

# SEQUENCE LISTING

<110> Institut National de la Santé et de la Recherche Médicale  
(INSERM)

<120> Novel immunoadjuvant compounds and use thereof

<130> V882EU - INSERM

<160> 30

<170> PatentIn version 3.3

<210> 1

<211> 494

<212> PRT

<213> Salmonella enterica

<400> 1

|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Ala | Gln | Val | Ile | Asn | Thr | Asn | Ser | Leu | Ser | Leu | Leu | Thr | Gln | Asn | Asn |
| 1   |     |     |     | 5   |     |     |     |     | 10  |     |     |     |     | 15  |     |

|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Leu | Asn | Lys | Ser | Gln | Ser | Ala | Leu | Gly | Thr | Ala | Ile | Glu | Arg | Leu | Ser |
|     |     |     | 20  |     |     |     |     | 25  |     |     |     |     | 30  |     |     |

|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Ser | Gly | Leu | Arg | Ile | Asn | Ser | Ala | Lys | Asp | Asp | Ala | Ala | Gly | Gln | Ala |
|     |     | 35  |     |     |     |     | 40  |     |     |     |     | 45  |     |     |     |

|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Ile | Ala | Asn | Arg | Phe | Thr | Ala | Asn | Ile | Lys | Gly | Leu | Thr | Gln | Ala | Ser |
|     | 50  |     |     |     |     | 55  |     |     |     |     | 60  |     |     |     |     |

|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Arg | Asn | Ala | Asn | Asp | Gly | Ile | Ser | Ile | Ala | Gln | Thr | Thr | Glu | Gly | Ala |
| 65  |     |     |     |     | 70  |     |     |     | 75  |     |     |     |     |     | 80  |

|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Leu | Asn | Glu | Ile | Asn | Asn | Asn | Leu | Gln | Arg | Val | Arg | Glu | Leu | Ala | Val |
|     |     |     |     | 85  |     |     |     |     | 90  |     |     |     |     | 95  |     |

|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Gln | Ser | Ala | Asn | Ser | Thr | Asn | Ser | Gln | Ser | Asp | Leu | Asp | Ser | Ile | Gln |
|     |     |     | 100 |     |     |     |     | 105 |     |     |     |     | 110 |     |     |

|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Ala | Glu | Ile | Thr | Gln | Arg | Leu | Asn | Glu | Ile | Asp | Arg | Val | Ser | Gly | Gln |
|     |     | 115 |     |     |     |     | 120 |     |     |     |     | 125 |     |     |     |

|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Thr | Gln | Phe | Asn | Gly | Val | Lys | Val | Leu | Ala | Gln | Asp | Asn | Thr | Leu | Thr |
|     | 130 |     |     |     |     | 135 |     |     |     |     | 140 |     |     |     |     |

|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Ile | Gln | Val | Gly | Ala | Asn | Asp | Gly | Glu | Thr | Ile | Asp | Ile | Asp | Leu | Lys |
| 145 |     |     |     |     | 150 |     |     |     |     | 155 |     |     |     |     | 160 |

|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Gln | Ile | Asn | Ser | Gln | Thr | Leu | Gly | Leu | Asp | Thr | Leu | Asn | Val | Gln | Gln |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|

165

170

175

Lys Tyr Lys Val Ser Asp Thr Ala Ala Thr Val Thr Gly Tyr Ala Asp  
180 185 190

Thr Thr Ile Ala Leu Asp Asn Ser Thr Phe Lys Ala Ser Ala Thr Gly  
195 200 205

Leu Gly Gly Thr Asp Gln Lys Ile Asp Gly Asp Leu Lys Phe Asp Asp  
210 215 220

Thr Thr Gly Lys Tyr Tyr Ala Lys Val Thr Val Thr Gly Gly Thr Gly  
225 230 235 240

