

## SEQUENCE LISTING

<110> Valtion teknillinen tutkimuskeskus

<120> Method for producing novel hypoallergens for immunotherapy

<130> 47548

<160> 4

<170> PatentIn version 3.1

<210> 1

<211> 162

<212> PRT

<213> Bos taurus

<220>

<221> MISC\_FEATURE

<223> Amino acid sequence of recombinant H146P beta-lactoglobulin

<400> 1

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

Gly Thr Trp Tyr Ser Leu Ala Met Ala Ala Ser Asp Ile Ser Leu Leu  
20 25 30

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

Thr Pro Glu Gly Asp Leu Glu Ile Leu Leu Gln Lys Trp Glu Asn Gly  
50 55 60

Glu Cys Ala Gln Lys Lys Ile Ile Ala Glu Lys Thr Lys Ile Pro Ala  
65 70 75 80

Val Phe Lys Ile Asp Ala Leu Asn Glu Asn Lys Val Leu Val Leu Asp  
                   85                  90                  95

Thr Asp Tyr Lys Lys Tyr Leu Leu Phe Cys Met Glu Asn Ser Ala Glu  
                   100                  105                  110

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

Asp Asp Glu Ala Leu Glu Lys Phe Asp Lys Ala Leu Lys Ala Leu Pro  
           130                  135                  140

Met Pro Ile Arg Leu Ser Phe Asn Pro Thr Gln Leu Glu Glu Gln Cys  
   145                  150                  155                  160

His Ile

<210> 2

<211> 162

<212> PRT

<213> Bos taurus

<220>

<221> MISC\_FEATURE

<223> Amino acid sequence of recombinant R148P beta-lactoglobulin

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Leu Ile Val Thr Gln Thr Met Lys Gly Leu Asp Ile Gln Lys Val Ala  
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Gly Thr Trp Tyr Ser Leu Ala Met Ala Ala Ser Asp Ile Ser Leu Leu  
           20                  25                  30

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

Thr Pro Glu Gly Asp Leu Glu Ile Leu Leu Gln Lys Trp Glu Asn Gly  
   50                  55                  60

Glu Cys Ala Gln Lys Lys Ile Ile Ala Glu Lys Thr Lys Ile Pro Ala  
 65 70 75 80

Val Phe Lys Ile Asp Ala Leu Asn Glu Asn Lys Val Leu Val Leu Asp  
 85 90 95

Thr Asp Tyr Lys Lys Tyr Leu Leu Phe Cys Met Glu Asn Ser Ala Glu  
 100 105 110

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

Asp Asp Glu Ala Leu Glu Lys Phe Asp Lys Ala Leu Lys Ala Leu Pro  
 130 135 140

Met His Ile Pro Leu Ser Phe Asn Pro Thr Gln Leu Glu Glu Gln Cys  
 145 150 155 160

His Ile

<210> 3

<211> 162

<212> PRT

<213> Bos taurus

<220>

<221> MISC\_FEATURE

<223> Amino acid sequence of recombinant S150P beta-lactoglobulin

<400> 3

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Gly Thr Trp Tyr Ser Leu Ala Met Ala Ala Ser Asp Ile Ser Leu Leu  
 20 25 30

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

Thr Pro Glu Gly Asp Leu Glu Ile Leu Leu Gln Lys Trp Glu Asn Gly  
 50 55 60

Glu Cys Ala Gln Lys Lys Ile Ile Ala Glu Lys Thr Lys Ile Pro Ala  
 65 70 75 80

Val Phe Lys Ile Asp Ala Leu Asn Glu Asn Lys Val Leu Val Leu Asp  
 85 90 95

Thr Asp Tyr Lys Lys Tyr Leu Leu Phe Cys Met Glu Asn Ser Ala Glu  
 100 105 110

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

Asp Asp Glu Ala Leu Glu Lys Phe Asp Lys Ala Leu Lys Ala Leu Pro  
 130 135 140

Met His Ile Arg Leu Pro Phe Asn Pro Thr Gln Leu Glu Glu Gln Cys  
 145 150 155 160

His Ile

<210> 4

<211> 162

<212> PRT

<213> Bos taurus

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<223> Amino acid sequence of recombinant H146P/R148P/S150P (triple mutant) beta-lactoglobulin

<400> 4

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

Gly Thr Trp Tyr Ser Leu Ala Met Ala Ala Ser Asp Ile Ser Leu Leu  
 20 25 30

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

Thr Pro Glu Gly Asp Leu Glu Ile Leu Leu Gln Lys Trp Glu Asn Gly  
 50 55 60

Glu Cys Ala Gln Lys Lys Ile Ile Ala Glu Lys Thr Lys Ile Pro Ala  
 65 70 75 80

Val Phe Lys Ile Asp Ala Leu Asn Glu Asn Lys Val Leu Val Leu Asp  
 85 90 95

Thr Asp Tyr Lys Lys Tyr Leu Leu Phe Cys Met Glu Asn Ser Ala Glu  
 100 105 110

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

Asp Asp Glu Ala Leu Glu Lys Phe Asp Lys Ala Leu Lys Ala Leu Pro  
 130 135 140

Met Pro Ile Pro Leu Pro Phe Asn Pro Thr Gln Leu Glu Glu Gln Cys  
 145 150 155 160

His Ile