

[図1]

|                   |     | N末                                                                              |     |
|-------------------|-----|---------------------------------------------------------------------------------|-----|
| hCCR8             | 1   | ---MDYTLDDLSTVTVDYYPDFSSPCDAELIQNGKLLAVFYCLLFVFSLLGNSLVILVLVVCCKLRSTIDVYLLN     | 76  |
| hCCR4             | 1   | MNPTDIADTTLDESIYSNYYLYESIPKPCIKKAFSELLEPIMELMFVFLGNSLVILVLVVCCKLRSTIDVYLLN      | 80  |
| N-ter hCCR4-hCCR8 | 1   | MNPTDIADTTLDESIYSNYYLYESIPKPCIKKAFSELLEPIMELMFVFLGNSLVILVLVVCCKLRSTIDVYLLN      | 80  |
| loop1 hCCR4-hCCR8 | 1   | ---MDYTLDDLSTVTVDYYPDFSSPCDAELIQNGKLLAVFYCLLFVFSLLGNSLVILVLVVCCKLRSTIDVYLLN     | 76  |
| loop2 hCCR4-hCCR8 | 1   | ---MDYTLDDLSTVTVDYYPDFSSPCDAELIQNGKLLAVFYCLLFVFSLLGNSLVILVLVVCCKLRSTIDVYLLN     | 76  |
| loop3 hCCR4-hCCR8 | 1   | ---MDYTLDDLSTVTVDYYPDFSSPCDAELIQNGKLLAVFYCLLFVFSLLGNSLVILVLVVCCKLRSTIDVYLLN     | 76  |
|                   |     | loop1                                                                           |     |
| hCCR8             | 77  | LALSDDLFFVFSFPFQTYLLDQWVFGTVMCKVVSIFYGFIYSSMFFITLMSVDRYLAVVHAVYALKVIRMGTTLCIA   | 156 |
| hCCR4             | 81  | LALSDDLFFVFSFPFQTYLLDQWVFGTVMCKVVSIFYGFIYSSMFFITLMSVDRYLAVVHAVYALKVIRMGTTLCIA   | 160 |
| N-ter hCCR4-hCCR8 | 81  | LALSDDLFFVFSFPFQTYLLDQWVFGTVMCKVVSIFYGFIYSSMFFITLMSVDRYLAVVHAVYALKVIRMGTTLCIA   | 160 |
| loop1 hCCR4-hCCR8 | 77  | LALSDDLFFVFSFPFQTYLLDQWVFGTVMCKVVSIFYGFIYSSMFFITLMSVDRYLAVVHAVYALKVIRMGTTLCIA   | 156 |
| loop2 hCCR4-hCCR8 | 77  | LALSDDLFFVFSFPFQTYLLDQWVFGTVMCKVVSIFYGFIYSSMFFITLMSVDRYLAVVHAVYALKVIRMGTTLCIA   | 156 |
| loop3 hCCR4-hCCR8 | 77  | LALSDDLFFVFSFPFQTYLLDQWVFGTVMCKVVSIFYGFIYSSMFFITLMSVDRYLAVVHAVYALKVIRMGTTLCIA   | 156 |
|                   |     | loop2                                                                           |     |
| hCCR8             | 157 | VWLTAIMATIPLLVFYQVASEDGVLCQYSFYNQOTLKWKIFTNFKMNLGLLIPFTIFMFCYIKILHQLKRCQNNHNTKA | 236 |
| hCCR4             | 161 | TVSVVFNLSLFFLSTCYTERNHTYKTRVSLNSTIHWLSSLEINILGLIPFTIFMFCYIKILHQLKRCQNNHNTKA     | 240 |
| N-ter hCCR4-hCCR8 | 161 | VWLTAIMATIPLLVFYQVASEDGVLCQYSFYNQOTLKWKIFTNFKMNLGLLIPFTIFMFCYIKILHQLKRCQNNHNTKA | 240 |
| loop1 hCCR4-hCCR8 | 157 | VWLTAIMATIPLLVFYQVASEDGVLCQYSFYNQOTLKWKIFTNFKMNLGLLIPFTIFMFCYIKILHQLKRCQNNHNTKA | 236 |
| loop2 hCCR4-hCCR8 | 157 | VWLTAIMATIPLLVFSTCYTERNHTYKTRVSLNSTIHWLSSLEINILGLIPFTIFMFCYIKILHQLKRCQNNHNTKA   | 236 |
| loop3 hCCR4-hCCR8 | 157 | VWLTAIMATIPLLVFYQVASEDGVLCQYSFYNQOTLKWKIFTNFKMNLGLLIPFTIFMFCYIKILHQLKRCQNNHNTKA | 236 |
|                   |     | loop3                                                                           |     |
| hCCR8             | 237 | IRLVLIIVVIASLLFWVPFNVLFLTSLHSMHILDGCSISQQLTYATHVTEIISFTHCCVNPVIYAFVGEKFKHLSEIFQ | 316 |
| hCCR4             | 241 | VKMIFAVVLELLEFVFNVLFLTLELEVLDLFFERYLDYATQATELAFVHCCDNPFLYFFLSEKFKHYILQLEF       | 319 |
| N-ter hCCR4-hCCR8 | 241 | IRLVLIIVVIASLLFWVPFNVLFLTSLHSMHILDGCSISQQLTYATHVTEIISFTHCCVNPVIYAFVGEKFKHLSEIFQ | 320 |
| loop1 hCCR4-hCCR8 | 237 | IRLVLIIVVIASLLFWVPFNVLFLTSLHSMHILDGCSISQQLTYATHVTEIISFTHCCVNPVIYAFVGEKFKHLSEIFQ | 316 |
| loop2 hCCR4-hCCR8 | 237 | IRLVLIIVVIASLLFWVPFNVLFLTSLHSMHILDGCSISQQLTYATHVTEIISFTHCCVNPVIYAFVGEKFKHLSEIFQ | 316 |
| loop3 hCCR4-hCCR8 | 237 | IRLVLIIVVIASLLFWVPFNVLFLTSLLELEVLDLFFERYLDYATHVTEIISFTHCCVNPVIYAFVGEKFKHLSEIFQ  | 316 |
| hCCR8             | 317 | KSCSQIFNYLGRQMPRESCEKSSSCQHQSSRSSSDYIIL--                                       | 355 |
| hCCR4             | 320 | MTIRGLHVLCCYCGLLQIYSADTPSSSYTQSTMDHCLHDAL                                       | 360 |
| N-ter hCCR4-hCCR8 | 321 | KSCSQIFNYLGRQMPRESCEKSSSCQHQSSRSSSDYIIL--                                       | 359 |
| loop1 hCCR4-hCCR8 | 317 | KSCSQIFNYLGRQMPRESCEKSSSCQHQSSRSSSDYIIL--                                       | 355 |
| loop2 hCCR4-hCCR8 | 317 | KSCSQIFNYLGRQMPRESCEKSSSCQHQSSRSSSDYIIL--                                       | 355 |
| loop3 hCCR4-hCCR8 | 317 | KSCSQIFNYLGRQMPRESCEKSSSCQHQSSRSSSDYIIL--                                       | 355 |

