

# SEQUENCE LISTING

<110> Seattle Children's Hospital  
(DBA Seattle Children's Research Institute)

<120> DRUG REGULATED TRANSGENE EXPRESSION

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<151> 2014-10-02

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<151> 2014-04-10

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T2A - - EGFRt

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 - CD3Zeta - T2A - EGFRt

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| Met | Leu | Leu | Leu | Val | Thr | Ser | Leu | Leu | Leu | Cys | Glu | Leu | Pro | His | Pro |
| 1   |     |     |     | 5   |     |     |     |     | 10  |     |     |     |     | 15  |     |
| Ala | Phe | Leu | Leu | Ile | Pro | Asp | Ile | Gln | Met | Thr | Gln | Thr | Thr | Ser | Ser |
|     |     |     | 20  |     |     |     |     | 25  |     |     |     |     | 30  |     |     |
| Leu | Ser | Ala | Ser | Leu | Gly | Asp | Arg | Val | Thr | Ile | Ser | Cys | Arg | Ala | Ser |
|     |     | 35  |     |     |     |     | 40  |     |     |     |     | 45  |     |     |     |
| Gln | Asp | Ile | Ser | Lys | Tyr | Leu | Asn | Trp | Tyr | Gln | Gln | Lys | Pro | Asp | Gly |
|     | 50  |     |     |     |     | 55  |     |     |     |     | 60  |     |     |     |     |
| Thr | Val | Lys | Leu | Leu | Ile | Tyr | His | Thr | Ser | Arg | Leu | His | Ser | Gly | Val |
| 65  |     |     |     |     | 70  |     |     |     |     | 75  |     |     |     | 80  |     |
| Pro | Ser | Arg | Phe | Ser | Gly | Ser | Gly | Ser | Gly | Thr | Asp | Tyr | Ser | Leu | Thr |
|     |     |     |     | 85  |     |     |     |     | 90  |     |     |     |     | 95  |     |
| Ile | Ser | Asn | Leu | Glu | Gln | Glu | Asp | Ile | Ala | Thr | Tyr | Phe | Cys | Gln | Gln |
|     |     |     | 100 |     |     |     |     | 105 |     |     |     |     | 110 |     |     |
| Gly | Asn | Thr | Leu | Pro | Tyr | Thr | Phe | Gly | Gly | Gly | Thr | Lys | Leu | Glu | Ile |
|     |     | 115 |     |     |     |     | 120 |     |     |     |     | 125 |     |     |     |
| Thr | Gly | Ser | Thr | Ser | Gly | Ser | Gly | Lys | Pro | Gly | Ser | Gly | Glu | Gly | Ser |
|     | 130 |     |     |     |     | 135 |     |     |     |     | 140 |     |     |     |     |
| Thr | Lys | Gly | Glu | Val | Lys | Leu | Gln | Glu | Ser | Gly | Pro | Gly | Leu | Val | Ala |
| 145 |     |     |     |     | 150 |     |     |     |     | 155 |     |     |     |     | 160 |
| Pro | Ser | Gln | Ser | Leu | Ser | Val | Thr | Cys | Thr | Val | Ser | Gly | Val | Ser | Leu |
|     |     |     |     | 165 |     |     |     |     | 170 |     |     |     |     | 175 |     |
| Pro | Asp | Tyr | Gly | Val | Ser | Trp | Ile | Arg | Gln | Pro | Pro | Arg | Lys | Gly | Leu |
|     |     |     | 180 |     |     |     |     | 185 |     |     |     |     | 190 |     |     |
| Glu | Trp | Leu | Gly | Val | Ile | Trp | Gly | Ser | Glu | Thr | Thr | Tyr | Tyr | Asn | Ser |
|     |     | 195 |     |     |     |     | 200 |     |     |     |     | 205 |     |     |     |
| Ala | Leu | Lys | Ser | Arg | Leu | Thr | Ile | Ile | Lys | Asp | Asn | Ser | Lys | Ser | Gln |
|     | 210 |     |     |     |     | 215 |     |     |     |     | 220 |     |     |     |     |
| Val | Phe | Leu | Lys | Met | Asn | Ser | Leu | Gln | Thr | Asp | Asp | Thr | Ala | Ile | Tyr |
| 225 |     |     |     |     | 230 |     |     |     |     | 235 |     |     |     |     | 240 |
| Tyr | Cys | Ala | Lys | His | Tyr | Tyr | Tyr | Gly | Gly | Ser | Tyr | Ala | Met | Asp | Tyr |
|     |     |     |     | 245 |     |     |     |     | 250 |     |     |     |     | 255 |     |
| Trp | Gly | Gln | Gly | Thr | Ser | Val | Thr | Val | Ser | Ser | Glu | Ser | Lys | Tyr | Gly |
|     |     |     | 260 |     |     |     |     | 265 |     |     |     |     | 270 |     |     |
| Pro | Pro | Cys | Pro | Pro | Cys | Pro | Met | Phe | Trp | Val | Leu | Val | Val | Val | Gly |
|     |     | 275 |     |     |     |     | 280 |     |     |     |     | 285 |     |     |     |
| Gly | Val | Leu | Ala | Cys | Tyr | Ser | Leu | Leu | Val | Thr | Val | Ala | Phe | Ile | Ile |
|     | 290 |     |     |     |     | 295 |     |     |     |     | 300 |     |     |     |     |
| Phe | Trp | Val | Lys | Arg | Gly | Arg | Lys | Lys | Leu | Leu | Tyr | Ile | Phe | Lys | Gln |
| 305 |     |     |     |     | 310 |     |     |     |     | 315 |     |     |     |     | 320 |
| Pro | Phe | Met | Arg | Pro | Val | Gln | Thr | Thr | Gln | Glu | Glu | Asp | Gly | Cys | Ser |
|     |     |     |     | 325 |     |     |     |     | 330 |     |     |     |     | 335 |     |
| Cys | Arg | Phe | Pro | Glu | Glu | Glu | Glu | Gly | Gly | Cys | Glu | Leu | Arg | Val | Lys |
|     |     |     | 340 |     |     |     |     | 345 |     |     |     |     | 350 |     |     |
| Phe | Ser | Arg | Ser | Ala | Asp | Ala | Pro | Ala | Tyr | Gln | Gln | Gly | Gln | Asn | Gln |
|     |     | 355 |     |     |     |     | 360 |     |     |     |     | 365 |     |     |     |
| Leu | Tyr | Asn | Glu | Leu | Asn | Leu | Gly | Arg | Arg | Glu | Glu | Tyr | Asp | Val | Leu |
|     | 370 |     |     |     |     | 375 |     |     |     |     | 380 |     |     |     |     |
| Asp | Lys | Arg | Arg | Gly | Arg | Asp | Pro | Glu | Met | Gly | Gly | Lys | Pro | Arg | Arg |
| 385 |     |     |     |     | 390 |     |     |     |     | 395 |     |     |     |     | 400 |
| Lys | Asn | Pro | Gln | Glu | Gly | Leu | Tyr | Asn | Glu | Leu | Gln | Lys | Asp | Lys | Met |
|     |     |     | 405 |     |     |     |     |     | 410 |     |     |     |     | 415 |     |
| Ala | Glu | Ala | Tyr | Ser | Glu | Ile | Gly | Met | Lys | Gly | Glu | Arg | Arg | Arg | Gly |
|     |     |     | 420 |     |     |     |     | 425 |     |     |     |     | 430 |     |     |
| Lys | Gly | His | Asp | Gly | Leu | Tyr | Gln | Gly | Leu | Ser | Thr | Ala | Thr | Lys | Asp |
|     |     | 435 |     |     |     |     | 440 |     |     |     |     | 445 |     |     |     |
| Thr | Tyr | Asp | Ala | Leu | His | Met | Gln | Ala | Leu | Pro | Pro | Arg | Leu | Glu | Gly |
|     | 450 |     |     |     |     | 455 |     |     |     |     | 460 |     |     |     |     |
| Gly | Gly | Glu | Gly | Arg | Gly | Ser | Leu | Leu | Thr | Cys | Gly | Asp | Val | Glu | Glu |
| 465 |     |     |     |     | 470 |     |     |     |     | 475 |     |     |     |     | 480 |
| Asn | Pro | Gly | Pro | Arg | Met | Leu | Leu | Leu | Val | Thr | Ser | Leu | Leu | Leu | Cys |
|     |     |     |     | 485 |     |     |     |     | 490 |     |     |     |     | 495 |     |
| Glu | Leu | Pro | His | Pro | Ala | Phe | Leu | Leu | Ile | Pro | Arg | Lys | Val | Cys | Asn |
|     |     |     | 500 |     |     |     |     | 505 |     |     |     |     | 510 |     |     |
| Gly | Ile | Gly | Ile | Gly | Glu | Phe | Lys | Asp | Ser | Leu | Ser | Ile | Asn | Ala | Thr |



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

|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Gly | Val | Leu | Ala | Cys | Tyr | Ser | Leu | Leu | Val | Thr | Val | Ala | Phe | Ile | Ile |
|     |     |     |     | 165 |     |     |     |     | 170 |     |     |     |     | 175 |     |
| Phe | Trp | Val | Arg | Ser | Lys | Arg | Ser | Arg | Leu | Leu | His | Ser | Asp | Tyr | Met |
|     |     |     | 180 |     |     |     |     | 185 |     |     |     |     | 190 |     |     |
| Asn | Met | Thr | Pro | Arg | Arg | Pro | Gly | Pro | Thr | Arg | Lys | His | Tyr | Gln | Pro |
|     |     | 195 |     |     |     |     | 200 |     |     |     |     | 205 |     |     |     |
| Tyr | Ala | Pro | Pro | Arg | Asp | Phe | Ala | Ala | Tyr | Arg | Ser |     |     |     |     |
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| Met | Gly | Asn | Ser | Cys | Tyr | Asn | Ile | Val | Ala | Thr | Leu | Leu | Leu | Val | Leu |
| 1   |     |     |     | 5   |     |     |     |     | 10  |     |     |     |     | 15  |     |
| Asn | Phe | Glu | Arg | Thr | Arg | Ser | Leu | Gln | Asp | Pro | Cys | Ser | Asn | Cys | Pro |
|     |     |     | 20  |     |     |     |     | 25  |     |     |     |     | 30  |     |     |
| Ala | Gly | Thr | Phe | Cys | Asp | Asn | Asn | Arg | Asn | Gln | Ile | Cys | Ser | Pro | Cys |
|     |     | 35  |     |     |     |     | 40  |     |     |     |     | 45  |     |     |     |
| Pro | Pro | Asn | Ser | Phe | Ser | Ser | Ala | Gly | Gly | Gln | Arg | Thr | Cys | Asp | Ile |
|     | 50  |     |     |     |     | 55  |     |     |     |     | 60  |     |     |     |     |
| Cys | Arg | Gln | Cys | Lys | Gly | Val | Phe | Arg | Thr | Arg | Lys | Glu | Cys | Ser | Ser |
| 65  |     |     |     |     | 70  |     |     |     |     | 75  |     |     |     | 80  |     |
| Thr | Ser | Asn | Ala | Glu | Cys | Asp | Cys | Thr | Pro | Gly | Phe | His | Cys | Leu | Gly |
|     |     |     | 85  |     |     |     |     |     | 90  |     |     |     |     | 95  |     |
| Ala | Gly | Cys | Ser | Met | Cys | Glu | Gln | Asp | Cys | Lys | Gln | Gly | Gln | Glu | Leu |
|     |     |     | 100 |     |     |     |     | 105 |     |     |     |     | 110 |     |     |
| Thr | Lys | Lys | Gly | Cys | Lys | Asp | Cys | Cys | Phe | Gly | Thr | Phe | Asn | Asp | Gln |
|     |     | 115 |     |     |     |     | 120 |     |     |     |     |     | 125 |     |     |
| Lys | Arg | Gly | Ile | Cys | Arg | Pro | Trp | Thr | Asn | Cys | Ser | Leu | Asp | Gly | Lys |
|     | 130 |     |     |     |     | 135 |     |     |     |     | 140 |     |     |     |     |
| Ser | Val | Leu | Val | Asn | Gly | Thr | Lys | Glu | Arg | Asp | Val | Val | Cys | Gly | Pro |
| 145 |     |     |     |     | 150 |     |     |     |     | 155 |     |     |     |     | 160 |
| Ser | Pro | Ala | Asp | Leu | Ser | Pro | Gly | Ala | Ser | Ser | Val | Thr | Pro | Pro | Ala |
|     |     |     |     | 165 |     |     |     |     | 170 |     |     |     |     | 175 |     |
| Pro | Ala | Arg | Glu | Pro | Gly | His | Ser | Pro | Gln | Ile | Ile | Ser | Phe | Phe | Leu |
|     |     |     | 180 |     |     |     |     | 185 |     |     |     |     | 190 |     |     |
| Ala | Leu | Thr | Ser | Thr | Ala | Leu | Leu | Phe | Leu | Leu | Phe | Phe | Leu | Thr | Leu |
|     |     | 195 |     |     |     |     | 200 |     |     |     |     | 205 |     |     |     |
| Arg | Phe | Ser | Val | Val | Lys | Arg | Gly | Arg | Lys | Lys | Leu | Leu | Tyr | Ile | Phe |
|     | 210 |     |     |     |     | 215 |     |     |     |     | 220 |     |     |     |     |
| Lys | Gln | Pro | Phe | Met | Arg | Pro | Val | Gln | Thr | Thr | Gln | Glu | Glu | Asp | Gly |
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<220>  
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|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
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| Met | Lys | Trp | Lys | Ala | Leu | Phe | Thr | Ala | Ala | Ile | Leu | Gln | Ala | Gln | Leu |
| 1   |     |     |     | 5   |     |     |     |     | 10  |     |     |     |     | 15  |     |
| Pro | Ile | Thr | Glu | Ala | Gln | Ser | Phe | Gly | Leu | Leu | Asp | Pro | Lys | Leu | Cys |
|     |     |     | 20  |     |     |     |     | 25  |     |     |     |     | 30  |     |     |
| Tyr | Leu | Leu | Asp | Gly | Ile | Leu | Phe | Ile | Tyr | Gly | Val | Ile | Leu | Thr | Ala |
|     |     | 35  |     |     |     |     | 40  |     |     |     |     | 45  |     |     |     |
| Leu | Phe | Leu | Arg | Val | Lys | Phe | Ser | Arg | Ser | Ala | Asp | Ala | Pro | Ala | Tyr |
|     | 50  |     |     |     |     | 55  |     |     |     |     | 60  |     |     |     |     |
| Gln | Gln | Gly | Gln | Asn | Gln | Leu | Tyr | Asn | Glu | Leu | Asn | Leu | Gly | Arg | Arg |

|    |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |    |     |
|----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|----|-----|
| 65 | Glu | Glu | Tyr | Asp | Val | 70  | Leu | Asp | Lys | Arg | Arg | 75  | Gly | Arg | Asp | Pro | Glu | 80 | Met |
|    |     |     |     |     | 85  |     |     |     |     |     | 90  |     |     |     |     |     | 95  |    |     |
|    | Gly | Gly | Lys | Pro | Gln | Arg | Arg | Lys | Asn | 100 | Pro | Gln | Glu | Gly | Leu | Tyr | Asn |    |     |
|    |     |     |     |     |     |     |     |     | 105 |     |     |     |     |     |     |     | 110 |    |     |
|    | Glu | Leu | Gln | Lys | Asp | Lys | Met | Ala | Glu | 115 | Ala | Tyr | Ser | Glu | Ile | Gly | Met |    |     |
|    |     |     |     |     |     |     |     | 120 |     |     |     |     |     | 125 |     |     |     |    |     |
|    | Lys | Gly | Glu | Arg | Arg | Arg | Gly | Lys | Gly | 130 | His | Asp | Gly | Leu | Tyr | Gln | Gly |    |     |
|    |     |     |     |     |     |     | 135 |     |     |     |     |     | 140 |     |     |     |     |    |     |
|    | Leu | Ser | Thr | Ala | Thr | Lys | Asp | Thr | Tyr | 145 | Asp | Ala | Leu | His | Met | Gln | Ala |    |     |
|    |     |     |     |     |     | 150 |     |     |     | 155 |     |     |     |     |     |     | 160 |    |     |
|    | Leu | Pro | Pro | Arg |     |     |     |     |     |     |     |     |     |     |     |     |     |    |     |

