|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Segment**  **(Protein)** | **Position** | **Transmission type** | **Mutations at position** | **Position** | **Transmission type** | **Mutations at position** |
| **PB2** | 4 | sw-hu | I-V(1) | 439 | hu-sw | Q-L(1) |
| 6 | sw-sw | E-A(1), E-R(1) | 444 | sw-sw | V-I(4), I-V(1) |
| 19 | sw-sw | I-D(1) | 447 | hu-hu | Q-L(1) |
| 52 | sw-sw | A-Q(1) | 451 | sw-hu | I-V(2), I-L(1), V-I(1) |
| 58 | hu-hu | T-A(1) | 468 | sw-sw | T-A(3), T-I(1) |
| 64 | sw-sw | M-I(22), M-V(6), M-T(3), M-L(2), M-R(2), I-M(1), I-V(1), M-K(1), M-N(1) | 478 | sw-sw | I-V(9), V-I(3) |
| 92 | sw-sw | S-Q(1) | 498 | hu-hu | I-D(1), I-N(1) |
| 105 | hu-hu | M-I(1), M-V(1), T-A(1), T-M(1), V-T(1) | 525 | sw-sw | E-D(1), E-V(1) |
| 110 | hu-hu | H-T(1) | 526 | sw-sw | K-R(10), K-F(1), R-K(1) |
| 153 | sw-sw | D-G(2), D-H(2), D-N(1) | 535 | sw-sw | M-L(10) |
| 191 | hu-hu | E-K(2) | 541 | sw-sw | G-P(1) |
| 207 | sw-sw | L-M(1) | 560 | sw-hu | L-V(2) |
| 227 | hu-hu | I-V(1), V-I(1) | 560 | sw-sw | V-I(9), V-L(5), L-V(2), L-M(1), V-M(1) |
| 229 | sw-sw | I-V(5), I-N(1), I-Y(1), N-Y(1) | 588 | sw-sw | T-I(20), A-T(15), A-V(8), T-A(8), A-S(6), T-N(5), A-F(2), A-I(2), T-S(2), A-N(1), I-V(1), S-F(1), T-F(1), V-F(1) |
| 241 | sw-sw | E-G(1) | 615 | hu-hu | I-V(2) |
| 243 | sw-sw | M-L(6), M-I(3), M-K(3), I-V(1), K-M(1), M-R(1), M-T(1), M-V(1) | 650 | sw-sw | R-D(1) |
| 245 | sw-sw | T-I(1), T-N(1) | 653 | sw-sw | S-E(1) |
| 249 | hu-sw | E-G(2), E-N(1) | 654 | sw-sw | P-I(1), P-Q(1), P-S(1) |
| 267 | sw-sw | V-I(2), V-D(1) | 656 | sw-sw | F-L(1), F-N(1) |
| 281 | sw-sw | L-I(1) | 666 | sw-sw | T-L(1), T-S(1) |
| 293 | sw-sw | R-K(18), R-G(4), R-Q(2), G-E(1), R-M(1), R-N(1), R-W(1) | 668 | sw-sw | L-T(1) |
| 295 | hu-sw | V-I(1), V-T(1) | 669 | sw-sw | G-P(1), G-R(1) |
| 295 | sw-sw | V-I(22), V-M(13), V-T(3), I-T(1), I-V(1), T-V(1) | 670 | sw-sw | K-A(1) |
| 300 | sw-hu | Q-L(1) | 671 | sw-sw | D-K(1), D-V(1) |
| 311 | hu-hu | C-S(1) | 676 | hu-sw | T-I(2), T-A(1), T-D(1), T-K(1), T-S(1) |
| 344 | hu-sw | V-M(2) | 683 | sw-sw | T-K(9), T-R(2), T-A(1), T-M(1), T-N(1), T-Q(1), T-S(1) |
| 354 | hu-hu | I-L(5), I-V(1), L-I(1), L-R(1) | 686 | sw-sw | V-I(5), I-V(1), M-I(1), V-M(1) |
| 376 | hu-hu | K-G(1) | 704 | hu-hu | Y-H(1) |
| 383 | sw-sw | Q-L(2) | 729 | sw-sw | G-C(1) |
| 389 | hu-hu | R-K(3) | 750 | sw-sw | A-V(1) |
| 391 | sw-sw | E-D(7), D-E(2), D-N(1), E-G(1), E-N(1) | 755 | sw-sw | R-Q(1) |
| 392 | hu-hu | Q-E(1) | 756 | sw-sw | L-M(2), M-L(2), M-V(2), L-T(1), M-T(1) |
| 423 | hu-sw | R-T(1) | 758 | sw-sw | I-T(6), I-N(1), I-R(1) |
| **PB1** | 12 | sw-sw | V-I(7), V-E(1), V-L(1) | 484 | sw-sw | I-L(1), I-V(1) |
| 15 | sw-sw | Q-G(1) | 494 | sw-sw | S-A(1) |
| 41 | sw-sw | D-F(1) | 508 | sw-sw | E-D(1), E-G(1) |
| 42 | sw-sw | T-L(1) | 522 | sw-sw | D-G(1), D-N(1) |
| 67 | sw-sw | N-K(1) | 523 | sw-sw | M-Q(1) |
| 79 | hu-hu | P-A(1) | 524 | sw-sw | S-I(1), S-K(1) |
| 80 | sw-sw | N-S(2), S-C(1), S-I(1), S-T(1), T-N(1) | 546 | hu-hu | M-L(1) |
| 85 | sw-sw | T-Q(1) | 565 | sw-sw | D-G(1), D-H(1) |
| 105 | hu-hu | N-T(2) | 567 | hu-sw | Q-L(1) |
| 108 | sw-hu | L-I(1) | 578 | sw-sw | K-R(9), R-K(2), S-K(2), S-N(2), K-Q(1), R-G( |
| 152 | hu-sw | S-L(2), S-M(1) | 581 | sw-sw | E-D(5), D-N(4), D-E(1), D-G(1), D-L(1) |
| 164 | hu-sw | I-V(1) | 582 | sw-sw | E-D(1), Q-E(1), Q-H(1), Q-K(1) |
| 172 | hu-sw | E-R(1) | 585 | sw-sw | S-A(3) |
| 177 | hu-sw | E-K(1), E-R(1), E-V(1) | 587 | hu-hu | V-A(5), A-T(4), A-V(1), T-V(1) |
| 196 | sw-sw | T-S(3) | 615 | sw-sw | L-M(1), L-V(1) |
| 209 | hu-hu | K-R(2), K-N(1) | 620 | hu-hu | Y-Q(1) |
| 281 | sw-sw | K-T(1) | 622 | hu-hu | G-T(1) |
| 283 | sw-sw | A-P(1), A-V(1) | 623 | hu-hu | R-E(1) |
| 327 | sw-sw | R-K(6), R-E(3), K-R(1) | 624 | hu-hu | L-V(1) |
| 370 | hu-sw | A-G(1), A-T(1) | 636 | hu-sw | E-R(1) |
| 375 | sw-hu | D-E(1), D-S(1), G-S(1) | 683 | sw-sw | L-I(2), L-S(1) |
| 384 | sw-sw | S-P(7), S-L(3), S-T(2), P-Q(1), P-T(1), S-A( | 686 | hu-hu | E-V(1) |
