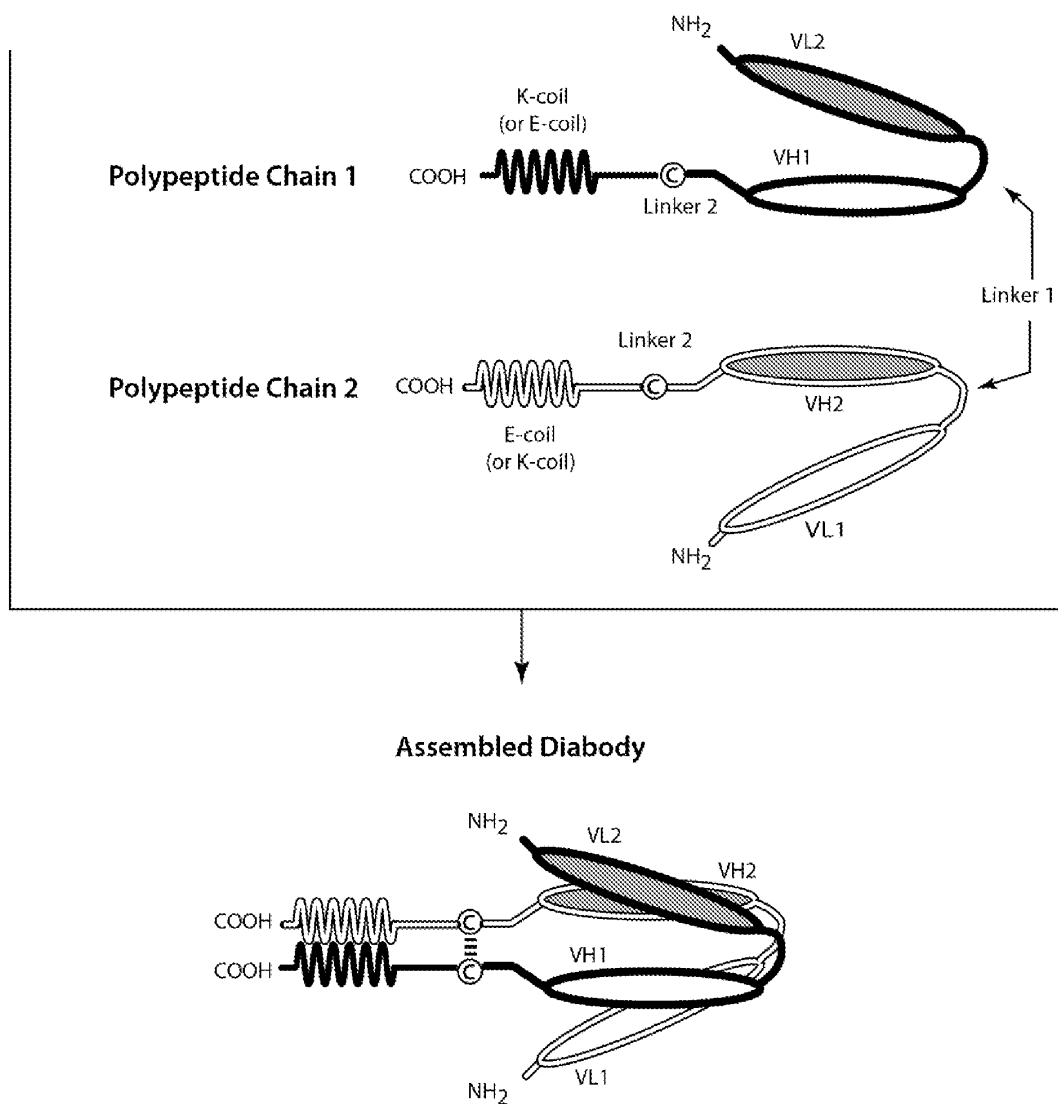
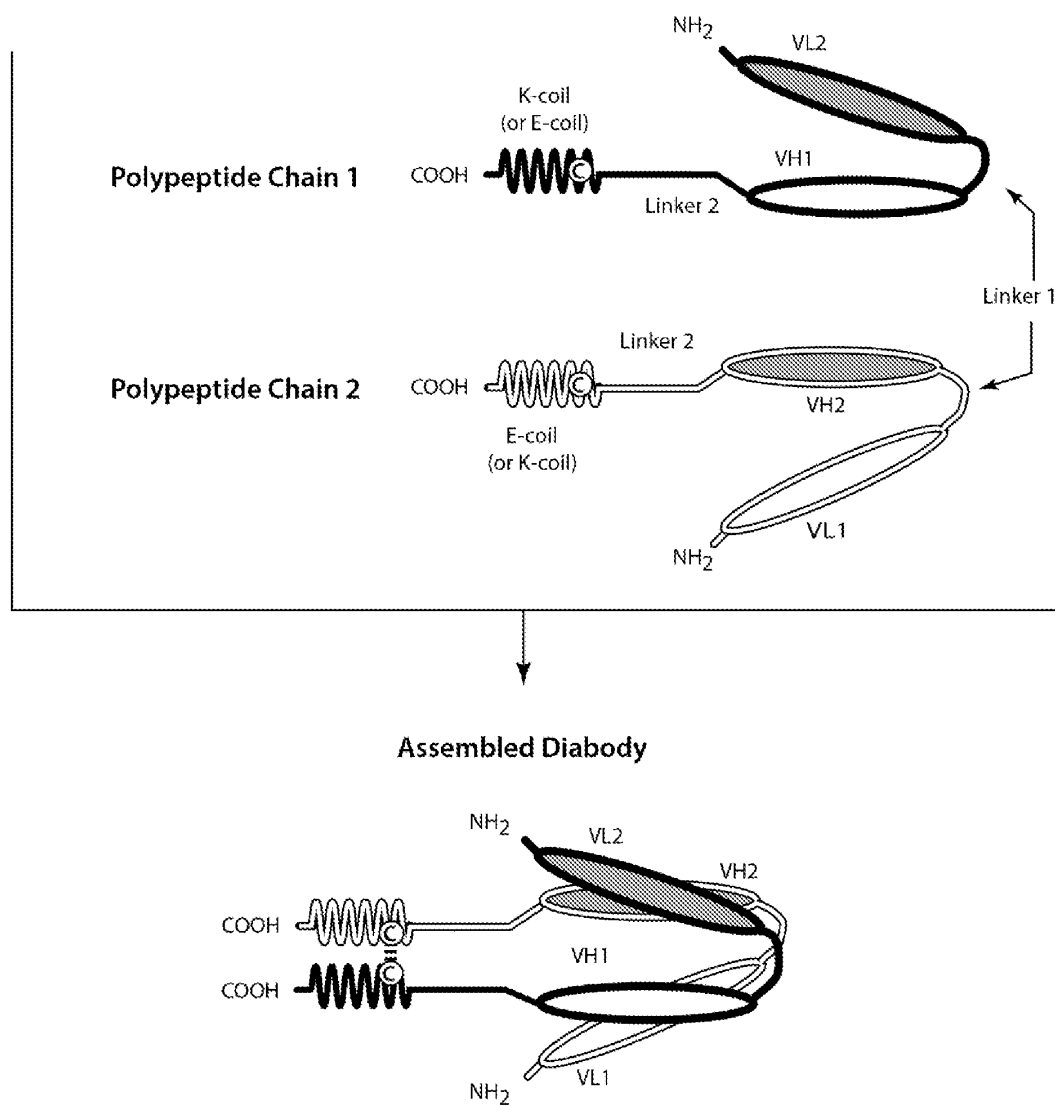
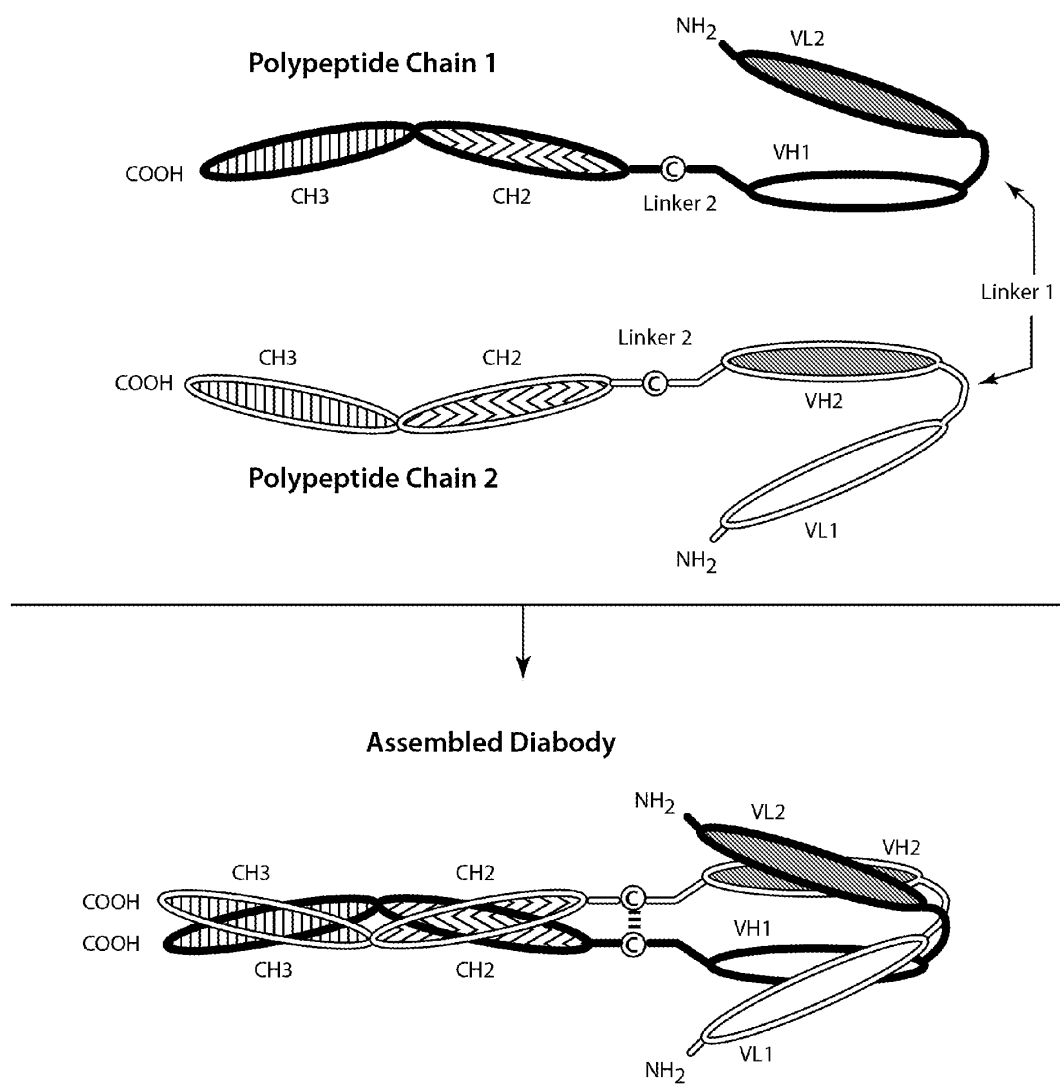
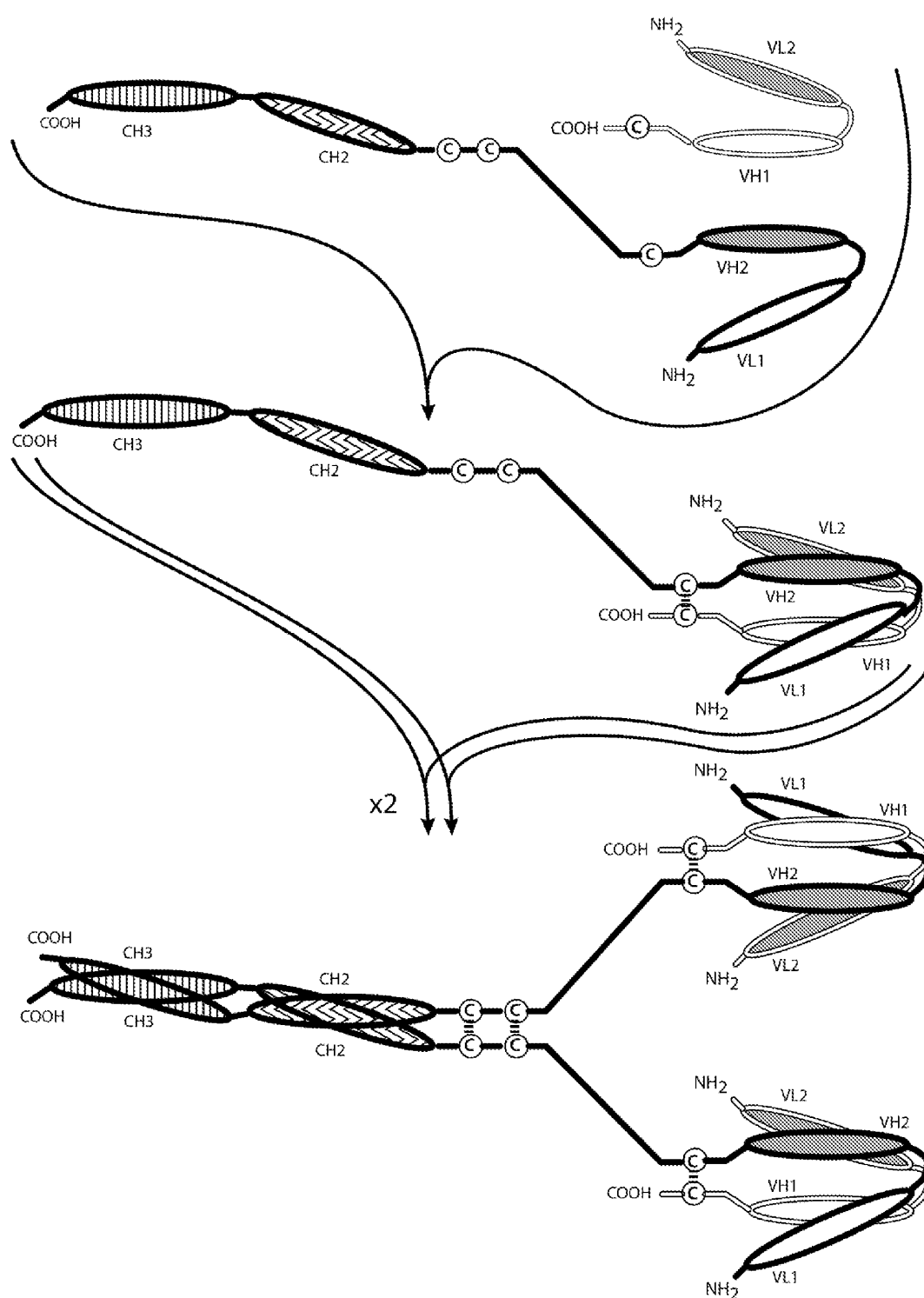