| region                 | FR1 |    |    |    |    |    |    |    |    |     |     |     |     |     |     |     | CDR1 |     |     |     |     |     |     |     |     |     |     |      |      |      |      |      |
|------------------------|-----|----|----|----|----|----|----|----|----|-----|-----|-----|-----|-----|-----|-----|------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|------|------|------|------|
|                        | L1  | L2 | L3 | L4 | L5 | L6 | L7 | L8 | L9 | L10 | L11 | L12 | L13 | L14 | L15 | L16 | L17  | L18 | L19 | L20 | L21 | L22 | L23 | L24 | L25 | L26 | L27 | L27A | L27B | L27C | L27D | L27E |
| Kabat number           | 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   |
| 10A11, 27G1 轻链, 配列番号26 | D   | I  | V  | M  | T  | Q  | A  | A  | P  | S   | V   | P   | V   | T   | P   | G   | E    | S   | V   | S   | I   | S   | C   | R   | S   | S   | K   | S    | L    | L    | H    | S    |
| 1H4 轻链, 配列番号29         | D   | I  | V  | M  | T  | Q  | A  | A  | P  | S   | V   | P   | V   | T   | P   | G   | E    | S   | V   | S   | I   | S   | C   | R   | S   | S   | K   | S    | L    | L    | H    | S    |
| 19D7 轻链, 配列番号31        | D   | I  | V  | M  | T  | Q  | A  | A  | P  | S   | V   | P   | V   | T   | P   | G   | E    | S   | V   | S   | I   | S   | C   | R   | S   | S   | K   | S    | L    | L    | H    | S    |
| 8F7 轻链, 配列番号33         | D   | I  | V  | M  | T  | Q  | A  | A  | P  | S   | V   | P   | V   | T   | P   | G   | E    | S   | V   | S   | I   | S   | C   | R   | S   | S   | K   | S    | L    | L    | H    | S    |
| 2C7 轻链, 配列番号35         | D   | V  | V  | L  | T  | Q  | T  | P  | L  | S   | L   | P   | V   | S   | L   | G   | G    | Q   | A   | S   | I   | S   | C   | R   | S   | S   | Q   | S    | L    | V    | H    | S    |

  

| region                 | FR2 |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     | CDR2 |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     | FR3 |  |
|------------------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|--|
|                        | L28 | L29 | L30 | L31 | L32 | L33 | L34 | L35 | L36 | L37 | L38 | L39 | L40 | L41 | L42 | L43 | L44  | L45 | L46 | L47 | L48 | L49 | L50 | L51 | L52 | L53 | L54 | L55 | L56 | L57 | L58 | L59 |     |  |
| Kabat number           | 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  |     |  |
| 10A11, 27G1 轻链, 配列番号26 | N   | G   | N   | T   | Y   | L   | Y   | M   | F   | L   | Q   | R   | P   | G   | Q   | S   | P    | Q   | L   | L   | I   | Y   | R   | M   | S   | N   | L   | A   | S   | G   | V   | P   |     |  |
| 1H4 轻链, 配列番号29         | N   | G   | N   | T   | Y   | L   | Y   | M   | F   | L   | Q   | R   | P   | G   | Q   | S   | P    | Q   | L   | L   | I   | Y   | R   | M   | S   | N   | L   | A   | S   | G   | V   | P   |     |  |
| 19D7 轻链, 配列番号31        | N   | G   | N   | T   | Y   | L   | Y   | M   | F   | L   | Q   | R   | P   | G   | Q   | S   | P    | Q   | L   | L   | I   | Y   | R   | M   | S   | N   | L   | A   | S   | G   | V   | P   |     |  |
| 8F7 轻链, 配列番号33         | N   | G   | N   | T   | Y   | L   | Y   | M   | F   | L   | Q   | R   | P   | G   | Q   | S   | P    | Q   | L   | L   | I   | Y   | R   | M   | S   | N   | L   | A   | S   | G   | V   | P   |     |  |
| 2C7 轻链, 配列番号35         | N   | G   | N   | T   | Y   | L   | H   | M   | Y   | L   | Q   | K   | P   | G   | Q   | S   | P    | K   | L   | L   | I   | Y   | K   | V   | S   | N   | R   | F   | S   | G   | V   | P   |     |  |

