<110> MEDIMMUNE, LLC

<120> METHODS FOR IMPROVING ASTHMA SYMPTOMS USING BENRALIZUMAB

<130> IL5R-605WO1

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<150> 61/864,950
<151> 2013-08-12

<160> 12

<170> PatentIn version 3.5

<210> 1
<211> 107
<212> PRT
<213> Homo sapiens

<400> 1
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 Gly Thr Ser Glu Asp Ile Ile Asn Tyr
20 25 30

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

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

Ser Gly 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 Gly Tyr Thr Leu Pro Tyr
85 90 95

Thr Phe Gly Gln Gly Thr Lys Val Glu Ile Lys
100 105

<210> 2
<211> 214
<212> PRT
<213> Homo sapiens

<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 Gly Thr Ser Glu Asp Ile Ile Asn Tyr
20 25 30

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

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

Ser Gly 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 Gly Tyr Thr Leu Pro Tyr
                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> 121
<212> PRT
<213> Homo sapiens

<400> 3
Glu Val Gln Leu Val Gln Ser Gly Ala Glu Val Lys Lys Pro Gly Ala
1               5                   10                  15

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

Val Ile His Trp Val Arg Gln Arg Pro Gly Gln Gly Leu Ala Trp Met
        35                  40                  45

Gly Tyr Ile Asn Pro Tyr Asn Asp Gly Thr Lys Tyr Asn Glu Arg Phe
    50                  55                  60
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Lys Gly Lys Val Thr Ile Thr Ser Asp Arg Ser Thr Ser Thr Val Tyr
65 70 75 80

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

Gly Arg Glu Gly Ile Arg Tyr Tyr Gly Leu Leu Gly Asp Tyr Trp Gly
100 105 110

Gln Gly Thr Leu Val Thr Val Ser Ser
115 120

<210> 4
<211> 451
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<213> Homo sapiens

<400> 4
Glu Val Gln Leu Val Gln Ser Gly Ala Glu Val Lys Lys Pro Gly Ala
1 5 10 15

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

Val Ile His Trp Val Arg Gln Arg Pro Gly Gln Gly Leu Ala Trp Met
35 40 45

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

Lys Gly Lys Val Thr Ile Thr Ser Asp Arg Ser Thr Ser Thr Val Tyr
65 70 75 80

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

Gly Arg Glu Gly Ile Arg Tyr Tyr Gly Leu Leu Gly Asp Tyr Trp Gly
100 105 110

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

Pro Gly Lys
    450
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<210> 5
<211> 400
<212> PRT
<213> Homo sapiens

<400> 5
Asp Leu Leu Pro Asp Glu Lys Ile Ser Leu Leu Pro Pro Val Asn Phe
1   5   10   15

Thr Ile Lys Val Thr Gly Leu Ala Gln Val Leu Leu Gln Trp Lys Pro
            20   25   30

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

Ile Asn Ala Pro Lys Glu Asp Asp Tyr Glu Thr Arg Ile Thr Glu Ser
    50   55   60

Lys Cys Val Thr Ile Leu His Lys Gly Phe Ser Ala Ser Val Arg Thr
65   70   75   80

Ile Leu Gln Asn Asp His Ser Leu Leu Ala Ser Ser Trp Ala Ser Ala
                85   90   95

Glu Leu His Ala Pro Pro Gly Ser Pro Gly Thr Ser Ile Val Asn Leu
            100   105   110

Thr Cys Thr Thr Asn Thr Thr Glu Asp Asn Tyr Ser Arg Leu Arg Ser
        115   120   125

Tyr Gln Val Ser Leu His Cys Thr Trp Leu Val Gly Thr Asp Ala Pro
    130   135   140

Glu Asp Thr Gln Tyr Phe Leu Tyr Tyr Arg Tyr Gly Ser Trp Thr Glu
145   150   155   160

Glu Cys Gln Glu Tyr Ser Lys Asp Thr Leu Gly Arg Asn Ile Ala Cys
                165   170   175

Trp Phe Pro Arg Thr Phe Ile Leu Ser Lys Gly Arg Asp Trp Leu Ala
            180   185   190

Val Leu Val Asn Gly Ser Ser Lys His Ser Ala Ile Arg Pro Phe Asp
        195   200   205

Gln Leu Phe Ala Leu His Ala Ile Asp Gln Ile Asn Pro Pro Leu Asn
    210   215   220