**Figure 1A**

**Figure 1B**

**Figure 2**

**Figure 3A**

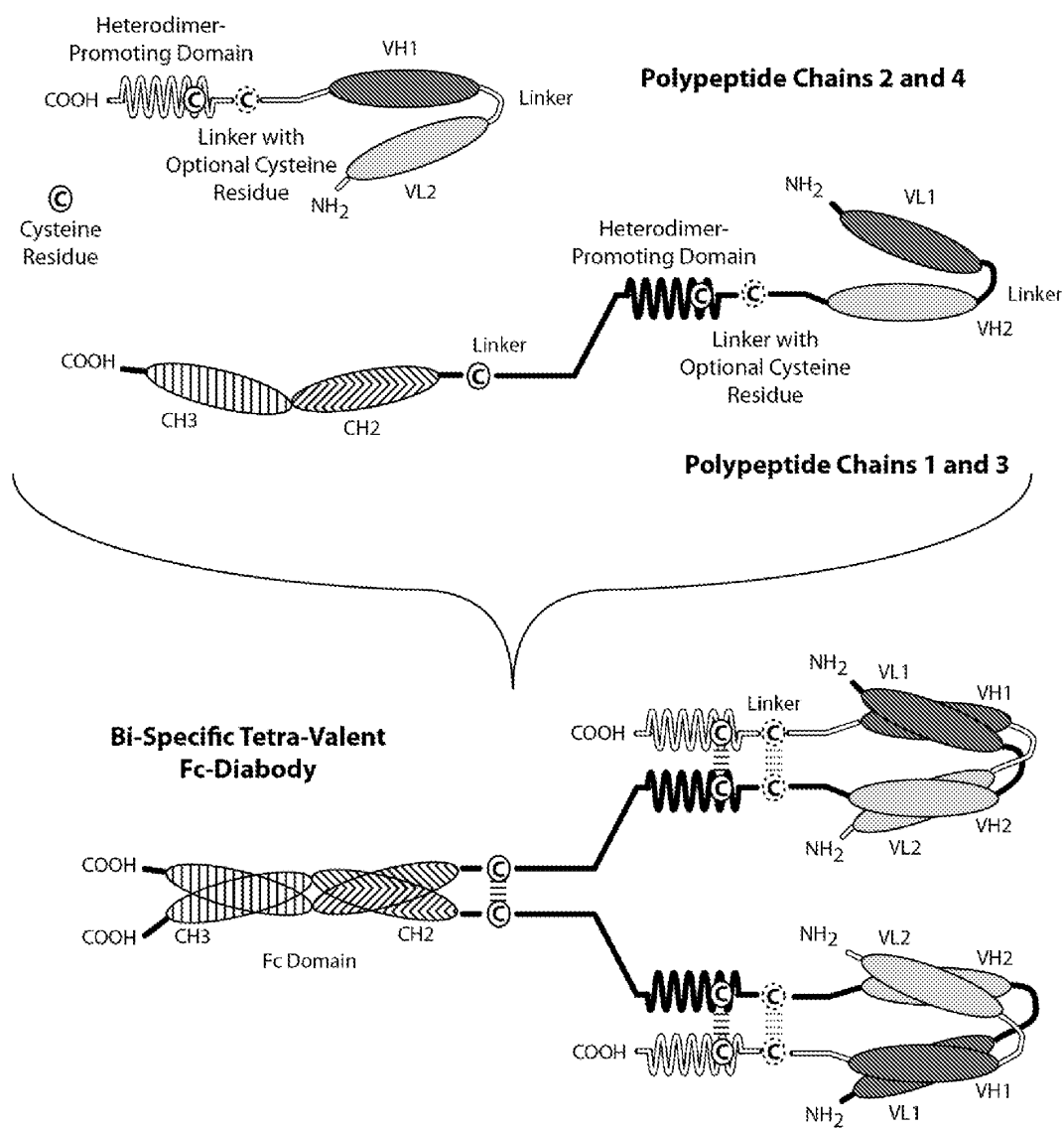
