

SEQUENCE LISTING

<110> Sumitomo Dainippon Pharma Co., Ltd.
 <120> A humanized antibody and a method for use thereof
 <130> 093076
 <150> JP 2019-191560
 <151> 2019-10-18
 <160> 15
 <170> PatentIn version 3.5
 <210> 1
 <211> 121
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> Humanaized antibody heavy chain variable region 1 (H01)

<400> 1

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

Ser Leu Arg Leu Ser Cys Ala Ala Ser Gly Phe Thr Phe Ser Asn Tyr
 20 25 30

Gly Met Ser Trp Val Arg Gln Ala Pro Gly Lys Gly Leu Glu Trp Val
 35 40 45

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

Lys Gly Arg Phe Thr Ile Ser Arg Asp Asn Ser Lys Asn Thr Leu Tyr
 65 70 75 80

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

Thr Arg His Leu Asp Tyr Ala Asn Tyr Asp Ala Met Asp Tyr Trp Gly
 100 105 110

Gln Gly Thr Leu Val Thr Val Ser Ser
 115 120

<210> 2
 <211> 121
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> Humanaized antibody heavy chain variable region 2 (H02)



<400> 2

Leu Val Gln Leu Val Glu Ser Gly Gly Gly Val Val Arg Pro Gly Gly
1 5 10 15

Ser Leu Arg Leu Ser Cys Ala Ala Ser Gly Phe Thr Phe Ser Asn Tyr
20 25 30

Gly Met Ser Trp Ile Arg Gln Ala Pro Gly Lys Gly Leu Glu Trp Val
35 40 45

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

Lys Gly Arg Phe Thr Ile Ser Arg Asp Asn Ala Lys Asn Ser Leu Tyr
65 70 75 80

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

Thr Arg His Leu Asp Tyr Ala Asn Tyr Asp Ala Met Asp Tyr Trp Gly
100 105 110

Gln Gly Thr Leu Val Thr Val Ser Ser
115 120

<210> 3

<211> 121

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<223> Humanized antibody heavy chain variable region 3 (H03)

<400> 3

Leu Val Gln Leu Val Glu Ser Gly Gly Gly Val Val Gln Pro Gly Arg
1 5 10 15

Ser Leu Arg Leu Ser Cys Ala Ala Ser Gly Phe Thr Phe Ser Asn Tyr
20 25 30

Gly Met Ser Trp Val Arg Gln Ala Pro Gly Lys Gly Leu Glu Trp Val
35 40 45

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

Lys Gly Arg Phe Thr Ile Ser Arg Asp Asn Ser Lys Asn Thr Leu Tyr
65 70 75 80



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

Thr Arg His Leu Asp Tyr Ala Asn Tyr Asp Ala Met Asp Tyr Trp Gly
100 105 110

Gln Gly Thr Leu Val Thr Val Ser Ser
115 120

<210> 4
<211> 121
<212> PRT
<213> Artificial Sequence

<220>
<223> Humanized antibody heavy chain variable region 4 (H04)

<400> 4

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

Ser Leu Arg Leu Ser Cys Ala Val Ser Gly Phe Thr Phe Ser Asn Tyr
20 25 30

Gly Met Ser Trp Val Arg Gln Ala Pro Gly Lys Gly Leu Glu Trp Val
35 40 45

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

Lys Gly Arg Phe Thr Ile Ser Arg Asp Asn Ser Arg Asn Thr Leu Tyr
65 70 75 80

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

Thr Arg His Leu Asp Tyr Ala Asn Tyr Asp Ala Met Asp Tyr Trp Gly
100 105 110

Gln Gly Thr Pro Val Thr Val Ser Ser
115 120

<210> 5
<211> 111
<212> PRT
<213> Artificial Sequence

<220>
<223> Humanized antibody light chain variable region 1 (L01)

<400> 5

Asp Ile Val Met Thr Gln Ser Pro Ser Ser Leu Ser Ala Ser Val Gly



1 5 10 15
 Asp Arg Val Thr Ile Thr Cys Arg Ala Ser Lys Ser Val Thr Thr Ser
 20 25 30
 Asp Phe Ser Tyr Met His Trp Tyr Gln Gln Lys Pro Gly Lys Ala Pro
 35 40 45
 Lys Leu Leu Ile Tyr Leu Ala Ser Asn Leu Glu Ser Gly Val Pro Ser
 50 55 60
 Arg Phe Ser Gly Ser Gly Ser Gly Thr Asp Phe Thr Leu Thr Ile Ser
 65 70 75 80
 Ser Leu Gln Pro Glu Asp Phe Ala Thr Tyr Tyr Cys Gln His Ser Arg
 85 90 95
 Glu Phe Pro Trp Thr Phe Gly Gly Gly Thr Lys Val Glu Ile Lys
 100 105 110

 <210> 6
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 <212> PRT
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 <220>
 <223> Humanized antibody light chain variable region 2 (L02)