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| <220><br><223> oJ02653                                         |    |
| <400> 27<br>cgaccagcaa ccatagtcc                               | 19 |
| <210> 28<br><211> 18<br><212> DNA<br><213> Artificial Sequence |    |
| <220><br><223> oJ02654                                         |    |
| <400> 28<br>tagcggtttg actcacgg                                | 18 |
| <210> 29<br><211> 20<br><212> DNA<br><213> Artificial Sequence |    |
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| <400> 29<br>gcagggagct agaacgattc                              | 20 |
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| <210> 31<br><211> 16<br><212> DNA<br><213> Artificial Sequence |    |
| <220><br><223> oJ02657                                         |    |
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1  
5  
10  
15  
Leu Gln Ser Gly Leu Ser Lys Gln Ala Leu Ile Gln Ala Leu Gly Gln  
Page 13

|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Pro | Gly | Pro | 20  | Tyr | Leu | Leu | Ala | Gly | 25  | Glu | Gly | Pro | Leu | Asp | 30  | Lys | Gly | Glu |
| Ser | Cys | 35  | Gly | Gly | Gly | Arg | Gly | 40  | Glu | Leu | Ala | Glu | Leu | Pro | 45  | Asn | Gly | Leu |
| Gly | Glu | 50  | Thr | Arg | Gly | Ser | 55  | Glu | Asp | Glu | Thr | Asp | 60  | Asp | Asp | Gly | Glu | Asp |
| 65  | Phe | Thr | Pro | Pro | Ile | Leu | 70  | Lys | Glu | Leu | Glu | Asn | Leu | Ser | Pro | 80  | Glu | Glu |
|     |     |     |     | 85  | Lys | Ala | Val | Val | Glu | 90  | Thr | Leu | Leu | Gln | Glu | 95  | Asp | Pro |
| Ala | Ala | His | 100 | Ala | Lys | Met | Val | Lys | 105 | Ser | Tyr | Leu | Gln | Gln | 110 | His | Asn | Ile |
| Trp | Arg | Val | 115 | Val | Val | Asp | 120 | Thr | Thr | Gly | Leu | Asn | Gln | Ser | His | Leu |     |     |
| Pro | Gln | Arg | 130 | Glu | Val | Val | 135 | Thr | Thr | Gly | Leu | Asn | Gln | Ser | His | Leu |     |     |
| Ser | Gln | His | 145 | Leu | Asn | Lys | 150 | Gly | Thr | Pro | Met | Lys | 155 | Thr | Gln | Lys | Arg | Ala |
| Ala | Leu | Tyr | 165 | Thr | Trp | Tyr | 170 | Val | Arg | Lys | Gln | Arg | Glu | Val | Ala | Gln | Gln |     |
| Phe | Thr | His | 180 | Gly | Gln | Gly | Gly | Leu | 185 | Ile | Glu | Glu | Pro | Thr | 190 | Gly | Asp |     |
| Glu | Leu | Pro | 195 | Thr | Lys | Lys | Gly | Arg | 200 | Arg | Asn | Arg | Phe | Lys | 205 | Trp | Gly | Pro |
| Ala | Ser | Gln | 210 | Gln | Ile | Leu | 215 | Gln | Ala | Tyr | Glu | Arg | Gln | Lys | Asn | Pro |     |     |
| Ser | Lys | Glu | 225 | Glu | Arg | Glu | 230 | Thr | Leu | Val | Glu | Glu | Cys | Asn | Arg | Ala | Glu |     |
| Cys | Ile | Gln | 245 | Arg | Gly | Val | 250 | Ser | Pro | Ser | Gln | Ala | Gln | Gly | Leu | Gly | Ser |     |
| Asn | Leu | Val | 260 | Thr | Glu | Val | 265 | Arg | Val | Tyr | Asn | Trp | Phe | Ala | Asn | Arg | Arg |     |
| Lys | Glu | Glu | 275 | Ala | Phe | Arg | 280 | His | Lys | Leu | Ser | Ala | Gly | Asp | 285 | Met | Arg | Ala |
| Ala | Asn | Leu | 290 | Trp | Pro | Ser | 295 | Leu | Met | Ile | Lys | Arg | Ser | Lys | Lys | Asn |     |     |
| Ser | Leu | Ala | 305 | Leu | Ser | Leu | 310 | Thr | Ala | Asp | Gln | Met | Val | Ser | Ala | Leu | Leu |     |
| Asp | Ala | Glu | 325 | Pro | Pro | Ile | 330 | Leu | Tyr | Ser | Glu | Tyr | Asp | Pro | Thr | Arg | Pro |     |
| Phe | Ser | Glu | 340 | Ala | Ser | Met | 345 | Met | Gly | Leu | Thr | Asn | Leu | Ala | 350 | Asp | Arg |     |
| Glu | Leu | Val | 355 | His | Met | Ile | 360 | Asn | Trp | Ala | Lys | Arg | Val | Pro | 365 | Gly | Phe | Val |
| Asp | Leu | Thr | 370 | Leu | His | Asp | 375 | Gln | Val | His | Leu | Leu | Glu | Cys | 380 | Ala | Trp | Leu |
| Glu | Ile | Leu | 385 | Met | Ile | Gly | 390 | Leu | Val | Trp | Arg | Ser | Met | Glu | His | Pro | Gly |     |
| Lys | Leu | Leu | 405 | Phe | Ala | Pro | 410 | Asn | Leu | Leu | Leu | Asp | Arg | Asn | Gln | Gly | Lys |     |
| Cys | Val | Glu | 420 | Gly | Met | Val | 425 | Glu | Ile | Phe | Asp | Met | Leu | Leu | 430 | Ala | Thr | Ser |
| Ser | Arg | Phe | 435 | Arg | Met | Met | 440 | Asn | Leu | Gln | Gly | Glu | Glu | Phe | 445 | Val | Cys | Leu |
| Lys | Ser | Ile | 450 | Ile | Leu | Leu | 455 | Asn | Ser | Gly | Val | Tyr | Thr | Phe | 460 | Leu | Ser | Ser |
| Thr | Leu | Lys | 465 | Ser | Leu | Glu | 470 | Glu | Lys | Asp | His | Ile | His | Arg | 475 | Val | Leu | Asp |
| Lys | Ile | Thr | 485 | Asp | Thr | Leu | 490 | Ile | His | Leu | Met | Ala | Lys | Ala | 495 | Gly | Leu | Thr |
| Leu | Gln | Gln | 500 | Gln | His | Gln | 505 | Arg | Leu | Ala | Gln | Leu | Leu | Leu | 510 | Ile | Leu | Ser |
| His | Ile | Arg | 515 | His | Met | Ser | 520 | Asn | Lys | Arg | Met | Glu | His | Leu | 525 | Tyr | Ser | Met |
| Lys | Cys | Lys | 530 | Asn | Val | Val | 535 | Pro | Leu | Tyr | Asp | Leu | Leu | Glu | 540 | Met | Leu |     |
| Asp | Ala | His | 545 | Arg | Leu | His | 550 | Ala | Pro | Thr | Ser | Arg | Gly | Gly | 555 | Ala | Ser | Val |
| Glu | Glu | Phe | 565 | Gln | Tyr | Leu | 570 | Pro | Asp | Thr | Asp | Asp | Arg | His | Arg | Ile | Glu |     |

