

SEQUENCE LISTING

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<120> CD79A CHIMERIC ANTIGEN RECEPTORS

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<150> US 62/685,078

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<160> 79

<170> PatentIn version 3.5

<210> 1

<211> 16

<212> PRT

<213> Artificial Sequence

<220>

<223> Made in Lab - Light chain CDR1

<400> 1

Arg	Ser	Ser	Gln	Ser	Ile	Val	His	Ser	Asn	Gly	Asn	Thr	Tyr	Leu	Glu
1				5					10					15	

<210> 2

<211> 7

<212> PRT

<213> Artificial Sequence

<220>

<223> Made in Lab - Light chain CDR2

<400> 2

Lys	Val	Ser	Asn	Arg	Phe	Ser
1				5		

<210> 3

<211> 9

<212> PRT

<213> Artificial Sequence

<220>
<223> Made in Lab - Light Chain CDR3

<400> 3

Phe Gln Gly Ser His Val Pro Phe Thr
1 5

<210> 4
<211> 10
<212> PRT
<213> Artificial Sequence

<220>
<223> Made in Lab - Heavy chain CDR1

<400> 4

Gly Tyr Thr Phe Ser Thr Ser Trp Met Asn
1 5 10

<210> 5
<211> 17
<212> PRT
<213> Artificial Sequence

<220>
<223> Made in Lab - Heavy chain CDR2

<400> 5

Arg Ile Tyr Pro Gly Asp Gly Asp Thr Asn Tyr Asn Gly Lys Phe Lys
1 5 10 15

Gly

<210> 6
<211> 11
<212> PRT
<213> Artificial Sequence

<220>
<223> Made in Lab - Heavy chain CDR6

<400> 6

Phe Tyr Tyr Gly Asn Thr Phe Ala Met Asp Tyr
1 5 10

<210> 7
<211> 112
<212> PRT
<213> Artificial Sequence

<220>
<223> Made in Lab - Variable light chain

<400> 7

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

Asp Gln Ala Ser Ile Ser Cys Arg Ser Ser Gln Ser Ile Val His Ser
20 25 30

Asn Gly Asn Thr Tyr Leu Glu Trp Tyr Leu Gln Lys Pro Gly Gln Ser
35 40 45

Pro Lys Leu Leu Ile Tyr Lys Val Ser Asn Arg Phe Ser Gly Val Pro
50 55 60

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

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

Ser His Val Pro Phe Thr Phe Gly Ser Gly Thr Lys Leu Glu Ile Lys
100 105 110

<210> 8
<211> 120
<212> PRT
<213> Artificial Sequence

<220>
<223> Made in Lab - Variable heavy chain

<400> 8

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

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

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

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

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

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

Glu Arg Phe Tyr Tyr Gly Asn Thr Phe Ala Met Asp Tyr Trp Gly Gln
100 105 110

Gly Thr Ser Val Thr Val Ser Ser
115 120

<210> 9

<211> 16

<212> PRT

<213> Artificial Sequence

<220>

<223> Made in Lab - Light chain CDR1

<400> 9

Arg Ser Ser Gln Ser Leu Val His Ser Asn Gly Asn Thr Tyr Leu His
1 5 10 15

<210> 10

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

<220>
<223> Made in Lab - Light chain CDR2

<400> 10

Lys Val Ser Asn Arg Phe Ser
1 5

<210> 11
<211> 10
<212> PRT
<213> Artificial Sequence

<220>
<223> Made in Lab - Light Chain CDR3

<400> 11

Ser Gln Ser Thr His Val Pro Pro Tyr Thr
1 5 10

<210> 12
<211> 10
<212> PRT
<213> Artificial Sequence

<220>
<223> Made in Lab - Heavy chain CDR1

<400> 12

Gly Tyr Ala Phe Ser Phe Ser Trp Met Asn
1 5 10

<210> 13
<211> 17
<212> PRT
<213> Artificial Sequence

<220>
<223> Made in Lab - Heavy chain CDR2

<400> 13

Arg Ile Tyr Pro Gly Asn Gly Asp Thr Asn Tyr Asn Gly Lys Phe Lys
1 5 10 15

Gly

<210> 14
<211> 12
<212> PRT
<213> Artificial Sequence

<220>
<223> Made in Lab - Heavy chain CDR6

<400> 14

Trp Val Tyr Ser Gly Asn Asn Tyr Ala Val Asp Tyr
1 5 10

<210> 15
<211> 113
<212> PRT
<213> Artificial Sequence

<220>
<223> Made in Lab - Variable light chain

<400> 15

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

Asp Gln Ala Ser Ile Ser Cys Arg Ser Ser Gln Ser Leu Val His Ser
20 25 30

Asn Gly Asn Thr Tyr Leu His Trp Tyr Leu Gln Lys Pro Gly Gln Ser
35 40 45

Pro Lys Leu Leu Ile Tyr Lys Val Ser Asn Arg Phe Ser Gly Val Pro
50 55 60

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

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

Thr	His	Val	Pro	Pro	Tyr	Thr	Phe	Gly	Gly	Gly	Thr	Lys	Leu	Glu	Ile
		100						105					110		

Lys

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

<220>
 <223> Made in Lab - Variable heavy chain

<400> 16

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

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

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

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

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

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

Ala	Arg	Trp	Val	Tyr	Ser	Gly	Asn	Asn	Tyr	Ala	Val	Asp	Tyr	Trp	Gly
-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----

100

105

110

Gln Gly Thr Ser Val Thr Val Ser Ser
115 120

<210> 17
<211> 14
<212> PRT
<213> Artificial Sequence

<220>
<223> Made in Lab - Light chain CDR1

<400> 17

Thr Gly Thr Ser Ser Asp Phe Gly Ser Tyr Asn Leu Val Ser
1 5 10

<210> 18
<211> 7
<212> PRT
<213> Artificial Sequence

<220>
<223> Made in Lab - Light chain CDR2

<400> 18

Glu Gly Ser Lys Arg Pro Ser
1 5

<210> 19
<211> 10
<212> PRT
<213> Artificial Sequence

<220>
<223> Made in Lab - Light Chain CDR3

<400> 19

Cys Ser Tyr Ala Gly Gly Ser Thr Trp Val
1 5 10

<210> 20

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

<220>
<223> Made in Lab - Heavy chain CDR1

<400> 20

Gly Leu Thr Phe Thr Ser Tyr Ala Met Asn
1 5 10

<210> 21
<211> 17
<212> PRT
<213> Artificial Sequence

<220>
<223> Made in Lab - Heavy chain CDR2

<400> 21

Gly Ile Ser Gly Ser Gly Gly Gly Thr Tyr Tyr Ala Asp Ser Val Lys
1 5 10 15

Gly

<210> 22
<211> 7
<212> PRT
<213> Artificial Sequence

<220>
<223> Made in Lab - Heavy chain CDR6

<400> 22

Leu Gly Gly Trp Ser Asp Tyr
1 5

<210> 23
<211> 110
<212> PRT
<213> Artificial Sequence

<220>

<223> Made in Lab - Variablb light chain

<400> 23

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

Ser Ile Thr Ile Ser Cys Thr Gly Thr Ser Ser Asp Phe Gly Ser Tyr
20 25 30

Asn Leu Val Ser Trp Tyr Gln Gln His Pro Gly Lys Ala Pro Lys Leu
35 40 45

Met Ile Tyr Glu Gly Ser Lys Arg Pro Ser Gly Val Ser Asn Arg Phe
50 55 60

Ser Gly Ser Lys Ser Gly Asn Thr Ala Ser Leu Thr Ile Ser Gly Leu
65 70 75 80

Gln Ala Glu Asp Glu Ala Asp Tyr Tyr Cys Cys Ser Tyr Ala Gly Gly
85 90 95

Ser Thr Trp Val Phe Gly Gly Gly Thr Lys Leu Thr Val Leu
100 105 110

<210> 24

<211> 116

<212> PRT

<213> Artificial Sequence

<220>

<223> Made in Lab - Variable heavy chain

<400> 24

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 Leu Thr Phe Thr Ser Tyr
20 25 30

