

-----monomer 1-----

 L1-17 GGAAGAGACCACCAACACTGCTCACCCCTGCCCATCCCTGGCCCAAGAGGAAACTGTATAAGGCCCTCTGGGCTCCCGTGGGGGAGGGCCAGGAGCGGCAGGACCCCTGC--CTGAGACA CCGCCAGAACCTGAACAAAAAGAGCCGG 148
 L1-21 GGAAGAGACCACCAACACTGCTCACCCCTGCCCATCCCTGGCCCAAGAGGAAACTGTATAAGGCCCTCTGGGCTCCCGTGGGGGAGGGCCAGGAGCGGCAGGACCCCTGC--CTGAGACA CCGCCAAAACCTGAAGGAAACAGACTGG 148
 L1-8 GGAAGAGACCACCAACACTGCTCACCCCTGCCCATCCCTGGCCCAAGAGGAAACTGTATAAGGCCCTCTGGGCTCCCGTGGGGGAGGGCCAGGAGCAGCAGGACACCTGC--CTGAGACA CCGCCAAAACCGGAAAGAAACAGACCCGG 148
 L1-13 GGAAGAGACCACCAACACTGCTCACCCCTGCCCATCCCTGGCCCAAGAGGAAACTGTATAAGGCCCTCTGGGCTCCCGTGGAGGAGGGCCAGGAGCAACAGGACACCTGC--CTGAGACA CCGCCGAAACCGGAAAGAAACAGACCCGG 148
 L1-12 GGAAGAGACCACCAACACTGCTCACCCCTGCCCATCCCTGGCCCAAGAGGAAACTGTATAAGGCCCTCTGGGCTCCCGTGGGGGAGGGCCAGGAGCAGCAGGACCCCTGC--CAGAGACA CCTCCGGACCTGAAGGAAACAGACCCAG 148
 L1-3 GGAAGAGACCACCAACACTGCTCACCACTGCCCATCCCTGGCCCAAGAGGAAACTGTATAAGGCCCTCTGGGCTCCCGTGGGGGAGGGCCAGGAGCGGCAGGACTTCTGCGCTGAGACA CCGCCGAAACCTGAAAGAAACAGACCCGG 150
 L1-23 GGAAGAGACCACCAACACTGCTCACCCCTGCCCATCCCTGGCCCAAGAGGAAACTGTATAAGGCCCTCTGGGCTCCCGTGGGGGAGGGCCAGGAGCGGCAGGACTTCTGCGCTGAGACA CCGCCGAAACCTGAAAGAAACAGACCCGG 150
 L1-22 GGAAGAGACCACCAACACTGCTCACCCCTGCCCATCCCTGGCCCAAGAGGAAACTGTATAAGGCCCTCTGGGCTCCCGTGGGGGAGGGCCAGGAGCGGCAGGACCCCTGC--CTGAGACA CCGCCGAAACCTGAAAGAAACAGACCCGG 148
 L1-10 GGAAGAGACCACCAACACTGCTCACCCCTGCCCATCCCTGGCCCAAGAGGAAACTGTATAAGGCCCTCTGGGCTCCCGTGGGGGAGGGCCAGGAGCGGCAGGACCCCTGC--CTGAGACA CCGCCGAAACCTGAGGGAAACAGGCCGG 148
 L1-19 GGAAGAGACCACCAACACTGCTCACCCCTGCCCATCCCTGGCCCAAGAGGAAACTGTATAAGGCCCTCTGGGCTCCCGTGGGGGAGGGCCAGGAGCGGCAGGACCCCTGCGCTGAGACA CCGCCGAAACCTGAAGGAA-CAGACCCG 149
 ruler 1.....10.....20.....30.....40.....50.....60.....70.....80.....90.....100.....110.....120.....130.....140.....150



-----monomer 1-----

 L1-17 ATAAAAGTTCTCTGACCCAAAATCCCGTGGGAGGGAGAGCTAAAACCTTCAGAGAGGCAGACAAGCCTGGGAAACAGAAAGAGACTGCTCTCTGCACACACATCTCGGACGCCAGAGGAAAAAGCCGAAAGCCATCTGGAAACCTGGTGC 298
 L1-21 ATAAAAGTTCTCTGACCCAAAATCCCGTGGGAGGGAGAGCTAAAACCTTCAGAGAGGCAGACAAGCCTGGGAAACAGAAAGAGACTGCTCTCTGCACACACATCTCGGACCCAGAGGAAAAAGCCAAAGCCATCTGGAAACCTGGTGC 298
 L1-8 ATAAAAGTTCTCTGACCCAAAATCCCGTGGGAGGGAGAGCTAAAACCTTCAGAGAGGCAGACAAGCCTGGGAAACAGAAAGAGACTGCTCTCTGCACACACATCTCGGACGCCAGAGGAAAAAGCCAAAGCCATCTGGAAATCTGGTGC 298
 L1-13 ATAAAAGTTCTCTGACCCAAAATCCCGTGGGAGGGAGAGCTAAAACCTTCAGAGAGGCAGACAAGCCTGGGAAACAGAAAGAGACTGCTCTCTGCACACACATCTCGGACGCCAGAGGAAAAAGCCAAAGCCATCTGGAAATCTGGTGC 298
 L1-12 ATAAAAGTTCTCTGACCCAAAATCCCGTGGGAGGGAGAGCTAAAACCTTCAGAGAGGCAGACAAGCCTGGGAAACAGAAAGAGACTGCTCTCTGCACACACATCTCGGACCCAGAGGAAAAAGCCAAAGCCATCTGGAAACCTGGC 298
 L1-3 ATAAAAGTTCTCTGACCCAAAATCCCGTGGGAGGGAGAGCTAAAACCTTCAGAGAGGCAGACAAGCCTGGGAAACAGAAAGAGACTGCTCTCTGCACACACATCTCGGACGCCAGAGGAAAAAGCCAAAGCCATCTGGAAACCTGGTGC 300
 L1-23 ATAAAAGTTCTCTGACCCAAAATCCCGTGGGAGGGAGAGCTAAAACCTTCAGAGAGGCAGACAAGCCTGGGAAACAGAAAGAGACTGCTCTCTGCACACACATCTCGGACGCCAGAGGAAAAAGCCAAAGCCATCTGGAAACCTGGTGC 300
 L1-22 ATAAAAGTTCTCTGACCCAAAATCCCGTGGGAGGGAGAGCTAAAACCTTCAGAGAGGCAGACAAGCCTGGGAAACAGAAAGAGACTGCTCTCTGCACACACATCTCGGACCCAGAGGAAAAAGCCAAAGCCATCTGGAAACCTGGTGC 298
 L1-10 ATAAAAGTTCTCTGACCCAAAATCCCGTGGGAGGGAGAGCTAAAACCTTCAGAGAGGCAGACAAGCCTGGGAAACAGAAAGAGACTGCTCTCTGCACACACATCTCGGACGCCAGAGGAAAAAGCCAAAGCCATCTGGAAACCTGGTGC 298
 L1-19 ATAAAAGTTCTCTGACCCAAAATCAGTGAGAGTGAGAGCTAAAACCTTCAGAGAGGCAGACAAGCCTGGGAAACAGAAAGAGACTGCTCTCTGCACACACATCTCGGACGCCAGAGGAAAGACACCAAGCCATCTGGAAACCTGGTGC 297
 ruler160.....170.....180.....190.....200.....210.....220.....230.....240.....250.....260.....270.....280.....290.....300



-----monomer 1-----

 L1-17 ACTGAAGCTCCCGGAAAGGGCGGCACAGGTCTTCTGGTGGTGCCTGCGCAGAGAGCCCTGGGCAGACCCCCAGAGCGAACTTGGAGCCTCCGGACCCAGATAAGACCCAAATTTCTGCTGCAAGAAAAGCTGCCTGGTGAATCAAG 448
 L1-21 ACTGAAGCTCCCGGAAAGGGCGGCACAGGTCTTCTGGTGGTGCCTGCGCAGAGAGCCCTGGGCAGACCCCCAGAGCGAACTTGGAGCCTCAGGACCCAGGTAAAGCCAACTTTTCTGCTGCAAGAAAAGCTGCCTGGTGAATCAAG 448
 L1-8 ACTGAAGCTCCCGGAAAGGGCGGCACAGGTCTTCTGGTGGTGCCTGCGCAGAGAGCCCTGGGCAGACCCCCAGAGCGAACTTGGAGCCTCAGGACCCAGGTAAAGCCAACTTTTCTGCTGCAAGAAAAGCTGCCTGGTGAATCAAG 448
 L1-13 ACTGAAGCTCCCGGAAAGGGCGGCACAGGTCTTCTGGTGGTGCCTGCGCAGAGAGCCCTGGGCAGACCCCCAGAGCGAACTTGGAGCCTCAGGACCCAGGTAAAGCCAACTTTTCTGCTGCAAGAAAAGCTGCCTGGTGAATCAAG 448
 L1-12 ACTGAAGCTCCCGGAAAGGGCGGCACAGGTCTTCTGGTGGTGCCTGCGCAGAGAGCCCTGGGCAGACCCCCAGAGCGAACTTGGAGCCTGGGACCCAGGTAAAGCCAACTTTTCTGCTGCAAGAAAAGCTGCCTGGTGAATCAAG 448
 L1-3 ACTGAAGCTCCCGGAAAGGGCGGCACAGGTCTTCTGGTGGTGCCTGCGCAGAGAGCCCTGGGCAGACCCCCAGAGCGAACTTGGAGCCTGGGACCCAGGTAAAGCCAACTTTTCTGCTGCAAGAAAAGCTGCCTGGTGAATCAAG 450
 L1-23 ACTGAAGCTCCCGGAAAGGGCGGCACAGGTCTTCTGGTGGTGCCTGCGCAGAGAGCCCTGGGCAGACCCCCAGAGCGAACTTGGAGCCTGGGACCCAGGTAAAGCCAACTTTTCTGCTGCAAGAAAAGCTGCCTGGTGAATCAAG 450
 L1-22 ACTGAAGCTCCCGGAAAGGGCGGCACAGGTCTTCTGGTGGTGCCTGCGCAGAGAGCCCTGGGCAGACCCCCAGAGCGAACTTGGAGCCTGGGACCCAGGTAAAGCCAACTTTTCTGCTGCAAGAAAAGCTGCCTGGTGAATCAAG 448
 L1-10 ACTGAAGCTCCCGGAAAGGGCGGCACAGGTCTTCTGGTGGTGCCTGCGCAGAGAGCCCTGGGCAGACCCCTGGAGCAACTTGGAGCCTGGGACCCAGGTAAAGCCAACTTTTCTGCTGCAAGAAAAGCTGCCTGGTGAATCAAG 448
 L1-19 ACTGAAGCTCCCGGAAAGGGCGGCACAGGTCTTCTGGTGGTGCCTGCGCAGAGAGCTAATGGCAGACCCCAAGAGCAAACTTGAACCTCGGACCCAGGTAAAGCCAACTTTTCTGCTGCAAGAAAAGCTGCCTGGTGAATCAAG 447
 ruler310.....320.....330.....340.....350.....360.....370.....380.....390.....400.....410.....420.....430.....440.....450



