

| AA#   | 1              | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13   | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23   | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | 32 | 33 | 34 | 35 | 36 | 37 | 38 | 39 | 40 | 41 | 42 | 43 | 44 | 45   | 46 | 47 | 48 | 49 | 50 | 51 | 52 | 53 | 54 | 55 | 56 | 57 | 58 | 59 | 60 | 61 | 62 | 63 | 64 | 65 | 66 | 67 | 68 | 69 | 70 | 71 | 72 | 73 | 74 | 75 | 76 | 77 | 78 | 79 | 80 | 81 | 82 | 83 | 84 | 85 | 86 | 87 | 88 | 89 | 90 | 91 | 92 | 93 | 94 | 95 | 96 | 97 | 98 | 99 | 100 | 101 | 102 | 103 | 104 | 105 | 106 | 107 | 108 | 109 | 110 | 111 | 112 | 113 | 114 | 115 | 116 | 117 | 118 | 119 | 120 | 121 | 122 | 123 | 124 |
|-------|----------------|---|---|---|---|---|---|---|---|----|----|----|------|----|----|----|----|----|----|----|----|----|------|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|------|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
|       |                |   |   |   |   |   |   |   |   |    |    |    | CDR1 |    |    |    |    |    |    |    |    |    | CDR2 |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    | CDR3 |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
| KM12  | QVQLVESGGGLVQP | G | S | L | R | L | S | C | A | A  | G  | P  | S    | L  | D  | L  | G  | T  | A  | W  | F  | R  | V    | P  | G  | K  | E  | R  | E  | F  | V  | S  | H  | I  | T  | Y  | A  | D  | S  | V  | E  | G  | R  | F  | T    | S  | R  | D  | S  | A  | K  | R  | T  | V  | Y  | L  | Q  | M  | N  | T  | L  | A  | P  | E  | D  | T  | A  | A  | Y  | C  | A  | A  | T  | R  | S  | N  | Y  | P  | P  | R  | E  | D  | M  | S  | Y  | D  | S  | S  | W  | G  | G  | T  | L  | V  | T  | S  | S  |    |    |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
| KM108 | QVQLVESGGGLVQP | G | S | L | R | L | S | C | A | A  | G  | P  | S    | L  | D  | L  | G  | T  | A  | W  | F  | R  | Q    | V  | P  | G  | K  | E  | R  | E  | F  | V  | S  | H  | I  | T  | Y  | A  | D  | S  | V  | E  | G  | R  | F    | T  | S  | R  | D  | S  | A  | K  | R  | T  | V  | Y  | L  | Q  | M  | N  | T  | L  | A  | P  | E  | D  | T  | A  | A  | Y  | C  | A  | A  | T  | R  | S  | N  | Y  | P  | P  | R  | E  | D  | M  | S  | Y  | D  | S  | S  | W  | G  | G  | T  | L  | V  | T  | S  | S  |    |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
| KM111 | QVQLVESGGGLVQP | G | S | L | R | L | S | C | A | A  | G  | P  | S    | L  | D  | L  | G  | T  | A  | W  | F  | R  | Q    | V  | P  | G  | K  | E  | R  | E  | F  | V  | S  | H  | I  | T  | Y  | A  | D  | S  | V  | E  | G  | R  | F    | T  | S  | R  | D  | S  | A  | K  | R  | T  | V  | Y  | L  | Q  | M  | N  | T  | L  | A  | P  | E  | D  | T  | A  | A  | Y  | C  | A  | A  | T  | R  | S  | N  | Y  | P  | P  | R  | E  | D  | M  | S  | Y  | D  | S  | S  | W  | G  | G  | T  | L  | V  | T  | S  | S  |    |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
| KM109 | QVQLVESGGGLVQP | G | S | L | R | L | S | C | A | A  | G  | P  | S    | L  | D  | L  | G  | T  | A  | W  | F  | R  | Q    | V  | P  | G  | K  | E  | R  | E  | F  | V  | S  | H  | I  | T  | Y  | A  | D  | S  | V  | E  | G  | R  | F    | T  | S  | R  | D  | S  | A  | K  | R  | T  | V  | Y  | L  | Q  | M  | N  | T  | L  | A  | P  | E  | D  | T  | A  | A  | Y  | C  | A  | A  | T  | R  | S  | N  | Y  | P  | P  | R  | E  | D  | M  | S  | Y  | D  | S  | S  | W  | G  | G  | T  | L  | V  | T  | S  | S  |    |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
| KM110 | QVQLVESGGGLVQP | G | S | L | R | L | S | C | A | A  | G  | P  | S    | L  | D  | L  | G  | T  | A  | W  | F  | R  | Q    | V  | P  | G  | K  | E  | R  | E  | F  | V  | S  | H  | I  | T  | Y  | A  | D  | S  | V  | E  | G  | R  | F    | T  | S  | R  | D  | S  | A  | K  | R  | T  | V  | Y  | L  | Q  | M  | N  | T  | L  | A  | P  | E  | D  | T  | A  | A  | Y  | C  | A  | A  | T  | R  | S  | N  | Y  | P  | P  | R  | E  | D  | M  | S  | Y  | D  | S  | S  | W  | G  | G  | T  | L  | V  | T  | S  | S  |    |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |

[illegible]

Supplementary Figure 3