# HBV-RYD-36

| | |
|---|---|
| File name | **HBV-RYD-36.sam** |
| Ref name | **KM606753.1 Hepatitis B virus isolate Cuba109, complete genome** |
| Ref len | **3182** |
| Program used | **Tanoti Assembler 1.0** |
| Total reads | **427004** |
| Mapped reads | **121985 (28.57%)** |
| Unmapped reads | **305019** |
| Mapped loan pairs | **776** |
| Average read length | **146nt** |
| Coverage | **3173nt (99.72%)** |
| Average depth | **5651 reads/site** |
| Average insert length | **38nt** |

## COVERAGE

**Coverage by reads**



## SHANNON ENTROPY

**Entropy of the reads**
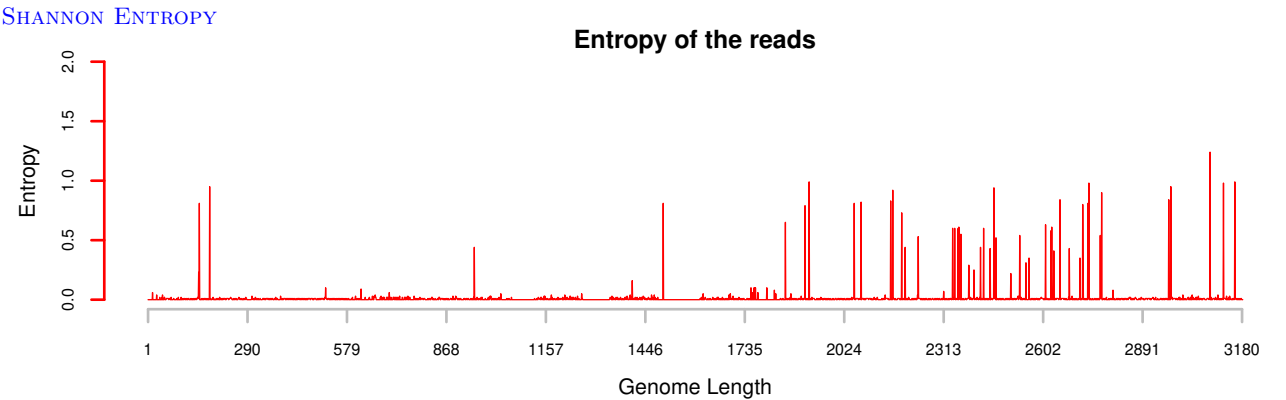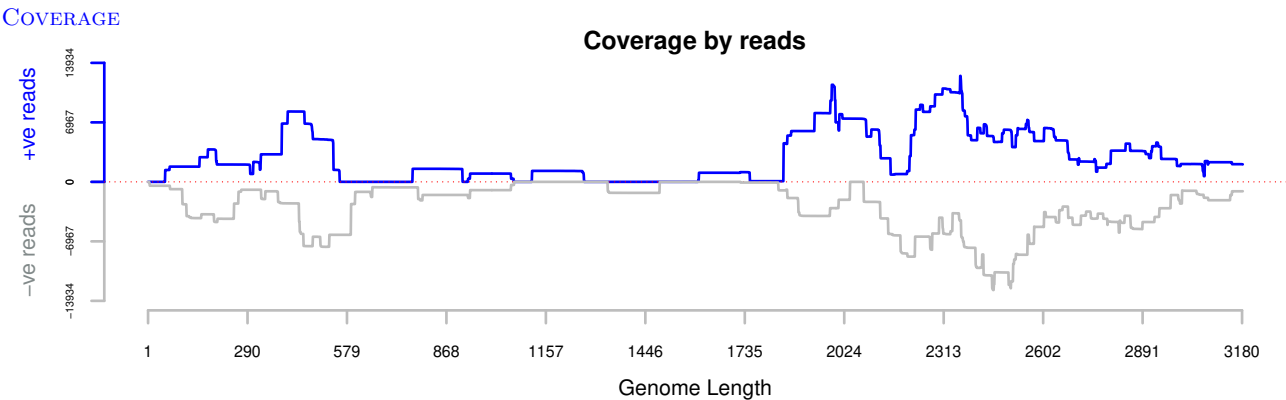
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   1        CTCCACAACT TTCAACCAAA CTCTGCAAGA TCCCAGAGTG AGGGGCCTGT ATTTCCCTGC TGGTGGCTCC
  70        AGTTCAGGAA CAGTAAACCC TGTTCCGACT ACTGTCTCTC ACATATCGTC AATCTTCTCG AAGATTGGGG
 140        ACCCTGCGCT GAACATGGAG AACATCACAT CAGGATTCCT AGGACCCCTG CTCGTGTTAC AGGCGGGGTT
 210        TTTCTTGTTG ACAAGAATCC TCACAATACC GCAGAGTCTA GACTCGTGGT GGACTTCTCT CAATTTTCTA
 280        GGGGGAACTA CCGTGTGTCT TGGCCAAAAT TCGCAGTCCC CAACCTCCAA TCACTCACCA ACCTCCTGTC
 350        CTCCAACTTG TCCTGGTTAT CGCTGGATGT GTCTGCGGCG TTTTATCATC TTCCTCTTCA TCCTGCTGCT
 420        ATGCCTCATC TTCTTGTTGG TTCTTCTGGA CTATCAAGGT ATGTTGCCCG TTTGTCCTCA AATTCCAGGA
 490        TCTTCAACCA CCAGCACGGG ACCATGCAGA ACCTGCACGA CTCCTGCTCA AGGAACCTCT ATGTATCCCT
 560        CCTGTTGCTG TACCAAACCT TCGGACGGAA ATTGCACCTG TATTCCCATC CCATCATCCT GGGCTTTCGG
 630        AAAATTCCTA TGGGAGTGGG CCTCAGCCCG TTTCTCCTGG CTCAGTTTAC TAGTGCCATT TGTTCAGTGG
 700        TTCGTAGGGC TTTCCCCCAC TGTTTGGCTT TCAGTTATAT GGATGATGTG GTATTGGGGG CCAAGTCTGT
 770        ACAGCATCTT GAGTCCCTTT ATACCGCTGT TACCAATTTT CTTTTGTCTT TGGGTATACA TTTAAACCCT
 840        AACAAAACAA AAAGATGGGG TTACTCTTTA CATTTCATGG GCTATGTCAT TGGAAGTTAT GGGTCATTGC
 910        CACAAGATCA CATCATACAG AAAATCAAAG AATGTTTTAG AAAACTTCCT GTTAACGAGAC CTATTGATTG
 980        GAAAGTCTGT CAACGTATTG TGGGTCTTTT GGGTTTTGCT GCCCCTTTTA CACAATGTGG TTATCCTGCT
1050        TTAATGCCCT TGTATGCATG CATTCAATCT AAACAGGCTT TCACTTTCTC GCCAACTTAC AAGGCCTTTC
1120        TGTGTAAACA ATACCTGAAC CTTTACCCCG TTGCCCGGCA ACGGCCAGGT CTGTGCCAAG TGTTTGCTGA
1190        CGCAACCCCC ACTGGCTGGG GCTTGGTTAT GGGCCATCAG CGCATGCGTG GAACCTTTTT GGCTCCTCTG
1260        CCGATCCNNN NNNNNNAACT CCTAGCCGCT TGTTTTGCTC GCAGCAGGTC TGGAGCGAAC ATTCTCGGGA
1330        CGGACAACTC TGTTGTTCTC TCCCGCAAAT ATACATCGTT TCCATGGCTG CTAGGCTGTG CTGCCAACTG
1400        GATCCTGCGC GGGACGTCCT TTGTTTACGT CCCGTCGGCG CTGAATCCCG CGGACGACCC TTCTCGGGGC
1470        CGCTTGGGAC TTTCTCGTCC CCTTCTCCGT CTGCCGTTTC GACCGACCAC GGGGCGCACC TCTCTTTACG
1540        CGGACTCCCC GTCTGTGCCT TCTCATCTGC CGGACCGTGT GCACTTCGCT TCACCTCTGC ACGTCGCATG
1610        GAGACCACCG TGAACGCCCA CCAATTCTTG CCCAAGGTCT TACATAAGAG GACTCTTGGA CTCTCTGTAA
1680        TGTCAACGAC CGACCTTGAG GCATACTTCA AAGACTGTTT GTTTAAAGAC TGGGAGGAGT TGGGGGAGGA
1750        GACTAGATTA ATGATTTTTG TACTAGGAGG CTGTAGGCAT AAATTGGTCT GCGCACCAGC ACCATGCAAC
1820        TTTTTCACCT CTGCCTAATC ATCTCTTGTT CATGTCCTAC TGTTCAAGCC TCCAAGCTGT GCCTTGGGTG
1890        GCTTTAGGGC ATGGACATCG ATCCTTATAA AGAATTTGGA GCTACTGTGG AGTTACTCTC GTTTTTGCCT
1960        TCTGACTTCT TTCCTTCGGT ACGAGATCTT CTAGATACCG CCTCAGCTCT ATATCGGGAA GCCTTAGAGT
2030        CTCCTGAGCA TTGTTCACCT CACCATACTG CACTCAGGCA AGCAATTCTT TGCTGGGGGG AACTAATGAC
2100        TCTAGCCACC TGGGTGGGTG GTAATTTGGA AGATCCAACT TCCAGGGACC TAGTAGTCAG TTATGTTAAC
2170        ACTAATATGG GCCTAAAGTT CAGGCAACTG TTGTGGTTTC ACATTTCTTG TCTCACTTTT GGAAGAGAAA
2240        CGGTCATAGA GTATTTGGTG TCTTTCGGAG TGTGGATTCG CACTCCTCCA GCTTATAGAC CACCAAATGC
2310        CCCTATCTTA TCAACACTTC CGGAGACTAC TGTTGTTAGA CGACGAGGCA GGTCCCCTAG AAGAAGAACT
2380        CCCTCGCCTC GCAGACGAAG GTCTCAATCG CCGCGTCGCA GAAGATCTAA ATCTCGGGAA TCTCAATGTT
2450        AGTATTCCGT GGACTCATAA GGTGGGAAAC TTTACGGGGC TTTATTCTTC TACTGTTCCT GTCTTTAACC
2520        CTCATTGGAA AACTCCCTCT TTTCCTAATA TACATTTACA CCAAGACATT ATCAAAAAAT GTGAACAATT
2590        TGTAGGCCCA CTCACAGTTA ATGAGAAAAG AAGACTACAA TTGATTATGC CTGCTAGGTT CTATCCAAAG
2660        GTTACCAAAT ATTTGCCATT GGATAAGGGT ATTAAACCTT ATTATCCAGA ACATCTAGTT AATCATTACT
2730        TCCAGACCAG ACATTATTTA CACACTCTAT GGAAGGCGGG TATATTATAT AAGAGAGAAA CAACACACAG
2800        CGCCTCATTT TGTGGGTCAC CATATTCTTG GGAACAAGAG CTACAGCATG GGGCAGAATC TTTCCACCAG
2870        CAATCCTCTG GGATTCTTTC CCGACCACCA GTTGGATCCA GCCTTCAGAG CAAACACCGC AAATCCAGAT
2940        TGGGACTTCA ATCCCAACAA GGACACCTGG CCGGACGCCA ACAAGGTAGG AGCTGGAGCA TTCGGGCTGG
3010        GACTCACCCC ACCGCACGGA GGCCTTTTGG GGTGGAGCCC TCAGGCTCAG GGCATACTAC AAAACCTTGCC
3080        AGCAAATCCG CCTCCTGCCT CCACCAATCG CCAGTCAGGA AGGCAACCTA CCCCTCTGTC TCCACCTTTG
3150        AGAAACACTC ATCCTCAGGC CATGCAGTGG AA
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| Genome Composition | |
|---|---|
| A | 729 (22.91%) |
| T | 899 (28.25%) |
| G | 688 (21.62%) |
| C | 857 (26.93%) |
| N | 9 (0.28%) |
| Total Nucleotides | 3182 |
| GC% | 48.69 |