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

Ser Gly Ile Ser Gly Ser Gly Gly Gly Thr Tyr Tyr Ala 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 Leu Gly Gly Trp Ser Asp Tyr Trp Gly Gln Gly Thr Leu Val
100 105 110

Thr Val Ser Ser
115

<210> 25

<211> 492

<212> PRT

<213> Artificial Sequence

<220>

<223> Made in Lab - anti-CD79A-01_HL CAR construct

<400> 25

Met Ala Leu Pro Val Thr Ala Leu Leu Leu Pro Leu Ala Leu Leu Leu
1 5 10 15

His Ala Ala Arg Pro Gln Val Gln Leu Gln Gln Ser Gly Pro Glu Leu
20 25 30

Val Lys Pro Gly Ala Ser Val Lys Ile Ser Cys Lys Ala Ser Gly Tyr
35 40 45

Thr Phe Ser Thr Ser Trp Met Asn Trp Val Lys Gln Arg Pro Gly Gln
50 55 60

Gly Leu Glu Trp Ile Gly Arg Ile Tyr Pro Gly Asp Gly Asp Thr Asn
65 70 75 80

Tyr Asn Gly Lys Phe Lys Gly Lys Ala Thr Leu Thr Ala Asp Lys Ser
85 90 95

Ser Asn Thr Ala Tyr Met Gln Leu Ser Ser Leu Thr Ser Val Asp Ser
100 105 110

Ala Val Tyr Phe Cys Glu Arg Phe Tyr Tyr Gly Asn Thr Phe Ala Met
115 120 125

Asp Tyr Trp Gly Gln Gly Thr Ser Val Thr Val Ser Ser Gly Gly Gly
130 135 140

Gly Ser Gly Gly Gly Gly Ser Gly Gly Gly Gly Ser Asp Val Leu Met
145 150 155 160

Thr Gln Ile Pro Leu Ser Leu Pro Val Ser Leu Gly Asp Gln Ala Ser
165 170 175

Ile Ser Cys Arg Ser Ser Gln Ser Ile Val His Ser Asn Gly Asn Thr
180 185 190

Tyr Leu Glu Trp Tyr Leu Gln Lys Pro Gly Gln Ser Pro Lys Leu Leu
195 200 205

Ile Tyr Lys Val Ser Asn Arg Phe Ser Gly Val Pro Asp Arg Phe Ser
210 215 220

Gly Ser Gly Ser Gly Thr Asp Phe Thr Leu Lys Ile Ser Arg Val Glu
225 230 235 240

Ala Glu Asp Leu Gly Val Tyr Tyr Cys Phe Gln Gly Ser His Val Pro
245 250 255

Phe Thr Phe Gly Ser Gly Thr Lys Leu Glu Ile Lys Arg Thr Thr Thr

260

265

270

Pro Ala Pro Arg Pro Pro Thr Pro Ala Pro Thr Ile Ala Ser Gln Pro
 275 280 285

Leu Ser Leu Arg Pro Glu Ala Cys Arg Pro Ala Ala Gly Gly Ala Val
 290 295 300

His Thr Arg Gly Leu Asp Phe Ala Cys Asp Ile Tyr Ile Trp Ala Pro
 305 310 315 320

Leu Ala Gly Thr Cys Gly Val Leu Leu Leu Ser Leu Val Ile Thr Leu
 325 330 335

Tyr Cys Lys Arg Gly Arg Lys Lys Leu Leu Tyr Ile Phe Lys Gln Pro
 340 345 350

Phe Met Arg Pro Val Gln Thr Thr Gln Glu Glu Asp Gly Cys Ser Cys
 355 360 365

Arg Phe Pro Glu Glu Glu Glu Gly Gly Cys Glu Leu Arg Val Lys Phe
 370 375 380

Ser Arg Ser Ala Asp Ala Pro Ala Tyr Gln Gln Gly Gln Asn Gln Leu
 385 390 395 400

Tyr Asn Glu Leu Asn Leu Gly Arg Arg Glu Glu Tyr Asp Val Leu Asp
 405 410 415

Lys Arg Arg Gly Arg Asp Pro Glu Met Gly Gly Lys Pro Arg Arg Lys
 420 425 430

Asn Pro Gln Glu Gly Leu Tyr Asn Glu Leu Gln Lys Asp Lys Met Ala
 435 440 445

Glu Ala Tyr Ser Glu Ile Gly Met Lys Gly Glu Arg Arg Arg Gly Lys
 450 455 460

Gly His Asp Gly Leu Tyr Gln Gly Leu Ser Thr Ala Thr Lys Asp Thr
465 470 475 480

Tyr Asp Ala Leu His Met Gln Ala Leu Pro Pro Arg
485 490

<210> 26
<211> 492
<212> PRT
<213> Artificial Sequence

<220>
<223> Made in Lab - anti-CD79A-01_LH CAR construct

<400> 26

Met Ala Leu Pro Val Thr Ala Leu Leu Leu Pro Leu Ala Leu Leu Leu
1 5 10 15

His Ala Ala Arg Pro Asp Val Leu Met Thr Gln Ile Pro Leu Ser Leu
20 25 30

Pro Val Ser Leu Gly Asp Gln Ala Ser Ile Ser Cys Arg Ser Ser Gln
35 40 45

Ser Ile Val His Ser Asn Gly Asn Thr Tyr Leu Glu Trp Tyr Leu Gln
50 55 60

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

Phe Ser Gly Val Pro Asp Arg Phe Ser Gly Ser Gly Ser Gly Thr Asp
85 90 95

Phe Thr Leu Lys Ile Ser Arg Val Glu Ala Glu Asp Leu Gly Val Tyr
100 105 110

Tyr Cys Phe Gln Gly Ser His Val Pro Phe Thr Phe Gly Ser Gly Thr
115 120 125

Lys Leu Glu Ile Lys Arg Gly Gly Gly Gly Ser Gly Gly Gly Gly Ser
130 135 140

Gly Gly Gly Gly Ser Gln Val Gln Leu Gln Gln Ser Gly Pro Glu Leu
145 150 155 160

Val Lys Pro Gly Ala Ser Val Lys Ile Ser Cys Lys Ala Ser Gly Tyr
165 170 175

Thr Phe Ser Thr Ser Trp Met Asn Trp Val Lys Gln Arg Pro Gly Gln
180 185 190

Gly Leu Glu Trp Ile Gly Arg Ile Tyr Pro Gly Asp Gly Asp Thr Asn
195 200 205

Tyr Asn Gly Lys Phe Lys Gly Lys Ala Thr Leu Thr Ala Asp Lys Ser
210 215 220

Ser Asn Thr Ala Tyr Met Gln Leu Ser Ser Leu Thr Ser Val Asp Ser
225 230 235 240

Ala Val Tyr Phe Cys Glu Arg Phe Tyr Tyr Gly Asn Thr Phe Ala Met
245 250 255

Asp Tyr Trp Gly Gln Gly Thr Ser Val Thr Val Ser Ser Thr Thr Thr
260 265 270

Pro Ala Pro Arg Pro Pro Thr Pro Ala Pro Thr Ile Ala Ser Gln Pro
275 280 285

Leu Ser Leu Arg Pro Glu Ala Cys Arg Pro Ala Ala Gly Gly Ala Val
290 295 300

His Thr Arg Gly Leu Asp Phe Ala Cys Asp Ile Tyr Ile Trp Ala Pro
305 310 315 320

Leu Ala Gly Thr Cys Gly Val Leu Leu Leu Ser Leu Val Ile Thr Leu

325

330

335

Tyr Cys Lys Arg Gly Arg Lys Lys Leu Leu Tyr Ile Phe Lys Gln Pro
 340 345 350

Phe Met Arg Pro Val Gln Thr Thr Gln Glu Glu Asp Gly Cys Ser Cys
 355 360 365

Arg Phe Pro Glu Glu Glu Glu Gly Gly Cys Glu Leu Arg Val Lys Phe
 370 375 380