| 388 | sw-sw | K-R(5) | 687 | hu-hu | Q-H(1), Q-P(1) |
| 431 | sw-sw | Y-H(2), Y-P(1) | 702 | hu-hu | S-N(1) |
| 433 | sw-hu | K-R(1) | 705 | hu-hu | Y-W(1) |
| 445 | sw-sw | D-P(1), D-S(1) | 706 | hu-hu | R-N(1) |
| 446 | sw-sw | D-S(1) | 746 | hu-sw | I-D(1), I-T(1) |
| 448 | sw-sw | A-V(5), A-C(1), A-T(1) | 747 | hu-sw | C-L(1) |
| 451 | hu-hu | V-I(1) | 753 | sw-sw | L-F(5), F-L(4), F-S(4), L-I(4), F-I(2), S-F( |
| 455 | sw-sw | N-D(10), N-S(3), D-N(2), D-G(1), M-L(1), N-M | 754 | sw-sw | R-G(6), R-K(5) |
| 459 | sw-sw | I-V(3), I-A(1) | 757 | hu-hu | R-K(1) |
| 475 | sw-sw | I-N(1), I-V(1) |  |  |  |
| **PA** | 6 | sw-sw | R-E(1) | 261 | sw-sw | L-F(2), L-S(2), L-T(1), L-V(1), L-W(1), S-T(1) |
| 17 | sw-sw | A-G(1) | 263 | hu-sw | T-E(2), T-A(1) |
| 42 | sw-sw | L-M(1), L-S(1), M-A(1) | 263 | sw-sw | T-K(7), E-K(6), T-E(5), T-A(4), E-G(2), K-R(2), T-N(2), E-D(1), N-D(1), N-K(1), N-S(1), T-S(1) |
| 55 | hu-hu | D-N(2), N-D(2), N-V(1) | 272 | sw-sw | D-N(10), D-G(8), D-E(7), D-V(5), N-D(3), C-S(1), D-A(1), D-K(1), D-S(1), G-C(1), S-G(1), S-K(1) |
| 56 | sw-sw | E-R(1) | 277 | hu-sw | H-S(2), F-S(1), H-P(1), S-Y(1) |
| 65 | hu-hu | S-L(3), L-P(1) | 278 | sw-sw | Q-N(1) |
| 70 | sw-sw | A-V(9), A-I(2), A-T(2), A-S(1) | 279 | sw-sw | R-K(4) |
| 78 | hu-hu | I-A(1) | 284 | sw-sw | L-M(4), L-R(1) |
| 79 | sw-sw | I-L(2), I-V(1) | 329 | sw-sw | G-C(1), G-E(1) |
| 81 | sw-sw | G-A(1), G-V(1) | 341 | hu-sw | I-V(1) |
| 83 | sw-sw | D-C(1), D-H(1) | 348 | hu-sw | I-L(1), I-T(1) |
| 85 | sw-sw | T-A(15), T-N(9), T-I(4), I-T(3), I-V(3), N-S(2), I-A(1), T-G(1), T-S(1) | 357 | sw-sw | T-I(9), T-A(2), T-N(2), I-V(1), T-L(1), T-V(1), V-I(1) |
| 87 | sw-sw | A-Y(1) | 399 | hu-hu | E-K(2) |
| 105 | hu-hu | F-L(2) | 400 | hu-sw | P-F(1), P-L(1), P-S(1) |
| 146 | sw-sw | H-D(1) | 421 | hu-sw | S-I(2), S-G(1) |
| 156 | sw-sw | A-P(1) | 437 | hu-sw | H-I(1), H-Y(1) |
| 161 | hu-sw | Y-L(1) | 450 | sw-sw | V-I(1) |
| 169 | hu-sw | A-Y(1) | 486 | sw-sw | I-L(4), I-M(1) |
| 170 | sw-sw | R-T(1) | 489 | hu-hu | C-S(1) |
| 186 | hu-sw | S-N(3), S-A(2), S-G(1) | 528 | sw-sw | V-I(3), T-I(1), T-N(1), T-V(1) |
| 186 | sw-sw | G-A(4), G-S(4), S-N(3), A-G(2), A-N(2), S-G(2), S-A(1) | 538 | sw-sw | E-K(5), E-G(2), E-R(1), G-V(1) |
| 218 | sw-sw | S-A(1) | 550 | hu-sw | L-I(1), L-R(1) |
| 224 | hu-hu | S-P(2) | 555 | sw-sw | G-R(1) |
| 230 | sw-sw | R-T(2), R-K(1) | 558 | sw-sw | S-L(2), A-T(1), S-A(1), S-E(1) |
| 231 | sw-sw | A-S(3), A-T(2), A-V(2), S-F(1) | 598 | hu-hu | A-G(1) |
| 233 | sw-sw | V-I(2) | 613 | hu-sw | E-D(1) |
| 238 | sw-sw | P-A(1), P-E(1) | 616 | hu-sw | S-Q(1) |
| 239 | sw-sw | N-T(1), N-W(1) | 630 | sw-sw | E-D(1), E-H(1), E-K(1) |
| 241 | hu-sw | C-Y(11) | 667 | sw-sw | L-G(1) |
| 243 | hu-hu | E-D(1), E-P(1) | 712 | sw-hu | V-T(1) |
| 258 | sw-sw | D-E(7), E-D(3), D-Y(2), D-Q(1), D-S(1), E-A(1), E-K(1), E-Q(1), Y-F(1), Y-H(1) | 714 | hu-hu | A-T(1) |
| 261 | hu-sw | L-R(1), L-S(1), L-T(1) |  |  |  |
| **HA**  **(H1)** | 4 | hu-sw | I-T(6), I-V(2), I-M(1), K-E(1), R-V(1) | 231 | hu-hu | A-E(1), A-G(1), A-P(1), A-S(1), A-T(1), A-V(1), V-I(1) |
| 8 | sw-sw | L-I(3), L-M(3), L-Q(1), L-S(1) | 232 | hu-sw | I-V(5), I-R(4), I-K(3), I-T(2), T-A(2), I-M(1), K-R(1), K-T(1), T-E(1), T-K(1), T-R(1), T-S(1) |
| 11 | sw-sw | A-T(26), A-V(21), T-A(16), T-I(8), A-S(4), A-I(2), T-S(2), V-A(2), I-M(1), T-K(1), V-I(1) | 232 | sw-sw | A-T(35), K-R(13), T-A(13), A-V(10), A-D(6), T-K(6), A-S(5), T-I(4), A-E(3), I-K(3), A-N(2), A-P(2), E-K(2), I-R(2), T-N(2), A-I(1), E-G(1), I-T(1), I-V(1), K-N(1), K-Q(1), Q-R(1), R-I(1), R-K(1), S-P(1), T-R(1), T-V(1), V-I(1) |
| 13 | hu-hu | A-T(2), A-S(1), S-T(1), T-A(1), T-V(1) | 234 | sw-sw | P-Q(6), P-S(6), P-T(5), P-L(2), P-W(1) |
| 38 | sw-sw | E-P(1) | 236 | hu-sw | V-I(1), V-L(1), V-M(1), V-T(1) |
| 46 | sw-sw | S-R(1) | 238 | sw-hu | D-G(1), E-K(1), G-D(1), G-N(1) |
| 51 | sw-sw | E-L(1), E-V(1) | 238 | sw-sw | D-N(29), D-G(20), E-G(17), E-K(11), G-D(9), K-N(6), N-D(5), E-D(4), G-E(3), G-N(3), E-Q(2), K-E(2), D-E(1), K-T(1), N-G(1) |