**Read quality**
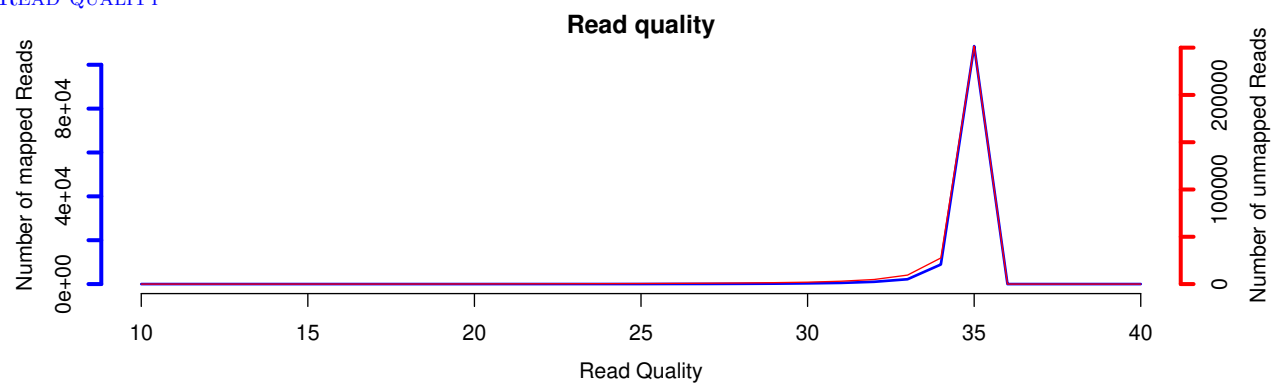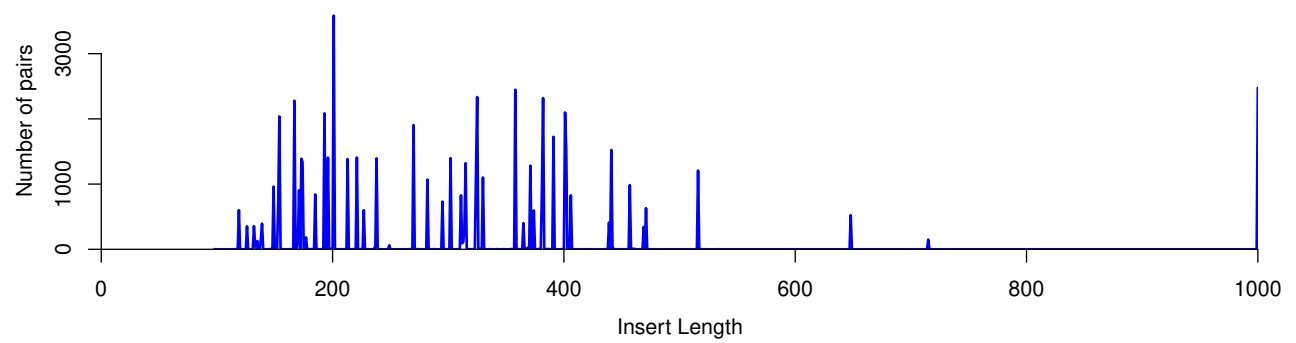
## Amino acid variations

| Protein | Position | Ref AA | Consensus AA | All AAs |
|---------|----------|--------|--------------|---------|
| P2 | 1 | F | H | H::100.00(1) |
| P2 | 2 | F | N | N::100.00(449) |
| P2 | 4 | F | Q | Q::99.56(448) |
| P2 | 5 | F | P | P::100.00(454) |
| P2 | 6 | F | N | N::100.00(455) |
| P2 | 7 | F | S | S::100.00(455) |
| P2 | 8 | F | A | A::99.56(453) |
| P2 | 9 | F | R | R::100.00(455) |
| P2 | 10 | F | S | S::100.00(455) |
| P2 | 11 | F | Q | Q::99.78(454) |
| P2 | 12 | F | S | S::100.00(455) |
| P2 | 13 | F | E | E::99.78(454) |
| P2 | 14 | F | G | G::99.56(453) |
| P2 | 15 | F | P | P::100.00(456) |
| P2 | 16 | F | V | V::99.78(455) |
| P2 | 18 | F | P | P::99.84(1842) |
| P2 | 19 | F | C | C::99.73(1840) |
| P2 | 20 | F | W | W::99.84(1844) |
| P2 | 21 | F | W | W::99.91(2238) |
| P2 | 22 | F | L | L::99.81(2630) |
| P2 | 23 | F | Q | Q::99.92(2635) |
| P2 | 25 | F | R | R::99.85(2633) |
| P2 | 26 | F | N | N::99.96(2636) |
| P2 | 27 | F | S | S::99.85(2633) |
| P2 | 28 | F | K | K::100.00(2637) |
| P2 | 29 | F | P | P::99.81(2632) |
| P2 | 30 | F | C | C::99.96(2636) |
| P2 | 31 | F | S | S::99.96(2635) |
| P2 | 32 | F | D | D::99.77(2630) |
| P2 | 33 | F | Y | Y::99.85(2632) |
| P2 | 34 | F | C | C::99.95(4385) |
| P2 | 35 | F | L | L::99.86(4406) |
| P2 | 36 | F | S | S::99.98(4411) |
| P2 | 37 | F | H | H::99.95(4416) |
| P2 | 38 | F | I | I::99.91(5796) |
| P2 | 39 | F | V | V::99.88(5797) |
| P2 | 40 | F | N | N::99.93(5925) |
| P2 | 41 | F | L | L::99.93(5925) |
| P2 | 42 | F | L | L::99.92(6013) |
| P2 | 43 | F | E | E::99.95(6015) |
| P2 | 44 | F | D | D::99.95(6022) |
| P2 | 45 | F | W | W::99.95(6023) |
| P2 | 46 | F | G | G::99.92(6019) |
| P2 | 47 | F | P | P::99.87(6019) |
| P2 | 48 | F | C | C::99.77(6012) |
| P2 | 49 | F | A | A::96.22(5799) |

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|----|-----|---|---|------------------|
| P2 | 50  | F | E | E::99.96(7132)   |
| P2 | 51  | F | H | H::99.94(6678)   |
| P2 | 52  | F | G | G::99.97(6681)   |
| P2 | 53  | F | E | E::99.93(6677)   |
| P2 | 54  | F | H | H::99.90(6674)   |
| P2 | 55  | F | H | H::99.91(6674)   |
| P2 | 56  | F | I | I::99.94(6673)   |
| P2 | 57  | F | R | R::99.91(6671)   |
| P2 | 58  | F | I | I::99.93(7588)   |
| P2 | 59  | F | P | P::99.96(7590)   |
| P2 | 60  | F | R | R::99.93(7590)   |
| P2 | 61  | F | T | T::99.99(7590)   |
| P2 | 62  | F | P | P::99.92(7587)   |
| P2 | 63  | F | A | A::99.80(7577)   |
| P2 | 64  | F | R | R::99.99(8415)   |
| P2 | 65  | F | V | V::99.95(8326)   |
| P2 | 66  | F | T | T::99.96(6733)   |
| P2 | 67  | F | G | G::99.91(6338)   |
| P2 | 68  | F | G | G::99.91(6338)   |
| P2 | 69  | F | V | V::99.89(6338)   |
| P2 | 71  | F | L | L::99.97(6345)   |
| P2 | 72  | F | V | V::99.92(6348)   |
| P2 | 73  | F | D | D::99.86(6346)   |
| P2 | 74  | F | K | K::99.89(6349)   |
| P2 | 75  | F | N | N::99.94(6351)   |
| P2 | 76  | F | P | P::99.89(6349)   |
| P2 | 77  | F | H | H::99.91(6349)   |
| P2 | 78  | F | N | N::99.94(6351)   |
| P2 | 79  | F | T | T::99.86(6346)   |
| P2 | 80  | F | A | A::99.78(6341)   |
| P2 | 81  | F | E | E::99.89(6349)   |
| P2 | 82  | F | S | S::99.97(6352)   |
| P2 | 83  | F | R | R::99.91(4568)   |
| P2 | 84  | F | L | L::99.98(4571)   |
| P2 | 85  | F | V | V::99.93(4567)   |
| P2 | 86  | F | V | V::100.00(4569)  |
| P2 | 87  | F | D | D::99.84(3176)   |
| P2 | 89  | F | S | S::99.97(3179)   |
| P2 | 90  | F | Q | Q::99.86(2947)   |
| P2 | 92  | F | S | S::99.90(2948)   |
| P2 | 93  | F | R | R::99.86(2946)   |
| P2 | 94  | F | G | G::99.90(2945)   |
| P2 | 95  | F | N | N::99.80(2939)   |
| P2 | 96  | F | Y | Y::100.00(2940)  |
| P2 | 97  | F | R | R::99.97(2932)   |
| P2 | 98  | F | V | V::100.00(2784)  |
| P2 | 99  | F | S | S::100.00(1846)  |
| P2 | 100 | F | W | W::99.68(1841)   |
| P2 | 101 | F | P | P::99.78(1843)   |
| P2 | 102 | F | K | K::99.91(3255)   |
| P2 | 104 | F | A | A::99.78(3241)   |

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|---|---|---|---|---|
| P2 | 105 | F | V | V::99.94(3241) |
| P2 | 106 | F | P | P::100.00(3220) |
| P2 | 107 | F | N | N::99.97(3185) |
| P2 | 108 | F | L | L::99.91(2339) |
| P2 | 109 | F | Q | Q::99.97(2978) |
| P2 | 110 | F | S | S::99.98(5182) |
| P2 | 111 | F | L | L::99.83(5221) |
| P2 | 112 | F | T | T::99.90(5235) |
| P2 | 113 | F | N | N::99.84(4312) |
| P2 | 114 | F | L | L::99.95(4321) |
| P2 | 115 | F | L | L::99.88(4319) |
| P2 | 116 | F | S | S::99.93(4322) |
| P2 | 117 | F | S | S::99.93(4323) |
| P2 | 118 | F | N | N::99.84(4320) |
| P2 | 119 | F | L | L::99.88(4322) |
| P2 | 120 | F | S | S::99.84(4321) |
| P2 | 121 | F | W | W::99.98(4327) |
| P2 | 122 | F | L | L::99.88(4323) |
| P2 | 123 | F | S | S::99.88(4323) |
| P2 | 124 | F | L | L::99.98(4327) |
| P2 | 125 | F | D | D::99.84(4320) |
| P2 | 126 | F | V | V::99.96(5578) |
| P2 | 127 | F | S | S::99.93(5604) |
| P2 | 128 | F | A | A::99.75(5695) |
| P2 | 129 | F | A | A::99.91(5704) |
| P2 | 131 | F | Y | Y::99.86(9328) |
| P2 | 132 | F | H | H::99.82(9325) |
| P2 | 133 | F | L | L::99.90(9334) |
| P2 | 134 | F | P | P::99.89(9336) |
| P2 | 135 | F | L | L::99.87(9334) |
| P2 | 136 | F | H | H::99.91(10749) |
| P2 | 137 | F | P | P::99.94(10754) |
| P2 | 138 | F | A | A::99.95(10755) |
| P2 | 139 | F | A | A::99.93(10751) |
| P2 | 140 | F | M | M::99.91(10747) |
| P2 | 141 | F | P | P::99.92(10748) |
| P2 | 142 | F | H | H::99.93(10749) |
| P2 | 143 | F | L | L::99.93(10749) |
| P2 | 144 | F | L | L::99.92(10748) |
| P2 | 145 | F | V | V::99.91(10749) |
| P2 | 146 | F | G | G::99.94(10758) |
| P2 | 147 | F | S | S::99.93(14084) |
| P2 | 148 | F | S | S::99.90(14296) |
| P2 | 149 | F | G | G::99.95(14315) |
| P2 | 150 | F | L | L::99.94(14314) |
| P2 | 151 | F | S | S::99.96(14316) |
| P2 | 152 | F | R | R::99.87(14312) |
| P2 | 153 | F | Y | Y::99.92(14326) |
| P2 | 154 | F | V | V::99.92(14325) |
| P2 | 155 | F | A | A::99.88(14305) |
| P2 | 156 | F | R | R::99.81(14281) |

