<110> Dinona Inc

<120> Use of prevention and treatment of disease related to myeloid-derived suppressor cell and use thereof

<130> OPP20191779KR

<150> KR 10-2018-0054977
<151> 2018-05-14

<150> KR 10-2019-0055950
<151> 2019-05-13

<160> 79

<170> KoPatentIn 3.0

<210> 1
<211> 12
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<220>
<223> CDR-H1 of mouse or chimeric anti-CD66c antibody

<400> 1
Ala Ser Gly Tyr Ser Phe Thr Asp Tyr Thr Met Asn
1 5 10

<210> 2
<211> 17
<212> PRT
<213> Artificial Sequence

<220>
<223> CDR-H2 of mouse or chimeric anti-CD66c antibody

<400> 2
Leu Ile Asn Pro Phe His Gly Gly Thr Val Ser Asn Gln Arg Phe Lys
1 5 10 15

Val

<210> 3
<211> 14
<212> PRT
<213> Artificial Sequence

<220>
<223> CDR-H3 of mouse or chimeric anti-CD66c antibody

<400> 3
Val Arg Gly Asp Pro Val Arg His Tyr Tyr Ala Leu Ala Tyr
1 5 10

<210> 4

<211> 11
<212> PRT
<213> Artificial Sequence

<220>
<223> CDR-L1 of mouse or chimeric anti-CD66c antibody

<400> 4
Gly Ala Ser Glu Asn Val Tyr Gly Thr Leu Asn
1 5 10

<210> 5
<211> 7
<212> PRT
<213> Artificial Sequence

<220>
<223> CDR-L2 of mouse or chimeric anti-CD66c antibody

<400> 5
Gly Ala Thr Asn Leu Ala Asp
1 5

<210> 6
<211> 15
<212> PRT
<213> Artificial Sequence

<220>
<223> CDR-L3 of mouse or chimeric anti-CD66c antibody

<400> 6
Val Ala Thr Tyr Tyr Cys Gln Asn Val Leu Ser Ala Pro Tyr Thr
1 5 10 15

<210> 7
<211> 121
<212> PRT
<213> Artificial Sequence

<220>
<223> Heavy chain variable region of mouse or chimeric anti-CD66c antibody

<400> 7
Glu Val Gln Leu Gln Gln Ser Gly Pro Glu Leu Val Lys Pro Gly Ala
1 5 10 15

Ser Met Lys Ile Ser Cys Lys Ala Ser Gly Tyr Ser Phe Thr Asp Tyr
20 25 30

Thr Met Asn Trp Val Lys Gln Ser His Gly Lys Asn Leu Glu Trp Ile
35 40 45

Gly Leu Ile Asn Pro Phe His Gly Gly Thr Val Ser Asn Gln Arg Phe
50 55 60

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Lys Val Lys Ala Thr Leu Thr Val Asp Val Ser Ser Asn Thr Ala Tyr
 65                  70                  75                  80

Met Glu Leu Leu Ser Leu Thr Ser Asp Asp Ser Ala Val Tyr Tyr Cys
                85                  90                  95

Val Arg Gly Asp Pro Val Arg His Tyr Tyr Ala Leu Ala Tyr Trp Gly
            100                 105                 110

Gln Gly Thr Ser Val Thr Val Ser Ser
        115                 120


<210>    8
<211>    107
<212>    PRT
<213>    Artificial Sequence

<220>
<223>    Light chain variable region of mouse or chimeric anti-CD66c
         antibody


<400>    8
Asp Ile Gln Met Thr Gln Ser Pro Ala Ser Leu Ser Ala Ser Val Gly
  1               5                  10                  15

Glu Thr Val Thr Ile Thr Cys Gly Ala Ser Glu Asn Val Tyr Gly Thr
             20                  25                  30

Leu Asn Trp Tyr Gln Arg Lys Gln Gly Lys Ser Pro Gln Leu Leu Ile
         35                  40                  45

Tyr Gly Ala Thr Asn Leu Ala Asp Gly Met Ser Ser Arg Phe Ser Gly
     50                  55                  60

Ser Gly Ser Gly Arg Gln Tyr Ser Leu Lys Ile Ser Ser Leu His Pro
 65                  70                  75                  80

Asp Asp Val Ala Thr Tyr Tyr Cys Gln Asn Val Leu Ser Ala Pro Tyr
                85                  90                  95

Thr Phe Gly Gly Gly Thr Lys Leu Glu Ile Ile
            100                 105


<210>    9
<211>    12
<212>    PRT
<213>    Artificial Sequence

<220>
<223>    CDR-H1 of humanized anti-CD66c antibody


<400>    9
Ala Ser Gly Tyr Ser Phe Thr Asp Tyr Thr Met His
  1               5                  10


<210>    10
<211>    17
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<212> PRT
<213> Artificial Sequence

<220>
<223> CDR-H2 of humanized anti-CD66c antibody

<400> 10
Leu Ile Asn Pro Phe Gly Gly Ser Thr Ser Tyr Ala Gln Lys Phe Lys
  1   5   10   15

Gly

<210> 11
<211> 11
<212> PRT
<213> Artificial Sequence

<220>
<223> CDR-L1 of humanized anti-CD66c antibody

<400> 11
Gly Ala Ser Glu Asn Val Tyr Gly Thr Leu Ala
  1   5   10

<210> 12
<211> 11
<212> PRT
<213> Artificial Sequence

<220>
<223> CDR-L1 of humanized anti-CD66c antibody

<400> 12
Arg Ala Ser Glu Asn Val Tyr Gly Thr Leu Asn
  1   5   10

<210> 13
<211> 15
<212> PRT
<213> Artificial Sequence

<220>
<223> CDR-L3 of humanized anti-CD66c antibody

<400> 13
Phe Ala Thr Tyr Tyr Cys Gln Asn Val Leu Ser Ala Pro Tyr Thr
  1   5   10   15