Ser Arg Ser Ala Asp Ala Pro Ala Tyr Gln Gln Gly Gln Asn Gln Leu
 385 390 395 400

Tyr Asn Glu Leu Asn Leu Gly Arg Arg Glu Glu Tyr Asp Val Leu Asp
 405 410 415

Lys Arg Arg Gly Arg Asp Pro Glu Met Gly Gly Lys Pro Arg Arg Lys
 420 425 430

Asn Pro Gln Glu Gly Leu Tyr Asn Glu Leu Gln Lys Asp Lys Met Ala
 435 440 445

Glu Ala Tyr Ser Glu Ile Gly Met Lys Gly Glu Arg Arg Arg Gly Lys
 450 455 460

Gly His Asp Gly Leu Tyr Gln Gly Leu Ser Thr Ala Thr Lys Asp Thr
 465 470 475 480

Tyr Asp Ala Leu His Met Gln Ala Leu Pro Pro Arg
 485 490

<210> 27

<211> 493

<212> PRT

<213> Artificial Sequence

<220>

<223> Made in Lab - anti-CD79A-10_HL CAR construct

<400> 27

Met Ala Leu Pro Val Thr Ala Leu Leu Leu Pro Leu Ala Leu Leu Leu
1 5 10 15

His Ala Ala Arg Pro Gln Val Gln Leu Gln Gln Ser Gly Pro Glu Leu
20 25 30

Val Lys Pro Gly Ala Ser Val Lys Ile Ser Cys Lys Thr Ser Gly Tyr
35 40 45

Ala Phe Ser Phe Ser Trp Met Asn Trp Val Lys Trp Gly Pro Gly Gln
50 55 60

Gly Leu Glu Trp Ile Gly Arg Ile Tyr Pro Gly Asn Gly Asp Thr Asn
65 70 75 80

Tyr Asn Gly Lys Phe Lys Gly Lys Ala Thr Leu Thr Ala Asp Lys Ser
85 90 95

Ser Asn Thr Ala Tyr Met Gln Leu Ser Ser Leu Thr Ser Val Asp Ser
100 105 110

Ala Val Tyr Phe Cys Ala Arg Trp Val Tyr Ser Gly Asn Asn Tyr Ala
115 120 125

Val Asp Tyr Trp Gly Gln Gly Thr Ser Val Thr Val Ser Ser Gly Gly
130 135 140

Gly Gly Ser Gly Gly Gly Gly Ser Gly Gly Gly Gly Ser Asp Val Val
145 150 155 160

Met Thr Gln Thr Pro Leu Ser Leu Pro Val Ser Leu Gly Asp Gln Ala
165 170 175

Ser Ile Ser Cys Arg Ser Ser Gln Ser Leu Val His Ser Asn Gly Asn
180 185 190

Thr Tyr Leu His Trp Tyr Leu Gln Lys Pro Gly Gln Ser Pro Lys Leu
195 200 205

Leu Ile Tyr Lys Val Ser Asn Arg Phe Ser Gly Val Pro Asp Arg Phe
210 215 220

Ser Gly Ser Gly Ser Gly Thr Asp Phe Thr Leu Lys Ile Ser Arg Val
225 230 235 240

Glu Ala Glu Asp Leu Gly Val Tyr Phe Cys Ser Gln Ser Thr His Val
245 250 255

Pro Pro Tyr Thr Phe Gly Gly Gly Thr Lys Leu Glu Ile Lys Thr Thr
260 265 270

Thr Pro Ala Pro Arg Pro Pro Thr Pro Ala Pro Thr Ile Ala Ser Gln
275 280 285

Pro Leu Ser Leu Arg Pro Glu Ala Cys Arg Pro Ala Ala Gly Gly Ala
290 295 300

Val His Thr Arg Gly Leu Asp Phe Ala Cys Asp Ile Tyr Ile Trp Ala
305 310 315 320

Pro Leu Ala Gly Thr Cys Gly Val Leu Leu Leu Ser Leu Val Ile Thr
325 330 335

Leu Tyr Cys Lys Arg Gly Arg Lys Lys Leu Leu Tyr Ile Phe Lys Gln
340 345 350

Pro Phe Met Arg Pro Val Gln Thr Thr Gln Glu Glu Asp Gly Cys Ser
355 360 365

Cys Arg Phe Pro Glu Glu Glu Glu Gly Gly Cys Glu Leu Arg Val Lys
370 375 380

Phe Ser Arg Ser Ala Asp Ala Pro Ala Tyr Gln Gln Gly Gln Asn Gln

385 390 395 400

Leu Tyr Asn Glu Leu Asn Leu Gly Arg Arg Glu Glu Tyr Asp Val Leu
405 410 415

Asp Lys Arg Arg Gly Arg Asp Pro Glu Met Gly Gly Lys Pro Arg Arg
420 425 430

Lys Asn Pro Gln Glu Gly Leu Tyr Asn Glu Leu Gln Lys Asp Lys Met
435 440 445

Ala Glu Ala Tyr Ser Glu Ile Gly Met Lys Gly Glu Arg Arg Arg Gly
450 455 460

Lys Gly His Asp Gly Leu Tyr Gln Gly Leu Ser Thr Ala Thr Lys Asp
465 470 475 480

Thr Tyr Asp Ala Leu His Met Gln Ala Leu Pro Pro Arg
485 490

<210> 28
<211> 493
<212> PRT
<213> Artificial Sequence

<220>
<223> Made in Lab - anti-CD79A-10_LH CAR construct

<400> 28

Met Ala Leu Pro Val Thr Ala Leu Leu Leu Pro Leu Ala Leu Leu Leu
1 5 10 15

His Ala Ala Arg Pro Asp Val Val Met Thr Gln Thr Pro Leu Ser Leu
20 25 30

Pro Val Ser Leu Gly Asp Gln Ala Ser Ile Ser Cys Arg Ser Ser Gln
35 40 45

Ser Leu Val His Ser Asn Gly Asn Thr Tyr Leu His Trp Tyr Leu Gln

50

55

60

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

Phe Ser Gly Val Pro Asp Arg Phe Ser Gly Ser Gly Ser Gly Thr Asp
 85 90 95

Phe Thr Leu Lys Ile Ser Arg Val Glu Ala Glu Asp Leu Gly Val Tyr
 100 105 110

Phe Cys Ser Gln Ser Thr His Val Pro Pro Tyr Thr Phe Gly Gly Gly
 115 120 125

Thr Lys Leu Glu Ile Lys Gly Gly Gly Gly Ser Gly Gly Gly Gly Ser
 130 135 140

Gly Gly Gly Gly Ser Gln Val Gln Leu Gln Gln Ser Gly Pro Glu Leu
 145 150 155 160

Val Lys Pro Gly Ala Ser Val Lys Ile Ser Cys Lys Thr Ser Gly Tyr
 165 170 175

Ala Phe Ser Phe Ser Trp Met Asn Trp Val Lys Trp Gly Pro Gly Gln
 180 185 190

Gly Leu Glu Trp Ile Gly Arg Ile Tyr Pro Gly Asn Gly Asp Thr Asn
 195 200 205

Tyr Asn Gly Lys Phe Lys Gly Lys Ala Thr Leu Thr Ala Asp Lys Ser
 210 215 220

Ser Asn Thr Ala Tyr Met Gln Leu Ser Ser Leu Thr Ser Val Asp Ser
 225 230 235 240

Ala Val Tyr Phe Cys Ala Arg Trp Val Tyr Ser Gly Asn Asn Tyr Ala
 245 250 255

Val Asp Tyr Trp Gly Gln Gly Thr Ser Val Thr Val Ser Ser Thr Thr
260 265 270

Thr Pro Ala Pro Arg Pro Pro Thr Pro Ala Pro Thr Ile Ala Ser Gln
275 280 285

Pro Leu Ser Leu Arg Pro Glu Ala Cys Arg Pro Ala Ala Gly Gly Ala
290 295 300

Val His Thr Arg Gly Leu Asp Phe Ala Cys Asp Ile Tyr Ile Trp Ala
305 310 315 320

Pro Leu Ala Gly Thr Cys Gly Val Leu Leu Leu Ser Leu Val Ile Thr
325 330 335