Lys Asp Gly Tyr Tyr Glu Val Ser Val Asp Lys Thr Asn Gly Glu Val  
245 250 255

Thr Leu Ala Gly Gly Ala Thr Ser Pro Leu Thr Gly Gly Leu Pro Ala  
260 265 270

Thr Ala Thr Glu Asp Val Lys Asn Val Gln Val Ala Asn Ala Asp Leu  
275 280 285

Thr Glu Ala Lys Ala Ala Leu Thr Ala Ala Gly Val Thr Gly Thr Ala  
290 295 300

Ser Val Val Lys Met Ser Tyr Thr Asp Asn Asn Gly Lys Thr Ile Asp  
305 310 315 320

Gly Gly Leu Ala Val Lys Val Gly Asp Asp Tyr Tyr Ser Ala Thr Gln  
325 330 335

Asn Lys Asp Gly Ser Ile Ser Ile Asn Thr Thr Lys Tyr Thr Ala Asp  
340 345 350

Asp Gly Thr Ser Lys Thr Ala Leu Asn Lys Leu Gly Gly Ala Asp Gly  
355 360 365

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

Ala Glu Gly His Asn Phe Lys Ala Gln Pro Asp Leu Ala Glu Ala Ala  
385 390 395 400

Ala Thr Thr Thr Glu Asn Pro Leu Gln Lys Ile Asp Ala Ala Leu Ala  
405 410 415

Gln Val Asp Thr Leu Arg Ser Asp Leu Gly Ala Val Gln Asn Arg Phe  
420 425 430

Asn Ser Ala Ile Thr Asn Leu Gly Asn Thr Val Asn Asn Leu Thr Ser  
435 440 445

Ala Arg Ser Arg Ile Glu Asp Ser Asp Tyr Ala Thr Glu Val Ser Asn  
450 455 460

Met Ser Arg Ala Gln Ile Leu Gln Gln Ala Gly Thr Ser Val Leu Ala  
465 470 475 480

Gln Ala Asn Gln Val Pro Gln Asn Val Leu Ser Leu Leu Arg  
485 490

<210> 2  
<211> 271  
<212> PRT  
<213> Salmonella enterica

<400> 2

Ala Gln Val Ile Asn Thr Asn Ser Leu Ser Leu Leu Thr Gln Asn Asn  
1 5 10 15

Leu Asn Lys Ser Gln Ser Ala Leu Gly Thr Ala Ile Glu Arg Leu Ser  
20 25 30

Ser Gly Leu Arg Ile Asn Ser Ala Lys Asp Asp Ala Ala Gly Gln Ala  
35 40 45

Ile Ala Asn Arg Phe Thr Ala Asn Ile Lys Gly Leu Thr Gln Ala Ser  
50 55 60

Arg Asn Ala Asn Asp Gly Ile Ser Ile Ala Gln Thr Thr Glu Gly Ala  
65 70 75 80

Leu Asn Glu Ile Asn Asn Asn Leu Gln Arg Val Arg Glu Leu Ala Val  
85 90 95

Gln Ser Ala Asn Ser Thr Asn Ser Gln Ser Asp Leu Asp Ser Ile Gln  
100 105 110

Ala Glu Ile Thr Gln Arg Leu Asn Glu Ile Asp Arg Val Ser Gly Gln  
115 120 125

Thr Gln Phe Asn Gly Val Lys Val Leu Ala Gln Asp Asn Thr Leu Thr  
130 135 140

Ile Gln Val Gly Ala Asn Asp Gly Glu Thr Ile Asp Ile Asp Leu Lys  
145 150 155 160

Gln Ile Asn Ser Gln Thr Leu Gly Leu Asp Thr Leu Asn Gly Ala Ala  
165 170 175

Gly Ala Thr Thr Thr Glu Asn Pro Leu Gln Lys Ile Asp Ala Ala Leu  
180 185 190

Ala Gln Val Asp Thr Leu Arg Ser Asp Leu Gly Ala Val Gln Asn Arg  
195 200 205

Phe Asn Ser Ala Ile Thr Asn Leu Gly Asn Thr Val Asn Asn Leu Thr  
210 215 220

Ser Ala Arg Ser Arg Ile Glu Asp Ser Asp Tyr Ala Thr Glu Val Ser  
225 230 235 240

