
humanA ATGAATAC TCAAA TTTTGGCATT CATTGCTTGTATGCTGATTGGAACTAAAGGAGACAAAATATGTTCTGGGCACCATGCTGTGGCAAAATGGGACAAAAGTGAACACACTAACAGAGAGGGGAATTGAAGTAGTCAATGCCACGGGAGACG
humanB ATGAATAC TCAAA TTTTGGCATT CATTGCTTGTATGCTGATTGGAACTAAAGGAGACAAAATATGTTCTGGGCACCATGCTGTGGCAAAATGGGACAAAAGTGAACACACTAACAGAGAGGGGAATTGAAGTAGTCAATGCCACGGGAGACG
chickenA ATGAATAC TCAAA TTTTGGCATT CATTGCTTGTATGCTGATTGGAACTAAAGGAGACAAAATATGTTCTGGGCACCATGCTGTGGCAAAATGGGACAAAAGTGAACACACTAACAGAGAGGGGAATTGAAGTAGTCAATGCCACGGGAGACG
chickenB ATGAATAC TCAAA TTTTGGCATT CATTGCTTGTATGCTGATTGGAACTAAAGGAGACAAAATATGTTCTGGGCACCATGCTGTGGCAAAATGGGACAAAAGTGAACACACTAACAGAGAGGGGAATTGAAGTAGTCAATGCCACGGGAGACG
chickenE ATGAATAC TCAAA TTTTGGCATT CATTGCTTGTATGCTGATTGGAACTAAAGGAGACAAAATATGTTCTGGGCACCATGCTGTGGCAAAATGGGACAAAAGTGAACACACTAACAGAGAGGGGAATTGAAGTAGTCAATGCCACGGGAGACG
ruler 1.....10.....20.....30.....40.....50.....60.....70.....80.....90.....100.....110.....120.....130.....140.....150



humanA GTGAAACTGTAATAATTAAGAAAAATGCACTCAAAGGAAAAAGGCCAACAGATCTGGGCAATGTGGACTTCTAGGAAACCCCTAATAGGACCTCCCCAATGCCATCAATTTCTGGAGTTTGAAGCTAATTTGATAAATTGAAAGAAAGAGAA
humanB GTGAAACTGTAATAATTAAGAAAAATGCACTCAAAGGAAAAAGGCCAACAGATCTGGGCAATGTGGACTTCTAGGAAACCCCTAATAGGACCTCCCCAATGCCATCAATTTCTGGAGTTTGAAGCTAATTTGATAAATTGAAAGAAAGAGAA
chickenA GTGAAACTGTAATAATTAAGAAAAATGCACTCAAAGGAAAAAGGCCAACAGATCTGGGCAATGTGGACTTCTAGGAAACCCCTAATAGGACCTCCCCAATGCCATCAATTTCTGGAGTTTGAAGCTAATTTGATAAATTGAAAGAAAGAGAA
chickenB GTGAAACTGTAATAATTAAGAAAAATGCACTCAAAGGAAAAAGGCCAACAGATCTGGGCAATGTGGACTTCTAGGAAACCCCTAATAGGACCTCCCCAATGCCATCAATTTCTGGAGTTTGAAGCTAATTTGATAAATTGAAAGAAAGAGAA
chickenE GTGAAACTGTAATAATTAAGAAAAATGCACTCAAAGGAAAAAGGCCAACAGATCTGGGCAATGTGGACTTCTAGGAAACCCCTAATAGGACCTCCCCAATGCCATCAATTTCTGGAGTTTGAAGCTAATTTGATAAATTGAAAGAAAGAGAA
ruler160.....170.....180.....190.....200.....210.....220.....230.....240.....250.....260.....270.....280.....290.....300



humanA GGAACCGATGTGTGCTATCCCGGGAAGTTCAAAATGAAGAATCACTGAGGCAGATCCTTCGAGGGTCAGGAGGAATTGATAAAGAGTCAATGGGTTTCACTATAGTGAATTAAGAACCAATGGGGGACGAGTGCTGCAGAAGATCA
humanB GGAACCGATGTGTGCTATCCCGGGAAGTTCAAAATGAAGAATCACTGAGGCAGATCCTTCGAGGGTCAGGAGGAATTGATAAAGAGTCAATGGGTTTCACTATAGTGAATTAAGAACCAATGGGGGACGAGTGCTGCAGAAGATCA
chickenA GGAACCGATGTGTGCTATCCCGGGAAGTTCAAAATGAAGAATCACTGAGGCAGATCCTTCGAGGGTCAGGAGGAATTGATAAAGAGTCAATGGGTTTCACTATAGTGAATTAAGAACCAATGGGGGACGAGTGCTGCAGAAGATCA
chickenB GGAACCGATGTGTGCTATCCCGGGAAGTTCAAAATGAAGAATCACTGAGGCAGATCCTTCGAGGGTCAGGAGGAATTGATAAAGAGTCAATGGGTTTCACTATAGTGAATTAAGAACCAATGGGGGACGAGTGCTGCAGAAGATCA
chickenE GGAACCGATGTGTGCTATCCCGGGAAGTTCAAAATGAAGAATCACTGAGGCAGATCCTTCGAGGGTCAGGAGGAATTGATAAAGAGTCAATGGGTTTCACTATAGTGAATTAAGAACCAATGGGGGACGAGTGCTGCAGAAGATCA
ruler310.....320.....330.....340.....350.....360.....370.....380.....390.....400.....410.....420.....430.....440.....450



humanA GGTTCCTTCTTTCTATGCGGAGATGAAGTGGTTACTGTGGAATTCAGACAATGCGGCATTTCCCCAAATGACTAAGTCGTATAGGAATCCAGGAACAAACCAGCTCTGATAATCTGGGGAGTGATCACTCTGGATCAGCTACTGAGCAG
humanB GGTTCCTTCTTTCTATGCGGAGATGAAATGGTTACTGTGGAATTCAGACAATGCGGCATTTCCCCAAATGACTAAGTCGTATAGGAATCCAGGAACAAACCAGCTCTGATAATCTGGGGAGTGATCACTCTGGATCAGCTACTGAGCAG
chickenA GGTTCCTTCTTTCTATGCGGAGATGAAGTGGTTACTGTGGAATTCAGACAATGCGGCATTTCCCCAAATGACTAAGTCGTATAGGAATCCAGGAACAAACCAGCTCTGATAATCTGGGGAGTGATCACTCTGGATCAGCTACTGAGCAG
chickenB GGTTCCTTCTTTCTATGCGGAGATGAAGTGGTTACTGTGGAATTCAGACAATGCGGCATTTCCCCAAATGACTAAGTCGTATAGGAATCCAGGAACAAACCAGCTCTGATAATCTGGGGAGTGATCACTCTGGATCAGCTACTGAGCAG
chickenE GGTTCCTTCTTTCTATGCGGAGATGAAATGGTTACTGTGGAATTCAGACAATGCGGCATTTCCCCAAATGACTAAGTCGTATAGGAATCCAGGAACAAACCAGCTCTGATAATCTGGGGAGTGATCACTCTGGATCAGCTACTGAGCAG
ruler460.....470.....480.....490.....500.....510.....520.....530.....540.....550.....560.....570.....580.....590.....600



humanA ACCAAACTCTATGGAAGTGGAAAACAAGTTGATAACAGTAGGAAGCTGAAAATACCAGCAATCATTCACTCCAAGTCGGGAGCAGGGCCACAAGTGAATGGACAATCAGGAAGGATTGATTTTCATTGGCTACTCCTTGACCCCAATGAC
humanB ACCAAACTCTATGGAAGTGGAAAACAAGTTGATAACAGTAGGAAGCTGAAAATACCAGCAATCATTCACTCCAAGTCGGGAGCAGGGCCACAAGTGAATGGACAATCAGGAAGGATTGATTTTCATTGGCTACTCCTTGACCCCAATGAC
chickenA ACCAAACTCTATGGAAGTGGAAAACAAGTTGATAACAGTAGGAAGCTGAAAATACCAGCAATCATTCACTCCAAGTCGGGAGCAGGGCCACAAGTGAATGGACAATCAGGAAGGATTGATTTTCATTGGCTACTCCTTGACCCCAATGAC
chickenB ACCAAACTCTATGGAAGTGGAAAACAAGTTGATAACAGTAGGAAGCTGAAAATACCAGCAATCATTCACTCCAAGTCGGGAGCAGGGCCACAAGTGAATGGACAATCAGGAAGGATTGATTTTCATTGGCTACTCCTTGACCCCAATGAC
chickenE ACCAAACTCTATGGAAGTGGAAAACAAGTTGATAACAGTAGGAAGCTGAAAATACCAGCAATCATTCACTCCAAGTCGGGAGCAGGGCCACAAGTGAATGGACAATCAGGAAGGATTGATTTTCATTGGCTACTCCTTGACCCCAATGAC
ruler610.....620.....630.....640.....650.....660.....670.....680.....690.....700.....710.....720.....730.....740.....750



humanA ACAGTGACCTTCACTTTCAATGGGGCATTTCATAGCCCTGACAGGGCAAGTTTCTTTAGAGGAGAATCGCTAGGAGTCCAGAGTGATGTTCTTTGGATTCTGGTTGTGAAGGGGATTGCTTCCACAGTGGGGGTACGATAGTCAGTTCC
humanB ACAGTGACCTTCACTTTCAATGGGGCATTTCATAGCCCTGACAGGGCAAGTTTCTTTAGAGGAGAATCGCTAGGAGTCCAGAGTGATGTTCTTTGGATTCTGGTTGTGAAGGGGATTGCTTCCACAGTGGGGGTACGATAGTCAGTTCC
chickenA ACAGTGACCTTCACTTTCAATGGGGCATTTCATAGCCCTGACAGGGCAAGTTTCTTTAGAGGAGAATCGCTAGGAGTCCAGAGTGATGTTCTTTGGATTCTGGTTGTGAAGGGGATTGCTTCCACAGTGGGGGTACGATAGTCAGTTCC
chickenB ACAGTGACCTTCACTTTCAATGGGGCATTTCATAGCCCTGACAGGGCAAGTTTCTTTAGAGGAGAATCGCTAGGAGTCCAGAGTGATGTTCTTTGGATTCTGGTTGTGAAGGGGATTGCTTCCACAGTGGGGGTACGATAGTCAGTTCC
chickenE ACAGTGACCTTCACTTTCAATGGGGCATTTCATAGCCCTGACAGGGCAAGTTTCTTTAGAGGAGAATCGCTAGGAGTCCAGAGTGATGTTCTTTGGATTCTGGTTGTGAAGGGGATTGCTTCCACAGTGGGGGTACGATAGTCAGTTCC
ruler760.....770.....780.....790.....800.....810.....820.....830.....840.....850.....860.....870.....880.....890.....900



humanA CTGCCATTCCAAAACATCAACCCTAGAACAGTGGGGAAATGCCCTCGATATGTCAAACAGACAAGCCTCCTTTTGGCTACAGGAATGAGAAAAGTCCAGAGAAACCCCAAGCAGGCCCTACCAGAAAAGATGACCAGAGGCCCTTTTGGGA
humanB CTGCCATTCCAAAACATCAACCCTAGAACAGTGGGGAAATGCCCTCGATATGTCAAACAGACAAGCCTCCTTTTGGCTACAGGAATGAGAAAAGTCCAGAGAAACCCCAAGCAGGCCCTACCAGAAAAGATGACCAGAGGCCCTTTTGGGA
chickenA CTGCCATTCCAAAACATCAACCCTAGAACAGTGGGGAAATGCCCTCGATATGTCAAACAGACAAGCCTCCTTTTGGCTACAGGAATGAGAAAAGTCCAGAGAAACCCCAAGCAGGCCCTACCAGAAAAGATGACCAGAGGCCCTTTTGGGA
chickenB CTGCCATTCCAAAACATCAACCCTAGAACAGTGGGGAAATGCCCTCGATATGTCAAACAGACAAGCCTCCTTTTGGCTACAGGAATGAGAAAAGTCCAGAGAAACCCCAAGCAGGCCCTACCAGAAAAGATGACCAGAGGCCCTTTTGGGA
chickenE CTGCCATTCCAAAACATCAACCCTAGAACAGTGGGGAAATGCCCTCGATATGTCAAACAGACAAGCCTCCTTTTGGCTACAGGAATGAGAAAAGTCCAGAGAAACCCCAAGCAGGCCCTACCAGAAAAGATGACCAGAGGCCCTTTTGGGA
ruler910.....920.....930.....940.....950.....960.....970.....980.....990.....1000.....1010.....1020.....1030.....1040.....1050



humanA GCGATTGCTGGATTTCATAGAGAATGGATGGGAAGGTCATCGATGGATGGTATGGTTTTCAGACATCAAAATGCAACAAGGAGAAGGAACCTGCAGCTGACTACAAAAGCACCCCAATCTGCAATAGATCAGATCACAGGCAAAATGAATCGT
humanB GCGATTGCTGGATTTCATAGAGAATGGATGGGAAGGTCATCGATGGATGGTATGGTTTTCAGACATCAAAATGCAACAAGGAGAAGGAACCTGCAGCTGACTACAAAAGCACCCCAATCTGCAATAGATCAGATCACAGGCAAAATGAATCGT
chickenA GCGATTGCTGGATTTCATAGAGAATGGATGGGAAGGTCATCGATGGATGGTATGGTTTTCAGACATCAAAATGCAACAAGGAGAAGGAACCTGCAGCTGACTACAAAAGCACCCCAATCTGCAATAGATCAGATCACAGGCAAAATGAATCGT
chickenB GCGATTGCTGGATTTCATAGAGAATGGATGGGAAGGTCATCGATGGATGGTATGGTTTTCAGACATCAAAATGCAACAAGGAGAAGGAACCTGCAGCTGACTACAAAAGCACCCCAATCTGCAATAGATCAGATCACAGGCAAAATGAATCGT
chickenE GCGATTGCTGGATTTCATAGAGAATGGATGGGAAGGTCATCGATGGATGGTATGGTTTTCAGACATCAAAATGCAACAAGGAGAAGGAACCTGCAGCTGACTACAAAAGCACCCCAATCTGCAATAGATCAGATCACAGGCAAAATGAATCGT
ruler1060.....1070.....1080.....1090.....1100.....1110.....1120.....1130.....1140.....1150.....1160.....1170.....1180.....1190.....1200



humanA CTGATTGACAAAACAAACCCAGCAGTTTGAAGTATAGACAATGAATTCAGTGAGATAGAACAAACAAATCGGGAAATGTCATTAACTGGACACGAGACTCAATGACTGAGGTATGGTCTGATAAATGCTGAGCTGTTGGTGGCAATGGAGAAAT
humanB CTGATTGACAAAACAAACCCAGCAGTTTGAAGTATAGACAATGAATTCAGTGAGATAGAACAAACAAATCGGGAAATGTCATTAACTGGACACGAGACTCAATGACTGAGGTATGGTCTGATAAATGCTGAGCTGTTGGTGGCAATGGAGAAAT
chickenA CTGATTGACAAAACAAACCCAGCAGTTTGAAGTATAGACAATGAATTCAGTGAGATAGAACAAACAAATCGGGAAATGTCATTAACTGGACACGAGACTCAATGACTGAGGTATGGTCTGATAAATGCTGAGCTGTTGGTGGCAATGGAGAAAT
chickenB CTGATTGACAAAACAAACCCAGCAGTTTGAAGTATAGACAATGAATTCAGTGAGATAGAACAAACAAATCGGGAAATGTCATTAACTGGACACGAGACTCAATGACTGAGGTATGGTCTGATAAATGCTGAGCTGTTGGTGGCAATGGAGAAAT
chickenE CTGATTGACAAAACAAACCCAGCAGTTTGAAGTATAGACAATGAATTCAGTGAGATAGAACAAACAAATCGGGAAATGTCATTAACTGGACACGAGACTCAATGACTGAGGTATGGTCTGATAAATGCTGAGCTGTTGGTGGCAATGGAGAAAT
ruler1210.....1220.....1230.....1240.....1250.....1260.....1270.....1280.....1290.....1300.....1310.....1320.....1330.....1340.....1350



humanA CAGCATACAAATAGATCTTGCAGACTCAGAAAATGAAACAACTTTACGAACGGCTCAGAAAAAACAATAAGGGAAAAATGCTGAAGAAGATGGAACCTGGATGCTTTGAGATATTCCATAAGTGTGATGATCAGTGTATGGAGAGCATAAGGAAC
humanB CAGCATACAAATAGATCTTGCAGACTCAGAAAATGAAACAACTTTACGAACGGCTCAGAAAAAACAATAAGGGAAAAATGCTGAAGAAGATGGAACCTGGATGCTTTGAGATATTCCATAAGTGTGATGATCAGTGTATGGAGAGCATAAGGAAC
chickenA CAGCATACAAATAGATCTTGCAGACTCAGAAAATGAAACAACTTTACGAACGGCTCAGAAAAAACAATAAGGGAAAAATGCTGAAGAAGATGGAACCTGGATGCTTTGAGATATTCCATAAGTGTGATGATCAGTGTATGGAGAGCATAAGGAAC
chickenB CAGCATACAAATAGATCTTGCAGACTCAGAAAATGAAACAACTTTACGAACGGCTCAGAAAAAACAATAAGGGAAAAATGCTGAAGAAGATGGAACCTGGATGCTTTGAGATATTCCATAAGTGTGATGATCAGTGTATGGAGAGCATAAGGAAC
chickenE CAGCATACAAATAGATCTTGCAGACTCAGAAAATGAAACAACTTTACGAACGGCTCAGAAAAAACAATAAGGGAAAAATGCTGAAGAAGATGGAACCTGGATGCTTTGAGATATTCCATAAGTGTGATGATCAGTGTATGGAGAGCATAAGGAAC
ruler1360.....1370.....1380.....1390.....1400.....1410.....1420.....1430.....1440.....1450.....1460.....1470.....1480.....1490.....1500



humanA AACACTTATGACCATACCCAATACAGGACAGAGTCATTGCAGAAATAGAATACAGATAGACCCAGTGAAATTGAGTAGTGGATACAAAGACATAATCTTATGGTTTAGCTTCGGGGCATCATGTTTTCTTCTTAGCCATTGCAATGGGA
humanB AACACTTATGACCATACCCAATACAGGACAGAGTCATTGCAGAAATAGAATACAGATAGACCCAGTGAAATTGAGTAGTGGATACAAAGACATAATCTTATGGTTTAGCTTCGGGGCATCATGTTTTCTTCTTAGCCATTGCAATGGGA
chickenA AACACTTATGACCATACCCAATACAGGACAGAGTCATTGCAGAAATAGAATACAGATAGACCCAGTGAAATTGAGTAGTGGATACAAAGACATAATCTTATGGTTTAGCTTCGGGGCATCATGTTTTCTTCTTAGCCATTGCAATGGGA
chickenB AACACTTATGACCATACCCAATACAGGACAGAGTCATTGCAGAAATAGAATACAGATAGACCCAGTGAAATTGAGTAGTGGATACAAAGACATAATCTTATGGTTTAGCTTCGGGGCATCATGTTTTCTTCTTAGCCATTGCAATGGGA
chickenE AACACTTATGACCATACCCAATACAGGACAGAGTCATTGCAGAAATAGAATACAGATAGACCCAGTGAAATTGAGTAGTGGATACAAAGACATAATCTTATGGTTTAGCTTCGGGGCATCATGTTTTCTTCTTAGCCATTGCAATGGGA
ruler1510.....1520.....1530.....1540.....1550.....1560.....1570.....1580.....1590.....1600.....1610.....1620.....1630.....1640.....1650



humanA TTGGTTTTCATTTGCATAAAGAAATGGAAACATGCGGTGCACTATTTGTATATAG
humanB TTGGTTTTCATTTGCATAAAGAAATGGAAACATGCGGTGCACTATTTGTATATAG
chickenA TTGGTTTTCATTTGCATAAAGAAATGGAAACATGCGGTGCACTATTTGTATATAG
chickenB TTGGTTTTCATTTGCATAAAGAAATGGAAACATGCGGTGCACTATTTGTATATAG
chickenE TTGGTTTTCATTTGCATAAAGAAATGGAAACATGCGGTGCACTATTTGTATATAG
ruler1660.....1670.....1680.....1690.....1700.....