  

| region                 | FR3 |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     | CDR3 |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |   |
|------------------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|---|
|                        | L60 | L61 | L62 | L63 | L64 | L65 | L66 | L67 | L68 | L69 | L70 | L71 | L72 | L73 | L74 | L75 | L76  | L77 | L78 | L79 | L80 | L81 | L82 | L83 | L84 | L85 | L86 | L87 | L88 | L89 | L90 | L91 |   |
| Kabat number           | 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  |   |
| 10A11, 27G1 轻链, 配列番号26 | D   | R   | F   | S   | G   | S   | G   | S   | G   | T   | A   | F   | T   | L   | R   | I   | S    | R   | V   | E   | A   | E   | D   | V   | G   | V   | Y   | Y   | Y   | C   | M   | Q   | H |
| 1H4 轻链, 配列番号29         | D   | R   | F   | S   | G   | S   | G   | S   | G   | T   | A   | F   | T   | L   | R   | I   | S    | R   | V   | E   | A   | E   | D   | V   | G   | V   | Y   | Y   | Y   | C   | M   | Q   | H |
| 19D7 轻链, 配列番号31        | D   | R   | F   | S   | G   | S   | G   | S   | G   | T   | A   | F   | T   | L   | R   | I   | S    | R   | V   | E   | A   | E   | D   | V   | G   | V   | Y   | Y   | Y   | C   | M   | Q   | H |
| 8F7 轻链, 配列番号33         | D   | R   |     |     |     |     |     |     |     |     |     |     |     |     |     |     |      |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |   |

[図3]

| region                                                                                                 | FR1          |     |     |     |     |     |     |     |     |      |       |       |       |       |       |       |      |      |      |      |      |      |      |      |      |      |      |      |      |     | CDR1 |     |     |  |
|--------------------------------------------------------------------------------------------------------|--------------|-----|-----|-----|-----|-----|-----|-----|-----|------|-------|-------|-------|-------|-------|-------|------|------|------|------|------|------|------|------|------|------|------|------|------|-----|------|-----|-----|--|
|                                                                                                        | Kabat number | H1  | H2  | H3  | H4  | H5  | H6  | H7  | H8  | H9   | H10   | H11   | H12   | H13   | H14   | H15   | H16  | H17  | H18  | H19  | H20  | H21  | H22  | H23  | H24  | H25  | H26  | H27  | H28  | H29 | H30  | H31 | H32 |  |
| 10A11重鎖: 配列番号27<br>27G1重鎖: 配列番号28<br>1H4重鎖: 配列番号30<br>19D7重鎖: 配列番号32<br>8F7重鎖: 配列番号34<br>2C7重鎖: 配列番号36 | E            | V   | Q   | L   | V   | E   | S   | G   | G   | R    | L     | V     | Q     | P     | K     | G     | S    | L    | K    | L    | S    | C    | A    | A    | S    | G    | F    | A    | F    | N   | T    | Y   |     |  |
|                                                                                                        | E            | V   | Q   | L   | V   | E   | S   | G   | G   | R    | L     | V     | Q     | P     | K     | G     | S    | L    | K    | L    | S    | C    | A    | A    | S    | G    | F    | T    | F    | N   | T    | Y   |     |  |
|                                                                                                        | E            | V   | Q   | L   | V   | E   | S   | G   | G   | R    | L     | V     | Q     | P     | K     | G     | S    | L    | K    | L    | S    | C    | A    | A    | S    | G    | F    | T    | F    | N   | T    | Y   |     |  |
|                                                                                                        | E            | V   | Q   | L   | V   | E   | S   | G   | G   | R    | L     | V     | Q     | P     | K     | R     | S    | L    | K    | L    | S    | C    | A    | A    | S    | G    | F    | T    | F    | N   | P    | Y   |     |  |
|                                                                                                        | Q            | V   | Q   | L   | K   | Q   | S   | G   | P   | S    | L     | V     | Q     | P     | S     | Q     | S    | L    | S    | L    | T    | C    | T    | V    | S    | G    | F    | S    | L    | T   | A    | Y   |     |  |
|                                                                                                        |              |     |     |     |     |     |     |     |     |      |       |       |       |       |       |       |      |      |      |      |      |      |      |      |      |      |      |      |      |     |      |     |     |  |
| 10A11重鎖: 配列番号27<br>27G1重鎖: 配列番号28<br>1H4重鎖: 配列番号30<br>19D7重鎖: 配列番号32<br>8F7重鎖: 配列番号34<br>2C7重鎖: 配列番号36 | H33          | H34 | H35 | H36 | H37 | H38 | H39 | H40 | H41 | H42  | H43   | H44   | H45   | H46   | H47   | H48   | H49  | H50  | H51  | H52  | H52A | H52B | H52C | H53  | H54  | H55  | H56  | H57  | H58  | H59 | H60  | H61 |     |  |
|                                                                                                        | 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  |     |  |
|                                                                                                        | A            | L   | Y   | W   | I   | R   | Q   | A   | P   | G    | K     | G     | L     | E     | W     | V     | A    | R    | I    | R    | S    | K    | S    | N    | N    | Y    | A    | T    | Y    | Y   | A    | D   |     |  |
|                                                                                                        | A            | M   | Y   | W   | I   | R   | Q   | A   | P   | G    | K     | G     | L     | E     | W     | V     | A    | R    | I    | R    | S    | K    | S    | N    | N    | Y    | A    | T    | Y    | Y   | A    | D   |     |  |
|                                                                                                        | A            | M   | Y   | W   | I   | R   | Q   | A   | P   | G    | K     | G     | L     | E     | W     | V     | A    | R    | I    | R    | S    | K    | S    | N    | N    | Y    | A    | T    | Y    | Y   | A    | D   |     |  |
|                                                                                                        | A            | M   | Y   | W   | I   | R   | Q   | A   | P   | G    | K     | G     | L     | E     | W     | V     | A    | R    | I    | R    | S    | K    | S    | N    | N    | Y    | A    | T    | Y    | Y   | A    | D   |     |  |
| 10A11重鎖: 配列番号27<br>27G1重鎖: 配列番号28<br>1H4重鎖: 配列番号30<br>19D7重鎖: 配列番号32<br>8F7重鎖: 配列番号34<br>2C7重鎖: 配列番号36 | H62          | H63 | H64 | H65 | H66 | H67 | H68 | H69 | H70 | H71  | H72   | H73   | H74   | H75   | H76   | H77   | H78  | H79  | H80  | H81  | H82  | H82A | H82B | H82C | H83  | H84  | H85  | H86  | H87  | H88 | H89  | H90 |     |  |
|                                                                                                        | 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  |     |  |
|                                                                                                        | S            | V   | K   | D   | R   | F   | T   | I   | S   | R    | D     | D     | S     | Q     | S     | M     | L    | Y    | L    | Q    | M    | N    | N    | L    | K    | T    | E    | D    | T    | A   | M    | Y   |     |  |
|                                                                                                        | S            | V   | K   | D   | R   | F   | T   | I   | S   | R    | D     | D     | S     | Q     | S     | M     | L    | Y    | L    | Q    | M    | N    | N    | L    | K    | T    | E    | D    | T    | A   | M    | Y   |     |  |
|                                                                                                        | S            | V   | K   | D   | R   | F   | T   | I   | S   | R    | D     | D     | S     | Q     | S     | M     | L    | Y    | L    | Q    | M    | N    | N    | L    | K    | T    | E    | D    | T    | A   | M    | Y   |     |  |
|                                                                                                        | S            | V   | K   | D   | R   | F   | T   | I   | S   | R    | D     | D     | S     | Q     | S     | M     | L    | Y    | L    | Q    | M    | N    | N    | L    | K    | T    | E    | D    | T    | A   | M    | Y   |     |  |
| 10A11重鎖: 配列番号27<br>27G1重鎖: 配列番号28<br>1H4重鎖: 配列番号30<br>19D7重鎖: 配列番号32<br>8F7重鎖: 配列番号34<br>2C7重鎖: 配列番号36 | H91          | H92 | H93 | H94 | H95 | H96 | H97 | H98 | H99 | H100 | H100A | H100B | H100C | H100D | H100E | H100F | H101 | H102 | H103 | H104 | H105 | H106 | H107 | H108 | H109 | H110 | H111 | H112 | H113 |     |      |     |     |  |
|                                                                                                        | 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  | 125  |     |      |     |     |  |
|                                                                                                        | Y            | C   | V   | R   | A   | R   | F   | Y   | Y   | S    | D     | Y     | G     | Y     | A     | M     | D    | Y    | W    | G    | Q    | G    | T    | S    | V    | T    | V    | S    | S    |     |      |     |     |  |
|                                                                                                        | Y            | C   | V   | R   | A   | R   | F   | Y   | Y   | S    | D     | Y     | G     | Y     | A     | M     | D    | Y    | W    | G    | Q    | G    | T    | S    | V    | T    | V    | S    | S    |     |      |     |     |  |
|                                                                                                        | Y            | C   | V   | R   | A   | R   | F   | Y   | Y   | S    | D     | Y     | G     | Y     | A     | M     | D    | Y    | W    | G    | Q    | G    | T    | S    | V    | T    | V    | S    | S    |     |      |     |     |  |
|                                                                                                        | Y            | C   | V   | R   | G   | Y   | G   | N   | Y   | R    | Y     | A     | M     |       |       |       |      | D    | Y    | W    | G    | Q    | G    | T    | S    | V    | T    | V    | S    | S   |      |     |     |  |

