATCTTCTTCAAAAAGTGGTGGAGTCCACCAGAAACAGGAGTCCAACAAATTTTGGTTTTCAGGAAAGACAAAGAGCTGTCACGACAAGATGATCAACTTCGTGATGAAGTGTATATAATGATTCAAATAACTTGATTCCACTGAAGTGCTGTTAAGTACCTGGCTTGTTAAGTGTGCCATCAACCACATCAAAAAAGAGAAGGTGTTCCTTGCCATGAGAGACTTTTGGACCTGTATGGTCAAGCTCTCTTTCTTTAAGTCAAGTCTAAAATAGCATCTTGAAGTAAACTGAGCAAGAGAAGAACCTTCACCAGAGGACACAGAACGGAGCAGAGCAGTGTGCTGAACACAGCCGGACGTCCCTTCTTTCCCAGCAAGCTCCATGGCTTCTCGCAGTTCTTAGAGGTAGAACCTAAACAGCCTAGTCCCGGCTTTCTAAAAGGTTTCTTTTGTTCTCTGACAGACATAACTTTGAAAGGTGCTTTCCAAACAATTCTGAACTGGAATCGCAGAACTTTCTCCTGCTAGTTCCTCTCTCTGTCCTAAGAGTAACCTTCCCACTGAGGAGCCCCAAACCCAGCGCCTGCTCACTCGGTGCACCTGGGGGTGGGGAGGCAAATGGAGCCTCCGCACCCACCTGGACATCTGAGGCCCTAACCAACCAGGAGAAGAACTCCCTTGTTAATTCACAGAGTCTGGGGTCTGGAAGGGAACAGAGTGAAAGAAACTAGCCATATCTTACAATAAGCAGCCTTGTCTACCAGTAACAATCCACAGCAAAATCACCTAAGTAGATGGAAAACACACACACACACACACACACACACACACACACACACACACACACACCACAGCCTGTGCTCAGAACTATCAACACTTTCACCCATGTTTCTGAGTTACTTTGTGCAATGGTCAGTGGATTATCCATCCCATGACCTAGTCAGACTAACCTTGGGTTCCGATCACCATCCCAAATACTGGGATTTGAACCCAGGACCCGCAGTGCTCTACCACAGCACATTTGTCCACTGTGCAGCCTATAAACACTGGTTGGTTTTTAAGTAGACCATTTTGTTTTTTAGACTCTAGTCTTAAAATACCTGGAATTGGGCCCAGCCACCAGAATCTTTAATTGCTTACTCCACTTTCCCAGGTGGTTCTGCTCATGGGCAACCTGGGGATGCTGGTTTGACGTGGTGGGTAGTGGGGGGGGGGAGGGGAGTAATCACAGGAGGTCTAGAATGATCCTGTACCCGGCTTCTTCCCATTGT**CCTTATAAGA**GATAACAATCAGGACCCCTGGAGTCCCCACTCCCAGGAGGATGCTTTAGAAGGCTTAAACCCACCACCCAGGCTTGCCCCTAAGGGACCAACTCTACTTACAGATCTACTCCGGGGGTGGATTAGCAGGAGGACACCGGATGGAGAGCTCGGATCTGGCACTGATCCCAGGCTGGGATGGTCCAAATCTCTCTGTAAGCTTCGGACGCCTGGCTTTATAGAGTCAGCGCTATCTGAGAGTGGAAAGGGGAGGTGGCTGTCGGACGTCCGAGAGTGGGAGGATCCTCTTCCCTTCGCGG**CGCC**CCTGCAGGTGAGGAACAGAGCCGCACTGACCCACAGCCTCAGGCTTCGCTCCCTGTAGCCACCCAGATCCTGGGTCCTTACAGAAAAGGAATCCGGTATACAGAGTCTGTAGGGAAACGTGAGAATTTCTCCCCCTAGGTCCATTCCAGCTGGATTTTAACCTCTTCCTGTTCATACATACTGGAGGCTTGATACCTCCCACTCTCCTTCATCCCCTCTTCATTCACCTGCCACCTCTTAGATCTGAGGGCGGTTGTGTTTAGCAAAGGGAGGGGAAAGGTGATTTTTTTTTTTTTTTTTTGAACTCTGCAAGGTGCAAAGCAGGTCACCGCATATCCTCCAGTGACTGCTGGGAATGTGTGGGAAAAGAAAGGGAAACTTGTTTTTCCTAACTTGTTCTTTGCAGTTCCATTCATGCTACAACCAAAATTAAATATAATCCCAGGGTGCCTGGAACCAATAACGTGGTTTCTCTGAACATCGTTGAAAAGCGGGGTGCTGCTGGAGAAAGAGTGCATTATGGCACTTGGAGGATGCGTGCTAAGACCCTAAGAGAATGCGGGGTACTTGCTGGTCCCCCGCAAGTTCACAGCTGTCCCCCCTCAGCAAGGGATACTTCTCAATCTCTTTCCCTTAGCCCTGTATGGATCTAGGTCCCTGTCTCCCTGTCTCTTTTGTCGGACCTGACACACTCTCCATTACACTCTAGCTTTGATTTCCCTGTGACGATTTTTGTTCTGTCTCTATCATTTCATCTGTTATGTCCCTAAAGTCAGTTTCTTTCTCTCTCTCTCTCTCTCTCTCCCTCCCCCTCCCCCCCCCCTTGCACACACACCACTCAGGCCATAAAAGGAAGTCGAGGCAGAGC**TGGC**CCCAC**GCCA**GACCGGGGACGCCTCGCTCCCCGCGCGCGGACCCTCGAGGTCCCGGGCTGGTCCTCCCTCCTGGGCCTGGGCGGGAGACAACCCAAAAAGGCCAGGCGCAATTCTCGAAACAGGAATTCCCAGCGTGGCATACCAGCGGGGCTCTGGCTCCCCCTGA**ATCCATATGG**TCCCGCGCAGCCTCCCGCTGAGCCCGCGGGGCGGTATAGGGACCCCAGTGCTCAGACAGGAGCTCCAGACCCAGGTGCAGCTGGTTCTTCCAACCCAAGGATGATTCTGGCCAAACCTGCCCCAGCCCTATTTTGCAGGCCAGAAGACTGAGTCCTGTGAGGGTCCTTAGCAAGCTCAGTACTGTTTAATACCAATGTTCACTCTGGAGAGCTGAGTTACGGATCACTGTGTACAAAGCCAACAGGGGTGCTGTGTGGCCTTTCATATCCCAGCCCATCTGGACCCCTTCCATATCCGTCCAGGACCAAGCTCACCTGCTTCTCAGACTTGAAAACATCTGGATCTTGGTCCTCCCCATCCCCATTCCTAACCCCATCCCAGCCTCACTGGGCAGCAATACACAGAGCCAAGGACAGCAGCTTGGCTGCCTCGATGTAGAGGTGGGGGAGGAGCCCTCCACATGATGGACGAGGCTGCTTCCCCAAAGCCTCTTCGCAGCTGCACGTAAAAGGAATGGAAACCGTCTGGGCATTGAGCCCAGGAGGAATGGAAGAGGGAAGCCCAGGACCCACCTGCACCTATCCCAGTCTGGAACCAGCCCAGAGCTTGCCATCCCCGTGTTAGGAAGGAAGGGCACTCCCGCAGCAGGCCTCAGTGAAGTCAATTCCAAGGAGCACAGCTGAGTTTTAAAGAATGGTATCAATTTTGAAACAAAACTAATTTCAGTACAAGGAGAGACTGGGTCAGTAAGACTGGTCAAAAGCACTTGCTGCCCAAGACTGCCTTGAGTTCCATCCTTAGGAGCCACGTGACTGAATGGAACACATCATTCTCTGACTTTCACGTGTAAGCAGTAGGGCACCCTGCTCCCCAATCAATTAGTGTTAGCATTTTTTTTTAATGGAAACTGTGTTGTGCATGTGGTAGATGTGCACACCCGTCAATCGCAGATGTCAGTTCTCAGGACCCATCTACCACAGGGTCTCACTGTATACACAGTTCTAGCTCGTTGGCCTCAAACTCTGTGTAAACCAGGCTGGCAACAAACTTGCTTTACACATGCTGGGATCCAATGTGTGCACATCTGACATTGATTTTGTTGTTTTTACTTTGTTTTTGAGACAGTCTCTCACAGCTGGGCTGGGATGCTTGGTGGTTACAGTGTGTCTGTTGTCCAGTGCCGTCTGGGTGTCTTTATATAAGTGTTAGAGATGGAATTCAGACCTCATCACCTCAGTCAAGAAAGGGGAAACTTTACTGCTTTCTTTACATCTAATGCCCAGAATGATGGCATGAAGTAGGTTCGTCAGCATCTACTGCTGAGGATCCAGGTTTGAAAGAGTATATATCATCTGGCCAATAAGAGCAAGGTTAACAGAGGAGCTGAGATTCCAACCTGGGTCCATTCATGGCATGGCTGGTGGTTACACTGTGTCTGTGTATACATTCTCGAGTGTGGGCGTCAACATTGTGTCCATAAGTTGCCCCTCCATTTTATTTTATGAGCATCTCTCACTGCACATGGAGCTTGTTGATTCTGCTAGGCTGCTAGACTGCAGAGCCGGACAGCAAAGCCCAGGGACCCCCCTCTGTCTGTCTTCCCAGTGTTGGGATTCTTGCTGTAACTACTGAGCCATCTCCCCAGACCAACTTACTGTTCCCCCGAGTCTTGAGTGTTGCTCACAATAGGCAAGCGCTGTCCCACTGAGGCCCAAAAGTCTGATCTCAGCCCTGCTAAGCACTAGCCAAGAACCTCTGGGGTTATCCATGTCCTTATGTGACACTGCCTTAGGAAAGGCTTTCTGCCTTCCCCCACCTTGCTGGGTTGTTAATGACAGTGCCGGCCTTGTATAAACCACCCATCCCCTCCTGGCATGCTTGGGCAGTACCCAGGGACAGTATGTTCACTTCACAGTCACTTGGGAAGTTTCTGTCCACTGTGAGAAGTTCCGATATCTGAAGTCTTCAGAAGGAAGTTCTACCTAGAACAGGGTAGAGGCTTCTATTTTTCTTGTGGTTGAAGAGGTCATTTATTGTAAGAAGAGGAGAAAAGTCACTTAACAAAATGCTCCTTTGGGTGGTGTCAAATAAATTGTATGTTTTTCTGTGATGGGAAGTGGACGATGAAGGGGAAATTTCTCTTTGGGGTCTTTTTTTTTTTTTCTAGCAAATAGTTTTAAATAGCTATTGGCTTGTAAAAGCCTCAGTATGTGATGCCCTCTAGCTTTAGGAAAATCAAAGATTGTATCCAAGCATGGCTGACTCTTGCAGGTGCTAAAGATTTAATCATTTAAAACTATATCAGCTGGCCTGAGGAGATGGCTCAGTGGGTAAGAGTGCTGCTGCTCACTGTACAACACCCGTGTAAAAAGTGGGACATGGCCACACATACCTTTAACGGGTGTGCTGTGAGACAGAGACAGGAGGCTCACCGGGGCTTGCTGGCTACCAGCCTAGCTCCAACAGGTTCAGTGAGAGACTCCTGTCTCGAGGGAATAGAGCACAGTGACAGGCCACCTGACATTCTCCTCTGGCCTCAAATGCATGTGTGCGTACGCACACAGACACAGACACTCAGACACACACAGTTTCATCCCAGGTCCATGGAAGATCTGTCTCACAGATCAGTGGGAACTGTTCCAAGCCCAGGCACTGGTCACCACTGGGTCTCAAGGCAGGAGACTGCACCTGCTGTGCTGTTTCCTCTTCACTCATGTCCCATTCTGGTCTTCCTATAACTACAGATGATGTCTCTATTGGAAAGGCCTCCATAGGGAATGGTCAGAAGCTTTGCATTTTCATAAACCTACACATGTTCTGGGTGGTGGGTTGAATGAGAATGTCCCCAGAGGCTCATATGTTTCAATCTTTGGTCCCCACTTGGTAGAACTGGGACGGTATAGGAGCTGTAGCCTTGTTGGAGCTGTGGTCTTTTGGAGGAAGTGAGTCACTGGGGTGGACTTTCAGGTTTCTAGAGATCATGCCATTCCCAACTAGTACTCTCTGCCTCCTGCGTGTGGATCAGTATGTAAGCTCCTGGCTACAGCTCCATTACCATGCCTGCCTATCTGCCAGATGGCCATAGCTTCTAGTCCTCTGGAACTGTAAGCCCCCAATAAATCCTTTCTTATTTAAGTTAGTAATATCTTAGTAGTAATACTTTGCCATAGCAATAGAAAAGTAACTAAGACACTACTGGGAAATTTACCCTAAGAGATGGACTTATCTCATGAAGTTCTGTGCGTGGGCATTTATAGGAGCATGGTTTTGTTATTGTTTTTTTAAGACATGGTCTCACCAAGTAGCCCAGACCTTTAAAACTGACCATCACACCTCCAGCTCAGCAGCTTTGTTAACTGCAAGCACCTGAAGGCAGCTAGGCCGGTTTTTAGTAGGTATACAGATAGCTAATAAAAAGGCAGGATTCTGCACTTTCTAGAAAGCTAACAAACCACAAAGCTATGGGAGGTATGCCAATCCTAGAAGGTTGAAGTGGTTGAAGCCACATGGTGTCCTGGGAAAGGTGGGCAAAGGTGTCAGGTACTGCCACCATGAACTCTCATCACCATGCTTTGTCAGGTGACAAAGAAGGCTCTTCTGTGACAACTGCAGCTCTCAAACAGATTCAGACAGTGGGAGAAGACAGGGCCTGTGGGAGGAGAGTGAGGGCACTCAGTGCTCCCCACTTCTGTTAGTCGGGCAACTGAAAGTTCTCTCTCTCTCTCTCTCTCTCTCTCTCTCTCTCTCTTTTCTGAGACAACACAACACTACATAGCCCTGACAGGCCTGCAATTTGCTATGTAGACCAGGCTGGCCTCAAACTCCAAAATCTGCTTGTGTCTACTTTCAGAGTACTGAGACAAAAGTATATGCTGCCAAACTACAATTTTACTTTTTGAGACAGGGTCCCTCACTGAACCCAGGGTTCACTAAAATGACTGGACAGATTGGCCCACAATGTCCAAGGATCACCCTGCTGCCACCTTCCCAGCTCTGTGATAGAAGGAAGCTACAGCTGTGCCCTGTTTCTTAGGTGCCTGGGTATCTGGGGATTTCATCATGTTTGCATGGAAAGCACTTTCCCTGACTGAGCCGCCTCCAGGAGTTTGGTCTCACTTTTATTTGAAGTATTACATGCAGACCACGGTCCTCATATGGTGGTTGCCACAAACATAGAATGCTAAGTGTCTGAGAAGCAGTGTTCCAGATGCCTTTAAAGGCACATTCTTAACCATCAATCCTCCAGACACTTGGCTTTTTGCTAAAGGAACAATCAGGTTTACATAATCAGCCAGGCATGCAAATCATATACAAACATGTTCTTGCACATAATAATAAAGCTATCTGTTTATTCTACACAAGCATATACACTAGTCTTAAACTTATGATCTCCAGAAGTCAGCCCTAGGCTTGATAGACATTTTTTCCCCCAAGTTTTGAATAACCCAGTCTCCTACAGCCATCTGGTCCTATTCCCATCCTGTTTTGTGTGACTTCAAGTTTTCCCATAAACTTCCCTTGTTATTTCTAGAAGATAACTTGCCCTAACCTCAAGAAACAGACAGTGAGATACCAATACTGTTTGTGAGGATAGTAAAGGGTCTTCTAGACCTGTGTTTTCCTTTCTTGGGAGTTTTTTTCAGCGTAGCCAGGCATGGTGCATAATTACAGCTCTCTGGAAGACAGAGGCACAGAGATCTACGAGTTTTAGGCCATCTGGTCTATATAGTGACAAGTTGTCTTGAAACCAAATGTTCCAGCTTACAAACCTTTTTAAGAAGCCGTAGGAAGTAAATCAGCTGACAGTGTTTATAAATCCTGCACAAATAGACAGCTACAGTAGACTGTCTCAACTCTTTGTTGTTGTCTGTGAGATCCTCAGGGTTTCTGGTTAGCTATGTTGTATGCATAGGAACATGTGAGAGCAGATGCTCAGAGCTCAGAAGAGGCCATCAGAGCCTCTGAAGAAGCAAAAGTGAGAAACACTGAGCCATCTCTCCAGCCCCTTGATTCTTTCTTTGGACACAAGGTCTGGCTACACAGTCAGGGCTAGCTTAGAACTACCAATCTCCAATCTTCCTGTCTGGGCCTCCCAGGTACTTTACTGGATTACAGGCATATTTCACCATGACCTGGCACTTCTTCAGCTTTTAGGAATACAAAATGGTTCTTTCTTTGGATAATTAAAAAAACAAAAATGGTAACATGGTTTAAAAATAGATGGTTTTCCCCTCTTTAAAGTAGCTCTTCAAATATACCTGGTCCTCAGGTTGTGGCAGTCTGTAAGAATGGTGGATATCAAGTGCACATATGTACCAGGCCTGCCTTCAAAGACCCCACGTGCCCAGTGCTTCAGCCCCAGTCATCCCCCCTCTGGATGACAAGATAGTGACGTGACAATCTACACAGAGATGAGCTGAGCTGCATTAAATGATTATTCAGAGTAAAACAGGTTAGAATCAAGACTCAGGAATGCATAAGGCTGGGATGGTGAGGTGGTTCAGTGGGTAAGACTGACTGCTCTTCCGAAGGACCTGAGTTCAAATCCCAACAACTACATGGTGGCTCACAACCACCTGCAATGAGATCTGATGCCCTCTTCTGGTGCGTCTAAAGACAGCGACAGTGTACTTATTTATAATAATAAATCTTAAAAAAAAAAAAAAAAGGGCTGGTGAGATGGCTCAGTGGGTAAGGTGGGTAAGAGCACCAACTGCTCTTCCGAAGGTTTCGAGTTCAAATCCCAGCAACCACATGGTGGCTCACAACCACCTGTAATGAGATCTGACGCCCTCTTCTGGTGCATCTGAAGACAGTTACAGTGTACTTATTTAAAATAATAAATAAAATTTAAAAAATAAATAAATAAAAAAATAAAAAAGGAATGCATAAAGCTGCATTTCTGTGTAGCTTCCACTTTAATGATTTCACATCCATATCCAAAATTATAAACACCAATATTTTCCCTTCATCTGGCCCTACATAACTGCAATTCCTAAGATAGCATAGCATCCATAGCTGACACTTCTGAACATTAACCAAGCCCTCCGGGAGAAGCTGGTATTTATATCTGAACAGAGAACACAATGGAATTTATAACTCTAGTCAGTGCAGACTTAAAACGGAAACGGGGATGTGTGCAGCTTTAGGCATTGGTGGCCTGCATGAGTCACAGTGCTAGAAGCTGAGAGATGCACTCTGAACCCAGCAACCCTGTGATGAGCACACTGAGTCCAGGAACCTGCGCACCTGTTCTGAATGCTCAGAGTCCAGCCCAGACTTTTAGTTTTGCATTATTTATCTAACAAACTGTTTTACTTAAAGCAAAGTTAAAATAATTATTTCCCCCTTTACCTTTTCATTAAATTCCCTAGTAGAAGCTAAACTGTTCTTGGGGAAAGAGTATTGTTATCTAGTTTAAAGATCAACATTAGAGTTTTCATTGATGTTATAAAGACCATGACCGCTGGGCGTGGTGATGCACGCCTTTAATCCCAGCACTCGGGAGGCAGAGGCAGGTGGATTTCTGAGTCTACAGAGTGAGTTCCAGGACCGCCATGGCTACACAGAGAAACCCTGTCTTGAAAAAAGAAAGAAAGAAAGGAAGAAAGAAAGAAAGAAAGAAAGAAAGAAAGAAAGAAAGAAAGAGAGAGAGAGAGAGAGAGAGAGAGAGAGAAGGAAGGAAAGAAAGACAGACAGACCATGACCATAAGCAACTTGGGAAGAAGAAGGTTTATTTCAGCTTACAGTTCAACATCACAGTTTGTCACTGAGAGAAATCACGGCAGAAGTTAATGCAGAGGCCACAGAGGAGTGCTACTTAGTGGCTTGCTCCCCATGGCTTGCTCAGTCTTTCTTACTGAACCCAGGATCACCTGCCCAGGGGTGACACCACCCACTGTGGGCTGGACCCTCCCATATCAATCATGAATCAAGAAAAATGTACTACAGGTTTGCCCATAAGCCAATCTGATGGAGGGATTTTCTCAATTCAGAGTCCCTCTCCCCAAATGACTCTAGCTTGTATCAAGTTGATATAAAACTAGCCAGGGCAGGCAATAATAATTCAGGTATTTTTTAAAAAATCAAACTTCATATAAATTAAGTTCTGGTTTTAATATTCCTTTAGATATTTTTTCAAAACATGAATGACTTTCCCCATAGGTCCATATACTTCTAGCTGAAAAAAGTTTAATGAGCAGAGCACATGGACAAAGACCTGTTCTTGTGCTTTCTTTCTTCAGTGCTAGGACTGAACCCAGGACCTTGCATAGGGAGGGAAGTGCTTTACCAGCAGCATAGCAACAGCCCTTAGAGCTGGCCAAAAAACCCAAAACAAAACCCTATACAAAGTACTAAAAAGCCCTTTCAGATTTCACAAATGAGAACTTTAAAAATACATCCTGAAAACAATAAATTTTCCCCAGTGGCATCCAGCAAGCGAGACGACAGATCAGCTTTCCACAGATGCAGTAAACCATGAGTGGCTGAATGCAGACACTCAAACATTTACAAGCAGTGGTGGTCTAATTGATGGCATTGGGAATAATACGTCGGTTACTCCACACACAGCTGAGGTGATGAGCCTGGTGTATGCATCGCATCATCTGCTGACTGCTTGTGCAGCAGCAGGAAGCTCTTCAGTTGTGGTTCTTGGCCCTGTGTCCTTCCTCACGTGGTCATCTAGAGAAAACACACAGGTGTCAATATTCACTGCAAATCCCAACAGGCAGACAAGCAAGCACTTATGTTATAGGGCATTGTGTTAGTACTTTATGAGTTTTCCTTACAACATGTACTGTACTACCATGCATGCAGAAGTCAGAGGACAACTTGAGAGAATCAGTGCTTTCCTTCTACCATGTGTGTCCAGGTATTGAACTCGGGTCATGAGGCTTGGCAGCAAACCTGCTGAACTATCTTTGTGAACTCTACTCATGTCTTAAGCATCACTGAAGAAATCATAACTGTTTGGTATTAGAGACTAACTGTAATAATTCAAGTGTTTCTTCATTTGGAGGGTAGAGGAACAAGAGGGTCTCACTGTTTAGCCCAGGCTGGCCTTCTGCCTCAGCTTGAGTGCTGATGTCACAGGCTTCAAGCACAGGCTCAGCTTTTCTTTTTTCTTTTTTCCCCTTGGAGTGAAGTGCAGCGTGGAGCCCTGTAAGCCACTATCTCAGATATAAGGAATGGACTCAGGAGGAAGGACAAGTGTGCAATCAGCATTGTAGGGCCAACAAAACCACTATGATTGCCTGTTAGCTGAGCCCTCCTGTGGAACACAAAAAAGGGGGTTGTTTTGTATCTATTGTAACACTATCCAGGAAATGGTAGAAAGTACTTTTAAAGCCTGCAAGATGGCTCAGGGAGTAAAGATGCTGCCACAAAGTCTGACTCCAACTTTGATCTTTAAAACTTACATGGAAGGACAGAACTGACTCCTACACGTTGTCCCTTACCCCCACATATGCACTATGGTCCATGCATGCACAAATAGATATAAGTGTAATAAAAGTGATAACTAAATAAAATAAAATCCAAAGATAAGCTGGGCATGGGGAGATACACCTTTAAGACCATCCCTTGGGAGGCTGAGGTAGAATAATAAATGCCATCCTGATCCACACTGAGATCTGCCTGGCTCTGCTCCACCCATGCTGGGTTACAGGTACACATGCCACGCTGGAGGGATAGTCCAGTGGTTCACAGAACTTGCTGCTAGAGAACCCACGTTCAGTTCCCACTGGACACATGGCAGCTCATAATGGTCTATAAGTCTAGTTTCTGGAAATCTGATGCCATCTTCTGGCTTCCTAAGACACCAGGCATGCACGAGGTA |

Mouse (from paper)

|  |  |  |  |
| --- | --- | --- | --- |
| **Myh11 PPR *cis* Element** | **WT** | **MUT** | **Observed phenotype from literature** |
| CArG3  (SRF site) | CCATATTTAG | *deleted* | *No effect* |
| CArG2  (SRF site) | CCTTTTTGGG | ~~CCTT~~TTTGGG  ATCCTTTGGG | ~50% decrease in transcriptional activity |
| GC-rich  (Sp1/3 site) | CCCGCCC | CCCG~~C~~CC  CCCGGATCC | Increased transcriptional activity (WT is repressor site) |
| CTF/NF1 | TGGCATGAGGCCA  (TGGC(N)5GCCA) | ~~TGGC~~ATGA~~GGCCA~~  ATCC | *No significant difference in transcriptional activity* |
| CArG1  (SRF site) | CCTTTTATGG | ~~CCTT~~TTATGG  ATCCTTATGG | ~50% decrease in transcriptional activity |