**S1 Table.** Mutagenic primers for site directed mutagenesis.

| Primer       | Mutation | Sequence |
|--------------|----------|----------|
| HNL1-T11G-F  | T11G     | 5’-CAT TTT GTA TTA ATT CAC **GGC** ATA TGC CAC GGC GCA TGG |
| HNL1-T11G-R  | (ACT→GGC)| 5’-CCA TGC GCC GTG GCA TAT **GCC** GTG AAT TAA TAC AAA ATG |
| HNL1-E79H-F  | E79H     | 5’-G GTA ATA CTT GTT GGT **CAC** TCT TGT GGA GGA CTG AAC |
| HNL1-E79H-R  | (GAA→CAC)| ATC GCA TAT GCA TGG G |
| HNL1-K236G-F | K236G    | 5’-G GGT GGT GAC CAT **GGC** TTA CAG CTG TCT AAA ACC AAC |
| HNL1-K236G-R | (AAA→GGC)| GAG TTA GAG GTC TTT CCG |
| HNL1-F121L-F | F121L    | 5’-TA GAT AAA **TTA** ATG GAG GTC TTT CCG |
| HNL1-F121L-R |          | 5’-CCACATAGGACGGACTG |
| HNL1-M146L-F | M146L    | 5’-C ATC ACC GGC **TTG** AAA CTT GG |
| HNL1-M146L-R | (ATG→TTG)| 5’-GTCTCGTTATGCTAGTATACGTTGA |
| HNL1-F178L-F | F178L    | 5’-AA GGG AGT **TTA** TTT CAG AAC G |
| HNL1-F178L-R | (TTT→TTA)| 5’-TACCGTCAAGCATTTTTT |
| HbHNL-L121F-F | L121F   | 5’-C GTG GAT AAG **TTG** ATG GAG GTC |
| HbHNL-L121F-R| (CTC→TTC)| 5’-ACGTAAGATGGGCA GTG |
| HbHNL-L146M-F | L146M   | 5’-G ATA ACT GGA **ATG** AAA CTG GGC TTC |
| HbHNL-L146M-R| (TTA→ATG)| 5’-TCCTTGCACTCCTTAGTGACG |
| HbHNL-L178F-F | L178F   | 5’-AG GGA TCA **TTT** TTT CAA AAT ATT TTA GC |
| HbHNL-L178F-R| (TTA→TTT)| 5’-TCCTGTCAACATCTTTCG |

The first three primers pairs are overlapping primers for site-directed mutagenesis using the QuickChange (Agilent) method; the last six primer pairs are non-overlapping, back-to-back primers for site-directed mutagenesis using the Q5 (New England Biolabs) method. “F” designates a forward primer and “R” designates a reverse primer. The mutation site is in bold red.