**S2 Table.** Primer sequences used for Fc haploid library construction.

|  |  |  |  |
| --- | --- | --- | --- |
| **Library** | **Aim** | **Direction** | **Nucleotide sequences (5’-3’)** |
| **LibA1** | **Display Fc****(CH3A)** | Amplifying Fc fragment 1 | Forward | GTTCCAGACTACGCTCTGCAGG |
| Amplifying Fc fragment 1 | Reverse | GACCAGGCAGGTCAGGCTGA |
| Amplifying Fc fragment 2 | Forward | TCAGCCTGACCTGCCTGGTC**DNB**GGCTTCTATCCCAGCGACATCG |
| Amplifying Fc fragment 2 | Reverse | TCGATTTTGTTACATCTACACTGTTGTTATCAGAT |
| **Secretion Fc****(CH3B)** | Amplifying Fc fragment 1 | Forward | CTCAACCGGTTATTTCTACTACCGTC |
| Amplifying Fc fragment 1 | Reverse | ATCCCGGGATGGGGGCAG |
| Amplifying Fc fragment 2 | Forward | CTGCCCCCATCCCGGGAT**DNB**CTGACCAAGAACCAGGTC**DNB**CTGACCTGCCTGGTCAAAGGC |
| Amplifying Fc fragment 2 | Reverse | GAACAAAGTCGATTTTGTTACATCTACACTGTT |
| **LibB1** | **Display Fc****(CH3A)** | Amplifying Fc fragment 1 | Forward | GTTCCAGACTACGCTCTGCAGG |
| Amplifying Fc fragment 1 | Reverse | CAGCACGGGAGGCGTGGT |
| Amplifying Fc fragment 2 | Forward | ACCACGCCTCCCGTGCTG**DNB**TCCGACGGCTCCTTCTTCCTC |
| Amplifying Fc fragment 2 | Reverse | TCGATTTTGTTACATCTACACTGTTGTTATCAGAT |
| **Secretion Fc****(CH3B)** | Amplifying Fc fragment 1 | Forward | CTCAACCGGTTATTTCTACTACCGTC |
| Amplifying Fc fragment 1 | Reverse | AGGAGCCGTCGGACACCAGCACGGGAGGCGTGGT**VNH**GTAGTTGTTCTCCGGCTGCCC |
| Amplifying Fc fragment 2 | Forward | CTGGTGTCCGACGGCTCCTTCACCCTCTACAGC**DNB**CTCACCGTGGACAAGAGCAGG |
| Amplifying Fc fragment 2 | Reverse | GAACAAAGTCGATTTTGTTACATCTACACTGTT |
| **LibA2** | **Display Fc****(CH3A)** | Amplifying Fc fragment 1 | Forward | GTTCCAGACTACGCTCTGCAGG |
| Amplifying Fc fragment 1 | Reverse | ATCCCGGGATGGGGGCAG |
| Amplifying Fc fragment 2 | Forward | CTGCCCCCATCCCGGGAT**NNK**CTGACCAAGAACCAGGTC**NNK**CTGACCTGCCTGGTCGAGGGC |
| Amplifying Fc fragment 2 | Reverse | TCGATTTTGTTACATCTACACTGTTGTTATCAGAT |
| **Secretion Fc****(CH3B)** | Amplifying Fc fragment 1 | Forward | CTCAACCGGTTATTTCTACTACCGTC |
| Amplifying Fc fragment 1 | Reverse | GACCAGGCAGGTCAGGCTGA |
| Amplifying Fc fragment 2 | Forward | TCAGCCTGACCTGCCTGGTC**NNK**GGCTTCTATCCCAGCGACATCG |
| Amplifying Fc fragment 2 | Reverse | GAACAAAGTCGATTTTGTTACATCTACACTGTT |
| **LibB2** | **Display Fc****(CH3A)** | Amplifying Fc fragment 1 | Forward | GTTCCAGACTACGCTCTGCAGG |
| Amplifying Fc fragment 1 | Reverse | AGGAGCCGTCGGACAACAGCACGGGAGGCGTGGT**MNN**GTAGTTGTTCTCCGGCTGCCC |
| Amplifying Fc fragment 2 | Forward | CTGTTGTCCGACGGCTCCTTCTTCCTCTACAGC**NNK**CTCACCGTGGACAAGAGCAGG |
| Amplifying Fc fragment 2 | Reverse | TCGATTTTGTTACATCTACACTGTTGTTATCAGAT |
| **Secretion Fc****(CH3B)** | Amplifying Fc fragment 1 | Forward | CTCAACCGGTTATTTCTACTACCGTC |
| Amplifying Fc fragment 1 | Reverse | CAGCACGGGAGGCGTGGT |
| Amplifying Fc fragment 2 | Forward | ACCACGCCTCCCGTGCTG**NNK**TCCGACGGCTCCTTCTTCCTC |
| Amplifying Fc fragment 2 | Reverse | GAACAAAGTCGATTTTGTTACATCTACACTGTT |

 Bold: Diversification region.