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 L1-17 ACACAGGCCACAGGAAACAGCTGAAAGCCTGTAGAGAGGAAAAACTACAGCCCAAAAGCAGAACACTCTGTCCCCATAA CTGACTGAAAGAGA---GGAAAAAGGCTCTACAGCACTCCTGACACACAGGCTTATAGGCAGTCTAGCC 595
 L1-21 ACACAGGCCACAGGAAACAGCTGAAAGCCTGTAGAGAGGAAAAACTACAGCCCAAAAGCAGAACACTCTGTCCCCATAA CTGACTGAAAGAGA---GGAAAAAGGCTCTACAGCACTCCTGACACACAGGCTTATAGGAAAGTCTAGCC 595
 L1-8 ACACAGGCCACAGGAAACAGCTGAAAGCCTGTAGAGAGGAAAAACTACAGCCCAAAAGCAGAACACTCTGTCCCCATAA CTGACTGAAAGAGA---GGAAAAAGGCTCTACAGCACTCCTGACACACAGGCTTATAGGACAGTCTAGCC 595
 L1-13 ACACAGGCCACAGGAAACAGCTGAAAGCCTGTAGAGAGGAAAAACTACAGCCCAAAAGCAGAACACTCTGTCCCCATAA CTGACTGAAAGAGA---GGAAAAAGGCTCTACAGCACTCCTGACACACAGGCTTATAGGACAGTCTAGCC 595
 L1-12 ACACAGGCCACAGGAAACAGCTGAAAGCCTGTAGAGAGGAAAAACTACAGCCCAAAAGCAGAACACTCTGTCCCCATAA CTGACTGAAAGAGA---GGAAAAAGGCTCTACAGCACTCCTGACACACAGGCTTATAGGACAGTCTAGCC 595
 L1-3 ACACAGGCCACAGGAAACAGCTGAAAGCCTGTAGAGAGGAAAAACTACAGCCCAAAAGCAGAACACTCTGTCCCCATAA CTGACTGAAAGAGA---GGAAAAAGGCTCTACAGCACTCCTGACACACAGGCTTATAGGACAGTCTAGCC 597
 L1-23 ACACAGGCCACAGGAAACAGCTGAAAGCCTGTAGAGAGGAAAAACTACAGCCCAAAAGCAGAACACTCTGTCCCCATAA CTGACTGAAAGAGA---GGAAAAAGGCTCTACAGCACTCCTGACACACAGGCTTATAGGACAGTCTAGCC 597
 L1-22 ACACAGGCCACAGGAAACAGCTGAAAGCCTGTAGAGAGGAAAAACTACAGCCCAAAAGCAGAACACTCTGTCCCCATAA CTGACTGAAAGAGA---GGAAAAAGGCTCTACAGCACTCCTGACACACAGGCTTATAGGAGAGTCTAGCC 595
 L1-10 ACACAGGCCACAGGAAACAGCTGAAAGCCTGTAGAGAGGAAAAACTACAGCCCAAAAGCAGAACACTCTGTCCCCATAA CTGACTGAAAGAGA---AGAAAAAGGCTCTACAGCACTCCTGACACACAGGCTTATAGGACAGTCTAGCC 595
 L1-19 ACACAGGCCACAGGAAACAGCTGAAAGCCTGTAGAGAGGAAAAACTACAGCCCAAAAGCAGAACACTCTGTCCCCATAA CTGGCTAAAAGAAAACAGGAAACAGGCTCTACAGCACTCCTGACACACAGGCTTATAGGACAGTCTAGCC 597
 ruler460.....470.....480.....490.....500.....510.....520.....530.....540.....550.....560.....570.....580.....590.....600



stop

start ORF2

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L1-17 TAAAGCCCAACATAAGGAGGCAAGCTATACCTAGAGAAGCAAGAAAGTAAATCGTCTTGGCAACAAAACAAA-GAGAAATGAAAGCACACAAACATAACCATCACATCCAAATATGAAATAAACGGGAAGCAATAACATATTACTTAAT 1923
L1-21 TAAAGCCCAACATAAGGAGGCAAGCTATACCTAGAGAAGCAAGAAAGTAAATCGTCTTGGCAACAAAACAAA-GAGAAATGAAAGCACACAAACATAACCTCACATCCAAATATGAAATAAAGGGGAAGCAATAACATCACTATTCCTTAAT 1944
L1-8 TAAAGCCCAACATAAGGAGGCAAGCTATACCTAGAGAAGCAAGAAAGTAAATCGTCTTGGCAACAAAACAAA-GAGAAATGAAAGCACACAAACATAACCGCACATCCAAATATGAAATAAAGGGGAAGCAATAACATCACTATTCCTTAAT 1809
L1-13 TAAAGCCCAACATAAGGAGGCAAGCTATACCTAGAGAAGCAAGAAAGTAAATCGTCTTGGCAACAAAACAAA-GAGAAATGAAAGCACACAAACATAACCTCACATCCAAATATGAAATAAAGGGGAAGCAATAACATCACTATTCCTTAAT 1809
L1-12 TAAAGCCCAACATAAGGAGGCAAGCTATACCTAGAGAAGCAAGAAAGTAAATCGTCTTGGCAACAAAACAAA-GAGAAATGAAAGCACACAAACATAACCTCACATCCAAATATGAAATAAACGGGAAGCAATAACATCACTATTCCTTAAT 1809
L1-3 TAAAGCCCAACATAAGGAGGCAAGCTATACCTAGAGAAGCAAGAAAGTAAATCGTCTTGGCAACAAAACAAA-GAGAAATGAAAGCACACAAACATAACCTCACATCCAAATATGAAATAAAGGGGAAGCAATAACATCACTATTCCTTAAT 1812
L1-23 TAAAGCCCAACATAAGGAGGCAAGCTATACCTAGAGAAGCAAGAAAGTAAATCGTCTTGGCAACAAAACAAA-GAGAAATGAAAGCACACAAACATAACCTCACATCCAAATATGAAATAAAGGGGAAGCAATAACATCACTATTCCTTAAT 1811
L1-22 TAAAGCCCAACATAAGGAGGCAAGCTATACCTAGAGAAGCAAGAAAGTAAATCGTCTTGGCAACAAAACAAA-GAGAAATGAAAGCACACAAACATAACCTCACATCCAAATATGAAATAAACGGGAAGCAATAACATCACTATTCCTTAAT 1791
L1-10 TAAAGCCCAACATAAGGAGGCAAGCTATACCTAGAGAAGCAAGAAAGTAAATCGTCTTGGCAACAAAACAAA-GAGAAATGAAAGCACACAAACATAACCTCACATCCAAATATGAAATAAACGGGAAGCAATAACATCACTATTCCTTAAT 1809
L1-19 TAAAGCCCAACATAAGGAGGCAAGCTATACCTAGAGAAGCAAGAAAGTAAATCGTCTTGGCAACAAAACAAA-GAGAAATGAAAGCACACAAACATAACCTCACATCCAAATATGAAATAAACGGGAAGCAATAACATCACTATTCCTTAAT 1924
ruler .....1810.....1820.....1830.....1840.....1850.....1860.....1870.....1880.....1890.....1900.....1910.....1920.....1930.....1940.....1950

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L1-17 ATCTCTCAATATCAATGGCTCAACTCCCCAATAAAAAGACATAGATTAAACAAACTGGATACCAACAGGACCCCTGCATTTCTGTGCTTACAGGAAACACACCTCAGAGACAAAGACAGACACTACTCAGAGTGAAAGGCTGGAAAAAC 2073
L1-21 ATCTCTCAATATCAATGGCTCAACTCCCCGATAAAAAGACATAGATTAAACAAACTGGATACCGAACGAGGACCCCTGCATTTCTGTGCTTACAGGAAACACACCTCAGAGACAAAGACAGACACTACTCAGAGTGAAAGGCTGGAAAAAC 2094
L1-8 ATCTCTCAATATCAATGGCTCAACTCCCCAATAAAAAGACATAGATTAAACAAACTGGATACCGAACGAGGACCCCTGCATTTCTGTGCTTACAGGAAACACACCTCAGAGACAAAGACAGACACTACTCAGAGTGAAAGGCTGGAAAAAC 1959
L1-13 ATCTCTCAATATCAATGGCTCAACTCCCCAATAAAAAGACATAGATTAAACAAACTGGATACCGAACGAGGACCCCTGCATTTCTGTGCTTACAGGAAACACACCTCAGAGACAAAGACAGACACTACTCAGAGTGAAAGGCTGGAAAAAC 1959
L1-12 ATCTCTCAATATCAATGGCTCAACTCCCCAATAAAAAGACATAGATTAAACAAACTGGATACCGAACGAGGACCCCTGCATTTCTGTGCTTACAGGAAACACACCTCAGAGACAAAGACAGACACTACTCAGAGTGAAAGGCTGGAAAAAC 1959
L1-3 ATCTCTCAATATCAATGGCTCAACTCCCCAATAAAAAGACATAGATTAAACAAACTGGATACCGAACGAGGACCCCTGCATTTCTGTGCTTACAGGAAACACACCTCAGAGACAAAGACAGACACTACTCAGAGTGAAAGGCTGGAAAAAC 1962
L1-23 ATCTCTCAATATCAATGGCTCAACTCCCCAATAAAAAGACATAGATTAAACAAACTGGATACCGAACGAGGACCCCTGCATTTCTGTGCTTACAGGAAACACACCTCAGAGACAAAGACAGACACTACTCAGAGTGAAAGGCTGGAAAAAC 1961
L1-22 ATCTCTCAATATCAATGGCTCAACTCCCCAATAAAAAGACATAGATTAAACAAACTGGATACCGAACGAGGACCCCTGCATTTCTGTGCTTACAGGAAACACACCTCAGAGACAAAGACAGACACTACTCAGAGTGAAAGGCTGGAAAAAC 1941
L1-10 ATCTCTCAATCAATGGCTCAACTCCCCAATAAAAAGAAATAGATTAAACAAACTGGATACCGAACGAGGACCCCTGCATTTCTGTGCTTACAGGAAACACACCTCAGAGACAAAGACAGACACTACTCAGAGTGAAAGGCTGGAAAAAC 1959
L1-19 ATCTCTCAATCAATGGCTCAACTCCCCAATAAAGACATAGATTAAACAAACTGGATACCGAAATGAGGACCCCTGCATTTCTGTGCTTACAGGAAACACACCTCAGAGACAAAGACAGACACTACTCAGAGTGAAAGGCTGGAAAAAC 2074
ruler .....1960.....1970.....1980.....1990.....2000.....2010.....2020.....2030.....2040.....2050.....2060.....2070.....2080.....2090.....2100

