

PAT056047A_SEQ_ST25
SEQUENCE LISTING

<110> IRM LLC
Uno, Tetsuo

<120> CYTOTOXIC PEPTIDES AND CONJUGATES THEREOF

<130> PAT056407-WO-PCT

<160> 31

<170> PatentIn version 3.5

<210> 1

<211> 450

<212> PRT

<213> anti-Her2 heavy chain wild type

<400> 1

Glu Val Gln Leu Val 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 Asn Ile Lys Asp Thr
20 25 30

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

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

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

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

Ser Arg Trp Gly Gly Asp Gly Phe Tyr Ala Met Asp Tyr Trp Gly Gln
100 105 110

Gly Thr Leu Val Thr Val Ser Ser Ala Ser Thr Lys Gly Pro Ser Val
115 120 125

Phe Pro Leu Ala Pro Ser Ser Lys Ser Thr Ser Gly Gly Thr Ala Ala
130 135 140

Leu Gly Cys Leu Val Lys Asp Tyr Phe Pro Glu Pro Val Thr Val Ser
145 150 155 160

Trp Asn Ser Gly Ala Leu Thr Ser Gly Val His Thr Phe Pro Ala Val
165 170 175

Leu Gln Ser Ser Gly Leu Tyr Ser Leu Ser Ser Val Val Thr Val Pro
180 185 190

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Ser Ser Ser Leu Gly Thr Gln Thr Tyr Ile Cys Asn Val Asn His Lys
195 200 205

Pro Ser Asn Thr Lys Val Asp Lys Lys Val Glu Pro Lys Ser Cys Asp
210 215 220

Lys Thr His Thr Cys Pro Pro Cys Pro Ala Pro Glu Leu Leu Gly Gly
225 230 235 240

Pro Ser Val Phe Leu Phe Pro Pro Lys Pro Lys Asp Thr Leu Met Ile
245 250 255

Ser Arg Thr Pro Glu Val Thr Cys Val Val Val Asp Val Ser His Glu
260 265 270

Asp Pro Glu Val Lys Phe Asn Trp Tyr Val Asp Gly Val Glu Val His
275 280 285

Asn Ala Lys Thr Lys Pro Arg Glu Glu Gln Tyr Asn Ser Thr Tyr Arg
290 295 300

Val Val Ser Val Leu Thr Val Leu His Gln Asp Trp Leu Asn Gly Lys
305 310 315 320

Glu Tyr Lys Cys Lys Val Ser Asn Lys Ala Leu Pro Ala Pro Ile Glu
325 330 335

Lys Thr Ile Ser Lys Ala Lys Gly Gln Pro Arg Glu Pro Gln Val Tyr
340 345 350

Thr Leu Pro Pro Ser Arg Glu Glu Met Thr Lys Asn Gln Val Ser Leu
355 360 365

Thr Cys Leu Val Lys Gly Phe Tyr Pro Ser Asp Ile Ala Val Glu Trp
370 375 380

Glu Ser Asn Gly Gln Pro Glu Asn Asn Tyr Lys Thr Thr Pro Pro Val
385 390 395 400

Leu Asp Ser Asp Gly Ser Phe Phe Leu Tyr Ser Lys Leu Thr Val Asp
405 410 415

Lys Ser Arg Trp Gln Gln Gly Asn Val Phe Ser Cys Ser Val Met His
420 425 430

Glu Ala Leu His Asn His Tyr Thr Gln Lys Ser Leu Ser Leu Ser Pro
435 440 445

Gly Lys
450

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<210> 2
 <211> 214
 <212> PRT
 <213> anti-Her2 light chain wild type

<400> 2

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 Gln Asp Val Asn Thr Ala
 20 25 30