Glu Lys Arg Lys Arg Thr Tyr Glu Thr Phe Lys Ser Ile Met Lys Lys  
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 Ser Pro Phe Ser Gly Pro Thr Asp Pro Arg Pro Pro Arg Arg Ile  
 595 600 605  
 Ala Val Pro Ser Arg Ser Ser Ala Ser Val Pro Lys Pro Ala Pro Gln  
 610 615 620  
 Pro Tyr Pro Phe Thr Ser Ser Leu Ser Thr Ile Asn Tyr Asp Glu Phe  
 625 630 635 640  
 Pro Thr Met Val Phe Pro Ser Gly Gln Ile Ser Gln Ala Ser Ala Leu  
 645 650 655  
 Ala Pro Ala Pro Pro Gln Val Leu Pro Gln Ala Pro Ala Pro Ala Pro  
 660 665 670  
 Ala Pro Ala Met Val Ser Ala Leu Ala Gln Ala Pro Ala Pro Val Pro  
 675 680 685  
 Val Leu Ala Pro Gly Pro Pro Gln Ala Val Ala Pro Ala Pro Lys  
 690 695 700  
 Pro Thr Gln Ala Gly Glu Gly Thr Leu Ser Glu Ala Leu Leu Gln Leu  
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 Gln Phe Asp Asp Glu Asp Leu Gly Ala Leu Gly Asn Ser Thr Asp  
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 Pro Ala Val Phe Thr Asp Leu Ala Ser Val Asp Asn Ser Glu Phe Gln  
 740 745 750  
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 755 760 765  
 Met Leu Met Glu Tyr Pro Glu Ala Ile Thr Arg Leu Val Thr Gly Ala  
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 Gln Arg Pro Pro Asp Pro Ala Pro Ala Pro Leu Gly Ala Pro Gly Leu  
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aagatcaccc acacctgat ccacctgatg gccaaaggctg gcctgacact ccagcagcag 1500
caccagagac tggcccagct gctgctgatc ctgagccaca tccggcacat gagcaacaag 1560
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cccgacaccg acgaccggca ccggatcgag gaaaagcgga agcggacctg cgagacattc 1860
aagagcatca tgaagaagtc ccccttcagc ggccccaccg atcccagacc cccccctaga 1920
agaatcgccc tgcccagcag atctagcgcc agcgtgcccc agcctgcccc ccagccctac 1980
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cctccagatc cagcaccagc tccactggga gcccctggcc tgctaataatg gctgctgtct 2520
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<210> 43  
 <211> 862  
 <212> PRT  
 <213> Artificial Sequence

<220>  
 <223> TamR-tf (HEA4)

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<400> 43
Met Val Ser Lys Leu Ser Gln Leu Gln Thr Glu Leu Leu Ala Ala Leu
 1          5          10          15
Leu Glu Ser Gly Leu Ser Lys Glu Ala Leu Ile Gln Ala Leu Gly Glu
 20          25          30
Pro Gly Pro Tyr Leu Leu Ala Gly Glu Gly Pro Leu Asp Lys Gly Glu
 35          40          45
Ser Cys Gly Gly Gly Arg Gly Glu Leu Ala Glu Leu Pro Asn Gly Leu
 50          55          60
Gly Glu Thr Arg Gly Ser Glu Asp Glu Thr Asp Asp Gly Glu Asp
 65          70          75          80
Phe Thr Pro Pro Ile Leu Lys Glu Leu Glu Asn Leu Ser Pro Glu Glu
 85          90          95
Ala Ala His Gln Lys Ala Val Val Glu Thr Leu Leu Gln Glu Asp Pro
100          105          110
Trp Arg Val Ala Lys Met Val Lys Ser Tyr Leu Gln Gln His Asn Ile
115          120          125
Pro Gln Arg Glu Val Val Asp Thr Thr Gly Leu Asn Gln Ser His Leu
130          135          140
Ser Gln His Leu Asn Lys Gly Thr Pro Met Lys Thr Gln Lys Arg Ala
145          150          155          160
Ala Leu Tyr Thr Trp Tyr Val Arg Lys Gln Arg Glu Val Ala Gln Gln
165          170          175
Phe Thr His Ala Gly Gln Gly Gly Leu Ile Glu Glu Pro Thr Gly Asp
180          185          190
Glu Leu Pro Thr Lys Lys Gly Arg Arg Asn Arg Phe Lys Trp Gly Pro
195          200          205
Ala Ser Gln Gln Ile Leu Phe Gln Ala Tyr Glu Arg Gln Lys Asn Pro
210          215          220
Ser Lys Glu Glu Arg Glu Thr Leu Val Glu Glu Cys Asn Arg Ala Glu