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L1-17 AACTTTCCAAGCAAAATGGTCAGAAGAAGCAAGCTGGAGTAGCCATTCTAAATATCAAAATAAAATCAATTTCCAATAAAAGTCATCAAAAAGATAAGGAAGGACACTTCATATTCATCAAAGGAAAAATCCACCAAGATGAACTCTCAAT 2223
L1-21 AACTTTCCAAGCAAAATGGTCAGAAGAAGCAAGCTGGAGTAGCCATTCTAAATATCAAAATAAAATCAATTTCCAATAAAAGTCATCAAAAAGATAAGGAAGGACACTTCATATTCATCAAAGGAAAAATCCACCAAGATGAACTCTCAAT 2244
L1-8 AACTTTCCAAGCAAAATGGTCAGAAGAAGCAAGCTGGAGTAGCCATTCTAAATATCAAAATAAAATCAATTTCCAATAAAAGTCATCAGAAAAGATAAGGAAGGACACTTCATATTCATCAAAGGAAAAATCCACCAAGATGAACTCTCAAT 2109
L1-13 AACTTTCCAAGCAAAATGGTCAGAAGAAGCAAGCTGGAGTAGCCATTCTAAATATCAAAATAAAATCAATTTCCAATAAAAGTCATCAAAAAGATAAGGAAGGACACTTCATATTCATCAAAGGAAAAATCCACCAAGATGAACTCTCAAT 2109
L1-12 AACTTTCCAAGCAAAATGGTCAGAAGAAGCAAGCTGGAGTAGCCATTCTAAATATCAAAATAAAATCAATTTCCAATAAAATTCATCAAAAAGATAAGGAAGGACACTTCATATTCATCAAAGGAAAAATCCACCAAGATGAACTCTCAAT 2109
L1-3 AACTTTCCAAGCAAAATGGTCAGAAGAAGCAAGCTGGAGTAGCCATTCTAAATATCAAAATAAAATCAATTTCCAATAAAAGTCATCAAAAAGATAAGGAAGGACACTTCATATTCATCAAAGGAAAAATCCACCAAGATGAACTCTCAAT 2112
L1-23 AACTTTCCAAGCAAAATGGTCAGAAGAAGCAAGCTGGAGTAGCCATTCTAAATATCAAAATAAAATCAATTTCCAATAAAAGTCATCAAAAAGATAAGGAAGGACACTTCATATTCATCAAAGGAAAAATCCGCCCAAGATGAACTCTCAAT 2111
L1-22 AACTTTCCAAGCAAAATGGTCAGAAGAAGCAAGCTGGAGTAGCCATTCTAAATATCAAAATAAAATCAATTTCCAATAAAAGTCATCAAAAAGATAAGGAAGGACACTTCATATTCATCAAAGGAAAAATCCATCAAGATGAACTCTCAAT 2091
L1-10 AACTTTCCAAGCAAAATGGTCAGAAGAAGCAAGCTGGAGTAGCCATTCTAAATATCAAAATAAAATCAATTTCCAATAAAAGTCATCAAAAAGATAAGGAAGGACACTTCATATTCATCAAAGGAAAAATCCACCAAGATGAACTCTCAAT 2109
L1-19 AACTTTCCAAGCAAAATGGTCAGAAGAAGCAAGCTGGAGTAGCCATTCTAAATATCAAAATAAAATCAATTTCCAATAAAAGTCATCAAAAAGATAAGGAAGGACACTTCATATTCATCAAAGGAAAAATCCACCAATGAACTCTCAAT 2224
ruler .....2110.....2120.....2130.....2140.....2150.....2160.....2170.....2180.....2190.....2200.....2210.....2220.....2230.....2240.....2250

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L1-17 CCTAAATATCTATGCCCAAATACAAAGGGCACCTACATACGTA AAAAGAAACCTTACTAAAGCTCAAAAACACACATTGCACCTCACACAAATAAGTGGGAGATTTCAACACCCCACTCTCATCAATGGACAGATCATGGAAACAGAAATT 2373
L1-21 CCTAAATATCTATGCCCAAATACAAAGGGCACCTACATACGTA AAAAGAAACCTTACTAAAGCTCAAAAACACACATTGCACCTCACACAAATAAGTGGGAGATTTCAACACCCCACTCTCATCAATGGACAGATCATGGAAACAGAAATT 2394
L1-8 CCTAAATATCTATGCCCAAATACAAAGGGCACCTACATACGTA AAAAGAAACCTTACTAAAGCTCAAAAACACACATTGCACCTCACATCAATAAGTGGGAGATTTCAACACCCCACTCTCATCAATGGACAGATCATGGAAACAGAAATT 2259
L1-13 CCTAAATATCTATGCCCAAATACAAAGGGCACCTACATACGTA AAAAGAAACCTTACTAAAGCTCAAAAACACACATTGCACCTCACACAAATAAGTGGGAGATTTCAACACCCCACTCTCATCAATGGACAGATCATGGAAACAGAAATT 2259
L1-12 CCTAAATATCTATGCCCAAATACAAAGGGCACCTACATACGTA AAAAGAAACCTTACTAAAGCTCAAAAACACACATTGCACCTCACACAAATAAGTGGGAGATTTCAACACCCCACTCTCATCAATGGACAGATCATGGAAACAGAAATT 2259
L1-3 CCTAAATATCTATGCCCAAATACAAAGGGCACCTACATACGTA AAAAGAAACCTTACTAAAGCTCAAAAACACACATTGCACCTCACACAAATAAGTGGGAGATTTCAACACCCCACTCTCATCAATGGACAGATCATGGAAACAGAAATT 2262
L1-23 CCTAAATATCTATGCCCAAATACAAAGGGCACCTACATACGTA AAAAGAAACCTTACTAAAGCTCAAAAACACACATTGCACCTCACACAAATAAGTGGGAGATTTCAACACCCCACTCTCATCAATGGACAGATCATGGAAACAGAAATT 2261
L1-22 CCTAAATATCTATGCCCAAATACAAAGGGCACCTACATACGTA AAAAGAAACCTTACTAAAGCTCAAAAACACAAATAGTGGGAGATTTCAACACCCCACTCTCATCAATGGACAGATCATGGAAACAGAAATT 2241
L1-10 CCTAAATATCTATGCCCAAATACAAAGGGCACCTACATACGTA AAAAGAAACCTTACTAAAGCTCAAAAACACACATTGCACCTCACACAAATAAGTGGGAGATTTCAACACCCCACTCTCATCAATGGACAGATCATGGAAACAGAAATT 2259
L1-19 CCTAAATATCTATGCCCAAATACAAAGGGCACCTACATACGTA AAAAGAAACCTTACTAAAGCTCAAAAACACACATTGCACCTCACATCAATAAGTGGGAGATTTCAACACCCCACTCTCATCAATGGACAGATCATGGAAACAGAAATT 2374
ruler .....2260.....2270.....2280.....2290.....2300.....2310.....2320.....2330.....2340.....2350.....2360.....2370.....2380.....2390.....2400

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L1-17 CCAAAAGTTGGTCTTTGAGAAAATCAACAAGATAGATAAACCCCTTAGCCAGACTAA-CGAGAGGACACAGAGAGTCCGTCCAAAATTAACAAA-TCAGAAAAGAAAAGGGAGACATAACTACAGATTTCAGAGGAAATTCAAAAATCATC 3120
L1-21 CCAAAAGTTGGTTCATTGAGAAAATCAACAAGATAGATAAACCCCTTAGCCAGACTAA-CGAGAGGACACAGAGAGTCCGTCCAAAATTAACAAAATTCAGAAAAGAAAAGGGAGACATAACTACAGATTTCAGAGGAAATTCAAAAATCATC 3142
L1-8 CCAAAAGTTGGTTCCTTTGAGAAAATCAACAAGATAGATAAACCCCTTAGCCAGACTAG-CGAGAGGACACAGAGAGTCCGTCCAAAATTAACAAAATTCAGAAAAGAAAAGGGAGACATAACTACAGATTTCAGAGGAAATTCAAAAATCATC 3004
L1-13 CCAAAAGTTGGTTCCTTTGAGAAAATCAACAAGATAGATAAACCCCTTAGCCAGACTAG-CGAGAGGACACAGAGAGTCCGTCCAAAATTAACAAAATTCAGAAAAGAAAAGGGAGACATAACTACAGATTTCAGAGGAAATTCAAAAATCATC 3007
L1-12 CCAAAAGTTGGTTCCTTTGAGAAAATCAACAAGATAGATAAACCCCTTAGCCAGACAAAACGAGAGGACACAGAGAGTGTGTCCAAAATTAACAAAATTCAGAAAAGAAAAGGGAGACATAACTACAGATTTCAGAGGAAATTCAAAAATTCGTC 3008
L1-3 CCAAAAGTTGGTTCCTTTGAGAAAATCAACAAGATAGATAAACCCCTTAGCCAGACTAA-CGAGAGGACACAGAGAGTCCGTCCAAAATTAACAAAATTCAGAAAAGAAAAGGGAGACATAACTACAGATTTCAGAGGAAATTCAAAAATCATC 3010
L1-23 CCAAAAGTTGGTTCCTTTGAGAAAATCAACAAGATAGATAAACCCCTTAGCCAGACTAA-CGAGAGGACACAGAGAGTCCGTCCAAAATTAACAAAATTCAGAAAAGAAAAGGGAGACATAACTACAGATTTCAGAGGAAATTCAAAAATCATC 3009
L1-22 CCAAAAGTTGGTTCCTTTGAGAAAATCAACAAGATAGATAAACCCCTTAGCCAGACTAA-CGAGAGGACACAGAGAGTCCGTCCAAAATTAACAAAATTCAGAAAAGAAAAGGGAGACATAACTACAGATTTCAGAGGAAATTCAAAAATCATC 2989
L1-10 CCAAAAGTTGGTTCCTTTGAGAAAATCAACAAGATA---AACCCCTTAGCCAGACTAA-CGAGAGGACACAGAGAGTCCGTCCAAAATTAACAAAATTCAGAAAAGAAAAGGGAGACATAACTACAGATTTCAGAGGAAATTCAAAAATCATC 3004
L1-19 CCAAAAGTTGGTTCCTTTGAGAAAATCAACAAGATAGATAAACCCCTTAGCCAGACTAG-CGAGAGGACACAGAGAGTCCGTCCAAAATTAACAAAATTCAGAAAAGAAAAGGGAGACATAACTACAGATTTCAGAGGAAATTCAAAAATCATC 3122
ruler3010.....3020.....3030.....3040.....3050.....3060.....3070.....3080.....3090.....3100.....3110.....3120.....3130.....3140.....3150