| 52 | hu-sw | D-N(3), N-T(3), D-G(2), D-E(1), D-S(1), N-D(1) | 240 | hu-hu | A-S(1), A-T(1), E-A(1), E-H(1), S-P(1), T-P(1) |
| 52 | sw-hu | D-E(1), D-N(1), N-S(1) | 248 | hu-sw | T-V(1) |
| 55 | sw-sw | N-S(2), D-N(1), N-D(1), N-F(1) | 250 | sw-sw | V-I(8), I-V(6), V-L(2), L-F(1), L-M(1), L-V(1), V-C(1), V-M(1) |
| 62 | sw-sw | R-K(11), K-R(7), G-R(6), N-K(4), K-N(3), N-D(3), N-S(3), G-E(2), K-G(1), K-S(1), R-E(1), R-G(1), R-I(1), R-M(1), R-Q(1), R-S(1) | 256 | sw-sw | I-L(1), I-Q(1) |
| 65 | sw-sw | A-T(16), A-S(7), A-P(6), A-V(3), I-T(2), A-C(1), A-D(1), I-N(1), I-S(1), P-T(1), S-P(1), T-A(1), T-P(1), V-I(1) | 268 | hu-hu | W-R(2), W-M(1) |
| 69 | sw-sw | L-M(2), L-S(1), L-V(1) | 270 | sw-sw | A-R(1) |
| 70 | sw-sw | G-R(11), G-E(5), G-A(1), G-K(1) | 277 | hu-hu | A-V(1), F-P(1), F-V(1), S-F(1), S-P(1) |
| 86 | hu-hu | S-P(4), L-S(3), S-L(1), S-T(1) | 277 | hu-sw | A-T(6), A-V(3), A-D(2), A-S(2), F-L(1), S-Y(1) |
| 100 | sw-sw | S-P(30), P-S(7), S-T(4), P-T(2), S-A(2), P-Q(1), S-L(1), S-R(1), S-Y(1) | 285 | sw-hu | D-S(1) |
| 111 | sw-sw | Y-H(17), E-K(15), E-D(8), D-N(4), D-E(3), D-S(1), E-Q(1), E-Y(1), H-Y(1), S-I(1), Y-L(1) | 287 | hu-hu | P-S(3), S-P(2), P-G(1), Q-K(1) |
| 113 | hu-hu | A-S(1), I-A(1) | 292 | sw-sw | D-N(11), N-D(9), N-S(3), N-T(3), T-S(3), D-E(2), S-N(2), D-T(1), D-Y(1), N-C(1), N-Y(1), T-A(1), T-N(1) |
| 113 | sw-hu | T-E(1), T-N(1) | 322 | hu-hu | Y-G(1) |
| 126 | sw-sw | S-T(5), S-A(3), S-L(2), S-F(1), S-V(1), S-Y(1), T-N(1) | 325 | sw-sw | S-F(1), S-T(1) |
| 134 | sw-sw | F-T(1) | 326 | sw-sw | A-T(17), T-K(14), T-A(9), T-N(5), T-S(3), A-E(2), A-S(2), T-R(2), A-V(1), K-N(1), T-E(1), T-F(1), T-I(1), T-P(1) |
| 136 | sw-sw | K-N(21), K-E(10), K-R(9), E-G(2), I-M(2), K-M(2), I-R(1), K-G(1), K-I(1), K-S(1), K-T(1), R-I(1), R-K(1) | 332 | sw-sw | T-R(2), T-P(1) |
| 137 | sw-sw | A-T(32), A-E(22), T-A(11), A-S(7), A-V(5), E-G(4), T-I(4), E-K(3), K-E(3), E-R(2), G-E(2), A-D(1), A-K(1), A-L(1), E-D(1), R-G(1), T-K(1), T-V(1) | 333 | sw-sw | G-M(1) |
| 141 | sw-sw | P-S(7), P-L(4), P-T(3), K-E(1), P-A(1), P-I(1), P-K(1), P-Q(1), S-F(1) | 337 | hu-hu | I-T(1), V-T(1) |
| 144 | hu-hu | D-E(2), E-N(1), N-T(1), T-N(1) | 346 | sw-sw | F-L(2), F-R(1) |
| 145 | hu-sw | S-P(3), S-V(1), S-W(1), T-A(1), T-P(1), V-I(1) | 347 | sw-sw | G-Y(1) |
| 146 | hu-hu | N-D(1), N-T(1), T-L(1), T-S(1) | 348 | sw-sw | A-G(1), A-I(1) |
| 147 | sw-sw | G-N(1) | 353 | hu-hu | I-L(1), I-V(1) |
| 148 | hu-sw | V-I(2), V-A(1), V-K(1), V-L(1), V-T(1) | 354 | hu-sw | E-H(1) |
| 148 | sw-sw | V-A(10), A-V(4), V-G(4), V-T(4), A-T(3), G-K(3), T-S(3), V-I(3), V-L(3), M-K(2), V-K(2), V-M(2), V-S(2), A-S(1), G-A(1), I-R(1), R-K(1), T-A(1), T-K(1), T-N(1), V-E(1) | 355 | hu-sw | G-R(1) |
| 150 | hu-sw | A-K(2), A-S(2), A-T(1) | 360 | sw-sw | M-L(5), M-V(5), M-E(3), M-K(1) |
| 152 | hu-hu | C-M(1) | 373 | hu-sw | Q-H(1), Q-S(1) |
| 154 | sw-sw | Y-H(13), H-Y(11), H-R(10), H-N(6), H-Q(5), N-K(4), H-D(1), H-K(1), H-L(1), H-S(1), Q-K(1), Y-D(1), Y-F(1), Y-S(1) | 375 | hu-sw | S-G(1) |
| 155 | hu-hu | A-D(1), A-E(1), A-G(1), A-K(1), K-N(1) | 375 | sw-sw | S-T(3), S-A(1), S-H(1), S-Y(1), T-N(1) |
| 157 | hu-sw | A-T(5), A-E(4), A-V(4), N-K(2), A-G(1), A-I(1), A-K(1), A-S(1), K-E(1), K-R(1) | 376 | hu-sw | G-K(1) |
| 157 | sw-sw | A-T(42), A-V(32), K-E(20), A-S(17), E-K(15), K-N(8), A-E(5), T-A(5), A-N(4), K-R(4), A-D(3), A-K(2), K-G(2), N-K(2), T-K(2), V-I(2), D-N(1), E-A(1), E-N(1), E-Q(1), I-V(1), K-Q(1), M-K(1), N-D(1), T-E(1), T-I(1), T-S(1), V-M(1) | 383 | sw-sw | S-T(2) |
| 158 | hu-sw | K-R(6), K-N(4), K-S(2), K-P(1), N-S(1), R-G(1), S-G(1), S-R(1) | 392 | sw-sw | S-N(22), S-R(13), N-K(2), S-T(2), S-E(1), T-I(1), T-S(1) |
| 158 | sw-sw | N-K(73), S-R(16), R-S(15), N-S(13), K-N(10), R-G(10), K-R(9), S-N(5), R-K(4), L-R(3), N-R(3), N-Q(2), R-N(2), G-R(1), K-G(1), K-P(1), N-G(1), N-P(1), N-T(1), R-Q(1), S-L(1), T-S(1) | 393 | sw-sw | N-T(7), N-F(1), N-S(1) |
| 167 | sw-hu | L-I(1) | 396 | sw-sw | N-D(1), N-T(1) |
| 167 | sw-sw | I-V(5), I-L(4), L-I(4), L-P(2), I-T(1), L-N(1) | 408 | sw-sw | A-S(6), S-A(4), A-T(3), A-V(3), A-F(1) |