<210> 14
<211> 128
<212> PRT
<213> Artificial Sequence

<220>

<223> Heavy chain variable region of humanized anti-CD66c antibody (8F5-human-VH5)

<400> 14

Phe His Met Ala Asn Val His Gln Val Gln Leu Val Gln Ser Gly Ala
1 5 10 15

Glu Val Lys Lys Pro Gly Ala Ser Val Lys Ile Ser Cys Lys Ala Ser
20 25 30

Gly Tyr Ser Phe Thr Asp Tyr Thr Met Asn Trp Val Arg Gln Ala His
35 40 45

Gly Gln Asn Leu Glu Trp Ile Gly Leu Ile Asn Pro Phe His Gly Gly
50 55 60

Thr Val Ser Asn Gln Arg Phe Lys Val Lys Ala Thr Leu Thr Val Asp
65 70 75 80

Val Ser Thr Asn Thr Ala Tyr Met Glu Leu Ser Arg Leu Arg Ser Asp
85 90 95

Asp Thr Ala Val Tyr Tyr Cys Val Arg Gly Asp Pro Val Arg His Tyr
100 105 110

Tyr Ala Leu Ala Tyr Trp Gly Gln Gly Thr Leu Val Thr Val Ser Ser
115 120 125

<210> 15
<211> 121
<212> PRT
<213> Artificial Sequence

<220>
<223> Heavy chain variable region of humanized anti-CD66c antibody (8F5-human-VH6)

<400> 15

Gln Val Gln Leu Val Gln Ser Gly Ala Glu Val Lys Lys Pro Gly Ala
1 5 10 15

Ser Met Lys Ile Ser Cys Lys Ala Ser Gly Tyr Ser Phe Thr Asp Tyr
20 25 30

Thr Met Asn Trp Val Lys Gln Ala Pro Gly Gln Asn Leu Glu Trp Ile
35 40 45

Gly Leu Ile Asn Pro Phe His Gly Gly Thr Val Ser Asn Gln Arg Phe
50 55 60

Lys Val Lys Ala Thr Leu Thr Val Asp Val Ser Thr Asn Thr Ala Tyr
65 70 75 80

Met Glu Leu Ser Arg Leu Arg Ser Asp Asp Thr Ala Val Tyr Tyr Cys
85 90 95

Val Arg Gly Asp Pro Val Arg His Tyr Tyr Ala Leu Ala Tyr Trp Gly
100 105 110

Gln Gly Thr Leu Val Thr Val Ser Ser
115 120

<210> 16
<211> 121
<212> PRT
<213> Artificial Sequence

<220>
<223> Heavy chain variable region of humanized anti-CD66c antibody (8F5-human-VH7)

<400> 16
Gln Val Gln Leu Val Gln Ser Gly Ala Glu Val Lys Lys Pro Gly Ala
1 5 10 15

Ser Met Lys Ile Ser Cys Lys Ala Ser Gly Tyr Ser Phe Thr Asp Tyr
20 25 30

Thr Met Asn Trp Val Arg Gln Ala Pro Gly Gln Gly Leu Glu Trp Ile
35 40 45

Gly Leu Ile Asn Pro Phe His Gly Gly Thr Val Ser Asn Gln Arg Phe
50 55 60

Lys Val Lys Ala Thr Leu Thr Val Asp Val Ser Thr Asn Thr Ala Tyr
65 70 75 80

Met Glu Leu Ser Arg Leu Arg Ser Asp Asp Thr Ala Val Tyr Tyr Cys
85 90 95

Val Arg Gly Asp Pro Val Arg His Tyr Tyr Ala Leu Ala Tyr Trp Gly
100 105 110

Gln Gly Thr Leu Val Thr Val Ser Ser
115 120

<210> 17
<211> 121
<212> PRT
<213> Artificial Sequence

<220>
<223> Heavy chain variable region of humanized anti-CD66c antibody (8F5-human-VH10)

<400> 17
Gln Val Gln Leu Val Gln Ser Gly Ala Glu Val Lys Lys Pro Gly Ala
1 5 10 15

Ser Val Lys Val Ser Cys Lys Ala Ser Gly Tyr Ser Phe Thr Asp Tyr
20 25 30

Thr Met Asn Trp Val Lys Gln Ala Pro Gly Gln Asn Leu Glu Trp Ile
35 40 45

Gly Leu Ile Asn Pro Phe His Gly Gly Thr Val Ser Asn Gln Arg Phe
50 55 60

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Lys Val Lys Ala Thr Met Thr Val Asp Val Ser Thr Asn Thr Ala Tyr
 65                  70                  75                  80

Met Glu Leu Ser Arg Leu Arg Ser Asp Asp Thr Ala Val Tyr Tyr Cys
                85                  90                  95

Val Arg Gly Asp Pro Val Arg His Tyr Tyr Ala Leu Ala Tyr Trp Gly
            100                 105                 110

Gln Gly Thr Leu Val Thr Val Ser Ser
        115                 120


<210>    18
<211>    121
<212>    PRT
<213>    Artificial Sequence

<220>
<223>    Heavy chain variable region of humanized anti-CD66c antibody
         (8F5-human-VH11)


<400>    18
Gln Val Gln Leu Val Gln Ser Gly Ala Glu Val Lys Lys Pro Gly Ala
  1               5                  10                  15

Ser Val Lys Ile Ser Cys Lys Ala Ser Gly Tyr Ser Phe Thr Asp Tyr
             20                  25                  30

Thr Met His Trp Val Lys Gln Ala Pro Gly Gln Asn Leu Glu Trp Ile
         35                  40                  45