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

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

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

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

Thr Phe Gly Gln Gly Thr Lys Val Glu Ile Lys Arg Thr Val Ala Ala
 100 105 110

Pro Ser Val Phe Ile Phe Pro Pro Ser Asp Glu Gln Leu Lys Ser Gly
 115 120 125

Thr Ala Ser Val Val Cys Leu Leu Asn Asn Phe Tyr Pro Arg Glu Ala
 130 135 140

Lys Val Gln Trp Lys Val Asp Asn Ala Leu Gln Ser Gly Asn Ser Gln
 145 150 155 160

Glu Ser Val Thr Glu Gln Asp Ser Lys Asp Ser Thr Tyr Ser Leu Ser
 165 170 175

Ser Thr Leu Thr Leu Ser Lys Ala Asp Tyr Glu Lys His Lys Val Tyr
 180 185 190

Ala Cys Glu Val Thr His Gln Gly Leu Ser Ser Pro Val Thr Lys Ser
 195 200 205

Phe Asn Arg Gly Glu Cys
 210

<210> 3
 <211> 108
 <212> PRT
 <213> constant region of the mutant light chain of anti-Her2 LS-S159C and
 antibody 20507 LC-S159C

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<400> 3

Lys Arg Thr Val Ala Ala Pro Ser Val Phe Ile Phe Pro Pro Ser Asp
1 5 10 15

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

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

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

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

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

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

<210> 4

<211> 331

<212> PRT

<213> constant region of the mutant heavy chain of antibody 20507 HC-E155C

<400> 4

Ser Ala Ser Thr Lys Gly Pro Ser Val Phe Pro Leu Ala Pro Ser Ser
1 5 10 15

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

Asn Val Phe Ser Cys Ser Val Met His Glu Ala Leu His Asn His Tyr
305 310 315 320

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

<210> 5

<211> 331

<212> PRT

<213> constant region of the mutant heavy chain of antibody 20507 HC-S376C

<400> 5

Ser Ala Ser Thr Lys Gly Pro Ser Val Phe Pro Leu Ala Pro Ser Ser
1 5 10 15

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

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Tyr Phe Pro Glu Pro Val Thr Val Ser Trp Asn Ser Gly Ala Leu Thr
 35 40 45
 Ser Gly Val His Thr Phe Pro Ala Val Leu Gln Ser Ser Gly Leu Tyr
 50 55 60
 Ser Leu Ser Ser Val Val Thr Val Pro Ser Ser Ser Leu Gly Thr Gln
 65 70 75 80
 Thr Tyr Ile Cys Asn Val Asn His Lys Pro Ser Asn Thr Lys Val Asp
 85 90 95
 Lys Lys Val Glu Pro Lys Ser Cys Asp Lys Thr His Thr Cys Pro Pro
 100 105 110
 Cys Pro Ala Pro Glu Leu Leu Gly Gly Pro Ser Val Phe Leu Phe Pro
 115 120 125
 Pro Lys Pro Lys Asp Thr Leu Met Ile Ser Arg Thr Pro Glu Val Thr
 130 135 140
 Cys Val Val Val Asp Val Ser His Glu Asp Pro Glu Val Lys Phe Asn
 145 150 155 160
 Trp Tyr Val Asp Gly Val Glu Val His Asn Ala Lys Thr Lys Pro Arg
 165 170 175
 Glu Glu Gln Tyr Asn Ser Thr Tyr Arg Val Val Ser Val Leu Thr Val
 180 185 190
 Leu His Gln Asp Trp Leu Asn Gly Lys Glu Tyr Lys Cys Lys Val Ser
 195 200 205
 Asn Lys Ala Leu Pro Ala Pro Ile Glu Lys Thr Ile Ser Lys Ala Lys
 210 215 220
 Gly Gln Pro Arg Glu Pro Gln Val Tyr Thr Leu Pro Pro Ser Arg Glu
 225 230 235 240
 Glu Met Thr Lys Asn Gln Val Ser Leu Thr Cys Leu Val Lys Gly Phe
 245 250 255
 Tyr Pro Cys Asp Ile Ala Val Glu Trp Glu Ser Asn Gly Gln Pro Glu
 260 265 270
 Asn Asn Tyr Lys Thr Thr Pro Pro Val Leu Asp Ser Asp Gly Ser Phe
 275 280 285
 Phe Leu Tyr Ser Lys Leu Thr Val Asp Lys Ser Arg Trp Gln Gln Gly
 290 295 300