Leu Tyr Cys Lys Arg Gly Arg Lys Lys Leu Leu Tyr Ile Phe Lys Gln
340 345 350

Pro Phe Met Arg Pro Val Gln Thr Thr Gln Glu Glu Asp Gly Cys Ser
355 360 365

Cys Arg Phe Pro Glu Glu Glu Glu Gly Gly Cys Glu Leu Arg Val Lys
370 375 380

Phe Ser Arg Ser Ala Asp Ala Pro Ala Tyr Gln Gln Gly Gln Asn Gln
385 390 395 400

Leu Tyr Asn Glu Leu Asn Leu Gly Arg Arg Glu Glu Tyr Asp Val Leu
405 410 415

Asp Lys Arg Arg Gly Arg Asp Pro Glu Met Gly Gly Lys Pro Arg Arg
420 425 430

Lys Asn Pro Gln Glu Gly Leu Tyr Asn Glu Leu Gln Lys Asp Lys Met
435 440 445

Ala Glu Ala Tyr Ser Glu Ile Gly Met Lys Gly Glu Arg Arg Arg Gly

450

455

460

Lys Gly His Asp Gly Leu Tyr Gln Gly Leu Ser Thr Ala Thr Lys Asp
 465 470 475 480

Thr Tyr Asp Ala Leu His Met Gln Ala Leu Pro Pro Arg
 485 490

<210> 29

<211> 485

<212> PRT

<213> Artificial Sequence

<220>

<223> Made in Lab - anti-CD79A-02_HL CAR construct

<400> 29

Met Ala Leu Pro Val Thr Ala Leu Leu Leu Pro Leu Ala Leu Leu Leu
 1 5 10 15

His Ala Ala Arg Pro Glu Val Gln Leu Leu Glu Ser Gly Gly Gly Leu
 20 25 30

Val Gln Pro Gly Gly Ser Leu Arg Leu Ser Cys Ala Ala Ser Gly Leu
 35 40 45

Thr Phe Thr Ser Tyr Ala Met Asn Trp Val Arg Gln Ala Pro Gly Lys
 50 55 60

Gly Leu Glu Trp Val Ser Gly Ile Ser Gly Ser Gly Gly Gly Thr Tyr
 65 70 75 80

Tyr Ala Asp Ser Val Lys Gly Arg Phe Thr Ile Ser Arg Asp Asn Ser
 85 90 95

Lys Asn Thr Leu Tyr Leu Gln Met Asn Ser Leu Arg Ala Glu Asp Thr
 100 105 110

Ala Val Tyr Tyr Cys Ala Lys Leu Gly Gly Trp Ser Asp Tyr Trp Gly

115

120

125

Gln Gly Thr Leu Val Thr Val Ser Ser Gly Gly Gly Gly Ser Gly Gly
 130 135 140

Gly Gly Ser Gly Gly Gly Gly Ser Gln Ser Ala Leu Thr Gln Pro Ala
 145 150 155 160

Ser Val Ser Gly Ser Pro Gly Gln Ser Ile Thr Ile Ser Cys Thr Gly
 165 170 175

Thr Ser Ser Asp Phe Gly Ser Tyr Asn Leu Val Ser Trp Tyr Gln Gln
 180 185 190

His Pro Gly Lys Ala Pro Lys Leu Met Ile Tyr Glu Gly Ser Lys Arg
 195 200 205

Pro Ser Gly Val Ser Asn Arg Phe Ser Gly Ser Lys Ser Gly Asn Thr
 210 215 220

Ala Ser Leu Thr Ile Ser Gly Leu Gln Ala Glu Asp Glu Ala Asp Tyr
 225 230 235 240

Tyr Cys Cys Ser Tyr Ala Gly Gly Ser Thr Trp Val Phe Gly Gly Gly
 245 250 255

Thr Lys Leu Thr Val Leu Thr Thr Thr Pro Ala Pro Arg Pro Pro Thr
 260 265 270

Pro Ala Pro Thr Ile Ala Ser Gln Pro Leu Ser Leu Arg Pro Glu Ala
 275 280 285

Cys Arg Pro Ala Ala Gly Gly Ala Val His Thr Arg Gly Leu Asp Phe
 290 295 300

Ala Cys Asp Ile Tyr Ile Trp Ala Pro Leu Ala Gly Thr Cys Gly Val
 305 310 315 320

Leu Leu Leu Ser Leu Val Ile Thr Leu Tyr Cys Lys Arg Gly Arg Lys
325 330 335

Lys Leu Leu Tyr Ile Phe Lys Gln Pro Phe Met Arg Pro Val Gln Thr
340 345 350

Thr Gln Glu Glu Asp Gly Cys Ser Cys Arg Phe Pro Glu Glu Glu Glu
355 360 365

Gly Gly Cys Glu Leu Arg Val Lys Phe Ser Arg Ser Ala Asp Ala Pro
370 375 380

Ala Tyr Gln Gln Gly Gln Asn Gln Leu Tyr Asn Glu Leu Asn Leu Gly
385 390 395 400

Arg Arg Glu Glu Tyr Asp Val Leu Asp Lys Arg Arg Gly Arg Asp Pro
405 410 415

Glu Met Gly Gly Lys Pro Arg Arg Lys Asn Pro Gln Glu Gly Leu Tyr
420 425 430

Asn Glu Leu Gln Lys Asp Lys Met Ala Glu Ala Tyr Ser Glu Ile Gly
435 440 445

Met Lys Gly Glu Arg Arg Arg Gly Lys Gly His Asp Gly Leu Tyr Gln
450 455 460

Gly Leu Ser Thr Ala Thr Lys Asp Thr Tyr Asp Ala Leu His Met Gln
465 470 475 480

Ala Leu Pro Pro Arg
485

<210> 30
<211> 485
<212> PRT
<213> Artificial Sequence

<220>

<223> Made in Lab - anti-CD79A-02_LH CAR construct

<400> 30

Met Ala Leu Pro Val Thr Ala Leu Leu Leu Pro Leu Ala Leu Leu Leu
1 5 10 15

His Ala Ala Arg Pro Gln Ser Ala Leu Thr Gln Pro Ala Ser Val Ser
20 25 30

Gly Ser Pro Gly Gln Ser Ile Thr Ile Ser Cys Thr Gly Thr Ser Ser
35 40 45

Asp Phe Gly Ser Tyr Asn Leu Val Ser Trp Tyr Gln Gln His Pro Gly
50 55 60

Lys Ala Pro Lys Leu Met Ile Tyr Glu Gly Ser Lys Arg Pro Ser Gly
65 70 75 80

Val Ser Asn Arg Phe Ser Gly Ser Lys Ser Gly Asn Thr Ala Ser Leu
85 90 95

Thr Ile Ser Gly Leu Gln Ala Glu Asp Glu Ala Asp Tyr Tyr Cys Cys
100 105 110

Ser Tyr Ala Gly Gly Ser Thr Trp Val Phe Gly Gly Gly Thr Lys Leu
115 120 125

Thr Val Leu Gly Gly Gly Gly Ser Gly Gly Gly Gly Ser Gly Gly Gly
130 135 140

Gly Ser Glu Val Gln Leu Leu Glu Ser Gly Gly Gly Leu Val Gln Pro
145 150 155 160

Gly Gly Ser Leu Arg Leu Ser Cys Ala Ala Ser Gly Leu Thr Phe Thr
165 170 175

Ser Tyr Ala Met Asn Trp Val Arg Gln Ala Pro Gly Lys Gly Leu Glu

180

185

190

Trp Val Ser Gly Ile Ser Gly Ser Gly Gly Gly Thr Tyr Tyr Ala Asp
 195 200 205

Ser Val Lys Gly Arg Phe Thr Ile Ser Arg Asp Asn Ser Lys Asn Thr
 210 215 220

Leu Tyr Leu Gln Met Asn Ser Leu Arg Ala Glu Asp Thr Ala Val Tyr
 225 230 235 240

Tyr Cys Ala Lys Leu Gly Gly Trp Ser Asp Tyr Trp Gly Gln Gly Thr
 245 250 255

Leu Val Thr Val Ser Ser Thr Thr Thr Pro Ala Pro Arg Pro Pro Thr
 260 265 270

Pro Ala Pro Thr Ile Ala Ser Gln Pro Leu Ser Leu Arg Pro Glu Ala