Asn Met Ser Arg Ala Gln Ile Leu Gln Gln Ala Gly Thr Ser Val Leu  
245 250 255

Ala Gln Ala Asn Gln Val Pro Gln Ser Val Leu Ser Leu Leu Arg  
260 265 270

<210> 3  
<211> 1488  
<212> DNA  
<213> Salmonella enterica

<400> 3  
atggcacaag tcattaatac aaacagcctg tcgctgttga cccagaataa cctgaacaaa 60  
tcccagtcctg ctctgggcac cgctatcgag cgtctgtctt ccggtctgog tatcaacagc 120  
gcgaaagacg atgcggcagg tcaggcgatt gctaaccgtt ttaccgcgaa catcaaaggt 180  
ctgactcagg cttcccgtaa cgctaacgac ggtatctcca ttgcgcagac cactgaaggc 240  
gcgctgaacg aaatcaacaa caacctgcag cgtgtgcgtg aactggcggt tcagtctgct 300  
aacagcacca actcccagtc tgacctcgac tccatccagg ctgaaatcac ccagcgctg 360  
aacgaaatcg accgtgtatc cggccagact cagttcaacg gcgtgaaagt cctggcgagc 420  
gacaacaccc tgaccatcca ggttggtgcc aacgacggtg aaactatcga tatcgatctg 480  
aagcagatca actctcagac cctgggtctg gatacgctga atgtgcaaca aaaatataag 540  
gtcagcgata cggctgcaac tgttacagga tatgccgata ctacgattgc tttagacaat 600

|                                                                   |      |
|-------------------------------------------------------------------|------|
| agtactttta aagcctcggc tactggtctt ggtggtactg accagaaaat tgatggcgat | 660  |
| ttaaaatttg atgatacgac tggaaaatat tacgccaaag ttaccgttac ggggggaact | 720  |
| ggtaaagatg gctattatga agtttccgtt gataagacga acggtgaggt gactcttgct | 780  |
| ggcggtgcca cttccccgct tacaggtgga ctacctgcca cagcaactga ggatgtgaaa | 840  |
| aatgtacaag ttgcaaatgc tgatttgaca gaggctaaag ccgcattgac agcagcaggt | 900  |
| gttaccggca cagcatctgt tgttaagatg tcttatactg ataataacgg taaaactatt | 960  |
| gatggtgggt tagcagttaa ggtaggcgat gattactatt ctgcaactca aaataaagat | 1020 |
| ggttccataa gtattaatac tacgaaatac actgcagatg acggtacatc caaaactgca | 1080 |
| ctaaacaaac tgggtggcgc agacggcaaa accgaagttg tttctattgg tggtaaaact | 1140 |
| tacgctgcaa gtaaagccga aggtcacaac tttaaagcac agcctgatct ggcggaagcg | 1200 |
| gctgctacaa ccaccgaaaa cccgctgcag aaaattgatg ctgctttggc acaggttgac | 1260 |
| acgttacgtt ctgacctggg tgcggtacag aaccgtttca actccgctat taccaacctg | 1320 |
| ggcaacaccg taaacaacct gacttctgcc cgtagccgta tcgaagattc cgactacgcg | 1380 |
| accgaagttt ccaacatgtc tcgcgcgcag attctgcagc aggcgggtac ctccgttctg | 1440 |
| gcgcaggcga accaggttcc gcaaaacgtc ctctctttac tgcgttaa              | 1488 |

<210> 4  
 <211> 18  
 <212> DNA  
 <213> artificial sequence

<220>  
 <223> primer

|                     |    |
|---------------------|----|
| <400> 4             |    |
| agcagactga accgccag | 18 |

<210> 5  
 <211> 19  
 <212> DNA  
 <213> artificial sequence

<220>  
 <223> primer

|                      |    |
|----------------------|----|
| <400> 5              |    |
| gctacaacca ccgaaaacc | 19 |