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|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| 225 | Cys | Ile | Gln | Arg | Gly | 230 | Val | Ser | Pro | Ser | Gln | 235 | Ala | Gln | Gly | Leu | Gly | 240 | Ser |
|     |     |     |     |     | 245 |     |     |     |     |     | 250 |     |     |     |     |     | 255 |     |     |
| Asn | Leu | Val | Thr | Glu | Val | Arg | Val | Tyr | 265 | Asn | Trp | Phe | Ala | Asn | Arg | Arg |     |     |     |
|     |     |     | 260 |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
| Lys | Glu | Glu | Ala | Phe | Arg | His | Lys | 280 | Leu | Ser | Ala | Gly | Asp | Met | Arg | Ala |     |     |     |
|     |     | 275 |     |     |     |     |     |     |     |     |     |     | 285 |     |     |     |     |     |     |
| Ala | Asn | Leu | Trp | Pro | Ser | Pro | Leu | Met | Ile | Lys | Arg | Ser | Lys | Lys | Asn |     |     |     |     |
|     | 290 |     |     |     |     | 295 |     |     |     |     | 300 |     |     |     |     |     |     |     |     |
| Ser | Leu | Ala | Leu | Ser | Leu | Thr | Ala | Asp | Gln | Met | Val | Ser | Ala | Leu | Leu |     |     |     |     |
|     | 305 |     |     |     | 310 |     |     |     |     | 315 |     |     |     |     |     |     |     |     |     |
| Asp | Ala | Glu | Pro | Pro | Ile | Leu | Tyr | Ser | Glu | Tyr | Asp | Pro | Thr | Arg | Pro |     |     |     |     |
|     |     |     | 325 |     |     |     |     |     | 330 |     |     |     |     |     |     |     |     |     |     |
| Phe | Ser | Glu | Ala | Ser | Met | Met | Gly | Leu | 345 | Leu | Thr | Asn | Leu | Ala | Asp | Arg |     |     |     |
|     |     |     | 340 |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
| Glu | Leu | Val | His | Met | Ile | Asn | Trp | Ala | Lys | Arg | Val | Pro | Gly | Phe | Val |     |     |     |     |
|     |     | 355 |     |     |     |     | 360 |     |     |     |     |     |     |     |     |     |     |     |     |
| Asp | Leu | Thr | Leu | His | Asp | Gln | Val | His | Leu | Leu | Glu | Cys | Ala | Trp | Leu |     |     |     |     |
|     | 370 |     |     |     |     | 375 |     |     |     |     |     |     |     |     |     |     |     |     |     |
| Glu | Ile | Leu | Met | Ile | Gly | Leu | Val | Trp | Arg | Ser | Met | Glu | His | Pro | Val |     |     |     |     |
|     | 385 |     |     |     | 390 |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
| Lys | Leu | Leu | Phe | Ala | Pro | Asn | Leu | Leu | Leu | Asp | Arg | Asn | Gln | Gly | Lys |     |     |     |     |
|     |     |     | 405 |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
| Cys | Val | Glu | Gly | Met | Val | Glu | Ile | Phe | Asp | Met | Leu | Leu | Ala | Thr | Ser |     |     |     |     |
|     |     |     | 420 |     |     |     |     | 425 |     |     |     |     |     |     |     |     |     |     |     |
| Ser | Arg | Phe | Arg | Met | Met | Asn | Leu | Gln | Gly | Glu | Glu | Phe | Val | Cys | Leu |     |     |     |     |
|     |     | 435 |     |     |     | 440 |     |     |     |     |     | 445 |     |     |     |     |     |     |     |
| Lys | Ser | Ile | Ile | Leu | Leu | Asn | Ser | Gly | Val | Tyr | Thr | Phe | Leu | Ser | Ser |     |     |     |     |
|     | 450 |     |     |     |     | 455 |     |     |     |     |     |     |     |     |     |     |     |     |     |
| Thr | Leu | Lys | Ser | Leu | Glu | Lys | Asp | His | Ile | His | Arg | Val | Leu | Asp |     |     |     |     |     |
|     | 465 |     |     |     | 470 |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
| Lys | Ile | Thr | Asp | Thr | Leu | Ile | His | Leu | Met | Ala | Lys | Ala | Gly | Leu | Thr |     |     |     |     |
|     |     |     | 485 |     |     |     |     |     | 490 |     |     |     |     |     |     |     |     |     |     |
| Leu | Gln | Gln | Gln | His | Gln | Arg | Leu | Ala | Gln | Leu | Leu | Leu | Ile | Leu | Ser |     |     |     |     |
|     |     |     | 500 |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
| His | Ile | Arg | His | Met | Ser | Asn | Lys | Gly | Met | Glu | His | Leu | Tyr | Ser | Met |     |     |     |     |
|     |     | 515 |     |     |     |     | 520 |     |     |     |     | 525 |     |     |     |     |     |     |     |
| Lys | Cys | Lys | Asn | Val | Val | Pro | Leu | Tyr | Asp | Leu | Leu | Leu | Glu | Ala | Ala |     |     |     |     |
|     | 530 |     |     |     |     | 535 |     |     |     |     |     |     |     |     |     |     |     |     |     |
| Asp | Ala | His | Arg | Leu | His | Ala | Pro | Thr | Ser | Arg | Gly | Gly | Ala | Ser | Val |     |     |     |     |
|     | 545 |     |     |     | 550 |     |     |     |     | 555 |     |     |     |     |     |     |     |     |     |
| Glu | Glu | Thr | Asp | Gln | Ser | His | Leu | Ala | Thr | Ala | Gly | Ser | Thr | Ser | Ser |     |     |     |     |
|     |     |     | 565 |     |     |     |     |     | 570 |     |     |     |     |     |     |     |     |     |     |
| His | Ser | Leu | Gln | Lys | Tyr | Tyr | Ile | Thr | Gly | Glu | Ala | Glu | Gly | Phe | Pro |     |     |     |     |
|     |     |     | 580 |     |     |     |     | 585 |     |     |     |     |     |     |     |     |     |     |     |
| Ala | Thr | Val | Glu | Phe | Gln | Tyr | Leu | Pro | Asp | Thr | Asp | Asp | Arg | His | Arg |     |     |     |     |
|     |     | 595 |     |     |     |     | 600 |     |     |     |     |     |     |     |     |     |     |     |     |
| Ile | Glu | Glu | Lys | Arg | Lys | Arg | Thr | Tyr | Glu | Thr | Phe | Lys | Ser | Ile | Met |     |     |     |     |
|     | 610 |     |     |     |     | 615 |     |     |     |     | 620 |     |     |     |     |     |     |     |     |
| Lys | Lys | Ser | Pro | Phe | Ser | Gly | Pro | Thr | Asp | Pro | Arg | Pro | Pro | Pro | Arg |     |     |     |     |
|     | 625 |     |     |     | 630 |     |     |     |     | 635 |     |     |     |     |     |     |     |     |     |
| Arg | Ile | Ala | Val | Pro | Ser | Arg | Ser | Ser | Ala | Ser | Val | Pro | Lys | Pro | Ala |     |     |     |     |
|     |     |     | 645 |     |     |     |     |     | 650 |     |     |     |     |     |     |     |     |     |     |
| Pro | Gln | Pro | Tyr | Pro | Phe | Thr | Ser | Ser | Leu | Ser | Thr | Ile | Asn | Tyr | Asp |     |     |     |     |
|     |     |     | 660 |     |     |     |     | 665 |     |     |     |     |     |     |     |     |     |     |     |
| Glu | Phe | Pro | Thr | Met | Val | Phe | Pro | Ser | Gly | Gln | Ile | Ser | Gln | Ala | Ser |     |     |     |     |
|     |     | 675 |     |     |     |     | 680 |     |     |     |     |     |     |     |     |     |     |     |     |
| Ala | Leu | Ala | Pro | Ala | Pro | Pro | Gln | Val | Leu | Pro | Gln | Ala | Pro | Ala | Pro |     |     |     |     |
|     | 690 |     |     |     |     | 695 |     |     |     |     |     |     |     |     |     |     |     |     |     |
| Ala | Pro | Ala | Pro | Ala | Met | Val | Ser | Ala | Leu | Ala | Gln | Ala | Pro | Ala | Pro |     |     |     |     |
|     | 705 |     |     |     | 710 |     |     |     |     | 715 |     |     |     |     |     |     |     |     |     |
| Val | Pro | Val | Leu | Ala | Pro | Gly | Pro | Pro | Gln | Ala | Val | Ala | Pro | Pro | Ala |     |     |     |     |
|     |     |     | 725 |     |     |     |     |     | 730 |     |     |     |     |     |     |     |     |     |     |
| Pro | Lys | Pro | Thr | Gln | Ala | Gly | Glu | Gly | Thr | Leu | Ser | Glu | Ala | Leu | Leu |     |     |     |     |
|     |     |     | 740 |     |     |     |     | 745 |     |     |     |     |     |     |     |     |     |     |     |
| Gln | Leu | Gln | Phe | Asp | Asp | Glu | Asp | Leu | Gly | Ala | Leu | Leu | Gly | Asn | Ser |     |     |     |     |
|     |     | 755 |     |     |     |     | 760 |     |     |     |     |     |     |     |     |     |     |     |     |
| Thr | Asp | Pro | Ala | Val | Phe | Thr | Asp | Leu | Ala | Ser | Val | Asp | Asn | Ser | Glu |     |     |     |     |
|     | 770 |     |     |     |     | 775 |     |     |     |     | 780 |     |     |     |     |     |     |     |     |

|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Phe | Gln | Gln | Leu | Leu | Asn | Gln | Gly | Ile | Pro | Val | Ala | Pro | His | Thr | Thr |
| 785 |     |     |     |     | 790 |     |     |     |     | 795 |     |     |     |     | 800 |
| Glu | Pro | Met | Leu | Met | Glu | Tyr | Pro | Glu | Ala | Ile | Thr | Arg | Leu | Val | Thr |
|     |     |     | 805 |     |     |     |     |     | 810 |     |     |     |     | 815 |     |
| Gly | Ala | Gln | Arg | Pro | Pro | Asp | Pro | Ala | Pro | Ala | Pro | Leu | Gly | Ala | Pro |
|     |     |     | 820 |     |     |     |     | 825 |     |     |     |     | 830 |     |     |
| Gly | Leu | Pro | Asn | Gly | Leu | Leu | Ser | Gly | Asp | Glu | Asp | Phe | Ser | Ser | Ile |
|     |     | 835 |     |     |     |     | 840 |     |     |     |     | 845 |     |     |     |
| Ala | Asp | Met | Asp | Phe | Ser | Ala | Leu | Leu | Ser | Gln | Ile | Ser | Ser |     |     |
|     | 850 |     |     |     |     | 855 |     |     |     |     | 860 |     |     |     |     |

<210> 44  
 <211> 408  
 <212> DNA  
 <213> Artificial Sequence

<220>  
 <223> Her2t

<400> 44  
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 atcccatgcc accctgagtg tcagccccag aatggctcag tgacctgttt tggaccggag 120  
 gctgaccagt gtgtggcctg tgcccactat aaggaccctc ccttctgcgt ggcccgcctg 180  
 cccagcgggtg tgaacacctga cctctcctac atgccatctt ggaagtittcc agatgaggag 240  
 ggcgcattgcc agccttgccc catcaactgc acccactcct gtgtggacct ggatgacaag 300  
 ggctgccccg ccgagcagag agccagccct ctgacgtcca tcatctctgc ggtggttggc 360  
 attctgctgg tcgtggtcctt ggggggtggtc tttgggatcc tcatctga 408