humanA ATGAGTCTTCTAAACCGAGGTCGAAACGTACGTTCTCTATCGTCCCGTCAGGCCCCCTCAAAGCCGAGATCGGCAGAGACTTGAAGATGTCTTTGCAGGGAAGAAACCCGATCTCGAGGCACCTCATGGAATGGCTAAAGACAAGACCA
humanB ATGAGTCTTCTAAACCGAGGTCGAAACGTACGTTCTCTATCGTCCCGTCAGGCCCCCTCAAAGCCGAGATCGGCAGAGACTTGAAGATGTCTTTGCAGGGAAGAAACCCGATCTCGAGGCACCTCATGGAATGGCTAAAGACAAGACCA
chickenA ATGAGTCTTCTAAACCGAGGTCGAAACGTACGTTCTCTATCGTCCCGTCAGGCCCCCTCAAAGCCGAGATCGGCAGAGACTTGAAGATGTCTTTGCAGGGAAGAAACCCGATCTCGAGGCACCTCATGGAATGGCTAAAGACAAGACCA
chickenB ATGAGTCTTCTAAACCGAGGTCGAAACGTACGTTCTCTATCGTCCCGTCAGGCCCCCTCAAAGCCGAGATCGGCAGAGACTTGAAGATGTCTTTGCAGGGAAGAAACCCGATCTCGAGGCACCTCATGGAATGGCTAAAGACAAGACCA
chickenE ATGAGTCTTCTAAACCGAGGTCGAAACGTACGTTCTCTATCGTCCCGTCAGGCCCCCTCAAAGCCGAGATCGGCAGAGACTTGAAGATGTCTTTGCAGGGAAGAAACCCGATCTCGAGGCACCTCATGGAATGGCTAAAGACAAGACCA
ruler 1.....10.....20.....30.....40.....50.....60.....70.....80.....90.....100.....110.....120.....130.....140.....150



humanA ATCCCTGTCAACCTCTGACTAAGGGGATTTAGGATTTGTGTTACCGCTCACCGTGCCAGTGAGCGAGGACTGCAGCGTAGACGCTTTGTCCAAAATGCCCTTAATGGGAATGGGGATCCAAAACAACATGGAACAGAGGGTCAAACCTGTAT
humanB ATCCCTGTCAACCTCTGACTAAGGGGATTTAGGATTTGTGTTACCGCTCACCGTGCCAGTGAGCGAGGACTGCAGCGTAGACGCTTTGTCCAAAATGCCCTTAATGGGAATGGGGATCCAAAACAACATGGAACAGAGGGTCAAACCTGTAT
chickenA ATCCCTGTCAACCTCTGACTAAGGGGATTTAGGATTTGTGTTACCGCTCACCGTGCCAGTGAGCGAGGACTGCAGCGTAGACGCTTTGTCCAAAATGCCCTTAATGGGAATGGGGATCCAAAACAACATGGAACAGAGGGTCAAACCTGTAT
chickenB ATCCCTGTCAACCTCTGACTAAGGGGATTTAGGATTTGTGTTACCGCTCACCGTGCCAGTGAGCGAGGACTGCAGCGTAGACGCTTTGTCCAAAATGCCCTTAATGGGAATGGGGATCCAAAACAACATGGAACAGAGGGTCAAACCTGTAT
chickenE ATCCCTGTCAACCTCTGACTAAGGGGATTTAGGATTTGTGTTACCGCTCACCGTGCCAGTGAGCGAGGACTGCAGCGTAGACGCTTTGTCCAAAATGCCCTTAATGGGAATGGGGATCCAAAACAACATGGAACAGAGGGTCAAACCTGTAT
ruler160.....170.....180.....190.....200.....210.....220.....230.....240.....250.....260.....270.....280.....290.....300



humanA AGGAAGCTAAAAAGGGAATAACATTCCATGGGGCAAAGAAAGTGGCACTCAGTTATTCAACTGGTGCACCTTGCCAGTTGCATGGGCCTCATATACAAACAGAAATGGGGACTGTGACCACTGAAAGTGGCATTGGCCCTGGTGTGGCCACA
humanB AGGAAGCTAAAAAGGGAATAACATTCCATGGGGCAAAGAAAGTGGCACTCAGTTATTCAACTGGTGCACCTTGCCAGTTGCATGGGCCTCATATACAAACAGAAATGGGGACTGTGACCACTGAAAGTGGCATTGGCCCTGGTGTGGCCACA
chickenA AGGAAGCTAAAAAGGGAATAACATTCCATGGGGCAAAGAAAGTGGCACTCAGTTATTCAACTGGTGCACCTTGCCAGTTGCATGGGCCTCATATACAAACAGAAATGGGGACTGTGACCACTGAAAGTGGCATTGGCCCTGGTGTGGCCACA
chickenB AGGAAGCTAAAAAGGGAATAACATTCCATGGGGCAAAGAAAGTGGCACTCAGTTATTCAACTGGTGCACCTTGCCAGTTGCATGGGCCTCATATACAAACAGAAATGGGGACTGTGACCACTGAAAGTGGCATTGGCCCTGGTGTGGCCACA
chickenE AGGAAGCTAAAAAGGGAATAACATTCCATGGGGCAAAGAAAGTGGCACTCAGTTATTCAACTGGTGCACCTTGCCAGTTGCATGGGCCTCATATACAAACAGAAATGGGGACTGTGACCACTGAAAGTGGCATTGGCCCTGGTGTGGCCACA
ruler310.....320.....330.....340.....350.....360.....370.....380.....390.....400.....410.....420.....430.....440.....450



humanA TGTGAGCAGATTGCTGATTCCACGATCGGCTCACAGACAAATGGTGACAAACAACCCCGCTGATCAGACATGAGAAACAGAAATGGTGTGGCCAGTACCAAGGCTAAAGCCATGGAGCAAATGGCAGGGTCGAGTGAGCAGGCAGCA
humanB TGTGAGCAGATTGCTGATTCCACGATCGGCTCACAGACAAATGGTGACAAACAACCCCGCTGATCAGACATGAGAAACAGAAATGGTGTGGCCAGTACCAAGGCTAAAGCCATGGAGCAAATGGCAGGGTCGAGTGAGCAGGCAGCA
chickenA TGTGAGCAGATTGCTGATTCCACGATCGGCTCACAGACAAATGGTGACAAACAACCCCGCTGATCAGACATGAGAAACAGAAATGGTGTGGCCAGTACCAAGGCTAAAGCCATGGAGCAAATGGCAGGGTCGAGTGAGCAGGCAGCA
chickenB TGTGAGCAGATTGCTGATTCCACGATCGGCTCACAGACAAATGGTGACAAACAACCCCGCTGATCAGACATGAGAAACAGAAATGGTGTGGCCAGTACCAAGGCTAAAGCCATGGAGCAAATGGCAGGGTCGAGTGAGCAGGCAGCA
chickenE TGTGAGCAGATTGCTGATTCCACGATCGGCTCACAGACAAATGGTGACAAACAACCCCGCTGATCAGACATGAGAAACAGAAATGGTGTGGCCAGTACCAAGGCTAAAGCCATGGAGCAAATGGCAGGGTCGAGTGAGCAGGCAGCA
ruler460.....470.....480.....490.....500.....510.....520.....530.....540.....550.....560.....570.....580.....590.....600



humanA GAGGCTATGGAAGTTGCTAGCCAGGCTAGACAGATGGTGACGCAATGAGGACCAATGGGACTCATCCTAGCTCCAGTGTGGTCTAAAAGATGATCTTCTTGAAAAATTTGCAGGCCTACCAGAAAAGGATGGGAGTGCAAAATGCAGCGA
humanB GAGGCTATGGAAGTTGCTAGCCAGGCTAGACAGATGGTGACGCAATGAGGACCAATGGGACTCATCCTAGCTCCAGTGTGGTCTAAAAGATGATCTTCTTGAAAAATTTGCAGGCCTACCAGAAAAGGATGGGAGTGCAAAATGCAGCGA
chickenA GAGGCTATGGAAGTTGCTAGCCAGGCTAGACAGATGGTGACGCAATGAGGACCAATGGGACTCATCCTAGCTCCAGTGTGGTCTAAAAGATGATCTTCTTGAAAAATTTGCAGGCCTACCAGAAAAGGATGGGAGTGCAAAATGCAGCGA
chickenB GAGGCTATGGAAGTTGCTAGCCAGGCTAGACAGATGGTGACGCAATGAGGACCAATGGGACTCATCCTAGCTCCAGTGTGGTCTAAAAGATGATCTTCTTGAAAAATTTGCAGGCCTACCAGAAAAGGATGGGAGTGCAAAATGCAGCGA
chickenE GAGGCTATGGAAGTTGCTAGCCAGGCTAGACAGATGGTGACGCAATGAGGACCAATGGGACTCATCCTAGCTCCAGTGTGGTCTAAAAGATGATCTTCTTGAAAAATTTGCAGGCCTACCAGAAAAGGATGGGAGTGCAAAATGCAGCGA
ruler610.....620.....630.....640.....650.....660.....670.....680.....690.....700.....710.....720.....730.....740.....750



humanA TTCAAGTGA
humanB TTCAAGTGA
chickenA TTCAAGTGA
chickenB TTCAAGTGA
chickenD TTCAAGTGA
chickenE TTCAAGTGA
ruler



humanA ATGAGTCTTCTAACCGAGGTCGAAACGCCTACCAGAAACGGATGGGAGTGC AAATGCAGCGATTCAAGTGATCCTCTCGTTATTGCCGCAAGTATCATTGGGATCTTGCACTTGATAATTGTGGATTCTTGATCGTCTTTTCTTCAAATGC
humanB ATGAGTCTTCTAACCGAGGTCGAAACGCCTACCAGAAACGGATGGGAGTGC AAATGCAGCGATTCAAGTGATCCTCTCGTTATTGCCGCAAGTATCATTGGGATCTTGCACTTGATAATTGTGGATTCTTGATCGTCTTTTCTTCAAATGC
chickenA ATGAGTCTTCTAACCGAGGTCGAAACGCCTACCAGAAACGGATGGGAGTGC AAATGCAGCGATTCAAGTGATCCTCTCGTTATTGCCGCAAGTATCATTGGGATCTTGCACTTGATAATTGTGGATTCTTGATCGTCTTTTCTTCAAATGC
chickenB ATGAGTCTTCTAACCGAGGTCGAAACGCCTACCAGAAACGGATGGGAGTGC AAATGCAGCGATTCAAGTGATCCTCTCGTTATTGCCGCAAGTATCATTGGGATCTTGCACTTGATAATTGTGGATTCTTGATCGTCTTTTCTTCAAATGC
chickenD ATGAGTCTTCTAACCGAGGTCGAAACGCCTACCAGAAACGGATGGGAGTGC AAATGCAGCGATTCAAGTGATCCTCTCGTTATTGCCGCAAGTATCATTGGGATCTTGCACTTGATAATTGTGGATTCTTGATCGTCTTTTCTTCAAATGC
chickenE ATGAGTCTTCTAACCGAGGTCGAAACGCCTACCAGAAACGGATGGGAGTGC AAATGCAGCGATTCAAGTGATCCTCTCGTTATTGCCGCAAGTATCATTGGGATCTTGCACTTGATAATTGTGGATTCTTGATCGTCTTTTCTTCAAATGC
ruler 1.....10.....20.....30.....40.....50.....60.....70.....80.....90.....100.....110.....120.....130.....140.....150



humanA ATTTATCGTCGCCTTAAATACGGTTTGAAAAGAGGGCCTTCTACGGGAAGGAGTGCC TGAGTCTATGAGGGGAAGAATATCGGCAGGAACAGCAGAGTGCTGTGGATGTTGACGATAGTCATTTTGTCAACATAGAGCTGGAGTAA
humanB ATTTATCGTCGCCTTAAATACGGTTTGAAAAGAGGGCCTTCTACGGGAAGGAGTGCC TGAGTCTATGAGGGGAAGAATATCGGCAGGAACAGCAGAGTGCTGTGGATGTTGACGATAGTCATTTTGTCAACATAGAGCTGGAGTAA
chickenA ATTTATCGTCGCCTTAAATACGGTTTGAAAAGAGGGCCTTCTACGGGAAGGAGTGCC TGAGTCTATGAGGGGAAGAATATCGGCAGGAACAGCAGAGTGCTGTGGATGTTGACGATAGTCATTTTGTCAACATAGAGCTGGAGTAA
chickenB ATTTATCGTCGCCTTAAATACGGTTTGAAAAGAGGGCCTTCTACGGGAAGGAGTGCC TGAGTCTATGAGGGGAAGAATATCGGCAGGAACAGCAGAGTGCTGTGGATGTTGACGATAGTCATTTTGTCAACATAGAGCTGGAGTAA
chickenD ATTTATCGTCGCCTTAAATACGGTTTGAAAAGAGGGCCTTCTACGGGAAGGAGTGCC TGAGTCTATGAGGGGAAGAATATCGGCAGGAACAGCAGAGTGCTGTGGATGTTGACGATAGTCATTTTGTCAACATAGAGCTGGAGTAA
chickenE ATTTATCGTCGCCTTAAATACGGTTTGAAAAGAGGGCCTTCTACGGGAAGGAGTGCC TGAGTCTATGAGGGGAAGAATATCGGCAGGAACAGCAGAGTGCTGTGGATGTTGACGATAGTCATTTTGTCAACATAGAGCTGGAGTAA
ruler160.....170.....180.....190.....200.....210.....220.....230.....240.....250.....260.....270.....280.....290.....



humanA ATGAATCCGAATCAGAAGATAATAACAATCGGGGTAGTGAATACCACTCTGTCAACAATAGCCCTTTTCATTGGAGTGGGAAACTTAGTTTTCAACACAGTCATACATGAGAAAAATAGGAGACCATCAAATAGTGACCCATCCAACAATA
humanB ATGAATCCGAATCAGAAGATAATAACAATCGGGGTAGTGAATACCACTCTGTCAACAATAGCCCTTTTCATTGGAGTGGGAAACTTAGTTTTCAACACAGTCATACATGAGAAAAATAGGAGACCATCAAATAGTGACCCATCCAACAATA
chickenA ATGAATCCGAATCAGAAGATAATAACAATCGGGGTAGTGAATACCACTCTGTCAACAATAGCCCTTTTCATTGGAGTGGGAAACTTAGTTTTCAACACAGTCATACATGAGAAAAATAGGAGACCATCAAATAGTGACCCATCCAACAATA
chickenB ATGAATCCGAATCAGAAGATAATAACAATCGGGGTAGTGAATACCACTCTGTCAACAATAGCCCTTTTCATTGGAGTGGGAAACTTAGTTTTCAACACAGTCATACATGAGAAAAATAGGAGACCATCAAATAGTGACCCATCCAACAATA
chickenE ATGAATCCGAATCAGAAGATAATAACAATCGGGGTAGTGAATACCACTCTGTCAACAATAGCCCTTTTCATTGGAGTGGGAAACTTAGTTTTCAACACAGTCATACATGAGAAAAATAGGAGACCATCAAATAGTGACCCATCCAACAATA
ruler 1.....10.....20.....30.....40.....50.....60.....70.....80.....90.....100.....110.....120.....130.....140.....150



humanA ATGACCCCTGAAGTACCGAACTGCAGTGACACTATAATAACAATACAATAAACAAGTGTATAAAACAACATAACAACAACAATAAATAACTGAAGCAGAAAAGCCCTTCAAGTCTCCACTACGGCTGTGCCCTTACAGAGGATTCCTCCCTTTT
humanB ATGACCCCTGAAGTACCGAACTGCAGTGACACTATAATAACAATACAATAAACAAGTGTATAAAACAACATAACAACAACAATAAATAACTGAAGCAGAAAAGCCCTTCAAGTCTCCACTACGGCTGTGCCCTTACAGAGGATTCCTCCCTTTT
chickenA ATGACCCCTGAAGTACCGAACTGCAGTGACACTATAATAACAATACAATAAACAAGTGTATAAAACAACATAACAACAACAATAAATAACTGAAGCAGAAAAGCCCTTCAAGTCTCCACTACGGCTGTGCCCTTACAGAGGATTCCTCCCTTTT
chickenB ATGACCCCTGAAGTACCGAACTGCAGTGACACTATAATAACAATACAATAAACAAGTGTATAAAACAACATAACAACAACAATAAATAACTGAAGCAGAAAAGCCCTTCAAGTCTCCACTACGGCTGTGCCCTTACAGAGGATTCCTCCCTTTT
chickenE ATGACCCCTGAAGTACCGAACTGCAGTGACACTATAATAACAATACAATAAACAAGTGTATAAAACAACATAACAACAACAATAAATAACTGAAGCAGAAAAGCCCTTCAAGTCTCCACTACGGCTGTGCCCTTACAGAGGATTCCTCCCTTTT
ruler160.....170.....180.....190.....200.....210.....220.....230.....240.....250.....260.....270.....280.....290.....300



humanA CACAAGGACAATGCAATACGACTGGGTGAAAACAAAGACGTCATAGTCACAAGGGAGCCTTATGTTAGCTCCGATAATGACAACTGCTGGTCCCTTTGCTCTCGCACAAGGAGCATTGCTAGGGACTAAACATAGCAATGGGACCATTAAA
humanB CACAAGGACAATGCAATACGACTGGGTGAAAACAAAGACGTCATAGTCACAAGGGAGCCTTATGTTAGCTCCGATAATGACAACTGCTGGTCCCTTTGCTCTCGCACAAGGAGCATTGCTAGGGACTAAACATAGCAATGGGACCATTAAA
chickenA CACAAGGACAATGCAATACGACTGGGTGAAAACAAAGACGTCATAGTCACAAGGGAGCCTTATGTTAGCTCCGATAATGACAACTGCTGGTCCCTTTGCTCTCGCACAAGGAGCATTGCTAGGGACTAAACATAGCAATGGGACCATTAAA
chickenB CACAAGGACAATGCAATACGACTGGGTGAAAACAAAGACGTCATAGTCACAAGGGAGCCTTATGTTAGCTCCGATAATGACAACTGCTGGTCCCTTTGCTCTCGCACAAGGAGCATTGCTAGGGACTAAACATAGCAATGGGACCATTAAA
chickenE CACAAGGACAATGCAATACGACTGGGTGAAAACAAAGACGTCATAGTCACAAGGGAGCCTTATGTTAGCTCCGATAATGACAACTGCTGGTCCCTTTGCTCTCGCACAAGGAGCATTGCTAGGGACTAAACATAGCAATGGGACCATTAAA
ruler310.....320.....330.....340.....350.....360.....370.....380.....390.....400.....410.....420.....430.....440.....450