[図4]

| region           | FR1 |    |    |    |    |    |    |    |    |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     | CDR1 |      |      |  |  |
|------------------|-----|----|----|----|----|----|----|----|----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|------|------|--|--|
| Kabat number     | L1  | L2 | L3 | L4 | L5 | L6 | L7 | L8 | L9 | L10 | L11 | L12 | L13 | L14 | L15 | L16 | L17 | L18 | L19 | L20 | L21 | L22 | L23 | L24 | L25 | L26 | L27  | L27A | L27B |  |  |
| 10A11 軽鎖: 配列番号26 | I   | 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   |  |  |
| IGKV4-1: 配列番号42  | D   | I  | V  | M  | T  | Q  | A  | A  | P  | S   | V   | P   | V   | T   | P   | G   | E   | S   | V   | S   | I   | S   | C   | R   | S   | S   | K    | S    | L    |  |  |
| IGKV3-20: 配列番号40 | E   | I  | V  | L  | T  | Q  | S  | P  | D  | S   | L   | A   | V   | S   | L   | G   | E   | R   | A   | T   | L   | S   | C   | R   | S   | S   | K    | S    | L    |  |  |
| IGKV1-39: 配列番号43 | D   | I  | Q  | M  | T  | Q  | S  | P  | S  | L   | S   | A   | S   | V   | G   | D   | R   | V   | T   | I   | T   | C   | R   | S   | S   | K   | S    | L    |      |  |  |
| IGKV2-40: 配列番号44 | D   | I  | V  | M  | T  | Q  | T  | P  | L  | S   | L   | P   | V   | T   | P   | G   | E   | P   | A   | S   | I   | S   | C   | R   | S   | S   | K    | S    | L    |  |  |
| IGKV2-28: 配列番号47 | D   | I  | V  | M  | T  | Q  | S  | P  | L  | S   | L   | P   | V   | T   | P   | G   | E   | P   | A   | S   | I   | S   | C   | R   | S   | S   | K    | S    | L    |  |  |
| IGKV1-16: 配列番号45 | D   | I  | Q  | M  | T  | Q  | S  | P  | S  | L   | S   | A   | S   | V   | G   | D   | R   | V   | T   | I   | T   | C   | R   | S   | S   | K   | S    | L    |      |  |  |