<210> 45  
 <211> 135  
 <212> PRT  
 <213> Artificial Sequence

<220>  
 <223> Her2t

|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Met | Leu | Leu | Leu | Val | Thr | Ser | Leu | Leu | Leu | Cys | Glu | Leu | Pro | His | Pro |
| 1   |     |     |     | 5   |     |     |     |     | 10  |     |     |     |     | 15  |     |
| Ala | Phe | Leu | Leu | Ile | Pro | Cys | His | Pro | Glu | Cys | Gln | Pro | Gln | Asn | Gly |
|     |     |     | 20  |     |     |     |     | 25  |     |     |     |     | 30  |     |     |
| Ser | Val | Thr | Cys | Phe | Gly | Pro | Glu | Ala | Asp | Gln | Cys | Val | Ala | Cys | Ala |
|     |     | 35  |     |     |     | 40  |     |     |     |     |     | 45  |     |     |     |
| His | Tyr | Lys | Asp | Pro | Pro | Phe | Cys | Val | Ala | Arg | Cys | Pro | Ser | Gly | Val |
|     | 50  |     |     |     |     | 55  |     |     |     |     | 60  |     |     |     |     |
| Lys | Pro | Asp | Leu | Ser | Tyr | Met | Pro | Ile | Trp | Lys | Phe | Pro | Asp | Glu | Glu |
| 65  |     |     |     |     | 70  |     |     |     | 75  |     |     |     |     | 80  |     |
| Gly | Ala | Cys | Gln | Pro | Cys | Pro | Ile | Asn | Cys | Thr | His | Ser | Cys | Val | Asp |
|     |     |     | 85  |     |     |     |     |     | 90  |     |     |     |     | 95  |     |
| Leu | Asp | Asp | Lys | Gly | Cys | Pro | Ala | Glu | Gln | Arg | Ala | Ser | Pro | Leu | Thr |
|     |     |     | 100 |     |     |     |     | 105 |     |     |     |     | 110 |     |     |
| Ser | Ile | Ile | Ser | Ala | Val | Val | Gly | Ile | Leu | Leu | Val | Val | Val | Leu | Gly |
|     |     | 115 |     |     |     |     | 120 |     |     |     |     | 125 |     |     |     |
| Val | Val | Phe | Gly | Ile | Leu | Ile |     |     |     |     |     |     |     |     |     |
|     | 130 |     |     |     |     | 135 |     |     |     |     |     |     |     |     |     |

<210> 46  
 <211> 561  
 <212> DNA  
 <213> Artificial Sequence

<220>  
 <223> DHFRdm

<400> 46  
 atggttggtt cgctaaactg catcgtcgt gtgtcccaga acatgggcat cggcaagaac 60  
 ggggacttcc cctggccacc gtcaggaat gaatccagat atttccagag aatgaccaca 120

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acctcttcag tagaaggtaa acagaatctg gtgattatgg gtaagaagac ctggttctcc 180
attcctgaga agaatcgacc tttaaagggt agaattaatt tagttctcag cagagaactc 240
aaggaacctc cacaaggagc tcattttcct tccagaagtc tagatgatgc cttaaaactt 300
actgaacaac cagaattagc aaataaagta gacatggtct ggatagttgg tggcagttct 360
gtttataagg aagccatgaa tcacccaggc catcttaaac tatttgtgac aaggatcatg 420
caagactttg aaagtgacac gttttttcca gaaattgatt tggagaaata taaacttctg 480
ccagaatacc caggtgttct ctctgatgtc caggaggaga aaggcattaa gtacaaattt 540
gaagtatatg agaagaatga t

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<210> 47  
 <211> 187  
 <212> PRT  
 <213> Artificial Sequence

<220>  
 <223> DHFRdm

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<400> 47
Met Val Gly Ser Leu Asn Cys Ile Val Ala Val Ser Gln Asn Met Gly
 1      5      10      15
Ile Gly Lys Asn Gly Asp Phe Pro Trp Pro Pro Leu Arg Asn Glu Ser
 20     25     30
Arg Tyr Phe Gln Arg Met Thr Thr Thr Ser Ser Val Glu Gly Lys Gln
 35     40     45
Asn Leu Val Ile Met Gly Lys Lys Thr Trp Phe Ser Ile Pro Glu Lys
 50     55     60
Asn Arg Pro Leu Lys Gly Arg Ile Asn Leu Val Leu Ser Arg Glu Leu
 65     70     75     80
Lys Glu Pro Pro Gln Gly Ala His Phe Leu Ser Arg Ser Leu Asp Asp
 85     90     95
Ala Leu Lys Leu Thr Glu Gln Pro Glu Leu Ala Asn Lys Val Asp Met
100    105    110
Val Trp Ile Val Gly Gly Ser Ser Val Tyr Lys Glu Ala Met Asn His
115    120    125
Pro Gly His Leu Lys Leu Phe Val Thr Arg Ile Met Gln Asp Phe Glu
130    135    140
Ser Asp Thr Phe Phe Pro Glu Ile Asp Leu Glu Lys Tyr Lys Leu Leu
145    150    155    160
Pro Glu Tyr Pro Gly Val Leu Ser Asp Val Gln Glu Glu Lys Gly Ile
165    170    175
Lys Tyr Lys Phe Glu Val Tyr Glu Lys Asn Asp
180    185

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<210> 48

<400> 48  
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<210> 49

<400> 49  
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<210> 50

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 <210> 59  
 <211> 98  
 <212> PRT  
 <213> Artificial Sequence

<220>  
 <223> CH3 domain

<400> 59  
 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 Ser Leu Gly Thr Lys Thr  
 65 70 75 80  
 Tyr Thr Cys Asn Val Asp His Lys Pro Ser Asn Thr Lys Val Asp Lys  
 85 90 95  
 Arg Val

<210> 60  
 <211> 12  
 <212> PRT  
 <213> Artificial Sequence

<220>  
 <223> Hinge domain

<400> 60  
 Glu Ser Lys Tyr Gly Pro Pro Cys Pro Ser Cys Pro  
 1 5 10

<210> 61

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

<220>  
 <223> CH2 domain

<400> 61  
 Ala Pro Glu Phe Leu Gly Gly Pro Ser Val Phe Leu Phe Pro Pro Lys  
 1 5 10 15  
 Pro Lys Asp Thr Leu Met Ile Ser Arg Thr Pro Glu Val Thr Cys Val  
 20 25 30  
 Val Val Asp Val Ser Gln Glu Asp Pro Glu Val Gln Phe Asn Trp Tyr  
 35 40 45  
 Val Asp Gly Val Glu Val His Asn Ala Lys Thr Lys Pro Arg Glu Glu  
 50 55 60  
 Gln Phe Asn Ser Thr Tyr Arg Val Val Ser Val Leu Thr Val Leu His  
 65 70 75 80  
 Gln Asp Trp Leu Asn Gly Lys Glu Tyr Lys Cys Lys Val Ser Asn Lys  
 85 90 95  
 Gly Leu Pro Ser Ser Ile Glu Lys Thr Ile Ser Lys Ala Lys  
 100 105 110

<210> 62  
 <211> 107  
 <212> PRT  
 <213> Artificial Sequence

<220>  
 <223> CH3 protein domain

<400> 62  
 Gly Gln Pro Arg Glu Pro Gln Val Tyr Thr Leu Pro Pro Ser Gln Glu  
 1 5 10 15  
 Glu Met Thr Lys Asn Gln Val Ser Leu Thr Cys Leu Val Lys Gly Phe  
 20 25 30  
 Tyr Pro Ser Asp Ile Ala Val Glu Trp Glu Ser Asn Gly Gln Pro Glu  
 35 40 45  
 Asn Asn Tyr Lys Thr Thr Pro Val Leu Asp Ser Asp Gly Ser Phe  
 50 55 60  
 Phe Leu Tyr Ser Arg Leu Thr Val Asp Lys Ser Arg Trp Gln Glu Gly  
 65 70 75 80  
 Asn Val Phe Ser Cys Ser Val Met His Glu Ala Leu His Asn His Tyr  
 85 90 95  
 Thr Gln Lys Ser Leu Ser Leu Ser Leu Gly Lys  
 100 105

<210> 63

<400> 63  
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<210> 64  
 <211> 12  
 <212> PRT  
 <213> Artificial Sequence