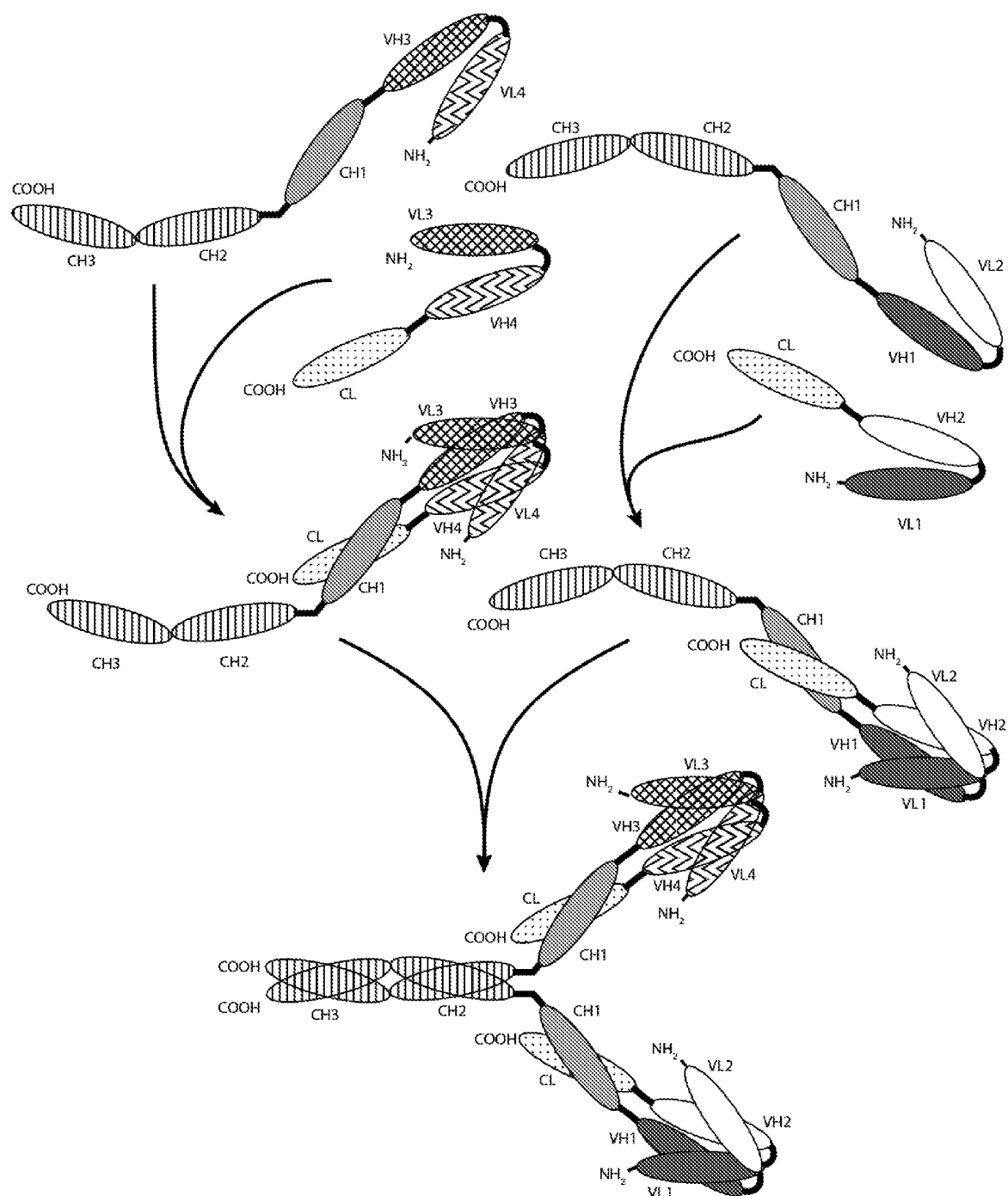
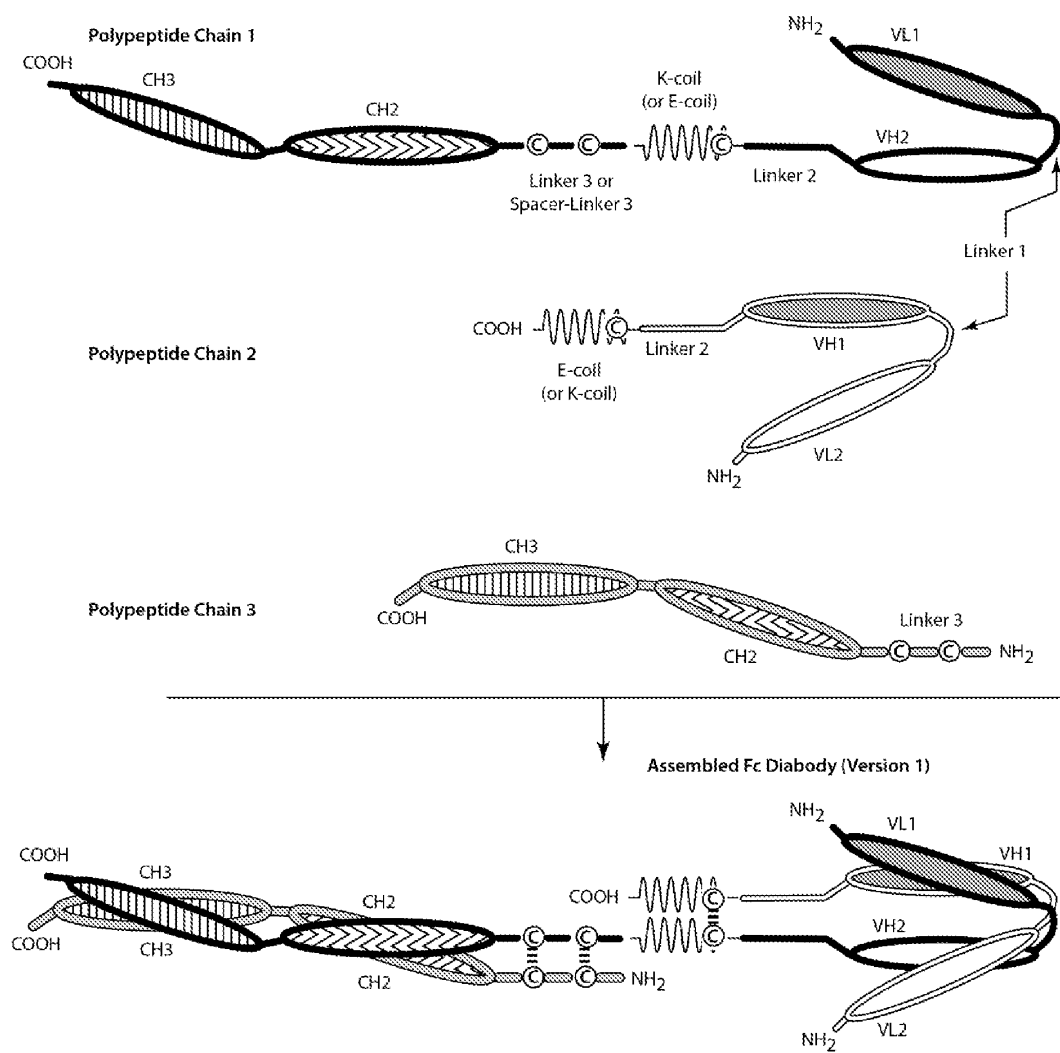
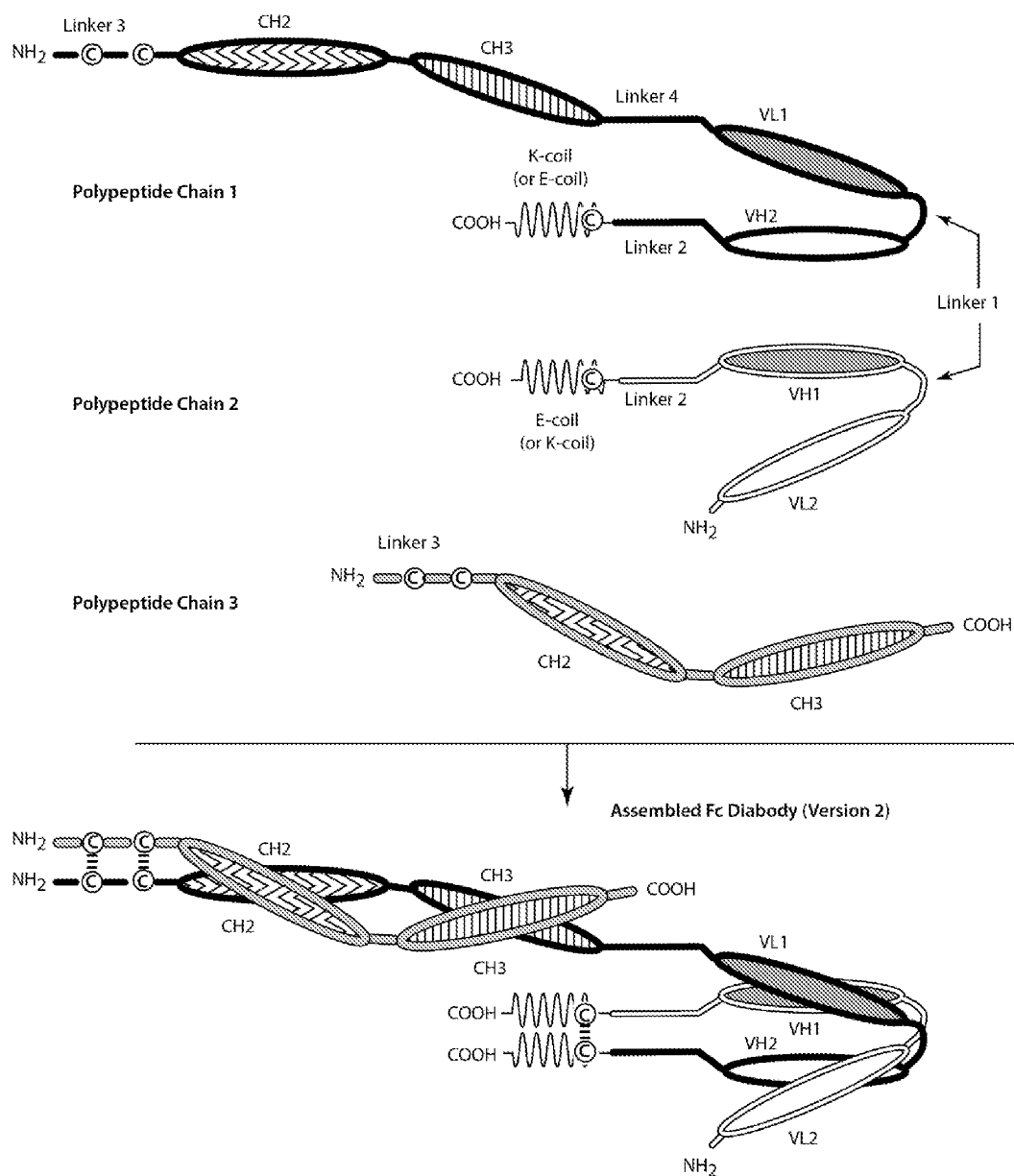