 275 280 285

Cys Arg Pro Ala Ala Gly Gly Ala Val His Thr Arg Gly Leu Asp Phe
 290 295 300

Ala Cys Asp Ile Tyr Ile Trp Ala Pro Leu Ala Gly Thr Cys Gly Val
 305 310 315 320

Leu Leu Leu Ser Leu Val Ile Thr Leu Tyr Cys Lys Arg Gly Arg Lys
 325 330 335

Lys Leu Leu Tyr Ile Phe Lys Gln Pro Phe Met Arg Pro Val Gln Thr
 340 345 350

Thr Gln Glu Glu Asp Gly Cys Ser Cys Arg Phe Pro Glu Glu Glu Glu
 355 360 365

Gly Gly Cys Glu Leu Arg Val Lys Phe Ser Arg Ser Ala Asp Ala Pro
 370 375 380

Ala Tyr Gln Gln Gly Gln Asn Gln Leu Tyr Asn Glu Leu Asn Leu Gly
385 390 395 400

Arg Arg Glu Glu Tyr Asp Val Leu Asp Lys Arg Arg Gly Arg Asp Pro
405 410 415

Glu Met Gly Gly Lys Pro Arg Arg Lys Asn Pro Gln Glu Gly Leu Tyr
420 425 430

Asn Glu Leu Gln Lys Asp Lys Met Ala Glu Ala Tyr Ser Glu Ile Gly
435 440 445

Met Lys Gly Glu Arg Arg Arg Gly Lys Gly His Asp Gly Leu Tyr Gln
450 455 460

Gly Leu Ser Thr Ala Thr Lys Asp Thr Tyr Asp Ala Leu His Met Gln
465 470 475 480

Ala Leu Pro Pro Arg
485

<210> 31
<211> 1479
<212> DNA
<213> Artificial Sequence

<220>
<223> Made in Lab - anti-CD79A-01_HL CAR polynucleotide construct

<400> 31
atggcacttc cagtgactgc attgttggtg cccctggccc tgctgcttca cgccgcaagg 60
ccccagggtcc agcttcagca gtccggacca gagttggtga aacctggggc atcagtcaag 120
attagctgca aggcatcagg gtacaccttc agcactagtt ggatgaattg ggtgaagcag 180
cggcctggcc aggggttggga gtggatcgga cgcatctacc caggggatgg cgatacaaac 240
tacaacggaa agtttaaagg taaggctact ttgaccgctg acaaatcatc aaacacggca 300
tatatgcaac tgtctagcct cacatctgtc gactctgccg tctacttttg cgagcgattc 360

tactatggca acacttttgc catggactac tgggggcagg ggacatcagt aacagttagt	420
tctggagggg gcggttccgg gggcggggga tccggagggg gaggcagtga tgtgctgatg	480
accagatac cgttgtcact cccggtctca ctgggtgacc aggcaagcat cagctgcagg	540
agcagccagt ccatcgtgca ctctaacgga aatacctacc tggagtggta tctgcagaaa	600
cctggccagt cccctaagtt gttgatttac aaagtttcaa accgatttag tggagttccc	660
gataggtttt ccggttccgg gagcgggtaca gacttcaccc tgaagataag tcgggttgag	720
gctgaagacc tgggagtata ttattgcttt cagggcagcc acgtaccatt cacatttggg	780
agtggaacca aactggagat caaaagaacc acaacacctg ctccaaggcc cccacacccc	840
gctccaacta tagccagcca accattgagc ctgagacctg aagcttgag gcccgagca	900
ggaggcgccg tccatacgcg aggcctggac ttcgcgtgtg atatttatat ttgggcccct	960
ttggccggaa catgtggggg gttgcttctc tcccttgtga tcaactctgta ttgtaagcgc	1020
gggagaaaaga agctcctgta catcttcaag cagcctttta tgcgacctgt gcaaaccact	1080
caggaagaag atgggtgttc atgccgcttc cccgaggagg aagaaggagg gtgtgaactg	1140
agggtgaaat tttctagaag cgccgatgct cccgcatatc agcagggtca gaatcagctc	1200
tacaatgaat tgaatctcgg caggcgagaa gagtacgatg ttctggacaa gagacggggc	1260
agggatcccc agatgggggg aaagccccgg agaaaaaatc ctcaggagg gttgtacaat	1320
gagctgcaga aggacaagat ggctgaagcc tatagcgaga tcggaatgaa aggcgaaaga	1380
cgcagaggca aggggcatga cggctctgtac cagggctctc ctacagccac caaggacact	1440
tatgatgcgt tgcatatgca agccttgcca ccccgctaa	1479

<210> 32

<211> 1479

<212> DNA

<213> Artificial Sequence

<220>

<223> Made in Lab - anti-CD79A-01_LH CAR polynucleotide construct

<400> 32

atggctctgc ctgtgacggc cctgcttttg cccctcgccc tgcttctgca tgccgcgaga	60
---	----

cccgacgtgt tgatgacca aataccgctt agtctgcctg tatctcttgg ggaccaggct	120
agcatctcat gccgcagcag tcaatccatt gtgcactcaa atgggaacac ctatttggag	180
tggatatctgc aaaaaccggg acagtctccg aaactgctga tatacaaagt aagcaacagg	240
ttcagcggag ttcctgacag attcagcggg agcggttctg gaactgactt tacacttaag	300
atctctcgcg ttgaggcggg ggacctgggc gtgtattact gttttcaagg atcccacgtc	360
ccgtttacat tcggatcagg caccaagctg gagatcaagc gcggtggcgg gggttctggc	420
gggggcggat ccggaggcgg cggatcccag gtgcagctgc agcagtctgg accagaactg	480
gttaagcccg gagcttcagt taagatttcc tgtaaggctt caggctatac attttccact	540
tcttggatga actgggtgaa acagcgccct ggccaggggc tggaatggat cggacggatc	600
tatcccgcg atggagacac taattataac ggtaagttca aagggaaggc caccctcacg	660
gccgacaagt cctccaatac agcgtacatg caactcagtt ccctgaccag cgttgatagc	720
gcagtttact tctgtgagcg cttctattac ggaaacacct tcgctatgga ttactggggt	780
caggggacct ccgtgaccgt gtcctctacc acaacacctg ctccaaggcc cccacacccc	840
gctccaacta tagccagcca accattgagc ctcagacctg aagcttgagc gcccgcagca	900
ggaggcgccg tccatacgcg aggcctggac ttcgcgtgtg atatttatat ttgggcccct	960
ttggccggaa catgtggggt gttgcttctc tcccttgtga tcaactctgta ttgtaagcgc	1020
gggagaaaaga agctcctgta catcttcaag cagcctttta tgcgacctgt gcaaaccact	1080
caggaagaag atgggtgttc atgccgttc cccgaggagg aagaaggagg gtgtgaactg	1140
agggtgaaat tttctagaag cgccgatgct cccgcatatc agcagggtca gaatcagctc	1200
tacaatgaat tgaatctcgg caggcgagaa gactacgatg ttctggacaa gagacggggc	1260
agggatcccc agatgggggg aaagccccgg agaaaaaatc ctcaggaggg gttgtacaat	1320
gagctgcaga aggacaagat ggctgaagcc tatagcgaga tcggaatgaa aggcgaaaga	1380
cgagaggca aggggcatga cggctgttac cagggtctct ctacagccac caaggacact	1440
tatgatgcgt tgcatatgca agccttgcca ccccgctaa	1479