<210> 6  
 <211> 19  
 <212> DNA  
 <213> artificial sequence

|       |                               |    |
|-------|-------------------------------|----|
| <220> |                               |    |
| <223> | primer                        |    |
| <400> | 6                             |    |
|       | aacccgctgc agaaaattg          | 19 |
| <210> | 7                             |    |
| <211> | 18                            |    |
| <212> | DNA                           |    |
| <213> | artificial sequence           |    |
| <220> |                               |    |
| <223> | primer                        |    |
| <400> | 7                             |    |
|       | caggactttc acgccgtt           | 18 |
| <210> | 8                             |    |
| <211> | 26                            |    |
| <212> | DNA                           |    |
| <213> | artificial sequence           |    |
| <220> |                               |    |
| <223> | primer                        |    |
| <400> | 8                             |    |
|       | cttcagatcg atatcgatag tttcac  | 26 |
| <210> | 9                             |    |
| <211> | 18                            |    |
| <212> | DNA                           |    |
| <213> | artificial sequence           |    |
| <220> |                               |    |
| <223> | primer                        |    |
| <400> | 9                             |    |
|       | attcagcgta tccagacc           | 18 |
| <210> | 10                            |    |
| <211> | 27                            |    |
| <212> | DNA                           |    |
| <213> | artificial sequence           |    |
| <220> |                               |    |
| <223> | primer                        |    |
| <400> | 10                            |    |
|       | gttccgcaaa gcgtcctctc tttactg | 27 |
| <210> | 11                            |    |
| <211> | 27                            |    |
| <212> | DNA                           |    |
| <213> | artificial sequence           |    |
| <220> |                               |    |

<223> primer

<400> 11  
cagtaaagag aggacgcttt gcggaac 27

<210> 12  
<211> 31  
<212> DNA  
<213> artificial sequence

<220>  
<223> primer

<400> 12  
ggtgcagctg gagctacaac caccgaaaac c 31

<210> 13  
<211> 31  
<212> DNA  
<213> artificial sequence

<220>  
<223> primer

<400> 13  
ggtgcagctg gaaacccgct gcagaaaatt g 31

<210> 14  
<211> 819  
<212> DNA  
<213> *Salmonella enterica*

<400> 14  
atggcacaag tcattaatac aaacagcctg tcgctgttga cccagaataa cctgaacaaa 60  
tcccagtcg ctctgggcac cgctatcgag cgtctgtctt ccggtctgag tatcaacagc 120  
gcgaaagacg atgcggcagg tcaggcgatt gctaaccgtt ttaccgcgaa catcaaaggt 180  
ctgactcagg cttcccgtaa cgctaacgac ggtatctcca ttgcgcagac cactgaaggc 240  
gcgctgaacg aaatcaacaa caacctgcag cgtgtgcgtg aactggcggg tcagtctgct 300  
aacagcacca actcccagtc tgacctcgac tccatccagg ctgaaatcac ccagcgctg 360  
aacgaaatcg accgtgtatc cgccagact cagttcaacg gcgtgaaagt cctggcgag 420  
gacaacaccc tgaccatcca ggttggtgcc aacgacggtg aaactatcga tatcgatctg 480  
aagcagatca actctcagac cctgggtctg gatacgctga atggtgctgc tgggtgctaca 540  
accaccgaaa acccgctgca gaaaattgat gctgctttgg cacagggtga cacgttacgt 600  
tctgacctgg gtgcggtaca gaaccgtttc aactccgcta ttaccaacct gggcaacacc 660  
gtaaacaacc tgacttctgc ccgtagccgt atcgaagatt ccgactacgc gaccgaagtt 720  
tccaacatgt ctgcgcgcga gattctgcag caggccggta cctccgttct ggcgagggcg 780