Gly Leu Ile Asn Pro Phe Gly Gly Ser Thr Ser Tyr Ala Gln Lys Phe
     50                  55                  60

Lys Gly Arg Val Thr Met Thr Arg Asp Thr Ser Thr Asn Thr Ala Tyr
 65                  70                  75                  80

Met Glu Leu Ser Arg Leu Arg Ser Asp Asp Thr Ala Val Tyr Tyr Cys
                85                  90                  95

Val Arg Gly Asp Pro Val Arg His Tyr Tyr Ala Leu Ala Tyr Trp Gly
            100                 105                 110

Gln Gly Thr Leu Val Thr Val Ser Ser
        115                 120


<210>    19
<211>    107
<212>    PRT
<213>    Artificial Sequence

<220>
<223>    Light chain variable region of humanized anti-CD66c antibody
         (8F5-human-VK5)


<400>    19
Asp Ile Gln Met Thr Gln Ser Pro Ser Thr Leu Ser Ala Ser Val Gly
  1               5                  10                  15
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```
Asp Arg Val Thr Ile Thr Cys Gly Ala Ser Glu Asn Val Tyr Gly Thr
            20                  25                  30

Leu Ala Trp Tyr Gln Arg Lys Pro Gly Lys Ala Pro Lys Leu Leu Ile
        35                  40                  45

Tyr Gly Ala Thr Asn Leu Ala Asp Gly Val Pro Ser Arg Phe Ser Gly
    50                  55                  60

Ser Gly Ser Gly Arg Glu Tyr Thr Leu Thr Ile Ser Ser Leu Gln Pro
65                  70                  75                  80

Asp Asp Phe Ala Thr Tyr Tyr Cys Gln Asn Val Leu Ser Ala Pro Tyr
                85                  90                  95

Thr Phe Gly Gly Gly Thr Lys Leu Glu Ile Lys
            100                 105
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<210> 20
<211> 107
<212> PRT
<213> Artificial Sequence

<220>
<223> Light chain variable region of humanized anti-CD66c antibody (8F5-human-VK7)

<400> 20

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Asp Ile Gln Met Thr Gln Ser Pro Ser Thr Leu Ser Ala Ser Val Gly
  1               5                  10                  15

Asp Arg Val Thr Ile Thr Cys Gly Ala Ser Glu Asn Val Tyr Gly Thr
            20                  25                  30

Leu Asn Trp Tyr Gln Arg Lys Pro Gly Lys Ala Pro Lys Leu Leu Ile
        35                  40                  45

Tyr Gly Ala Thr Asn Leu Ala Asp Gly Val Pro Ser Arg Phe Ser Gly
    50                  55                  60

Ser Gly Ser Gly Thr Glu Tyr Thr Leu Thr Ile Ser Ser Leu Gln Pro
65                  70                  75                  80

Asp Asp Phe Ala Thr Tyr Tyr Cys Gln Asn Val Leu Ser Ala Pro Tyr
                85                  90                  95

Thr Phe Gly Gly Gly Thr Lys Leu Glu Ile Lys
            100                 105
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<210> 21
<211> 107
<212> PRT
<213> Artificial Sequence

<220>
<223> Light chain variable region of humanized anti-CD66c antibody (8F5-human-VK8)

<400> 21
Asp Ile Gln Met Thr Gln Ser Pro Ser Thr Leu Ser Ala Ser Val Gly
1 5 10 15

Asp Arg Val Thr Ile Thr Cys Arg Ala Ser Glu Asn Val Tyr Gly Thr
20 25 30

Leu Asn Trp Tyr Gln Arg Lys Pro Gly Lys Ala Pro Lys Leu Leu Ile
35 40 45

Tyr Gly Ala Thr Asn Leu Ala Asp Gly Met Pro Ser Arg Phe Ser Gly
50 55 60

Ser Gly Ser Gly Thr Glu Tyr Thr Leu Thr Ile Ser Ser Leu Gln Pro
65 70 75 80

Asp Asp Phe Ala Thr Tyr Tyr Cys Gln Asn Val Leu Ser Ala Pro Tyr
85 90 95

Thr Phe Gly Gly Gly Thr Lys Leu Glu Ile Lys
100 105

<210> 22
<211> 23
<212> PRT
<213> Artificial Sequence

<220>
<223> Framework 1 in Heavy chain variable region of chimeric anti-CD66c antibody

<400> 22
Glu Val Gln Leu Gln Gln Ser Gly Pro Glu Leu Val Lys Pro Gly Ala
1 5 10 15

Ser Met Lys Ile Ser Cys Lys
20

<210> 23
<211> 23
<212> PRT
<213> Artificial Sequence

<220>
<223> Framework 1 in Heavy chain variable region of humanized anti-CD66c antibody (8F5-human-VH5)

<400> 23
Gln Val Gln Leu Val Gln Ser Gly Ala Glu Val Lys Lys Pro Gly Ala
1 5 10 15

Ser Val Lys Ile Ser Cys Lys
20

<210> 24
<211> 23
<212> PRT
<213> Artificial Sequence

<220>
<223> Framework 1 in Heavy chain variable region of humanized anti-CD66c antibody (8F5-human-VH6)

<400> 24
Gln Val Gln Leu Val Gln Ser Gly Ala Glu Val Lys Lys Pro Gly Ala
1 5 10 15

Ser Met Lys Ile Ser Cys Lys
20

<210> 25
<211> 23
<212> PRT
<213> Artificial Sequence

<220>
<223> Framework 1 in Heavy chain variable region of humanized anti-CD66c antibody (8F5-human-VH7)

<400> 25
Gln Val Gln Leu Val Gln Ser Gly Ala Glu Val Lys Lys Pro Gly Ala
1 5 10 15