<211> 1482
<212> DNA
<213> Artificial Sequence

<220>

<223> Made in Lab - anti-CD79A-10_HL CAR polynucleotide construct

<400> 33

atggctctgc cagtgactgc gctgctgctg cccctcgctc ttctgctgca cgccgctcgg	60
ccacaggtcc aactgcaaca gagcggcccc gagctggtaa aacccggggc ctccgtaaaa	120
atatcctgca agaccagcgg ctatgccttt tcattctcct ggatgaactg ggtgaagtgg	180
ggacccggtc agggacttga gtggatcggg cgaatctatc ccggaaacgg ggacacgaat	240
tacaacggca aatttaaagg caaggctact ctgactgctg acaaaaagtag caacaccgcc	300
tacatgcagt tgcctcttt gacatcagta gactctgcag tgtatttttg cgcccggtgg	360
gtttactccg gaaataacta cgcggttgac tattggggac agggcacctc cgtgacagtg	420
tcttctggcg gcgggggatc aggtggcggc gggctctgggg gtggaggagg cgacgtggtt	480
atgaccaga cccctttgag cctgcccgtg agccttggcg accaagcctc catctcttgc	540
cggctccttc aatcactggg gcacagtaac gggaataactt atctccactg gtatttgcaa	600
aagcccggtc agtctcctaa gcttctgac tataagggtg ccaaccgctt ttctggagtg	660
cccgatagat tttccggatc tggatccgga acagacttca cattgaagat tagtagagtc	720
gaagcggagg acttgggtgt ttatttttgt tcccagagta cccacgtgcc tccatacacg	780
tttggagggtg gaaccaaact tgaaattaag accacaacac ctgctccaag gccccccaca	840
cccgtccaa ctatagccag ccaaccattg agcctcagac ctgaagcttg caggcccga	900
gcaggaggcg cgtccatac gcgaggcctg gacttcgcgt gtgatattta tatttgggcc	960
cctttggccg gaacatgtgg ggtgttgctt ctctcccttg tgatcactct gtattgtaag	1020
cgcgggagaa agaagctcct gtacatcttc aagcagcctt ttatgcgacc tgtgcaaacc	1080
actcaggaag aagatgggtg ttcatgccgc ttccccgagg aggaagaagg aggggtgtaa	1140
ctgagggtga aattttctag aagcgccgat gctcccgcat atcagcaggg tcagaatcag	1200
ctctacaatg aattgaatct cggcaggcga gaagagtacg atgttctgga caagagacgg	1260

ggcagggatc ccgagatggg gggaaaagccc cggagaaaaa atcctcagga ggggttgtag	1320
aatgagctgc agaaggacaa gatggctgaa gcctatagcg agatcggaat gaaaggcgaa	1380
agacgcagag gcaaggggca tgacgggtctg taccagggtc tctctacagc caccaaggac	1440
acttatgatg cgttgcatat gcaagccttg ccaccccgt aa	1482

<210> 34
 <211> 1482
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Made in Lab - anti-CD79A-10_LH CAR polynucleotide construct

<400> 34	
atggccctgc cagtaacagc actgctcctt cctctcgac tcctcctgca cgcagcaaga	60
ccagatgtcg tgatgactca gacacctctt agcttgcccg tctccttggg tgatcaggct	120
agcatttcat gtagatcaag ccagagcttg gtacattcaa atggcaatac ctacctgcac	180
tggtatctcc agaaacctgg ccagagccca aaattgctta tctataaagt tagtaacaga	240
ttctccgggg tcccagatcg attttccggc tcaggctcag gcacggattt taccctgaag	300
atctcacgag tcgaggcaga agatcttggc gtgtactttt gttcccagag taccacgta	360
cccccttaca cattcggagg agggaccaag ttggagatca aaggaggggg gggcagtggg	420
gggggcggtt ccggaggggg aggaagccaa gtacaactgc aacaaagcgg acccgagctc	480
gtcaaacctg gtgctagcgt caaaatttcc tgtaagacca gcggctacgc ttttagcttt	540
tcttgatga actgggtgaa atgggggccc gggcagggcc tggagtggat aggacgaatt	600
tatcccggga atgggggatac aaattacaat ggtaaatca aggggaaaagc cacactgact	660
gcagataaaa gctccaacac ggcatacatg cagctcagct ccctcacttc tgtggattct	720
gctgtttact tttgtgccag gtgggtttac tctggttaata actatgccgt ggattactgg	780
gggcaaggca cctctgttac agtgagttcc accacaacac ctgctccaag gccccccaca	840
cccgtccaa ctatagccag ccaaccattg agcctcagac ctgaagcttg caggcccgca	900
gcaggaggcg ccgtccatac gcgaggcctg gacttcgcgt gtgatattta tatttgggcc	960

cctttggccg gaacatgtgg ggtgttgctt ctctcccttg tgatcactct gtattgtaag	1020
cgcgggagaa agaagctcct gtacatcttc aagcagcctt ttatgcgacc tgtgcaaacc	1080
actcaggaag aagatgggtg ttcatgccgc ttccccgagg aggaagaagg aggggtgtgaa	1140
ctgagggtga aattttctag aagcgccgat gctcccgcat atcagcaggg tcagaatcag	1200
ctctacaatg aattgaatct cggcaggcga gaagagtacg atgttctgga caagagacgg	1260
ggcagggatc ccgagatggg gggaaaagccc cggagaaaaa atcctcagga ggggtgttac	1320
aatgagctgc agaaggacaa gatggctgaa gcctatagcg agatcggaat gaaaggcgaa	1380
agacgcagag gcaaggggca tgacggctctg taccagggtc tctctacagc caccaaggac	1440
acttatgatg cgttgcatat gcaagccttg ccaccccgct aa	1482

<210> 35
 <211> 1458
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Made in Lab - anti-CD79A-02_HL CAR polynucleotide construct

<400> 35	
atggcgcttc ctgtcactgc cctgcttctg cccctcgctc ttctgctgca cgccgctcgc	60
cccgaagttc agctgttgga aagcggaggc ggcttggttc aaccgggtgg cagtctgagg	120
ctgtcctgcg ccgcctccgg tcttacattc acatcttacg ctatgaattg ggtgcgccaa	180
gccccgggca agggcctgga gtgggttagt ggtatcagcg ggtccggagg agggacttac	240
tacgccgact ctgtaaaggg acggttcact atctcccggg acaactccaa aaacacactt	300
tacctgcaga tgaactcctt gcgagccgaa gacacagccg tgtactactg tgctaagctt	360
ggaggctgga gtgattattg gggtcagggg accttggtga cagtgtcttc cgggggtggg	420
ggatccggtg gcggtggatc aggagggggg ggctcccaga gcgctctcac acagccggcc	480
agtgtgtcag gatcacctgg acagtccatt acgatctctt gacttgaac aagctctgac	540
tttggctcct ataatctcgt gtcctggtat cagcagcacc ccgggaaggc tcccaagctt	600
atgatttacg agggctcaaa acgcccttca ggtgtatcca accgattcag cggaagcaaa	660

tccggcaata ccgcaagtct caccataagt ggctgcagg cagaagacga agccgactac	720
tattgttgtt cttatgccgg cggctcaaca tgggtgttcg gcggggggcac caagctgact	780
gtattgacca caacacctgc tccaaggccc cccacacccg ctccaactat agccagccaa	840
ccattgagcc tcagacctga agcttgagg cccgcagcag gaggcgccgt ccatacgca	900
ggcctggact tcgcgtgtga tatttatatt tgggccccctt tggccggaac atgtgggggtg	960
ttgcttctct cccttgatgat cactctgtat tgtaagcgcg ggagaaaagaa gctcctgtac	1020
atcttcaagc agccttttat gcgacctgtg caaaccactc aggaagaaga tgggtgttca	1080
tgccgcttcc ccgaggagga agaaggaggg tgtgaactga gggtgaaatt ttctagaagc	1140
gccgatgctc ccgcatatca gcagggtcag aatcagctct acaatgaatt gaatctcggc	1200
aggcgagaag agtacgatgt tctggacaag agacggggca gggatcccga gatgggggga	1260
aagccccgga gaaaaaatcc tcaggagggg ttgtacaatg agctgcagaa ggacaagatg	1320
gctgaagcct atagcgagat cggaatgaaa ggcgaaagac gcagaggcaa ggggcatgac	1380
ggtctgtacc aggggtctct tacagccacc aaggacactt atgatgcgtt gcatatgcaa	1440
gccttgccac cccgctaa	1458