Val Thr Ala Glu Ile Glu Gly Thr Arg Leu Ser Ile Gln Trp Glu Lys
225   230   235   240

```
Pro Val Ser Ala Phe Pro Ile His Cys Phe Asp Tyr Glu Val Lys Ile
                245                 250                 255

His Asn Thr Arg Asn Gly Tyr Leu Gln Ile Glu Lys Leu Met Thr Asn
            260                 265                 270

Ala Phe Ile Ser Ile Ile Asp Asp Leu Ser Lys Tyr Asp Val Gln Val
        275                 280                 285

Arg Ala Ala Val Ser Ser Met Cys Arg Glu Ala Gly Leu Trp Ser Glu
    290                 295                 300

Trp Ser Gln Pro Ile Tyr Val Gly Asn Asp Glu His Lys Pro Leu Arg
305                 310                 315                 320

Glu Trp Phe Val Ile Val Ile Met Ala Thr Ile Cys Phe Ile Leu Leu
                325                 330                 335

Ile Leu Ser Leu Ile Cys Lys Ile Cys His Leu Trp Ile Lys Leu Phe
            340                 345                 350

Pro Pro Ile Pro Ala Pro Lys Ser Asn Ile Lys Asp Leu Phe Val Thr
        355                 360                 365

Thr Asn Tyr Glu Lys Ala Gly Ser Ser Glu Thr Glu Ile Glu Val Ile
    370                 375                 380

Cys Tyr Ile Glu Lys Pro Gly Val Glu Thr Leu Glu Asp Ser Val Phe
385                 390                 395                 400
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<210> 6
<211> 398
<212> PRT
<213> Mus musculus

<400> 6

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Asp Leu Leu Asn His Lys Lys Phe Leu Leu Leu Pro Pro Val Asn Phe
1               5                   10                  15

Thr Ile Lys Ala Thr Gly Leu Ala Gln Val Leu Leu His Trp Asp Pro
            20                  25                  30

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

Ile Asn Ala Pro Gln Glu Asp Glu Tyr Asp Thr Arg Lys Thr Glu Ser
    50                  55                  60

Lys Cys Val Thr Pro Leu His Glu Gly Phe Ala Ala Ser Val Arg Thr
65                  70                  75                  80

Ile Leu Lys Ser Ser His Thr Thr Leu Ala Ser Ser Trp Val Ser Ala
                85                  90                  95
```

```
Glu Leu Lys Ala Pro Pro Gly Ser Pro Gly Thr Ser Val Thr Asn Leu
            100                 105                 110

Thr Cys Thr Thr His Thr Val Val Ser Ser His Thr His Leu Arg Pro
        115                 120                 125

Tyr Gln Val Ser Leu Arg Cys Thr Trp Leu Val Gly Lys Asp Ala Pro
    130                 135                 140

Glu Asp Thr Gln Tyr Phe Leu Tyr Tyr Arg Phe Gly Val Leu Thr Glu
145                 150                 155                 160

Lys Cys Gln Glu Tyr Ser Arg Asp Ala Leu Asn Arg Asn Thr Ala Cys
                165                 170                 175

Trp Phe Pro Arg Thr Phe Ile Asn Ser Lys Gly Phe Glu Gln Leu Ala
            180                 185                 190

Val His Ile Asn Gly Ser Ser Lys Arg Ala Ala Ile Lys Pro Phe Asp
        195                 200                 205

Gln Leu Phe Ser Pro Leu Ala Ile Asp Gln Val Asn Pro Pro Arg Asn
    210                 215                 220

Val Thr Val Glu Ile Glu Ser Asn Ser Leu Tyr Ile Gln Trp Glu Lys
225                 230                 235                 240

Pro Leu Ser Ala Phe Pro Asp His Cys Phe Asn Tyr Glu Leu Lys Ile
                245                 250                 255

Tyr Asn Thr Lys Asn Gly His Ile Gln Lys Glu Lys Leu Ile Ala Asn
            260                 265                 270

Lys Phe Ile Ser Lys Ile Asp Asp Val Ser Thr Tyr Ser Ile Gln Val
        275                 280                 285

Arg Ala Ala Val Ser Ser Pro Cys Arg Met Pro Gly Arg Trp Gly Glu
    290                 295                 300

Trp Ser Gln Pro Ile Tyr Val Gly Lys Glu Arg Lys Ser Leu Val Glu
305                 310                 315                 320

Trp His Leu Ile Val Leu Pro Thr Ala Ala Cys Phe Val Leu Leu Ile
                325                 330                 335

Phe Ser Leu Ile Cys Arg Val Cys His Leu Trp Thr Arg Leu Phe Pro
            340                 345                 350

Pro Val Pro Ala Pro Lys Ser Asn Ile Lys Asp Leu Pro Val Val Thr
        355                 360                 365
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Glu Tyr Glu Lys Pro Ser Asn Glu Thr Lys Ile Glu Val Val His Cys
    370   375   380

Val Glu Glu Val Gly Phe Glu Val Met Gly Asn Ser Thr Phe
385   390   395

<210> 7
<211> 5
<212> PRT
<213> Homo sapiens

<400> 7
Ser Tyr Val Ile His
1   5

<210> 8
<211> 17
<212> PRT
<213> Homo sapiens

<400> 8
Tyr Ile Asn Pro Tyr Asn Asp Gly Thr Lys Tyr Asn Glu Arg Phe Lys
1   5   10   15

Gly

<210> 9
<211> 12
<212> PRT
<213> Homo sapiens

<400> 9
Glu Gly Ile Arg Tyr Tyr Gly Leu Leu Gly Asp Tyr
1   5   10

<210> 10
<211> 11
<212> PRT
<213> Homo sapiens

<400> 10
Gly Thr Ser Glu Asp Ile Ile Asn Tyr Leu Asn
1   5   10

<210> 11
<211> 7
<212> PRT
<213> Homo sapiens

<400> 11
His Thr Ser Arg Leu Gln Ser
1   5

<210> 12
<211> 9
<212> PRT
<213> Homo sapiens

<400> 12
Gln Gln Gly Tyr Thr Leu Pro Tyr Thr
1 5