aaccagggttc cgcaaagcgt cctctcttta ctgcgttaa 819

<210> 15  
<211> 24  
<212> DNA  
<213> artificial sequence

<220>  
<223> primer

<400> 15  
agcaccattc agcgtatcca gacc 24

<210> 16  
<211> 24  
<212> DNA  
<213> artificial sequence

<220>  
<223> primer

<400> 16  
gctggtgcta caaccaccga aaac 24

<210> 17  
<211> 27  
<212> DNA  
<213> artificial sequence

<220>  
<223> primer

<400> 17  
tcgagatatc ctgtaacagt tgcagcc 27

<210> 18  
<211> 29  
<212> DNA  
<213> artificial sequence

<220>  
<223> primer

<400> 18  
actcgaggac ggtacatcca aaactgcac 29

<210> 19  
<211> 19  
<212> DNA  
<213> artificial sequence

<220>  
<223> primer

<400> 19

|                           |    |
|---------------------------|----|
| cgtcacccat ggcgaactg      | 19 |
|                           |    |
| <210> 20                  |    |
| <211> 21                  |    |
| <212> DNA                 |    |
| <213> artificial sequence |    |
| <220>                     |    |
| <223> primer              |    |
| <400> 20                  |    |
| gcttctttgc agctccttcg t   | 21 |
|                           |    |
| <210> 21                  |    |
| <211> 21                  |    |
| <212> DNA                 |    |
| <213> artificial sequence |    |
| <220>                     |    |
| <223> primer              |    |
| <400> 21                  |    |
| ttttgggatg gaattggaca c   | 21 |
|                           |    |
| <210> 22                  |    |
| <211> 20                  |    |
| <212> DNA                 |    |
| <213> artificial sequence |    |
| <220>                     |    |
| <223> primer              |    |
| <400> 22                  |    |
| tgacagtgaa gccttcaacc     | 20 |
|                           |    |
| <210> 23                  |    |
| <211> 20                  |    |
| <212> DNA                 |    |
| <213> artificial sequence |    |
| <220>                     |    |
| <223> primer              |    |
| <400> 23                  |    |
| ccctcaacgg aagaacaaaa     | 20 |
|                           |    |
| <210> 24                  |    |
| <211> 21                  |    |
| <212> DNA                 |    |
| <213> artificial sequence |    |
| <220>                     |    |
| <223> primer              |    |
| <400> 24                  |    |
| cacatcaggt acgatccagg c   | 21 |

<210> 25  
<211> 253  
<212> PRT  
<213> Salmonella enterica

<400> 25

Ala Gln Val Ile Asn Thr Asn Ser Leu Ser Leu Leu Thr Gln Asn Asn  
1 5 10 15

Leu Asn Lys Ser Gln Ser Ala Leu Gly Thr Ala Ile Glu Arg Leu Ser  
20 25 30

Ser Gly Leu Arg Ile Asn Ser Ala Lys Asp Asp Ala Ala Gly Gln Ala  
35 40 45

Ile Ala Asn Arg Phe Thr Ala Asn Ile Lys Gly Leu Thr Gln Ala Ser  
50 55 60

Arg Asn Ala Asn Asp Gly Ile Ser Ile Ala Gln Thr Thr Glu Gly Ala  
65 70 75 80

Leu Asn Glu Ile Asn Asn Asn Leu Gln Arg Val Arg Glu Leu Ala Val  
85 90 95

Gln Ser Ala Asn Ser Thr Asn Ser Gln Ser Asp Leu Asp Ser Ile Gln  
100 105 110

Ala Glu Ile Thr Gln Arg Leu Asn Glu Ile Asp Arg Val Ser Gly Gln  
115 120 125

Thr Gln Phe Asn Gly Val Lys Val Leu Ala Gln Asp Asn Thr Leu Thr  
130 135 140

Ile Gln Val Gly Ala Asn Asp Gly Glu Thr Ile Asp Ile Asp Leu Lys  
145 150 155 160