<210> 36
 <211> 1458
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Made in Lab - anti-CD79A-02_LH CAR polynucleotide construct

<400> 36	
atgggtctgc ctgtaactgc tctgctgctt ccccttgctc tgctcctgca tgccgcccgg	60
ccgcaaagcg ccctgactca gccagcttcc gtgtctggct ctccggggca gtccatcacc	120
atctcatgca caggaacctc cagcgacttc ggatcatata acctggtttc atggtatcag	180
cagcatcctg ggaaggctcc gaagttgatg atctacgagg gaagcaagag gcccagtggg	240
gtcagtaacc gcttctctgg aagtaagtca ggcaataacc ctagtctgac catctccgga	300
ttgcaagctg aggacgaagc tgattactac tgctgttcat atgcaggggg ttctacttgg	360

gtgttcggcg gtggaaccaa gcttaccgtt ctgggaggcg gaggctccgg gggaggcgga	420
tcaggcggag gtggatccga agtgcagctg cttgagtcag gagggggatt ggtccagccg	480
gggggatcat tgaggctgtc ttgtgccgca agtggactca cttttaccag ttatgcaatg	540
aactgggtgc ggcaggcacc cgggaaggga ctggaatggg tgagtggcat atctggcagc	600
gggggcggaa cttactacgc tgattctgtc aagggaaggt ttactatctc acgagacaac	660
agcaaaaaaca ccctctacct gcagatgaac tcactcagag cagaggatac tgcagtctac	720
tattgtgcta agctgggtgg ttggagcgac tactggggac aagggacgtt ggtgaccgtg	780
tcttcaacca caacacctgc tccaaggccc cccacacccg ctccaactat agccagccaa	840
ccattgagcc tcagacctga agcttgacagg cccgcagcag gaggcgccgt ccatacgcg	900
ggcctggact tcgcgtgtga tatttatatt tggggccctt tggccggaac atgtgggggtg	960
ttgcttctct cccttgatgat cactctgtat tgtaagcgcg ggagaaagaa gctcctgtac	1020
atcttcaagc agccttttat gcgacctgtg caaaccactc aggaagaaga tgggtgttca	1080
tgccgcttcc ccgaggagga agaaggaggg tgtgaactga gggtgaaatt ttctagaagc	1140
gccgatgctc ccgcatatca gcagggtcag aatcagctct acaatgaatt gaatctcggc	1200
aggcgagaag agtacgatgt tctggacaag agacggggca gggatcccga gatgggggga	1260
aagccccgga gaaaaaatcc tcaggagggg ttgtacaatg agctgcagaa ggacaagatg	1320
gctgaagcct atagcgagat cggaatgaaa ggcgaaagac gcagaggcaa ggggcatgac	1380
ggtctgtacc agggctcttc tacagccacc aaggacactt atgatgctgt gcatatgcaa	1440
gccttgccac cccgctaa	1458