| 168 | hu-hu | V-I(2), I-T(1), V-G(1), V-T(1) | 433 | sw-sw | D-N(1), D-S(1) |
| 169 | sw-sw | G-V(7), R-K(7), R-G(5), V-E(5), G-E(4), G-R(4), K-Q(4), V-A(4), E-G(3), K-R(3), R-S(3), V-M(3), K-E(2), E-Q(1), K-D(1), K-S(1), M-T(1), V-K(1), V-T(1) | 451 | hu-sw | L-Y(1) |
| 171 | hu-sw | G-E(12), E-N(1), G-I(1), G-K(1), G-R(1) | 460 | hu-hu | N-D(1), N-K(1), N-S(1), N-T(1) |
| 172 | sw-sw | N-D(26), N-S(16), G-N(7), N-T(6), N-G(4), S-G(4), S-N(4), G-D(3), D-G(2), N-E(2), N-K(2), D-N(1), D-Y(1), G-E(1), G-S(1), G-Y(1), N-H(1), N-M(1), N-Q(1) | 466 | hu-sw | R-K(2), R-S(1) |
| 173 | hu-sw | S-L(4), S-V(1) | 467 | sw-sw | S-N(15), S-G(14), S-L(11), S-A(5), S-I(5), S-R(5), G-S(3), N-S(3), S-T(3), G-A(1), G-D(1), G-V(1), N-H(1), N-T(1) |
| 177 | sw-sw | L-I(48), L-F(4), I-L(2), L-V(2), F-L(1), I-V(1), L-N(1) | 470 | hu-sw | K-R(4), K-L(1), R-K(1) |
| 178 | hu-hu | S-N(5), N-S(2), N-K(1), S-I(1), S-T(1) | 476 | hu-sw | I-N(1), I-T(1) |
| 179 | hu-sw | K-I(2), K-A(1), K-G(1), K-R(1), Q-K(1) | 479 | sw-sw | G-R(1) |
| 179 | sw-sw | K-N(25), K-I(7), K-Q(7), K-R(7), K-T(7), K-M(6), K-E(3), N-K(2), T-A(2), T-M(2), I-A(1), I-K(1), K-G(1), N-E(1), Q-K(1), T-K(1), T-V(1) | 496 | hu-sw | K-R(3), K-S(1), K-T(1) |
| 181 | sw-sw | Y-G(1), Y-H(1) | 500 | hu-hu | Y-K(1) |
| 183 | sw-sw | N-T(1), N-V(1) | 501 | hu-hu | D-K(1) |
| 200 | sw-sw | T-N(18), N-D(2), N-K(2), N-R(2), T-S(2), T-K(1) | 511 | hu-hu | L-I(1), L-K(1) |
| 201 | hu-hu | D-E(1), I-M(1), I-V(1), S-G(1), S-I(1), S-M(1), S-N(1), S-T(1), T-I(1) | 517 | hu-sw | D-E(2), D-N(2), D-L(1) |
| 202 | sw-sw | S-N(19), G-R(13), G-E(12), A-T(9), S-R(8), E-K(6), N-S(6), T-A(6), T-N(6), A-D(5), E-G(4), S-G(4), D-N(3), N-T(3), A-S(2), R-G(2), S-D(2), T-I(2), T-S(2), A-E(1), A-G(1), A-V(1), D-A(1), E-Q(1), E-R(1), N-D(1), R-Q(1), S-I(1), S-K(1), S-T(1), T-Q(1) | 523 | sw-sw | S-T(10), S-P(8), S-A(3), S-L(2), P-Q(1), P-S(1), S-F(1), S-V(1) |
| 203 | hu-hu | D-E(3), D-A(2), D-N(1), D-S(1), D-V(1) | 525 | hu-sw | R-K(2), R-M(1), R-Q(1), R-T(1) |
| 203 | hu-sw | D-E(2), D-N(2), D-S(2), D-V(2), S-I(1), S-T(1) | 528 | sw-sw | Q-R(5), R-Q(3), N-D(1), Q-H(1), Q-K(1), Q-L(1), Q-N(1), Q-P(1), R-N(1), R-W(1) |
| 205 | hu-hu | R-K(4), K-R(1), Q-E(1), Q-K(1), R-M(1), R-Q(1) | 534 | sw-sw | S-W(1) |
| 205 | hu-sw | Q-R(8), Q-K(2), M-S(1) | 536 | hu-hu | V-A(3) |
| 206 | hu-sw | S-T(5), S-R(4), S-N(3), A-T(2), T-A(2), S-A(1), S-D(1), S-E(1), S-K(1) | 543 | hu-sw | V-I(3), V-T(2), V-M(1) |
| 206 | sw-sw | T-A(30), A-T(18), S-T(10), S-A(5), T-S(5), R-W(4), A-V(3), S-N(2), S-R(2), S-W(2), R-Q(1), S-G(1), S-I(1), S-K(1), S-V(1), S-Y(1), T-D(1), T-I(1), T-P(1), V-A(1), W-Q(1) | 544 | hu-sw | V-I(1) |
| 211 | sw-sw | A-E(12), A-V(7), A-T(6), N-S(6), N-D(5), E-D(4), A-I(2), A-N(2), E-K(2), N-K(2), N-T(2), A-D(1), A-L(1), A-P(1), E-G(1), N-I(1), T-P(1) | 544 | sw-hu | V-I(1) |
| 217 | sw-sw | V-A(1), V-I(1) | 549 | sw-sw | I-V(32), T-I(10), I-L(9), I-T(9), I-F(2), T-A(1), V-A(1) |
| 227 | sw-hu | K-V(1), T-A(1) | 559 | sw-sw | L-T(1) |
| 228 | sw-sw | P-I(1), P-S(1), P-T(1) | 560 | hu-sw | Q-D(1) |
| 229 | sw-hu | E-I(1) | 562 | sw-sw | R-K(15), R-Q(1), R-S(1), R-T(1), R-V(1) |
| **HA**  **(H3)** | 2 | hu-sw | K-R(1), K-S(1) | 215 | hu-sw | S-A(1), S-L(1) |
| 4 | hu-sw | I-V(1) | 219 | sw-sw | T-I(12), I-T(3), T-A(2), T-V(2), I-L(1), I-M(1), I-V(1), T-M(1) |
| 4 | sw-sw | I-V(3), I-T(2), V-I(2), I-A(1), V-L(1) | 237 | sw-sw | P-I(1), P-L(1) |
| 8 | sw-hu | S-G(1) | 242 | hu-hu | I-V(2), L-Q(2), V-I(2), L-I(1) |
| 9 | sw-hu | Y-H(2), C-Y(1) | 251 | sw-sw | T-D(1) |
| 10 | sw-sw | I-T(2), I-A(1), I-F(1), I-G(1), I-V(1), T-I(1), V-I(1), V-L(1) | 252 | sw-sw | I-V(3), I-T(2), I-L(1), I-M(1) |
| 13 | sw-sw | L-M(5), L-Q(4), L-I(1), L-P(1), L-S(1), M-V(1), Q-H(1) | 260 | hu-sw | L-M(1), L-N(1), V-I(1), V-M(1) |
| 14 | sw-sw | V-G(8), V-A(6), V-I(6), I-V(5), I-T(4), I-N(3), I-S(1), T-A(1), V-F(1), V-T(1) | 262 | sw-sw | N-K(6), N-S(3), N-T(2), N-E(1), N-V(1) |