 <400> 6
 Asp Val Val 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 Lys Ser Val Thr Thr Ser
 20 25 30
 Asp Phe Ser Tyr Met His Trp Tyr Gln Gln Lys Pro Gly Gln Ala Pro
 35 40 45
 Lys Leu Leu Ile Tyr Leu Ala Ser Asn Leu Glu Ser Gly Val Pro Ser
 50 55 60
 Arg Phe Ser Gly Ser Gly Ser Gly Thr Asp Phe Thr Leu Thr Ile Ser
 65 70 75 80
 Ser Leu Gln Pro Glu Asp Phe Ala Thr Tyr Tyr Cys Gln His Ser Arg
 85 90 95
 Glu Phe Pro Trp Thr Phe Gly Gln Gly Thr Lys Leu Glu Ile Lys
 100 105 110



<210> 7
<211> 111
<212> PRT
<213> Artificial Sequence

<220>
<223> Humanized antibody light chain variable region 3 (L03)

<400> 7

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

Asp Arg Val Thr Ile Thr Cys Arg Ala Ser Lys Ser Val Thr Thr Ser
20 25 30

Asp Phe Ser Tyr Met His Trp Tyr Gln Gln Lys Pro Gly Lys Ser Pro
35 40 45

Lys Leu Leu Ile Tyr Leu Ala Ser Asn Leu Glu Ser Gly Val Pro Ser
50 55 60

Arg Phe Ser Gly Ser Gly Ser Gly Thr Asp Phe Ser Leu Thr Ile Ser
65 70 75 80

Ser Leu Gln Pro Glu Asp Phe Ala Thr Tyr Tyr Cys Gln His Ser Arg
85 90 95

Glu Phe Pro Trp Thr Phe Gly Gly Gly Thr Lys Val Glu Ile Lys
100 105 110

<210> 8
<211> 111
<212> PRT
<213> Artificial Sequence

<220>
<223> Humanized antibody light chain variable region 4 (L04)

<400> 8

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

Glu Arg Ala Thr Ile Asn Cys Lys Ala Ser Lys Ser Val Thr Thr Ser
20 25 30

Asp Phe Ser Tyr Leu His Trp Tyr Gln Gln Lys Pro Gly Gln Pro Pro
35 40 45

Lys Leu Leu Ile Tyr Leu Ala Ser Asn Leu Glu Ser Gly Val Pro Asp
50 55 60

Arg Phe Ser Gly Ser Gly Ser Gly Thr Asp Phe Thr Leu Thr Ile Ser



65		70		75		80									
Ser	Leu	Gln	Ala	Glu	Asp	Val	Ala	Val	Tyr	Tyr	Cys	Gln	His	Ser	Arg
				85					90					95	

Glu	Phe	Pro	Trp	Thr	Phe	Gly	Gly	Gly	Thr	Lys	Leu	Glu	Ile	Lys
			100					105					110	

<210> 9
 <211> 121
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> Humanized antibody heavy chain variable region 5 (H05)

<400> 9

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

Ser	Leu	Arg	Leu	Ser	Cys	Ala	Ala	Ser	Gly	Phe	Thr	Phe	Ser	Asn	Tyr
			20					25						30	

Gly	Met	Ser	Trp	Val	Arg	Gln	Ala	Pro	Gly	Lys	Gly	Leu	Glu	Trp	Val
		35					40					45			

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

Lys	Gly	Arg	Phe	Thr	Ile	Ser	Arg	Asp	Asn	Ser	Lys	Asn	Thr	Leu	Tyr
65					70					75				80	

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

Ala	Lys	His	Leu	Asp	Tyr	Ala	Asn	Tyr	Asp	Ala	Met	Asp	Tyr	Trp	Gly
			100					105					110		

Gln	Gly	Thr	Leu	Val	Thr	Val	Ser	Ser
			115				120	

<210> 10
 <211> 121
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> Humanized antibody heavy chain variable region 6 (H06)

<400> 10

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



Ser Leu Arg Leu Ser Cys Ala Ala Ser Gly Phe Thr Phe Ser Asn Tyr
20 25 30

Gly Met Ser Trp Val Arg Gln Ala Pro Gly Lys Gly Leu Glu Trp Val
35 40 45

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

Lys Gly Arg Phe Thr Ile Ser Arg Asp Asn Ala Lys Asn Ser Leu Tyr
65 70 75 80

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

Ala Arg His Leu Asp Tyr Ala Asn Tyr Asp Ala Met Asp Tyr Trp Gly
100 105 110

Gln Gly Thr Leu Val Thr Val Ser Ser
115 120

<210> 11
<211> 111
<212> PRT
<213> Artificial Sequence

<220>
<223> Humanized antibody light chain variable region 5 (L05)