<210> 37
 <211> 226
 <212> PRT
 <213> Homo sapiens

<400> 37

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

Leu Leu Phe Leu Leu Ser Ala Val Tyr Leu Gly Pro Gly Cys Gln Ala
20 25 30

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

Asp Ala His Phe Gln Cys Pro His Asn Ser Ser Asn Asn Ala Asn Val
50 55 60

Thr Trp Trp Arg Val Leu His Gly Asn Tyr Thr Trp Pro Pro Glu Phe
65 70 75 80

Leu Gly Pro Gly Glu Asp Pro Asn Gly Thr Leu Ile Ile Gln Asn Val
85 90 95

Asn Lys Ser His Gly Gly Ile Tyr Val Cys Arg Val Gln Glu Gly Asn
100 105 110

Glu Ser Tyr Gln Gln Ser Cys Gly Thr Tyr Leu Arg Val Arg Gln Pro
115 120 125

Pro Pro Arg Pro Phe Leu Asp Met Gly Glu Gly Thr Lys Asn Arg Ile
130 135 140

Ile Thr Ala Glu Gly Ile Ile Leu Leu Phe Cys Ala Val Val Pro Gly
145 150 155 160

Thr Leu Leu Leu Phe Arg Lys Arg Trp Gln Asn Glu Lys Leu Gly Leu
165 170 175

Asp Ala Gly Asp Glu Tyr Glu Asp Glu Asn Leu Tyr Glu Gly Leu Asn
180 185 190

Leu Asp Asp Cys Ser Met Tyr Glu Asp Ile Ser Arg Gly Leu Gln Gly
195 200 205

Thr Tyr Gln Asp Val Gly Ser Leu Asn Ile Gly Asp Val Gln Leu Glu
210 215 220

Lys Pro
225

<210> 38
<211> 188
<212> PRT
<213> Homo sapiens

<400> 38

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

Leu Leu Phe Leu Leu Ser Ala Val Tyr Leu Gly Pro Gly Cys Gln Ala
20 25 30

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

Asp Ala His Phe Gln Cys Pro His Asn Ser Ser Asn Asn Ala Asn Val
50 55 60

Thr Trp Trp Arg Val Leu His Gly Asn Tyr Thr Trp Pro Pro Glu Phe
65 70 75 80

Leu Gly Pro Gly Glu Asp Pro Asn Glu Pro Pro Pro Arg Pro Phe Leu
85 90 95

Asp Met Gly Glu Gly Thr Lys Asn Arg Ile Ile Thr Ala Glu Gly Ile
100 105 110

Ile Leu Leu Phe Cys Ala Val Val Pro Gly Thr Leu Leu Leu Phe Arg
115 120 125

Lys Arg Trp Gln Asn Glu Lys Leu Gly Leu Asp Ala Gly Asp Glu Tyr
130 135 140

Glu Asp Glu Asn Leu Tyr Glu Gly Leu Asn Leu Asp Asp Cys Ser Met

145 150 155 160

Tyr Glu Asp Ile Ser Arg Gly Leu Gln Gly Thr Tyr Gln Asp Val Gly
 165 170 175

Ser Leu Asn Ile Gly Asp Val Gln Leu Glu Lys Pro
 180 185

<210> 39
<211> 5
<212> PRT
<213> Artificial Sequence

<220>
<223> Exemplary linker sequence

<400> 39

Asp Gly Gly Gly Ser
1 5

<210> 40
<211> 5
<212> PRT
<213> Artificial Sequence

<220>
<223> Exemplary linker sequence

<400> 40

Thr Gly Glu Lys Pro
1 5

<210> 41
<211> 4
<212> PRT
<213> Artificial Sequence

<220>
<223> Exemplary linker sequence

<400> 41

Gly Gly Arg Arg

1

<210> 42
<211> 5
<212> PRT
<213> Artificial Sequence

<220>
<223> Exemplary linker sequence

<400> 42

Gly Gly Gly Gly Ser
1 5

<210> 43
<211> 14
<212> PRT
<213> Artificial Sequence

<220>
<223> Exemplary linker sequence

<400> 43

Glu Gly Lys Ser Ser Gly Ser Gly Ser Glu Ser Lys Val Asp
1 5 10

<210> 44
<211> 18
<212> PRT
<213> Artificial Sequence

<220>
<223> Exemplary linker sequence

<400> 44

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

Leu Asp

<210> 45

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

<220>
<223> Exemplary linker sequence

<400> 45

Gly Gly Arg Arg Gly Gly Gly Ser
1 5

<210> 46
<211> 9
<212> PRT
<213> Artificial Sequence

<220>
<223> Exemplary linker sequence

<400> 46

Leu Arg Gln Arg Asp Gly Glu Arg Pro
1 5

<210> 47
<211> 12
<212> PRT
<213> Artificial Sequence

<220>
<223> Exemplary linker sequence

<400> 47

Leu Arg Gln Lys Asp Gly Gly Gly Ser Glu Arg Pro
1 5 10

<210> 48
<211> 16
<212> PRT
<213> Artificial Sequence

<220>
<223> Exemplary linker sequence

<400> 48

Leu Arg Gln Lys Asp Gly Gly Gly Ser Gly Gly Gly Ser Glu Arg Pro
1 5 10 15

<210> 49
<211> 18
<212> PRT
<213> Artificial Sequence

<220>
<223> Exemplary linker sequence

<400> 49

Gly Ser Thr Ser Gly Ser Gly Lys Pro Gly Ser Gly Glu Gly Ser Thr
1 5 10 15

Lys Gly

<210> 50
<211> 7
<212> PRT
<213> Artificial Sequence

<220>
<223> Cleavage sequence by TEV protease

<220>
<221> misc_feature
<222> (2)..(3)
<223> Xaa is any amino acid

<220>
<221> misc_feature
<222> (5)..(5)
<223> Xaa is any amino acid

<220>
<221> MISC_FEATURE
<222> (7)..(7)
<223> Xaa = Gly or Ser

<400> 50

Glu Xaa Xaa Tyr Xaa Gln Xaa

1 5

<210> 51
<211> 7
<212> PRT
<213> Artificial Sequence

<220>
<223> Cleavage sequence by TEV protease

<400> 51

Glu Asn Leu Tyr Phe Gln Gly
1 5

<210> 52
<211> 7
<212> PRT
<213> Artificial Sequence

<220>
<223> Cleavage sequence by TEV protease

<400> 52

Glu Asn Leu Tyr Phe Gln Ser
1 5

<210> 53
<211> 22
<212> PRT
<213> Artificial Sequence

<220>
<223> Self-cleaving polypeptide comprising 2A site

<400> 53

Gly Ser Gly Ala Thr Asn Phe Ser Leu Leu Lys Gln Ala Gly Asp Val
1 5 10 15

Glu Glu Asn Pro Gly Pro
20

<210> 54

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

<220>
<223> Self-cleaving polypeptide comprising 2A site

<400> 54

Ala Thr Asn Phe Ser Leu Leu Lys Gln Ala Gly Asp Val Glu Glu Asn
1 5 10 15

Pro Gly Pro

<210> 55
<211> 14
<212> PRT
<213> Artificial Sequence

<220>
<223> Self-cleaving polypeptide comprising 2A site

<400> 55

Leu Leu Lys Gln Ala Gly Asp Val Glu Glu Asn Pro Gly Pro
1 5 10

<210> 56
<211> 21
<212> PRT
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<220>
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<400> 56

Gly Ser Gly Glu Gly Arg Gly Ser Leu Leu Thr Cys Gly Asp Val Glu
1 5 10 15

Glu Asn Pro Gly Pro
20

<210> 57

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

<220>
<223> Self-cleaving polypeptide comprising 2A site

<400> 57

Glu Gly Arg Gly Ser Leu Leu Thr Cys Gly Asp Val Glu Glu Asn Pro
1 5 10 15

Gly Pro

<210> 58
<211> 13
<212> PRT
<213> Artificial Sequence

<220>
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<400> 58

Leu Leu Thr Cys Gly Asp Val Glu Glu Asn Pro Gly Pro
1 5 10

<210> 59
<211> 23
<212> PRT
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<220>
<223> Self-cleaving polypeptide comprising 2A site

<400> 59

Gly Ser Gly Gln Cys Thr Asn Tyr Ala Leu Leu Lys Leu Ala Gly Asp
1 5 10 15

Val Glu Ser Asn Pro Gly Pro
20

<210> 60

<211> 20
<212> PRT
<213> Artificial Sequence

<220>
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<400> 60

Gln Cys Thr Asn Tyr Ala Leu Leu Lys Leu Ala Gly Asp Val Glu Ser
1 5 10 15

Asn Pro Gly Pro
20

<210> 61
<211> 14
<212> PRT
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<220>
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<400> 61

Leu Leu Lys Leu Ala Gly Asp Val Glu Ser Asn Pro Gly Pro
1 5 10

<210> 62
<211> 25
<212> PRT
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<220>
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<400> 62

Gly Ser Gly Val Lys Gln Thr Leu Asn Phe Asp Leu Leu Lys Leu Ala
1 5 10 15

Gly Asp Val Glu Ser Asn Pro Gly Pro
20 25

<210> 63

<211> 22
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<213> Artificial Sequence

<220>
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<400> 63

Val Lys Gln Thr Leu Asn Phe Asp Leu Leu Lys Leu Ala Gly Asp Val
1 5 10 15

Glu Ser Asn Pro Gly Pro
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<210> 64
<211> 14
<212> PRT
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<220>
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<400> 64

Leu Leu Lys Leu Ala Gly Asp Val Glu Ser Asn Pro Gly Pro
1 5 10

<210> 65
<211> 19
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<220>
<223> Self-cleaving polypeptide comprising 2A site

<400> 65

Leu Leu Asn Phe Asp Leu Leu Lys Leu Ala Gly Asp Val Glu Ser Asn
1 5 10 15

Pro Gly Pro

<210> 66

<211> 19
<212> PRT
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<220>
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<400> 66

Thr Leu Asn Phe Asp Leu Leu Lys Leu Ala Gly Asp Val Glu Ser Asn
1 5 10 15

Pro Gly Pro

<210> 67
<211> 14
<212> PRT
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<220>
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<400> 67

Leu Leu Lys Leu Ala Gly Asp Val Glu Ser Asn Pro Gly Pro
1 5 10

<210> 68
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<220>
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<400> 68

Asn Phe Asp Leu Leu Lys Leu Ala Gly Asp Val Glu Ser Asn Pro Gly
1 5 10 15

Pro

<210> 69

<211> 20
<212> PRT
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<220>
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<400> 69

Gln Leu Leu Asn Phe Asp Leu Leu Lys Leu Ala Gly Asp Val Glu Ser
1 5 10 15

Asn Pro Gly Pro
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<210> 70
<211> 24
<212> PRT
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<400> 70

Ala Pro Val Lys Gln Thr Leu Asn Phe Asp Leu Leu Lys Leu Ala Gly
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Asp Val Glu Ser Asn Pro Gly Pro
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<210> 71
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<220>
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<400> 71

Val Thr Glu Leu Leu Tyr Arg Met Lys Arg Ala Glu Thr Tyr Cys Pro
1 5 10 15

Arg Pro Leu Leu Ala Ile His Pro Thr Glu Ala Arg His Lys Gln Lys

20

25

30

Ile Val Ala Pro Val Lys Gln Thr
35 40

<210> 72
<211> 18
<212> PRT
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<220>
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<400> 72

Leu Asn Phe Asp Leu Leu Lys Leu Ala Gly Asp Val Glu Ser Asn Pro
1 5 10 15

Gly Pro

<210> 73
<211> 40
<212> PRT
<213> Artificial Sequence

<220>
<223> Self-cleaving polypeptide comprising 2A site

<400> 73

Leu Leu Ala Ile His Pro Thr Glu Ala Arg His Lys Gln Lys Ile Val
1 5 10 15

Ala Pro Val Lys Gln Thr Leu Asn Phe Asp Leu Leu Lys Leu Ala Gly
20 25 30

Asp Val Glu Ser Asn Pro Gly Pro
35 40

<210> 74
<211> 33
<212> PRT

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<223> Self-cleaving polypeptide comprising 2A site

<400> 74

Glu Ala Arg His Lys Gln Lys Ile Val Ala Pro Val Lys Gln Thr Leu
1 5 10 15

Asn Phe Asp Leu Leu Lys Leu Ala Gly Asp Val Glu Ser Asn Pro Gly
20 25 30

Pro

<210> 75

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<223> Consensus Kozak sequence

<400> 75

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10

<210> 76

<211> 4

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<223> Exemplary rule for determining light chain CDR-L3 motif

<220>

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<222> (3)..(3)

<223> Xaa is any amino acid

<400> 76

Phe Gly Xaa Gly

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<210> 77
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<220>
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<400> 77

Cys Xaa Xaa Xaa
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<210> 78
<211> 5
<212> PRT
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<220>
<223> Exemplary rule for determining heavy chain CDR-H2motif

<400> 78

Leu Glu Trp Ile Gly
1 5

<210> 79
<211> 4
<212> PRT
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<220>
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<220>
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<400> 79

Trp Gly Xaa Gly
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