**Supplementary TABLES**

**Table S1. Primers for construction and 454 deep sequencing of human gDNA scFv libraries**.

|  |  |  |
| --- | --- | --- |
| **Primer** | **Sequence** | **Use** |
| VH1-Lead | CCATGGACTGGACCTGG | VH 1st round PCR sense primers |
| VH2-Lead | ATGGACACACTTTGCTCCAC |
| VH3-Lead | CCATGGAGTTTGGGCTGAGC |
| VH4-Lead | ATGAAACACCTGTGGTTCTT |
| VH5-Lead | ATGGGGTCAACCGCCATCCT |
| VH6-Lead | ATGTCTGTCTCCTTCCTCAT |
| HV1F | ACCGTGGCCCAGGCGGCCCAGGTGCAGCTGGTGCAGTCTGG  | VH 2nd round PCR sense primers |
| HV2F | ACCGTGGCCCAGGCGGCCCAGGTCACCTTGARGGAGTCTGG  |
| HV3aF | ACCGTGGCCCAGGCGGCCSAGGTGCAGCTGGTGGAGTCTGG  |
| HV3bF | ACCGTGGCCCAGGCGGCCGAGGTGCAGCTGGTGGAGWCYGG  |
| HV4aF | ACCGTGGCCCAGGCGGCCCAGGTGCAGCTGCAGGAGTCGG  |
| HV4bF | ACCGTGGCCCAGGCGGCCCAGGTGCAGCTACAGCAGTGG  |
| HV5F | ACCGTGGCCCAGGCGGCCGAGGTGCAGCTGGTGCAGTCYGG  |
| HV6F | ACCGTGGCCCAGGCGGCCCAGGTACAGCTGCAGCAGTCAGG  |
| HV7F | ACCGTGGCCCAGGCGGCCCAGGTGCAGCTGGTGCAATCTGG  |
| HJ12R | AGACCCGCCACCTCCCTGAGGAGACRGTGACCAGGGTGCC | VH semi-nested PCR anti-sense primers |
| HJ3R | AGACCCGCCACCTCCCTGAAGAGACGGTGACCATTGTGG |
| HJ4a5R | AGACCCGCCACCTCCCTGAGGAGACGGTGACCAGGGTTCC |
| HJ4bR | AGACCCGCCACCTCCCTGAGGAGACGGTGACCAGGGTCC |
| HJ6R | AGACCCGCCACCTCCCTGAGGAGACGGTGACCGTGGTGG |
| VK12-Lead | GCTCAGCTCCTGGGGCT | VK 1st round PCR sense primers |
| VK3-Lead | TCCTCCTGCTACTCTGG |
| VK4-Lead | TTGCTCTGGATCTCTG |
| VK5-Lead | CTCCTTTGGATCTCTG |
| VK6-Lead | CTGCTSCTCTGGGTTC |
| KV1F | AGCGGTGGTGGCGGATCAGACATCCAGATGACCCAGTCTCC  | VK 2nd round PCR sense primers |
| KV2F | AGCGGTGGTGGCGGATCAGATATTGTGATGACCCAGWCTCC  |
| KV3F | AGCGGTGGTGGCGGATCAGAAATTGTGTTGACRCAGTCTCC  |
| KV4F | AGCGGTGGTGGCGGATCAGACATCGTGATGACCCAGTCTCC  |
| KV5F | AGCGGTGGTGGCGGATCAGAAACGACACTCACGCAGTCTCC  |
| KV6F | AGCGGTGGTGGCGGATCAGAAATTGTGCTGACTCAGTCTCC  |
| KJ1R | GTGCTGGCCGGCCTGGCCGTTTGATTTCCACCTTGGTCC  | VK semi-nested PCR anti-sense primers |
| KJ2R | GTGCTGGCCGGCCTGGCCGTTTGATCTCCAGCTTGGTCC |
| KJ3R | GTGCTGGCCGGCCTGGCCGTTTGATATCCACTTTGGTCC |
| KJ4R | GTGCTGGCCGGCCTGGCCGTTTGATCTCCACCTTGGTCC |
| KJ5R | GTGCTGGCCGGCCTGGCCGTTTAATCTCCAGTCGTGTCC |
| VL1-Lead | CCTCTCYTCCTCAC | VL 1st round PCR sense primers |
| VL2-Lead | ATGGCCTGGGCTCTGC |
| VL3-Leada | ATGGCMTGGATCCCTC |
| VL3-Leadb | ATGGCCTGGACC |
| VL3-Leadc | ATGGCATGGGCCACACTC |
| VL3-Leadd | ATGGCCTGGACCCCTC |
| VL3-Leade | ATGGCCTGGACCGYTCTCC |