<400> 11

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

Asp Arg Val Thr Ile Thr Cys Arg Ala Ser Lys Ser Val Thr Thr Ser
20 25 30

Asp Phe Ser Tyr Met His Trp Tyr Gln Gln Lys Pro Gly Leu Ala Pro
35 40 45

Lys Leu Leu Ile Tyr Leu Ala Ser Asn Leu Glu Ser Gly Val Pro Ser
50 55 60

Arg Phe Ser Gly Ser Gly Ser Gly Thr Asp Phe Thr Phe Thr Ile Ser
65 70 75 80

Ser Leu Gln Pro Glu Asp Ile Ala Thr Tyr Tyr Cys Gln His Ser Arg
85 90 95

Glu Phe Pro Trp Thr Phe Gly Gln Gly Thr Lys Val Glu Val Lys



100

105

110

<210> 12
 <211> 111
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> Humanized antibody light chain variable region 6 (L06)

<400> 12

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

Gln Pro Ala Ser Ile Ser Cys Arg Ala Ser Lys Ser Val Thr Thr Ser
 20 25 30

Asp Phe Ser Tyr Met His Trp Leu Gln Gln Arg Pro Gly Gln Pro Pro
 35 40 45

Arg Leu Leu Ile Tyr Leu Ala Ser Asn Leu Glu Ser Gly Val Pro Asp
 50 55 60

Arg Phe Ser Gly Ser Gly Ala Gly Thr Asp Phe Thr Leu Lys Ile Ser
 65 70 75 80

Arg Val Glu Ala Glu Asp Val Gly Val Tyr Tyr Cys Gln His Ser Arg
 85 90 95

Glu Phe Pro Trp Thr Phe Gly Gln Gly Thr Lys Val Glu Ile Lys
 100 105 110

<210> 13
 <211> 111
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> Humanized antibody light chain variable region 7 (L07)

<400> 13

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

Gln Pro Ala Ser Ile Ser Cys Arg Ala Ser Lys Ser Val Thr Thr Ser
 20 25 30

Asp Phe Ser Tyr Met His Trp Tyr Leu Gln Lys Pro Gly Gln Pro Pro
 35 40 45

Gln Leu Leu Ile Tyr Leu Ala Ser Asn Leu Glu Ser Gly Val Pro Asp
 50 55 60



Arg Phe Ser Gly Ser Gly Ser Gly Thr Asp Phe Thr Leu Lys Ile Ser
65 70 75 80

Arg Val Glu Ala Glu Asp Val Gly Val Tyr Tyr Cys Gln His Ser Arg
85 90 95

Glu Phe Pro Trp Thr Phe Gly Gln Gly Thr Lys Val Glu Ile Lys
100 105 110

<210> 14
<211> 121
<212> PRT
<213> Artificial Sequence

<220>
<223> Kimeric antibody heavy chain variable region 7 (H07)

<400> 14

Glu Val Lys Leu Val Glu Ser Gly Gly Val Leu Val Lys Ser Gly Gly
1 5 10 15

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

Gly Met Ser Trp Val Arg Gln Thr Pro Glu Lys Arg Leu Glu Trp Val
35 40 45

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

Lys Gly Pro Phe Ala Ile Ser Arg Asp Asn Ala Lys Asn Asn Leu Tyr
65 70 75 80

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

Thr Arg His Leu Asp Tyr Ala Asn Tyr Asp Ala Met Asp Tyr Trp Gly
100 105 110

Gln Gly Thr Ser Val Thr Val Ser Ser
115 120

<210> 15
<211> 111
<212> PRT
<213> Artificial Sequence

<220>
<223> Kimeric antibody light chain variable region 8 (L08)

<400> 15



Asp	Ile	Val	Leu	Thr	Gln	Ser	Pro	Ala	Ser	Leu	Ala	Val	Ser	Leu	Gly
1				5					10					15	
Gln	Arg	Ala	Thr	Ile	Ser	Cys	Arg	Ala	Ser	Lys	Ser	Val	Thr	Thr	Ser
			20					25					30		
Asp	Phe	Ser	Tyr	Met	His	Trp	Tyr	Gln	Gln	Lys	Pro	Gly	Gln	Pro	Pro
		35					40					45			
Lys	Leu	Leu	Leu	Tyr	Leu	Ala	Ser	Asn	Leu	Glu	Ser	Gly	Val	Pro	Asp
	50					55					60				
Arg	Phe	Ser	Gly	Ser	Gly	Ser	Gly	Tyr	Asp	Phe	Tyr	Leu	Asn	Ile	His
65					70					75					80
Pro	Val	Glu	Glu	Glu	Asp	Ala	Ala	Thr	Tyr	Tyr	Cys	Gln	His	Ser	Arg
				85					90					95	
Glu	Phe	Pro	Trp	Thr	Phe	Gly	Gly	Gly	Thr	Lys	Leu	Glu	Ile	Lys	
			100					105					110		