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Asn Val Phe Ser Cys Ser Val Met His Glu Ala Leu His Asn His Tyr
305 310 315 320

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

<210> 6

<211> 331

<212> PRT

<213> Artificial Sequence

<220>

<223> constant region of the mutant light chain of
anti-Her2-HC-E152C-S375C and antibody 20507-HC-E152C-S375C

<400> 6

Ser Ala Ser Thr Lys Gly Pro Ser Val Phe Pro Leu Ala Pro Ser Ser
1 5 10 15

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

Asn Val Phe Ser Cys Ser Val Met His Glu Ala Leu His Asn His Tyr
305 310 315 320

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

<210> 7
<211> 108
<212> PRT
<213> constant region of the mutant light chain of antibody 20507 LC-K107C
<400> 7

Cys Arg Thr Val Ala Ala Pro Ser Val Phe Ile Phe Pro Pro Ser Asp
1 5 10 15

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

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

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

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

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

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

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105

<210> 8
 <211> 342
 <212> PRT
 <213> constant region of the heavy chain of anti-Her2 HC-ins388-ybbr
 <400> 8

Ser Ala Ser Thr Lys Gly Pro Ser Val Phe Pro Leu Ala Pro Ser Ser
 1 5 10 15

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

Asp Ser Leu Glu Phe Ile Ala Ser Lys Leu Ala Asn Asn Tyr Lys Thr
275 280 285

Thr Pro Pro Val Leu Asp Ser Asp Gly Ser Phe Phe Leu Tyr Ser Lys
290 295 300

Leu Thr Val Asp Lys Ser Arg Trp Gln Gln Gly Asn Val Phe Ser Cys
305 310 315 320

Ser Val Met His Glu Ala Leu His Asn His Tyr Thr Gln Lys Ser Leu
325 330 335

Ser Leu Ser Pro Gly Lys
340

<210> 9

<211> 343

<212> PRT

<213> constant region of the mutant heavy chain HC-ins388-A1 in anti-Her2 and antibody 20507