humanA GACAGAACCCATATAGGTCCTCTAATTGTTTTCCCAATAGGAACAGTCCAGTACTAGGAAATTAACAAGAGATATGCATTGCTTGGTGCAGCAGCAGTTGCTTTGACGGGAAAGAGTGGATGCATGTGTGCATGACAGGGAAATGATAAT
humanB GACAGAACCCATATAGGTCCTCTAATTGTTTTCCCAATAGGAACAGTCCAGTACTAGGAAATTAACAAGAGATATGCATTGCTTGGTGCAGCAGCAGTTGCTTTGACGGGAAAGAGTGGATGCATGTGTGCATGACAGGGAAATGATAAT
chickenA GACAGAACCCATATAGGTCCTCTAATTGTTTTCCCAATAGGAACAGTCCAGTACTAGGAAATTAACAAGAGATATGCATTGCTTGGTGCAGCAGCAGTTGCTTTGACGGGAAAGAGTGGATGCATGTGTGCATGACAGGGAAATGATAAT
chickenB GACAGAACCCATATAGGTCCTCTAATTGTTTTCCCAATAGGAACAGTCCAGTACTAGGAAATTAACAAGAGATATGCATTGCTTGGTGCAGCAGCAGTTGCTTTGACGGGAAAGAGTGGATGCATGTGTGCATGACAGGGAAATGATAAT
chickenE GACAGAACCCATATAGGTCCTCTAATTGTTTTCCCAATAGGAACAGTCCAGTACTAGGAAATTAACAAGAGATATGCATTGCTTGGTGCAGCAGCAGTTGCTTTGACGGGAAAGAGTGGATGCATGTGTGCATGACAGGGAAATGATAAT
ruler460.....470.....480.....490.....500.....510.....520.....530.....540.....550.....560.....570.....580.....590.....600



humanA GATGCAAGTGCCAGATAATATATGGAGGACGAATGACAGACTCCATTAAATCATGGAGGAAGGACATACTAAGAACCCAGGAGTCTGAATGTCAATGCATTGACGGGACTTGTGTTGTTGCTGTACAGATGGCCCTGCTGCTAATAGT
humanB GATGCAAGTGCCAGATAATATATGGAGGACGAATGACAGACTCCATTAAATCATGGAGGAAGGACATACTAAGAACCCAGGAGTCTGAATGTCAATGCATTGACGGGACTTGTGTTGTTGCTGTACAGATGGCCCTGCTGCTAATAGT
chickenA GATGCAAGTGCCAGATAATATATGGAGGACGAATGACAGACTCCATTAAATCATGGAGGAAGGACATACTAAGAACCCAGGAGTCTGAATGTCAATGCATTGACGGGACTTGTGTTGTTGCTGTACAGATGGCCCTGCTGCTAATAGT
chickenB GATGCAAGTGCCAGATAATATATGGAGGACGAATGACAGACTCCATTAAATCATGGAGGAAGGACATACTAAGAACCCAGGAGTCTGAATGTCAATGCATTGACGGGACTTGTGTTGTTGCTGTACAGATGGCCCTGCTGCTAATAGT
chickenE GATGCAAGTGCCAGATAATATATGGAGGACGAATGACAGACTCCATTAAATCATGGAGGAAGGACATACTAAGAACCCAGGAGTCTGAATGTCAATGCATTGACGGGACTTGTGTTGTTGCTGTACAGATGGCCCTGCTGCTAATAGT
ruler610.....620.....630.....640.....650.....660.....670.....680.....690.....700.....710.....720.....730.....740.....750



humanA GCAGATCAGGGTTTACTGGATACGGGAGGGGAGAAATAATAAAGTATGAAAAATGTTCCCAAAAACAAAGATACAAACACTTAGAAGAATGTTCCCTGCTATGTGGACATTGATGTTTACTGTATATGTAGGGACAATTGGAAGGGCTCTAAC
humanB GCAGATCAGGGTTTACTGGATACGGGAGGGGAGAAATAATAAAGTATGAAAAATGTTCCCAAAAACAAAGATACAAACACTTAGAAGAATGTTCCCTGCTATGTGGACATTGATGTTTACTGTATATGTAGGGACAATTGGAAGGGCTCTAAC
chickenA GCAGATCAGGGTTTACTGGATACGGGAGGGGAGAAATAATAAAGTATGAAAAATGTTCCCAAAAACAAAGATACAAACACTTAGAAGAATGTTCCCTGCTATGTGGACATTGATGTTTACTGTATATGTAGGGACAATTGGAAGGGCTCTAAC
chickenB GCAGATCAGGGTTTACTGGATACGGGAGGGGAGAAATAATAAAGTATGAAAAATGTTCCCAAAAACAAAGATACAAACACTTAGAAGAATGTTCCCTGCTATGTGGACATTGATGTTTACTGTATATGTAGGGACAATTGGAAGGGCTCTAAC
chickenE GCAGATCAGGGTTTACTGGATACGGGAGGGGAGAAATAATAAAGTATGAAAAATGTTCCCAAAAACAAAGATACAAACACTTAGAAGAATGTTCCCTGCTATGTGGACATTGATGTTTACTGTATATGTAGGGACAATTGGAAGGGCTCTAAC
ruler760.....770.....780.....790.....800.....810.....820.....830.....840.....850.....860.....870.....880.....890.....900



humanA AGACCTTGGATGAGAATCAACAACGAGACTATACTGGAAAACAGGATATGTAATGTAGTAAATTTCACTCAGACACCCCCAGGCCAGCTGACCCCTTCAATAATGTATGTGACTCCCCAAGCAATGTCAATGGAGGACCCGGAGTGAAGGGG
humanB AGACCTTGGATGAGAATCAACAACGAGACTATACTGGAAAACAGGATATGTAATGTAGTAAATTTCACTCAGACACCCCCAGGCCAGCTGACCCCTTCAATAATGTATGTGACTCCCCAAGCAATGTCAATGGAGGACCCGGAGTGAAGGGG
chickenA AGACCTTGGATGAGAATCAACAACGAGACTATACTGGAAAACAGGATATGTAATGTAGTAAATTTCACTCAGACACCCCCAGGCCAGCTGACCCCTTCAATAATGTATGTGACTCCCCAAGCAATGTCAATGGAGGACCCGGAGTGAAGGGG
chickenB AGACCTTGGATGAGAATCAACAACGAGACTATACTGGAAAACAGGATATGTAATGTAGTAAATTTCACTCAGACACCCCCAGGCCAGCTGACCCCTTCAATAATGTATGTGACTCCCCAAGCAATGTCAATGGAGGACCCGGAGTGAAGGGG
chickenE AGACCTTGGATGAGAATCAACAACGAGACTATACTGGAAAACAGGATATGTAATGTAGTAAATTTCACTCAGACACCCCCAGGCCAGCTGACCCCTTCAATAATGTATGTGACTCCCCAAGCAATGTCAATGGAGGACCCGGAGTGAAGGGG
ruler910.....920.....930.....940.....950.....960.....970.....980.....990.....1000.....1010.....1020.....1030.....1040.....1050



humanA TTTGGTTTCAAAGCTGGCAATGATGTAATGGTTAGGTAGAACAGTGTCAACTAGTGGTAGATGGGGCTTTGAAATTATCAAAGTTACAGAAGGGTGGATCAACTCTCCTAACCATGTCAATCAATTAACAACACTAGTGTCCAAACAAT
humanB TTTGGTTTCAAAGCTGGCAATGATGTAATGGTTAGGTAGAACAGTGTCAACTAGTGGTAGATGGGGCTTTGAAATTATCAAAGTTACAGAAGGGTGGATCAACTCTCCTAACCATGTCAATCAATTAACAACACTAGTGTCCAAACAAT
chickenA TTTGGTTTCAAAGCTGGCAATGATGTAATGGTTAGGTAGAACAGTGTCAACTAGTGGTAGATGGGGCTTTGAAATTATCAAAGTTACAGAAGGGTGGATCAACTCTCCTAACCATGTCAATCAATTAACAACACTAGTGTCCAAACAAT
chickenB TTTGGTTTCAAAGCTGGCAATGATGTAATGGTTAGGTAGAACAGTGTCAACTAGTGGTAGATGGGGCTTTGAAATTATCAAAGTTACAGAAGGGTGGATCAACTCTCCTAACCATGTCAATCAATTAACAACACTAGTGTCCAAACAAT
chickenE TTTGGTTTCAAAGCTGGCAATGATGTAATGGTTAGGTAGAACAGTGTCAACTAGTGGTAGATGGGGCTTTGAAATTATCAAAGTTACAGAAGGGTGGATCAACTCTCCTAACCATGTCAATCAATTAACAACACTAGTGTCCAAACAAT
ruler1060.....1070.....1080.....1090.....1100.....1110.....1120.....1130.....1140.....1150.....1160.....1170.....1180.....1190.....1200



humanA GACTGGTCAGGCTATTCAGGTAGCTTCATTGTCAAAGCCAAGGACTGTTTTAGCCCTGTTTTATGTTGAGCTTATACGAGGGAGGCCAACAGAATGATGACGTCCTTTGGACAAGTAATAGTATAGTTACTTTCTGTGGACTAGAC
humanB GACTGGTCAGGCTATTCAGGTAGCTTCATTGTCAAAGCCAAGGACTGTTTTAGCCCTGTTTTATGTTGAGCTTATACGAGGGAGGCCAACAGAATGATGACGTCCTTTGGACAAGTAATAGTATAGTTACTTTCTGTGGACTAGAC
chickenA GACTGGTCAGGCTATTCAGGTAGCTTCATTGTCAAAGCCAAGGACTGTTTTAGCCCTGTTTTATGTTGAGCTTATACGAGGGAGGCCAACAGAATGATGACGTCCTTTGGACAAGTAATAGTATAGTTACTTTCTGTGGACTAGAC
chickenB GACTGGTCAGGCTATTCAGGTAGCTTCATTGTCAAAGCCAAGGACTGTTTTAGCCCTGTTTTATGTTGAGCTTATACGAGGGAGGCCAACAGAATGATGACGTCCTTTGGACAAGTAATAGTATAGTTACTTTCTGTGGACTAGAC
chickenE GACTGGTCAGGCTATTCAGGTAGCTTCATTGTCAAAGCCAAGGACTGTTTTAGCCCTGTTTTATGTTGAGCTTATACGAGGGAGGCCAACAGAATGATGACGTCCTTTGGACAAGTAATAGTATAGTTACTTTCTGTGGACTAGAC
ruler1210.....1220.....1230.....1240.....1250.....1260.....1270.....1280.....1290.....1300.....1310.....1320.....1330.....1340.....1350



humanA AATGAACCTGGATCGGGAAATTGGCCAGATGGTTCTAACATTGGGTTTATGCCAAGTAA
humanB AATGAACCTGGATCGGGAAATTGGCCAGATGGTTCTAACATTGGGTTTATGCCAAGTAA
chickenA AATGAACCTGGATCGGGAAATTGGCCAGATGGTTCTAACATTGGGTTTATGCCAAGTAA
chickenB AATGAACCTGGATCGGGAAATTGGCCAGATGGTTCTAACATTGGGTTTATGCCAAGTAA
chickenE AATGAACCTGGATCGGGAAATTGGCCAGATGGTTCTAACATTGGGTTTATGCCAAGTAA
ruler1360.....1370.....1380.....1390.....1400.....1410



humanA ATGGCGTCTCAAGGCACCAAAAGATCTTATGAACAGATGGAAACTGGTGGAGAACGCCAGAAATGCCACTGAAATCAGAGCATCTGTTGGGAGAAATGGTTGGTGGGATCGGAAGATTCTACATACAGATGTGCCTGAACTCAAGCTCAGT
humanB ATGGCGTCTCAAGGCACCAAAAGATCTTATGAACAGATGGAAACTGGTGGAGAACGCCAGAAATGCCACTGAAATCAGAGCATCTGTTGGGAGAAATGGTTGGTGGGATCGGAAGATTCTACATACAGATGTGCCTGAACTCAAGCTCAGT
chickenA ATGGCGTCTCAAGGCACCAAAAGATCTTATGAACAGATGGAAACTGGTGGAGAACGCCAGAAATGCCACTGAAATCAGAGCATCTGTTGGGAGAAATGGTTGGTGGGATCGGAAGATTCTACATACAGATGTGCCTGAACTCAAGCTCAGT
chickenB ATGGCGTCTCAAGGCACCAAAAGATCTTATGAACAGATGGAAACTGGTGGAGAACGCCAGAAATGCCACTGAAATCAGAGCATCTGTTGGGAGAAATGGTTGGTGGGATCGGAAGATTCTACATACAGATGTGCCTGAACTCAAGCTCAGT
chickenE ATGGCGTCTCAAGGCACCAAAAGATCTTATGAACAGATGGAAACTGGTGGAGAACGCCAGAAATGCCACTGAAATCAGAGCATCTGTTGGGAGAAATGGTTGGTGGGATCGGAAGATTCTACATACAGATGTGCCTGAACTCAAGCTCAGT
ruler 1.....10.....20.....30.....40.....50.....60.....70.....80.....90.....100.....110.....120.....130.....140.....150



humanA GACTATGAAGGGAGGCTGATCCAAAAAGCATCACAATAGAGAGAAATGGTTCTCTCAGCATTTGATGAGAGGAGAAAACAATATCTGGAGGAGCATCCCAGTGTGGAAAAGACCCTAAGAAGACTGGAGGTCCAATCTACAAGAGGAGA
humanB GACTATGAAGGGAGGCTGATCCAAAAAGCATCACAATAGAGAGAAATGGTTCTCTCAGCATTTGATGAGAGGAGAAAACAATATCTGGAGGAGCATCCCAGTGTGGAAAAGACCCTAAGAAGACTGGAGGTCCAATCTACAAGAGGAGA
chickenA GACTATGAAGGGAGGCTGATCCAAAAAGCATCACAATAGAGAGAAATGGTTCTCTCAGCATTTGATGAGAGGAGAAAACAATATCTGGAGGAGCATCCCAGTGTGGAAAAGACCCTAAGAAGACTGGAGGTCCAATCTACAAGAGGAGA
chickenB GACTATGAAGGGAGGCTGATCCAAAAAGCATCACAATAGAGAGAAATGGTTCTCTCAGCATTTGATGAGAGGAGAAAACAATATCTGGAGGAGCATCCCAGTGTGGAAAAGACCCTAAGAAGACTGGAGGTCCAATCTACAAGAGGAGA
chickenE GACTATGAAGGGAGGCTGATCCAAAAAGCATCACAATAGAGAGAAATGGTTCTCTCAGCATTTGATGAGAGGAGAAAACAATATCTGGAGGAGCATCCCAGTGTGGAAAAGACCCTAAGAAGACTGGAGGTCCAATCTACAAGAGGAGA
ruler160.....170.....180.....190.....200.....210.....220.....230.....240.....250.....260.....270.....280.....290.....300



humanA GATGGGAAATGGATGAGAGAAATGATCCTATATGATAAAGAGGAGATCAGAAGGATTTGGCGTCAAGCGAATAATGGAGAAGACGCAACTGCCGGCTCACCCATTTGATGATCTGGCACTCCAATCTGAATGATGCCACCTATCAGAGG
humanB GATGGGAAATGGATGAGAGAAATGATCCTATATGATAAAGAGGAGATCAGAAGGATTTGGCGTCAAGCGAATAATGGAGAAGACGCAACTGCCGGCTCACCCATTTGATGATCTGGCACTCCAATCTGAATGATGCCACCTATCAGAGG
chickenA GATGGGAAATGGATGAGAGAAATGATCCTATATGATAAAGAGGAGATCAGAAGGATTTGGCGTCAAGCGAATAATGGAGAAGACGCAACTGCCGGCTCACCCATTTGATGATCTGGCACTCCAATCTGAATGATGCCACCTATCAGAGG
chickenB GATGGGAAATGGATGAGAGAAATGATCCTATATGATAAAGAGGAGATCAGAAGGATTTGGCGTCAAGCGAATAATGGAGAAGACGCAACTGCCGGCTCACCCATTTGATGATCTGGCACTCCAATCTGAATGATGCCACCTATCAGAGG
chickenE GATGGGAAATGGATGAGAGAAATGATCCTATATGATAAAGAGGAGATCAGAAGGATTTGGCGTCAAGCGAATAATGGAGAAGACGCAACTGCCGGCTCACCCATTTGATGATCTGGCACTCCAATCTGAATGATGCCACCTATCAGAGG
ruler310.....320.....330.....340.....350.....360.....370.....380.....390.....400.....410.....420.....430.....440.....450



humanA ACGAGGGCACTTGTGCGTACTGGAATGGATCCCAGGATGTGTTCTCTGATGCAAGGCTCGACTCTTCCGAGGAGGTCTGGAGCTGCTGGAGCAGCAGTGAAAAGGATTTGGAAACAATGGTGATGGAATTTGATCCGAATGATCAAGCGAGGG
humanB ACGAGGGCACTTGTGCGTACTGGAATGGATCCCAGGATGTGTTCTCTGATGCAAGGCTCGACTCTTCCGAGGAGGTCTGGAGCTGCTGGAGCAGCAGTGAAAAGGATTTGGAAACAATGGTGATGGAATTTGATCCGAATGATCAAGCGAGGG
chickenA ACGAGGGCACTTGTGCGTACTGGAATGGATCCCAGGATGTGTTCTCTGATGCAAGGCTCGACTCTTCCGAGGAGGTCTGGAGCTGCTGGAGCAGCAGTGAAAAGGATTTGGAAACAATGGTGATGGAATTTGATCCGAATGATCAAGCGAGGG
chickenB ACGAGGGCACTTGTGCGTACTGGAATGGATCCCAGGATGTGTTCTCTGATGCAAGGCTCGACTCTTCCGAGGAGGTCTGGAGCTGCTGGAGCAGCAGTGAAAAGGATTTGGAAACAATGGTGATGGAATTTGATCCGAATGATCAAGCGAGGG
chickenE ACGAGGGCACTTGTGCGTACTGGAATGGATCCCAGGATGTGTTCTCTGATGCAAGGCTCGACTCTTCCGAGGAGGTCTGGAGCTGCTGGAGCAGCAGTGAAAAGGATTTGGAAACAATGGTGATGGAATTTGATCCGAATGATCAAGCGAGGG
ruler460.....470.....480.....490.....500.....510.....520.....530.....540.....550.....560.....570.....580.....590.....600