| VL4-Leada | ATGGCCTGGATCC |
| VL4-Leadb | ATGGCTTGGACCCCAC |
| VL4-Leadc | ATGGCCTGGGTCTCCTTC |
| VL4-Leadd | ATGGCCTGGATCCAACTC |
| VL579-Lead | ATGGCCTGGRCTCCTC |
| VL6-Lead | ATGGCCTGGGCTCCACTAC |
| VL8-Lead | ATGGCCTGGATGATGC |
| VL10-Leada | ATGCCCTGGGCTCTGCTCCTC |
| LV1aF | AGCGGTGGTGGCGGATCACAGTCTGTGTTGACGCAGCCGCC  | VL 2nd round PCR sense primers |
| LV2aF | AGCGGTGGTGGCGGATCACAGTCTGCCCTGACTCAGCCTC  |
| LV2bF | AGCGGTGGTGGCGGATCACAGTCTGCCCTGACTCAGCCTGC  |
| LV3a1b910F | AGCGGTGGTGGCGGATCATCCTATGAGCTGACWCAGCCACC  |
| LV3bF | AGCGGTGGTGGCGGATCATCCTATGAGCTGACTCAGCCAC  |
| LV4F | AGCGGTGGTGGCGGATCACAGCYTGTGCTGACTCAATC  |
| LV5aF | AGCGGTGGTGGCGGATCACAGGCTGTGCTGACTCAGCCRTC  |
| LV5bF | AGCGGTGGTGGCGGATCACAGCCTGTGCTGACTCAGCCAAC  |
| LV6F | AGCGGTGGTGGCGGATCAAATTTTATGCTGACTCAGCCSCAC  |
| LV78F | AGCGGTGGTGGCGGATCACAGRCTGTGGTGACYCAGGAGCC |
| LJ1R | GTGCTGGCCGGCCTGGCCCTAGGACGGTGACCTTGGTCC | VL semi-nested PCR anti-sense primers |
| LJ23R | GTGCTGGCCGGCCTGGCCCTAGGACGGTCAGCTTGGTCC |
| LJ4R | GTGCTGGCCGGCCTGGCCCTAAAATGATCAGCTGGGTTCC |
| LJ5R | GTGCTGGCCGGCCTGGCCCTAGGACGGTCAGCTCSGTCC |
| LJ6R | GTGCTGGCCGGCCTGGCCCGAGGACGGTCACCTTGGTGCC |
| LJ7R | GTGCTGGCCGGCCTGGCCCGAGGRCGGTCAGCTGGGTGCC |
| LINK F | GGTGGAGGCGGTAGCGGTGGTGGCGGATCA | adding a (G4S)3 linker  |
| LINK R | ACCGCTACCGCCTCCACCAGACCCGCCACCTCCCTG |
| Sfi5new  | ATCGCGATTGCACTGGCACTGGCTGGTTTCGCTACCGTGGCCCAGGCGGCC | adding two SfiI sites to the scFvs  |
| Sfi3hisR | GTCGTACGGGTATGCGCCATGGTGATGGTGATGGTGCTGGCCGGCCTGGCC |
| 454-scF | GCTACCGTGGCCCAGGCGGCC |  scFv 454 deep sequencing |
| 454-scR | GATGGTGCTGGCCGGCCTGGCC |

**Table S2. Primers for construction and 454 deep sequencing of human cDNA Fab libraries.**

|  |  |  |
| --- | --- | --- |
| **Primer** | **Sequence** | **Use** |
| HuVH1B/7A | GCTGCCCAACCAGCCATGGCCCAGRTGCAGCTGGTGCARTCTGG | VH sense primers |
| HuVH1C | GCTGCCCAACCAGCCATGGCCSAGGTCCAGCTGGTRCAGTCTGG |
| HuVH2B | GCTGCCCAACCAGCCATGGCCCAGRTCACCTTGAAGGAGTCTGG |
| HuVH3B  | GCTGCCCAACCAGCCATGGCCSAGGTGCAGCTGGTGGAGTCTGG |
| HuVH3C | GCTGCCCAACCAGCCATGGCCGAGGTGCAGCTGGTGGAGBCYGG |
| HuVH4B | GCTGCCCAACCAGCCATGGCCCAGGTGCAGCTACAGCAGTGGGG |
| HuVH4C  | GCTGCCCAACCAGCCATGGCCCAGSTGCAGCTGCAGGAGTCSGG |
| HuVH5B | GCTGCCCAACCAGCCATGGCCGARGTGCAGCTGGTGCAGTCTGG |
| HuVH6A | GCTGCCCAACCAGCCATGGCCCAGGTACAGCTGCAGCAGTCAGG |
| HuJH1/2 | CGATGGGCCCTTGGTGGAGGCTGAGGAGACGGTGACCAGGGTGCC | VH anti-sense primers |