Figure 3B

**Figure 3C**

**Figure 4A**

**Figure 4B**

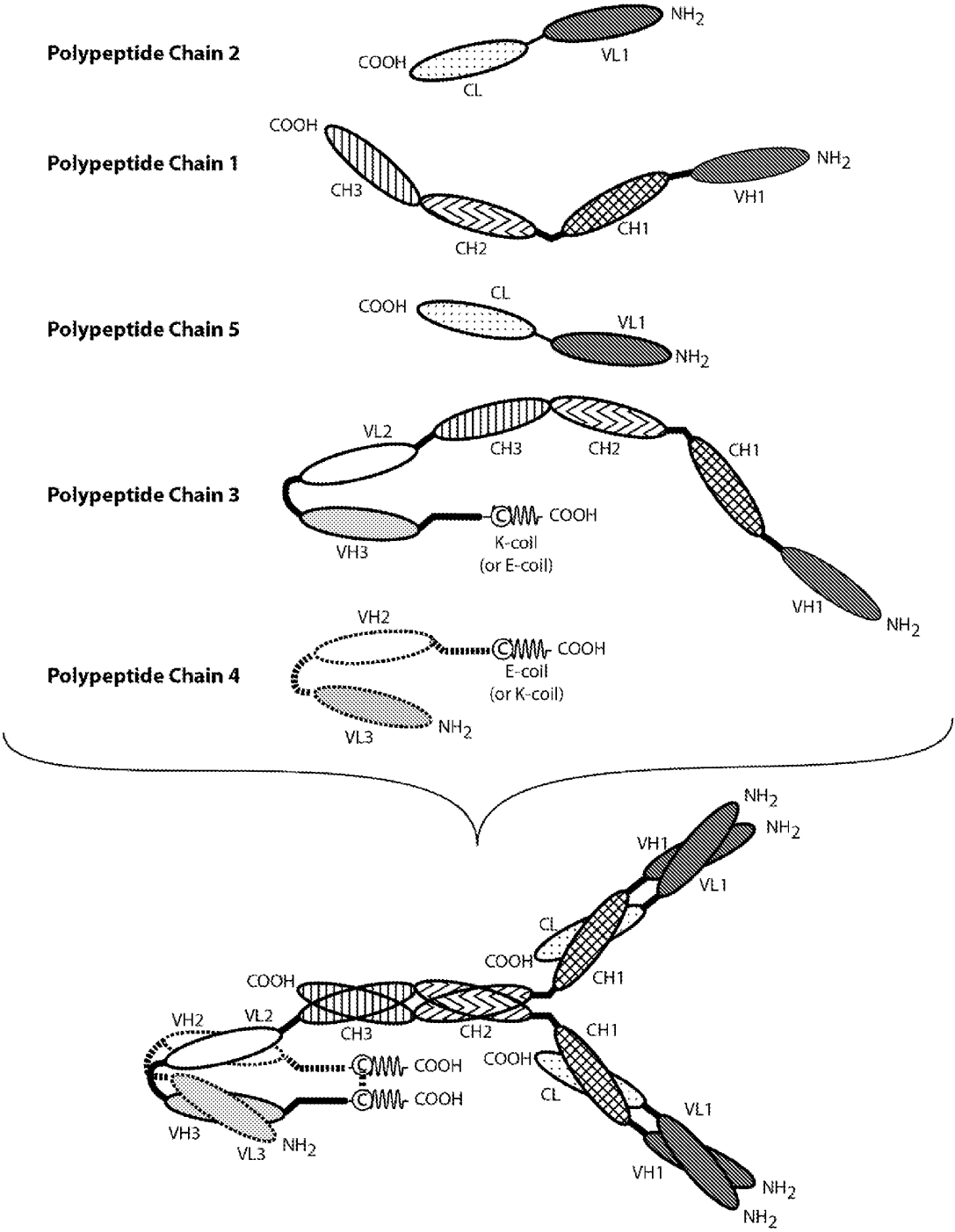
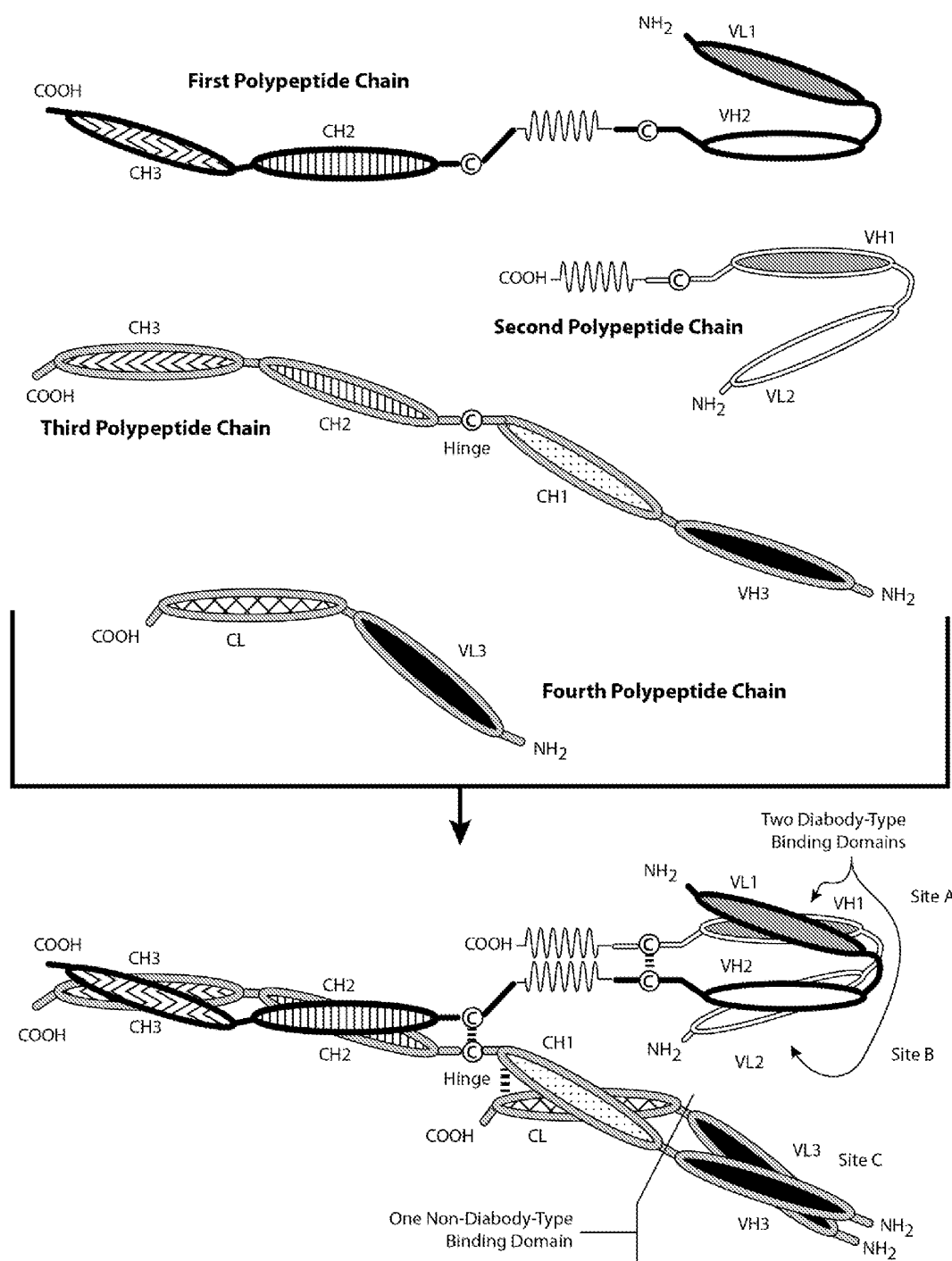
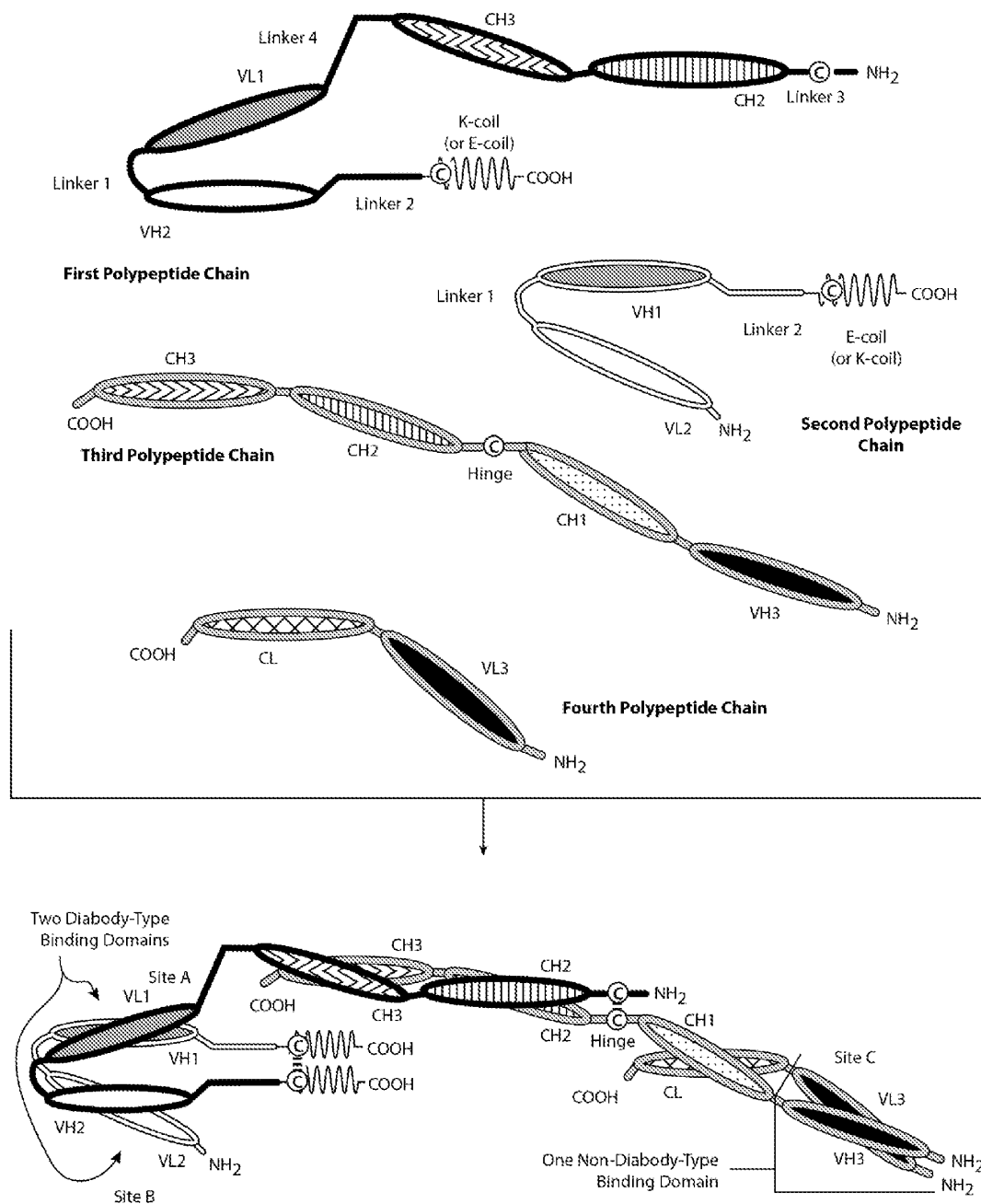