Gly Ala Ala Gly Asn Pro Leu Gln Lys Ile Asp Ala Ala Leu Ala Gln  
165 170 175

Val Asp Thr Leu Arg Ser Asp Leu Gly Ala Val Gln Asn Arg Phe Asn  
180 185 190

Ser Ala Ile Thr Asn Leu Gly Asn Thr Val Asn Asn Leu Thr Ser Ala  
195 200 205

Arg Ser Arg Ile Glu Asp Ser Asp Tyr Ala Thr Glu Val Ser Asn Met  
210 215 220

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

Ala Asn Gln Val Pro Gln Ser Val Leu Ser Leu Leu Arg  
245 250

<210> 26  
<211> 230  
<212> PRT  
<213> Salmonella enterica

<400> 26

Ala Gln Val Ile Asn Thr Asn Ser Leu Ser Leu Leu Thr Gln Asn Asn  
1 5 10 15

Leu Asn Lys Ser Gln Ser Ala Leu Gly Thr Ala Ile Glu Arg Leu Ser  
20 25 30

Ser Gly Leu Arg Ile Asn Ser Ala Lys Asp Asp Ala Ala Gly Gln Ala  
35 40 45

Ile Ala Asn Arg Phe Thr Ala Asn Ile Lys Gly Leu Thr Gln Ala Ser  
50 55 60

Arg Asn Ala Asn Asp Gly Ile Ser Ile Ala Gln Thr Thr Glu Gly Ala  
65 70 75 80

Leu Asn Glu Ile Asn Asn Asn Leu Gln Arg Val Arg Glu Leu Ala Val  
85 90 95

Gln Ser Ala Asn Ser Thr Asn Ser Gln Ser Asp Leu Asp Ser Ile Gln  
100 105 110

Ala Glu Ile Thr Gln Arg Leu Asn Glu Ile Asp Arg Val Ser Gly Gln  
115 120 125

Thr Gln Phe Asn Gly Val Lys Val Leu Gly Ala Ala Gly Asn Pro Leu  
130 135 140

Gln Lys Ile Asp Ala Ala Leu Ala Gln Val Asp Thr Leu Arg Ser Asp  
145 150 155 160

Leu Gly Ala Val Gln Asn Arg Phe Asn Ser Ala Ile Thr Asn Leu Gly  
165 170 175

Asn Thr Val Asn Asn Leu Thr Ser Ala Arg Ser Arg Ile Glu Asp Ser  
180 185 190

Asp Tyr Ala Thr Glu Val Ser Asn Met Ser Arg Ala Gln Ile Leu Gln  
195 200 205

Gln Ala Gly Thr Ser Val Leu Ala Gln Ala Asn Gln Val Pro Gln Ser  
210 215 220

Val Leu Ser Leu Leu Arg  
225 230

<210> 27  
<211> 192  
<212> PRT  
<213> Salmonella enterica

<400> 27

Ala Gln Val Ile Asn Thr Asn Ser Leu Ser Leu Leu Thr Gln Asn Asn  
1 5 10 15

Leu Asn Lys Ser Gln Ser Ala Leu Gly Thr Ala Ile Glu Arg Leu Ser  
20 25 30

Ser Gly Leu Arg Ile Asn Ser Ala Lys Asp Asp Ala Ala Gly Gln Ala  
35 40 45

Ile Ala Asn Arg Phe Thr Ala Asn Ile Lys Gly Leu Thr Gln Ala Ser  
50 55 60

Arg Asn Ala Asn Asp Gly Ile Ser Ile Ala Gln Thr Thr Glu Gly Ala  
65 70 75 80

Leu Asn Glu Ile Asn Asn Asn Leu Gln Arg Val Arg Glu Leu Ala Val  
85 90 95

Gln Ser Ala Gly Ala Ala Gly Asn Pro Leu Gln Lys Ile Asp Ala Ala  
100 105 110

Leu Ala Gln Val Asp Thr Leu Arg Ser Asp Leu Gly Ala Val Gln Asn  
115 120 125

Arg Phe Asn Ser Ala Ile Thr Asn Leu Gly Asn Thr Val Asn Asn Leu  
130 135 140

Thr Ser Ala Arg Ser Arg Ile Glu Asp Ser Asp Tyr Ala Thr Glu Val  
 145 150 155 160