L1-17 AGATCTTACTATAAAAACTATATTCAACAAAACCTTGAAAATCTTCAGGAAATGGACAAATTCCTAGACAGATACCAGGTATCGAAGTTAAATCAGGAAACAGATAAAACAGTTAAACAACCCCAATAACTCTTAAGGAAATAGAAGCAGTC 3270
L1-21 AGATCTTACTATAAAAACTATATTCAAGAAAACCTTGAAAATCTTCAGGAAATGGACAAATTCCTTACACAGATACCAGGTATCGAAGTTAAATCAGGAAACAGATAAAACAGTTAAACAACCCCAATAACTCTTAAGGAAATAGAAGCAGTC 3292
L1-8 AGATCTTACTATAAAAACTATATTCAACAAAACCTTGAAAATCTTCAGGAAATGGACAAATTCCTTACACAGATACCAGGTATCGAAGTTAAATCAGGAAACAGATAAAACAGTTAAACAACCCCAATAACTCTTAAGGAAATAGAAGCAGTC 3154
L1-13 AGATCTTACTATAAAAACTATATTCAACAAAACCTTGAAAATCTTCAGGAAATGGACAAATTCCTTACACAGATACCAGGTATCGAAGTTAAATCAGGAAACAGATAAAACAGTTAAACAACCCCAATAACTCTTAAGGAAATAGAAGCAGTC 3157
L1-12 AGATCTTACTATAAAAACTATATTCAACAAAACCTTGAAAATCTTCAGGAAATGGACAAATTCCTTACACAGATACCAGGTATCGAAGTTAAATCAGGAAACAGATAAAACAGTTAAACAACCCCAATAACTCTTAAGGAAATAGAAGCAGTC 3158
L1-3 AGATCTTACTATAAAAACTATATTCAACAAAACCTTGAAAATCTTCAGGAAATGGACAAATTCCTTACACAGATACCAGGTATCGAAGTTAAATCAGGAAACAGATAAAACAGTTAAACAACCCCAATAACTCTTAAGGAAATAGAAGCAGTC 3160
L1-23 AGATCTTACTATAAAAACTATATTCAACAAAACCTTGAAAATCTTCAGGAAATGGACAAATTCCTTACACAGATACCAGGTATCGAAGTTAAATCAGGAAACAGATAAAACAGTTAAACAACCCCAATAACTCTTAAGGAAATAGAAGCAGTC 3159
L1-22 AGATCTTACTATAAAAACTATATTCAACAAAACCTTGAAAATCTTCAGGAAATGGACAAATTCCTTACACAGATACCAGGTATCGAAGTTAAATCAGGAAACAGATAAAACAGTTAAACAACCCCAATAACTCTTAAGGAAATAGAAGCAGTC 3130
L1-10 AGATCTTACTATAAAAACTATATTCAACAAAACCTTGAAAATCTTCAGGAAATGGACAAATTCCTTACACAGATACCAGGTATCGAAGTTAAATCAGGAAACAGATAAAACAGTTAAACAACCCCAATAACTCTTAAGGAAATAGAAGCAGTC 3154
L1-19 AGATCTTACTATAAAAACTATATTCAACAAAACCTTGAAAATCTTCAGGAAATGGACAAATTCCTTACACAGATACCAGGTATCGAAGTTAAATCAGGAAACAGATAAAACAGTTAAACAACCCCAATAACTCTTAAGGAAATAGAAGCAGTC 3272
ruler3160.....3170.....3180.....3190.....3200.....3210.....3220.....3230.....3240.....3250.....3260.....3270.....3280.....3290.....3300



L1-17 AATTAAAGGTCCTCCCAACCAAAAAGAGCCC-----TACCGAATTCCTTCTACGAA 3319
L1-21 AATTAAAGGTCCTCCCAACCAAAAAGAGCCCAGGTCAGACGGGTTAGTGCAGAAATCTCTCAAACTTCATAGAAAGCCTCATACCAATATTATCCAACTATTCCACAAAATTTGAAACAGATGGAGCCCTACCGAATTCCTTCTACGAA 3442
L1-8 AATTAAAGGTCCTCCCAACCAAAAAGAGCCCAGGTCAGACGGGTTAGTGCAGAAATCTCTCAAACTTCATAGAAAGCCTCATACCAATATTATCCAACTATTCCACAAAATTTGAAACAGATGGAGCCCTACCGAATTCCTTCTACGAA 3304
L1-13 AATTAAAGGTCCTCCCAACCAAAAAGAGCCCAGGTCAGACGGGTTAGTGCAGAAATCTCTCAAACTTCATAGAAAGCCTCATACCAATATTATCCAACTATTCCACAAAATTTGAAACAGATGGAGCCCTACCGAATTCCTTCTACGAA 3307
L1-12 AATTAAAGGTCCTCCCAACCAAAAAGAGCCCAGGTCAGACGGGTTAGTGCAGAAATCTCTCAAACTTCATAGAAAGCCTCATACCAATATTATCCAACTATTCCACAAAATTTGAAACAGATGGAGCCCTACCGAATTCCTTCTACGAA 3308
L1-3 AATTAAAGGTCCTCCCAACCAAAAAGAGCCCAGGTCAGACGGGTTAGTGCAGAAATCTCTCAAACTTCATAGAAAGCCTCATACCAATATTATCCAACTATTCCACAAAATTTGAAACAGATGGAGCCCTACCGAATTCCTTCTACGAA 3310
L1-23 AATTAAAGGTCCTCCCAACCAAAAAGAGCCCAGGTCAGACGGGTTAGTGCAGAAATCTCTCAAACTTCATAGAAAGCCTCATACCAATATTATCCAACTATTCCACAAAATTTGAAACAGATGGAGCCCTACCGAATTCCTTCTACGAA 3309
L1-22 AATTAAAGGTCCTCCCAACCAAAAAGAGCCCAGGTCAGACGGGTTAGTGCAGAAATCTCTCAAACTTCATAGAAAGCCTCATACCAATATTATCCAACTATTCCACAAAATTTGAAACAGATGGAGCCCTACCGAATTCCTTCTACGAA 3280
L1-10 AATTAAAGGTCCTCCCAACCAAAAAGAGCCCAGGTCAGACGGGTTAGTGCAGAAATCTCTCAAACTTCATAGAAAGCCTCATACCAATATTATCCAACTATTCCACAAAATTTGAAACAGATGGAGCCCTACCGAATTCCTTCTACGAA 3304
L1-19 AATTAAAGGTCCTCCCAACCAAAAAGAGCCCAGGTCAGACGGGTTAGTGCAGAAATCTCTCAAACTTCATAGAAAGCCTCATACCAATATTATCCAACTATTCCACAAAATTTGAAACAGATGGAGCCCTACCGAATTCCTTCTACGAA 3422
ruler3310.....3320.....3330.....3340.....3350.....3360.....3370.....3380.....3390.....3400.....3410.....3420.....3430.....3440.....3450



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L1-17 GCCACAATTACTCTTATACCTAAACACACAAGACACAAACAAGAAAGAGAACTTCAGACCAATTTCCCTTATGAATATCGACGCAAAAATACTCAATAAAAATTCGGCAAAACCGAATTCAGAGCACATCAAAAACAATCATCCACCAT 3469
L1-21 GCCACAATTACTCTTATACCTAAACACACAAGACACAAACAAGAAAGAGAACTTCAGACCAATTTCCCTTATGAATATCGACGCAAAAATACTCAATAAAAATTCGGCAAAACCGAATTCAGAGCACATCAAAAACAATCATCCACCAT 3592
L1-8 GCCACAATTACTCTTATACCTAAACACACAAGACACAAACAAGAAAGAGAACTTCAGACCAATTTCCCTTATGAATATCGACGCAAAAATACTCAATAAAAATTCGGCAAAACCGAATTCAGAGCACATCAAAAACAATCATCCACCAT 3454
L1-13 GCCACAATTACTCTTATACCTAAACACACAAGACACAAACAAGAAAGAGAACTTCAGACCAATTTCCCTTATGAATATCGACGCAAAAATACTCAATAAAAATTCGGCAAAACCGAATTCAGAGCACATCAAAAACAATCATCCACCAT 3457
L1-12 GCCACAATTACTCTTATACCTAAACACACAAGACACAAACAAGAAAGAGAACTTCAGACCAATTTCCCTTATGAATATCGACGCAAAAATACTCAATAAAAATTCGGCAAAACCGAATTCAGAGCACATCAAAAACAATCATCCACCAT 3458
L1-3 GCTACAATTACTCTTATACCTAAACACACAAGACACAAACAAGAAAGAGAACTTCAGACCAATTTCCCTTATGAATATCGACGCAAAAATACTCAATAAAAATTCGGCAAAACCGAATTCAGAGCACATCAAAAACAATCATCCACCAT 3460
L1-23 GCTACAATTACTCTTATACCTAAACACACAAGACACAAACAAGAAAGAGAACTTCAGACCAATTTCCCTTATGAATATCGACGCAAAAATACTCAATAAAAATTCGGCAAAACCGAATTCAGAGCACATCAAAAACAATCATCCACCAT 3459
L1-22 GCCACAATTACTCTTATACCTAAACACACAAGACACAAACAAGAAAGAGAACTTCAGACCAATTTCCCTTATGAATATCGACGCAAAAATACTCAATAAAAATTCGGCAAAACCGAATTCAGAGCACATCAAAAACAATCATCCACCAT 3430
L1-10 GCCACAATTACTCTTATACCTAAACACACAAGACACAAACAAGAAAGAGAACTTCAGACCAATTTCCCTTATGAATATCGACGCAAAAATACTCAATAAAAATTCGGCAAAACCGAATTCAGAGCACATCAAAAACAATCATCCACCAT 3454
L1-19 GCCACAATTACTCTTATACCTAAACACACAAGACACAAACAAGAAAGAGAACTTCAGACCAATTTCCCTTATGAATATCGACGCAAAAATACTCAATAAAAATTCGGCAAAACCGAATTCAGAGCACATCAAAAACAATCATCCACCAT 3572
ruler3460.....3470.....3480.....3490.....3500.....3510.....3520.....3530.....3540.....3550.....3560.....3570.....3580.....3590.....3600