<400> 9

Ser Ala Ser Thr Lys Gly Pro Ser Val Phe Pro Leu Ala Pro Ser Ser
1 5 10 15

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

Gly Asp Ser Leu Asp Met Leu Glu Trp Ser Leu Met Asn Asn Tyr Lys
275 280 285

Thr Thr Pro Pro Val Leu Asp Ser Asp Gly Ser Phe Phe Leu Tyr Ser
290 295 300

Lys Leu Thr Val Asp Lys Ser Arg Trp Gln Gln Gly Asn Val Phe Ser
305 310 315 320

Cys Ser Val Met His Glu Ala Leu His Asn His Tyr Thr Gln Lys Ser
325 330 335

Leu Ser Leu Ser Pro Gly Lys
340

<210> 10

<211> 331

<212> PRT

<213> constant region of the heavy chain wild type of antibody 20507

<400> 10

Ser Ala Ser Thr Lys Gly Pro Ser Val Phe Pro Leu Ala Pro Ser Ser
1 5 10 15

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Lys Ser Thr Ser Gly Gly Thr Ala Ala Leu Gly Cys Leu Val Lys Asp
 20 25 30
 Tyr Phe Pro Glu Pro Val Thr Val Ser Trp Asn Ser Gly Ala Leu Thr
 35 40 45
 Ser Gly Val His Thr Phe Pro Ala Val Leu Gln Ser Ser Gly Leu Tyr
 50 55 60
 Ser Leu Ser Ser Val Val Thr Val Pro Ser Ser Ser Leu Gly Thr Gln
 65 70 75 80
 Thr Tyr Ile Cys Asn Val Asn His Lys Pro Ser Asn Thr Lys Val Asp
 85 90 95
 Lys Lys Val Glu Pro Lys Ser Cys Asp Lys Thr His Thr Cys Pro Pro
 100 105 110
 Cys Pro Ala Pro Glu Leu Leu Gly Gly Pro Ser Val Phe Leu Phe Pro
 115 120 125
 Pro Lys Pro Lys Asp Thr Leu Met Ile Ser Arg Thr Pro Glu Val Thr
 130 135 140
 Cys Val Val Val Asp Val Ser His Glu Asp Pro Glu Val Lys Phe Asn
 145 150 155 160
 Trp Tyr Val Asp Gly Val Glu Val His Asn Ala Lys Thr Lys Pro Arg
 165 170 175
 Glu Glu Gln Tyr Asn Ser Thr Tyr Arg Val Val Ser Val Leu Thr Val
 180 185 190
 Leu His Gln Asp Trp Leu Asn Gly Lys Glu Tyr Lys Cys Lys Val Ser
 195 200 205
 Asn Lys Ala Leu Pro Ala Pro Ile Glu Lys Thr Ile Ser Lys Ala Lys
 210 215 220
 Gly Gln Pro Arg Glu Pro Gln Val Tyr Thr Leu Pro Pro Ser Arg Glu
 225 230 235 240
 Glu Met Thr Lys Asn Gln Val Ser Leu Thr Cys Leu Val Lys Gly Phe
 245 250 255
 Tyr Pro Ser Asp Ile Ala Val Glu Trp Glu Ser Asn Gly Gln Pro Glu
 260 265 270
 Asn Asn Tyr Lys Thr Thr Pro Pro Val Leu Asp Ser Asp Gly Ser Phe
 275 280 285

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

Asn Val Phe Ser Cys Ser Val Met His Glu Ala Leu His Asn His Tyr
305 310 315 320

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

<210> 11
<211> 108
<212> PRT
<213> constant region of the light chain wild type of antibody 20507
<400> 11

Lys Arg Thr Val Ala Ala Pro Ser Val Phe Ile Phe Pro Pro Ser Asp
1 5 10 15

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

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

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

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

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

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

<210> 12
<211> 24
<212> PRT
<213> Artificial Sequence

<220>
<223> Expression Vector

<400> 12

Met Lys Thr Phe Ile Leu Leu Leu Trp Val Leu Leu Leu Trp Val Ile
1 5 10 15

Phe Leu Leu Pro Gly Ala Thr Ala
20

<210> 13
<211> 41

<212> DNA
 <213> Artificial Sequence
 <220>
 <223> primer sequence
 <400> 13
 agcggcaact gtcaggagag cgtcaccgag caggacagca a 41

<210> 14
 <211> 40
 <212> DNA
 <213> Artificial Sequence
 <220>
 <223> primer sequence
 <400> 14
 ctctcctgac agttgccgct ctgcagggcg ttgtccacct 40

<210> 15
 <211> 39
 <212> DNA
 <213> Artificial Sequence
 <220>
 <223> primer sesquence
 <400> 15
 tacttcccct gtcccgtgac cgtgtcctgg aacagcgga 39

<210> 16
 <211> 38
 <212> DNA
 <213> Artificial Sequence
 <220>
 <223> primer sequence
 <400> 16
 ggtcacggga caggggaagt agtccttcac caggcagc 38

<210> 17
 <211> 40
 <212> DNA
 <213> Artificial Sequence
 <220>
 <223> primer sequence
 <400> 17
 ttctaccctt gcgacatcg cgtggagtgg gagagcaacg 40

<210> 18
 <211> 41
 <212> DNA
 <213> Artificial Sequence
 <220>
 <223> primer sequence
 <400> 18
 ggcgatgtcg caggggtaga agcccttcac cagacaggtc a 41