humanA ATCAATGATAGGAATTTCTGGAGAGGCAGAAAATGGGCGGAGAACAGAAATTCCTTATGAGAGAAATGTGCAACATCCTCAAAGGGGAAATTTCAAACAGCGGCACAAAGAGCGATGATGGACCAGGTGAGGGAAAGCCGGAATCCTGGGAAT
humanB ATCAATGATAGGAATTTCTGGAGAGGCAGAAAATGGGCGGAGAACAGAAATTCCTTATGAGAGAAATGTGCAACATCCTCAAAGGGGAAATTTCAAACAGCGGCACAAAGAGCGATGATGGACCAGGTGAGGGAAAGCCGGAATCCTGGGAAT
chickenA ATCAATGATAGGAATTTCTGGAGAGGCAGAAAATGGGCGGAGAACAGAAATTCCTTATGAGAGAAATGTGCAACATCCTCAAAGGGGAAATTTCAAACAGCGGCACAAAGAGCGATGATGGACCAGGTGAGGGAAAGCCGGAATCCTGGGAAT
chickenB ATCAATGATAGGAATTTCTGGAGAGGCAGAAAATGGGCGGAGAACAGAAATTCCTTATGAGAGAAATGTGCAACATCCTCAAAGGGGAAATTTCAAACAGCGGCACAAAGAGCGATGATGGACCAGGTGAGGGAAAGCCGGAATCCTGGGAAT
chickenE ATCAATGATAGGAATTTCTGGAGAGGCAGAAAATGGGCGGAGAACAGAAATTCCTTATGAGAGAAATGTGCAACATCCTCAAAGGGGAAATTTCAAACAGCGGCACAAAGAGCGATGATGGACCAGGTGAGGGAAAGCCGGAATCCTGGGAAT
ruler610.....620.....630.....640.....650.....660.....670.....680.....690.....700.....710.....720.....730.....740.....750



humanA GCTGAAATTGAAGATCTCATATTTCTGACGGTCTGTCTCATTCTGAGGGGATCAGTGGCTCATAAGTCTTGCCCTGCTTGTGTGTATGGACTTGCTGTGGCCAGTGGATACGACTTTGAAAGGGAGGGATACTCCCTAGTCGGA
humanB GCTGAAATTGAAGATCTCATATTTCTGACGGTCTGTCTCATTCTGAGGGGATCAGTGGCTCATAAGTCTTGCCCTGCTTGTGTGTATGGACTTGCTGTGGCCAGTGGATACGACTTTGAAAGGGAGGGATACTCCCTAGTCGGA
chickenA GCTGAAATTGAAGATCTCATATTTCTGACGGTCTGTCTCATTCTGAGGGGATCAGTGGCTCATAAGTCTTGCCCTGCTTGTGTGTATGGACTTGCTGTGGCCAGTGGATACGACTTTGAAAGGGAGGGATACTCCCTAGTCGGA
chickenB GCTGAAATTGAAGATCTCATATTTCTGACGGTCTGTCTCATTCTGAGGGGATCAGTGGCTCATAAGTCTTGCCCTGCTTGTGTGTATGGACTTGCTGTGGCCAGTGGATACGACTTTGAAAGGGAGGGATACTCCCTAGTCGGA
chickenE GCTGAAATTGAAGATCTCATATTTCTGACGGTCTGTCTCATTCTGAGGGGATCAGTGGCTCATAAGTCTTGCCCTGCTTGTGTGTATGGACTTGCTGTGGCCAGTGGATACGACTTTGAAAGGGAGGGATACTCCCTAGTCGGA
ruler760.....770.....780.....790.....800.....810.....820.....830.....840.....850.....860.....870.....880.....890.....900



humanA ATCGATCCTTTCCGCTGTGCTCCAAAAACAGTCAAGTCTTCAGTCTCATCAGACCAAAAGAAAACCCAGCACATAAAAGTCAGCTGGTATGGATGGCATGCCACTCTGCAGCTTTTGAAGATCTGAGAGTGTCAAGCTTCATTAGAGGAAACA
humanB ATCGATCCTTTCCGCTGTGCTCCAAAAACAGTCAAGTCTTCAGTCTCATCAGACCAAAAGAAAACCCAGCACATAAAAGTCAGCTGGTATGGATGGCATGCCACTCTGCAGCTTTTGAAGATCTGAGAGTGTCAAGCTTCATTAGAGGAAACA
chickenA ATCGATCCTTTCCGCTGTGCTCCAAAAACAGTCAAGTCTTCAGTCTCATCAGACCAAAAGAAAACCCAGCACATAAAAGTCAGCTGGTATGGATGGCATGCCACTCTGCAGCTTTTGAAGATCTGAGAGTGTCAAGCTTCATTAGAGGAAACA
chickenB ATCGATCCTTTCCGCTGTGCTCCAAAAACAGTCAAGTCTTCAGTCTCATCAGACCAAAAGAAAACCCAGCACATAAAAGTCAGCTGGTATGGATGGCATGCCACTCTGCAGCTTTTGAAGATCTGAGAGTGTCAAGCTTCATTAGAGGAAACA
chickenE ATCGATCCTTTCCGCTGTGCTCCAAAAACAGTCAAGTCTTCAGTCTCATCAGACCAAAAGAAAACCCAGCACATAAAAGTCAGCTGGTATGGATGGCATGCCACTCTGCAGCTTTTGAAGATCTGAGAGTGTCAAGCTTCATTAGAGGAAACA
ruler910.....920.....930.....940.....950.....960.....970.....980.....990.....1000.....1010.....1020.....1030.....1040.....1050



humanA AGAGTAGTCCCAAGAGGACAGCTGTCCACCAGAGGAGTTAGATTGCTTCAAATGAGAAACATGGAGACAAATGGACTCCAGTACTCTTGAAGTGGAGGACAGATACTGGGCTATAAGGACCAGAAGTGGAGGAAACACTAACCCAGCAGAGA
humanB AGAGTAGTCCCAAGAGGACAGCTGTCCACCAGAGGAGTTAGATTGCTTCAAATGAGAAACATGGAGACAAATGGACTCCAGTACTCTTGAAGTGGAGGACAGATACTGGGCTATAAGGACCAGAAGTGGAGGAAACACTAACCCAGCAGAGA
chickenA AGAGTAGTCCCAAGAGGACAGCTGTCCACCAGAGGAGTTAGATTGCTTCAAATGAGAAACATGGAGACAAATGGACTCCAGTACTCTTGAAGTGGAGGACAGATACTGGGCTATAAGGACCAGAAGTGGAGGAAACACTAACCCAGCAGAGA
chickenB AGAGTAGTCCCAAGAGGACAGCTGTCCACCAGAGGAGTTAGATTGCTTCAAATGAGAAACATGGAGACAAATGGACTCCAGTACTCTTGAAGTGGAGGACAGATACTGGGCTATAAGGACCAGAAGTGGAGGAAACACTAACCCAGCAGAGA
chickenE AGAGTAGTCCCAAGAGGACAGCTGTCCACCAGAGGAGTTAGATTGCTTCAAATGAGAAACATGGAGACAAATGGACTCCAGTACTCTTGAAGTGGAGGACAGATACTGGGCTATAAGGACCAGAAGTGGAGGAAACACTAACCCAGCAGAGA
ruler1060.....1070.....1080.....1090.....1100.....1110.....1120.....1130.....1140.....1150.....1160.....1170.....1180.....1190.....1200



humanA GCATCCGCAGGGCAGATCAGCGTACAGCCCACTTCTGTGTACAGAGGAACCTCCCATTGAGAGAGCAACCATTTATGGGGCATTACAGGGAACTGAAGGCAGAACTTACAGACATGAGAACAGAAATCATAAGGATGATGGAAAAAT
humanB GCATCCGCAGGGCAGATCAGCGTACAGCCCACTTCTGTGTACAGAGGAACCTCCCATTGAGAGAGCAACCATTTATGGGGCATTACAGGGAACTGAAGGCAGAACTTACAGACATGAGAACAGAAATCATAAGGATGATGGAAAAAT
chickenA GCATCCGCAGGGCAGATCAGCGTACAGCCCACTTCTGTGTACAGAGGAACCTCCCATTGAGAGAGCAACCATTTATGGGGCATTACAGGGAACTGAAGGCAGAACTTACAGACATGAGAACAGAAATCATAAGGATGATGGAAAAAT
chickenB GCATCCGCAGGGCAGATCAGCGTACAGCCCACTTCTGTGTACAGAGGAACCTCCCATTGAGAGAGCAACCATTTATGGGGCATTACAGGGAACTGAAGGCAGAACTTACAGACATGAGAACAGAAATCATAAGGATGATGGAAAAAT
chickenE GCATCCGCAGGGCAGATCAGCGTACAGCCCACTTCTGTGTACAGAGGAACCTCCCATTGAGAGAGCAACCATTTATGGGGCATTACAGGGAACTGAAGGCAGAACTTACAGACATGAGAACAGAAATCATAAGGATGATGGAAAAAT
ruler1210.....1220.....1230.....1240.....1250.....1260.....1270.....1280.....1290.....1300.....1310.....1320.....1330.....1340.....1350



humanA GCCAGACCTGAGGATGTGTCTTTCCAGGGGCGGGGAGTCTTCGAGCTCTCGGACGAAAAGGCAAGAACCCGATCGTGCCCTTCCCTTGCATGAGTAAAGAAAGATCTTATTTCTTCGGAGACAATGCAGAGGAGTATGCAATTAA
humanB GCCAGACCTGAGGATGTGTCTTTCCAGGGGCGGGGAGTCTTCGAGCTCTCGGACGAAAAGGCAAGAACCCGATCGTGCCCTTCCCTTGCATGAGTAAAGAAAGATCTTATTTCTTCGGAGACAATGCAGAGGAGTATGCAATTAA
chickenA GCCAGACCTGAGGATGTGTCTTTCCAGGGGCGGGGAGTCTTCGAGCTCTCGGACGAAAAGGCAAGAACCCGATCGTGCCCTTCCCTTGCATGAGTAAAGAAAGATCTTATTTCTTCGGAGACAATGCAGAGGAGTATGCAATTAA
chickenB GCCAGACCTGAGGATGTGTCTTTCCAGGGGCGGGGAGTCTTCGAGCTCTCGGACGAAAAGGCAAGAACCCGATCGTGCCCTTCCCTTGCATGAGTAAAGAAAGATCTTATTTCTTCGGAGACAATGCAGAGGAGTATGCAATTAA
chickenE GCCAGACCTGAGGATGTGTCTTTCCAGGGGCGGGGAGTCTTCGAGCTCTCGGACGAAAAGGCAAGAACCCGATCGTGCCCTTCCCTTGCATGAGTAAAGAAAGATCTTATTTCTTCGGAGACAATGCAGAGGAGTATGCAATTAA
ruler1360.....1370.....1380.....1390.....1400.....1410.....1420.....1430.....1440.....1450.....1460.....1470.....1480.....1490.....



humanA ATGGATTCCAACACTGTGTCAAGCTTTTCAGGTAGACTGCTTTCTTTGGCATGTCCGCAAAACGATTTGCAGACCAAGAACTGGGTGATGCCCAATTCCTTGACCGGCTTGCCGAGACCAGCACTCTT
humanB ATGGATTCCAACACTGTGTCAAGCTTTTCAGGTAGACTGCTTTCTTTGGCATGTCCGCAAAACGATTTGCAGACCAAGAACTGGGTGATGCCCAATTCCTTGACCGGCTTGCCGAGACCAGCACTCTT
chickenA ATGGATTCCAACACTGTGTCAAGCTTTTCAGGTAGACTGCTTTCTTTGGCATGTCCGCAAAACGATTTGCAGACCAAGAACTGGGTGATGCCCAATTCCTTGACCGGCTTGCCGAGACCAGCACTCTT
chickenB ATGGATTCCAACACTGTGTCAAGCTTTTCAGGTAGACTGCTTTCTTTGGCATGTCCGCAAAACGATTTGCAGACCAAGAACTGGGTGATGCCCAATTCCTTGACCGGCTTGCCGAGACCAGCACTCTT
chickenE ATGGATTCCAACACTGTGTCAAGCTTTTCAGGTAGACTGCTTTCTTTGGCATGTCCGCAAAACGATTTGCAGACCAAGAACTGGGTGATGCCCAATTCCTTGACCGGCTTGCCGAGACCAGCACTCTT
ruler 1.....10.....20.....30.....40.....50.....60.....70.....80.....90.....100.....110.....120.....130.....140.....150



humanA GGTCTGGACATCGAAACAGCCACTCGTGTGGAAAGCAGATAGTGGAGAGGATTCTGGAGGAAGAAATCCGATGAGGCACCTTAAAAATGACCATGCTCTGTACCTGCTTCACGCTACCTAACTGACATGACTCTTGAAGAGATGTCAAGA
humanB GGTCTGGACATCGAAACAGCCACTCGTGTGGAAAGCAGATAGTGGAGAGGATTCTGGAGGAAGAAATCCGATGAGGCACCTTAAAAATGACCATGCTCTGTACCTGCTTCACGCTACCTAACTGACATGACTCTTGAAGAGATGTCAAGA
chickenA GGTCTGGACATCGAAACAGCCACTCGTGTGGAAAGCAGATAGTGGAGAGGATTCTGGAGGAAGAAATCCGATGAGGCACCTTAAAAATGACCATGCTCTGTACCTGCTTCACGCTACCTAACTGACATGACTCTTGAAGAGATGTCAAGA
chickenB GGTCTGGACATCGAAACAGCCACTCGTGTGGAAAGCAGATAGTGGAGAGGATTCTGGAGGAAGAAATCCGATGAGGCACCTTAAAAATGACCATGCTCTGTACCTGCTTCACGCTACCTAACTGACATGACTCTTGAAGAGATGTCAAGA
chickenE GGTCTGGACATCGAAACAGCCACTCGTGTGGAAAGCAGATAGTGGAGAGGATTCTGGAGGAAGAAATCCGATGAGGCACCTTAAAAATGACCATGCTCTGTACCTGCTTCACGCTACCTAACTGACATGACTCTTGAAGAGATGTCAAGA
ruler160.....170.....180.....190.....200.....210.....220.....230.....240.....250.....260.....270.....280.....290.....300



humanA GACTGGTTCATGTCATGCCCAAAACAAAAAGTGGCAGGTTCCCTCTGTATCAGAATGGACCAAGCGATTATGAATAAGAACATCATACTGAAAGCAAAATTCAGTGTGATCTTGCATCGGCTGGAGACACTAATACTACTCAGAGCTTTC
humanB GACTGGTTCATGTCATGCCCAAAACAAAAAGTGGCAGGTTCCCTCTGTATCAGAATGGACCAAGCGATTATGAATAAGAACATCATACTGAAAGCAAAATTCAGTGTGATCTTGCATCGGCTGGAGACACTAATACTACTCAGAGCTTTC
chickenA GACTGGTTCATGTCATGCCCAAAACAAAAAGTGGCAGGTTCCCTCTGTATCAGAATGGACCAAGCGATTATGAATAAGAACATCATACTGAAAGCAAAATTCAGTGTGATCTTGCATCGGCTGGAGACACTAATACTACTCAGAGCTTTC
chickenB GACTGGTTCATGTCATGCCCAAAACAAAAAGTGGCAGGTTCCCTCTGTATCAGAATGGACCAAGCGATTATGAATAAGAACATCATACTGAAAGCAAAATTCAGTGTGATCTTGCATCGGCTGGAGACACTAATACTACTCAGAGCTTTC
chickenE GACTGGTTCATGTCATGCCCAAAACAAAAAGTGGCAGGTTCCCTCTGTATCAGAATGGACCAAGCGATTATGAATAAGAACATCATACTGAAAGCAAAATTCAGTGTGATCTTGCATCGGCTGGAGACACTAATACTACTCAGAGCTTTC
ruler310.....320.....330.....340.....350.....360.....370.....380.....390.....400.....410.....420.....430.....440.....450



humanA ACTGAAGAAGGAGCAATCATCGGTGAAATTTACCATTGCCCTCTCTCCAGGACATACTGATGAGGATGTCAAAAATGCAATTGGGGTCTCATCGGAGGACTTGAATGGAATGATAACACAGTTGAGTCTCTGAAACTCTACAGAGA
humanB ACTGAAGAAGGAGCAATCATCGGTGAAATTTACCATTGCCCTCTCTCCAGGACATACTGATGAGGATGTCAAAAATGCAATTGGGGTCTCATCGGAGGACTTGAATGGAATGATAACACAGTTGAGTCTCTGAAACTCTACAGAGA
chickenA ACTGAAGAAGGAGCAATCATCGGTGAAATTTACCATTGCCCTCTCTCCAGGACATACTGATGAGGATGTCAAAAATGCAATTGGGGTCTCATCGGAGGACTTGAATGGAATGATAACACAGTTGAGTCTCTGAAACTCTACAGAGA
chickenB ACTGAAGAAGGAGCAATCATCGGTGAAATTTACCATTGCCCTCTCTCCAGGACATACTGATGAGGATGTCAAAAATGCAATTGGGGTCTCATCGGAGGACTTGAATGGAATGATAACACAGTTGAGTCTCTGAAACTCTACAGAGA
chickenE ACTGAAGAAGGAGCAATCATCGGTGAAATTTACCATTGCCCTCTCTCCAGGACATACTGATGAGGATGTCAAAAATGCAATTGGGGTCTCATCGGAGGACTTGAATGGAATGATAACACAGTTGAGTCTCTGAAACTCTACAGAGA
ruler460.....470.....480.....490.....500.....510.....520.....530.....540.....550.....560.....570.....580.....590.....600



humanA TTGCTTTGGAGAAGCAGTAATGAGGATGGGAGACCTCCACTCCCTCCAAAAACAGAAACGGAAAAATGGCGAGAACAATTGAGTCAGAAAGTTTGA
humanB TTGCTTTGGAGAAGCAGTAATGAGGATGGGAGACCTCCACTCCCTCCAAAAACAGAAACGGAAAAATGGCGAGAACAATTGAGTCAGAAAGTTTGA
chickenA TTGCTTTGGAGAAGCAGTAATGAGGATGGGAGACCTCCACTCCCTCCAAAAACAGAAACGGAAAAATGGCGAGAACAATTGAGTCAGAAAGTTTGA
chickenB TTGCTTTGGAGAAGCAGTAATGAGGATGGGAGACCTCCACTCCCTCCAAAAACAGAAACGGAAAAATGGCGAGAACAATTGAGTCAGAAAGTTTGA
chickenE TTGCTTTGGAGAAGCAGTAATGAGGATGGGAGACCTCCACTCCCTCCAAAAACAGAAACGGAAAAATGGCGAGAACAATTGAGTCAGAAAGTTTGA
ruler610.....620.....630.....640.....650.....660.....670.....680.....690...