Ser Met Lys Ile Ser Cys Lys
20

<210> 26
<211> 23
<212> PRT
<213> Artificial Sequence

<220>
<223> Framework 1 in Heavy chain variable region of humanized anti-CD66c antibody (8F5-human-VH10)

<400> 26
Gln Val Gln Leu Val Gln Ser Gly Ala Glu Val Lys Lys Pro Gly Ala
1 5 10 15

Ser Val Lys Val Ser Cys Lys
20

<210> 27
<211> 23
<212> PRT
<213> Artificial Sequence

<220>
<223> Framework 1 in Heavy chain variable region of humanized anti-CD66c antibody (8F5-human-VH11)

<400> 27
Gln Val Gln Leu Val Gln Ser Gly Ala Glu Val Lys Lys Pro Gly Ala
1 5 10 15

Ser Val Lys Ile Ser Cys Lys
20

<210> 28
<211> 23
<212> PRT
<213> Artificial Sequence

<220>
<223> Framework 1 in Light chain variable region of chimeric anti-CD66c antibody

<400> 28
Asp Ile Gln Met Thr Gln Ser Pro Ala Ser Leu Ser Ala Ser Val Gly
1 5 10 15

Glu Thr Val Thr Ile Thr Cys
20

<210> 29
<211> 23
<212> PRT
<213> Artificial Sequence

<220>
<223> Framework 1 in Light chain variable region of humanized anti-CD66c antibody (8F5-human-VK5)

<400> 29
Asp Ile Gln Met Thr Gln Ser Pro Ser Thr Leu Ser Ala Ser Val Gly
1 5 10 15

Asp Arg Val Thr Ile Thr Cys
20

<210> 30
<211> 23
<212> PRT
<213> Artificial Sequence

<220>
<223> Framework 1 in Light chain variable region of humanized anti-CD66c antibody (8F5-human-VK7)

<400> 30
Asp Ile Gln Met Thr Gln Ser Pro Ser Thr Leu Ser Ala Ser Val Gly
1 5 10 15

Asp Arg Val Thr Ile Thr Cys
20

<210> 31
<211> 23
<212> PRT
<213> Artificial Sequence

<220>
<223> Framework 1 in Light chain variable region of humanized anti-CD66c antibody (8F5-human-VK8)

<400> 31
Asp Ile Gln Met Thr Gln Ser Pro Ser Thr Leu Ser Ala Ser Val Gly
1 5 10 15

Asp Arg Val Thr Ile Thr Cys
20

<210> 32
<211> 14
<212> PRT
<213> Artificial Sequence

<220>
<223> Framework 2 in Heavy chain variable regionof chimeric anti-CD66c antibody

<400> 32
Trp Val Lys Gln Ser His Gly Lys Asn Leu Glu Trp Ile Gly
1 5 10

<210> 33
<211> 14
<212> PRT
<213> Artificial Sequence

<220>
<223> Framework 2 in Heavy chain variable region of humanized anti-CD66c antibody (8F5-human-VH5)

<400> 33
Trp Val Arg Gln Ala His Gly Gln Asn Leu Glu Trp Ile Gly
1 5 10

<210> 34
<211> 14
<212> PRT
<213> Artificial Sequence

<220>
<223> Framework 2 in Heavy chain variable region of humanized anti-CD66c antibody (8F5-human-VH6)

<400> 34
Trp Val Lys Gln Ala Pro Gly Gln Asn Leu Glu Trp Ile Gly
1 5 10

<210> 35
<211> 14
<212> PRT
<213> Artificial Sequence

<220>
<223> Framework 2 in Heavy chain variable region of humanized anti-CD66c antibody (8F5-human-VH7)

<400> 35
Trp Val Arg Gln Ala Pro Gly Gln Gly Leu Glu Trp Ile Gly
1 5 10

<210> 36
<211> 14
<212> PRT
<213> Artificial Sequence

<220>
<223> Framework 2 in Heavy chain variable region of humanized anti-CD66c antibody (8F5-human-VH10)

<400> 36
Trp Val Lys Gln Ala Pro Gly Gln Asn Leu Glu Trp Ile Gly
1 5 10

<210> 37
<211> 14
<212> PRT
<213> Artificial Sequence

<220>
<223> Framework 2 in Heavy chain variable region of humanized anti-CD66c antibody (8F5-human-VH11)

<400> 37
Trp Val Lys Gln Ala Pro Gly Gln Asn Leu Glu Trp Ile Gly
1 5 10

<210> 38
<211> 15
<212> PRT
<213> Artificial Sequence

<220>
<223> Framework 2 in Light chain variable region of chimeric anti-CD66c antibody

<400> 38
Trp Tyr Gln Arg Lys Gln Gly Lys Ser Pro Gln Leu Leu Ile Tyr
1 5 10 15

<210> 39
<211> 15
<212> PRT
<213> Artificial Sequence

<220>
<223> Framework 2 in Light chain variable region of humanized

anti-CD66c antibody (8F5-human-VK5)

<400> 39
Trp Tyr Gln Arg Lys Pro Gly Lys Ala Pro Lys Leu Leu Ile Tyr
1 5 10 15

<210> 40
<211> 15
<212> PRT
<213> Artificial Sequence

<220>
<223> Framework 2 in Light chain variable region of humanized anti-CD66c antibody (8F5-human-VK6)

<400> 40
Trp Tyr Gln Arg Lys Pro Gly Lys Ala Pro Lys Leu Leu Ile Tyr
1 5 10 15

<210> 41
<211> 15
<212> PRT
<213> Artificial Sequence

<220>
<223> Framework 2 in Light chain variable region of humanized anti-CD66c antibody (8F5-human-VK8)

<400> 41
Trp Tyr Gln Arg Lys Pro Gly Lys Ala Pro Lys Leu Leu Ile Tyr
1 5 10 15

<210> 42
<211> 38
<212> PRT
<213> Artificial Sequence

<220>
<223> Framework 3 in Heavy chain variable region of chimeric anti-CD66c antibody