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|---|---|---|---|---|
| P2 | 157 | F | L | L::99.94(14290) |
| P2 | 158 | F | S | S::99.91(13974) |
| P2 | 159 | F | S | S::99.94(11428) |
| P2 | 160 | F | N | N::99.96(11432) |
| P2 | 161 | F | S | S::99.90(11420) |
| P2 | 162 | F | R | R::99.83(11415) |
| P2 | 163 | F | I | I::99.95(11428) |
| P2 | 165 | F | N | N::99.86(11417) |
| P2 | 166 | F | H | H::99.88(11413) |
| P2 | 167 | F | Q | Q::99.89(12349) |
| P2 | 168 | F | H | H::99.88(12544) |
| P2 | 169 | F | G | G::99.87(12559) |
| P2 | 170 | F | T | T::99.85(12555) |
| P2 | 171 | F | M | M::99.72(12526) |
| P2 | 172 | F | Q | Q::98.63(12396) |
| P2 | 173 | F | N | N::99.94(12556) |
| P2 | 174 | F | L | L::99.91(12514) |
| P2 | 175 | F | H | H::99.87(11110) |
| P2 | 176 | F | D | D::99.91(11110) |
| P2 | 177 | F | S | S::99.94(11100) |
| P2 | 178 | F | C | C::99.86(11072) |
| P2 | 179 | F | S | S::99.92(7599) |
| P2 | 180 | F | R | R::99.88(7596) |
| P2 | 181 | F | N | N::99.93(7599) |
| P2 | 182 | F | L | L::99.89(7590) |
| P2 | 183 | F | Y | Y::99.91(7585) |
| P2 | 184 | F | V | V::99.88(7564) |
| P2 | 185 | F | S | S::99.94(6202) |
| P2 | 186 | F | L | L::99.95(6203) |
| P2 | 187 | F | L | L::99.85(6197) |
| P2 | 188 | F | L | L::99.89(6200) |
| P2 | 189 | F | L | L::99.95(6204) |
| P2 | 190 | F | Y | Y::99.92(6201) |
| P2 | 191 | F | Q | Q::99.95(6202) |
| P2 | 192 | F | T | T::99.95(6204) |
| P2 | 194 | F | G | G::99.90(6202) |
| P2 | 195 | F | R | R::100.00(6206) |
| P2 | 196 | F | K | K::99.88(2598) |
| P2 | 197 | F | L | L::99.96(2599) |
| P2 | 198 | F | H | H::99.77(2595) |
| P2 | 199 | F | L | L::100.00(2601) |
| P2 | 200 | F | Y | Y::99.92(1187) |
| P2 | 201 | F | S | S::99.75(1185) |
| P2 | 202 | F | H | H::99.91(1174) |
| P2 | 203 | F | P | P::100.00(1176) |
| P2 | 204 | F | I | I::99.91(1175) |
| P2 | 205 | F | I | I::99.91(1174) |
| P2 | 206 | F | L | L::98.89(1161) |
| P2 | 207 | F | G | G::100.00(1174) |
| P2 | 209 | F | R | R::100.00(1174) |
| P2 | 210 | F | K | K::99.83(1173) |

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|---|---|---|---|---|
| P2 | 211 | F | I | I::100.00(1175) |
| P2 | 212 | F | P | P::100.00(1174) |
| P2 | 213 | F | M | M::99.91(1172) |
| P2 | 214 | F | G | G::99.83(1171) |
| P2 | 215 | F | V | V::100.00(1173) |
| P2 | 216 | F | G | G::100.00(1746) |
| P2 | 217 | F | L | L::99.52(617) |
| P2 | 218 | F | S | S::100.00(628) |
| P2 | 219 | F | P | P::99.52(627) |
| P2 | 221 | F | L | L::100.00(635) |
| P2 | 222 | F | L | L::100.00(636) |
| P2 | 223 | F | A | A::100.00(638) |
| P2 | 224 | F | Q | Q::100.00(640) |
| P2 | 226 | F | T | T::99.84(637) |
| P2 | 227 | F | S | S::100.00(638) |
| P2 | 228 | F | A | A::99.84(637) |
| P2 | 229 | F | I | I::100.00(638) |
| P2 | 230 | F | C | C::100.00(638) |
| P2 | 231 | F | S | S::99.84(637) |
| P2 | 232 | F | V | V::99.84(637) |
| P2 | 233 | F | V | V::100.00(638) |
| P2 | 234 | F | R | R::99.84(638) |
| P2 | 235 | F | R | R::99.84(640) |
| P2 | 236 | F | A | A::100.00(643) |
| P2 | 238 | F | P | P::99.85(645) |
| P2 | 239 | F | H | H::99.69(644) |
| P2 | 240 | F | C | C::99.84(644) |
| P2 | 241 | F | L | L::99.84(644) |
| P2 | 242 | F | A | A::99.84(644) |
| P2 | 244 | F | S | S::100.00(644) |
| P2 | 245 | F | Y | Y::100.00(644) |
| P2 | 246 | F | M | M::99.84(643) |
| P2 | 247 | F | D | D::100.00(644) |
| P2 | 248 | F | D | D::99.69(642) |
| P2 | 249 | F | V | V::99.84(643) |
| P2 | 250 | F | V | V::99.84(643) |
| P2 | 251 | F | L | L::99.84(641) |
| P2 | 252 | F | G | G::99.84(644) |
| P2 | 253 | F | A | A::99.84(643) |
| P2 | 254 | F | K | K::100.00(644) |
| P2 | 255 | F | S | S::100.00(644) |
| P2 | 256 | F | V | V::100.00(644) |
| P2 | 257 | F | Q | Q::100.00(2170) |
| P2 | 258 | F | H | H::99.86(2169) |
| P2 | 259 | F | L | L::99.91(2170) |
| P2 | 260 | F | E | E::99.95(2170) |
| P2 | 261 | F | S | S::99.95(2170) |
| P2 | 262 | F | L | L::99.94(3544) |
| P2 | 263 | F | Y | Y::99.77(3536) |
| P2 | 264 | F | T | T::99.97(3697) |
| P2 | 265 | F | A | A::99.84(3691) |

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|----|-----|---|---|------------------|
| P2 | 266 | F | V | V::99.93(3060) |
| P2 | 267 | F | T | T::99.84(3056) |
| P2 | 268 | F | N | N::99.93(3060) |
| P2 | 270 | F | L | L::99.97(3061) |
| P2 | 271 | F | L | L::99.93(3060) |
| P2 | 272 | F | S | S::99.93(3060) |
| P2 | 273 | F | L | L::99.93(3060) |
| P2 | 274 | F | G | G::99.90(3059) |
| P2 | 275 | F | I | I::99.74(3054) |
| P2 | 276 | F | H | H::99.90(3059) |
| P2 | 277 | F | L | L::100.00(3062) |
| P2 | 278 | F | N | N::99.84(3057) |
| P2 | 279 | F | P | P::99.93(3060) |
| P2 | 280 | F | N | N::99.74(3054) |
| P2 | 281 | F | K | K::99.97(3061) |
| P2 | 282 | F | T | T::99.67(3050) |
| P2 | 283 | F | K | K::100.00(3062) |
| P2 | 284 | F | R | R::99.84(3053) |
| P2 | 285 | F | W | W::99.84(3052) |
| P2 | 286 | F | G | G::99.87(3052) |
| P2 | 287 | F | Y | Y::99.93(3054) |
| P2 | 288 | F | S | S::100.00(3056) |
| P2 | 289 | F | L | L::99.90(3052) |
| P2 | 290 | F | H | H::99.84(3050) |
| P2 | 292 | F | M | M::99.97(3049) |
| P2 | 293 | F | G | G::99.87(3046) |
| P2 | 294 | F | Y | Y::99.93(3048) |
| P2 | 295 | F | V | V::99.74(3042) |
| P2 | 296 | F | I | I::99.93(3047) |
| P2 | 297 | F | G | G::99.97(3045) |
| P2 | 298 | F | S | S::99.47(3030) |
| P2 | 299 | F | Y | Y::99.87(3042) |
| P2 | 300 | F | G | G::99.90(3041) |
| P2 | 301 | F | S | S::99.93(3040) |
| P2 | 302 | F | L | L::99.93(3032) |
| P2 | 303 | F | P | P::99.93(3033) |
| P2 | 304 | F | Q | Q::99.93(1537) |
| P2 | 305 | F | D | D::100.00(1537) |
| P2 | 306 | F | H | H::99.93(1532) |
| P2 | 307 | F | I | I::99.93(1530) |
| P2 | 308 | F | I | I::99.87(1529) |
| P2 | 309 | F | Q | Q::100.00(1531) |
| P2 | 310 | F | K | K::99.91(2252) |
| P2 | 311 | F | I | I::100.00(2257) |
| P2 | 312 | F | K | K::99.95(1929) |
| P2 | 313 | F | E | E::99.95(1934) |
| P2 | 314 | F | C | C::100.00(1935) |
| P2 | 316 | F | R | R::100.00(1208) |
| P2 | 317 | F | K | K::100.00(1936) |
| P2 | 318 | F | L | L::100.00(1934) |
| P2 | 319 | F | P | P::99.90(1934) |

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|---|---|---|---|---|
| P2 | 320 | F | V | V::100.00(1937) |
| P2 | 321 | F | N | N::99.85(1934) |
| P2 | 322 | F | R | R::99.95(1936) |
| P2 | 323 | F | P | P::99.90(1935) |
| P2 | 324 | F | I | I::100.00(1937) |
| P2 | 325 | F | D | D::100.00(1937) |
| P2 | 326 | F | W | W::99.95(1936) |
| P2 | 327 | F | K | K::100.00(1937) |
| P2 | 328 | F | V | V::100.00(1937) |
| P2 | 329 | F | C | C::99.69(1931) |
| P2 | 330 | F | Q | Q::100.00(1937) |
| P2 | 331 | F | R | R::99.54(1928) |
| P2 | 332 | F | I | I::99.74(1932) |
| P2 | 333 | F | V | V::100.00(1937) |
| P2 | 334 | F | G | G::99.95(1936) |
| P2 | 335 | F | L | L::99.95(1936) |
| P2 | 336 | F | L | L::99.90(1935) |
| P2 | 337 | F | G | G::99.95(1936) |
| P2 | 339 | F | A | A::100.00(1937) |
| P2 | 340 | F | A | A::99.85(1934) |
| P2 | 341 | F | P | P::100.00(1937) |
| P2 | 343 | F | T | T::100.00(1935) |
| P2 | 344 | F | Q | Q::100.00(1935) |
| P2 | 345 | F | C | C::100.00(1935) |
| P2 | 346 | F | G | G::100.00(1935) |
| P2 | 347 | F | Y | Y::99.95(1934) |
| P2 | 348 | F | P | P::100.00(1935) |
| P2 | 349 | F | A | A::100.00(1935) |
| P2 | 350 | F | L | L::100.00(1934) |
| P2 | 351 | F | M | M::100.00(725) |
| P2 | 352 | F | P | P::99.86(723) |
| P2 | 353 | F | L | L::100.00(725) |
| P2 | 354 | F | Y | Y::100.00(1) |
| P2 | 355 | F | A | A::100.00(1) |
| P2 | 356 | F | C | C::100.00(1) |
| P2 | 357 | F | I | I::100.00(1) |
| P2 | 358 | F | Q | Q::100.00(1) |
| P2 | 359 | F | S | S::100.00(1) |
| P2 | 360 | F | K | K::100.00(1) |
| P2 | 361 | F | Q | Q::100.00(1) |
| P2 | 362 | F | A | A::100.00(1) |
| P2 | 364 | F | T | T::100.00(1) |
| P2 | 366 | F | S | S::100.00(1) |
| P2 | 367 | F | P | P::100.00(1) |
| P2 | 368 | F | T | T::100.00(1) |
| P2 | 369 | F | Y | Y::100.00(1) |
| P2 | 370 | F | K | K::100.00(1) |
| P2 | 371 | F | A | A::100.00(1) |
| P2 | 373 | F | L | L::100.00(1285) |
| P2 | 374 | F | C | C::99.92(1285) |
| P2 | 375 | F | K | K::100.00(1286) |

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|---|---|---|---|---|
| P2 | 376 | F | Q | Q::99.92(1285) |
| P2 | 377 | F | Y | Y::99.92(1285) |
| P2 | 378 | F | L | L::99.77(1283) |
| P2 | 379 | F | N | N::99.84(1284) |
| P2 | 380 | F | L | L::99.84(1284) |
| P2 | 381 | F | Y | Y::99.84(1284) |
| P2 | 382 | F | P | P::99.92(1285) |
| P2 | 383 | F | V | V::100.00(1286) |
| P2 | 384 | F | A | A::99.77(1283) |
| P2 | 385 | F | R | R::99.84(1284) |
| P2 | 386 | F | Q | Q::100.00(1286) |
| P2 | 387 | F | R | R::99.84(1284) |
| P2 | 388 | F | P | P::100.00(1286) |
| P2 | 389 | F | G | G::99.92(1285) |
| P2 | 390 | F | L | L::99.84(1284) |
| P2 | 391 | F | C | C::99.84(1284) |
| P2 | 392 | F | Q | Q::100.00(1285) |
| P2 | 393 | F | V | V::99.92(1285) |
| P2 | 395 | F | A | A::99.92(1285) |
| P2 | 396 | F | D | D::99.92(1285) |
| P2 | 397 | F | A | A::99.84(1284) |
| P2 | 398 | F | T | T::99.92(1285) |
| P2 | 399 | F | P | P::99.92(1285) |
| P2 | 400 | F | T | T::99.84(1282) |
| P2 | 401 | F | G | G::100.00(1283) |
| P2 | 402 | F | W | W::100.00(1279) |
| P2 | 403 | F | G | G::99.92(1280) |
| P2 | 404 | F | L | L::99.84(1277) |
| P2 | 405 | F | V | V::99.92(1277) |
| P2 | 406 | F | M | M::99.84(1276) |
| P2 | 407 | F | G | G::99.92(1278) |
| P2 | 408 | F | H | H::99.69(1275) |
| P2 | 409 | F | Q | Q::99.69(1275) |
| P2 | 410 | F | R | R::99.84(1277) |
| P2 | 411 | F | M | M::99.84(1277) |
| P2 | 412 | F | R | R::99.77(1276) |
| P2 | 413 | F | G | G::99.84(1270) |
| P2 | 414 | F | T | T::99.84(1269) |
| P2 | 416 | F | L | L::100.00(1262) |
| P2 | 417 | F | A | A::99.92(1265) |
| P2 | 418 | F | P | P::100.00(1266) |
| P2 | 419 | F | L | L::100.00(1260) |
| P2 | 420 | F | P | P::99.44(1244) |
| P2 | 421 | F | I | I::100.00(1075) |
| P2 | 426 | F | L | L::100.00(1) |
| P2 | 427 | F | L | L::100.00(1) |
| P2 | 428 | F | A | A::100.00(1) |
| P2 | 429 | F | A | A::100.00(1) |
| P2 | 430 | F | C | C::100.00(1) |
| P2 | 432 | F | A | A::100.00(1) |
| P2 | 433 | F | R | R::100.00(1) |