| HuJH3  | CGATGGGCCCTTGGTGGAGGCTGAAGAGACGGTGACCATTGTCCC |
| HuJH4/5  | CGATGGGCCCTTGGTGGAGGCTGAGGAGACGGTGACCAGGGTTCC |
| HuJH6 | CGATGGGCCCTTGGTGGAGGCTGAGGAGACGGTGACCGTGGTCCC |
| CH1back | GCCTCCACCAAGGGCCCATCGGTC | CH1 sense primer |
| FlagR | CTGGGACTAGCCCTTATCGTCATCGTCCTTG | CH1 anti-sense primer |
| HuVk1B | GCTACCGTGGCCCAGGCGGCCGACATCCAGWTGACCCAGTCTCC | kappa LC sense primers |
| HuVk2 | GCTACCGTGGCCCAGGCGGCCGATGTTGTGATGACTCAGTCTCC |
| HuVk3B | GCTACCGTGGCCCAGGCGGCCGAAATTGTGWTGACRCAGTCTCC |
| HuVk4B | GCTACCGTGGCCCAGGCGGCCGATATTGTGATGACCCACACTCC |
| HuVk5  | GCTACCGTGGCCCAGGCGGCCGAAACGACACTCACGCAGTCTCC |
| HuVk6  | GCTACCGTGGCCCAGGCGGCCGAAATTGTGCTGACTCAGTCTCC |
| CkappaR | CTAATTAATTATCTAGAATTAACACTCTCCCCTGTTGAAGCTCTT | kappa LC anti-sense primers |
| HuVl1A | GCTACCGTGGCCCAGGCGGCCCAGTCTGTGCTGACTCAGCCACC  | lambda LC sense primers |
| HuVl1B | GCTACCGTGGCCCAGGCGGCCCAGTCTGTGYTGAGCAGCCGCC |
| HuVl1C | GCTACCGTGGCCCAGGCGGCCCAGTCTGTCGTGACGCAGCCGCC |
| HuVl2 | GCTACCGTGGCCCAGGCGGCCCARTCTGCCCTGACTCAGCCT  |
| HuVl3A | GCTACCGTGGCCCAGGCGGCCTCCTATGWGCTGACTCAGCCACC |
| HuVl3B  | GCTACCGTGGCCCAGGCGGCCTCTTCTGAGCTGACTCAGGACCC |
| HuVl4 | GCTACCGTGGCCCAGGCGGCCCACGTTATACTGACTCAACCGCC |
| HuVl5 | GCTACCGTGGCCCAGGCGGCCCAGGCTGTGCTGACTCAGCCGTC |
| HuVl6 | GCTACCGTGGCCCAGGCGGCCAATTTTATGCTGACTCAGCCCCA |
| HuVl78 | GCTACCGTGGCCCAGGCGGCCCAGRCTGTGGTGACYCAGGAGCC |
| HuVl9  | GCTACCGTGGCCCAGGCGGCCCWGCCTGTGCTGACTCAGCCMCC |
| ClamdaR | CTCCTAATTAATTATCTAGAATTATGAACATTCTGTAGGGGCCACTG  | lambda LC anti-sense primer |
| Heavy-F  | GCCTACGGCAGCCGCTGGATTGTTATTACTCGCTGCCCAACCAGCCATGGC | SOE-PCR to assemble Fd |
| FlagR | ACCGCTACCGCCTCCACCAGACCCGCCACCTCCCTG |
| Sfi5new  | ATCGCGATTGCACTGGCACTGGCTGGTTTCGCTACCGTGGCCCAGGCGGCC | adding an SfiI site to 5' end of LC |
| Light-R | CCAGCGGCTGCCGTAGGCAATAGGTATTTCATTTAAATTCCTCCTAATTAATTATCTAG |
| Sfi5new  | ATCGCGATTGCACTGGCACTGGCTGGTTTCGCTACCGTGGCCCAGGCGGCC | SOE-PCR to assemble Fab; adding an SfiI site  |
| Sfi3hisR | GTCGTACGGGTATGCGCCATGGTGATGGTGATGGTGCTGGCCGGCCTGGCC |
| 454-VHF | GCTGCCCAACCAGCCATGGCC | Fd 454 sequencing  |
| 454-IgGR | GCTGGAGGGCACGGTCACCAC |
| 454-KaF | GCTACCGTGGCCCAGGCGGCC | kappa LC 454 sequencing  |
| 454-KaR | ACACTCTCCCCTGTTGAAGCTC |
| 454-LamF | GCTACCGTGGCCCAGGCGGCC | lambda LC 454 sequencing  |
| 454-LamR | TGAACATTCTGTAGGGGCCACTG |