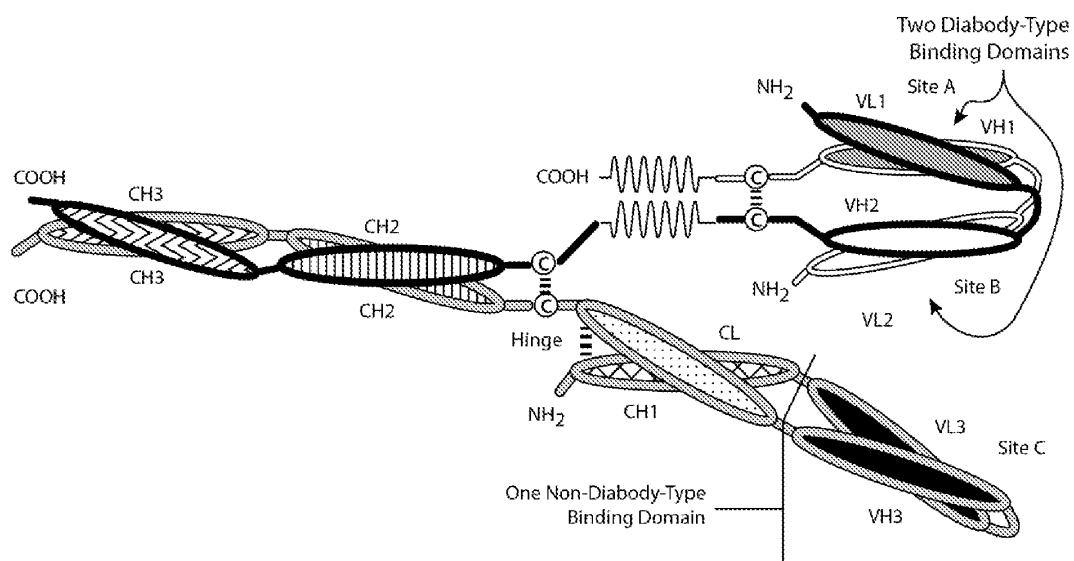
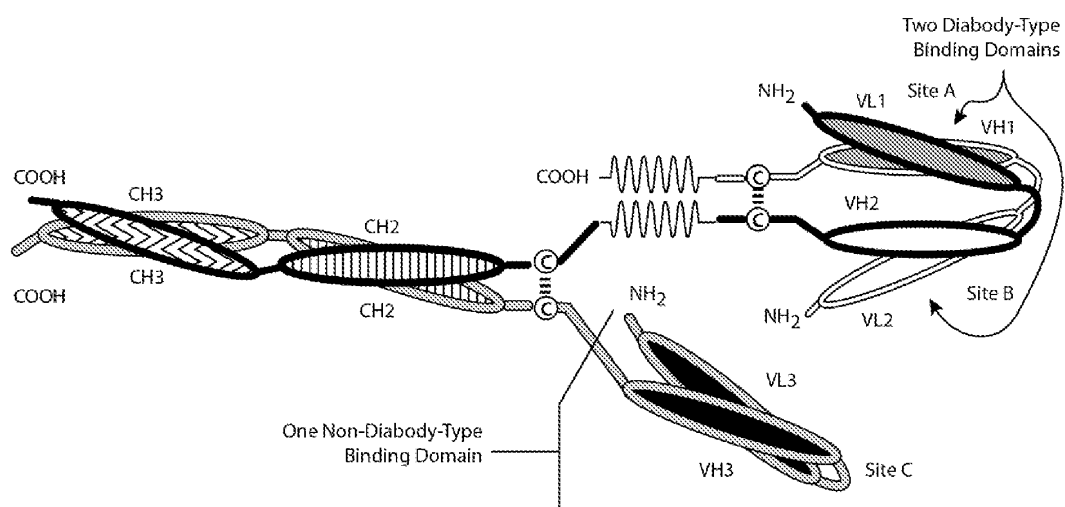
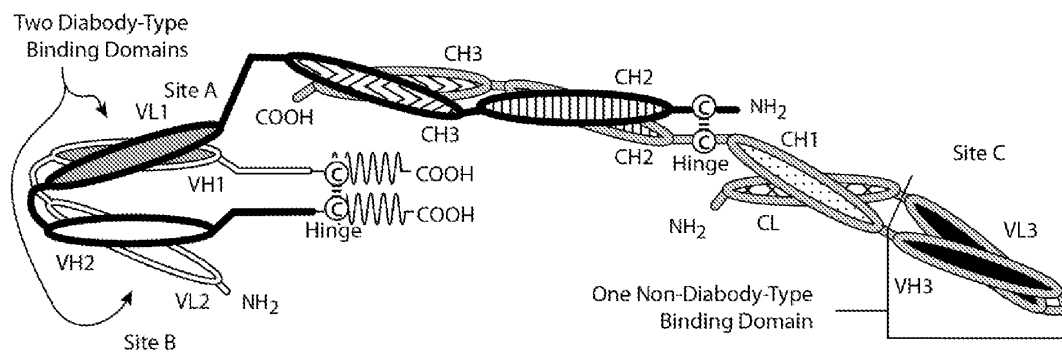
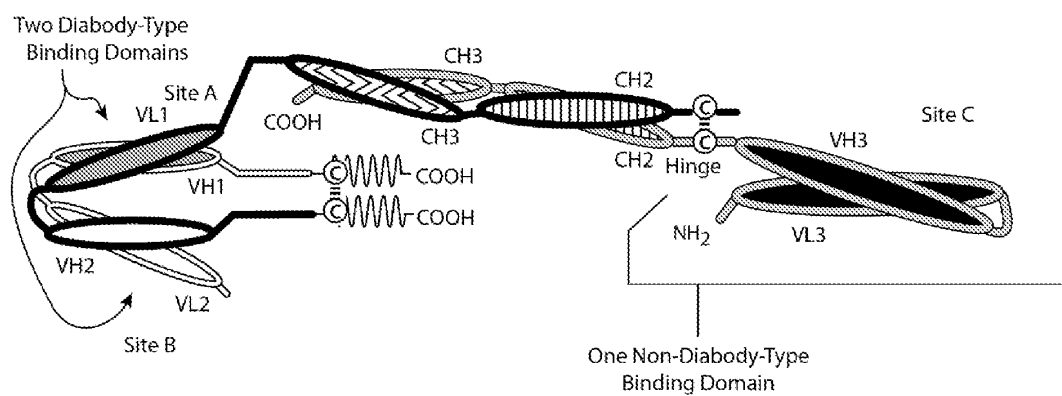