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L1-17 GATCAACTAGGCTTCATCCCAGGCATGCAGGGATGGTTTAAATATACGGAAAAACCAACAAGTGCATCCATTATATAAAACAACTGAAAGAAACAGAACCCATGATCATTTTCATTAGATGCTGAGAAAGCATTGACAAA----- 3606
L1-21 GATCAAGTAGGATTCATCCCAGGCATGCAGGGATGATTTAAATATACGGAAAAACCAACAAGTGCATCCATTATATAAAACAACTGAAAGAAACAAACCCATGATCATTTTCATTAGATGCTGAGAAAGCATTGACAAAATTCACACCCCC 3742
L1-8 GATCAAGTAGGCTTCATCCCAGGCATGCAGGGATGGTTTAAATATACGGAAAAACCAACAAGTGCATCCATTATATAAAACAACTGAAAGAAACAGAACCCATGATCATTTTCATTAGATGCTGAGAAAGCATTGACAAAATTCACACCCCC 3604
L1-13 GATCAAGTAGGCTTCATCCCAGGCATGCAGGGATGGTTTAAATATACGGAAAAACCAACAAGTGCATCCATTATATAAAACAACTGAAAGAAACAGAACCCATGATCATTTTCATTAGATGCTGAGAAAGCATTGACAAAATTCACACCCCC 3607
L1-12 GATCAAGTAGGCTTCATCCCAGGCATGCAGGGATGGTTTAAATATACGGAAAAACCAACAAGTGCATCCATTATATAAAACAACTGAAAGAAACAGAACCCATGATCATTTTCATTAGATGCTGAGAAAGCATTGACAAAATTCACACCCCC 3608
L1-3 GATCAAGTAGGCTTCATCCCAGGCATGCAGGGATGGTTTAAATATACGGAAAAACCAACAAGTGCATCCATTATATAAAACAACTGAAAGAAACAGAACCCATGATCATTTTCATTAGATGCTGAGAAAGCATTGACAAAATTCACACCCCC 3610
L1-23 GATCAAGTAGGCTTCATCCCAGGCATGCAGGGATGGTTTAAATATACGGAAAAACCAACAAGTGCATCCATTATATAAAACAACTGAAAGAAACAGAACCCATGATCATTTTCATTAGATGCTGAGAAAGCATTGACAAAATTCACACCCCC 3609
L1-22 GATCAAGTAGGCTTCATCCCAGGCATGCAGGGATGGTTTAAATATACGGAAAAACCAACAAGTGCATCCATTATATAAAACAACTGAAAGAAACAGAACCCATGATCATTTTCATTAGATGCTGAGAAAGCATTGACAAAATTCACACCCCC 3580
L1-10 GATCAAGTAGGCTTCATCCCAGGCATGCAGGGATGGTTTAAATATACGGAAAAACCAACAAGTGCATCCATTATATAAAACAACTGAAAGAAACAGAACCCATGATCATTTTCATTAGATGCTGAGAAAGCATTGACAAAATTCACACCCCC 3604
L1-19 GATCAACTAGGCTTCATCCCAGGCATGCAGGGATGGTTTAAATATACGGAAAAACCAACAAGTGCATCCATTATATAAAACAACTGAAAGAAACAAACCCATGATCATTTTCATTAGATGCTGAGAAAGCATTGACAAAATTCACACCCCC 3722
ruler .....3610.....3620.....3630.....3640.....3650.....3660.....3670.....3680.....3690.....3700.....3710.....3720.....3730.....3740.....3750

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L1-17 TTTTCATGATAAAAAGTCTTGGAAAAGAAATAGGAATTCAGGCCCATACCTTAAACATAGTAAAAGCCATATACAGCAAAACCGATTGCTAACATTTAAACTTAAATGGAGAGAAAACCTTGAAGCAATCCCCTAAAATCAGGGACTAGACAAGGCTGTC 3606
L1-21 TTTTCATGATAAAAAGTCTTGGAAAAGAAATAGGAATTCAGGCCCATACCTTAAACATAGTAAAAGCCATATACAGCAAAACCGATTGCTAACATTTAAACTTAAATGGAGAGAAAACCTTGAAGCAATCCCCTAAAATCAGGGACTAGACAAGGCTGTC 3892
L1-8 TTTTCATGATAAAAAGTCTTGGAAAAGAAATAGGAATTCAGGCCCATACCTTAAACATAGTAAAAGCCATATACAGCAAAACCGATTGCTAACATTTAAACTTAAATGGAGAGAAAACCTTGAAGCAATCCCCTAAAATCAGGGACTAGACAAGGCTGTC 3754
L1-13 TTTTCATGATAAAAAGTCTTGGAAAAGAAATAGGAATTCAGGCCCATACCTTAAACATAGTAAAAGCCATATACAGCAAAACCGATTGCTAACATTTAAACTTAAATGGAGAGAAAACCTTGAAGCAATCCCCTAAAATCAGGGACTAGACAAGGCTGTC 3757
L1-12 TTTTCATGATAAAAAGTCTTGGAAAAGAAATAGGAATTCAGGCCCATACCTTAAACATAGTAAAAGCCATATACAGCAAAACCGATTGCTAACATTTAAACTTAAATGGAGAGAAAACCTTGAAGCAATCCCCTAAAATCAGGGACTAGACAAGGCTGTC 3758
L1-3 TTTTCATGATAAAAAGTCTTGGAAAAGAAATAGGAATTCAGGCCCATACCTTAAACATAGTAAAAGCCATATACAGCAAAACCGATTGCTAACATTTAAACTTAAATGGAGAGAAAACCTTGAAGCAATCCCCTAAAATCAGGGACTAGACAAGGCTGTC 3760
L1-23 TTTTCATGATAAAAAGTCTTGGAAAAGAAATAGGAATTCAGGCCCATACCTTAAACATAGTAAAAGCCATATACAGCAAAACCGATTGCTAACATTTAAACTTAAATGGAGAGAAAACCTTGAAGCAATCCCCTAAAATCAGGGACTAGACAAGGCTGTC 3759
L1-22 TTTTCATGATAAAAAGTCTTGGAAAAGAAATAGGAATTCAGGCCCATACCTTAAACATAGTAAAAGCCATATACAGCAAAACCGATTGCTAACATTTAAACTTAAATGGAGAGAAAACCTTGAAGCAATCCCCTAAAATCAGGGACTAGACAAGGCTGTC 3730
L1-10 TTTTCATGATAAAAAGTCTTGGAAAAGAAATAGGAATTCAGGCCCATACCTTAAACATAGTAAAAGCCATATACAGCAAAACCGATTGCTAACATTTAAACTTAAATGGAGAGAAAACCTTGAAGCAATCCCCTAAAATCAGGGACTAGACAAGGCTGTC 3754
L1-19 TTTTCATGATAAAAAGTCTTGGAAAAGAAATAGGAATTCAGGCCCATACCTTAAACATAGTAAAAGCCATATACAGCAAAACCGATTGCTAACATTTAAACTTAAATGGAGAGAAAACCTTGAAGCAATCCCCTAAAATCAGGGACTAGACAAGGCTGTC 3872
ruler .....3760.....3770.....3780.....3790.....3800.....3810.....3820.....3830.....3840.....3850.....3860.....3870.....3880.....3890.....3900

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L1-17 ----- CAAAAGGAGATCAAGGGGATACAGATCGGAAAAGAAAGAGGTCAAAGTATCACTATTTGCAGATGACATGATAGTATATTTAAGTGATCCC 3696
L1-21 CCACTCTCTCCCTACTTATTCATATAGTTCTTGAAGTTCTAGCCAGAGCAATCAGACAAACAAAAGGAGATCAAGGGGATACAGATCGGAAAAGAAAGAGGTCAAAGTATCACTATTTGCAGATGACATGATAGTATATTTAAGTGATCCC 4042
L1-8 CCACTCTCTCCCTACTTATTCATATAGTTCTTGAAGTTCTAGCCAGAGAAATCAGACAAACAAAAGGAGATCAAGGGGATACAGATCGGAAAAGAAAGAGGTCAAAGTATCACTATTTGCAGATGACATGATAGTATATTTAAGTGATCCC 3904
L1-13 CCACTCTCTCCCTACTTATTCATATAGTTCTTGAAGTTCTAGCCAGAGAAATCAGACAAACAAAAGGAGATCAAGGGGATACAGATCGGAAAAGAAAGAGGTCAAAGTATCACTATTTGCAGATGACATGATAGTATATTTAAGTGATCCC 3907
L1-12 CCACTCTCTCCCTACTTATTCATATAGTTCTTGAAGTTCTAGCCATAGCAATCAGACAAACAAAAGGAGATCAAGGGGATACAGATCGGAAAAGAAAGAGGTCAAAGTATCACTATTTGCAGATGACATGATAGTATATTTAAGTGATCCC 3908
L1-3 CCACTCTCTCCCTACTTATTCATATAGTTCTTGAAGTTCTAGCCAGAGCAATCAGACAAACAAAAGGAGATCAAGGGGATACAGATCGGAAAAGAAAGAGGTCAAAGTATCACTATTTGCAGATGATAGTATATTTAAGTGATCCC 3910
L1-23 CCACTCTCTCCCTACTTATTCATATAGTTCTTGAAGTTCTAGCCAGAGCAATCAGACAAACAAAAGGAGATCAAGGGGATACAGATCGGAAAAGAAAGAGGTCAAAGTATCACTATTTGCAGATGATAGTATATTTAAGTGGTCCC 3909
L1-22 CCACTCTCTCCCTACTTATTCATATAGTTCTTGAAGTTCTAGCCAGAGCAATCAGACAAACAAAAGGAGATCAAGGGGATACAGATCGGAAAAGAAAGAGGTCAAAGTATCACTATTTGCAGATGACATGATAGTATATTTAAGTGATCCC 3880
L1-10 CCACTCTCTCCCTACTTATTCATATAGTTCTTGAAGTTCTAGCCAGAGCAATCAGACAAACAAAAGGAGTCAAGGGGATACAGATCGGAAAAGAAAGAGTCAAAGTATCACTATTTGCAGATGATAGTATATTTAAGTGATCCC 3904
L1-19 CCACTCTCTCCCTACTTATTCATATAGTTCTTGAAGTTCTAGCCAGAGCAATCAGACAAAGAAAGAGGTCAGGGGATACAGATCGGAAAAGAAAGAGTCAAAGTATCACTATTTGCAGATGATAGTATATTTAAGTGATCCC 4020
ruler .....3910.....3920.....3930.....3940.....3950.....3960.....3970.....3980.....3990.....4000.....4010.....4020.....4030.....4040.....4050