<400> 42
Asn Gln Arg Phe Lys Val Lys Ala Thr Leu Thr Val Asp Val Ser Ser
1 5 10 15

Asn Thr Ala Tyr Met Glu Leu Leu Ser Leu Thr Ser Asp Asp Ser Ala
20 25 30

Val Tyr Tyr Cys Val Arg
35

<210> 43
<211> 38
<212> PRT
<213> Artificial Sequence

<220>
<223> Framework 3 in Heavy chain variable region of humanized anti-CD66c antibody (8F5-human-VH5)

<400> 43
Asn Gln Arg Phe Lys Val Lys Ala Thr Leu Thr Val Asp Val Ser Thr
1 5 10 15

Asn Thr Ala Tyr Met Glu Leu Ser Arg Leu Arg Ser Asp Asp Thr Ala
20 25 30

Val Tyr Tyr Cys Val Arg
35

<210> 44
<211> 38
<212> PRT
<213> Artificial Sequence

<220>
<223> Framework 3 in Heavy chain variable region of humanized anti-CD66c antibody (8F5-human-VH6)

<400> 44
Asn Gln Arg Phe Lys Val Lys Ala Thr Leu Thr Val Asp Val Ser Thr
1 5 10 15

Asn Thr Ala Tyr Met Glu Leu Ser Arg Leu Arg Ser Asp Asp Thr Ala
20 25 30

Val Tyr Tyr Cys Val Arg
35

<210> 45
<211> 38
<212> PRT
<213> Artificial Sequence

<220>
<223> Framework 3 in Heavy chain variable region of humanized anti-CD66c antibody (8F5-human-VH7)

<400> 45
Asn Gln Arg Phe Lys Val Lys Ala Thr Leu Thr Val Asp Val Ser Thr
1 5 10 15

Asn Thr Ala Tyr Met Glu Leu Ser Arg Leu Arg Ser Asp Asp Thr Ala
20 25 30

Val Tyr Tyr Cys Val Arg
35

<210> 46
<211> 38
<212> PRT
<213> Artificial Sequence

<220>
<223> Framework 3 in Heavy chain variable region of humanized anti-CD66c antibody (8F5-human-VH10)

<400> 46
Asn Gln Arg Phe Lys Val Lys Ala Thr Met Thr Val Asp Val Ser Thr
1 5 10 15

Asn Thr Ala Tyr Met Glu Leu Ser Arg Leu Arg Ser Asp Asp Thr Ala
20 25 30

Val Tyr Tyr Cys Val Arg
35

<210> 47
<211> 38
<212> PRT
<213> Artificial Sequence

<220>
<223> Framework 3 in Heavy chain variable region of humanized anti-CD66c antibody (8F5-human-VH11)

<400> 47
Ala Gln Lys Phe Lys Gly Arg Val Thr Met Thr Arg Asp Thr Ser Thr
1 5 10 15

Asn Thr Ala Tyr Met Glu Leu Ser Arg Leu Arg Ser Asp Asp Thr Ala
20 25 30

Val Tyr Tyr Cys Val Arg
35

<210> 48
<211> 26
<212> PRT
<213> Artificial Sequence

<220>
<223> Framework 3 in Light chain variable region of chimeric anti-CD66c antibody

<400> 48
Gly Met Ser Ser Arg Phe Ser Gly Ser Gly Ser Gly Arg Gln Tyr Ser
1 5 10 15

Leu Lys Ile Ser Ser Leu His Pro Asp Asp
20 25

<210> 49
<211> 26
<212> PRT
<213> Artificial Sequence

<220>
<223> Framework 3 in Light chain variable region of humanized

anti-CD66c antibody (8F5-human-VK5)

<400> 49
Gly Val Pro Ser Arg Phe Ser Gly Ser Gly Ser Gly Arg Gln Tyr Ser
1 5 10 15

Leu Lys Ile Ser Ser Leu His Pro Asp Asp
20 25

<210> 50
<211> 26
<212> PRT
<213> Artificial Sequence

<220>
<223> Framework 3 in Light chain variable region of humanized anti-CD66c antibody (8F5-human-VK7)

<400> 50
Gly Val Pro Ser Arg Phe Ser Gly Ser Gly Ser Gly Thr Glu Tyr Thr
1 5 10 15

Leu Thr Ile Ser Ser Leu Gln Pro Asp Asp
20 25

<210> 51
<211> 26
<212> PRT
<213> Artificial Sequence

<220>
<223> Framework 3 in Light chain variable region of humanized anti-CD66c antibody (8F5-human-VK8)

<400> 51
Gly Met Pro Ser Arg Phe Ser Gly Ser Gly Ser Gly Thr Glu Tyr Thr
1 5 10 15

Leu Thr Ile Ser Ser Leu Gln Pro Asp Asp
20 25

<210> 52
<211> 11
<212> PRT
<213> Artificial Sequence

<220>
<223> Framework 4 in Light chain variable region of chimeric anti-CD66c antibody

<400> 52
Trp Gly Gln Gly Thr Ser Val Thr Val Ser Ser
1 5 10

<210> 53

<211> 11
<212> PRT
<213> Artificial Sequence

<220>
<223> Framework 4 in Heavy chain variable region of humanzied anti-CD66c antibody (8F5-human-VH5)

<400> 53
Trp Gly Gln Gly Thr Leu Val Thr Val Ser Ser
1 5 10

<210> 54
<211> 11
<212> PRT
<213> Artificial Sequence

<220>
<223> Framework 4 in Heavy chain variable region of humanzied anti-CD66c antibody (8F5-human-VH6)