Figure 5

**Figure 6A**

**Figure 6B**

**Figure 6C****Figure 6D**

**Figure 6E****Figure 6F**

| VL       |  | FR1 |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
|----------|--|-----|---|---|---|---|---|---|---|---|----|----|----|----|----|----|----|----|----|----|----|----|----|----|
| Kabat    |  | 1   | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 |
| 7B2 VL   |  | D   | I | V | M | T | Q | S | P | D | S  | L  | A  | V  | S  | P  | G  | E  | R  | A  | T  | I  | H  | C  |
| 7B2GL VL |  | D   | I | V | M | T | Q | S | P | D | S  | L  | A  | V  | S  | L  | G  | E  | R  | A  | T  | I  | N  | C  |
| IGKV4-1  |  | D   | I | V | M | T | Q | S | P | D | S  | L  | A  | V  | S  | L  | G  | E  | R  | A  | T  | I  | N  | C  |

| VL       |  | CDR1 |    |    |     |     |     |     |     |     |     |    |    |    |    |    |    | FW2 |    |    |    |    |    |    |  |  |  |
|----------|--|------|----|----|-----|-----|-----|-----|-----|-----|-----|----|----|----|----|----|----|-----|----|----|----|----|----|----|--|--|--|
| Kabat    |  | 24   | 25 | 26 | 27a | 27b | 27c | 27d | 27e | 27f | 27g | 28 | 29 | 30 | 31 | 32 | 33 | 34  | 35 | 36 | 37 | 38 | 39 | 40 |  |  |  |
| 7B2      |  | K    | S  | S  | Q   | T   | L   | L   | Y   | S   | S   | N  | N  | R  | H  | S  | I  | A   | W  | Y  | Q  | Q  | R  | P  |  |  |  |
| 7B2GL VL |  | K    | S  | S  | Q   | T   | L   | L   | Y   | S   | S   | N  | N  | R  | H  | S  | I  | A   | W  | Y  | Q  | Q  | K  | P  |  |  |  |
| IGKV4-1  |  | K    | S  | S  | Q   | S   | V   | L   | Y   | S   | S   | N  | N  | K  | N  | Y  | L  | A   | W  | Y  | Q  | Q  | K  | P  |  |  |  |

| VL       |  | CDR2 |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    | FW3 |    |    |    |    |    |    |  |  |  |
|----------|--|------|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|-----|----|----|----|----|----|----|--|--|--|
| Kabat    |  | 41   | 42 | 43 | 44 | 45 | 46 | 47 | 48 | 49 | 50 | 51 | 52 | 53 | 54 | 55 | 56 | 57  | 58 | 59 | 60 | 61 | 62 | 63 |  |  |  |
| 7B2      |  | G    | Q  | P  | P  | K  | L  | L  | L  | Y  | W  | A  | S  | M  | R  | L  | S  | G   | V  | P  | D  | R  | F  | S  |  |  |  |
| 7B2GL VL |  | G    | Q  | P  | P  | K  | L  | L  | I  | Y  | W  | A  | S  | M  | R  | L  | S  | G   | V  | P  | D  | R  | F  | S  |  |  |  |
| IGKV4-1  |  | G    | Q  | P  | P  | K  | L  | L  | I  | Y  | W  | A  | S  | T  | R  | E  | S  | G   | V  | P  | D  | R  | F  | S  |  |  |  |

| VL       |  |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |  |
|----------|--|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|--|
| Kabat    |  | 64 | 65 | 66 | 67 | 68 | 69 | 70 | 71 | 72 | 73 | 74 | 75 | 76 | 77 | 78 | 79 | 80 | 81 | 82 | 83 | 84 | 85 | 86 |  |
| 7B2      |  | G  | S  | G  | S  | G  | T  | D  | F  | T  | L  | T  | I  | N  | N  | L  | Q  | A  | E  | D  | V  | A  | I  | Y  |  |
| 7B2GL VL |  | G  | S  | G  | S  | G  | T  | D  | F  | T  | L  | T  | I  | S  | S  | L  | Q  | A  | E  | D  | V  | A  | V  | Y  |  |
| IGKV4-1  |  | G  | S  | G  | S  | G  | T  | D  | F  | T  | L  | T  | I  | S  | S  | L  | Q  | A  | E  | D  | V  | A  | V  | Y  |  |