| 16 | sw-sw | G-S(4), A-T(3), A-D(1), A-G(1), A-P(1), A-R(1), A-S(1) | 264 | sw-sw | N-T(1), T-N(1), T-Q(1) |
| 21 | hu-sw | G-E(2), G-R(2), G-K(1) | 269 | sw-sw | A-P(1) |
| 23 | sw-sw | D-E(7), D-G(7), D-N(3), G-D(3), D-S(2), D-T(1), G-S(1), G-Y(1) | 278 | sw-sw | S-N(14), S-G(8), N-D(2), S-I(1), S-R(1), S-T(1), T-A(1), T-N(1), T-S(1) |
| 26 | sw-sw | M-R(2), M-T(2), T-K(2), T-M(2), M-L(1), T-S(1) | 292 | sw-hu | N-E(1) |
| 28 | sw-sw | T-M(4), T-G(1), T-I(1), T-K(1) | 294 | sw-sw | N-H(3), N-S(3), S-N(3), N-D(2), N-Y(2), N-E(1), N-I(1), N-K(1), N-T(1) |
| 36 | sw-sw | V-W(1) | 320 | sw-sw | A-P(6), A-T(4), A-V(3), A-E(1), A-N(1), D-A(1), D-N(1), P-A(1), T-N(1) |
| 55 | hu-sw | A-G(1) | 323 | sw-sw | R-K(4), K-H(1) |
| 66 | sw-hu | R-G(1) | 363 | hu-sw | V-M(1) |
| 71 | sw-sw | P-I(1) | 370 | sw-sw | K-R(1) |
| 78 | hu-sw | K-E(2), E-K(1), I-M(1), I-T(1), I-V(1), K-G(1), K-R(1) | 388 | sw-sw | A-T(8), A-S(6), A-E(2), T-S(1) |
| 94 | sw-sw | G-D(10), D-E(8), D-G(6), G-S(4), D-N(3), D-S(1), G-A(1), G-E(1), G-M(1) | 399 | sw-sw | R-K(4), R-W(1) |
| 117 | sw-sw | Y-F(4), D-E(3), D-Y(3), Y-H(2) | 438 | hu-hu | S-G(1) |
| 121 | sw-hu | Y-H(1) | 441 | hu-hu | A-F(1), F-C(1) |
| 138 | hu-hu | N-K(2), T-N(1) | 443 | sw-hu | L-I(1) |
| 138 | hu-sw | N-S(2), N-D(1), N-T(1), T-I(1) | 450 | hu-hu | Q-Y(1) |
| 146 | sw-sw | V-I(3), V-L(1) | 453 | hu-hu | I-A(1), I-W(1) |
| 147 | sw-sw | A-T(10), A-S(4), A-N(3), K-E(2), T-N(2), A-D(1), A-K(1), T-A(1), T-K(1), T-S(1) | 457 | hu-hu | D-A(1) |
| 151 | sw-sw | T-A(4), S-A(3), T-S(2), A-T(1), K-E(1), K-R(1), S-T(1), T-E(1), T-K(1) | 461 | hu-hu | I-F(1), I-V(1), N-D(1), N-I(1) |
| 153 | sw-sw | Y-F(9), Y-N(7), N-S(3), Y-R(3), Y-S(3), N-I(2), S-F(2), S-Y(2), Y-Q(2), F-S(1), N-D(1), N-R(1), R-F(1), S-P(1), Y-I(1), Y-T(1) | 466 | hu-hu | R-K(2), K-R(1) |
| 156 | hu-hu | K-I(3), I-K(1), K-R(1) | 469 | hu-hu | R-K(1) |
| 158 | sw-sw | E-G(12), E-K(7), G-E(5), K-N(5), G-K(3), G-R(3), R-G(3), K-E(2), K-G(2), E-A(1), E-N(1), G-N(1), K-Q(1), K-R(1), R-K(1) | 470 | sw-sw | Q-L(7), Q-N(1) |
| 160 | hu-hu | D-G(3), N-D(2), G-S(1), G-V(1), I-N(1), N-S(1), N-T(1), V-G(1), V-I(1) | 471 | sw-sw | L-R(1) |
| 161 | sw-sw | N-K(28), K-N(11), N-S(3), S-N(2), K-I(1), K-M(1), K-S(1), N-Y(1), S-K(1) | 515 | sw-sw | R-V(1) |
| 171 | hu-hu | Y-H(2), H-T(1), T-Y(1) | 537 | hu-sw | A-S(2) |
| 172 | sw-sw | N-K(12), N-H(10), N-S(9), K-Q(6), K-E(3), E-A(2), E-K(2), K-N(2), A-G(1), E-G(1), E-Q(1), H-Q(1), H-R(1), H-S(1), N-A(1), Q-H(1), S-G(1) | 545 | sw-sw | V-A(12), A-T(3), V-G(3), V-I(2), A-H(1), A-V(1), V-F(1), V-T(1) |
| 175 | hu-hu | F-Y(2), F-S(1), S-N(1), S-Y(1), Y-F(1), Y-N(1) | 554 | sw-sw | A-T(2), A-G(1), A-P(1) |
| 189 | sw-hu | E-G(1), K-Q(1) | 560 | hu-hu | I-K(1), I-L(1) |
| 205 | hu-hu | S-N(2), K-R(1), N-K(1), Q-K(1), R-S(1) | 565 | sw-sw | C-H(3) |
| 209 | sw-sw | N-S(16), S-N(7), N-Y(6), Y-S(3), F-S(2), S-A(2), S-Y(2), D-N(1), N-D(1), N-K(1), Y-N(1) | 566 | sw-sw | V-I(6), I-G(2), I-V(1) |
| 215 | hu-hu | S-I(1) |  |  |  |
| **NP** | 8 | sw-sw | R-S(1) | 240 | sw-sw | D-S(1) |
| 31 | sw-sw | K-R(8), R-K(4), G-R(1), K-P(1), R-G(1) | 241 | sw-sw | Q-P(1) |
| 34 | hu-sw | G-S(2), G-D(1) | 246 | sw-sw | R-P(1) |
| 50 | sw-sw | S-N(6), S-D(1), S-G(1), S-R(1) | 251 | sw-sw | A-V(1) |
| 53 | sw-hu | E-D(1) | 253 | hu-hu | F-I(1), F-L(1), I-D(1), I-F(1) |
| 55 | hu-hu | R-V(1) | 310 | hu-sw | S-T(1) |
| 61 | hu-hu | I-L(2), I-T(1), I-V(1), L-I(1) | 339 | sw-sw | E-L(1) |
| 66 | hu-hu | M-P(1) | 353 | hu-hu | I-L(2), V-I(2), I-V(1), S-I(1), V-L(1) |
| 67 | hu-hu | V-N(1) | 370 | sw-sw | N-S(6), N-T(2), N-A(1), S-N(1) |
| 113 | sw-sw | K-L(1) | 430 | hu-hu | S-A(1), T-N(1) |
| 122 | sw-sw | Q-L(2), Q-H(1) | 431 | hu-sw | G-M(1) |
| 124 | sw-sw | N-Y(1) | 455 | hu-hu | D-E(2), D-T(1) |
| 126 | hu-hu | G-P(1) | 456 | hu-sw | V-M(1) |
| 126 | sw-sw | G-S(2), G-N(1) | 459 | sw-sw | Q-H(2), Q-N(1) |
| 130 | hu-sw | T-I(1) | 470 | hu-hu | K-R(2) |
| 131 | hu-sw | A-R(1) | 472 | hu-hu | A-T(5), T-A(4) |
| 131 | sw-sw | A-G(1), A-P(1), A-R(1) | 472 | hu-sw | T-A(3), A-T(1) |