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L1-17 AAAAGTTCCACCAGAGAACTACTAAAAGCTGATAAAACAACTTCAGCAAAGTGGCTGGGATAAAAATTAACCTCAAATAAAATCAGTTGCGCTTCTCTATACAAAAAGAGAAAACAGCTGAGAAAAGAAATAGGGAAAACGACACCCCTTCATAATA 3846
L1-21 AAAAGTTCCACCAGAGAACTACTAAAAGCTGATAAAACAACTTCAGCAAAGTGGCTGGGATAAAAATTAACCTCAAATAAAATCAGTTGCGCTTCTCTATACAAAAAGAGAAAACAGCCGAGAAAAGAAATAGGGAAAACGACACCCCTTCATTGTA 4192
L1-8 AAAAGTTCCAGCAGAGAACTACTAAAAGCTGATAAAACAACTTCAGCAAAGTGGCTGGGATAAAAATTAACCTCAAATAAAATCAGTTGCGCTTCTCTATACAAAAAGAGAAAACAGCTGAGAAAAGAAATAGGGAAAACGACACCCCTTCATAATA 4054
L1-13 AAAAGTTCCAGCAGAGAACTACTAAAAGCTGATAAAACAACTTCAGCAAAGTGGCTGGGATAAAAATTAACCTCAAATAAAATCAGTTGCGCTTCTCTATACAAAAAGAGAAAACAGCCGAGAAAAGAAATAGGGAAAACGACACCCCTTCATAATA 4057
L1-12 AAAAGTTCCACCAGAGAACTACTAAAAGCTGATAAAACAACTTCAGCAAAGTGGCTGGGATAAAAATTAACCTCAAATAAAATCAGTTGCGCTTCTCTATACAAAAAGAGAAAACAGCCGAGAAAAGAAATAGGGAAAACGACACCCCTTCATAATA 4058
L1-3 AAAAGTTCCACCAGAGAACTACTAAAAGCTGATAAAACAACTTCAGCAAAGTGGCTGGGATAAAAATTAACCTCAAATAAAATCAGTTGCGCTTCTCTATACAAAAAGAGAAAACAGCCGAGAAAAGAAATAGGGAAAACGACACCCCTTCATAATA 4060
L1-23 AAAAGTTCCACCAGAGAACTACTAAAAGCTGATAAAACAACTTCAGCAAAGTGGCTGGGATAAAAATTAACCTCAAATAAAATCAGTTGCGCTTCTCTATACAAAAAGAGAAAACAGCCGAGAAAAGAAATAGGGAAAACGACACCCCTTCATAATA 4059
L1-22 AAAAGTTCCACCAGAGAACTACTAAAAGCTGATAAAACAACTTCAGCAAAGTGGCTGGGATAAAAATTAACCTCAAATAAAATCAGTTGCGCTTCTCTATACAAAAAGAGAAAACAGCCGAGAAAAGAAATAGGGAAAACGACACCCCTTCATAATA 4030
L1-10 AAAAGTTCCACCAGAGAACTACTAAAAGCTGATAAAACAACTTCAGCAAAGTGGCTGGGATAAAAATTAACCTCAAATAAAATCAGTTGCGCTTCTCTATACAAAAAGAGAAAACAGCCGAGAAAAGAAATAGGGAAAACGACACCCCTTCATAATA 4054
L1-19 AAAAGTTCCACCAGAGAACTACTAAAAGCTGATAAAACAACTTCAGCAAAGTGGCTGGGATAAAAATTAACCTCAAATAAAATCAGTTGCGCTTCTCTATACAAAAAGAGAAAACAGCCGAGAAAAGAAATAGGGAAAACGACACCCCTTCATAATA 4170
ruler .....4060.....4070.....4080.....4090.....4100.....4110.....4120.....4130.....4140.....4150.....4160.....4170.....4180.....4190.....4200

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L1-17 AAGTGGATCAAGGACCTCCACATCAAACCGAGACACTCAAACATAAGAGAAAACTAGGGAAGCATCTGGAAACATGGGCACTGGAAAAAATTTCTTGAACAAAACACCAATGGCTTATGCTCTAAGATCAAGAAATCGACAAATGG 4956
L1-21 AAGTGGATCAAGGACCTCCACATCAAACCGAGACACTCAAACATAAGAGAAAACTAGGGAAGCATCTGGAAACATGGGCACTGGAAAAAATTTCTTGAACAAAACACCAATGGCTTATGCTCTAAGATCAAGAAATCGACAAATGG 4942
L1-8 AAGTGCATCAAGGACCTCCACATCAAACCGAGACACTCAAACATAAGAGAAAACTAGGGAAGCATCTGGAAACATGGGCACTGGAAAAAATTTCTTGAACAAAACACCAATGGCTTATGCTCTAAGATCAAGAAATCGACAAATGG 4804
L1-13 AAGTGCATCAAGGACCTCCACATCAAACCGAGACACTCAAACATAAGAGAAAACTAGGGAAGCATCTGGAAACATGGGCACTGGAAAAAATTTCTTGAACAAAACACCAATGGCTTATGCTCTAAGATCAAGAAATCGACAAATGG 4807
L1-12 AAGTGGATCAAGGACCTCCACATCAAACCGAGACACTCAAACATAAGAGAAAACTAGGGAAGCATCTGGAAACATGGGCACTGGAAAAAATTTCTTGAACAAAACACCAATGGCTTATGCTCTAAGATCAAGAAATCGACAAATGG 4804
L1-3 AAGTGGATCAAGGACCTCCACATCAAACCGAGACACTCAAACATAAGAGAAAACTAGGGAAGCATCTGGAAACATGGGCACTGGAAAAAATTTCTTGAACAAAACACCAATGGCTTATGCTCTAAGATCAAGAAATCGACAAATGG 4810
L1-23 AAGTGGATCAAGGACCTCCACATCAAACCGAGACACTCAAACATAAGAGAAAACTAGGGAAGCATCTGGAAACATGGGCACTGGAAAAAATTTCTTGAACAAAACACCAATGGCTTATGCTCTAAGATCAAGAAATCGACAAATGG 4809
L1-22 AAGTGCATCAAGGACCTCCACATCAAACCGAGACACTCAAACATAAGAGAAAACTAGGGAAGCATCTGGAAACATGGGCACTGGAAAAAATTTCTTGAACAAAACACCAATGGCTTATGCTCTAAGATCAAGAAATCGACAAATGG 4780
L1-10 AAGTGGATCAAGGACCTCCACATCAAACCGAGACACTCAAACATAAGAGAAAACTAGGGAAGCATCTGGAAACATGGGCACTGGAAAAAATTTCTTGAACAAAACACCAATGGCTTATGCTCTAAGATCAAGAAATCGACAAATGG 4804
L1-19 AAGTGGATCAAGGACCTCCACATCAAACCGAGACACTCAAACATAAGAGAAAACTAGGGAAGCATCTGGAAACATGGGCACTGGAAAAAATTTCTTGAACAAAACACCAATGGCTTATGCTCTAAGATCAAGAAATCGACAAATGG 4920
ruler4810.....4820.....4830.....4840.....4850.....4860.....4870.....4880.....4890.....4900.....4910.....4920.....4930.....4940.....4950



L1-17 GATTTTCATAAAACTGCAAAGCTTCTGTAAGGCAAAGGACACTGTGGTTAGGACAAAACGGCAACCAACAGATTGGGAAAAGATCTTTTACCAATCCTTCAACAGATAGAGGCTTATATCCAAAATATACAAAGAACTCAAGAAGTTAGAC 4746
L1-21 GATCTCATAAAACTGCAAAGCTTCTGTAAGGCAAAGGACACTGTGGTTAGGACAAAATGGCAACCAACAGATTGGGAAAAGATCTTTTACCAATCCTTCAACAGATAGAGGCTTATATCCAAAATATACAAAGAACTCAAGAAGTTAGAC 5092
L1-8 GATCTCATAAAACTGCAAAGCTTCTGTAAGGCAAAGGACACTGTGGTTAGGACAAAACGGCAACCAACAGATTGGGAAAAGATCTTTTACCAATCCTTCAACAGATAGAGGCTTATATCCAAAATATACAAAGAACTCAAGAAGTTAGAC 4954
L1-13 GATCTCATAAAACTGCAAAGCTTCTGTAAGGCAAAGGACACTGTGGTTAGGACAAAACGGCAACCAACAGATTGGGAAAAGATCTTTTACCAATCCTTCAACAGATAGAGGCTTATATCCAAAATATACAAAGAACTCAAGAAGTTAGAC 4957
L1-12 GATCTCATAAAACTGCAAAGCTTCTGTAAGGCAAAGGACACTGTGGTTAGGACAAAACGGCAACCAACAGATTGGGAAAAGATCTTTTACCAATCCTTCAACAGATAGAGGCTTATATCCAAAATATACAAAGAACTCAAGAAGTTAGAC 4954
L1-3 GATCTCATAAAACTGCAAAGCTTCTGTAAGGCAAAGGACACTGTGGTTAGGACAAAACGGCAACCAACAGATTGGGAAAAGATCTTTTACCAATCCTTCAACAGATAGAGGCTTATATCCAAAATATACAAAGAACTCAAGAAGTTAGAC 4960
L1-23 GATCTCATAAAACTGCAAAGCTTCTGTAAGGCAAAGGACACTGTGGTTAGGACAAAACGGCAACCAACAGATTGGGAAAAGATCTTTTACCAATCCTTCAACAGATAGAGGCTTATATCCAAAATATACAAAGAACTCAAGAAGTTAGAC 4959
L1-22 GATCTCATAAAACTGCAAAGCTTCTGTAAGGCAAAGGACACTGTGGTTAGGACAAAACGGCAACCAACAGATTGGGAAAAGATCTTTTACCAATCCTTCAACAGATAGAGGCTTATATCCAAAATATACAAAGAACTCAAGAAGTTAGAC 4930
L1-10 GATCTCATAAAACTGCAAAGCTTCTGTAAGGCAAAGGACACTGTGGTTAGGACAAAACGGCAACCAACAGATTGGGAAAAGATCTTTTACCAATCCTTCAACAGATAGAGGCTTATATCCAAAATATACAAAGAACTCAAGAAGTTAGAC 4954
L1-19 GATCTCATAAAACTGCAAAGCTTCTGTAAGGCAAAGGACACTGTGGTTAGGACAAAACGGCAACCAACAGATTGGGAAAAGATCTTTTACCAATCCTTCAACAGATAGAGGCTTATATCCAAAATATACAAAGAACTCAAGAAGTTAGAC 5070
ruler4960.....4970.....4980.....4990.....5000.....5010.....5020.....5030.....5040.....5050.....5060.....5070.....5080.....5090.....5100