| VL       |  | CDR3 |    |    |    |    |    |    |    |     |    |    |    |    |     |     |     | FW4 |     |     |     |     |  |  |  |  |  |  |
|----------|--|------|----|----|----|----|----|----|----|-----|----|----|----|----|-----|-----|-----|-----|-----|-----|-----|-----|--|--|--|--|--|--|
| Kabat    |  | 87   | 88 | 89 | 90 | 91 | 92 | 93 | 94 | 95+ | 96 | 97 | 98 | 99 | 100 | 101 | 102 | 103 | 104 | 105 | 106 | 107 |  |  |  |  |  |  |
| 7B2      |  | Y    | C  | H  | Q  | Y  | S  | S  | H  | P   | P  | T  | F  | G  | H   | G   | T   | R   | V   | E   | I   | K   |  |  |  |  |  |  |
| 7B2GL VL |  | Y    | C  | H  | Q  | Y  | S  | S  | H  | P   | P  | T  | F  | G  | Q   | G   | T   | K   | V   | E   | I   | K   |  |  |  |  |  |  |
| IGKV4-1  |  | Y    | C  | Q  | Q  | Y  | Y  | S  | T  | P   |    |    | F  | G  | Q   | G   | T   | K   | V   | E   | I   | K   |  |  |  |  |  |  |
| IGKJ1-01 |  |      |    |    |    |    |    |    |    |     |    |    | F  | G  | Q   | G   | T   | K   | V   | E   | I   | K   |  |  |  |  |  |  |

| Sequence | SEQ ID NO |
|----------|-----------|
| 7B2 VL   | 55        |
| 7B2GL VL | 57        |
| IGKV4-1  | 123       |
| IGKJ1-01 | 124       |

Figure 7A

| VH       |  | FW1 |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
|----------|--|-----|---|---|---|---|---|---|---|---|----|----|----|----|----|----|----|----|----|----|----|----|----|----|
| Kabat    |  | 1   | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 |
| 7B2      |  | Q   | V | Q | L | V | Q | S | G | G | G  | V  | F  | K  | P  | G  | G  | S  | L  | R  | L  | S  | C  | E  |
| 7B2GL VH |  | Q   | V | Q | L | V | E | S | G | G | G  | L  | V  | K  | P  | G  | G  | S  | L  | R  | L  | S  | C  | A  |
| IGVH3-11 |  | Q   | V | Q | L | V | E | S | G | G | G  | L  | V  | K  | P  | G  | G  | S  | L  | R  | L  | S  | C  | A  |

| VH       |  | CDR1 |    |    |    |    |    |    |    |    |    |    |     |    | FW2 |    |    |    |    |    |    |    |    |    |  |  |
|----------|--|------|----|----|----|----|----|----|----|----|----|----|-----|----|-----|----|----|----|----|----|----|----|----|----|--|--|
| Kabat    |  | 24   | 25 | 26 | 27 | 28 | 29 | 30 | 31 | 32 | 33 | 34 | 35± | 36 | 37  | 38 | 39 | 40 | 41 | 42 | 43 | 44 | 45 | 46 |  |  |
| 7B2      |  | A    | S  | G  | F  | T  | F  | T  | E  | Y  | Y  | M  | T   | W  | V   | R  | Q  | A  | P  | G  | K  | G  | L  | E  |  |  |
| 7B2GL VH |  | A    | S  | G  | F  | T  | F  | S  | E  | Y  | Y  | M  | T   | W  | I   | R  | Q  | A  | P  | G  | K  | G  | L  | E  |  |  |
| IGVH3-11 |  | A    | S  | G  | F  | T  | F  | S  | D  | Y  | Y  | M  | S   | W  | I   | R  | Q  | A  | P  | G  | K  | G  | L  | E  |  |  |

| VH       |  | CDR2 |    |    |    |    |    |     |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    | FW3 |  |  |
|----------|--|------|----|----|----|----|----|-----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|-----|--|--|
| Kabat    |  | 47   | 48 | 49 | 50 | 51 | 52 | 52a | 53 | 54 | 55 | 56 | 57 | 58 | 59 | 60 | 61 | 62 | 63 | 64 | 65 | 66 | 67 | 68 |     |  |  |
| 7B2      |  | W    | L  | A  | Y  | I  | S  | K   | N  | G  | E  | Y  | S  | K  | Y  | S  | P  | S  | S  | N  | G  | R  | F  | T  |     |  |  |
| 7B2GL VH |  | W    | V  | S  | Y  | I  | S  | K   | N  | G  | E  | Y  | S  | K  | Y  | S  | P  | S  | S  | N  | G  | R  | F  | T  |     |  |  |
| IGVH3-11 |  | W    | V  | S  | Y  | I  | S  | S   | S  | S  | S  | Y  | T  | N  | Y  | A  | D  | S  | V  | K  | G  | R  | F  | T  |     |  |  |

| VH       |  |    |    |    |    |    |    |    |    |    |    |    |    |    |    |     |     |     |    |    |    |    |    |    |  |  |  |  |
|----------|--|----|----|----|----|----|----|----|----|----|----|----|----|----|----|-----|-----|-----|----|----|----|----|----|----|--|--|--|--|
| Kabat    |  | 69 | 70 | 71 | 72 | 73 | 74 | 75 | 76 | 77 | 78 | 79 | 80 | 81 | 82 | 82a | 82b | 82c | 83 | 84 | 85 | 86 | 87 | 88 |  |  |  |  |
| 7B2      |  | I  | S  | R  | D  | N  | A  | K  | N  | S  | V  | F  | L  | Q  | L  | D   | R   | L   | S  | A  | D  | D  | T  | A  |  |  |  |  |
| 7B2GL VH |  | I  | S  | R  | D  | N  | A  | K  | N  | S  | L  | Y  | L  | Q  | M  | N   | S   | L   | R  | A  | E  | D  | T  | A  |  |  |  |  |
| IGVH3-11 |  | I  | S  | R  | D  | N  | A  | K  | N  | S  | L  | Y  | L  | Q  | M  | N   | S   | L   | R  | A  | E  | D  | T  | A  |  |  |  |  |

| VH       |  | CDR3 |    |    |    |    |    |    |    |    |    |    |     |      |      |      |      |      |      |      |      |      |     |     |  |  |  |  |
|----------|--|------|----|----|----|----|----|----|----|----|----|----|-----|------|------|------|------|------|------|------|------|------|-----|-----|--|--|--|--|
| Kabat    |  | 89   | 90 | 91 | 92 | 93 | 94 | 95 | 96 | 97 | 98 | 99 | 100 | 100a | 100b | 100c | 100d | 100e | 100f | 100g | 100h | 100i | 101 | 102 |  |  |  |  |
| 7B2      |  | V    | Y  | Y  | C  | A  | R  | A  | D  | G  | L  | T  | Y   | F    | S    | E    | L    | L    | Q    | Y    | I    | F    | D   | L   |  |  |  |  |
| 7B2GL VH |  | V    | Y  | Y  | C  | A  | R  | A  | D  | G  | L  | T  | Y   | F    | S    | E    | L    | L    | Q    | Y    | I    | F    | D   | L   |  |  |  |  |
| IGVH3-11 |  | V    | Y  | Y  | C  | A  | R  | A  | D  | G  | L  | T  | Y   | F    | S    | E    | L    | L    | Q    | Y    | I    | F    | D   | L   |  |  |  |  |

| VH       |  | FW4 |     |     |     |     |     |     |     |     |     |     |  |
|----------|--|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|--|
| Kabat    |  | 103 | 104 | 105 | 106 | 107 | 108 | 109 | 110 | 111 | 112 | 113 |  |
| 7B2      |  | W   | G   | Q   | G   | A   | R   | V   | T   | V   | S   | S   |  |
| 7B2GL VH |  | W   | G   | Q   | G   | T   | L   | V   | T   | V   | S   | S   |  |
| IGVH3-11 |  | W   | G   | Q   | G   | T   | L   | V   | T   | V   | S   | S   |  |
| IGHJ4-01 |  | W   | G   | Q   | G   | T   | L   | V   | T   | V   | S   | S   |  |

| Sequence | SEQ ID NO |
|----------|-----------|
| 7B2 VH   | 56        |
| 7B2GL VH | 58        |
| IGVH3-11 | 125       |
| IGHJ4-01 | 126       |