<220>  
 <223> Signal peptide

<400> 64  
 Met Leu Arg Leu Leu Leu Ala Leu Asn Leu Phe Pro  
 1 5 10

<210> 65  
 <211> 134

<212> PRT  
<213> Artificial Sequence

<220>  
<223> Extracellular domain

<400> 65  
Asn Lys Ile Leu Val Lys Gln Ser Pro Met Leu Val Ala Tyr Asp Asn  
1 5 10 15  
Ala Val Asn Leu Ser Cys Lys Tyr Ser Tyr Asn Leu Phe Ser Arg Glu  
20 25 30  
Phe Arg Ala Ser Leu His Lys Gly Leu Asp Ser Ala Val Glu Val Cys  
35 40 45  
Val Val Tyr Gly Asn Tyr Ser Gln Gln Leu Gln Val Tyr Ser Lys Thr  
50 55 60  
Gly Phe Asn Cys Asp Gly Lys Leu Gly Asn Glu Ser Val Thr Phe Tyr  
65 70 75 80  
Leu Gln Asn Leu Tyr Val Asn Gln Thr Asp Ile Tyr Phe Cys Lys Ile  
85 90 95  
Glu Val Met Tyr Pro Pro Tyr Leu Asp Asn Glu Lys Ser Asn Gly  
100 105 110  
Thr Ile Ile His Val Lys Gly Lys His Leu Cys Pro Ser Pro Leu Phe  
115 120 125  
Pro Gly Pro Ser Lys Pro  
130

<210> 66  
<211> 27  
<212> PRT  
<213> Artificial Sequence

<220>  
<223> Transmembrane domain

<400> 66  
Phe Trp Val Leu Val Val Val Gly Gly Val Leu Ala Cys Tyr Ser Leu  
1 5 10 15  
Leu Val Thr Val Ala Phe Ile Ile Phe Trp Val  
20 25

<210> 67  
<211> 50  
<212> PRT  
<213> Artificial Sequence

<220>  
<223> Intracellular domain

<400> 67  
Thr Val Ala Phe Ile Ile Phe Trp Val Arg Ser Lys Arg Ser Arg Leu  
1 5 10 15  
Leu His Ser Asp Tyr Met Asn Met Thr Pro Arg Arg Pro Gly Pro Thr  
20 25 30  
Arg Lys His Tyr Gln Pro Tyr Ala Pro Pro Arg Asp Phe Ala Ala Tyr  
35 40 45  
Arg Ser  
50

<210> 68  
<220>  
<223> Signal peptide

<400> 68  
000

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

<220>  
 <223> Signal peptide

<400> 69  
 Met Gly Asn Ser Cys Tyr Asn Ile Val Ala Thr Leu Leu Leu Val Leu  
 1 5 10 15  
 Asn Phe Glu Arg Thr Arg Ser  
 20

<210> 70  
 <211> 166  
 <212> PRT  
 <213> Artificial Sequence

<220>  
 <223> Extracellular domain

<400> 70  
 Thr Arg Ser Leu Gln Asp Pro Cys Ser Asn Cys Pro Ala Gly Thr Phe  
 1 5 10 15  
 Cys Asp Asn Asn Arg Asn Gln Ile Cys Ser Pro Cys Pro Pro Asn Ser  
 20 25 30  
 Phe Ser Ser Ala Gly Gly Gln Arg Thr Cys Asp Ile Cys Arg Gln Cys  
 35 40 45  
 Lys Gly Val Phe Arg Thr Arg Lys Glu Cys Ser Ser Thr Ser Asn Ala  
 50 55 60  
 Glu Cys Asp Cys Thr Pro Gly Phe His Cys Leu Gly Ala Gly Cys Ser  
 65 70 75 80  
 Met Cys Glu Gln Asp Cys Lys Gln Gly Gln Glu Leu Thr Lys Lys Gly  
 85 90 95  
 Cys Lys Asp Cys Cys Phe Gly Thr Phe Asn Asp Gln Lys Arg Gly Ile  
 100 105 110  
 Cys Arg Pro Trp Thr Asn Cys Ser Leu Asp Gly Lys Ser Val Leu Val  
 115 120 125  
 Asn Gly Thr Lys Glu Arg Asp Val Val Cys Gly Pro Ser Pro Ala Asp  
 130 135 140  
 Leu Ser Pro Gly Ala Ser Ser Val Thr Pro Pro Ala Pro Ala Arg Glu  
 145 150 155 160  
 Pro Gly His Ser Pro Gln  
 165

<210> 71  
 <211> 27  
 <212> PRT  
 <213> Artificial Sequence

<220>  
 <223> Transmembrane domain

<400> 71  
 Ile Ile Ser Phe Phe Leu Ala Leu Thr Ser Thr Ala Leu Leu Phe Leu  
 1 5 10 15  
 Leu Phe Phe Leu Thr Leu Arg Phe Ser Val Val  
 20 25

<210> 72  
 <211> 42  
 <212> PRT  
 <213> Artificial Sequence

<220>

<223> Intracellular domain

<400> 72

Lys Arg Gly Arg Lys Lys Leu Leu Tyr Ile Phe Lys Gln Pro Phe Met  
1 5 10 15  
Arg Pro Val Gln Thr Thr Gln Glu Glu Asp Gly Cys Ser Cys Arg Phe  
20 25 30  
Pro Glu Glu Glu Glu Gly Gly Cys Glu Leu  
35 40

<210> 73

<211> 21

<212> PRT

<213> Artificial Sequence

<220>

<223> Signal peptide

<400> 73

Met Lys Trp Lys Ala Leu Phe Thr Ala Ala Ile Leu Gln Ala Gln Leu  
1 5 10 15  
Pro Ile Thr Glu Ala  
20

<210> 74

<211> 9

<212> PRT

<213> Artificial Sequence

<220>

<223> Extracellular domain

<400> 74

Gln Ser Phe Gly Leu Leu Asp Pro Lys  
1 5

<210> 75

<211> 21

<212> PRT

<213> Artificial Sequence

<220>

<223> Transmembrane domain

<400> 75

Leu Cys Tyr Leu Leu Asp Gly Ile Leu Phe Ile Tyr Gly Val Ile Leu  
1 5 10 15  
Thr Ala Leu Phe Leu  
20

<210> 76

<211> 113

<212> PRT

<213> Artificial Sequence

<220>

<223> Intracellular domain

<400> 76

Arg Val Lys Phe Ser Arg Ser Ala Asp Ala Pro Ala Tyr Gln Gln Gly  
1 5 10 15  
Gln Asn Gln Leu Tyr Asn Glu Leu Asn Leu Gly Arg Arg Glu Glu Tyr  
20 25 30  
Asp Val Leu Asp Lys Arg Arg Gly Arg Asp Pro Glu Met Gly Gly Lys  
35 40 45

Pro Gln Arg Arg Lys Asn Pro Gln Glu Gly Leu Tyr Asn Glu Leu Gln  
50 55 60  
Lys Asp Lys Met Ala Glu Ala Tyr Ser Glu Ile Gly Met Lys Gly Glu  
65 70 75 80  
Arg Arg Arg Gly Lys Gly His Asp Gly Leu Tyr Gln Gly Leu Ser Thr  
85 90 95  
Ala Thr Lys Asp Thr Tyr Asp Ala Leu His Met Gln Ala Leu Pro Pro  
100 105 110  
Arg

<210> 77  
<211> 29  
<212> PRT  
<213> Artificial Sequence

<220>  
<223> ITAM 1

<400> 77  
Ala Pro Ala Tyr Gln Gln Gly Gln Asn Gln Leu Tyr Asn Glu Leu Asn  
1 5 10 15  
Leu Gly Arg Arg Glu Glu Tyr Asp Val Leu Asp Lys Arg  
20 25

<210> 78  
<211> 29  
<212> PRT  
<213> Artificial Sequence

<220>  
<223> ITAM 2

<400> 78  
Pro Gln Arg Arg Lys Asn Pro Gln Glu Gly Leu Tyr Asn Glu Leu Gln  
1 5 10 15  
Lys Asp Lys Met Ala Glu Ala Tyr Ser Glu Ile Gly Met  
20 25