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|---|---|---|---|---|
| P2 | 434 | F | S | S::100.00(1) |
| P2 | 435 | F | R | R::100.00(1) |
| P2 | 436 | F | S | S::100.00(1) |
| P2 | 437 | F | G | G::100.00(1) |
| P2 | 438 | F | A | A::100.00(1) |
| P2 | 439 | F | N | N::100.00(1) |
| P2 | 440 | F | I | I::100.00(1) |
| P2 | 441 | F | L | L::100.00(1) |
| P2 | 442 | F | G | G::100.00(1) |
| P2 | 443 | F | T | T::100.00(1) |
| P2 | 444 | F | D | D::100.00(1) |
| P2 | 445 | F | N | N::100.00(2) |
| P2 | 446 | F | S | S::100.00(1097) |
| P2 | 447 | F | V | V::99.92(1277) |
| P2 | 448 | F | V | V::99.84(1277) |
| P2 | 449 | F | L | L::99.77(1276) |
| P2 | 450 | F | S | S::99.92(1282) |
| P2 | 451 | F | R | R::99.92(1283) |
| P2 | 452 | F | K | K::99.92(1283) |
| P2 | 453 | F | Y | Y::99.77(1283) |
| P2 | 454 | F | T | T::99.92(1287) |
| P2 | 455 | F | S | S::99.92(1287) |
| P2 | 457 | F | P | P::99.84(1286) |
| P2 | 458 | F | W | W::100.00(1288) |
| P2 | 459 | F | L | L::99.92(1288) |
| P2 | 460 | F | L | L::100.00(1289) |
| P2 | 461 | F | G | G::99.92(1289) |
| P2 | 462 | F | C | C::99.61(1285) |
| P2 | 463 | F | A | A::99.84(1288) |
| P2 | 464 | F | A | A::99.61(1286) |
| P2 | 465 | F | N | N::100.00(1291) |
| P2 | 466 | F | W | W::99.77(1288) |
| P2 | 467 | F | I | I::99.54(1285) |
| P2 | 468 | F | L | L::99.77(1288) |
| P2 | 469 | F | R | R::97.68(1261) |
| P2 | 470 | F | G | G::99.92(1290) |
| P2 | 471 | F | T | T::99.92(1290) |
| P2 | 472 | F | S | S::99.85(1289) |
| P2 | 474 | F | V | V::99.92(1291) |
| P2 | 475 | F | Y | Y::99.92(1290) |
| P2 | 476 | F | V | V::99.77(1288) |
| P2 | 477 | F | P | P::99.92(1290) |
| P2 | 478 | F | S | S::99.85(1289) |
| P2 | 479 | F | A | A::99.85(1289) |
| P2 | 480 | F | L | L::99.92(1293) |
| P2 | 481 | F | N | N::99.77(1291) |
| P2 | 482 | F | P | P::99.92(1293) |
| P2 | 483 | F | A | A::99.92(1293) |
| P2 | 484 | F | D | D::99.85(1292) |
| P2 | 485 | F | D | D::99.85(1292) |
| P2 | 486 | F | P | P::99.92(1293) |

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|---|---|---|---|---|
| P2 | 487 | F | S | S::100.00(1294) |
| P2 | 488 | F | R | R::99.92(1295) |
| P2 | 489 | F | G | G::100.00(1297) |
| P2 | 490 | F | R | R::99.61(1292) |
| P2 | 491 | F | L | L::99.92(1296) |
| P2 | 492 | F | G | G::99.92(1295) |
| P2 | 493 | F | L | L::100.00(1293) |
| P2 | 494 | F | S | S::100.00(1293) |
| P2 | 495 | F | R | R::100.00(8) |
| P2 | 496 | F | P | P::100.00(8) |
| P2 | 497 | F | L | L::100.00(8) |
| P2 | 498 | F | L | L::100.00(8) |
| P2 | 499 | F | R | R::75.00(6) C::25.00(2) |
| P2 | 500 | F | L | L::100.00(8) |
| P2 | 501 | F | P | P::100.00(8) |
| P2 | 503 | F | R | R::100.00(7) |
| P2 | 504 | F | P | P::100.00(7) |
| P2 | 505 | F | T | T::100.00(7) |
| P2 | 506 | F | T | T::100.00(7) |
| P2 | 507 | F | G | G::100.00(7) |
| P2 | 508 | F | R | R::100.00(7) |
| P2 | 509 | F | T | T::100.00(7) |
| P2 | 510 | F | S | S::100.00(7) |
| P2 | 511 | F | L | L::100.00(7) |
| P2 | 512 | F | Y | Y::100.00(7) |
| P2 | 513 | F | A | A::100.00(7) |
| P2 | 514 | F | D | D::100.00(7) |
| P2 | 515 | F | S | S::100.00(7) |
| P2 | 516 | F | P | P::100.00(7) |
| P2 | 517 | F | S | S::100.00(7) |
| P2 | 518 | F | V | V::100.00(8) |
| P2 | 519 | F | P | P::100.00(8) |
| P2 | 520 | F | S | S::100.00(8) |
| P2 | 521 | F | H | H::100.00(8) |
| P2 | 522 | F | L | L::100.00(8) |
| P2 | 523 | F | P | P::100.00(7) |
| P2 | 524 | F | D | D::100.00(7) |
| P2 | 525 | F | R | R::100.00(7) |
| P2 | 526 | F | V | V::100.00(7) |
| P2 | 527 | F | H | H::100.00(7) |
| P2 | 529 | F | A | A::100.00(6) |
| P2 | 530 | F | S | S::100.00(4) |
| P2 | 531 | F | P | P::100.00(4) |
| P2 | 532 | F | L | L::100.00(5) |
| P2 | 533 | F | H | H::100.00(156) |
| P2 | 534 | F | V | V::100.00(1071) |
| P2 | 535 | F | A | A::99.91(1071) |
| P2 | 536 | F | W | W::99.81(1070) |
| P2 | 537 | F | R | R::99.72(1066) |
| P2 | 538 | F | P | P::100.00(1069) |
| S2 | 1 | F | S | S::100.00(1) |

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|---|---|---|---|---|
| S2 | 2 | F | T | T::100.00(107) |
| S2 | 3 | F | T | T::100.00(449) |
| S2 | 5 | F | N | N::99.33(448) |
| S2 | 6 | F | Q | Q::100.00(454) |
| S2 | 7 | F | T | T::100.00(455) |
| S2 | 8 | F | L | L::100.00(455) |
| S2 | 9 | F | Q | Q::99.56(453) |
| S2 | 10 | F | D | D::100.00(455) |
| S2 | 11 | F | P | P::100.00(455) |
| S2 | 12 | F | R | R::100.00(455) |
| S2 | 13 | F | V | V::100.00(455) |
| S2 | 14 | F | R | R::100.00(455) |
| S2 | 15 | F | G | G::100.00(456) |
| S2 | 16 | F | L | L::99.78(455) |
| S2 | 17 | F | Y | Y::100.00(456) |
| S2 | 19 | F | P | P::99.84(1842) |
| S2 | 20 | F | A | A::99.84(1843) |
| S2 | 21 | F | G | G::99.84(1844) |
| S2 | 22 | F | G | G::99.96(2633) |
| S2 | 23 | F | S | S::99.81(2632) |
| S2 | 24 | F | S | S::99.96(2636) |
| S2 | 25 | F | S | S::99.85(2633) |
| S2 | 26 | F | G | G::99.96(2636) |
| S2 | 27 | F | T | T::100.00(2637) |
| S2 | 28 | F | V | V::99.89(2634) |
| S2 | 29 | F | N | N::99.96(2636) |
| S2 | 30 | F | P | P::99.81(2632) |
| S2 | 31 | F | V | V::99.96(2635) |
| S2 | 32 | F | P | P::99.92(2634) |
| S2 | 33 | F | T | T::99.96(2635) |
| S2 | 34 | F | T | T::99.91(4383) |
| S2 | 35 | F | V | V::99.93(4407) |
| S2 | 36 | F | S | S::99.91(4408) |
| S2 | 37 | F | H | H::99.91(4408) |
| S2 | 38 | F | I | I::99.98(5794) |
| S2 | 39 | F | S | S::99.91(5796) |
| S2 | 40 | F | S | S::99.88(5797) |
| S2 | 41 | F | I | I::99.95(5926) |
| S2 | 43 | F | S | S::99.92(6013) |
| S2 | 44 | F | K | K::99.88(6011) |
| S2 | 45 | F | I | I::99.92(6020) |
| S2 | 46 | F | G | G::99.95(6026) |
| S2 | 47 | F | D | D::99.87(6016) |
| S2 | 48 | F | P | P::99.82(6016) |
| S2 | 49 | F | A | A::99.88(6020) |
| S2 | 50 | F | L | L::75.56(4554) R::24.34(1467) |
| S2 | 51 | F | N | N::99.96(7133) |
| S2 | 52 | F | M | M::99.94(6679) |
| S2 | 53 | F | E | E::99.90(6675) |
| S2 | 54 | F | N | N::99.91(6676) |
| S2 | 55 | F | I | I::99.90(6674) |

| S2 | 56 | F | T | T::99.96(6676) |
|----|----|---|---|----------------|
| S2 | 57 | F | S | S::99.96(6671) |
| S2 | 58 | F | G | G::99.97(6674) |
| S2 | 60 | F | L | L::63.66(4834) P::36.30(2756) |
| S2 | 61 | F | G | G::99.95(7591) |
| S2 | 62 | F | P | P::99.97(7590) |
| S2 | 63 | F | L | L::99.89(7583) |
| S2 | 64 | F | L | L::99.96(7587) |
| S2 | 65 | F | V | V::100.00(8438) |
| S2 | 66 | F | L | L::99.99(7125) |
| S2 | 67 | F | Q | Q::99.90(6730) |
| S2 | 68 | F | A | A::99.89(6337) |
| S2 | 69 | F | G | G::99.95(6343) |
| S2 | 72 | F | L | L::99.95(6343) |
| S2 | 73 | F | L | L::99.94(6348) |
| S2 | 74 | F | T | T::99.87(6347) |
| S2 | 75 | F | R | R::99.91(6349) |
| S2 | 76 | F | I | I::99.95(6353) |
| S2 | 77 | F | L | L::99.87(6347) |
| S2 | 78 | F | T | T::99.92(6350) |
| S2 | 79 | F | I | I::99.91(6349) |
| S2 | 80 | F | P | P::99.86(6346) |
| S2 | 81 | F | Q | Q::99.83(6344) |
| S2 | 82 | F | S | S::99.94(6352) |
| S2 | 83 | F | L | L::99.92(6348) |
| S2 | 84 | F | D | D::99.96(4570) |
| S2 | 85 | F | S | S::99.91(4568) |
| S2 | 86 | F | W | W::99.98(4569) |
| S2 | 87 | F | W | W::99.96(4567) |
| S2 | 88 | F | T | T::99.84(3176) |
| S2 | 89 | F | S | S::99.91(3177) |
| S2 | 90 | F | L | L::99.91(3178) |
| S2 | 91 | F | N | N::99.86(2947) |
| S2 | 93 | F | L | L::99.97(2949) |
| S2 | 94 | F | G | G::99.90(2947) |
| S2 | 95 | F | G | G::99.76(2939) |
| S2 | 96 | F | T | T::99.86(2940) |
| S2 | 97 | F | T | T::99.97(2936) |
| S2 | 98 | F | V | V::99.97(2930) |
| S2 | 99 | F | C | C::99.95(1848) |
| S2 | 100 | F | L | L::100.00(1846) |
| S2 | 101 | F | G | G::99.68(1841) |
| S2 | 102 | F | Q | Q::99.89(1845) |
| S2 | 103 | F | N | N::99.91(3256) |
| S2 | 104 | F | S | S::99.94(3251) |
| S2 | 105 | F | Q | Q::99.91(3245) |
| S2 | 106 | F | S | S::99.88(3227) |
| S2 | 107 | F | P | P::99.94(3188) |
| S2 | 108 | F | T | T::99.97(3175) |
| S2 | 109 | F | S | S::99.87(2337) |
| S2 | 110 | F | N | N::99.98(4145) |