humanA ATGGATTCCAACACTGTGTCAAGCTTT CAGGACATACTGATGAGGATGTCAAAAAATGCAATTGGGGTCCTCATCGGAGGACTTGAATGGAATGATAAACACAGTTCCGAGTCTCTGAAACTCTACAGAGATTCCGTTGGAGAAGCAGTAATG
humanB ATGGATTCCAACACTGTGTCAAGCTTT CAGGACATACTGATGAGGATGTCAAAAAATGCAATTGGGGTCCTCATCGGAGGACTTGAATGGAATGATAAACACAGTTCCGAGTCTCTGAAACTCTACAGAGATTCCGTTGGAGAAGCAGTAATG
chickenA ATGGATTCCAACACTGTGTCAAGCTTT CAGGACATACTGATGAGGATGTCAAAAAATGCAATTGGGGTCCTCATCGGAGGACTTGAATGGAATGATAAACACAGTTCCGAGTCTCTGAAACTCTACAGAGATTCCGTTGGAGAAGCAGTAATG
chickenB ATGGATTCCAACACTGTGTCAAGCTTT CAGGACATACTGATGAGGATGTCAAAAAATGCAATTGGGGTCCTCATCGGAGGACTTGAATGGAATGATAAACACAGTTCCGAGTCTCTGAAACTCTACAGAGATTCCGTTGGAGAAGCAGTAATG
chickenC ATGGATTCCAACACTGTGTCAAGCTTT CAGGACATACTGATGAGGATGTCAAAAAATGCAATTGGGGTCCTCATCGGAGGACTTGAATGGAATGATAAACACAGTTCCGAGTCTCTGAAACTCTACAGAGATTCCGTTGGAGAAGCAGTAATG
chickenE ATGGATTCCAACACTGTGTCAAGCTTT CAGGACATACTGATGAGGATGTCAAAAAATGCAATTGGGGTCCTCATCGGAGGACTTGAATGGAATGATAAACACAGTTCCGAGTCTCTGAAACTCTACAGAGATTCCGTTGGAGAAGCAGTAATG
ruler 1.....10.....20.....30.....40.....50.....60.....70.....80.....90.....100.....110.....120.....130.....140.....150



humanA AGGATGGGAGACCTCCACTCCCTCCAAAAACAGAAACGGAAAAATGGCGAGAACAAATTGAGTCAGAAAGTTTGAGGAAAATAAGGTGGCTGATTGAAGAAGTGCGACATAGACTAAAGGTTACAGAGAAATAGTTTTGAACAAATAACATTTATG
humanB AGGATGGGAGACCTCCACTCCCTCCAAAAACAGAAACGGAAAAATGGCGAGAACAAATTGAGTCAGAAAGTTTGAGGAAAATAAGGTGGCTGATTGAAGAAGTGCGACATAGACTAAAGGTTACAGAGAAATAGTTTTGAACAAATAACATTTATG
chickenA AGGATGGGAGACCTCCACTCCCTCCAAAAACAGAAACGGAAAAATGGCGAGAACAAATTGAGTCAGAAAGTTTGAGGAAAATAAGGTGGCTGATTGAAGAAGTGCGACATAGACTAAAGGTTACAGAGAAATAGTTTTGAACAAATAACATTTATG
chickenB AGGATGGGAGACCTCCACTCCCTCCAAAAACAGAAACGGAAAAATGGCGAGAACAAATTGAGTCAGAAAGTTTGAGGAAAATAAGGTGGCTGATTGAAGAAGTGCGACATAGACTAAAGGTTACAGAGAAATAGTTTTGAACAAATAACATTTATG
chickenC AGGATGGGAGACCTCCACTCCCTCCAAAAACAGAAACGGAAAAATGGCGAGAACAAATTGAGTCAGAAAGTTTGAGGAAAATAAGGTGGCTGATTGAAGAAGTGCGACATAGACTAAAGGTTACAGAGAAATAGTTTTGAACAAATAACATTTATG
chickenE AGGATGGGAGACCTCCACTCCCTCCAAAAACAGAAACGGAAAAATGGCGAGAACAAATTGAGTCAGAAAGTTTGAGGAAAATAAGGTGGCTGATTGAAGAAGTGCGACATAGACTAAAGGTTACAGAGAAATAGTTTTGAACAAATAACATTTATG
ruler160.....170.....180.....190.....200.....210.....220.....230.....240.....250.....260.....270.....280.....290.....300



humanA CAAGCCTTACAAC TACTGCTTGAAGTGGAGCAAGAGATAAAGAACTTTCTCGTTTCAGCTTATTTAA
humanB CAAGCCTTACAAC TACTGCTTGAAGTGGAGCAAGAGATAAAGAACTTTCTCGTTTCAGCTTATTTAA
chickenA CAAGCCTTACAAC TACTGCTTGAAGTGGAGCAAGAGATAAAGAACTTTCTCGTTTCAGCTTATTTAA
chickenB CAAGCCTTACAAC TACTGCTTGAAGTGGAGCAAGAGATAAAGAACTTTCTCGTTTCAGCTTATTTAA
chickenC CAAGCCTTACAAC TACTGCTTGAAGTGGAGCAAGAGATAAAGAACTTTCTCGTTTCAGCTTATTTAA
chickenE CAAGCCTTACAAC TACTGCTTGAAGTGGAGCAAGAGATAAAGAACTTTCTCGTTTCAGCTTATTTAA
ruler310.....320.....330.....340.....350.....360.....



humanA ATGGAAGA TTTGTG CGACAATG CTTCAATCCAATGATCGT CGAGCTTGCGGAAAAAGCAATGAAAAGAATATGGGGAAAGATCCGAAAATCGAAA CCAACAAAGTTGCTGCAATATGCACTCA TTTGGAAGTCTGTTTCATGTATT CAGAT
humanB ATGGAAGA CTTTGTGCGACAATGCTTCAATCCAATGATCGT CGAGCTTGCGGAAAAAGCAATGAAAAGAATATGGGGAAAGATCCGAAAATCGAAA CCAACAAAGTTGCTGCAATATGCACTCA TTTGGAAGTCTGTTTCATGTATT CAGAT
chickenA ATGGAAGA CTTTGTGCGACAATGCTTCAATCCAATGATCGT CGAGCTTGCGGAAAAAGCAATGAAAAGAATATGGGGAAAGATCCGAAAATCGAAA CCAACAAAGTTGCTGCAATATGCACTCA TTTGGAAGTCTGTTTCATGTATT CAGAT
chickenB ATGGAAGA CTTTGTGCGACAATGCTTCAATCCAATGATCGT CGAGCTTGCGGAAAAAGCAATGAAAAGAATATGGGGAAAGATCCGAAAATCGAAA CCAACAAAGTTGCTGCAATATGCACTCA TTTGGAAGTCTGTTTCATGTATT CAGAT
chickenD ATGGAAGA CTTTGTGCGACAATGCTTCAATCCAATGATCGT CGAGCTTGCGGAAAAAGCAATGAAAAGAATATGGGGAAAGATCCGAAAATCGAAA CCAACAAAGTTGCTGCAATATGCACTCA TTTGGAAGTCTGTTTCATGTATT CAGAT
ruler 1.....10.....20.....30.....40.....50.....60.....70.....80.....90.....100.....110.....120.....130.....140.....150



humanA TTCCACTT CATTGATGAACGGGGGGAATCAATAATTGTGGAATCTGGTGATCCAAATGCATTACTGAAGCATCGATT CGAGATAATTGAAGGAAGAGACAGAACCAATGGCTGGACAGTGGTGAATAGCATCTGCAACACCCAGGGGGTCT
humanB TTCCACTT CATTGATGAACGGGGGGAATCAATAATTGTGGAATCTGGTGATCCAAATGCATTACTGAAGCATCGATT CGAGATAATTGAAGGAAGAGACAGAACCAATGGCTGGACAGTGGTGAATAGCATCTGCAACACCCAGGGGGTCT
chickenA TTCCACTT CATTGATGAACGGGGGGAATCAATAATTGTGGAATCTGGTGATCCAAATGCATTACTGAAGCATCGATT CGAGATAATTGAAGGAAGAGACAGAACCAATGGCTGGACAGTGGTGAATAGCATCTGCAACACCCAGGGGGTCT
chickenB TTCCACTT CATTGATGAACGGGGGGAATCAATAATTGTGGAATCTGGTGATCCAAATGCATTACTGAAGCATCGATT CGAGATAATTGAAGGAAGAGACAGAACCAATGGCTGGACAGTGGTGAATAGCATCTGCAACACCCAGGGGGTCT
chickenD TTCCACTT CATTGATGAACGGGGGGAATCAATAATTGTGGAATCTGGTGATCCAAATGCATTACTGAAGCATCGATT CGAGATAATTGAAGGAAGAGACAGAACCAATGGCTGGACAGTGGTGAATAGCATCTGCAACACCCAGGGGGTCT
ruler160.....170.....180.....190.....200.....210.....220.....230.....240.....250.....260.....270.....280.....290.....300



humanA GAGAAGCCTAAGTTCCTTCGGATCTGTATGACTACAAGGAGAACCGGTT CATTGAAATTGGAGTGACCGGAGAGAGGTCATATATATTACCTAGAGAAAAGCCAACAAAGATAAAAATCCGAGAAGACACACATTACATCTTCTCATT
humanB GAGAAGCCTAAGTTCCTTCGGATCTGTATGACTACAAGGAGAACCGGTT CATTGAAATTGGAGTGACCGGAGAGAGGTCATATATATTACCTAGAGAAAAGCCAACAAAGATAAAAATCCGAGAAGACACACATTACATCTTCTCATT
chickenA GAGAAGCCTAAGTTCCTTCGGATCTGTATGACTACAAGGAGAACCGGTT CATTGAAATTGGAGTGACCGGAGAGAGGTCATATATATTACCTAGAGAAAAGCCAACAAAGATAAAAATCCGAGAAGACACACATTACATCTTCTCATT
chickenB GAGAAGCCTAAGTTCCTTCGGATCTGTATGACTACAAGGAGAACCGGTT CATTGAAATTGGAGTGACCGGAGAGAGGTCATATATATTACCTAGAGAAAAGCCAACAAAGATAAAAATCCGAGAAGACACACATTACATCTTCTCATT
chickenD GAGAAGCCTAAGTTCCTTCGGATCTGTATGACTACAAGGAGAACCGGTT CATTGAAATTGGAGTGACCGGAGAGAGGTCATATATATTACCTAGAGAAAAGCCAACAAAGATAAAAATCCGAGAAGACACACATTACATCTTCTCATT
ruler310.....320.....330.....340.....350.....360.....370.....380.....390.....400.....410.....420.....430.....440.....450



humanA ACTGGAGAAGAAATGGCCACCAAAGCAGACTACACCCCTTGA CGAAGAAAAGCAGAGCAAGAATTAAAACAGACTGTTCACTATAAGACAAGAAATGGCCAGCAGGGGTCTATGGGATTCTTTCTGTCAGTCCGAAAGAGGGGAAGAGACA
humanB ACTGGAGAAGAAATGGCCACCAAAGCAGACTACACCCCTTGA CGAAGAAAAGCAGAGCAAGAATTAAAACAGACTGTTCACTATAAGACAAGAAATGGCCAGCAGGGGTCTATGGGATTCTTTCTGTCAGTCCGAAAGAGGGGAAGAGACA
chickenA ACTGGAGAAGAAATGGCCACCAAAGCAGACTACACCCCTTGA CGAAGAAAAGCAGAGCAAGAATTAAAACAGACTGTTCACTATAAGACAAGAAATGGCCAGCAGGGGTCTATGGGATTCTTTCTGTCAGTCCGAAAGAGGGGAAGAGACA
chickenB ACTGGAGAAGAAATGGCCACCAAAGCAGACTACACCCCTTGA CGAAGAAAAGCAGAGCAAGAATTAAAACAGACTGTTCACTATAAGACAAGAAATGGCCAGCAGGGGTCTATGGGATTCTTTCTGTCAGTCCGAAAGAGGGGAAGAGACA
chickenD ACTGGAGAAGAAATGGCCACCAAAGCAGACTACACCCCTTGA CGAAGAAAAGCAGAGCAAGAATTAAAACAGACTGTTCACTATAAGACAAGAAATGGCCAGCAGGGGTCTATGGGATTCTTTCTGTCAGTCCGAAAGAGGGGAAGAGACA
ruler460.....470.....480.....490.....500.....510.....520.....530.....540.....550.....560.....570.....580.....590.....600



humanA ATTGAAGAAAGATTTGAAATCACAGGAAACCATGCGCAGGCTTGCCGACCAAAGTCTCCACCGAACTTCTCCAGCCTTGAAAACCTTAGAGCCTATGTGGATGGATTGAAACCGAACGGCTGATTGAGGGCAAGCTTTCTCAAATGTCA
humanB ATTGAAGAAAGATTTGAAATCACAGGAAACCATGCGCAGGCTTGCCGACCAAAGTCTCCACCGAACTTCTCCAGCCTTGAAAACCTTAGAGCCTATGTGGATGGATTGAAACCGAACGGCTGATTGAGGGCAAGCTTTCTCAAATGTCA
chickenA ATTGAAGAAAGATTTGAAATCACAGGAAACCATGCGCAGGCTTGCCGACCAAAGTCTCCACCGAACTTCTCCAGCCTTGAAAACCTTAGAGCCTATGTGGATGGATTGAAACCGAACGGCTGATTGAGGGCAAGCTTTCTCAAATGTCA
chickenB ATTGAAGAAAGATTTGAAATCACAGGAAACCATGCGCAGGCTTGCCGACCAAAGTCTCCACCGAACTTCTCCAGCCTTGAAAACCTTAGAGCCTATGTGGATGGATTGAAACCGAACGGCTGATTGAGGGCAAGCTTTCTCAAATGTCA
chickenD ATTGAAGAAAGATTTGAAATCACAGGAAACCATGCGCAGGCTTGCCGACCAAAGTCTCCACCGAACTTCTCCAGCCTTGAAAACCTTAGAGCCTATGTGGATGGATTGAAACCGAACGGCTGATTGAGGGCAAGCTTTCTCAAATGTCA
ruler610.....620.....630.....640.....650.....660.....670.....680.....690.....700.....710.....720.....730.....740.....750



humanA AAAGAAGTGAACGCCAGGATTGAGCCATTTCTGAAAGCAAACCCACGCCCTTCAAGTTGCCTGATGGGTCCCCTTGCTCTCAGGGTCAAAATTCCTTGCTGATGGATGCCTTGAAACTGAGCATTGAAGACCCAAGTCAAGAGGGGAGAG
humanB AAAGAAGTGAACGCCAGGATTGAGCCATTTCTGAAAGCAAACCCACGCCCTTCAAGTTGCCTGATGGGTCCCCTTGCTCTCAGGGTCAAAATTCCTTGCTGATGGATGCCTTGAAACTGAGCATTGAAGACCCAAGTCAAGAGGGGAGAG
chickenA AAAGAAGTGAACGCCAGGATTGAGCCATTTCTGAAAGCAAACCCACGCCCTTCAAGTTGCCTGATGGGTCCCCTTGCTCTCAGGGTCAAAATTCCTTGCTGATGGATGCCTTGAAACTGAGCATTGAAGACCCAAGTCAAGAGGGGAGAG
chickenB AAAGAAGTGAACGCCAGGATTGAGCCATTTCTGAAAGCAAACCCACGCCCTTCAAGTTGCCTGATGGGTCCCCTTGCTCTCAGGGTCAAAATTCCTTGCTGATGGATGCCTTGAAACTGAGCATTGAAGACCCAAGTCAAGAGGGGAGAG
ruler760.....770.....780.....790.....800.....810.....820.....830.....840.....850.....860.....870.....880.....890.....900



humanA GGGATACCACTATACGATGCAATCAAATGCAATGAAGACATTTTTCGGCTGGAAAGAGCCCAATATAATCAAACCAATGAAAAGGGCATAAATCCTAACTATCTCCTGGCTTGGAAAGCAAGTGCTAGCAGAACTCCAGGACCTTGAAAAT
humanB GGGATACCACTATACGATGCAATCAAATGCAATGAAGACATTTTTCGGCTGGAAAGAGCCCAATATAATCAAACCAATGAAAAGGGCATAAATCCTAACTATCTCCTGGCTTGGAAAGCAAGTGCTAGCAGAACTCCAGGACCTTGAAAAT
chickenA GGGATACCACTATACGATGCAATCAAATGCAATGAAGACATTTTTCGGCTGGAAAGAGCCCAATATAATCAAACCAATGAAAAGGGCATAAATCCTAACTATCTCCTGGCTTGGAAAGCAAGTGCTAGCAGAACTCCAGGACCTTGAAAAT
chickenB GGGATACCACTATACGATGCAATCAAATGCAATGAAGACATTTTTCGGCTGGAAAGAGCCCAATATAATCAAACCAATGAAAAGGGCATAAATCCTAACTATCTCCTGGCTTGGAAAGCAAGTGCTAGCAGAACTCCAGGACCTTGAAAAT
ruler910.....920.....930.....940.....950.....960.....970.....980.....990.....1000.....1010.....1020.....1030.....1040.....1050



humanA GAGGAGAAAATCCCAAAGACAAAGAACATGAAGAAAAAAGCCAAATGAAGTGGGCACCTTGGTGAGAACATGGCACAGAAAAAGTGGACTTTGAGGATTGCAAGGATGTTGGGATCTAAAAACAGTATGATAGCGATGAGCCAGAGCCT
humanB GAGGAGAAAATCCCAAAGACAAAGAACATGAAGAAAAAAGCCAAATGAAGTGGGCACCTTGGTGAGAACATGGCACAGAAAAAGTGGACTTTGAGGATTGCAAGGATGTTGGGATCTAAAAACAGTATGATAGCGATGAGCCAGAGCCT
chickenA GAGGAGAAAATCCCAAAGACAAAGAACATGAAGAAAAAAGCCAAATGAAGTGGGCACCTTGGTGAGAACATGGCACAGAAAAAGTGGACTTTGAGGATTGCAAGGATGTTGGGATCTAAAAACAGTATGATAGCGATGAGCCAGAGCCT
chickenB GAGGAGAAAATCCCAAAGACAAAGAACATGAAGAAAAAAGCCAAATGAAGTGGGCACCTTGGTGAGAACATGGCACAGAAAAAGTGGACTTTGAGGATTGCAAGGATGTTGGGATCTAAAAACAGTATGATAGCGATGAGCCAGAGCCT
ruler1060.....1070.....1080.....1090.....1100.....1110.....1120.....1130.....1140.....1150.....1160.....1170.....1180.....1190.....1200



humanA AGATCGTTAGCAAGCTGGATCCAGAGTGAATTCAATAAGGCATGTGAATTGACCGACTCGAGCTGGATAGAAGTGGATGAAAAGGGGAAGATGTTGCTCCGATTGAAACACATTGCAAGTATGAGGAGGAATTATTTTACAGCAGAAGTG
humanB AGATCGTTAGCAAGCTGGATCCAGAGTGAATTCAATAAGGCATGTGAATTGACCGACTCGAGCTGGATAGAAGTGGATGAAAAGGGGAAGATGTTGCTCCGATTGAAACACATTGCAAGTATGAGGAGGAATTATTTTACAGCAGAAGTG
chickenA AGATCGTTAGCAAGCTGGATCCAGAGTGAATTCAATAAGGCATGTGAATTGACCGACTCGAGCTGGATAGAAGTGGATGAAAAGGGGAAGATGTTGCTCCGATTGAAACACATTGCAAGTATGAGGAGGAATTATTTTACAGCAGAAGTG
chickenB AGATCGTTAGCAAGCTGGATCCAGAGTGAATTCAATAAGGCATGTGAATTGACCGACTCGAGCTGGATAGAAGTGGATGAAAAGGGGAAGATGTTGCTCCGATTGAAACACATTGCAAGTATGAGGAGGAATTATTTTACAGCAGAAGTG
ruler1210.....1220.....1230.....1240.....1250.....1260.....1270.....1280.....1290.....1300.....1310.....1320.....1330.....1340.....1350