| region           | FR2  |      |      |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     | CDR2 |     |  |  |  |
|------------------|------|------|------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|-----|--|--|--|
| Kabat number     | L27C | L27D | L27E | L28 | L29 | L30 | L31 | L32 | L33 | L34 | L35 | L36 | L37 | L38 | L39 | L40 | L41 | L42 | L43 | L44 | L45 | L46 | L47 | L48 | L49 | L50 | L51 | L52  | L53 |  |  |  |
| 10A11 軽鎖: 配列番号26 | L    | H    | S    | N   | G   | N   | T   | Y   | L   | Y   | W   | F   | L   | Q   | R   | P   | G   | Q   | S   | P   | Q   | L   | L   | I   | Y   | R   | M   | S    | N   |  |  |  |
| IGKV4-1: 配列番号42  | L    | H    | S    | N   | G   | N   | T   | Y   | L   | Y   | W   | Y   | Q   | Q   | K   | P   | G   | Q   | A   | P   | R   | L   | L   | I   | Y   | R   | M   | S    | N   |  |  |  |
| IGKV3-20: 配列番号40 | L    | H    | S    | N   | G   | N   | T   | Y   | L   | Y   | W   | Y   | Q   | Q   | K   | P   | G   | Q   | A   | P   | R   | L   | L   | I   | Y   | R   | M   | S    | N   |  |  |  |
| IGKV1-39: 配列番号43 | L    | H    | S    | N   | G   | N   | T   | Y   | L   | Y   | W   | Y   | Q   | Q   | K   | P   | G   | Q   | A   | P   | R   | L   | L   | I   | Y   | R   | M   | S    | N   |  |  |  |
| IGKV2-40: 配列番号44 | L    | H    | S    | N   | G   | N   | T   | Y   | L   | Y   | W   | Y   | L   | Q   | K   | P   | G   | Q   | S   | P   | Q   | L   | L   | I   | Y   | R   | M   | S    | N   |  |  |  |
| IGKV2-28: 配列番号47 | L    | H    | S    | N   | G   | N   | T   | Y   | L   | Y   | W   | Y   | L   | Q   | K   | P   | G   | Q   | S   | P   | Q   | L   | L   | I   | Y   | R   | M   | S    | N   |  |  |  |
| IGKV1-16: 配列番号45 | L    | H    | S    | N   | G   | N   | T   | Y   | L   | Y   | W   | F   | Q   | Q   | K   | P   | G   | K   | A   | P   | K   | S   | L   | I   | Y   | R   | M   | S    | N   |  |  |  |

| region           | FR3 |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     | CDR3 |     |  |  |  |
|------------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|-----|--|--|--|
| Kabat number     | L54 | L55 | L56 | L57 | L58 | L59 | L60 | L61 | L62 | L63 | L64 | L65 | L66 | L67 | L68 | L69 | L70 | L71 | L72 | L73 | L74 | L75 | L76 | L77 | L78 | L79 | L80 | L81  | L82 |  |  |  |
| 10A11 軽鎖: 配列番号26 | L   | A   | S   | G   | V   | P   | D   | R   | F   | S   | G   | S   | G   | S   | G   | T   | A   | F   | T   | L   | R   | I   | S   | R   | V   | E   | A   | E    | D   |  |  |  |
| IGKV4-1: 配列番号42  | L   | A   | S   | G   | V   | P   | D   | R   | F   | S   | G   | S   | G   | S   | G   | T   | D   | F   | T   | L   | T   | I   | S   | R   | L   | E   | P   | E    | D   |  |  |  |
| IGKV3-20: 配列番号40 | L   | A   | S   | G   | V   | P   | D   | R   | F   | S   | G   | S   | G   | S   | G   | T   | D   | F   | T   | L   | T   | I   | S   | S   | L   | Q   | P   | E    | D   |  |  |  |
| IGKV1-39: 配列番号43 | L   | A   | S   | G   | V   | P   | D   | R   | F   | S   | G   | S   | G   | S   | G   | T   | D   | F   | T   | L   | K   | I   | S   | R   | V   | E   | A   | E    | D   |  |  |  |
| IGKV2-40: 配列番号44 | L   | A   | S   | G   | V   | P   | D   | R   | F   | S   | G   | S   | G   | S   | G   | T   | D   | F   | T   | L   | K   | I   | S   | R   | V   | E   | A   | E    | D   |  |  |  |
| IGKV2-28: 配列番号47 | L   | A   | S   | G   | V   | P   | D   | R   | F   | S   | G   | S   | G   | S   | G   | T   | D   | F   | T   | L   | K   | I   | S   | R   | V   | E   | A   | E    | D   |  |  |  |
| IGKV1-16: 配列番号45 | L   | A   | S   | G   | V   | P   | S   | R   | F   | S   | G   | S   | G   | S   | G   | T   | D   | F   | T   | L   | T   | I   | S   | S   | L   | Q   | P   | E    | D   |  |  |  |

| region           | FR4 |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |      |      |      |      |      |      |      |      |      |      | CDR4 |  |  |  |  |
|------------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|------|------|------|------|------|------|------|------|------|------|--|--|--|--|
| Kabat number     | L83 | L84 | L85 | L86 | L87 | L88 | L89 | L90 | L91 | L92 | L93 | L94 | L95 | L96 | L97 | L98 | L99 | L100 | L101 | L102 | L103 | L104 | L105 | L106 | L107 | L108 | L109 |      |  |  |  |  |
| 10A11 軽鎖: 配列番号26 | V   | G   | V   | Y   | Y   | C   | M   | Q   | H   | L   | E   | Y   | P   | L   | T   | F   | G   | A    | G    | T    | K    | L    | E    | L    | K    | R    | I    |      |  |  |  |  |
| IGKV4-1: 配列番号42  | V   | A   | V   | Y   | Y   | C   | M   | Q   | H   | L   | E   | Y   | P   | L   | T   | F   | G   | Q    | G    | T    | K    | L    | E    | I    | K    | R    | I    |      |  |  |  |  |
| IGKV3-20: 配列番号40 | F   | A   | T   | Y   | Y   | C   | M   | Q   | H   | L   | E   | Y   | P   | L   | T   | F   | G   | Q    | G    | T    | K    | L    | E    | I    | K    | R    | I    |      |  |  |  |  |
| IGKV1-39: 配列番号43 | V   | G   | V   | Y   | Y   | C   | M   | Q   | H   | L   | E   | Y   | P   | L   | T   | F   | G   | Q    | G    | T    | K    | L    | E    | I    | K    | R    | I    |      |  |  |  |  |
| IGKV2-40: 配列番号44 | V   | G   | V   | Y   | Y   | C   | M   | Q   | H   | L   | E   | Y   | P   | L   | T   | F   | G   | Q    | G    | T    | K    | L    | E    | I    | K    | R    | I    |      |  |  |  |  |
| IGKV2-28: 配列番号47 | V   | G   | V   | Y   | Y   | C   | M   | Q   | H   | L   | E   | Y   | P   | L   | T   | F   | G   | Q    | G    | T    | K    | L    | E    | I    | K    | R    | I    |      |  |  |  |  |
| IGKV1-16: 配列番号45 | F   | A   | T   | Y   | Y   | C   | M   | Q   | H   | L   | E   | Y   | P   | L   | T   | F   | G   | Q    | G    | T    | K    | L    | E    | I    | K    | R    | I    |      |  |  |  |  |