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|---|---|---|---|---|
| S2 | 111 | F | H | H::99.94(5222) |
| S2 | 112 | F | S | S::99.85(5222) |
| S2 | 113 | F | P | P::99.94(5237) |
| S2 | 114 | F | T | T::99.91(4316) |
| S2 | 115 | F | S | S::99.88(4317) |
| S2 | 116 | F | C | C::99.84(4317) |
| S2 | 117 | F | P | P::99.93(4323) |
| S2 | 118 | F | P | P::100.00(4326) |
| S2 | 119 | F | T | T::99.88(4322) |
| S2 | 120 | F | C | C::99.84(4321) |
| S2 | 121 | F | P | P::99.88(4323) |
| S2 | 122 | F | G | G::99.98(4327) |
| S2 | 123 | F | Y | Y::99.84(4321) |
| S2 | 124 | F | R | R::99.70(4315) |
| S2 | 125 | F | W | W::99.91(4323) |
| S2 | 126 | F | M | M::99.86(4383) |
| S2 | 127 | F | C | C::99.91(5576) |
| S2 | 128 | F | L | L::99.96(5607) |
| S2 | 129 | F | R | R::99.74(5693) |
| S2 | 130 | F | R | R::99.91(5705) |
| S2 | 132 | F | I | I::99.84(9327) |
| S2 | 133 | F | I | I::99.86(9330) |
| S2 | 135 | F | L | L::99.93(9339) |
| S2 | 137 | F | I | I::99.90(10749) |
| S2 | 138 | F | L | L::99.87(10746) |
| S2 | 139 | F | L | L::99.98(10758) |
| S2 | 140 | F | L | L::99.93(10751) |
| S2 | 141 | F | C | C::99.93(10749) |
| S2 | 142 | F | L | L::99.84(10740) |
| S2 | 143 | F | I | I::99.93(10749) |
| S2 | 145 | F | L | L::99.92(10748) |
| S2 | 146 | F | L | L::99.90(10748) |
| S2 | 147 | F | V | V::99.94(12904) |
| S2 | 148 | F | L | L::99.96(14089) |
| S2 | 149 | F | L | L::99.94(14300) |
| S2 | 150 | F | D | D::99.94(14318) |
| S2 | 151 | F | Y | Y::99.91(14310) |
| S2 | 152 | F | Q | Q::99.85(14299) |
| S2 | 153 | F | G | G::99.95(14327) |
| S2 | 154 | F | M | M::99.91(14322) |
| S2 | 155 | F | L | L::99.88(14315) |
| S2 | 156 | F | P | P::99.87(14300) |
| S2 | 157 | F | V | V::99.85(14289) |
| S2 | 158 | F | C | C::99.92(14282) |
| S2 | 159 | F | P | P::99.87(13537) |
| S2 | 160 | F | Q | Q::99.89(11421) |
| S2 | 161 | F | I | I::99.97(11433) |
| S2 | 162 | F | P | P::99.91(11422) |
| S2 | 163 | F | G | G::99.89(11421) |
| S2 | 164 | F | S | S::99.96(11429) |
| S2 | 165 | F | S | S::99.96(11422) |

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|---|---|---|---|---|
| S2 | 166 | F | T | T::99.91(11418) |
| S2 | 167 | F | T | T::99.92(11411) |
| S2 | 168 | F | S | S::99.89(12506) |
| S2 | 169 | F | T | T::99.87(12548) |
| S2 | 170 | F | G | G::99.88(12560) |
| S2 | 171 | F | P | P::99.92(12551) |
| S2 | 172 | F | C | C::99.78(12539) |
| S2 | 173 | F | R | R::99.91(12555) |
| S2 | 174 | F | T | T::99.99(12524) |
| S2 | 175 | F | C | C::99.87(12510) |
| S2 | 176 | F | T | T::99.95(11115) |
| S2 | 177 | F | T | T::99.96(11113) |
| S2 | 178 | F | P | P::99.99(11097) |
| S2 | 179 | F | A | A::99.94(11068) |
| S2 | 180 | F | Q | Q::99.91(7598) |
| S2 | 181 | F | G | G::99.92(7599) |
| S2 | 182 | F | T | T::99.96(7600) |
| S2 | 183 | F | S | S::99.91(7590) |
| S2 | 184 | F | M | M::99.87(7580) |
| S2 | 185 | F | Y | Y::99.91(7566) |
| S2 | 186 | F | P | P::99.94(6201) |
| S2 | 187 | F | S | S::99.97(6203) |
| S2 | 188 | F | C | C::99.87(6198) |
| S2 | 189 | F | C | C::99.90(6201) |
| S2 | 190 | F | C | C::99.90(6201) |
| S2 | 191 | F | T | T::99.92(6202) |
| S2 | 192 | F | K | K::99.94(6201) |
| S2 | 193 | F | P | P::99.98(6206) |
| S2 | 194 | F | S | S::99.94(6203) |
| S2 | 195 | F | D | D::99.87(6200) |
| S2 | 196 | F | G | G::100.00(6202) |
| S2 | 197 | F | N | N::99.88(2597) |
| S2 | 198 | F | C | C::99.96(2600) |
| S2 | 199 | F | T | T::99.96(2600) |
| S2 | 200 | F | C | C::100.00(2598) |
| S2 | 201 | F | I | I::99.75(1185) |
| S2 | 202 | F | P | P::100.00(1175) |
| S2 | 203 | F | I | I::99.83(1173) |
| S2 | 204 | F | P | P::100.00(1176) |
| S2 | 205 | F | S | S::99.91(1174) |
| S2 | 206 | F | S | S::99.91(1173) |
| S2 | 207 | F | W | W::98.89(1161) |
| S2 | 208 | F | A | A::100.00(1174) |
| S2 | 210 | F | G | G::100.00(1174) |
| S2 | 211 | F | K | K::99.83(1173) |
| S2 | 213 | F | L | L::100.00(1173) |
| S2 | 214 | F | W | W::99.91(1172) |
| S2 | 215 | F | E | E::99.74(1170) |
| S2 | 216 | F | W | W::100.00(1173) |
| S2 | 217 | F | A | A::100.00(1768) |
| S2 | 218 | F | S | S::99.68(618) |

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|---|---|---|---|---|
| S2 | 219 | F | A | A::100.00(629) |
| S2 | 220 | F | R | R::99.52(628) |
| S2 | 222 | F | S | S::100.00(635) |
| S2 | 223 | F | W | W::100.00(636) |
| S2 | 224 | F | L | L::100.00(638) |
| S2 | 225 | F | S | S::99.84(639) |
| S2 | 226 | F | L | L::99.84(636) |
| S2 | 227 | F | L | L::100.00(638) |
| S2 | 228 | F | V | V::99.84(637) |
| S2 | 229 | F | P | P::99.84(637) |
| S2 | 231 | F | V | V::100.00(638) |
| S2 | 232 | F | Q | Q::99.84(637) |
| S2 | 233 | F | W | W::99.84(637) |
| S2 | 235 | F | V | V::99.84(638) |
| S2 | 236 | F | G | G::99.84(641) |
| S2 | 237 | F | L | L::100.00(643) |
| S2 | 238 | F | S | S::99.69(643) |
| S2 | 239 | F | P | P::100.00(646) |
| S2 | 240 | F | T | T::99.85(645) |
| S2 | 241 | F | V | V::99.84(644) |
| S2 | 242 | F | W | W::99.84(644) |
| S2 | 243 | F | L | L::99.84(644) |
| S2 | 244 | F | S | S::99.69(642) |
| S2 | 245 | F | V | V::100.00(644) |
| S2 | 246 | F | I | I::100.00(644) |
| S2 | 247 | F | W | W::99.84(643) |
| S2 | 248 | F | M | M::100.00(644) |
| S2 | 249 | F | M | M::99.69(642) |
| S2 | 250 | F | W | W::99.84(643) |
| S2 | 251 | F | Y | Y::99.69(642) |
| S2 | 252 | F | W | W::99.84(641) |
| S2 | 253 | F | G | G::99.84(643) |
| S2 | 254 | F | P | P::99.69(642) |
| S2 | 255 | F | S | S::100.00(644) |
| S2 | 256 | F | L | L::100.00(644) |
| S2 | 257 | F | Y | Y::100.00(2170) |
| S2 | 258 | F | S | S::99.63(2162) |
| S2 | 259 | F | I | I::100.00(2172) |
| S2 | 260 | F | L | L::99.91(2170) |
| S2 | 261 | F | S | S::100.00(2171) |
| S2 | 262 | F | P | P::99.95(2176) |
| S2 | 264 | F | I | I::99.80(3537) |
| S2 | 265 | F | P | P::99.95(3696) |
| S2 | 266 | F | L | L::99.90(3059) |
| S2 | 267 | F | L | L::99.93(3060) |
| S2 | 268 | F | P | P::99.80(3055) |
| S2 | 269 | F | I | I::100.00(3062) |
| S2 | 272 | F | C | C::99.90(3059) |
| S2 | 273 | F | L | L::99.93(3060) |
| S2 | 274 | F | W | W::99.93(3060) |
| S2 | 275 | F | V | V::99.80(3056) |

| S2 | 276 | F | Y | Y::99.71(3053) |
|---|---|---|---|---|
| X | 1 | F | M | M::99.84(1286) |
| X | 2 | F | A | A::100.00(1289) |
| X | 3 | F | A | A::100.00(1289) |
| X | 4 | F | R | R::99.92(1289) |
| X | 5 | F | L | L::99.77(1287) |
| X | 6 | F | C | C::99.84(1288) |
| X | 7 | F | C | C::99.53(1284) |
| X | 8 | F | Q | Q::100.00(1291) |
| X | 9 | F | L | L::99.92(1290) |
| X | 10 | F | D | D::99.54(1285) |
| X | 11 | F | P | P::100.00(1291) |
| X | 12 | F | A | A::97.60(1260) |
| X | 13 | F | R | R::99.85(1289) |
| X | 14 | F | D | D::99.85(1289) |
| X | 15 | F | V | V::99.77(1288) |
| X | 16 | F | L | L::99.92(1290) |
| X | 17 | F | C | C::99.77(1288) |
| X | 18 | F | L | L::99.92(1291) |
| X | 19 | F | R | R::99.85(1289) |
| X | 20 | F | P | P::99.92(1290) |
| X | 21 | F | V | V::99.85(1289) |
| X | 22 | F | G | G::99.92(1290) |
| X | 23 | F | A | A::99.61(1289) |
| X | 24 | F | E | E::99.77(1291) |
| X | 25 | F | S | S::99.85(1292) |
| X | 26 | F | R | R::100.00(1294) |
| X | 27 | F | G | G::100.00(1294) |
| X | 28 | F | R | R::99.77(1291) |
| X | 29 | F | P | P::99.92(1293) |
| X | 31 | F | S | S::99.61(1288) |
| X | 32 | F | G | G::99.92(1295) |
| X | 33 | F | P | P::100.00(1297) |
| X | 34 | F | L | L::99.85(1295) |
| X | 35 | F | G | G::99.92(1296) |
| X | 36 | F | T | T::100.00(1294) |
| X | 38 | F | S | S::100.00(1293) |
| X | 39 | F | S | S::100.00(8) |
| X | 40 | F | P | P::100.00(8) |
| X | 41 | F | S | S::100.00(8) |
| X | 42 | F | P | P::75.00(6) L::25.00(2) |
| X | 43 | F | S | S::100.00(8) |
| X | 44 | F | A | A::100.00(8) |
| X | 45 | F | V | V::100.00(8) |
| X | 46 | F | S | S::100.00(7) |
| X | 47 | F | T | T::100.00(7) |
| X | 48 | F | D | D::100.00(7) |
| X | 49 | F | H | H::100.00(7) |
| X | 50 | F | G | G::100.00(7) |
| X | 51 | F | A | A::100.00(7) |
| X | 52 | F | H | H::100.00(7) |