Figure 7B

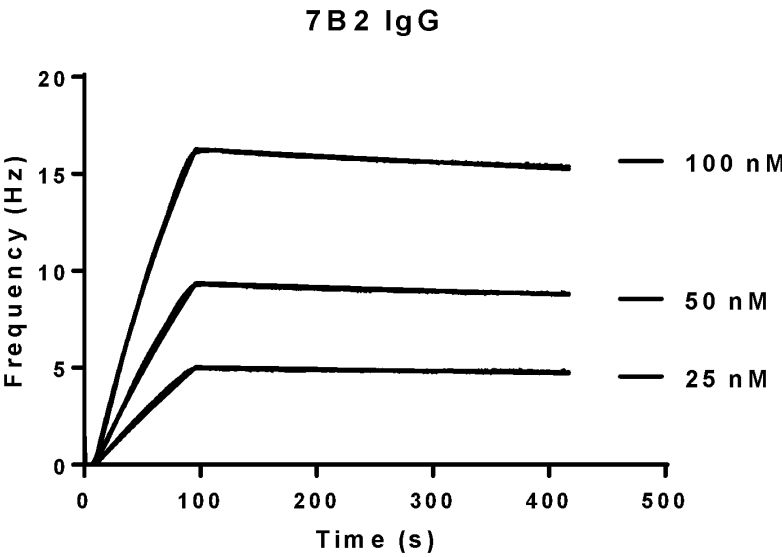


Figure 8A

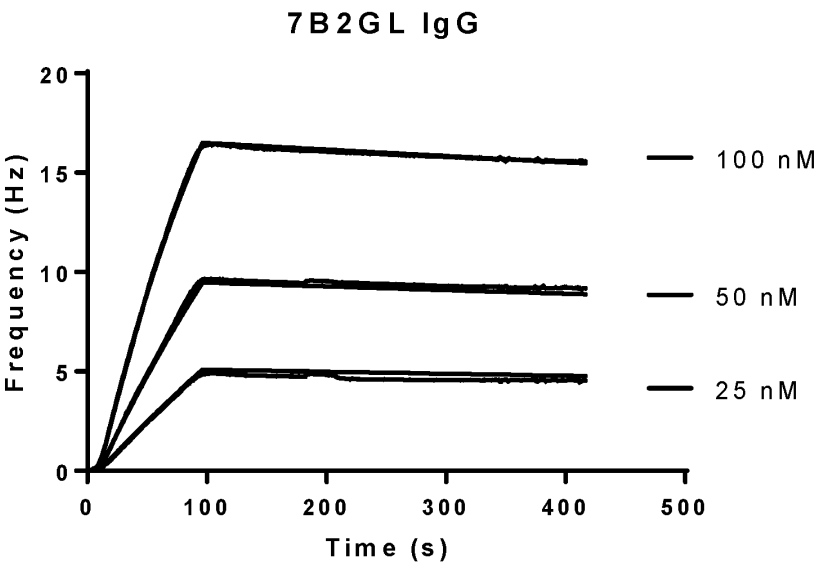


Figure 8B

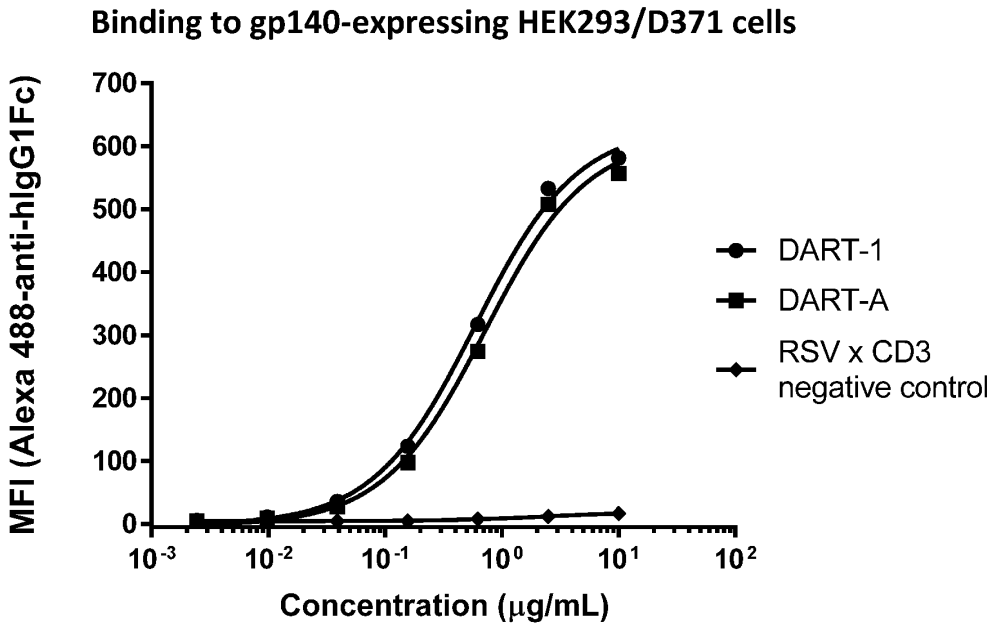


Figure 9

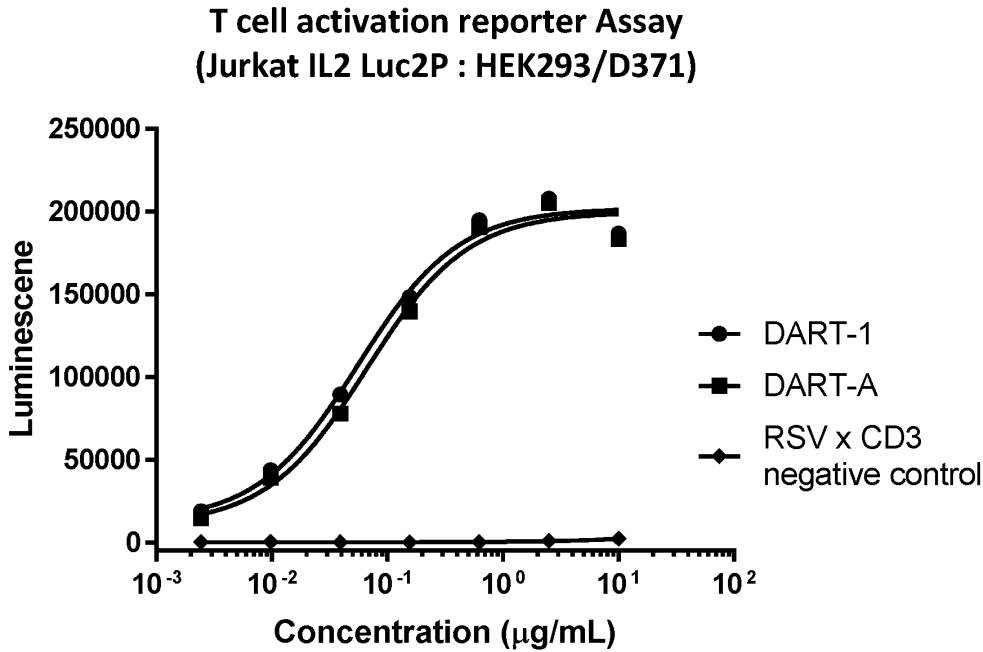


Figure 10

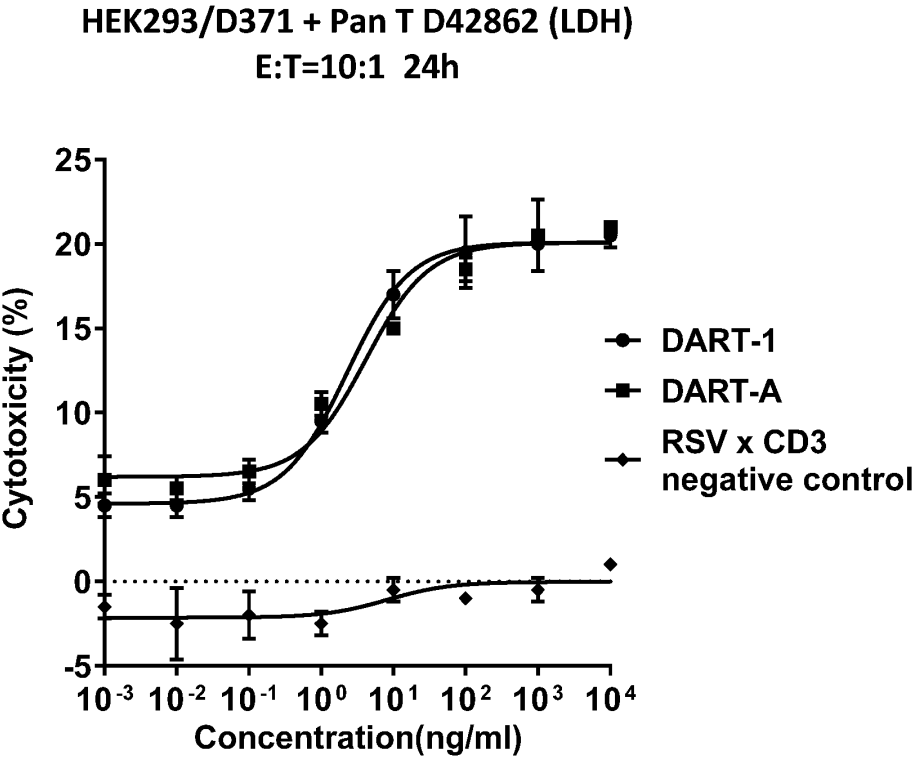


Figure 11