[図5]

| region                | FR1 |    |    |    |    |    |    |    |    |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
|-----------------------|-----|----|----|----|----|----|----|----|----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Kabat number          | H1  | H2 | H3 | H4 | H5 | H6 | H7 | H8 | H9 | H10 | H11 | H12 | H13 | H14 | H15 | H16 | H17 | H18 | H19 | H20 | H21 | H22 | H23 | H24 | H25 | H26 | H27 | H28 | H29 |
| 10A11重鎖: 配列番号27       | 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  |
| IGHV3-15 T94R: 配列番号41 | E   | V  | Q  | L  | V  | E  | S  | G  | G  | R   | L   | V   | Q   | P   | K   | G   | S   | L   | K   | L   | S   | C   | A   | A   | S   | G   | F   | A   | F   |
| IGHV 3-73: 配列番号46     | E   | V  | Q  | L  | V  | E  | S  | G  | G  | A   | L   | V   | Q   | P   | G   | G   | S   | L   | K   | L   | S   | C   | A   | A   | S   | G   | F   | T   | F   |

| region                | FR2 |     |     |     |     |     |     |     |     |     | CDR2 |     |     |     |     |     |     |     |     |     |     |     |     |      |      |      |     |     |     |
|-----------------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|------|------|-----|-----|-----|
| Kabat number          | H30 | H31 | H32 | H33 | H34 | H35 | H36 | H37 | H38 | H39 | H40  | H41 | H42 | H43 | H44 | H45 | H46 | H47 | H48 | H49 | H50 | H51 | H52 | H52A | H52B | H52C | H53 | H54 | H55 |
| 10A11重鎖: 配列番号27       | 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  |
| IGHV3-15 T94R: 配列番号41 | N   | T   | Y   | A   | L   | Y   | W   | I   | R   | Q   | A    | P   | G   | K   | G   | L   | E   | W   | V   | A   | R   | I   | R   | S    | K    | S    | N   | N   | Y   |
| IGHV 3-73: 配列番号46     | N   | T   | Y   | A   | L   | Y   | W   | V   | R   | Q   | A    | P   | G   | K   | G   | L   | E   | W   | V   | G   | R   | I   | R   | S    | K    | S    | N   | N   | Y   |

| region                | CDR2 |     |     |     |     |     |     |     |     |     | FR3 |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |      |      |
|-----------------------|------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|------|
| Kabat number          | H56  | H57 | H58 | H59 | H60 | H61 | H62 | H63 | H64 | H65 | H66 | H67 | H68 | H69 | H70 | H71 | H72 | H73 | H74 | H75 | H76 | H77 | H78 | H79 | H80 | H81 | H82 | H82a | H82b |
| 10A11重鎖: 配列番号27       | 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   |
| IGHV3-15 T94R: 配列番号41 | A    | T   | Y   | Y   | A   | D   | S   | V   | K   | D   | R   | F   | T   | I   | S   | R   | D   | D   | S   | Q   | S   | M   | L   | Y   | L   | Q   | M   | N    | N    |
| IGHV 3-73: 配列番号46     | A    | T   | Y   | Y   | A   | D   | S   | V   | K   | D   | R   | F   | T   | I   | S   | R   | D   | D   | S   | K   | N   | T   | A   | Y   | L   | Q   | M   | N    | S    |

| region                | FR3  |     |     |     |     |     |     |     |     |     | CDR3 |     |     |     |     |     |     |     |      |       | FR4   |       |       |       |       |      |      |      |      |
|-----------------------|------|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|-----|-----|-----|-----|-----|-----|-----|------|-------|-------|-------|-------|-------|-------|------|------|------|------|
| Kabat number          | H82c | H83 | H84 | H85 | H86 | H87 | H88 | H89 | H90 | H91 | H92  | H93 | H94 | H95 | H96 | H97 | H98 | H99 | H100 | H100a | H100b | H100c | H100d | H100e | H100f | H101 | H102 | H103 | H104 |
| 10A11重鎖: 配列番号27       | 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  |
| IGHV3-15 T94R: 配列番号41 | L    | K   | T   | E   | D   | T   | A   | M   | Y   | Y   | C    | V   | R   | A   | R   | F   | Y   | Y   | S    | D     | Y     | G     | Y     | A     | M     | D    | Y    | W    | G    |
| IGHV 3-73: 配列番号46     | L    | K   | T   | E   | D   | T   | A   | V   | Y   | Y   | C    | T   | R   | A   | R   | F   | Y   | Y   | S    | D     | Y     | G     | Y     | A     | M     | D    | Y    | W    | G    |

| region                | FR4  |      |      |      |      |      |      |      |      |  |
|-----------------------|------|------|------|------|------|------|------|------|------|--|
| Kabat number          | H105 | H106 | H107 | H108 | H109 | H110 | H111 | H112 | H113 |  |
| 10A11重鎖: 配列番号27       | Q    | G    | T    | S    | V    | T    | V    | S    | S    |  |
| IGHV3-15 T94R: 配列番号41 | Q    | G    | T    | L    | V    | T    | V    | S    | S    |  |
| IGHV 3-73: 配列番号46     | Q    | G    | T    | L    | V    | T    | V    | S    | S    |  |