| 178 | sw-sw | A-R(1) | 473 | hu-sw | I-T(1), S-N(1) |
| 190 | hu-sw | A-N(1), A-T(1), A-V(1) | 473 | sw-sw | S-N(10), N-T(4), N-S(2), N-K(1), S-T(1) |
| 203 | sw-sw | D-G(1), D-S(1) | 480 | sw-sw | D-E(1), D-N(1) |
| 213 | sw-sw | R-P(1) | 483 | sw-sw | N-Y(1) |
| 217 | hu-hu | I-V(2), S-G(2), G-S(1), I-S(1), V-A(1), V-I(1) | 485 | hu-sw | G-C(1) |
| 218 | sw-sw | A-S(1), A-V(1) | 494 | hu-sw | E-V(1) |
| 222 | hu-sw | M-I(1), M-L(1), M-T(1) | 495 | hu-sw | E-V(1) |
| 239 | sw-sw | M-V(6), M-E(1) |  |  |  |
| **NA**  **(N1)** | 3 | sw-sw | P-S(6), T-A(4), T-P(2), A-T(1), P-D(1), P-Q(1) | 348 | hu-hu | G-L(1) |
| 16 | hu-sw | T-A(4), I-A(1), I-T(1), V-I(1) | 364 | sw-sw | S-N(6), S-D(3), S-G(2), S-K(1) |
| 18 | sw-sw | G-A(1), G-W(1) | 368 | hu-hu | R-A(1) |
| 20 | hu-sw | I-T(2), I-V(1), V-I(1) | 373 | hu-hu | M-S(1) |
| 39 | sw-sw | Q-R(2), Q-F(1), Q-H(1), Q-P(1) | 374 | hu-hu | I-K(1), I-S(1), I-V(1) |
| 61 | sw-sw | W-C(1), W-L(1), W-Y(1) | 375 | hu-hu | W-M(1) |
| 84 | sw-hu | I-V(2), N-S(1), T-A(1), T-V(1), V-I(1) | 382 | hu-hu | D-N(1), G-M(1), K-R(1), R-G(1) |
| 84 | sw-sw | I-T(4), I-V(4), K-E(4), K-R(3), I-K(2), K-N(2), E-V(1), I-F(1), I-M(1), K-S(1), K-T(1), M-I(1), R-K(1), T-K(1) | 385 | hu-sw | N-S(1), S-W(1) |
| 98 | hu-hu | A-F(1), A-P(1) | 386 | hu-sw | D-N(2), K-E(1), N-D(1), N-S(1), S-I(1) |
| 101 | sw-sw | S-R(2), S-N(1), S-T(1), T-S(1) | 387 | hu-sw | F-R(1), F-Y(1) |
| 147 | sw-sw | G-T(1) | 388 | hu-sw | S-Q(1) |
| 149 | hu-sw | I-V(2), I-F(1), I-Y(1), V-I(1) | 389 | hu-sw | M-L(2), I-T(1), I-V(1), M-Q(1), M-V(1), V-I(1) |
| 157 | sw-hu | A-R(1) | 399 | hu-hu | W-Y(1) |
| 164 | sw-sw | G-E(1), G-R(1) | 416 | sw-sw | D-N(19), D-S(9), N-D(9), N-S(3), S-N(3), D-G(2), G-D(1), N-K(1), N-T(1), S-K(1) |
| 213 | sw-sw | I-M(1), T-I(1), T-V(1) | 424 | hu-sw | V-I(1) |
| 215 | hu-sw | T-I(1), T-S(1) | 430 | sw-hu | R-E(1) |
| 231 | sw-sw | C-I(1) | 432 | hu-hu | E-K(1), E-N(1), K-E(1), R-K(1) |
| 240 | sw-sw | T-A(3), T-I(1), T-V(1), V-S(1) | 440 | sw-sw | G-A(3), G-S(2) |
| 248 | hu-hu | D-N(1), N-D(1) | 444 | hu-hu | S-R(1) |
| 250 | sw-hu | P-Q(1) | 451 | hu-hu | D-G(2), D-A(1), D-N(1), E-D(1), G-E(1) |
| 250 | sw-sw | A-P(1), A-Q(1), P-A(1), Q-P(1), Q-R(1) | 454 | hu-hu | G-C(1), G-F(1), G-R(1), G-S(1), N-D(1) |
| 273 | hu-sw | N-G(1) | 459 | hu-hu | D-R(1) |
| 276 | sw-sw | Y-P(1) | 460 | hu-hu | G-A(1), G-L(1) |
| 278 | sw-sw | E-G(1), E-S(1) | 461 | hu-hu | A-W(1) |
| 314 | sw-sw | I-M(8), I-L(5), I-K(1), I-V(1) | 462 | sw-hu | D-N(1) |
| 317 | sw-sw | I-V(5) | 464 | hu-hu | P-L(1) |
| 331 | sw-sw | R-G(26), K-G(8), K-N(8), K-R(7), R-K(6), K-E(3), K-M(3), E-G(1), G-K(1), G-R(1), K-Q(1), N-K(1), R-V(1) | 466 | hu-hu | T-A(1), T-I(1), T-N(1), T-S(1), T-V(1) |
| 332 | sw-sw | T-I(7), T-K(7), K-R(4), T-A(3), T-M(3), T-P(2), E-T(1), K-E(1), T-V(1) | 466 | sw-hu | T-D(1) |
| 336 | hu-sw | N-G(1) | 467 | sw-sw | I-V(10), I-D(1), I-M(1), I-Q(1), I-T(1), I-Y(1), V-I(1) |
| 340 | sw-sw | S-F(11), S-T(7), S-L(6), S-P(4), S-Y(4), P-Q(2), P-S(2), S-A(2), F-L(1), L-A(1), L-R(1), P-H(1), P-L(1), S-V(1), T-I(1), T-S(1), V-I(1), V-S(1) |  |  |  |
| **NA**  **(N2)** | 4 | sw-hu | S-I(1) | 343 | hu-hu | E-D(1), E-I(1) |
| 16 | sw-hu | I-A(1) | 344 | hu-hu | E-K(3), K-E(1), K-R(1), R-K(1) |
| 19 | sw-hu | T-I(1), T-L(1) | 346 | hu-hu | G-D(1), G-S(1), G-Y(1), N-S(1), N-T(1), S-G(1) |
| 42 | sw-sw | C-Y(21), C-R(7), C-H(2), C-S(2), Y-H(2), C-F(1), F-L(1), S-G(1), S-H(1), S-N(1), Y-C(1) | 350 | sw-sw | K-I(1), K-N(1) |
| 46 | hu-hu | A-P(2), P-A(2) | 352 | hu-hu | W-F(1) |
| 52 | sw-hu | L-Q(1), S-L(1) | 353 | hu-hu | A-L(1) |
| 63 | sw-hu | T-V(1) | 354 | hu-hu | F-S(1) |
| 69 | sw-sw | T-N(14), T-A(10), A-T(6), T-I(4), A-V(3), S-F(3), T-S(3), A-F(1), A-I(1), A-S(1), S-A(1), T-V(1) | 355 | hu-hu | D-P(1) |
| 71 | sw-sw | T-I(24), T-A(4), T-N(4), T-S(2), A-T(1), I-T(1), I-V(1), T-K(1), T-L(1), T-P(1), T-V(1) | 360 | hu-hu | V-L(1) |
| 74 | sw-sw | E-K(10), E-V(4), E-D(2), E-G(1), E-Y(1) | 362 | hu-hu | M-S(1) |