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|---|---|---|---|---|
| X | 53 | F | L | L::100.00(7) |
| X | 54 | F | S | S::100.00(7) |
| X | 55 | F | L | L::100.00(7) |
| X | 56 | F | R | R::100.00(7) |
| X | 57 | F | G | G::100.00(7) |
| X | 58 | F | L | L::100.00(7) |
| X | 59 | F | P | P::100.00(7) |
| X | 60 | F | V | V::100.00(7) |
| X | 61 | F | C | C::100.00(8) |
| X | 62 | F | A | A::100.00(8) |
| X | 64 | F | S | S::100.00(8) |
| X | 65 | F | S | S::100.00(8) |
| X | 66 | F | A | A::100.00(8) |
| X | 67 | F | G | G::100.00(7) |
| X | 68 | F | P | P::100.00(7) |
| X | 69 | F | C | C::100.00(7) |
| X | 70 | F | A | A::100.00(7) |
| X | 71 | F | L | L::100.00(7) |
| X | 72 | F | R | R::100.00(7) |
| X | 74 | F | T | T::100.00(4) |
| X | 75 | F | S | S::100.00(4) |
| X | 76 | F | A | A::100.00(5) |
| X | 77 | F | R | R::100.00(1069) |
| X | 78 | F | R | R::99.81(1070) |
| X | 79 | F | M | M::99.81(1070) |
| X | 80 | F | E | E::100.00(1069) |
| X | 81 | F | T | T::99.53(1064) |
| X | 82 | F | T | T::100.00(1069) |
| X | 83 | F | V | V::99.72(1066) |
| X | 84 | F | N | N::100.00(1069) |
| X | 85 | F | A | A::100.00(1069) |
| X | 86 | F | H | H::100.00(1069) |
| X | 87 | F | Q | Q::99.91(1068) |
| X | 89 | F | L | L::100.00(1069) |
| X | 90 | F | P | P::99.72(1066) |
| X | 91 | F | K | K::99.91(1068) |
| X | 92 | F | V | V::99.91(1068) |
| X | 93 | F | L | L::99.91(1068) |
| X | 94 | F | H | H::99.72(1066) |
| X | 95 | F | K | K::99.53(1064) |
| X | 96 | F | R | R::100.00(1069) |
| X | 97 | F | T | T::99.91(1068) |
| X | 98 | F | L | L::99.91(1069) |
| X | 99 | F | G | G::100.00(1070) |
| X | 100 | F | L | L::100.00(1070) |
| X | 101 | F | S | S::99.91(1069) |
| X | 102 | F | V | V::100.00(1070) |
| X | 103 | F | M | M::99.91(1070) |
| X | 104 | F | S | S::99.91(1069) |
| X | 105 | F | T | T::99.91(1068) |
| X | 106 | F | T | T::99.63(1064) |

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|---|---|---|---|---|
| X | 107 | F | D | D::99.16(1059) |
| X | 108 | F | L | L::99.91(1067) |
| X | 109 | F | E | E::99.91(1067) |
| X | 110 | F | A | A::99.72(1065) |
| X | 111 | F | Y | Y::99.91(1067) |
| X | 113 | F | K | K::99.91(1062) |
| X | 114 | F | D | D::99.91(1062) |
| X | 115 | F | C | C::100.00(1062) |
| X | 116 | F | L | L::99.81(1061) |
| X | 118 | F | K | K::99.92(1215) |
| X | 119 | F | D | D::99.92(1215) |
| X | 120 | F | W | W::99.84(1213) |
| X | 121 | F | E | E::100.00(1216) |
| X | 122 | F | E | E::100.00(1213) |
| X | 123 | F | L | L::99.83(1210) |
| X | 124 | F | G | G::99.92(1208) |
| X | 125 | F | E | E::99.92(1178) |
| X | 126 | F | E | E::100.00(161) |
| X | 127 | F | T | T::98.74(157) |
| X | 128 | F | R | R::100.00(159) |
| X | 129 | F | L | L::100.00(159) |
| X | 130 | F | M | M::98.74(157) |
| X | 131 | F | I | I::98.74(157) |
| X | 133 | F | V | V::100.00(159) |
| X | 134 | F | L | L::100.00(159) |
| X | 135 | F | G | G::100.00(160) |
| X | 136 | F | G | G::100.00(160) |
| X | 137 | F | C | C::100.00(160) |
| X | 138 | F | R | R::100.00(160) |
| X | 139 | F | H | H::100.00(160) |
| X | 140 | F | K | K::100.00(160) |
| X | 141 | F | L | L::100.00(160) |
| X | 142 | F | V | V::100.00(160) |
| X | 143 | F | C | C::100.00(160) |
| X | 144 | F | A | A::100.00(160) |
| X | 145 | F | P | P::100.00(160) |
| X | 146 | F | A | A::100.00(160) |
| X | 147 | F | P | P::100.00(160) |
| X | 148 | F | C | C::100.00(160) |
| X | 149 | F | N | N::100.00(161) |
| X | 152 | F | T | T::100.00(160) |
| X | 153 | F | S | S::100.00(161) |
| C | 1 | F | M | M::99.89(9911) |
| C | 2 | F | D | D::99.90(9920) |
| C | 3 | F | I | I::99.90(9922) |
| C | 4 | F | D | D::76.32(7581) N::23.64(2348) |
| C | 5 | F | P | P::99.96(9930) |
| C | 6 | F | Y | Y::99.94(9928) |
| C | 7 | F | K | K::99.98(9933) |
| C | 8 | F | E | E::57.87(5747) K::42.11(4182) |
| C | 10 | F | G | G::99.92(9927) |

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|---|---|---|---|---|
| C | 11 | F | A | A::99.90(9923) |
| C | 12 | F | T | T::99.90(9924) |
| C | 13 | F | V | V::99.94(9931) |
| C | 14 | F | E | E::99.95(12042) |
| C | 15 | F | L | L::99.95(12045) |
| C | 16 | F | L | L::99.88(12036) |
| C | 17 | F | S | S::99.88(12036) |
| C | 19 | F | L | L::99.90(12025) |
| C | 20 | F | P | P::99.86(12025) |
| C | 21 | F | S | S::99.94(12034) |
| C | 22 | F | D | D::99.91(12029) |
| C | 25 | F | P | P::99.96(12029) |
| C | 26 | F | S | S::99.93(12018) |
| C | 27 | F | V | V::99.93(12017) |
| C | 28 | F | R | R::99.95(11070) |
| C | 29 | F | D | D::99.93(12587) |
| C | 30 | F | L | L::99.92(14428) |
| C | 31 | F | L | L::99.96(14221) |
| C | 32 | F | D | D::99.94(14217) |
| C | 33 | F | T | T::99.89(10061) |
| C | 34 | F | A | A::99.88(10046) |
| C | 35 | F | S | S::99.99(10048) |
| C | 36 | F | A | A::99.89(8102) |
| C | 37 | F | L | L::99.93(8103) |
| C | 38 | F | Y | Y::99.88(10015) |
| C | 39 | F | R | R::99.92(10014) |
| C | 40 | F | E | E::99.95(9503) |
| C | 41 | F | A | A::99.98(9506) |
| C | 42 | F | L | L::99.92(9497) |
| C | 43 | F | E | E::99.94(9500) |
| C | 44 | F | S | S::99.95(9501) |
| C | 45 | F | P | P::99.94(9500) |
| C | 46 | F | E | E::99.95(9499) |
| C | 47 | F | H | H::99.92(7403) |
| C | 48 | F | C | C::99.73(7387) |
| C | 49 | F | S | S::99.86(7395) |
| C | 50 | F | P | P::99.93(7400) |
| C | 51 | F | H | H::99.88(7394) |
| C | 52 | F | H | H::99.82(7390) |
| C | 53 | F | T | T::99.88(7394) |
| C | 54 | F | A | A::99.85(7391) |
| C | 55 | F | L | L::99.89(7394) |
| C | 56 | F | R | R::99.96(7396) |
| C | 57 | F | Q | Q::99.91(7392) |
| C | 58 | F | A | A::74.85(5537) E::25.05(1853) |
| C | 59 | F | I | I::99.89(7382) |
| C | 60 | F | L | L::99.82(7360) |
| C | 61 | F | C | C::99.95(9664) |
| C | 62 | F | W | W::99.94(9607) |
| C | 63 | F | G | G::99.90(7633) |
| C | 64 | F | E | E::99.79(7615) |

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|---|---|---|---|---|
| C | 65 | F | L | L::99.91(7636) |
| C | 66 | F | M | M::99.90(7636) |
| C | 67 | F | T | T::99.84(7633) |
| C | 68 | F | L | L::99.87(7635) |
| C | 69 | F | A | A::99.95(8470) |
| C | 70 | F | T | T::99.91(8465) |
| C | 71 | F | W | W::99.80(8449) |
| C | 72 | F | V | V::99.91(8459) |
| C | 73 | F | G | G::99.93(8458) |
| C | 74 | F | G | G::99.75(8444) |
| C | 75 | F | N | N::99.99(8364) |
| C | 76 | F | L | L::99.94(6626) |
| C | 77 | F | E | E::99.96(6982) |
| C | 78 | F | D | D::99.90(7029) |
| C | 79 | F | P | P::99.91(7035) |
| C | 80 | F | T | T::99.91(7036) |
| C | 81 | F | S | S::99.91(7036) |
| C | 82 | F | R | R::99.83(7030) |
| C | 83 | F | D | D::99.86(7031) |
| C | 84 | F | L | L::99.91(7035) |
| C | 85 | F | V | V::99.93(8842) |
| C | 86 | F | V | V::99.94(8839) |
| C | 87 | F | S | S::73.81(5133) G::26.13(1817) |
| C | 88 | F | Y | Y::100.00(6975) |
| C | 89 | F | V | V::66.82(4732) I::33.10(2344) |
| C | 90 | F | N | N::99.94(7095) |
| C | 91 | F | T | T::99.94(7167) |
| C | 92 | F | N | N::99.94(7172) |
| C | 93 | F | M | M::99.92(7172) |
| C | 94 | F | G | G::99.92(7172) |
| C | 95 | F | L | L::99.86(7171) |
| C | 96 | F | K | K::99.94(7180) |
| C | 97 | F | F | F::79.57(7212) L::20.41(1850) |
| C | 98 | F | R | R::99.92(9250) |
| C | 99 | F | Q | Q::99.85(9268) |
| C | 100 | F | L | L::99.96(9280) |
| C | 101 | F | L | L::99.96(9293) |
| C | 102 | F | W | W::99.85(9289) |
| C | 104 | F | H | H::99.81(9996) |
| C | 105 | F | I | I::99.92(10011) |
| C | 106 | F | S | S::99.97(11759) |
| C | 107 | F | C | C::99.93(14212) |
| C | 108 | F | L | L::99.93(14217) |
| C | 109 | F | T | T::99.93(14215) |
| C | 111 | F | G | G::99.91(12516) |
| C | 112 | F | R | R::99.93(14868) |
| C | 113 | F | E | E::87.73(13053) D::11.77(1751) |
| C | 114 | F | T | T::99.91(14860) |
| C | 115 | F | V | V::99.89(14848) |
| C | 116 | F | I | I::99.92(15420) |
| C | 117 | F | E | E::99.95(15409) |

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|---|---|---|---|---|
| C | 118 | F | Y | Y::99.97(14606) |
| C | 119 | F | L | L::99.93(14600) |
| C | 120 | F | V | V::99.95(14605) |
| C | 121 | F | S | S::99.95(14603) |
| C | 123 | F | G | G::99.95(14591) |
| C | 124 | F | V | V::99.95(14636) |
| C | 125 | F | W | W::99.86(14629) |
| C | 126 | F | I | I::99.95(16766) |
| C | 127 | F | R | R::99.78(14851) |
| C | 128 | F | T | T::99.92(14875) |
| C | 129 | F | P | P::99.96(14884) |
| C | 130 | F | P | P::99.95(16271) |
| C | 131 | F | A | A::99.99(16279) |
| C | 132 | F | Y | Y::99.91(16264) |
| C | 133 | F | R | R::99.87(16257) |
| C | 134 | F | P | P::99.92(14413) |
| C | 135 | F | P | P::99.97(14420) |
| C | 136 | F | N | N::99.92(14409) |
| C | 137 | F | A | A::99.88(14406) |
| C | 138 | F | P | P::99.19(16858) |
| C | 139 | F | I | I::99.98(16995) |
| C | 140 | F | L | L::99.92(16965) |
| C | 141 | F | S | S::99.94(16967) |
| C | 142 | F | T | T::99.96(16971) |
| C | 143 | F | L | L::99.92(16963) |
| C | 144 | F | P | P::99.92(16947) |
| C | 145 | F | E | E::99.90(16256) |
| C | 146 | F | T | T::99.90(16239) |
| C | 147 | F | T | T::85.38(12091) A::14.52(2057) |
| C | 148 | F | V | V::99.94(14157) |
| C | 149 | F | V | V::85.39(12094) I::14.57(2064) |
| C | 150 | F | R | R::99.91(14136) |
| C | 151 | F | R | R::99.92(14116) |
| C | 152 | F | R | R::85.29(12031) Q::14.66(2068) |
| C | 153 | F | G | G::85.24(12022) C::14.66(2067) |
| C | 154 | F | R | R::99.93(14853) |
| C | 155 | F | S | S::86.36(13095) T::13.59(2061) |
| C | 156 | F | P | P::99.97(15220) |
| C | 157 | F | R | R::99.92(15267) |
| C | 158 | F | R | R::99.97(15789) |
| C | 159 | F | R | R::99.82(15298) |
| C | 160 | F | T | T::99.95(15335) |
| C | 161 | F | P | P::99.80(13137) |
| C | 162 | F | S | S::99.91(13150) |
| C | 163 | F | P | P::99.90(13150) |
| C | 164 | F | R | R::99.76(13121) |
| C | 165 | F | R | R::99.81(12578) |
| C | 166 | F | R | R::99.94(12593) |
| C | 167 | F | R | R::99.83(12578) |
| C | 168 | F | S | S::99.90(12588) |
| C | 169 | F | Q | Q::99.87(12588) |