humanA TCCCATTTGACGGGCCACTGAATACATAAATGAAGGGAGTTACATAAAATACAGCTCTGCTCAATGCATCTTGGCGGGCTATGGATGACTTCCAGCTGATTCCAATGATAAGCAAATGTAGGACAAAAGAAAGGAAGGCCGGAACAAACCTG
humanB TCCCATTTGACGGGCCACTGAATACATAAATGAAGGGAGTTACATAAAATACAGCTCTGCTCAATGCATCTTGGCGGGCTATGGATGACTTCCAGCTGATTCCAATGATAAGCAAATGTAGGACAAAAGAAAGGAAGGCCGGAACAAACCTG
chickenA TCCCATTTGACGGGCCACTGAATACATAAATGAAGGGAGTTACATAAAATACAGCTCTGCTCAATGCATCTTGGCGGGCTATGGATGACTTCCAGCTGATTCCAATGATAAGCAAATGTAGGACAAAAGAAAGGAAGGCCGGAACAAACCTG
chickenB TCCCATTTGACGGGCCACTGAATACATAAATGAAGGGAGTTACATAAAATACAGCTCTGCTCAATGCATCTTGGCGGGCTATGGATGACTTCCAGCTGATTCCAATGATAAGCAAATGTAGGACAAAAGAAAGGAAGGCCGGAACAAACCTG
ruler1360.....1370.....1380.....1390.....1400.....1410.....1420.....1430.....1440.....1450.....1460.....1470.....1480.....1490.....1500



humanA TATGGGTT CAT CATAAAA GGAAGGTCT CATTGAGGAATGATACTGATGTGGTGAAC TTTGTGAGCATGGAGTTTTCTCTCACTGACCCGAGGC TAGAAC CACACAAA TGGGAAAAGTACTGCGTTCTTGAAGTGGGAGATATGCTCCTG
humanB TATGGGTT CAT CATAAAA GGAAGGTCT CATTGAGGAATGATACTGATGTGGTGAAC TTTGTGAGCATGGAGTTTTCTCTCACTGACCCGAGGC TAGAAC CACACAAA TGGGAAAAGTACTGCGTTCTTGAAGTGGGAGATATGCTCCTG
chickenA TATGGGTT CAT CATAAAA GGAAGGTCT CATTGAGGAATGATACTGATGTGGTGAAC TTTGTGAGCATGGAGTTTTCTCTCACTGACCCGAGGC TAGAAC CACACAAA TGGGAAAAGTACTGCGTTCTTGAAGTGGGAGATATGCTCCTG
chickenB TATGGGTT CAT CATAAAA GGAAGGTCT CATTGAGGAATGATACTGATGTGGTGAAC TTTGTGAGCATGGAGTTTTCTCTCACTGACCCGAGGC TAGAAC CACACAAA TGGGAAAAGTACTGCGTTCTTGAAGTGGGAGATATGCTCCTG
chickenD TATGGGTT CAT CATAAAA GGAAGGTCT CATTGAGGAATGATACTGATGTGGTGAAC TTTGTGAGCATGGAGTTTTCTCTCACTGACCCGAGGC TAGAAC CACACAAA TGGGAAAAGTACTGCGTTCTTGAAGTGGGAGATATGCTCCTG
ruler1510.....1520.....1530.....1540.....1550.....1560.....1570.....1580.....1590.....1600.....1610.....1620.....1630.....1640.....1650



humanA AGGACTGCAATAGGCCAAGTATCAAGGCCCATGTTCTTGTATGTTAGAACCACGGGACCTCCAAAATCAAGATGAAATGGGGTATGGAAATGAGGCGCTGCCCTTCTTCAATCTCTTCAACAGATTGAAAATGATTGAGGCCGAGTCT
humanB AGGACTGCAATAGGCCAAGTATCAAGGCCCATGTTCTTGTATGTTAGAACCACGGGACCTCCAAAATCAAGATGAAATGGGGTATGGAAATGAGGCGCTGCCCTTCTTCAATCTCTTCAACAGATTGAAAATGATTGAGGCCGAGTCT
chickenA AGGACTGCAATAGGCCAAGTATCAAGGCCCATGTTCTTGTATGTTAGAACCACGGGACCTCCAAAATCAAGATGAAATGGGGTATGGAAATGAGGCGCTGCCCTTCTTCAATCTCTTCAACAGATTGAAAATGATTGAGGCCGAGTCT
chickenB AGGACTGCAATAGGCCAAGTATCAAGGCCCATGTTCTTGTATGTTAGAACCACGGGACCTCCAAAATCAAGATGAAATGGGGTATGGAAATGAGGCGCTGCCCTTCTTCAATCTCTTCAACAGATTGAAAATGATTGAGGCCGAGTCT
chickenD AGGACTGCAATAGGCCAAGTATCAAGGCCCATGTTCTTGTATGTTAGAACCACGGGACCTCCAAAATCAAGATGAAATGGGGTATGGAAATGAGGCGCTGCCCTTCTTCAATCTCTTCAACAGATTGAAAATGATTGAGGCCGAGTCT
ruler1660.....1670.....1680.....1690.....1700.....1710.....1720.....1730.....1740.....1750.....1760.....1770.....1780.....1790.....1800



humanA TCTGTCAAAGAAAAGGACATGACTAAAGAATTTTTGAGAACAAAGTGGAAACGTGGCCAATTGGGGAATCCCCAGAGGGGTAGAGGAAGGCTCTATTGGGAAGGTATGCAGAACCCCTGCTGGCAAAATCTGTGTTCAACAGTCTATAC
humanB TCTGTCAAAGAAAAGGACATGACTAAAGAATTTTTGAGAACAAAGTGGAAACGTGGCCAATTGGGGAATCCCCAGAGGGGTAGAGGAAGGCTCTATTGGGAAGGTATGCAGAACCCCTGCTGGCAAAATCTGTGTTCAACAGTCTATAC
chickenA TCTGTCAAAGAAAAGGACATGACTAAAGAATTTTTGAGAACAAAGTGGAAACGTGGCCAATTGGGGAATCCCCAGAGGGGTAGAGGAAGGCTCTATTGGGAAGGTATGCAGAACCCCTGCTGGCAAAATCTGTGTTCAACAGTCTATAC
chickenB TCTGTCAAAGAAAAGGACATGACTAAAGAATTTTTGAGAACAAAGTGGAAACGTGGCCAATTGGGGAATCCCCAGAGGGGTAGAGGAAGGCTCTATTGGGAAGGTATGCAGAACCCCTGCTGGCAAAATCTGTGTTCAACAGTCTATAC
chickenD TCTGTCAAAGAAAAGGACATGACTAAAGAATTTTTGAGAACAAAGTGGAAACGTGGCCAATTGGGGAATCCCCAGAGGGGTAGAGGAAGGCTCTATTGGGAAGGTATGCAGAACCCCTGCTGGCAAAATCTGTGTTCAACAGTCTATAC
ruler1810.....1820.....1830.....1840.....1850.....1860.....1870.....1880.....1890.....1900.....1910.....1920.....1930.....1940.....1950



humanA GCATCTCCACAAC TTGAGGGATTTT CAGCAGAATCGAGGAAATGCTTCTCATTGTT CAGGCACTTAGGGACAACCTGGAACTGGAACTTCGATCTTGGAGGGCTATACGAGCAATTGAGGAGTGCCGTGATTAATGATCCCTGGGTT
humanB GCATCTCCACAAC TTGAGGGATTTT CAGCAGAATCGAGGAAATGCTTCTCATTGTT CAGGCACTTAGGGACAACCTGGAACTGGAACTTCGATCTTGGAGGGCTATACGAGCAATTGAGGAGTGCCGTGATTAATGATCCCTGGGTT
chickenA GCATCTCCACAAC TTGAGGGATTTT CAGCAGAATCGAGGAAATGCTTCTCATTGTT CAGGCACTTAGGGACAACCTGGAACTGGAACTTCGATCTTGGAGGGCTATACGAGCAATTGAGGAGTGCCGTGATTAATGATCCCTGGGTT
chickenB GCATCTCCACAAC TTGAGGGATTTT CAGCAGAATCGAGGAAATGCTTCTCATTGTT CAGGCACTTAGGGACAACCTGGAACTGGAACTTCGATCTTGGAGGGCTATACGAGCAATTGAGGAGTGCCGTGATTAATGATCCCTGGGTT
chickenD GCATCTCCACAAC TTGAGGGATTTT CAGCAGAATCGAGGAAATGCTTCTCATTGTT CAGGCACTTAGGGACAACCTGGAACTGGAACTTCGATCTTGGAGGGCTATACGAGCAATTGAGGAGTGCCGTGATTAATGATCCCTGGGTT
ruler1960.....1970.....1980.....1990.....2000.....2010.....2020.....2030.....2040.....2050.....2060.....2070.....2080.....2090.....2100



humanA TTGCTTAATGCATCTTGGTTCAACTCCTTCCTCACACATGCACTGAGATAG
humanB TTGCTTAATGCATCTTGGTTCAACTCCTTCCTCACACATGCACTGAGATAG
chickenA TTGCTTAATGCATCTTGGTTCAACTCCTTCCTCACACATGCACTGAGATAG
chickenB TTGCTTAATGCATCTTGGTTCAACTCCTTCCTCACACATGCACTGAGATAG
chickenD TTGCTTAATGCATCTTGGTTCAACTCCTTCCTCACACATGCACTGAGATAG
ruler2110.....2120.....2130.....2140.....2150.



humanA ATGGATGTC AATCGAC TTTACTTTTCTTGAAAAGTTCCAGCGCAAAAATGCCATAAGCACCAATTCCCATACACTGGAGATCCTCCATACAGCCATGGAACGGGAAACAGGATACACCATGGACACAGTCAACAGAACACACCAATAATTCA
humanB ATGGATGTC AATCGACTTTACTTTTCTTGAAAAGTTCCAGCGCAAAAATGCCATAAGCACCAATTCCCATACACTGGAGATCCTCCATACAGCCATGGAACGGGAAACAGGATACACCATGGACACAGTCAACAGAACACACCAATAATTCA
chickenA ATGGATGTC AATCGACTTTACTTTTCTTGAAAAGTTCCAGCGCAAAAATGCCATAAGCACCAATTCCCATACACTGGAGATCCTCCATACAGCCATGGAACGGGAAACAGGATACACCATGGACACAGTCAACAGAACACACCAATAATTCA
chickenB ATGGATGTC AATCGACTTTACTTTTCTTGAAAAGTTCCAGCGCAAAAATGCCATAAGCACCAATTCCCATACACTGGAGATCCTCCATACAGCCATGGAACGGGAAACAGGATACACCATGGACACAGTCAACAGAACACACCAATAATTCA
ruler 1.....10.....20.....30.....40.....50.....60.....70.....80.....90.....100.....110.....120.....130.....140.....150



humanA GAAAAGGGGAAATGGACAACCAACACAGAGACTGGAGCACCCCAACTTAACCCAATTGACGGACCACTGCCTGAGGACAAAGAGCCAAGTGGATATGCACAAAAGACTGTGTCTTGAAGCAATGGCTTTCTTGAAGAGTCCCAACCA
humanB GAAAAGGGGAAATGGACAACCAACACAGAGACTGGAGCACCCCAACTTAACCCAATTGACGGACCACTGCCTGAGGACAAAGAGCCAAGTGGATATGCACAAAAGACTGTGTCTTGAAGCAATGGCTTTCTTGAAGAGTCCCAACCA
chickenA GAAAAGGGGAAATGGACAACCAACACAGAGACTGGAGCACCCCAACTTAACCCAATTGACGGACCACTGCCTGAGGACAAAGAGCCAAGTGGATATGCACAAAAGACTGTGTCTTGAAGCAATGGCTTTCTTGAAGAGTCCCAACCA
chickenB GAAAAGGGGAAATGGACAACCAACACAGAGACTGGAGCACCCCAACTTAACCCAATTGACGGACCACTGCCTGAGGACAAAGAGCCAAGTGGATATGCACAAAAGACTGTGTCTTGAAGCAATGGCTTTCTTGAAGAGTCCCAACCA
ruler160.....170.....180.....190.....200.....210.....220.....230.....240.....250.....260.....270.....280.....290.....300



humanA GGAAATCTTTGAAAACCTCGTGTCTTGAAAACGATGGAAGTTGTTCAACAAAACAGAGTGGACAAAATAACTCAAGGTGTCAGACCTATGATTGGACATTAACACAGGAATCAACCGGCTGCAACTGCATTAGCCAATACTATAGAGGTCTTC
humanB GGAAATCTTTGAAAACCTCGTGTCTTGAAAACGATGGAAGTTGTTCAACAAAACAGAGTGGACAAAATAACTCAAGGTGTCAGACCTATGATTGGACATTAACACAGGAATCAACCGGCTGCAACTGCATTAGCCAATACTATAGAGGTCTTC
chickenA GGAAATCTTTGAAAACCTCGTGTCTTGAAAACGATGGAAGTTGTTCAACAAAACAGAGTGGACAAAATAACTCAAGGTGTCAGACCTATGATTGGACATTAACACAGGAATCAACCGGCTGCAACTGCATTAGCCAATACTATAGAGGTCTTC
chickenB GGAAATCTTTGAAAACCTCGTGTCTTGAAAACGATGGAAGTTGTTCAACAAAACAGAGTGGACAAAATAACTCAAGGTGTCAGACCTATGATTGGACATTAACACAGGAATCAACCGGCTGCAACTGCATTAGCCAATACTATAGAGGTCTTC
ruler310.....320.....330.....340.....350.....360.....370.....380.....390.....400.....410.....420.....430.....440.....450



humanA AGATTGAACGGTCTGACAGCTAATGAATCAGGAAGGCTAATAGATTTCTCAAAGATGTGATGGAGTCAATGGATAAAGAGGAAATGGAAATAAACAACACTTCCAAGAAAAAGAGAGTGAAGGACAACTGACCAAGAAAATGGTC
humanB AGATTGAACGGTCTGACAGCTAATGAATCAGGAAGGCTAATAGATTTCTCAAAGATGTGATGGAGTCAATGGATAAAGAGGAAATGGAAATAAACAACACTTCCAAGAAAAAGAGAGTGAAGGACAACTGACCAAGAAAATGGTC
chickenA AGATTGAACGGTCTGACAGCTAATGAATCAGGAAGGCTAATAGATTTCTCAAAGATGTGATGGAGTCAATGGATAAAGAGGAAATGGAAATAAACAACACTTCCAAGAAAAAGAGAGTGAAGGACAACTGACCAAGAAAATGGTC
chickenB AGATTGAACGGTCTGACAGCTAATGAATCAGGAAGGCTAATAGATTTCTCAAAGATGTGATGGAGTCAATGGATAAAGAGGAAATGGAAATAAACAACACTTCCAAGAAAAAGAGAGTGAAGGACAACTGACCAAGAAAATGGTC
ruler460.....470.....480.....490.....500.....510.....520.....530.....540.....550.....560.....570.....580.....590.....600



humanA ACACAAAGAACAAATAGGAAAGAAAGAAAACAAAGCTAAACAAGAGAAAGCTATCTAATAAGAGCACTGACACTGAAACAAATGACAAAAGACGCTGAAAAGAGGCAAACTGAAGAGAAAGAGCAATTGCAAACCCCGGAATGCAAAATCAGAGGA
humanB ACACAAAGAACAAATAGGAAAGAAAGAAAACAAAGCTAAACAAGAGAAAGCTATCTAATAAGAGCACTGACACTGAAACAAATGACAAAAGACGCTGAAAAGAGGCAAACTGAAGAGAAAGAGCAATTGCAAACCCCGGAATGCAAAATCAGAGGA
chickenA ACACAAAGAACAAATAGGAAAGAAAGAAAACAAAGCTAAACAAGAGAAAGCTATCTAATAAGAGCACTGACACTGAAACAAATGACAAAAGACGCTGAAAAGAGGCAAACTGAAGAGAAAGAGCAATTGCAAACCCCGGAATGCAAAATCAGAGGA
chickenB ACACAAAGAACAAATAGGAAAGAAAGAAAACAAAGCTAAACAAGAGAAAGCTATCTAATAAGAGCACTGACACTGAAACAAATGACAAAAGACGCTGAAAAGAGGCAAACTGAAGAGAAAGAGCAATTGCAAACCCCGGAATGCAAAATCAGAGGA
ruler610.....620.....630.....640.....650.....660.....670.....680.....690.....700.....710.....720.....730.....740.....750



humanA TTTGTATACTTTGTTGAAACATTGGCAAGGAGCATTTGTGAGAAGCTTGAAACAATCTGGGCTCCCGGTTGGAGGTAATGAAAAGAAAGGCTAAACTGGCAAAATGTTGTGAGAAAAATGATGACTAATTACAAAGACACAGAGCTCTCTTTC
humanB TTTGTATACTTTGTTGAAACATTGGCAAGGAGCATTTGTGAGAAGCTTGAAACAATCTGGGCTCCCGGTTGGAGGTAATGAAAAGAAAGGCTAAACTGGCAAAATGTTGTGAGAAAAATGATGACTAATTACAAAGACACAGAGCTCTCTTTC
chickenA TTTGTATACTTTGTTGAAACATTGGCAAGGAGCATTTGTGAGAAGCTTGAAACAATCTGGGCTCCCGGTTGGAGGTAATGAAAAGAAAGGCTAAACTGGCAAAATGTTGTGAGAAAAATGATGACTAATTACAAAGACACAGAGCTCTCTTTC
chickenB TTTGTATACTTTGTTGAAACATTGGCAAGGAGCATTTGTGAGAAGCTTGAAACAATCTGGGCTCCCGGTTGGAGGTAATGAAAAGAAAGGCTAAACTGGCAAAATGTTGTGAGAAAAATGATGACTAATTACAAAGACACAGAGCTCTCTTTC
ruler760.....770.....780.....790.....800.....810.....820.....830.....840.....850.....860.....870.....880.....890.....900



humanA ACAAATCACTGGAGACAAACCAAAATGGAACGAAAATCAAAACCCCAAGAAATGTTTCTGGCAATGATAACATACATAACAAGAAACCAACCTGAATGGTTTAGGAATGTCCTTGAGCATTGCACCTGTAATGTTCTCAAAATAAAATGGCAAGA
humanB ACAAATCACTGGAGACAAACCAAAATGGAACGAAAATCAAAACCCCAAGAAATGTTTCTGGCAATGATAACATACATAACAAGAAACCAACCTGAATGGTTTAGGAATGTCCTTGAGCATTGCACCTGTAATGTTCTCAAAATAAAATGGCAAGA
chickenA ACAAATCACTGGAGACAAACCAAAATGGAACGAAAATCAAAACCCCAAGAAATGTTTCTGGCAATGATAACATACATAACAAGAAACCAACCTGAATGGTTTAGGAATGTCCTTGAGCATTGCACCTGTAATGTTCTCAAAATAAAATGGCAAGA
chickenB ACAAATCACTGGAGACAAACCAAAATGGAACGAAAATCAAAACCCCAAGAAATGTTTCTGGCAATGATAACATACATAACAAGAAACCAACCTGAATGGTTTAGGAATGTCCTTGAGCATTGCACCTGTAATGTTCTCAAAATAAAATGGCAAGA
ruler910.....920.....930.....940.....950.....960.....970.....980.....990.....1000.....1010.....1020.....1030.....1040.....1050