| 77 | hu-sw | I-K(4), I-T(4), I-V(2) | 368 | sw-sw | E-D(5), K-N(4), E-K(2), K-E(2), N-E(2), N-K(2), D-N(1), E-N(1), E-T(1), K-G(1), N-S(1) |
| 79 | sw-sw | P-S(13), P-H(3), P-L(2), P-D(1), P-T(1), S-C(1), S-P(1) | 369 | hu-hu | D-E(1), E-K(1), K-E(1), K-R(1), K-T(1), T-D(1), T-K(1) |
| 81 | hu-hu | P-V(2), L-P(1), V-L(1) | 370 | sw-sw | L-S(36), L-F(9), S-L(6), L-V(5), F-L(2), L-I(2), S-A(2), S-T(2), L-Q(1), S-P(1), S-V(1), V-A(1), V-I(1) |
| 81 | hu-sw | L-P(2), L-I(1), L-Q(1), L-S(1), P-S(1), P-T(1) | 381 | hu-hu | E-G(3), G-E(1) |
| 93 | hu-hu | D-N(2), D-G(1), G-D(1), G-Q(1), G-S(1), K-N(1), N-D(1), Q-D(1), Q-K(1) | 385 | hu-hu | N-T(2), K-N(1), T-K(1) |
| 121 | sw-sw | Y-L(1) | 391 | sw-sw | Q-W(1) |
| 143 | hu-hu | G-V(1), K-R(1), R-G(1), V-I(1), V-K(1), V-M(1) | 392 | hu-hu | I-T(3), I-M(2) |
| 149 | sw-sw | V-I(10), I-V(4), I-M(2), V-A(2), A-T(1), F-V(1), I-F(1), I-T(1), V-F(1), V-L(1) | 398 | hu-hu | V-R(1) |
| 156 | sw-sw | R-I(1) | 403 | hu-hu | R-A(1), R-K(1) |
| 199 | hu-sw | E-K(4), K-N(3), K-E(2), E-A(1), E-T(1), K-Q(1), K-R(1), N-K(1) | 404 | hu-hu | S-N(1) |
| 205 | hu-sw | F-L(1), I-D(1) | 407 | hu-hu | S-F(1), S-L(1) |
| 220 | hu-hu | Q-K(2), K-N(1), K-P(1), K-Q(1) | 411 | sw-sw | S-T(5), S-C(1) |
| 237 | sw-sw | C-A(1) | 414 | sw-sw | G-S(12), G-D(9), G-N(7), S-N(7), D-N(2), D-G(1), G-R(1), G-V(1), S-G(1), V-L(1) |
| 253 | sw-hu | K-R(3) | 431 | hu-hu | E-K(2), K-N(2), E-R(1) |
| 267 | hu-hu | K-P(2), P-Q(2), P-T(2), K-T(1), P-L(1), P-S(1), Q-P(1), T-A(1), T-K(1), T-P(1) | 432 | hu-hu | E-Q(2), Q-E(2) |
| 269 | sw-sw | L-S(8), S-L(8), S-T(4), A-S(2), A-T(2), I-M(2), L-F(2), L-V(2), S-A(2), A-L(1), A-V(1), I-L(1), I-T(1), I-V(1), L-I(1), L-K(1), L-M(1), S-M(1), S-P(1), T-A(1) | 435 | hu-hu | E-R(2), E-K(1), K-E(1), R-K(1) |
| 280 | sw-sw | C-V(1) | 437 | hu-hu | L-W(2), W-L(1) |
| 313 | hu-sw | V-A(4), D-N(2), V-D(1) | 464 | hu-hu | I-L(2), L-I(1), L-M(1) |
| 313 | sw-sw | V-A(27), D-N(20), V-I(11), D-G(5), G-D(5), G-S(5), V-F(4), A-T(3), D-E(2), G-N(2), I-T(2), S-G(2), V-G(2), A-N(1), A-V(1), D-K(1), D-S(1), D-T(1), D-Y(1), G-V(1), I-M(1), S-N(1), V-D(1), V-N(1) | 465 | sw-hu | N-D(1) |
| 322 | sw-sw | V-T(2) | 468 | hu-hu | H-L(3), P-H(2), H-P(1), H-R(1), P-L(1) |
| 336 | hu-hu | H-N(2), Y-H(2), H-P(1), H-R(1), N-Y(1) | 469 | hu-sw | I-M(1), V-I(1) |
| 338 | hu-hu | R-Q(3), L-F(2), L-I(1), L-K(1), L-R(1), R-L(1) | 469 | sw-sw | I-V(26), V-I(8), I-M(6), I-L(1), I-T(1), V-A(1) |
| **MP**  **(M1)** | 9 | hu-sw | T-M(1) | 88 | sw-sw | G-A(1) |
| 20 | sw-sw | F-V(1), L-F(1) | 96 | sw-sw | A-G(2), A-S(1) |
| 28 | hu-hu | L-Q(1) | 144 | sw-sw | F-P(1) |
| 30 | hu-hu | D-N(4), G-S(2), D-S(1), D-Y(1), S-D(1), S-N(1) | 184 | sw-sw | T-H(1) |
| 31 | sw-sw | V-C(1) | 186 | sw-sw | A-P(1) |
| 46 | sw-sw | L-V(2) | 187 | hu-hu | K-Y(1) |
| 48 | hu-sw | T-K(1) | 192 | hu-sw | M-I(1) |
| 68 | sw-sw | V-C(1) | 202 | sw-sw | A-R(1) |
| 70 | hu-hu | S-T(1) | 222 | hu-sw | H-P(1) |
| 77 | hu-hu | R-I(2), R-K(2), R-T(2), K-T(1) | 234 | hu-hu | L-I(2), L-F(1) |
| 77 | hu-sw | R-I(1), R-T(1) | 235 | hu-sw | E-D(1) |
| **MP**  **(M2)** | 10 | hu-sw | P-H(1) | 23 | hu-sw | S-D(1), S-N(1) |
| 10 | sw-sw | P-H(4), P-L(2) | 23 | sw-sw | S-N(19), S-G(3), S-D(1) |
| 11 | hu-sw | I-F(1), I-T(1) | 27 | hu-hu | V-I(4), V-A(1), V-T(1) |
| 11 | sw-hu | T-I(1) | 28 | sw-hu | T-I(1), T-N(1) |
| 12 | sw-sw | R-K(10), K-R(2) | 48 | hu-hu | F-L(2), F-S(2) |
| 13 | hu-sw | S-N(1), S-R(1) | 56 | hu-sw | K-E(1), K-N(1) |
| 13 | sw-sw | N-S(12), S-N(8), N-K(4), N-D(1), N-T(1), S-R(1) | 64 | sw-sw | S-L(1), S-T(1) |
| 14 | sw-hu | G-E(2) | 68 | hu-sw | V-I(1) |
| 14 | sw-sw | G-E(20), E-G(6) | 82 | hu-sw | S-N(4) |
| 16 | hu-hu | G-E(6), E-G(2) | 82 | sw-sw | S-N(29), S-R(2), S-I(1), S-T(1) |
| 16 | hu-sw | E-G(1) | 86 | sw-sw | V-A(2), V-S(1) |
| 18 | sw-hu | R-K(1) | 89 | hu-hu | S-G(4), G-S(3), S-N(1) |
| 19 | sw-hu | Y-C(1) | 89 | hu-sw | G-S(1), S-N(1) |
| 19 | sw-sw | Y-C(5), C-Y(3), Y-S(2), C-R(1) | 93 | hu-hu | N-S(4), S-N(4) |
| 20 | hu-sw | N-K(1), N-S(1) | 95 | sw-sw | V-E(5), V-A(2), E-K(1), E-Q(1), V-M(1) |