<210> 19
 <211> 40
 <212> DNA
 <213> Artificial Sequence

 <220>
 <223> primer sequence

 <400> 19
 gtggagatct gtcgaacggt ggccgctccc agcgtgttca 40

 <210> 20
 <211> 39
 <212> DNA
 <213> Artificial Sequence

 <220>
 <223> primer sequence

 <400> 20
 accgttcgac agatctccac cttggtaccc tgtccgaac 39

 <210> 21
 <211> 52
 <212> DNA
 <213> Artificial Sequence

 <220>
 <223> primer sequence

 <400> 21
 ctggagttca tcgccagcaa gctggccaac aactacaaga ccacacctcc ag 52

 <210> 22
 <211> 46
 <212> DNA
 <213> Artificial Sequence

 <220>
 <223> primer sequence

 <400> 22
 cttgctggcg atgaactcca ggctgtcctc gggctggccg ttgctc 46

 <210> 23
 <211> 52
 <212> DNA
 <213> Artificial Sequence

 <220>
 <223> primer sequence

 <400> 23
 ctggacatgc tggagtggag cctgatgaac aactacaaga ccacacctcc ag 52

 <210> 24
 <211> 46
 <212> DNA
 <213> Artificial Sequence

 <220>

<223> primer sequence

<400> 24
ccactccagc atgtccaggc tgtcgccctc gggctggccg ttgctc 46

<210> 25
<211> 45
<212> DNA
<213> Artificial Sequence

<220>
<223> B. subtilis sfp pET22b primer

<400> 25
gaaggagata tacatatgaa aatttatggg atttacctgg atcgc 45

<210> 26
<211> 44
<212> DNA
<213> Artificial Sequence

<220>
<223> B. subtilis sfp pET22b primer

<400> 26
gtggtggtgg tgggtggtgca gcaattcttc ataggagacc atcg 44

<210> 27
<211> 22
<212> DNA
<213> Artificial Sequence

<220>
<223> pET22b primer

<400> 27
caccaccacc accaccactg ag 22

<210> 28
<211> 41
<212> DNA
<213> Artificial Sequence

<220>
<223> pET22b primer

<400> 28
catatgtata tctccttctt aaagttaaac aaaattattt c 41

<210> 29
<211> 43
<212> DNA
<213> Artificial Sequence

<220>
<223> TEV into B. subtilis sfp pET22b primer

<400> 29
gagaacctgt acttccaagg ccaccaccac caccaccact gag 43

<210> 30
<211> 47

<212> DNA
 <213> Artificial Sequence

<220>
 <223> TEV into B. subtilis Sfp pET22b primer

<400> 30
 gccttggaag tacaggttct ccagcaattc ttcataaggag accatcg

47

<210> 31
 <211> 237
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> Bacillus subtilis Sfp PPTase with C-terminal TEV cleavage site
 and His6 tag

<400> 31

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

Asn Glu Arg Phe Met Ser Phe Ile Ser Pro Glu Lys Arg Glu Lys Cys
 20 25 30

Arg Arg Phe Tyr His Lys Glu Asp Ala His Arg Thr Leu Leu Gly Asp
 35 40 45

Val Leu Val Arg Ser Val Ile Ser Arg Gln Tyr Gln Leu Asp Lys Ser
 50 55 60

Asp Ile Arg Phe Ser Thr Gln Glu Tyr Gly Lys Pro Cys Ile Pro Asp
 65 70 75 80

Leu Pro Asp Ala His Phe Asn Ile Ser His Ser Gly Arg Trp Val Ile
 85 90 95

Cys Ala Phe Asp Ser Gln Pro Ile Gly Ile Asp Ile Glu Lys Thr Lys
 100 105 110

Pro Ile Ser Leu Glu Ile Ala Lys Arg Phe Phe Ser Lys Thr Glu Tyr
 115 120 125

Ser Asp Leu Leu Ala Lys Asp Lys Asp Glu Gln Thr Asp Tyr Phe Tyr
 130 135 140

His Leu Trp Ser Met Lys Glu Ser Phe Ile Lys Gln Glu Gly Lys Gly
 145 150 155 160

Leu Ser Leu Pro Leu Asp Ser Phe Ser Val Arg Leu His Gln Asp Gly
 165 170 175

Gln Val Ser Ile Glu Leu Pro Asp Ser His Ser Pro Cys Tyr Ile Lys
 180 185 190

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Thr Tyr Glu Val Asp Pro Gly Tyr Lys Met Ala Val Cys Ala Ala His
 195 200 205

Pro Asp Phe Pro Glu Asp Ile Thr Met Val Ser Tyr Glu Glu Leu Leu
 210 215 220

Glu Asn Leu Tyr Phe Gln Gly His His His His His His
 225 230 235