humanA CTAGGGAAAGGATACATGTTGAAAGCAAGAGCATGAAGCTTGGAAACAAATACCAGCAAAATGCTAGCAAAATATTGATCTGAAATATTTCAATGAGTCAACAAAGAAAGAAAATAGAGAAGATAAGGCCTCTTCTGATAGATGGTACA
humanB CTAGGGAAAGGATACATGTTGAAAGCAAGAGCATGAAGCTTGGAAACAAATACCAGCAAAATGCTAGCAAAATATTGATCTGAAATATTTCAATGAGTCAACAAAGAAAGAAAATAGAGAAGATAAGGCCTCTTCTGATAGATGGTACA
chickenA CTAGGGAAAGGATACATGTTGAAAGTAAGAGCATGAAGCTTGGAAACAAATACCAGCAAAATGCTAGCAAAATATTGATCTGAAATATTTCAATGAGTCAACAAAGAAAGAAAATAGAGAAGATAAGGCCTCTTCTGATAGATGGTACA
chickenB CTAGGGAAAGGATACATGTTGAAAGTAAGAGCATGAAGCTTGGAAACAAATACCAGCAAAATGCTAGCAAAATATTGATCTGAAATATTTCAATGAGTCAACAAAGAAAGAAAATAGAGAAGATAAGGCCTCTTCTGATAGATGGTACA
ruler1060.....1070.....1080.....1090.....1100.....1110.....1120.....1130.....1140.....1150.....1160.....1170.....1180.....1190.....1200



humanA GCCTCATTGAGCCCTGGAATGATGATGGGCATGTTCAACATGCTAAGTACAGTCTTGGGAGTCTCGATTCTAAATCTAGGGCAAAAGAGGTACACCAAAAACAACATACCTGGTGGGACGGACTCCAATCCTCCGATGACTTTGCTCTCATA
humanB GCCTCATTGAGCCCTGGAATGATGATGGGCATGTTCAACATGCTAAGTACAGTCTTGGGAGTCTCGATTCTAAATCTAGGGCAAAAGAGGTACACCAAAAACAACATACCTGGTGGGACGGACTCCAATCCTCCGATGACTTTGCTCTCATA
chickenA GCCTCATTGAGCCCTGGAATGATGATGGGCATGTTCAACATGCTAAGTACAGTCTTGGGAGTCTCGATTCTAAATCTAGGGCAAAAGAGGTACACCAAAAACAACATACCTGGTGGGACGGACTCCAATCCTCCGATGACTTTGCTCTCATA
chickenB GCCTCATTGAGCCCTGGAATGATGATGGGCATGTTCAACATGCTAAGTACAGTCTTGGGAGTCTCGATTCTAAATCTAGGGCAAAAGAGGTACACCAAAAACAACATACCTGGTGGGACGGACTCCAATCCTCCGATGACTTTGCTCTCATA
ruler1210.....1220.....1230.....1240.....1250.....1260.....1270.....1280.....1290.....1300.....1310.....1320.....1330.....1340.....1350



humanA GTGAATGCTCCGAATCATGAGGGAATACAAGCAGGAGTAGATAGATTCTATAGGACCTGCAAGCTGGTGGAAATCAACATGAGCAAAAAGAAAGTCTTACATAAAACAGGACAGGAACATTTGAATTCACAAGCTTTTTCTATCGCTACGGGA
humanB GTGAATGCTCCGAATCATGAGGGAATACAAGCAGGAGTAGATAGATTCTATAGGACCTGCAAGCTGGTGGAAATCAACATGAGCAAAAAGAAAGTCTTACATAAAACAGGACAGGAACATTTGAATTCACAAGCTTTTTCTATCGCTACGGGA
chickenA GTGAATGCTCCGAATCATGAGGGAATACAAGCAGGAGTAGATAGATTCTATAGGACCTGCAAGCTGGTGGAAATCAACATGAGCAAAAAGAAAGTCTTACATAAAACAGGACAGGAACATTTGAATTCACAAGCTTTTTCTATCGCTACGGGA
chickenB GTGAATGCTCCGAATCATGAGGGAATACAAGCAGGAGTAGATAGATTCTATAGGACCTGCAAGCTGGTGGAAATCAACATGAGCAAAAAGAAAGTCTTACATAAAACAGGACAGGAACATTTGAATTCACAAGCTTTTTCTATCGCTACGGGA
ruler1360.....1370.....1380.....1390.....1400.....1410.....1420.....1430.....1440.....1450.....1460.....1470.....1480.....1490.....1500



humanA TTTGTAGCCAATTTTAGCATGGAACCTGCCAGTTTGGAGTATCTGGAATTAATGAATCTGCCGACATGAGCATTGGAGTAAACAGTGAATAAAGAACAAATGATAAAACAATGACCTTGGACCAGCAACAGCTCAAATGGCTCTTCAGCTG
humanB TTTGTAGCCAATTTTAGCATGGAACCTGCCAGTTTGGAGTATCTGGAATTAATGAATCTGCCGACATGAGCATTGGAGTAAACAGTGAATAAAGAACAAATGATAAAACAATGACCTTGGACCAGCAACAGCTCAAATGGCTCTTCAGCTG
chickenA TTTGTAGCCAATTTTAGCATGGAACCTGCCAGTTTGGAGTATCTGGAATTAATGAATCTGCCGACATGAGCATTGGAGTAAACAGTGAATAAAGAACAAATGATAAAACAATGACCTTGGACCAGCAACAGCTCAAATGGCTCTTCAGCTG
chickenB TTTGTAGCCAATTTTAGCATGGAACCTGCCAGTTTGGAGTATCTGGAATTAATGAATCTGCCGACATGAGCATTGGAGTAAACAGTGAATAAAGAACAAATGATAAAACAATGACCTTGGACCAGCAACAGCTCAAATGGCTCTTCAGCTG
ruler1510.....1520.....1530.....1540.....1550.....1560.....1570.....1580.....1590.....1600.....1610.....1620.....1630.....1640.....1650



humanA TTTTCATCAAGGATTACAGATACAGTACCGGTGCCACAGGGGGGACACACAAATTCAGACAAGGAGGTCATTGCAACTGAAAAAGTTGTGGGAAACAAACCCGCTCAAAGGCAGGACTGTTGGTTTCAGATGGAGGGCCAAACTTATACAAT
humanB TTTTCATCAAGGATTACAGATACAGTACCGGTGCCACAGGGGGGACACACAAATTCAGACAAGGAGGTCATTGCAACTGAAAAAGTTGTGGGAAACAAACCCGCTCAAAGGCAGGACTGTTGGTTTCAGATGGAGGGCCAAACTTATACAAT
chickenA TTTTCATCAAGGATTACAGATACAGTACCGGTGCCACAGGGGGGACACACAAATTCAGACAAGGAGGTCATTGCAACTGAAAAAGTTGTGGGAAACAAACCCGCTCAAAGGCAGGACTGTTGGTTTCAGATGGAGGGCCAAACTTATACAAT
chickenB TTTTCATCAAGGATTACAGATACAGTACCGGTGCCACAGGGGGGACACACAAATTCAGACAAGGAGGTCATTGCAACTGAAAAAGTTGTGGGAAACAAACCCGCTCAAAGGCAGGACTGTTGGTTTCAGATGGAGGGCCAAACTTATACAAT
ruler1660.....1670.....1680.....1690.....1700.....1710.....1720.....1730.....1740.....1750.....1760.....1770.....1780.....1790.....1800



humanA ATTGGAAATCTCCACATTCCGGAAGTCTGCCTGAAAGTGGGAGCTGATGGACGAAGACTATCAGGGAAGGCTCTGTAAATCCTCTGAATCCATTTGTCAGCCACAGAGAGATAGAGTCTGTAAAACAATGCTGTGGTGAATGCCAGCTCATGGT
humanB ATTGGAAATCTCCACATTCCGGAAGTCTGCCTGAAAGTGGGGGCTGATGGACGAAGACTATCAGGGAAGGCTCTGTAAATCCTCTGAATCCATTTGTCAGCCACAAAAGAGATAGAGTCTGTAAAACAATGCTGTGGTGAATGCCAGCTCATGGT
chickenA ATTGGAAATCTCCACATTCCGGAAGTCTGCCTGAAAGTGGGAGCTGATGGACGAAGACTATCAGGGAAGGCTCTGTAAATCCTCTGAATCCATTTGTCAGCCACAAAAGAGATAGAGTCTGTAAAACAATGCTGTGGTGAATGCCAGCTCATGGT
chickenB ATTGGAAATCTCCACATTCCGGAAGTCTGCCTGAAAGTGGGAGCTGATGGACGAAGACTATCAGGGAAGGCTCTGTAAATCCTCTGAATCCATTTGTCAGCCACAAAAGAGATAGAGTCTGTAAAACAATGCTGTGGTGAATGCCAGCTCATGGC
ruler1810.....1820.....1830.....1840.....1850.....1860.....1870.....1880.....1890.....1900.....1910.....1920.....1930.....1940.....1950



humanA CCTGCCAAGAGCATGGAATATGATGCTGTGCTACCAACACACTCCTGGATCCCTAAGAGGAACCGCTCCATCCTCAACAAGCCAAAAGGGGAATCCTTGAAGATGAAACAGATGTATCAAAAAGTCTGCAATCTATTGGAGAAATCTTC
humanB CCTGCCAAGAGCATGGAATATGATGCTGTGCTACCAACACACTCCTGGATCCCTAAGAGGAACCGCTCCATCCTCAACAAGCCAAAAGGGGAATCCTTGAAGATGAAACAGATGTATCAAAAAGTCTGCAATCTATTGGAGAAATCTTC
chickenA CCTGCCAAGAGCATGGAATATGATGCTGTGCTACCAACACACTCCTGGATCCCTAAGAGGAACCGCTCCATCCTCAACAAGCCAAAAGGGGAATCCTTGAAGATGAAACAGATGTATCAAAAAGTCTGCAATCTATTGGAGAAATCTTC
chickenB CCTGCCAAGAGCATGGAATATGATGCTGTGCTACCAACACACTCCTGGATCCCTAAGAGGAACCGCTCCATCCTCAACAAGCCAAAAGGGGAATCCTTGAAGATGAAACAGATGTATCAAAAAGTCTGCAATCTATTGGAGAAATCTTC
ruler1960.....1970.....1980.....1990.....2000.....2010.....2020.....2030.....2040.....2050.....2060.....2070.....2080.....2090.....2100



humanA CCTAGCAGTTCATACAGGAGACCGGTTGGAATTTCCAGCATGGTGGAGGCCATGGTTTCCAGGGCCCGAATTGATGCGCGAATTGACTTGAATCTGGACGGATTAAAGAAGGAGGAGTTTGTGAGATCATGAAGATCTGTTCCACCATT
humanB CCTAGCAGTTCATACAGGAGACCGGTTGGAATTTCCAGCATGGTGGAGGCCATGGTTTCCAGGGCCCGAATTGATGCGCGAATTGACTTGAATCTGGACGGATTAAAGAAGGAGGAGTTTGTGAGATCATGAAGATCTGTTCCACCATT
chickenA CCTAGCAGTTCATACAGGAGACCGGTTGGAATTTCCAGCATGGTGGAGGCCATGGTTTCCAGGGCCCGAATTGATGCGCGAATTGACTTGAATCTGGACGGATTAAAGAAGGAGGAGTTTGTGAGATCATGAAGATCTGTTCCACCATT
chickenB CCTAGCAGTTCATACAGGAGACCGGTTGGAATTTCCAGCATGGTGGAGGCCATGGTTTCCAGGGCCCGAATTGATGCGCGAATTGACTTGAATCTGGACGGATTAAAGAAGGAGGAGTTTGTGAGATCATGAAGATCTGTTCCACCATT
ruler2110.....2120.....2130.....2140.....2150.....2160.....2170.....2180.....2190.....2200.....2210.....2220.....2230.....2240.....2250



humanA GAAGAGCTCAGACGGCAGAAATAG
humanB GAAGAGCTCAGACGGCAGAAATAG
chickenA GAAGAGCTCAGACGGCAGAAATAG
chickenB GAAGAGCTCAGACGGCAGAAATAG
ruler2260.....2270....



humanA ATGGAGAGAAATAAAAGAACTAAGAGATCTAATGTACAGTCTGCCACCCGCGAGATACTAACCAAAACCACTGTGGACCACATGGCCATAATCAAAAAATACACATCAGGAAGGCAAGAGAAGAACCCCGCACTCAGAATGAAGTGGATG
humanB ATGGAGAGAAATAAAAGAACTAAGAGATCTAATGTACAGTCTGCCACCCGCGAGATACTAACCAAAACCACTGTGGACCACATGGCCATAATCAAAAAATACACATCAGGAAGGCAAGAGAAGAACCCCGCACTCAGAATGAAGTGGATG
chickenA ATGGAGAGAAATAAAAGAACTAAGAGATCTAATGTACAGTCTGCCACCCGCGAGATACTAACCAAAACCACTGTGGACCACATGGCCATAATCAAAAAATACACATCAGGAAGGCAAGAGAAGAACCCCGCACTCAGAATGAAGTGGATG
chickenB ATGGAGAGAAATAAAAGAACTAAGAGATCTAATGTACAGTCTGCCACCCGCGAGATACTAACCAAAACCACTGTGGACCACATGGCCATAATCAAAAAATACACATCAGGAAGGCAAGAGAAGAACCCCGCACTCAGAATGAAGTGGATG
chickenE ATGGAGAGAAATAAAAGAACTAAGAGATCTAATGTACAGTCTGCCACCCGCGAGATACTAACCAAAACCACTGTGGACCACATGGCCATAATCAAAAAATACACATCAGGAAGGCAAGAGAAGAACCCCGCACTCAGAATGAAGTGGATG
ruler 1.....10.....20.....30.....40.....50.....60.....70.....80.....90.....100.....110.....120.....130.....140.....150



humanA ATGGCAATGAAATACCCAAATTAAGCAGATAAAAAGAAATAATGGAAATAATTCCCAGAAAGAAATGAAACAAGGACAGACCCTCTGGAGCAAAAACAAACGATGCCGGTCTCAGACCCGGGTGATGGTGTCACTCTAGCCGTAAACATGGTGGAAAT
humanB ATGGCAATGAAATACCCAAATTAAGCAGATAAAAAGAAATAATGGAAATAATTCCCAGAAAGAAATGAAACAAGGACAGACCCTCTGGAGCAAAAACAAACGATGCCGGTCTCAGACCCGGGTGATGGTGTCACTCTAGCCGTAAACATGGTGGAAAT
chickenA ATGGCAATGAAATACCCAAATTAAGCAGATAAAAAGAAATAATGGAAATAATTCCCAGAAAGAAATGAAACAAGGACAGACCCTCTGGAGCAAAAACAAACGATGCCGGTCTCAGACCCGGGTGATGGTGTCACTCTAGCCGTAAACATGGTGGAAAT
chickenB ATGGCAATGAAATACCCAAATTAAGCAGATAAAAAGAAATAATGGAAATAATTCCCAGAAAGAAATGAAACAAGGACAGACCCTCTGGAGCAAAAACAAACGATGCCGGTCTCAGACCCGGGTGATGGTGTCACTCTAGCCGTAAACATGGTGGAAAT
chickenE ATGGCAATGAAATACCCAAATTAAGCAGATAAAAAGAAATAATGGAAATAATTCCCAGAAAGAAATGAAACAAGGACAGACCCTCTGGAGCAAAAACAAACGATGCCGGTCTCAGACCCGGGTGATGGTGTCACTCTAGCCGTAAACATGGTGGAAAT
ruler160.....170.....180.....190.....200.....210.....220.....230.....240.....250.....260.....270.....280.....290.....300



humanA AGGAATGGACCAACAACAAGTACAGTTCACTACCAAAGGTATATAAACTTATTTGAAAAAGTGAAAGATTGAAACAGGGACCTTTGGCCCTGTCCACTTCAGAAATCAAGTTAAGATAAGACGGAGGGTTGACACAAACCCGGGC
humanB AGGAATGGACCAACAACAAGTACAGTTCACTACCAAAGGTATATAAACTTATTTGAAAAAGTGAAAGATTGAAACAGGGACCTTTGGCCCTGTCCACTTCAGAAATCAAGTTAAGATAAGACGGAGGGTTGACACAAACCCGGGC
chickenA AGGAATGGACCAACAACAAGTACAGTTCACTACCAAAGGTATATAAACTTATTTGAAAAAGTGAAAGATTGAAACAGGGACCTTTGGCCCTGTCCACTTCAGAAATCAAGTTAAGATAAGACGGAGGGTTGACACAAACCCGGGC
chickenB AGGAATGGACCAACAACAAGTACAGTTCACTACCAAAGGTATATAAACTTATTTGAAAAAGTGAAAGATTGAAACAGGGACCTTTGGCCCTGTCCACTTCAGAAATCAAGTTAAGATAAGACGGAGGGTTGACACAAACCCGGGC
chickenE AGGAATGGACCAACAACAAGTACAGTTCACTACCAAAGGTATATAAACTTATTTGAAAAAGTGAAAGATTGAAACAGGGACCTTTGGCCCTGTCCACTTCAGAAATCAAGTTAAGATAAGACGGAGGGTTGACACAAACCCGGGC
ruler310.....320.....330.....340.....350.....360.....370.....380.....390.....400.....410.....420.....430.....440.....450



humanA CATGCAGATCTCAGTGCCAAAGAGGCGCAGGATGTAATCATGGAGGTTGTTTTCCCAATGAAGTGGGAGCTAGGATACTAACATCGGAATCACAGCTGACAAATAACAAAAGAGAAAAAGAGGAGCTCCAAGACTGC AAAATTGCCCC
humanB CATGCAGATCTCAGTGCCAAAGAGGCGCAGGATGTAATCATGGAGGTTGTTTTCCCAATGAAGTGGGAGCTAGGATACTAACATCGGAATCACAGCTGACAAATAACAAAAGAGAAAAAGAGGAGCTCCAAGACTGC AAAATTGCCCC
chickenA CATGCAGATCTCAGTGCCAAAGAGGCGCAGGATGTAATCATGGAGGTTGTTTTCCCAATGAAGTGGGAGCTAGGATACTAACATCGGAATCACAGCTGACAAATAACAAAAGAGAAAAAGAGGAGCTCCAAGACTGC AAAATTGCCCC
chickenB CATGCAGATCTCAGTGCCAAAGAGGCGCAGGATGTAATCATGGAGGTTGTTTTCCCAATGAAGTGGGAGCTAGGATACTAACATCGGAATCACAGCTGACAAATAACAAAAGAGAAAAAGAGGAGCTCCAAGACTGC AAAATTGCCCC
chickenE CATGCAGATCTCAGTGCCAAAGAGGCGCAGGATGTAATCATGGAGGTTGTTTTCCCAATGAAGTGGGAGCTAGGATACTAACATCGGAATCACAGCTGACAAATAACAAAAGAGAAAAAGAGGAGCTCCAAGACTGC AAAATTGCCCC
ruler460.....470.....480.....490.....500.....510.....520.....530.....540.....550.....560.....570.....580.....590.....600



humanA TTGATGGTTGCATACATGCTAGAAAGAGAGTTGGTCCGCAAAACGAGGTTCTCCAGTGGCTGGTGGGACAAGCAGTGTCTATATTGAGGTGCTGCATTAAACCCAGGGGACATGCTGGGAGCAAAATGTACTCTCCAGGAGGGGAAGTG
humanB TTGATGGTTGCATACATGCTAGAAAGAGAGTTGGTCCGCAAAACGAGGTTCTCCAGTGGCTGGTGGGACAAGCAGTGTCTATATTGAGGTGCTGCATTAAACCCAGGGGACATGCTGGGAGCAAAATGTACTCTCCAGGAGGGGAAGTG
chickenA TTGATGGTTGCATACATGCTAGAAAGAGAGTTGGTCCGCAAAACGAGGTTCTCCAGTGGCTGGTGGGACAAGCAGTGTCTATATTGAGGTGCTGCATTAAACCCAGGGGACATGCTGGGAGCAAAATGTACTCTCCAGGAGGGGAAGTG
chickenB TTGATGGTTGCATACATGCTAGAAAGAGAGTTGGTCCGCAAAACGAGGTTCTCCAGTGGCTGGTGGGACAAGCAGTGTCTATATTGAGGTGCTGCATTAAACCCAGGGGACATGCTGGGAGCAAAATGTACTCTCCAGGAGGGGAAGTG
chickenE TTGATGGTTGCATACATGCTAGAAAGAGAGTTGGTCCGCAAAACGAGGTTCTCCAGTGGCTGGTGGGACAAGCAGTGTCTATATTGAGGTGCTGCATTAAACCCAGGGGACATGCTGGGAGCAAAATGTACTCTCCAGGAGGGGAAGTG
ruler610.....620.....630.....640.....650.....660.....670.....680.....690.....700.....710.....720.....730.....740.....750