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L1-17 CACAGGGAAAACAAATAACCCCTATTAAAAAATGGGGTTTCAGAGCTAAAACAAAGAAATTCACAGCTGAGGAAATGCCGAAATGGCTGAGAAAACCTTAAAGAAATGTTCAACATCTTTAGTCAATAAGGAAATGCAAAATCAAAAACACCCCTGAGA 4896
L1-21 CGCAGGGACACAAATAACCCCTATTAAAAAATGGGGTTTCAGAGCTAAAACAAAGAAATTCACAGCTGAGGAAATGCCGAAATGGCTGAGAAAACCTTAAAGAAATGTTCAACATCTTTAGTCAATAAGGAAATGCAAAATCAAAAACACCCCTGAGA 5242
L1-8 CCGAGGGAGACAAATAACCCCTATTAAAAAATGGGGTTTCAGAGCTAAAACAAAGAAATTCACAGCTGAGGAAATGCCGAAATGGCTGAGAAAACCTTAAAGAAATGTTCAACATCTTTAGTCAATAAGGAAATGCAAAATCAAAAACACCCCTGAGA 5104
L1-13 CGCAGGGAAAACAAATAACCCCTATTAAAAAATGGGGTTTCAGAGCTAAAACAAAGAAATTCACAGCTGAGGAAATGCCGAAATGGCTGAGAAAACCTTAAAGAAATGTTCAACATCTTTAGTCAATAAGGAAATGCAAAATCAAAAACACCCCTGAGA 5107
L1-12 CGCAGGGAAAACAAATAACCCCTATTAAAAAATGGGGTTTCAGAGCTAAAACAAAGAAATTCACAGCTGAGGAAATGCCGAAATGGCTGAGAAAACCTTAAAGAAATGTTCAACATCTTTAGTCAATAAGGAAATGCAAAATCAAAAACACCCCTGAGA 5104
L1-3 CGCAGGGAAAACAAATAACCCCTATTAAAAAATGGGGTTTCAGAGCTAAAACAAAGAAATTCACAGCTGAGGAAATGCCGAAATGGCTGAGAAAACCTTAAAGAAATGTTCAACATCTTTAGTCAATAAGGAAATGCAAAATCAAAAACACCCCTGAGA 5110
L1-23 CGCAGGGAAAACAAATAACCCCTATTAAAAAATGGGGTTTCAGAGCTAAAACAAAGAAATTCACAGCTGAGGAAATGCCGAAATGGCTGAGAAAACCTTAAAGAAATGTTCAACATCTTTAGTCAATAAGGAAATGCAAAATCAAAAACACCCCTGAGA 5109
L1-22 CGCAGGGAAAACAAATAACCCCTATTAAAAAATGGGGTTTCAGAGCTAAAACAAAGAAATTCACAGCTGAGGAAATGCCGAAATGGCTGAGAAAACCTTAAAGAAATGTTCAACATCTTTAGTCAATAAGGAAATGCAAAATCAAAAACACCCCTGAGA 5080
L1-10 CACAGGGAAAACAAATAACCCCTATTAAAAAATGGGGTTTCAGAGCTAAAACAAAGAAATTCACAGCTGAGGAAATGCCGAAATGGCTGAGAAAACCTTAAAGAAATGTTCAACATCTTTAGTCAATAAGGAAATGCAAAATCAAAAACACCCCTGAGA 5104
L1-19 CGCAGGGAAAACAAATAACCCCTATTAAAAAATGGGGTTTCAGAGCTAAAACAAAGAAATTCACAGCTGAGGAAATGCCGAAATGGCTGAGAAAACCTTAAAGAAATGTTCAACATCTTTAGTCAATAAGGAAATGCAAAATCAAAAACACCCCTGAGA 5220
ruler5110.....5120.....5130.....5140.....5150.....5160.....5170.....5180.....5190.....5200.....5210.....5220.....5230.....5240.....5250



L1-17 TTTCACCTCACACCACTGAGAAATGGCTAAGATCAAAAACTCAGGTGACAGCAGATGCTGGCGAGGATGTGGAGAAAGAGGAAACCTCCCTCAATGTTGGTGGGATTCGAGACTGGTAAAACCAATTCGGAAATCAGTCTGGAGG-TTCTT 5045
L1-21 TTTCACCTCACACCACTGAGAAATGGCTAAGATCAAAAACTCAGGTGACAGCAGATGCTGGCGAGGATGTGGAGAAAGAGGAAACCTCCCTCAATGTTGGTGGGATTCGAGACTGGTAAAACCAATTCGGAAATCAGTCTGGAGG-TTCTT 5391
L1-8 TTTCACCTCACACCACTGCGAATGGCTAAGATCAAAAACTCAGGTGACAGCAGATGCTGGCGAGGATGTGGAGAAAGAGGAAACCTCCCTCAATGTTGGTGGGATTCGAGACTGGTAAAACCAATTCGGAAATCAGTCTGGAGG-TTCTT 5253
L1-13 TTTCACCTCACACCACTGCGAATGGCTAAGATCAAAAACTCAGGTGACAGCAGATGCTGGCGAGGATGTGGAGAAAGAGGAAACCTCCCTCAATGTTGGTGGGATTCGAGACTGGTAAAACCAATTCGGAAATCAGTCTGGAGG-TTCTT 5256
L1-12 TTTCACCTCACACCACTGCGAATGGCTAAGATCAAAAACTCAGGTGACAGCAGATGCTGGCGAGGATGTGGAGAAAGAGGAAACCTCCCTCAATGTTGGTGGGATTCGAGACTGGTAAAACCAATTCGGAAATCAGTCTGGAGG-TTCTT 5253
L1-3 TTTCACCTCACACCACTGCGAATGGCTAAGATCAAAAACTCAGGTGACAGCAGATGCTGGCGAGGATGTGGAGAAAGAGGAAACCTCCCTCAATGTTGGTGGGATTCGAGACTGGTAAAACCAATTCGGAAATCAGTCTGGAGG-TTCTT 5259
L1-23 TTTCACCTCACACCACTGCGAATGGCTAAGATCAAAAACTCAGGTGACAGCAGATGCTGGCGAGGATGTGGAGAAAGAGGAAACCTCCCTCAATGTTGGTGGGATTCGAGACTGGTAAAACCAATTCGGAAATCAGTCTGGAGG-TTCTT 5258
L1-22 TTTCACCTCACACCACTGAGAAATGGCTAAGATCAAAAACTCAGGTGACAGCAGATGCTGGCGAGGATGTGGAGAAAGAGGAAACCTCCCTCAATGTTGGTGGGATTCGAGACTGGTAAAACCAATTCGGAAATCAGTCTGGAGG-TTCTT 5230
L1-10 TTTCACCTCACACCACTGAGAAATGGCTAAGATCAAAAACTCAGGGGACAAACAGATGCTGGCGAGGATGTGGAGAAAGAGGAAACCTCCCTCAATGTTGGTGGGATTCGAAACTGGTAAAACCAATTCGGAAATCAGTCTGGAGG-ATCCT 5253
L1-19 TTTCACCTCACACCACTGAGAAATGGCTAAGATCAAAAACTCAGGGGACAAACAGATGCTGGCGAGGATGTGGAGAAAGAGGAAACCTCCCTCAATGTTGGTGGGATTCGAAACTGGTAAAACCAATTCGGAAATCAGTCTGGAGG-ATCCT 5369
ruler5260.....5270.....5280.....5290.....5300.....5310.....5320.....5330.....5340.....5350.....5360.....5370.....5380.....5390.....5400



L1-17 CAGAAAAATTGGACATTGAAC TGCTGAGGATCCAGCTATACCTCTCTGGGCATATACCCAAAAGATGCCTCAACATATAAAAAGAGACACGTGCTCCACTAGTTTATCGCAGCCTTATTTATAATAGCCAGAAACTGGAAAGAACCCAG 5195
L1-21 CAGAAAAATTGGACATTGAAC TGCTGAGGATCCAGCTATACCTCTCTGGGCATATACCCAAAAGATGCCTCAACATATAAAAAGAGACACGTGCTCCACTAGTTTATCGCAGCCTTATTTATAATAGCCAGAACTGGAAAGAACCCAG 5540
L1-8 CAGAAAAATTGGACATTGAAC TGCTGAGGATCCAGCTATACCTCTCTGGGCATATACCCAAAAGATGCCTCAACATATAAAAAGAGACACGTGCTCCACTAGTTTATCGCAGCCTTATTTATAATAGCCAGAACTGGAAAGAACCCAG 5403
L1-13 CAGAAAAATTGGACATTGAAC TGCTGAGGATCCAGCTATACCTCTCTGGGCATATACCCAAAAGATGCCTCAACATATAAAAAGAGACACGTGCTCCACTAGTTTATCGCAGCCTTATTTATAATAGCCAGAACTGGAAAGAACCCAG 5406
L1-12 CAGAAAAATTGGACATTGAAC TGCTGAGGATCCAGCTATACCTCTCTGGGCATATACCCAAAAGATGCCTCAACATATAAAAAGAGACACGTGCTCCACTAGTTTATCGCAGCCTTATTTATAATAGCCAGAACTGGAAAGAACCCAG 5403
L1-3 CAGAAAAATTGGACATTGAAC TGCTGAGGATCCAGCTATACCTCTCTGGGCATATACCCAAAAGATGCCTCAACATATAAAAAGAGACACGTGCTCCACTAGTTTATCGCAGCCTTATTTATAATAGCCAGAACTGGAAAGAACCCAG 5409
L1-23 CAGAAAAATTGGACATTGAAC TGCTGAGGATCCAGCTATACCTCTCTGGGCATATACCCAAAAGATGCCTCAACATATAAAAAGAGACACGTGCTCCACTAGTTTATCGCAGCCTTATTTATAATAGCCAGAACTGGAAAGAACCCAG 5408
L1-22 CAGAAAAATTGGACATTGAAC TGCTGAGGATCCAGCTATACCTCTCTGGGCATATACCCAAAAGATGCCTCAACATATAAAAAGAGACACGTGCTCCACTAGTTTATCGCAGCCTTATTTATAATAGCCAGAACTGGAAAGAACCCAG 5380
L1-10 CAGAAAAATTGGACATTGAAC TGCTGAGGATCCAGCTATACCTCTCTGGGCATATACCCAAAAGATGCCTCAACATATAAAAAGAGACACGTGCTCCACTAGTTTATCGCAGCCTTATTTATAATAGCCAGAACTGGAAAGAACCCAG 5403
L1-19 CAGAAAAATTGGACATTGAAC TGCTGAGGATCCAGCTATACCTCTCTGGGCATATACCCAAAAGATGCCTCAACATATAAAAAGAGACACGTGCTCCACTAGTTTATCGCAGCCTTATTTATAATAGCCAGAACTGGAAAGAACCCAG 5519
ruler5410.....5420.....5430.....5440.....5450.....5460.....5470.....5480.....5490.....5500.....5510.....5520.....5530.....5540.....5550