| 21 | hu-sw | D-G(2) | 96 | hu-sw | L-H(1), L-Q(1), L-S(1) |
| 21 | sw-sw | G-D(11), D-G(9), G-V(2), D-A(1) | 97 | hu-sw | E-T(1) |
| 22 | sw-sw | S-L(2) |  |  |  |
| **NS**  **(NS1)** | 4 | sw-hu | N-T(1) | 188 | hu-sw | N-S(2) |
| 4 | sw-sw | N-K(2), N-G(1), N-I(1), N-T(1) | 189 | sw-hu | G-S(2) |
| 7 | sw-sw | S-L(6), S-I(1), S-T(1) | 189 | sw-sw | D-N(7), G-D(7), G-S(5), D-G(3), G-N(2), G-C(1) |
| 10 | sw-sw | Q-E(1), Q-K(1) | 191 | sw-sw | A-T(5), T-K(4), T-A(3), T-R(1) |
| 25 | hu-hu | N-S(2), N-Q(1), Q-N(1) | 192 | hu-sw | V-A(1), V-I(1) |
| 26 | sw-sw | G-R(5), G-E(2), G-K(2), E-G(1), R-K(1) | 194 | hu-sw | G-S(1) |
| 27 | sw-sw | L-F(11), L-I(2), L-R(2), L-H(1), L-M(1) | 194 | sw-hu | V-I(1) |
| 40 | hu-hu | Q-L(1) | 194 | sw-sw | V-I(11), G-S(5), G-V(2), V-G(1) |
| 42 | hu-hu | S-A(1) | 197 | sw-sw | A-T(16), A-D(3), N-S(2), T-A(2), T-N(2), A-N(1), N-T(1), S-I(1), S-N(1) |
| 59 | hu-sw | H-F(1), L-I(1) | 198 | hu-hu | L-I(4), I-L(1) |
| 71 | sw-hu | D-G(1) | 200 | hu-hu | R-K(1) |
| 96 | hu-sw | E-M(1) | 202 | hu-sw | A-S(1), A-T(1) |
| 105 | hu-hu | L-V(2) | 202 | sw-sw | A-T(16), A-S(3), T-A(1), T-N(1) |
| 109 | hu-sw | Q-G(1) | 205 | hu-hu | S-N(2), N-K(1), N-S(1), S-G(1), S-R(1) |
| 129 | sw-sw | T-I(10), I-T(8), I-M(2), I-V(2), T-A(2), V-I(2), I-L(1), T-R(1) | 206 | sw-sw | T-I(13), R-C(10), I-T(5), R-H(4), R-S(4), T-A(4), R-L(3), I-S(2), T-S(2), C-S(1), H-Y(1), I-K(1), L-I(1), S-I(1), T-P(1) |
| 141 | sw-sw | L-M(6), L-I(4), L-V(2), L-G(1) | 207 | hu-hu | N-D(5), D-N(1) |
| 151 | hu-sw | T-S(2) | 207 | hu-sw | D-N(2) |
| 151 | sw-sw | T-N(2), T-D(1), T-M(1) | 210 | sw-sw | G-R(16), G-E(3), G-W(2), R-G(2), R-W(1) |
| 155 | hu-hu | A-T(4), A-R(1), A-S(1), S-A(1) | 211 | sw-sw | R-G(13), R-K(1), R-N(1) |
| 164 | sw-sw | P-L(4), P-S(4), L-I(1), L-P(1), P-H(1), P-Y(1) | 212 | sw-hu | P-S(1) |
| 166 | sw-hu | L-F(1) | 212 | sw-sw | P-S(19), P-L(4), P-H(1) |
| 166 | sw-sw | L-F(10), L-I(4), L-V(1) | 213 | hu-sw | S-P(2) |
| 167 | hu-sw | P-S(1) | 213 | sw-hu | S-P(2) |
| 167 | sw-sw | P-L(1), P-S(1) | 213 | sw-sw | P-S(12), S-P(12), P-L(2), P-T(1) |
| 170 | sw-sw | T-A(2), T-N(2), T-I(1) | 215 | hu-sw | P-S(5) |
| 171 | hu-hu | I-Y(2), D-A(1), D-G(1), D-N(1), I-F(1), Y-H(1), Y-I(1) | 215 | sw-hu | T-P(1) |
| 171 | hu-sw | Y-H(3), D-E(1), Y-C(1) | 216 | hu-sw | P-S(3) |
| 172 | hu-sw | E-K(1) | 216 | sw-sw | P-S(24), P-T(9), T-A(1), T-P(1) |
| 172 | sw-sw | E-K(4), E-G(1) | 218 | hu-sw | Q-K(1) |
| 173 | sw-sw | D-N(4) | 219 | hu-sw | K-E(1), K-N(1) |
| 174 | hu-hu | V-I(2) | 219 | sw-hu | E-K(1) |
| 175 | sw-sw | K-E(4), K-N(1), K-V(1) | 219 | sw-sw | K-E(8), E-K(1) |
| 176 | hu-sw | N-I(1) | 223 | sw-sw | A-E(4) |
| 176 | sw-hu | N-D(1) | 224 | sw-sw | R-G(5), G-R(2), R-K(2) |
| 176 | sw-sw | N-D(7), N-I(3), N-H(1), N-S(1), N-T(1), N-Y(1), T-I(1) | 225 | sw-sw | T-A(8), A-T(1) |
| 178 | hu-sw | V-I(4) | 226 | sw-sw | I-T(8), T-I(6), I-V(5), T-A(4) |
| 178 | sw-hu | V-I(1) | 227 | hu-sw | R-G(1) |
| 180 | hu-sw | V-I(2) | 227 | sw-hu | G-R(1), R-E(1) |
| 180 | sw-sw | V-I(22), I-T(7), I-V(5), V-A(3), I-F(2), I-L(1), V-F(1), V-L(1) | 230 | hu-sw | V-I(1) |
| 185 | sw-sw | L-F(9), L-P(1) | 230 | sw-sw | V-I(14) |
| **NS**  **(NEP)** | 4 | sw-hu | N-T(1) | 29 | hu-sw | N-S(3) |
| 4 | sw-sw | N-K(2), N-G(1), N-I(1), N-T(1) | 29 | sw-sw | N-S(23), S-N(3) |
| 7 | sw-sw | S-L(6), S-I(1), S-T(1) | 32 | hu-sw | V-A(1), V-I(1) |
| 8 | hu-hu | S-T(1) | 32 | sw-sw | V-I(9), I-V(3), I-M(1), I-T(1) |
| 10 | sw-sw | Q-E(1), Q-K(1) | 33 | sw-sw | T-M(5), M-T(3), T-I(2) |
| 12 | sw-sw | I-L(1), I-M(1), I-R(1), I-T(1) | 35 | hu-sw | F-L(1) |
| 18 | sw-sw | K-I(1), K-N(1), K-R(1), K-Y(1) | 54 | sw-sw | D-N(1), D-T(1) |
| 19 | hu-hu | M-I(1), M-L(1) | 71 | hu-hu | Q-K(1) |
| 23 | sw-sw | S-P(10), S-Y(2) | 89 | hu-hu | T-A(3), A-V(2), A-E(1), A-T(1), I-M(1), M-S(1), T-I(1) |
| 26 | hu-sw | E-G(2) | 101 | sw-hu | Q-E(1) |
| 26 | sw-hu | E-G(1) | 107 | hu-hu | F-L(3), F-S(1), L-F(1) |
| 26 | sw-sw | E-G(6), K-R(4), K-E(2), E-K(1), K-T(1) | 118 | hu-sw | F-C(1), F-V(1) |