humanA AGAAATGATGATGTTGACCAAAGCTTGATTATCGCTGCCAGAAACATAGTAAGAAGAGCAACAGTATCAGCAGACCCACTGGCATCTCTATTGGAGATGTGCCACAGCACACAGATTGGGGGAATAAGAATGGTAGACATTCTTCGGCAA
humanB AGAAATGATGATGTTGACCAAAGCTTGATTATCGCTGCCAGAAACATAGTAAGAAGAGCAACAGTATCAGCAGACCCACTGGCATCTCTATTGGAGATGTGCCACAGCACACAGATTGGGGGAATAAGAATGGTAGACATTCTTCGGCAA
chickenA AGAAATGATGATGTTGACCAAAGCTTGATTATCGCTGCCAGAAACATAGTAAGAAGAGCAACAGTATCAGCAGACCCACTGGCATCTCTATTGGAGATGTGCCACAGCACACAGATTGGGGGAATAAGAATGGTAGACATTCTTCGGCAA
chickenB AGAAATGATGATGTTGACCAAAGCTTGATTATCGCTGCCAGAAACATAGTAAGAAGAGCAACAGTATCAGCAGACCCACTGGCATCTCTATTGGAGATGTGCCACAGCACACAGATTGGGGGAATAAGAATGGTAGACATTCTTCGGCAA
chickenE AGAAATGATGATGTTGACCAAAGCTTGATTATCGCTGCCAGAAACATAGTAAGAAGAGCAACAGTATCAGCAGACCCACTGGCATCTCTATTGGAGATGTGCCACAGCACACAGATTGGGGGAATAAGAATGGTAGACATTCTTCGGCAA
ruler760.....770.....780.....790.....800.....810.....820.....830.....840.....850.....860.....870.....880.....890.....900



humanA AATCCAACAGAGGAACAAGCTGTGGACATATGCAAGGCAGCAATGGGCTTGAGGATTAGCTCGTCTTTGAGCTTTGGTGGATTCACTTTCAAAAGAAACAAGCGGGTCTCAGTTAAAAGAGAAAGAAGTGTTACGGGCAACCTTCAA
humanB AATCCAACAGAGGAACAAGCTGTGGACATATGCAAGGCAGCAATGGGCTTGAGGATTAGCTCGTCTTTGAGCTTTGGTGGATTCACTTTCAAAAGAAACAAGCGGGTCTCAGTTAAAAGAGAAAGAAGTGTTACGGGCAACCTTCAA
chickenA AATCCAACAGAGGAACAAGCTGTGGACATATGCAAGGCAGCAATGGGCTTGAGGATTAGCTCGTCTTTGAGCTTTGGTGGATTCACTTTCAAAAGAAACAAGCGGGTCTCAGTTAAAAGAGAAAGAAGTGTTACGGGCAACCTTCAA
chickenB AATCCAACAGAGGAACAAGCTGTGGACATATGCAAGGCAGCAATGGGCTTGAGGATTAGCTCGTCTTTGAGCTTTGGTGGATTCACTTTCAAAAGAAACAAGCGGGTCTCAGTTAAAAGAGAAAGAAGTGTTACGGGCAACCTTCAA
chickenE AATCCAACAGAGGAACAAGCTGTGGACATATGCAAGGCAGCAATGGGCTTGAGGATTAGCTCGTCTTTGAGCTTTGGTGGATTCACTTTCAAAAGAAACAAGCGGGTCTCAGTTAAAAGAGAAAGAAGTGTTACGGGCAACCTTCAA
ruler910.....920.....930.....940.....950.....960.....970.....980.....990.....1000.....1010.....1020.....1030.....1040.....1050



humanA ACATTGAAAATAAGAGTACATGAGGGATATGAAGAGTTCACAATGGTTGGGAGAAGAGCAACAGCTATTCTCAGGAAAGCAACCAGAAGATTGATCCAGCTAATAGTAAGTGGGAGAGACGAGCAGTCAATTGCTGAAGCAATAATTGTG
humanB ACATTGAAAATAAGAGTACATGAGGGATATGAAGAGTTCACAATGGTTGGGAGAAGAGCAACAGCTATTCTCAGGAAAGCAACCAGAAGATTGATCCAGCTAATAGTAAGTGGGAGAGACGAGCAGTCAATTGCTGAAGCAATAATTGTG
chickenA ACATTGAAAATAAGAGTACATGAGGGATATGAAGAGTTCACAATGGTTGGGAGAAGAGCAACAGCTATTCTCAGGAAAGCAACCAGAAGATTGATCCAGCTAATAGTAAGTGGGAGAGACGAGCAGTCAATTGCTGAAGCAATAATTGTG
chickenB ACATTGAAAATAAGAGTACATGAGGGATATGAAGAGTTCACAATGGTTGGGAGAAGAGCAACAGCTATTCTCAGGAAAGCAACCAGAAGATTGATCCAGCTAATAGTAAGTGGGAGAGACGAGCAGTCAATTGCTGAAGCAATAATTGTG
chickenE ACATTGAAAATAAGAGTACATGAGGGATATGAAGAGTTCACAATGGTTGGGAGAAGAGCAACAGCTATTCTCAGGAAAGCAACCAGAAGATTGATCCAGCTAATAGTAAGTGGGAGAGACGAGCAGTCAATTGCTGAAGCAATAATTGTG
ruler1060.....1070.....1080.....1090.....1100.....1110.....1120.....1130.....1140.....1150.....1160.....1170.....1180.....1190.....1200



humanA GCCATGGTATTCTCACAAGAAGATTGCATGATCAAAGCAGTTGAGGTGATCTGAACCTTTGTCAACAGGGCAAAACAGCGGCTGAATCCCATGCATCAACTCTTGAGACACTTCCAAAAGGATGCAAAAAGTTCTTTTCCAAAACCTGGGGA
humanB GCCATGGTATTCTCACAAGAAGATTGCATGATCAAAGCAGTTGAGGTGATCTGAACCTTTGTCAACAGGGCAAAACAGCGGCTGAATCCCATGCATCAACTCTTGAGACACTTCCAAAAGGATGCAAAAAGTTCTTTTCCAAAACCTGGGGA
chickenA GCCATGGTATTCTCACAAGAAGATTGCATGATCAAAGCAGTTGAGGTGATCTGAACCTTTGTCAACAGGGCAAAACAGCGGCTGAATCCCATGCATCAACTCTTGAGACACTTCCAAAAGGATGCAAAAAGTTCTTTTCCAAAACCTGGGGA
chickenB GCCATGGTATTCTCACAAGAAGATTGCATGATCAAAGCAGTTGAGGTGATCTGAACCTTTGTCAACAGGGCAAAACAGCGGCTGAATCCCATGCATCAACTCTTGAGACACTTCCAAAAGGATGCAAAAAGTTCTTTTCCAAAACCTGGGGA
chickenE GCCATGGTATTCTCACAAGAAGATTGCATGATCAAAGCAGTTGAGGTGATCTGAACCTTTGTCAACAGGGCAAAACAGCGGCTGAATCCCATGCATCAACTCTTGAGACACTTCCAAAAGGATGCAAAAAGTTCTTTTCCAAAACCTGGGGA
ruler1210.....1220.....1230.....1240.....1250.....1260.....1270.....1280.....1290.....1300.....1310.....1320.....1330.....1340.....1350



humanA ATTGAAACCCATTGACAAATGTAATGGGAATGATCGGAATACTGCCTGATATGACTCCAAGTACTGAGATGTGCTGAGGGGGATAAGAGTCAGTAAAGATGGGAGTGGATGAATACTCCAGCACAGAGAGGGTGGTAGTGAGCATTGACCGA
humanB ATTGAAACCCATTGACAAATGTAATGGGAATGATCGGAATACTGCCTGATATGACTCCAAGTACTGAGATGTGCTGAGGGGGATAAGAGTCAGTAAAGATGGGAGTGGATGAATACTCCAGCACAGAGAGGGTGGTAGTGAGCATTGACCGA
chickenA ATTGAAACCCATTGACAAATGTAATGGGAATGATCGGAATACTGCCTGATATGACTCCAAGTACTGAGATGTGCTGAGGGGGATAAGAGTCAGTAAAGATGGGAGTGGATGAATACTCCAGCACAGAGAGGGTGGTAGTGAGCATTGACCGA
chickenB ATTGAAACCCATTGACAAATGTAATGGGAATGATCGGAATACTGCCTGATATGACTCCAAGTACTGAGATGTGCTGAGGGGGATAAGAGTCAGTAAAGATGGGAGTGGATGAATACTCCAGCACAGAGAGGGTGGTAGTGAGCATTGACCGA
chickenE ATTGAAACCCATTGACAAATGTAATGGGAATGATCGGAATACTGCCTGATATGACTCCAAGTACTGAGATGTGCTGAGGGGGATAAGAGTCAGTAAAGATGGGAGTGGATGAATACTCCAGCACAGAGAGGGTGGTAGTGAGCATTGACCGA
ruler1360.....1370.....1380.....1390.....1400.....1410.....1420.....1430.....1440.....1450.....1460.....1470.....1480.....1490.....1500



humanA TTTTGGAGAGTTGGGACCAACGGGGGAACGTACTACTGTCACTGAAGAAGTCAGCGAGACACAAGGAAACAGAGAAGCTAACAAATAACTTATTGTCATCAATGATGTGGGAGATCAATGGTCTTGAGTCAGTGTGGTTAATACTTAT
humanB TTTTGGAGAGTTGGGACCAACGGGGGAACGTACTACTGTCACTGAAGAAGTCAGCGAGACACAAGGAAACAGAGAAGCTAACAAATAACTTATTGTCATCAATGATGTGGGAGATCAATGGTCTTGAGTCAGTGTGGTTAATACTTAT
chickenA TTTTGGAGAGTTGGGACCAACGGGGGAACGTACTACTGTCACTGAAGAAGTCAGCGAGACACAAGGAAACAGAGAAGCTAACAAATAACTTATTGTCATCAATGATGTGGGAGATCAATGGTCTTGAGTCAGTGTGGTTAATACTTAT
chickenB TTTTGGAGAGTTGGGACCAACGGGGGAACGTACTACTGTCACTGAAGAAGTCAGCGAGACACAAGGAAACAGAGAAGCTAACAAATAACTTATTGTCATCAATGATGTGGGAGATCAATGGTCTTGAGTCAGTGTGGTTAATACTTAT
chickenE TTTTGGAGAGTTGGGACCAACGGGGGAACGTACTACTGTCACTGAAGAAGTCAGCGAGACACAAGGAAACAGAGAAGCTAACAAATAACTTATTGTCATCAATGATGTGGGAGATCAATGGTCTTGAGTCAGTGTGGTTAATACTTAT
ruler1510.....1520.....1530.....1540.....1550.....1560.....1570.....1580.....1590.....1600.....1610.....1620.....1630.....1640.....1650



humanA CAGTGGATCATCAGGAAC TGGGAAACTGTGAAAATTCAATGGTCA CAGGATCCCA CAATGTTATATAAAGATGGAATTCAGCCATTCCAGTCTCTGGTCCCTAAGG CAGCCAGAGGTCAGTACAGTGGATTCTGTGAGGACACTATTC
humanB CAGTGGATCATCAGGAAC TGGGAAACTGTGAAAATTCAATGGTCA CAGGATCCCA CAATGTTATATAAAGATGGAATTCAGCCATTCCAGTCTCTGGTCCCTAAGG CAGCCAGAGGTCAGTACAGTGGATTCTGTGAGGACACTATTC
chickenA CAGTGGATCATCAGGAAC TGGGAAACTGTGAAAATTCAATGGTCA CAGGATCCCA CAATGTTATATAAAGATGGAATTCAGCCATTCCAGTCTCTGGTCCCTAAGG CAGCCAGAGGTCAGTACAGTGGATTCTGTGAGGACACTATTC
chickenB CAGTGGATCATCAGGAAC TGGGAAACTGTGAAAATTCAATGGTCA CAGGATCCCA CAATGTTATATAAAGATGGAATTCAGCCATTCCAGTCTCTGGTCCCTAAGG CAGCCAGAGGTCAGTACAGTGGATTCTGTGAGGACACTATTC
chickenE CAGTGGATCATCAGGAAC TGGGAAACTGTGAAAATTCAATGGTCA CAGGATCCCA CAATGTTATATAAAGATGGAATTCAGCCATTCCAGTCTCTGGTCCCTAAGG CAGCCAGAGGTCAGTACAGTGGATTCTGTGAGGACACTATTC
ruler1660.....1670.....1680.....1690.....1700.....1710.....1720.....1730.....1740.....1750.....1760.....1770.....1780.....1790.....1800



humanA CAACAAATGCGGGACGTGCTTGGAACTTTTGACACTGTT CAGATAATAAAA CTCTCCCATTTGCTGCTGCTCCACCAGA AAGTAGGATGCAGTTCTCCTCCCTGACTGTGAATGTAAGAGGATCAGGAATGAGGATAC TGGTAAGA
humanB CAACAAATGCGGGACGTGCTTGGAACTTTTGACACTGTT CAGATAATAAAA CTCTCCCATTTGCTGCTGCTCCACCAGA AAGTAGGATGCAGTTCTCCTCCCTGACTGTGAATGTAAGAGGATCAGGAATGAGGATACTGGTAAGA
chickenA CAACAAATGCGGGACGTGCTTGGAACTTTTGACACTGTT CAGATAATAAAA CTCTCCCATTTGCTGCTGCTCCACCAGA AAGTAGGATGCAGTTCTCCTCCCTGACTGTGAATGTAAGAGGATCAGGAATGAGGATACTGGTAAGA
chickenB CAACAAATGCGGGACGTGCTTGGAACTTTTGACACTGTT CAGATAATAAAA CTCTCCCATTTGCTGCTGCTCCACCAGA AAGTAGGATGCAGTTCTCCTCCCTGACTGTGAATGTAAGAGGATCAGGAATGAGGATACTGGTAAGA
chickenE CAACAAATGCGGGACGTGCTTGGAACTTTTGACACTGTT CAGATAATAAAA CTCTCCCATTTGCTGCTGCTCCACCAGA AAGTAGGATGCAGTTCTCCTCCCTGACTGTGAATGTAAGAGGATCAGGAATGAGGATACTGGTAAGA
ruler1810.....1820.....1830.....1840.....1850.....1860.....1870.....1880.....1890.....1900.....1910.....1920.....1930.....1940.....1950



humanA GGCAATTC C CAGTGTTC AATTACAACAAGGCCACCAAGAGGCTC CAGTTC CCGAAAGGATGCAGGTGCATTGACCGAGGATCCAGATGAAGGCACAGCTGGGGTAGAATCTGCTGTTCTAAGAGGATTCCTCATTTTGGGCAAAGAA
humanB GGCAATTC C CAGTGTTC AATTACAACAAGGCCACCAAGAGGCTC CAGTTC CCGAAAGGATGCAGGTGCATTGACCGAGGATCCAGATGAAGGCACAGCTGGGGTAGAATCTGCTGTTCTAAGAGGATTCCTCATTTTGGGCAAAGAA
chickenA GGCAATTC C CAGTGTTC AATTACAACAAGGCCACCAAGAGGCTC CAGTTC CCGAAAGGATGCAGGTGCATTGACCGAGGATCCAGATGAAGGCACAGCTGGGGTAGAATCTGCTGTTCTAAGAGGATTCCTCATTTTGGGCAAAGAA
chickenB GGCAATTC C CAGTGTTC AATTACAACAAGGCCACCAAGAGGCTC CAGTTC CCGAAAGGATGCAGGTGCATTGACCGAGGATCCAGATGAAGGCACAGCTGGGGTAGAATCTGCTGTTCTAAGAGGATTCCTCATTTTGGGCAAAGAA
chickenE GGCAATTC C CAGTGTTC AATTACAACAAGGCCACCAAGAGGCTC CAGTTC CCGAAAGGATGCAGGTGCATTGACCGAGGATCCAGATGAAGGCACAGCTGGGGTAGAATCTGCTGTTCTAAGAGGATTCCTCATTTTGGGCAAAGAA
ruler1960.....1970.....1980.....1990.....2000.....2010.....2020.....2030.....2040.....2050.....2060.....2070.....2080.....2090.....2100



humanA GACAAGAGATATGGCCAGCATTGAGCATCAATGAGCTGAGCAATCTTGCAAAGGAGAGAGGCTAATGTGCTAATTGGGCAAGGAGAGCTGGTGTGGTAAAGAAAAGGAAACGGGACTCTAGCATACTTACTGACAGCCAGACAGCG
humanB GACAAGAGATATGGCCAGCATTGAGCATCAATGAGCTGAGCAATCTTGCAAAGGAGAGAGGCTAATGTGCTAATTGGGCAAGGAGAGCTGGTGTGGTAAAGAAAAGGAAACGGGACTCTAGCATACTTACTGACAGCCAGACAGCG
chickenA GACAAGAGATATGGCCAGCATTGAGCATCAATGAGCTGAGCAATCTTGCAAAGGAGAGAGGCTAATGTGCTAATTGGGCAAGGAGAGCTGGTGTGGTAAAGAAAAGGAAACGGGACTCTAGCATACTTACTGACAGCCAGACAGCG
chickenB GACAAGAGATATGGCCAGCATTGAGCATCAATGAGCTGAGCAATCTTGCAAAGGAGAGAGGCTAATGTGCTAATTGGGCAAGGAGAGCTGGTGTGGTAAAGAAAAGGAAACGGGACTCTAGCATACTTACTGACAGCCAGACAGCG
chickenE GACAAGAGATATGGCCAGCATTGAGCATCAATGAGCTGAGCAATCTTGCAAAGGAGAGAGGCTAATGTGCTAATTGGGCAAGGAGAGCTGGTGTGGTAAAGAAAAGGAAACGGGACTCTAGCATACTTACTGACAGCCAGACAGCG
ruler2110.....2120.....2130.....2140.....2150.....2160.....2170.....2180.....2190.....2200.....2210.....2220.....2230.....2240.....2250



humanA ACCAAAAGAAATTCGGATGGCCATCAATTAG
humanB ACCAAAAGAAATTCGGATGGCCATCAATTAG
chickenA ACCAAAAGAAATTCGGATGGCCATCAATTAG
chickenB ACCAAAAGAAATTCGGATGGCCATCAATTAG
chickenD ACCAAAAGAAATTCGGATGGCCATCAATTAG
chickenE ACCAAAAGAAATTCGGATGGCCATCAATTAG
ruler2260.....2270.....2280