Ser Asn Met Ser Arg Ala Gln Ile Leu Gln Gln Ala Gly Thr Ser Val  
 165 170 175

Leu Ala Gln Ala Asn Gln Val Pro Gln Ser Val Leu Ser Leu Leu Arg  
 180 185 190

<210> 28  
 <211> 765  
 <212> DNA  
 <213> Salmonella enterica

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 tcccagtcctg ctctgggcac cgctatcgag cgtctgtctt ccggtctgcg tatcaacagc 120  
 gcgaaagacg atgcggcagg tcaggcgatt gctaaccggt ttaccgcgaa catcaaaggt 180  
 ctgactcagg cttcccgtaa cgctaacgac ggtatctcca ttgcgcagac cactgaaggc 240  
 gcgctgaacg aaatcaacaa caacctgcag cgtgtgctg aactggcggt tcagtctgct 300  
 aacagcacca actcccagtc tgacctcgac tccatccagg ctgaaatcac ccagcgctg 360  
 aacgaaatcg accgtgtatc cggccagact cagttcaacg gcgtgaaagt cctggcgag 420  
 gacaacaccc tgaccatcca ggttggtgcc aacgacgggt aaactatcga tatcgatctg 480  
 aagggtgcag ctggaaaccc gctgcagaaa attgatgctg ctttggcaca ggttgacacg 540  
 ttacgttctg acctgggtgc ggtacagaac cgtttcaact ccgctattac caacctgggc 600  
 aacaccgtaa acaacctgac ttctgcccgt agccgtatcg aagattccga ctacgcgacc 660  
 gaagtttcca acatgtctcg cgcgcagatt ctgcagcagg ccggtacctc cgttctggcg 720  
 caggcgaacc aggttccgca aagcgtcctc tctttactgc gttaa 765

<210> 29  
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 <212> DNA  
 <213> Salmonella enterica

<400> 29  
 atggcacaag tcattaatac aaacagcctg tcgctgttga cccagaataa cctgaacaaa 60  
 tcccagtcctg ctctgggcac cgctatcgag cgtctgtctt ccggtctgcg tatcaacagc 120  
 gcgaaagacg atgcggcagg tcaggcgatt gctaaccggt ttaccgcgaa catcaaaggt 180  
 ctgactcagg cttcccgtaa cgctaacgac ggtatctcca ttgcgcagac cactgaaggc 240  
 gcgctgaacg aaatcaacaa caacctgcag cgtgtgctg aactggcggt tcagtctgct 300

|                                                                   |     |
|-------------------------------------------------------------------|-----|
| aacagcacca actcccagtc tgacctcgac tccatccagg ctgaaatcac ccagcgctg  | 360 |
| aacgaaatcg accgtgtatc cggccagact cagttcaacg gcgtgaaagt cctgggtgca | 420 |
| gctggaaacc cgctgcagaa aattgatgct gctttggcac aggttgacac gttacgttct | 480 |
| gacctgggtg cggtacagaa ccgtttcaac tccgctatta ccaacctggg caacaccgta | 540 |
| aacaacctga cttctgcccg tagccgtatc gaagattccg actacgcgac cgaagtttcc | 600 |
| aacatgtctc gcgcgcagat tctgcagcag gccggtacct ccgttctggc gcaggcgaac | 660 |
| caggttccgc aaagcgtcct ctctttactg cgtaa                            | 696 |

<210> 30  
 <211> 582  
 <212> DNA  
 <213> *Salmonella enterica*

|                                                                   |     |
|-------------------------------------------------------------------|-----|
| <400> 30                                                          |     |
| atggcacaag tcattaatac aaacagcctg tcgctgttga cccagaataa cctgaacaaa | 60  |
| tcccagtccg ctctgggcac cgctatcgag cgtctgtctt ccggtctgcg tatcaacagc | 120 |
| gcgaaagacg atgcggcagg tcaggcgatt gctaaccgtt ttaccgcgaa catcaaaggt | 180 |
| ctgactcagg cttcccgtaa cgctaacgac ggtatctcca ttgcgcagac cactgaaggc | 240 |
| gcgctgaacg aaatcaacaa caacctgcag cgtgtgcgtg aactggcggt tcagtctgct | 300 |
| ggtgcagctg gaaacccgct gcagaaaatt gatgctgctt tggcacaggt tgacacgtta | 360 |
| cgttctgacc tgggtgcggt acagaaccgt ttcaactccg ctattaccaa cctgggcaac | 420 |
| accgtaaaca acctgacttc tgcccgtagc cgtatcgaag attccgacta cgcgaccgaa | 480 |
| gtttccaaca tgtctcgcgc gcagattctg cagcaggccg gtacctccgt tctggcgcag | 540 |
| gcgaaccagg ttccgcaaag cgtcctctct ttactgcgtt aa                    | 582 |