[図6]

| region          | FR1 |    |    |    |    |    |    |    |    |     |     |     |     |     |     |     |     |     |     |     | CDR1 |     |     |     |     |     |     |      |      |
|-----------------|-----|----|----|----|----|----|----|----|----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|-----|-----|-----|-----|-----|-----|------|------|
|                 | L1  | L2 | L3 | L4 | L5 | L6 | L7 | L8 | L9 | L10 | L11 | L12 | L13 | L14 | L15 | L16 | L17 | L18 | L19 | L20 | L21  | L22 | L23 | L24 | L25 | L26 | L27 | L27A | L27B |
| Kabat number    | 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   |
| 19D7輕鎖：配列番号31   | D   | I  | V  | M  | T  | Q  | A  | A  | P  | S   | V   | P   | V   | T   | P   | G   | E   | S   | V   | S   | I    | S   | C   | R   | S   | S   | K   | S    | L    |
| IGKV3-15：配列番号54 | E   | I  | V  | M  | T  | Q  | S  | P  | A  | T   | L   | S   | V   | S   | P   | G   | E   | R   | A   | T   | L    | S   | C   | R   | S   | S   | K   | S    | L    |
| IGKV2-18：配列番号55 | D   | I  | V  | M  | T  | Q  | T  | P  | P  | S   | L   | P   | V   | N   | P   | G   | E   | P   | A   | S   | I    | S   | C   | R   | S   | S   | K   | S    | L    |
| IGKV3-20：配列番号56 | E   | I  | V  | L  | T  | Q  | S  | P  | G  | T   | L   | S   | L   | S   | P   | G   | E   | R   | A   | T   | L    | S   | C   | R   | S   | S   | K   | S    | L    |

| region          | CDR1 |      |      |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     | FR2 |     |     |     |     | CDR2 |     |     |     |  |
|-----------------|------|------|------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|-----|-----|-----|--|
|                 | L27C | L27D | L27E | L28 | L29 | L30 | L31 | L32 | L33 | L34 | L35 | L36 | L37 | L38 | L39 | L40 | L41 | L42 | L43 | L44 | L45 | L46 | L47 | L48 | L49 | L50  | L51 | L52 | L53 |  |
| Kabat number    | 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  |  |
| 19D7輕鎖：配列番号31   | L    | H    | S    | N   | G   | N   | T   | Y   | L   | Y   | W   | F   | L   | Q   | R   | P   | G   | Q   | S   | P   | Q   | L   | L   | I   | Y   | R    | V   | S   | N   |  |
| IGKV3-15：配列番号54 | L    | H    | S    | N   | G   | N   | T   | Y   | L   | Y   | W   | Y   | Q   | Q   | K   | P   | G   | Q   | A   | P   | R   | L   | L   | I   | Y   | R    | V   | S   | N   |  |
| IGKV2-18：配列番号55 | L    | H    | S    | N   | G   | N   | T   | Y   | L   | Y   | W   | Y   | L   | Q   | K   | P   | G   | Q   | S   | P   | Q   | L   | L   | I   | Y   | R    | V   | S   | N   |  |
| IGKV3-20：配列番号56 | L    | H    | S    | N   | G   | N   | T   | Y   | L   | Y   | W   | Y   | Q   | Q   | K   | P   | G   | Q   | A   | P   | R   | L   | L   | I   | Y   | R    | V   | S   | N   |  |

| region          | CDR2 |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     | FR3 |     |     |     |     | CDR3 |     |     |     |  | FR4 |  |  |  |  |
|-----------------|------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|-----|-----|-----|--|-----|--|--|--|--|
|                 | L54  | L55 | L56 | L57 | L58 | L59 | L60 | L61 | L62 | L63 | L64 | L65 | L66 | L67 | L68 | L69 | L70 | L71 | L72 | L73 | L74 | L75 | L76 | L77 | L78 | L79  | L80 | L81 | L82 |  |     |  |  |  |  |
| Kabat number    | 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  |  |     |  |  |  |  |
| 19D7輕鎖：配列番号31   | L    | A   | S   | G   | V   | P   | D   | R   | F   | S   | G   | S   | G   | S   | G   | A   | A   | F   | T   | L   | R   | I   | S   | R   | V   | E    | A   | E   | D   |  |     |  |  |  |  |
| IGKV3-15：配列番号54 | L    | A   | S   | G   | I   | P   | A   | R   | F   | S   | G   | S   | G   | S   | G   | T   | E   | F   | T   | L   | T   | I   | S   | S   | L   | Q    | S   | E   | D   |  |     |  |  |  |  |
| IGKV2-18：配列番号55 | L    | A   | S   | G   | V   | P   | D   | R   | F   | S   | G   | S   | G   | S   | G   | S   | D   | F   | T   | L   | K   | I   | S   | W   | V   | E    | A   | E   | D   |  |     |  |  |  |  |
| IGKV3-20：配列番号56 | L    | A   | S   | G   | I   | P   | D   | R   | F   | S   | G   | S   | G   | S   | G   | T   | D   | F   | T   | L   | T   | I   | S   | R   | L   | E    | P   | E   | D   |  |     |  |  |  |  |

| region          | FR3 |     |     |     |     |     |     |     |     |     | CDR3 |     |     |     |     |     |     |      |      |      | FR4  |      |      |      |      |  |  |
|-----------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|-----|-----|-----|-----|-----|-----|------|------|------|------|------|------|------|------|--|--|
|                 | L83 | L84 | L85 | L86 | L87 | L88 | L89 | L90 | L91 | L92 | L93  | L94 | L95 | L96 | L97 | L98 | L99 | L100 | L101 | L102 | L103 | L104 | L105 | L106 | L107 |  |  |
| Kabat number    | 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  |  |  |
| 19D7輕鎖：配列番号31   | V   | G   | V   | Y   | Y   | C   | M   | Q   | H   | L   | E    | Y   | P   | F   | T   | F   | G   | S    | G    | T    | K    | L    | E    | I    | K    |  |  |
| IGKV3-15：配列番号54 | F   | A   | V   | Y   | Y   | C   | M   | Q   | H   | L   | E    | Y   | P   | F   | T   | F   | G   | Q    | G    | T    | K    | L    | E    | I    | K    |  |  |
| IGKV2-18：配列番号55 | V   | G   | V   | Y   | Y   | C   | M   | Q   | H   | L   | E    | Y   | P   | F   | T   | F   | G   | Q    | G    | T    | K    | L    | E    | I    | K    |  |  |
| IGKV3-20：配列番号56 | F   | A   | V   | Y   | Y   | C   | M   | Q   | H   | L   | E    | Y   | P   | F   | T   | F   | G   | Q    | G    | T    | K    | L    | E    | I    | K    |  |  |