<210> 79  
<211> 29  
<212> PRT  
<213> Artificial Sequence

<220>  
<223> ITAM 3

<400> 79  
Glu Arg Arg Arg Gly Lys Gly His Asp Gly Leu Tyr Gln Gly Leu Ser  
1 5 10 15  
Thr Ala Thr Lys Asp Thr Tyr Asp Ala Leu His Met Gln  
20 25

<210> 80  
<211> 66  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> Leader

<400> 80  
atgcttctcc tgggtgacaag ctttctgctc tgtgagttac cacaccacgc attcctcctg 60  
atccca 66

<210> 81  
<211> 734  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> Her2scFV

<400> 81  
gatattccaga tgaccagtc cccgagctcc ctgtccgcct ctgtgggcga tagggtcacc 60  
atcacctgcc gtgccagtca ggatgtgaat actgctgtag cctgggtatca acagaaacca 120  
ggaaaagctc cgaaactact gatttactcg gcatccttcc tctactctgg agtccccttct 180  
cgctttctctg gttccagatc tgggacggat ttcactctga ccatcagcag tctgcagccg 240  
gaagacttcg caacttatta ctgtcagcaa cattatacta ctctcccccac gttcggacag 300  
ggtaccaagg tggagatcaa aggcagtact agcggcgggtg gctccggggg cggatccggg 360  
gggggaggca gcagcgagggt tcagctgggtg gagtctggcg gtggcctggg gcagccaggg 420  
ggctcactcc gtttgcctg tgcagcttct ggcttcaaca ttaaagacac ctatatacac 480  
tgggtgcgtc aggcccccgg taagggcctg gaatgggttg caaggattta tcctacgaat 540  
ggttatacta gatatgccga tagcgtcaag ggccgtttca ctataagcgc agacacatcc 600  
aaaaacacag cctacctgca gatgaacagc ctgcgtgctg aggacactgc cgtctattat 660  
tgttctagat ggggagggga cggcttctat gctatggact actgggggtca aggaaccctg 720  
gtcaccgtct cgag 734

<210> 82  
<211> 36  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> Hinge spacer

<400> 82  
gagagcaagt acggaccgcc ctgccccct tgccct 36

<210> 83  
<211> 84  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> CD28tm

<400> 83  
atgttctggg tgctgggtgg ggtcggaggc gtgctggcct gctacagcct gctggtcacc 60  
gtggccttca tcatttttg ggtg 84

<210> 84  
<211> 126  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> 4-1BB

<400> 84  
aaacggggca gaaagaaact cctgtatata ttcaacaac catttatgag accagtacaa 60  
actactcaag aggaagatgg ctgtagctgc cgatttccag aagaagaaga aggaggatgt 120  
gaactg 126

<210> 85  
<211> 336  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> CD3 zeta

<400> 85  
cgggtgaagt tcagcagaag cgccgacgcc cctgcctacc agcagggcca gaatcagctg 60

|            |            |            |            |            |            |     |
|------------|------------|------------|------------|------------|------------|-----|
| tacaacgagc | tgaacctggg | cagaagggaa | gagtagcagc | tcctggataa | gcggagaggg | 120 |
| cgggaccctg | agatgggagg | caagcctcgg | cggaagaacc | cccaggaagg | cctgtataac | 180 |
| gaactgcaga | aagacaagat | ggccgaggcc | tacagcgaga | tcggcatgaa | gggcgagcgg | 240 |
| aggcggggca | agggccacga | cgccctgtat | cagggcctgt | ccaccgccac | caaggatacc | 300 |
| tacgacgccc | tgacacatga | ggccctgccc | ccaagg     |            |            | 336 |

<210> 86  
 <211> 72  
 <212> DNA  
 <213> Artificial Sequence

<220>  
 <223> T2A

|            |                                                           |
|------------|-----------------------------------------------------------|
| <400> 86   |                                                           |
| ctcgagggcg | gcggagaggg cagaggaagt cttctaacat gcggtgacgt ggaggagaat 60 |
| cccggcccta | gg 72                                                     |

<210> 87  
 <211> 1074  
 <212> DNA  
 <213> Artificial Sequence

<220>  
 <223> tEGFR

|             |                                                             |
|-------------|-------------------------------------------------------------|
| <400> 87    |                                                             |
| atgcttctcc  | tggtgacaag ccttctgctc tgtgagttac cacacccagc attcctcctg 60   |
| atcccacgca  | aagtgtgtaa cggaataggt attgggtgaat ttaaagactc actctccata 120 |
| aatgctacga  | atattaaaca cttcaaaaac tgcacctcca tcagtggcga tctccacatc 180  |
| ctgccggtgg  | catttagggg tgactccttc acacatactc ctctcttgga tccacaggaa 240  |
| ctggatattc  | tgaaaaccgt aaaggaaatc acagggtttt tgctgattca ggcttggcct 300  |
| gaaaacagga  | cggacctcca tgcctttgag aacctagaaa tcatacgcgg caggaccaag 360  |
| caacatggtc  | agttttctct tgcagtcgtc agcctgaaca taacatcctt gggattacgc 420  |
| tccctcaagg  | agataagtga tggagatgtg ataatttcag gaaacaaaaa tttgtgctat 480  |
| gcaaatacaa  | taaactggaa aaaactgttt gggacctccg gtcagaaaac caaaattata 540  |
| agcaacagag  | gtgaaaacag ctgcaaggcc acaggccagg tctgccatgc cttgtgtctc 600  |
| cccgagggct  | gctggggccc ggagcccagg gactgcgtct cttgccggaa tgtcagccga 660  |
| ggcaggggaat | gcgtggacaa gtgcaacctt ctggaggggt agccaaggga gtttgtggag 720  |
| aactctgagt  | gcatacagtg ccaccagag tgcctgcctc aggccatgaa catcacctgc 780   |
| acaggacggg  | gaccagacaa ctgtatccag tgtgcccact acattgacgg cccccactgc 840  |
| gtcaagacct  | gcccggcagg agtcatggga gaaaacaaca ccctgggtctg gaagtacgca 900 |
| gacgccggcc  | atgtgtgcca cctgtgccat ccaaactgca cctacggatg cactgggcca 960  |
| ggtcttgaag  | gctgtccaac gaatgggcct aagatcccgt ccatcgccac tgggatgggt 1020 |
| ggggccctcc  | tcttgctgct ggtggtggcc ctggggatcg gcctcttcat gtga 1074       |

<210> 88  
 <211> 11  
 <212> PRT  
 <213> Artificial Sequence

<220>  
 <223> Humanized ScFv comprising a variable light chain comprising a CDRL1 sequence

|                                             |      |
|---------------------------------------------|------|
| <400> 88                                    |      |
| Arg Ala Ser Gln Asp Ile Ser Lys Tyr Leu Asn |      |
| 1                                           | 5 10 |

<210> 89  
 <211> 7  
 <212> PRT  
 <213> Artificial Sequence

<220>  
 <223> CDRL2

<400> 89

Ser Arg Leu His Ser Gly Val  
1 5

<210> 90  
<211> 9  
<212> PRT  
<213> Artificial Sequence

<220>  
<223> CDRL3

<400> 90  
Gly Asn Thr Leu Pro Tyr Thr Phe Gly  
1 5

<210> 91  
<211> 5  
<212> PRT  
<213> Artificial Sequence

<220>  
<223> CDRH1

<400> 91  
Asp Tyr Gly Val Ser  
1 5

<210> 92  
<211> 16  
<212> PRT  
<213> Artificial Sequence

<220>  
<223> CDRH2

<400> 92  
Val Ile Trp Gly Ser Glu Thr Thr Tyr Tyr Asn Ser Ala Leu Lys Ser  
1 5 10 15

<210> 93  
<211> 7  
<212> PRT  
<213> Artificial Sequence

<220>  
<223> CDRH3

<400> 93  
Tyr Ala Met Asp Tyr Trp Gly  
1 5

<210> 94  
<211> 18  
<212> PRT  
<213> Artificial Sequence

<220>  
<223> Flexible linker between the VH and VL chains in  
the scFv

<400> 94  
Gly Ser Thr Ser Gly Ser Gly Lys Pro Gly Ser Gly Glu Gly Ser Thr  
1 5 10 15  
Lys Gly