L1-17 ATGCCCTCAACAGAGGAATGGATACAGAAAATGGGTACATCTACACAAATGGAAATTAATCTCAGCTATCAAAAAC--GAGTTTATGAAATTCGTAGGCAAAATGGTGGAACTGGAAAATATCATCCTGAGTGAGCTAACCCAAATCACA 5342
L1-21 ATGCCCTCAACAGAGGAATGGATACAGAAAATGGGTATATCTACACAAATGGAAATTAATCTCAGCTATCAAAAACCAACGAGTTTATGAAATTCGTAGGCAAAATGGTGGAACTGGAAAATATCATCCTGAGTGAGCTAACCCAAATCACA 5690
L1-8 ATGCCCTCAACAGAGGAATGGATACAGAAAATGGGTACATCTACACAAATGGAAATTAATCTCAGCTATCAAAAACAAATGACTTTATGAAATTCGTAGGCAAAATGGTGGAACTGGAAAATATCATCCTGAGTGAGCTAACCCAAATCACA 5553
L1-13 ATGCCCTCAACAGAGGAATGGATACAGAAAATGGGTACATCTACACAAATGGAAATTAATCTCAGCTATCAAAAACAAACGACTTTATGAAATTCGTAGGCAAAATGGTGGAACTGGAAAATATCATCCTGAGTGAGCTAACCCAAATCACA 5556
L1-12 ATGCCCTCAACAGAGGAATGGATACAGAAAATGGGTACATCTACACAAATGGAAATTAATCTCAGCTATCAAAAACCAACGAGTTTATGAAATTCGTAGGCAAAATGGTGGAACTGGAAAATATCATCCTGAGTGAGCTAACCCAAATCACA 5553
L1-3 ATGCCCTCAACAGAGGAATGGATACAGAAAATGGGTACATCTACACAAATGGAAATTAATCTCAGCTATCAAAAACAAAGTTTATGAAATTCGTAGGCAAAATGGTGGAACTGGAAAATATCATCCTGAGTGAGCTAACCCAAATCACA 5559
L1-23 ATGCCCTCAACAGAGGAATGGATACAGAAAATGGGTACATCTACACAAATGGAAATTAATCTCAGCTATCAAAAACCAACGAGTTTATGAAATTCGTAGGCAAAATGGTGGAACTGGAAAATATCATCCTGAGTGAGCTAACCCAAATCACA 5558
L1-22 ATGCCCTCAACAGAGGAATGGATACAGAAAATGGGTACATCTACACAAATGGAAATTAATCTCAGCTATCAAAAACCAACGACTTTATGAAATTCGTAGGCAAAATGGTGGAACTGGAAAATATCATCCTGAGTGAGCTAACCCAAATCACA 5530
L1-10 ATGCCCTCAACAGAGGAATGGATACAGAAAATGGGTACATCTACACAAATGGAGTATTAATCTCGGCTATCAAAAACCAACGACTTTATGAAATTCGTAGGCAAAATGGTGGAACTGGAAAATATCATCCTGAGTGAGCTAACCCAAATCACA 5553
L1-19 ATGCCCTCAACAGAGGAATGGATACAGAAAATGGGTACATCTACACAAATGGAAATTAATCTCAGCTATCAAAAACCAACGACTTTATGAAATTCGTAGGCAAAATGGTGGAACTGGAAAATATCATCCTGAGTGAGCTAACCCAAATCACA 5669
ruler5560.....5570.....5580.....5590.....5600.....5610.....5620.....5630.....5640.....5650.....5660.....5670.....5680.....5690.....5700



L1-17 GAAAGACATACATGGTATGCACCTCATTGATAAAGTGGCTATTAGCCCAAATGCTTGAATTAATCCCTAGATCCCTAGAACAAAGGAACTCAAGACGGATGATCAAAAATGTAATGCTTCACTCCCTTATTTAAATGAGAAAAAAGAAATACCCCT 5492
L1-21 GAAAGACATACATGGTATGCACCTCATTGATAAAGTGGCTATTAGCCCAAATGCTTGAATTAATCCCTAGATCCCTAGAACAAAGGAACTCAAGACGGATGATCAAAAATGTAATGCTTCACTCCCTTATTTAAATGAGAAAAAAGAAATACCCCT 5839
L1-8 GAAAGACATACATGATATGCACCTCATTGATAAAGTGGCTATTAGCCCAAATGCTTGAATTAATCCCTAGATCCCTAGAACAAAGGAACTCAAGACGGATGATCAAAAATGTAATGCTTCACTCCCTTATTTAAATGAGAAAAAAGAAATACCCCT 5703
L1-13 GAAAGACATACATGATATGCACCTCATTGATAAAGTGGCTATTAGCCCAAATGCTTGAATTAATCCCTAGATCCCTAGAACAAAGGAACTCAAGACGGATGATCAAAAATGTAATGCTTCACTCCCTTATTTAAATGAGAAAAAAGAAATACCCCT 5706
L1-12 GAAAGACATACATGGTATGCACCTCATTGATAAAGTGGCTATTAGCCCAAATGCTTGAATTAATCCCTAGATCCCTAGAACAAAGGAACTCAAGACGGATGATCAAAAATGTAATGCTTCACTCCCTTATTTAAATGAGAAAAAAGAAATACCCCT 5703
L1-3 GAAAGACATACATGGTATGCACCTCATTGATAAAGTGGCTATTAGCCCAAATGCTTGAATTAATCCCTAGATCCCTAGAACAAAGGAACTCAAGACGGATGATCAAAAATGTAATGCTTCACTCCCTTATTTAAATGAGAAAAAAGAAATACCCCT 5709
L1-23 GAAAGACATACATGGTATGCACCTCATTGATAAAGTGGCTATTAGCCCAAATGCTTGAATTAATCCCTAGATCCCTAGAACAAAGGAACTCAAGACGGATGATCAAAAATGTAATGCTTCACTCCCTTATTTAAATGAGAAAAAAGAAATACCCCT 5708
L1-22 GAAAGACATACATGGTATGCACCTCATTGATAAAGTGGCTATTAGCCCAAATGCTTGAATTAATCCCTAGATCCCTAGAACAAAGGAACTCAAGACGGATGATCAAAAATGTAATGCTTCACTCCCTTATTTAAATGAGAAAAAAGAAATACCCCT 5680
L1-10 GAAAGACATACATGGTATGCACCTCATTGATAAAGTGGCTATTAGCCCAAATGCTTGAATTAATCCCTAGATCCCTAGAACAAAGGAACTCAAGACGGATGATCAAAAATGTAATGCTTCACTCCCTTATTTAAATGAGAAAAAAGAAATACCCCT 5702
L1-19 GAAAGACATACATGGTATGCACCTCATTGATAAAGTGGCTATTAGCCCAAATGCTTGAATTAATCCCTAGATCCCTAGAACAAAGGAACTCAAGACGGATGATCAAAAATGTAATGCTTCACTCCCTTATTTAAATGAGAAAAAAGAAATACCCCT 5819
ruler5710.....5720.....5730.....5740.....5750.....5760.....5770.....5780.....5790.....5800.....5810.....5820.....5830.....5840.....5850



***** stop-----3' UTR-----
L1-17 TGGCAGGGAAGGGAGAGGCAAAGATAAAAAGAGACTGAAGGAAACCCATTAGAGGCTGCCGCATGTGGCCCATACATATACAGCCACCCAAATAGACAAGATGGATGAAGCAAAGAAAGTGCAGACTGACAGGAGCCGGATGTAG 5642
L1-21 TGGCAGGGAAGGGAGAGGCAAAGATAAAAAGAGACTGAAGGAAACCCATTAGAGGCTGCCCCACATGTGGCCCATACATATACAGCCACCCAAATAGACAAGATGGATGAAGCAAAGAAAGTGCAGACTGACAGGAGCCGGATGTAG 5989
L1-8 TGTACGGGAAGGGAGAGGCAAAGATAAAAAGAGACTGAAGGAAACCCATTAGAGGCTGCCCCACATGTGGTCCATACATATACAGCCACCCAAATAGACAAGATGGATGAAGCAAAGAAAGTGCAGACTGACAGGAGCCGGATGTAG 5853
L1-13 TGTACGGGAAGGGAGAGGCAAAGATAAAAAGAGACTGAAGGAAACCCATTAGAGGCTGCCCCACATGTGGTCCATACATATACAGCCACCCAAATAGACAAGATGGATGAAGCAAAGAAAGTGCAGACTGACAGGAGCCGGATGTAG 5856
L1-12 TGGCAGGGAAGGGAGAGGCAAAGATAAAAAGAGACTGAAGGAAACCCATTAGAGGCTGCCCCACATGTGGCCCATACATATACAGCCACCCAAATAGACAAGATGGATGAAGCAAAGAAAGTGCAGACTGACAGGAGCCGGATGTAG 5853
L1-3 TGGCAGGGAAGGGAGAGGCAAAGATAAAAAGAGACTGAAGGAAACCCATTAGAGGCTGCCCCACATGTGCCCATACATATACAGCCACCCAAATGGACTAGATGGATGAAGCAAAGAAAGTGCAGACTGACAGGAGCCGGATGTAG 5859
L1-23 TGGCAGGGAAGGGAGAGGCAAAGATAAAAAGAGACTGAAGGAAACCCATTAGAGGCTGCCCCACATTTGGCCCATACATATACAGCCACCCAAATGGACTAGATGGATGAAGCAAAGAAAGTGCAGACTGACAGGAGCCGGATGTAG 5858
L1-22 TGGCAGGGAAGGGAGAGGCAAAGATAAAAAGAGACTGAAGGAAACCCATTAGAGGCTGCCCCACATGTGGCCCATACATATACAGCCACCCAAATAGACAAGATGGATGAAGCAAAGAAAGTGCAGACTGACAGGAGCCGGATGTAG 5830
L1-10 TGGCAGGGAAGGGAGAGGCAAAGATAAAAAGAGACTGAAGGAAACCCATTAGAGGCTGCCCCACATGTGGCCCATACATATACAGCCACCCAAATAGACAAGATGGATGAAGCAAAGAAAGTGCAGACTGACAGGAGCCGGATGTAG 5852
L1-19 TGGCAGGGAAGGGAGAGGCAAAGATAAAAAGAGACTGAAGGAAACCCATTAGAGGCTGCCCCACATGTGGCCCATACATATACAGCCACCCAAATAGACAAGATGGATGAAGCAAAGAAAGTGCAGACTGACAGGAGCCGGATGTAG 5969
ruler5860.....5870.....5880.....5890.....5900.....5910.....5920.....5930.....5940.....5950.....5960.....5970.....5980.....5990.....6000



← Pr-L1Rn2