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|---|---|---|---|---|
| C | 170 | F | S | S::99.95(14776) |
| C | 171 | F | P | P::99.90(16378) |
| C | 172 | F | R | R::99.92(16379) |
| C | 173 | F | R | R::99.75(16349) |
| C | 174 | F | R | R::99.92(15699) |
| C | 175 | F | R | R::99.89(14171) |
| C | 176 | F | S | S::99.94(14181) |
| C | 177 | F | K | K::85.63(14152) Q::14.35(2371) |
| C | 178 | F | S | S::99.95(17637) |
| C | 179 | F | R | R::99.90(17514) |
| C | 180 | F | E | E::99.91(16303) |
| C | 181 | F | S | S::99.91(16307) |
| C | 182 | F | Q | Q::99.88(16299) |
| P1 | 1 | F | M | M::99.88(14407) |
| P1 | 2 | F | P | P::99.90(16269) |
| P1 | 3 | F | L | L::99.91(16830) |
| P1 | 4 | F | S | S::99.97(16993) |
| P1 | 5 | F | Y | Y::99.95(17005) |
| P1 | 6 | F | Q | Q::99.87(16958) |
| P1 | 7 | F | H | H::99.94(16969) |
| P1 | 9 | F | R | R::99.91(16264) |
| P1 | 10 | F | R | R::99.88(16256) |
| P1 | 11 | F | L | L::99.92(14149) |
| P1 | 12 | F | L | L::99.94(14154) |
| P1 | 13 | F | L | L::99.90(14152) |
| P1 | 14 | F | L | L::99.94(14133) |
| P1 | 15 | F | D | D::99.92(14138) |
| P1 | 16 | F | D | D::99.87(14110) |
| P1 | 17 | F | E | E::85.28(12031) N::14.65(2066) |
| P1 | 18 | F | A | A::99.84(14630) |
| P1 | 19 | F | G | G::99.96(16338) |
| P1 | 20 | F | P | P::99.93(16754) |
| P1 | 21 | F | L | L::99.93(14864) |
| P1 | 22 | F | E | E::99.93(15287) |
| P1 | 23 | F | E | E::99.91(15291) |
| P1 | 24 | F | E | E::99.84(15308) |
| P1 | 25 | F | L | L::99.96(15249) |
| P1 | 26 | F | P | P::99.86(13141) |
| P1 | 27 | F | R | R::95.04(12514) |
| P1 | 28 | F | L | L::99.91(13151) |
| P1 | 29 | F | A | A::99.75(12578) |
| P1 | 30 | F | D | D::99.90(12590) |
| P1 | 31 | F | E | E::99.91(12587) |
| P1 | 32 | F | G | G::95.80(12071) |
| P1 | 33 | F | L | L::99.94(12592) |
| P1 | 34 | F | N | N::99.89(14555) |
| P1 | 35 | F | R | R::99.78(14901) |
| P1 | 36 | F | R | R::99.91(16383) |
| P1 | 37 | F | V | V::99.88(16372) |
| P1 | 38 | F | A | A::99.79(15675) |
| P1 | 39 | F | E | E::99.94(15696) |

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|---|---|---|---|---|
| P1 | 40 | F | D | D::99.84(14165) |
| P1 | 41 | F | L | L::99.91(14156) |
| P1 | 42 | F | N | N::99.94(17642) |
| P1 | 43 | F | L | L::99.92(17599) |
| P1 | 44 | F | G | G::99.86(17314) |
| P1 | 45 | F | N | N::99.89(16305) |
| P1 | 46 | F | L | L::99.91(16308) |
| P1 | 47 | F | N | N::99.90(16302) |
| P1 | 48 | F | V | V::91.31(14898) L::8.62(1407) |
| P1 | 49 | F | S | S::99.86(16299) |
| P1 | 50 | F | I | I::99.96(17798) |
| P1 | 51 | F | P | P::99.90(16609) |
| P1 | 52 | F | W | W::99.84(15226) |
| P1 | 53 | F | T | T::99.92(15244) |
| P1 | 54 | F | H | H::99.95(15249) |
| P1 | 55 | F | K | K::99.88(15235) |
| P1 | 56 | F | V | V::99.93(15268) |
| P1 | 57 | F | G | G::99.90(15263) |
| P1 | 58 | F | N | N::99.90(15268) |
| P1 | 60 | F | T | T::99.86(16276) |
| P1 | 61 | F | G | G::99.94(16293) |
| P1 | 62 | F | L | L::99.95(16713) |
| P1 | 63 | F | Y | Y::99.93(16707) |
| P1 | 64 | F | S | S::99.94(16711) |
| P1 | 65 | F | S | S::99.95(16707) |
| P1 | 66 | F | T | T::99.95(18151) |
| P1 | 67 | F | V | V::99.94(18142) |
| P1 | 68 | F | P | P::96.27(16891) |
| P1 | 69 | F | V | V::99.93(15718) |
| P1 | 71 | F | N | N::99.90(13136) |
| P1 | 72 | F | P | P::99.92(13135) |
| P1 | 73 | F | H | H::99.89(13889) |
| P1 | 74 | F | W | W::99.80(13873) |
| P1 | 75 | F | K | K::99.90(14670) |
| P1 | 76 | F | T | T::99.90(14666) |
| P1 | 77 | F | P | P::99.90(14714) |
| P1 | 78 | F | S | S::99.79(14702) |
| P1 | 80 | F | P | P::99.88(14716) |
| P1 | 81 | F | N | N::99.90(14708) |
| P1 | 82 | F | I | I::99.98(14715) |
| P1 | 83 | F | H | H::99.92(15298) |
| P1 | 84 | F | L | L::99.99(13373) |
| P1 | 85 | F | H | H::99.89(12533) |
| P1 | 86 | F | Q | Q::99.90(13068) |
| P1 | 87 | F | D | D::99.91(13078) |
| P1 | 88 | F | I | I::99.94(13079) |
| P1 | 89 | F | I | I::99.93(13070) |
| P1 | 90 | F | K | K::99.91(9549) |
| P1 | 91 | F | K | K::99.97(10036) |
| P1 | 92 | F | C | C::99.91(10039) |
| P1 | 93 | F | E | E::99.87(10034) |

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|---|---|---|---|---|
| P1 | 94 | F | Q | Q::99.95(10042) |
| P1 | 96 | F | V | V::99.90(10033) |
| P1 | 97 | F | G | G::99.78(10021) |
| P1 | 98 | F | P | P::99.90(10032) |
| P1 | 99 | F | L | L::99.89(10030) |
| P1 | 100 | F | T | T::99.95(8307) |
| P1 | 101 | F | V | V::99.90(9838) |
| P1 | 102 | F | N | N::99.94(10408) |
| P1 | 103 | F | E | E::99.90(10384) |
| P1 | 104 | F | K | K::99.98(10395) |
| P1 | 105 | F | R | R::99.92(10390) |
| P1 | 106 | F | R | R::99.93(10382) |
| P1 | 107 | F | L | L::99.96(10292) |
| P1 | 108 | F | Q | Q::99.89(10284) |
| P1 | 109 | F | L | L::99.96(9864) |
| P1 | 110 | F | I | I::99.94(9365) |
| P1 | 111 | F | M | M::99.90(8971) |
| P1 | 112 | F | P | P::99.84(9589) |
| P1 | 113 | F | A | A::99.88(9608) |
| P1 | 114 | F | R | R::99.95(9616) |
| P1 | 116 | F | Y | Y::99.90(8159) |
| P1 | 117 | F | P | P::99.91(8152) |
| P1 | 118 | F | K | K::99.83(7731) |
| P1 | 119 | F | V | V::99.87(7730) |
| P1 | 120 | F | T | T::99.92(7730) |
| P1 | 121 | F | K | K::99.92(7720) |
| P1 | 122 | F | Y | Y::99.95(7701) |
| P1 | 123 | F | L | L::99.94(6319) |
| P1 | 124 | F | P | P::99.81(6798) |
| P1 | 125 | F | L | L::99.94(6817) |
| P1 | 126 | F | D | D::99.88(6813) |
| P1 | 127 | F | K | K::99.75(6798) |
| P1 | 128 | F | G | G::99.96(7616) |
| P1 | 129 | F | I | I::99.95(7648) |
| P1 | 130 | F | K | K::99.95(7651) |
| P1 | 131 | F | P | P::99.97(7647) |
| P1 | 132 | F | Y | Y::99.95(7641) |
| P1 | 133 | F | Y | Y::99.94(7039) |
| P1 | 134 | F | P | P::99.92(7408) |
| P1 | 135 | F | E | E::93.39(6924) K::6.53(484) |
| P1 | 136 | F | H | H::99.94(6339) |
| P1 | 137 | F | L | L::99.95(6338) |
| P1 | 138 | F | V | V::92.27(5851) I::7.65(485) |
| P1 | 139 | F | N | N::99.92(6336) |
| P1 | 140 | F | H | H::99.92(6334) |
| P1 | 141 | F | Y | Y::99.93(5850) |
| P1 | 143 | F | Q | Q::99.83(5834) |
| P1 | 144 | F | T | T::99.97(5843) |
| P1 | 145 | F | R | R::99.95(5839) |
| P1 | 146 | F | H | H::99.98(6620) |
| P1 | 147 | F | Y | Y::99.92(6658) |

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|---|---|---|---|---|---|
| P1 | 148 | F | L | | L::99.98(6639) |
| P1 | 149 | F | H | | H::99.93(6906) |
| P1 | 150 | F | T | | T::99.95(5482) |
| P1 | 151 | F | L | | L::99.98(5484) |
| P1 | 152 | F | W | | W::99.91(5382) |
| P1 | 153 | F | K | | K::99.89(5385) |
| P1 | 154 | F | A | | A::99.81(5381) |
| P1 | 155 | F | G | | G::99.81(5381) |
| P1 | 156 | F | I | | I::68.73(3705) V::31.22(1683) |
| P1 | 157 | F | L | | L::99.91(5388) |
| P1 | 158 | F | Y | | Y::99.88(5973) |
| P1 | 159 | F | K | | K::99.88(5983) |
| P1 | 160 | F | R | | R::99.88(5986) |
| P1 | 161 | F | E | | E::99.97(6429) |
| P1 | 162 | F | T | | T::99.96(6678) |
| P1 | 163 | F | T | | T::99.94(6747) |
| P1 | 164 | F | H | | H::99.91(6751) |
| P1 | 165 | F | S | | S::99.93(8320) |
| P1 | 166 | F | A | | A::99.90(8332) |
| P1 | 167 | F | S | | S::99.02(8260) |
| P1 | 169 | F | C | | C::99.96(8350) |
| P1 | 170 | F | G | | G::99.88(8344) |
| P1 | 171 | F | S | | S::99.92(8346) |
| P1 | 172 | F | P | | P::99.90(8344) |
| P1 | 173 | F | Y | | Y::99.95(8191) |
| P1 | 174 | F | S | | S::99.99(8195) |
| P1 | 175 | F | W | | W::99.85(8385) |
| P1 | 176 | F | E | | E::99.88(8443) |
| P1 | 177 | F | Q | | Q::99.93(8450) |
| P1 | 178 | F | E | | E::99.84(7617) |
| P1 | 179 | F | L | | L::99.91(7621) |
| P1 | 180 | F | Q | | Q::99.88(8439) |
| P1 | 181 | F | H | | H::99.86(8436) |
| P1 | 182 | F | G | | G::99.88(8436) |
| P1 | 183 | F | A | | A::99.80(7592) |
| P1 | 184 | F | E | | E::99.81(8365) |
| P1 | 185 | F | S | | S::99.94(8995) |
| P1 | 187 | F | H | | H::99.88(9119) |
| P1 | 188 | F | Q | | Q::99.82(9118) |
| P1 | 189 | F | Q | | Q::99.85(9122) |
| P1 | 190 | F | S | | S::99.96(9133) |
| P1 | 191 | F | S | | S::99.96(9135) |
| P1 | 192 | F | G | | G::99.85(9131) |
| P1 | 193 | F | I | | I::99.92(9139) |
| P1 | 194 | F | L | | L::99.87(9132) |
| P1 | 195 | F | S | | S::99.88(8279) |
| P1 | 196 | F | R | | R::99.87(8282) |
| P1 | 197 | F | P | | P::99.93(8282) |
| P1 | 198 | F | P | | P::99.92(7958) |
| P1 | 199 | F | V | | V::99.87(7954) |
| P1 | 200 | F | G | | G::99.96(7954) |