| region                 | H1 | H2 | H3 | H4 | H5 | H6 | H7 | H8 | H9 | H10 | H11 | H12 | H13 | H14 | H15 | H16 | H17 | H18 | H19 | H20 | H21 | H22 | H23 | H24 | H25 | H26 | H27 | H28 | H29 |
|------------------------|----|----|----|----|----|----|----|----|----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Kabat number           | 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  |
| 19D7轻链：配列番号3 2         | E  | V  | Q  | L  | V  | E  | S  | G  | G  | R   | L   | V   | Q   | P   | K   | G   | S   | L   | K   | L   | S   | C   | A   | A   | S   | G   | F   | T   | F   |
| IGHV 3-15 T94R：配列番号5 7 | E  | V  | Q  | L  | V  | E  | S  | G  | G  | A   | L   | V   | K   | P   | G   | G   | S   | L   | R   | L   | S   | C   | A   | A   | S   | G   | F   | T   | F   |
| IGHV 3-73：配列番号5 8      | E  | V  | Q  | L  | V  | E  | S  | G  | G  | G   | L   | V   | Q   | P   | G   | G   | S   | L   | K   | L   | S   | C   | A   | A   | S   | G   | F   | T   | F   |

| region                 | FR1 | CDR1 |     |     |     |     | FR2 |     |     |     |     | CDR2 |     |     |     |     | FR3 |     |     |     |     | CDR3 |     |      |      |      | FR4 |     |     |  |  |
|------------------------|-----|------|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|-----|------|------|------|-----|-----|-----|--|--|
| Kabat number           | H30 | H31  | H32 | H33 | H34 | H35 | H36 | H37 | H38 | H39 | H40 | H41  | H42 | H43 | H44 | H45 | H46 | H47 | H48 | H49 | H50 | H51  | H52 | H52A | H52B | H52C | H53 | H54 | H55 |  |  |
| 19D7轻链：配列番号3 2         | 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  |  |  |
| IGHV 3-15 T94R：配列番号5 7 | N   | T    | Y   | A   | M   | Y   | W   | I   | R   | Q   | A   | P    | G   | K   | G   | L   | E   | W   | V   | A   | R   | I    | R   | S    | K    | S    | N   | N   | Y   |  |  |
| IGHV 3-73：配列番号5 8      | S   | T    | Y   | A   | M   | Y   | W   | V   | R   | Q   | A   | P    | G   | K   | G   | L   | E   | W   | V   | G   | R   | I    | R   | S    | K    | S    | N   | N   | Y   |  |  |

| region                 | H56 | H57 | H58 | H59 | H60 | H61 | H62 | H63 | H64 | H65 | H66 | H67 | H68 | H69 | H70 | H71 | H72 | H73 | H74 | H75 | H76 | H77 | H78 | H79 | H80 | H81 | H82 | H82A | H82B |
|------------------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|------|
| Kabat number           | 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   |
| 19D7轻链：配列番号3 2         | A   | T   | Y   | Y   | A   | D   | S   | V   | K   | D   | R   | F   | T   | I   | S   | R   | D   | D   | S   | Q   | S   | M   | L   | Y   | L   | Q   | M   | N    | S    |
| IGHV 3-15 T94R：配列番号5 7 | A   | T   | Y   | Y   | A   | D   | S   | V   | K   | D   | R   | F   | T   | I   | S   | R   | D   | D   | S   | K   | S   | T   | L   | Y   | L   | Q   | M   | N    | S    |
| IGHV 3-73：配列番号5 8      | A   | T   | Y   | Y   | A   | D   | S   | V   | K   | D   | R   | F   | T   | I   | S   | R   | D   | D   | S   | K   | S   | T   | L   | Y   | L   | Q   | M   | N    | S    |

| region                 | H82C | H83 | H84 | H85 | H86 | H87 | H88 | H89 | H90 | H91 | H92 | H93 | H94 | H95 | H96 | H97 | H98 | H99 | H100 | H100A | H100B | H101 | H102 | H103 | H104 | H105 | H106 |     |
|------------------------|------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|-------|-------|------|------|------|------|------|------|-----|
| Kabat number           | 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 |
| 19D7轻链：配列番号3 2         | L    | K   | T   | E   | D   | T   | A   | M   | Y   | Y   | C   | V   | R   | G   | G   | Y   | G   | N   | Y    | R     | Y     | A    | M    | D    | Y    | W    | Q    | G   |
| IGHV 3-15 T94R：配列番号5 7 | L    | K   | T   | E   | D   | T   | A   | V   | Y   | Y   | C   | T   | R   | G   | G   | Y   | G   | N   | Y    | R     | Y     | A    | M    | D    | Y    | W    | Q    | G   |
| IGHV 3-73：配列番号5 8      | L    | K   | T   | E   | D   | T   | A   | V   | Y   | Y   | C   | T   | R   | G   | G   | Y   | G   | N   | Y    | R     | Y     | A    | M    | D    | Y    | W    | Q    | G   |

| region                 | H107 | H108 | H109 | H110 | H111 | H112 | H113 |
|------------------------|------|------|------|------|------|------|------|
| Kabat number           | 117  | 118  | 119  | 120  | 121  | 122  | 123  |
| 19D7轻链：配列番号3 2         | T    | S    | V    | T    | V    | S    | S    |
| IGHV 3-15 T94R：配列番号5 7 | T    | T    | V    | T    | V    | S    | S    |
| IGHV 3-73：配列番号5 8      | T    | T    | V    | T    | V    | S    | S    |

[図8]