<400> 54
Trp Gly Gln Gly Thr Leu Val Thr Val Ser Ser
1 5 10

<210> 55
<211> 11
<212> PRT
<213> Artificial Sequence

<220>
<223> Framework 4 in Heavy chain variable region of humanzied anti-CD66c antibody (8F5-human-VH7)

<400> 55
Trp Gly Gln Gly Thr Leu Val Thr Val Ser Ser
1 5 10

<210> 56
<211> 11
<212> PRT
<213> Artificial Sequence

<220>
<223> Framework 4 in Heavy chain variable region of humanzied anti-CD66c antibody (8F5-human-VH10)

<400> 56
Trp Gly Gln Gly Thr Leu Val Thr Val Ser Ser
1 5 10

<210> 57
<211> 11
<212> PRT
<213> Artificial Sequence

<220>
<223> Framework 4 in Heavy chain variable region of humanzied anti-CD66c antibody (8F5-human-VH11)

<400> 57
Trp Gly Gln Gly Thr Leu Val Thr Val Ser Ser
1 5 10

<210> 58
<211> 10
<212> PRT
<213> Artificial Sequence

<220>
<223> Framework 4 in Light chain variable region of chimeric anti-CD66c antibody

<400> 58
Phe Gly Gly Gly Thr Lys Leu Glu Ile Ile
1 5 10

<210> 59
<211> 10
<212> PRT
<213> Artificial Sequence

<220>
<223> Framework 4 in Light chain variable region of humanized anti-CD66c antibody (8F5-human-VK5)

<400> 59
Phe Gly Gly Gly Thr Lys Leu Glu Ile Lys
1 5 10

<210> 60
<211> 10
<212> PRT
<213> Artificial Sequence

<220>
<223> Framework 4 in Light chain variable region of humanized anti-CD66c antibody (8F5-human-VK7)

<400> 60
Phe Gly Gly Gly Thr Lys Leu Glu Ile Lys
1 5 10

<210> 61
<211> 10
<212> PRT
<213> Artificial Sequence

<220>
<223> Framework 4 in Light chain variable region of humanized

anti-CD66c antibody (8F5-human-VK8)

<400> 61
Phe Gly Gly Gly Thr Lys Leu Glu Ile Lys
1 5 10

<210> 62
<211> 363
<212> DNA
<213> Artificial Sequence

<220>
<223> Polynucleotide encoding heavy chain variable region of chimeric anti-CD66c antibody

<400> 62
gaggtccagc tgcaacagtc tggacctgaa ctggtgaagc ctggagcttc aatgaagata 60

tcctgcaagg cttctggtta ctcattcact gactacacca tgaactgggt gaagcagagc 120

catggaaaga accttgagtg gattggactt attaatcctt tccatggtgg tactgtctcc 180

aaccagaggt tcaaggtcaa ggccacatta actgtagaca agtcatccaa cacagcctac 240

atggagctcc tcagtctgac atctgacgac tctgcggtct attactgtgt aagaggtgac 300

ccggtccgcc attactatgc tttggcctac tggggtcagg gaacctcagt caccgtctcc 360

tca 363

<210> 63
<211> 217
<212> DNA
<213> Artificial Sequence

<220>
<223> Polynucleotide encoding light chain variable region of chimeric anti-CD66c antibody

<400> 63
gacatccaga tgactcagtc tccagcttca ctgtctgcat ctgtgggaga aactgtcacc 60

atcacatgtg gagcaagtga gaatgtttac ggtactttaa attggtatca gcggaaacag 120

ggaaaatctc ctcagctcct gatctatggt gcaaccaact tggcagatgg catgtcatcg 180

aggttcagtg gcagtggttc tggtagacag tattctc 217

<210> 64
<211> 21
<212> DNA
<213> Artificial Sequence

<220>
<223> 8F01 Primer of 1st frag forward

<400> 64
attactcgag gccaccatga a 21

<210> 65
<211> 23
<212> DNA
<213> Artificial Sequence

<220>
<223> 8F02 Primer of 1st frag reverse

<400> 65
agttgaagcg ctgctcacag tca 23

<210> 66
<211> 23
<212> DNA
<213> Artificial Sequence

<220>
<223> 8F03 Primer of 2nd frag forward

<400> 66
gtgagcagcg cttcaactaa ggg 23

<210> 67
<211> 26
<212> DNA
<213> Artificial Sequence

<220>
<223> 3E04 Primer of 2nd frag reverse

<400> 67
agtcgaattc tcatttccca ggagag 26

<210> 68
<211> 23
<212> DNA
<213> Artificial Sequence

<220>
<223> 8F04 Primer of 1st frag reverse

<400> 68
agttgaagca gaagacactg tca 23

<210> 69
<211> 23
<212> DNA
<213> Artificial Sequence

<220>
<223> 8F05 Primer of 1st frag forward

<400> 69
gtgtcttctg cttcaactaa ggg 23

<210> 70
<211> 26
<212> DNA
<213> Artificial Sequence

<220>
<223> 3E01 Primer of 1st frag forward

<400> 70
attactcgag gccaccatga agtggg 26

<210> 71
<211> 23
<212> DNA
<213> Artificial Sequence

<220>
<223> 8F06 Primer of 1st frag reverse

<400> 71
aacagtccgc ttgatctcca gct 23

<210> 72
<211> 23
<212> DNA
<213> Artificial Sequence

<220>
<223> 3EL02(2) Primer of 2nd frag forward

<400> 72
gagatcaagc ggactgttgc tgc 23

<210> 73
<211> 26
<212> DNA
<213> Artificial Sequence

<220>
<223> 3E08 Primer of 2nd frag reverse

<400> 73
attagaattc tcagcactcg ccgcgg 26

<210> 74
<211> 330
<212> PRT
<213> Artificial Sequence

<220>
<223> Heavy chain constant region of IgG1

<400> 74
Ala Ser Thr Lys Gly Pro Ser Val Phe Pro Leu Ala Pro Ser Ser Lys
1 5 10 15