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| P1 | 201 | F | S | S::99.89(7874) |
| P1 | 202 | F | S | S::99.89(7477) |
| P1 | 203 | F | L | L::99.91(7479) |
| P1 | 204 | F | Q | Q::99.83(8262) |
| P1 | 205 | F | S | S::99.83(8869) |
| P1 | 206 | F | K | K::99.88(8867) |
| P1 | 207 | F | H | H::99.90(8269) |
| P1 | 208 | F | R | R::99.78(8254) |
| P1 | 209 | F | K | K::99.95(8703) |
| P1 | 210 | F | S | S::99.94(8515) |
| P1 | 211 | F | R | R::99.96(8232) |
| P1 | 212 | F | L | L::99.93(7196) |
| P1 | 213 | F | G | G::99.86(5766) |
| P1 | 214 | F | L | L::99.88(5764) |
| P1 | 215 | F | Q | Q::99.88(5764) |
| P1 | 216 | F | S | S::99.91(5765) |
| P1 | 217 | F | Q | Q::99.86(5763) |
| P1 | 218 | F | Q | Q::99.83(5759) |
| P1 | 219 | F | G | G::99.91(5765) |
| P1 | 220 | F | H | H::99.90(5764) |
| P1 | 221 | F | L | L::73.25(4226) M::26.73(1542) |
| P1 | 222 | F | A | A::99.90(5755) |
| P1 | 223 | F | G | G::63.46(2680) R::36.44(1539) |
| P1 | 224 | F | R | R::99.64(4208) |
| P1 | 225 | F | Q | Q::99.81(4214) |
| P1 | 226 | F | Q | Q::99.83(4212) |
| P1 | 227 | F | G | G::99.83(4210) |
| P1 | 228 | F | R | R::99.83(4184) |
| P1 | 229 | F | S | S::99.91(3402) |
| P1 | 230 | F | W | W::99.85(3398) |
| P1 | 231 | F | S | S::99.72(3982) |
| P1 | 232 | F | I | I::99.91(4374) |
| P1 | 233 | F | R | R::99.94(4621) |
| P1 | 234 | F | A | A::99.97(3083) |
| P1 | 235 | F | G | G::99.94(3121) |
| P1 | 236 | F | T | T::99.94(3121) |
| P1 | 237 | F | H | H::99.87(3123) |
| P1 | 238 | F | P | P::100.00(3128) |
| P1 | 239 | F | T | T::99.81(3123) |
| P1 | 240 | F | A | A::99.81(3121) |
| P1 | 241 | F | R | R::99.94(3122) |
| P1 | 242 | F | R | R::99.81(3117) |
| P1 | 243 | F | P | P::99.97(3128) |
| P1 | 245 | F | G | G::99.97(3133) |
| P1 | 246 | F | V | V::99.97(3134) |
| P1 | 247 | F | E | E::99.74(3126) |
| P1 | 248 | F | P | P::99.85(3351) |
| P1 | 249 | F | S | S::99.89(3493) |
| P1 | 250 | F | G | G::99.89(3493) |
| P1 | 251 | F | S | S::99.92(3556) |
| P1 | 252 | F | G | G::99.92(3586) |

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| P1 | 253 | F | H | H::99.91(3476) |
| P1 | 254 | F | T | T::99.85(2750) |
| P1 | 255 | F | T | T::99.88(2507) |
| P1 | 256 | F | N | N::99.98(4287) |
| P1 | 257 | F | L | L::99.98(4300) |
| P1 | 258 | F | A | A::99.84(4291) |
| P1 | 259 | F | S | S::99.85(3886) |
| P1 | 260 | F | K | K::99.93(4445) |
| P1 | 261 | F | S | S::52.55(2337) T::42.25(1879) A::5.17(230) |
| P1 | 262 | F | A | A::99.78(4442) |
| P1 | 263 | F | S | S::100.00(4452) |
| P1 | 264 | F | C | C::99.84(4445) |
| P1 | 265 | F | L | L::99.93(4449) |
| P1 | 266 | F | H | H::99.78(4441) |
| P1 | 267 | F | Q | Q::99.93(4448) |
| P1 | 268 | F | S | S::99.87(4445) |
| P1 | 269 | F | P | P::99.93(4447) |
| P1 | 270 | F | V | V::99.98(4450) |
| P1 | 271 | F | R | R::99.87(4444) |
| P1 | 272 | F | K | K::99.91(4446) |
| P1 | 273 | F | A | A::99.87(4443) |
| P1 | 274 | F | T | T::59.95(2667) A::39.92(1776) |
| P1 | 275 | F | Y | Y::99.84(4441) |
| P1 | 276 | F | P | P::99.84(4442) |
| P1 | 277 | F | S | S::99.75(4438) |
| P1 | 278 | F | V | V::99.93(4446) |
| P1 | 279 | F | S | S::99.80(4440) |
| P1 | 280 | F | T | T::99.71(3831) |
| P1 | 282 | F | E | E::99.97(3173) |
| P1 | 283 | F | K | K::99.78(3167) |
| P1 | 284 | F | H | H::99.87(3170) |
| P1 | 285 | F | S | S::56.02(1778) T::43.86(1392) |
| P1 | 286 | F | S | S::99.94(3172) |
| P1 | 287 | F | S | S::99.87(3170) |
| P1 | 288 | F | G | G::99.94(3171) |
| P1 | 289 | F | H | H::100.00(3173) |
| P1 | 290 | F | A | A::99.87(3169) |
| P1 | 291 | F | V | V::99.84(3164) |
| S1 | 1 | F | M | M::99.92(8441) |
| S1 | 2 | F | G | G::99.79(8427) |
| S1 | 3 | F | Q | Q::99.83(7596) |
| S1 | 4 | F | N | N::99.94(8994) |
| S1 | 5 | F | L | L::99.92(8996) |
| S1 | 6 | F | S | S::99.90(9104) |
| S1 | 7 | F | T | T::99.91(9124) |
| S1 | 8 | F | S | S::99.75(9112) |
| S1 | 9 | F | N | N::99.85(9123) |
| S1 | 10 | F | P | P::99.95(9136) |
| S1 | 11 | F | L | L::99.96(9134) |
| S1 | 12 | F | G | G::99.88(9135) |
| S1 | 15 | F | P | P::99.84(8291) |

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|---|---|---|---|---|
| S1 | 16 | F | D | D::99.87(8282) |
| S1 | 17 | F | H | H::99.95(8283) |
| S1 | 18 | F | Q | Q::99.85(7952) |
| S1 | 19 | F | L | L::99.87(7954) |
| S1 | 20 | F | D | D::99.92(7951) |
| S1 | 21 | F | P | P::99.93(7479) |
| S1 | 22 | F | A | A::99.88(7477) |
| S1 | 24 | F | R | R::99.83(8262) |
| S1 | 25 | F | A | A::99.71(8856) |
| S1 | 26 | F | N | N::99.91(8870) |
| S1 | 27 | F | T | T::99.93(8268) |
| S1 | 28 | F | A | A::99.79(8251) |
| S1 | 29 | F | N | N::99.97(8704) |
| S1 | 30 | F | P | P::99.94(8230) |
| S1 | 31 | F | D | D::99.97(7218) |
| S1 | 32 | F | W | W::99.83(7181) |
| S1 | 33 | F | D | D::99.91(5769) |
| S1 | 35 | F | N | N::99.91(5766) |
| S1 | 36 | F | P | P::99.93(5767) |
| S1 | 37 | F | N | N::99.86(5762) |
| S1 | 38 | F | K | K::99.84(5760) |
| S1 | 39 | F | D | D::99.88(5763) |
| S1 | 40 | F | T | T::99.88(5762) |
| S1 | 41 | F | W | W::99.90(5759) |
| S1 | 42 | F | P | P::99.88(4218) |
| S1 | 43 | F | D | D::99.81(4215) |
| S1 | 44 | F | A | A::99.76(4213) |
| S1 | 45 | F | N | N::99.83(4215) |
| S1 | 46 | F | K | K::99.86(4213) |
| S1 | 47 | F | V | V::99.90(4188) |
| S1 | 48 | F | G | G::99.82(3399) |
| S1 | 49 | F | A | A::99.94(3401) |
| S1 | 50 | F | G | G::99.92(3832) |
| S1 | 51 | F | A | A::99.83(3994) |
| S1 | 53 | F | G | G::99.94(3082) |
| S1 | 54 | F | L | L::99.62(3107) |
| S1 | 55 | F | G | G::99.94(3121) |
| S1 | 56 | F | L | L::99.94(3121) |
| S1 | 57 | F | T | T::99.90(3125) |
| S1 | 58 | F | P | P::100.00(3128) |
| S1 | 59 | F | P | P::99.71(3119) |
| S1 | 60 | F | H | H::99.97(3126) |
| S1 | 61 | F | G | G::99.97(3122) |
| S1 | 62 | F | G | G::99.74(3116) |
| S1 | 63 | F | L | L::99.84(3124) |
| S1 | 64 | F | L | L::99.97(3128) |
| S1 | 65 | F | G | G::99.90(3133) |
| S1 | 66 | F | W | W::99.87(3132) |
| S1 | 67 | F | S | S::99.81(3128) |
| S1 | 68 | F | P | P::99.94(3499) |
| S1 | 69 | F | Q | Q::99.69(3485) |

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|---|---|---|---|---|
| S1 | 70 | F | A | A::99.94(3563) |
| S1 | 71 | F | Q | Q::99.83(3579) |
| S1 | 72 | F | G | G::99.94(3587) |
| S1 | 73 | F | I | I::99.96(2783) |
| S1 | 74 | F | L | L::99.91(2183) |
| S1 | 75 | F | Q | Q::99.88(2515) |
| S1 | 76 | F | T | T::100.00(4295) |
| S1 | 77 | F | L | L::99.95(4298) |
| S1 | 78 | F | P | P::99.79(3883) |
| S1 | 79 | F | A | A::99.86(4437) |
| S1 | 80 | F | N | N::52.56(2337) K::47.37(2106) |
| S1 | 81 | F | P | P::99.96(4449) |
| S1 | 82 | F | P | P::99.98(4451) |
| S1 | 83 | F | P | P::99.96(4450) |
| S1 | 84 | F | A | A::99.87(4446) |
| S1 | 85 | F | S | S::99.96(4449) |
| S1 | 86 | F | T | T::99.82(4443) |
| S1 | 87 | F | N | N::99.91(4447) |
| S1 | 88 | F | R | R::99.42(4425) |
| S1 | 89 | F | Q | Q::99.89(4445) |
| S1 | 90 | F | S | S::99.98(4449) |
| S1 | 91 | F | G | G::99.96(4448) |
| S1 | 92 | F | R | R::99.91(4446) |
| S1 | 93 | F | Q | Q::99.87(4443) |
| S1 | 94 | F | P | P::99.89(4444) |
| S1 | 95 | F | T | T::99.89(4443) |
| S1 | 96 | F | P | P::99.93(4446) |
| S1 | 97 | F | L | L::100.00(4449) |
| S1 | 98 | F | S | S::99.93(4446) |
| S1 | 99 | F | P | P::100.00(4446) |
| S1 | 100 | F | P | P::99.90(3836) |
| S1 | 101 | F | L | L::99.97(3840) |
| S1 | 102 | F | R | R::99.91(3171) |
| S1 | 103 | F | N | N::99.87(3170) |
| S1 | 104 | F | T | T::99.91(3171) |
| S1 | 105 | F | H | H::99.75(3166) |
| S1 | 106 | F | P | P::99.94(3172) |
| S1 | 107 | F | Q | Q::99.91(3171) |
| S1 | 108 | F | A | A::99.94(3171) |
| S1 | 109 | F | M | M::99.94(3171) |
| S1 | 110 | F | Q | Q::99.81(3167) |

| Meta data | |
|---|---|
| Assembly file: | HBV-RYD-36.sam |
| Annotation file: | /home3/vatt01s/Work/Project-150-HBV/Data/P150-1/Annotation/HBV.anno |
| Reference file: | KM606753.fa. |
| User name | ales01a |
| Hostname | Alpha |
| Location | /home2/ales01a/HBV/P150-5/HBV-RYD-36 |
| Date/Time | Fri 22 Mar 12:44:18 GMT 2019 |