Ser Thr Ser Gly Gly Thr Ala Ala Leu Gly Cys Leu Val Lys Asp Tyr
20 25 30

Phe Pro Glu Pro Val Thr Val Ser Trp Asn Ser Gly Ala Leu Thr Ser
35 40 45

Gly Val His Thr Phe Pro Ala Val Leu Gln Ser Ser Gly Leu Tyr Ser
50 55 60

Leu Ser Ser Val Val Thr Val Pro Ser Ser Ser Leu Gly Thr Gln Thr
65 70 75 80

Tyr Ile Cys Asn Val Asn His Lys Pro Ser Asn Thr Lys Val Asp Lys
85 90 95

Lys Val Glu Pro Lys Ser Cys Asp Lys Thr His Thr Cys Pro Pro Cys
100 105 110

Pro Ala Pro Glu Leu Leu Gly Gly Pro Ser Val Phe Leu Phe Pro Pro
115 120 125

Lys Pro Lys Asp Thr Leu Met Ile Ser Arg Thr Pro Glu Val Thr Cys
130 135 140

Val Val Val Asp Val Ser His Glu Asp Pro Glu Val Lys Phe Asn Trp
145 150 155 160

Tyr Val Asp Gly Val Glu Val His Asn Ala Lys Thr Lys Pro Arg Glu
165 170 175

Glu Gln Tyr Asn Ser Thr Tyr Arg Val Val Ser Val Leu Thr Val Leu
180 185 190

His Gln Asp Trp Leu Asn Gly Lys Glu Tyr Lys Cys Lys Val Ser Asn
195 200 205

Lys Ala Leu Pro Ala Pro Ile Glu Lys Thr Ile Ser Lys Ala Lys Gly
210 215 220

Gln Pro Arg Glu Pro Gln Val Tyr Thr Leu Pro Pro Ser Arg Asp Glu
225 230 235 240

Leu Thr Lys Asn Gln Val Ser Leu Thr Cys Leu Val Lys Gly Phe Tyr
245 250 255

Pro Ser Asp Ile Ala Val Glu Trp Glu Ser Asn Gly Gln Pro Glu Asn
260 265 270

Asn Tyr Lys Thr Thr Pro Pro Val Leu Asp Ser Asp Gly Ser Phe Phe
275 280 285

Leu Tyr Ser Lys Leu Thr Val Asp Lys Ser Arg Trp Gln Gln Gly Asn
290 295 300

Val Phe Ser Cys Ser Val Met His Glu Ala Leu His Asn His Tyr Thr

305 310 315 320

Gln Lys Ser Leu Ser Leu Ser Pro Gly Lys
325 330

<210> 75
<211> 993
<212> DNA
<213> Artificial Sequence

<220>
<223> DNA sequence of Heavy chain constant region of IgG1

<400> 75
gcttcaacta agggaccaag cgtattccca cttgctccat ctagcaagag cactagcgga 60

ggaacagctg ctttggggtg tttggtaaag gattactttc ccgaacctgt taccgtgagc 120

tggaacagcg gggctttgac aagtggcgtt catacatttc ctgccgtttt gcaaagcagc 180

ggcttgtata gcttgagctc tgttgttacc gttccaagct catctctggg cacacaaaca 240

tacatctgca acgtgaacca caagccctca aacaccaagg tggacaagaa ggtggagcca 300

aagtcttgcg acaagaccca cacctgtcca ccttgtccag cccctgaact cctggggggc 360

ccttcagttt ttctctttcc tcctaaacct aaagatacac tcatgatcag tcggacccct 420

gaagttacct gtgtggtggt cgatgtgtct catgaagatc ctgaagtcaa gtttaactgg 480

tatgtggacg gcgtggaggt gcataatgcc aagaccaagc ctcgggagga gcaatataat 540

tctacctatc gcgtcgtctc tgtcctcacc gtcctgcatc aggactggct gaatggcaaa 600

gagtataagt gcaaagtcag taacaaagcc ctccccgccc ccatagagaa aaccattagt 660

aaagccaaag ggcagccccg cgagccccag gtctatacac tgccccccag tagagacgag 720

ctgacaaaga atcaggtgtc tctgacatgc ctggtgaaag gcttttatcc ctctgacatt 780

gccgtcgagt gggagtctaa tgggcagccc gagaataatt ataagacaac acccccgtg 840

ctggacagtg acggctcatt tttcctgtat tcaaaactga cagtggacaa aagtcggtgg 900

cagcagggga atgtgttttc atgcagtgtc atgcacgagg ccctccacaa tcactatacc 960

cagaaatctc tgagtctctc tcctgggaaa tga 993

<210> 76
<211> 326
<212> PRT
<213> Artificial Sequence

<220>
<223> Heavy chain constant region of IgG2

<400> 76
Ala Ser Thr Lys Gly Pro Ser Val Phe Pro Leu Ala Pro Cys Ser Arg
1 5 10 15

```
Ser Thr Ser Glu Ser Thr Ala Ala Leu Gly Cys Leu Val Lys Asp Tyr
            20                  25                  30

Phe Pro Glu Pro Val Thr Val Ser Trp Asn Ser Gly Ala Leu Thr Ser
        35                  40                  45

Gly Val His Thr Phe Pro Ala Val Leu Gln Ser Ser Gly Leu Tyr Ser
    50                  55                  60

Leu Ser Ser Val Val Thr Val Pro Ser Ser Asn Phe Gly Thr Gln Thr
65                  70                  75                  80

Tyr Thr Cys Asn Val Asp His Lys Pro Ser Asn Thr Lys Val Asp Lys
                85                  90                  95

Thr Val Glu Arg Lys Cys Cys Val Glu Cys Pro Pro Cys Pro Ala Pro
            100                 105                 110

Pro Val Ala Gly Pro Ser Val Phe Leu Phe Pro Pro Lys Pro Lys Asp
        115                 120                 125

Thr Leu Met Ile Ser Arg Thr Pro Glu Val Thr Cys Val Val Val Asp
    130                 135                 140

Val Ser His Glu Asp Pro Glu Val Gln Phe Asn Trp Tyr Val Asp Gly
145                 150                 155                 160

Val Glu Val His Asn Ala Lys Thr Lys Pro Arg Glu Glu Gln Phe Asn
                165                 170                 175

Ser Thr Phe Arg Val Val Ser Val Leu Thr Val Val His Gln Asp Trp
            180                 185                 190

Leu Asn Gly Lys Glu Tyr Lys Cys Lys Val Ser Asn Lys Gly Leu Pro
        195                 200                 205

Ala Pro Ile Glu Lys Thr Ile Ser Lys Thr Lys Gly Gln Pro Arg Glu
    210                 215                 220

Pro Gln Val Tyr Thr Leu Pro Pro Ser Arg Glu Glu Met Thr Lys Asn
225                 230                 235                 240

Gln Val Ser Leu Thr Cys Leu Val Lys Gly Phe Tyr Pro Ser Asp Ile
                245                 250                 255

Ala Val Glu Trp Glu Ser Asn Gly Gln Pro Glu Asn Asn Tyr Lys Thr
            260                 265                 270

Thr Pro Pro Met Leu Asp Ser Asp Gly Ser Phe Phe Leu Tyr Ser Lys
        275                 280                 285

Leu Thr Val Asp Lys Ser Arg Trp Gln Gln Gly Asn Val Phe Ser Cys
    290                 295                 300

Ser Val Met His Glu Ala Leu His Asn His Tyr Thr Gln Lys Ser Leu
305                 310                 315                 320

Ser Leu Ser Pro Gly Lys
                325
```

<210> 77

<211> 981
<212> DNA
<213> Artificial Sequence

<220>
<223> DNA sequence of Heavy chain constant region of IgG2

<400> 77
gcttccacca agggcccatc cgtgttccct ctggccccat gttctaggtc tacatctgag 60

agcaccgccg ccctcggctg tctggtgaag gattatttcc ccgagcccgt gaccgtgtct 120

tggaacagcg gagccctgac tagcggagtg cacaccttcc cagctgtgct gcagagctcc 180

ggcctgtaca gcctctcttc tgtggtgacc gtgccctcta gcaacttcgg aacacagacc 240

tacacatgta acgtggatca caagccttcc aacaccaagg tggataagac cgtggagaga 300

aagtgctgtg tggagtgccc tccatgtcct gccccacctg tggctggacc ttctgtgttt 360

ctgttccctc caaagccaaa ggataccctg atgatcagca gaactcctga ggtgacctgt 420

gtggtggtgg acgtgagcca cgaggatcct gaggtgcagt ttaactggta cgtggatggc 480

gtggaggtgc ataacgctaa gacaaagcct agggaggagc agtttaacag caccttcaga 540

gtggtgagcg tgctgaccgt ggtgcaccag gattggctga acggcaagga gtataagtgt 600

aaggtgtcta acaagggcct gccagcccct attgagaaga ccatcagtaa gaccaaggga 660

cagcctaggg agcctcaggt gtacaccctg cctccttcca gagaggagat gacaaagaac 720

caggtgagcc tgacctgtct ggtgaagggc ttctacccta gcgatatcgc cgtggagtgg 780

gagagcaacg gccagcctga gaacaactac aagaccaccc cacctatgct ggacagcgat 840

ggctctttct tcctgtactc taagctgacc gtggacaaga gcagatggca gcagggcaac 900

gtgttttctt gttctgtgat gcacgaggcc ctgcacaacc actacaccca gaagtctctg 960

tctctgtctc caggcaagtg a 981

<210> 78
<211> 107
<212> PRT
<213> Artificial Sequence

<220>
<223> Light chain constant region

<400> 78
Arg Thr Val Ala Ala Pro Ser Val Phe Ile Phe Pro Pro Ser Asp Glu
1 5 10 15

Gln Leu Lys Ser Gly Thr Ala Ser Val Val Cys Leu Leu Asn Asn Phe
20 25 30

Tyr Pro Arg Glu Ala Lys Val Gln Trp Lys Val Asp Asn Ala Leu Gln
35 40 45

Ser Gly Asn Ser Gln Glu Ser Val Thr Glu Gln Asp Ser Lys Asp Ser
50 55 60

Thr Tyr Ser Leu Ser Ser Thr Leu Thr Leu Ser Lys Ala Asp Tyr Glu
65 70 75 80

Lys His Lys Val Tyr Ala Cys Glu Val Thr His Gln Gly Leu Ser Ser
85 90 95

Pro Val Thr Lys Ser Phe Asn Arg Gly Glu Cys
100 105

<210> 79
<211> 324
<212> DNA
<213> Artificial Sequence

<220>
<223> DNA sequence of Light chain constant region

<400> 79
cggactgttg ctgctccatc tgtttttata tttcctccca gcgacgagca gctgaaaagc 60

ggcactgcct ctgtggtgtg tctgctgaat aatttttacc cccgggaagc caaagtccag 120

tggaaggtgg ataatgccct ccagtctggg aacagtcagg aaagtgtgac agaacaggat 180

agtaaggact ctacttatag cctctcttct acactgactc tgtcaaaggc cgactatgag 240

aagcataaag tgtatgcctg cgaggtgaca catcagggcc tgagttcacc cgtgacaaaa 300

tcttttaacc gcggcgagtg ctga 324