SEQUENCE LISTING

<110> Astellas Pharma Inc.

<120> Nucleic acid for treatment of crustacean allergy

<130> A19003A00

<150> JP2018-091989
<151> 2018-05-11

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<170> PatentIn version 3.5

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1               5                   10                  15

ctg ctg ctc ggc ctc atg cat tgt gcg tca gca gca atg ttt atg gtg          96
Leu Leu Leu Gly Leu Met His Cys Ala Ser Ala Ala Met Phe Met Val
            20                  25                  30

aaa aat ggc aac ggg acc gcg tgc ata atg gcc aac ttc tct gct gcc         144
Lys Asn Gly Asn Gly Thr Ala Cys Ile Met Ala Asn Phe Ser Ala Ala
        35                  40                  45

ttc tca gtg aac tac gac acc aag agt ggc cct aag aac atg acc ctt         192
Phe Ser Val Asn Tyr Asp Thr Lys Ser Gly Pro Lys Asn Met Thr Leu
    50                  55                  60

gac ctg cca tca gat gcc aca gtg gtg ctc aac cgc agc tcc tgt gga         240
Asp Leu Pro Ser Asp Ala Thr Val Val Leu Asn Arg Ser Ser Cys Gly
65                  70                  75                  80

aaa gag aac act tct gac ccc agt ctc gtg att gct ttt gga aga gga         288
Lys Glu Asn Thr Ser Asp Pro Ser Leu Val Ile Ala Phe Gly Arg Gly
                85                  90                  95

cat aca ctc act ctc aat ttc acg aga aat gca aca cgt tac agc gtc         336
His Thr Leu Thr Leu Asn Phe Thr Arg Asn Ala Thr Arg Tyr Ser Val
            100                 105                 110
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cag ctc atg agt ttt gtt tat aac ttg tca gac aca cac ctt ttc ccc        384
Gln Leu Met Ser Phe Val Tyr Asn Leu Ser Asp Thr His Leu Phe Pro
        115                 120                 125

aat gcg agc tcc aaa gaa atc aag act gtg gaa tct ata act gac atc        432
Asn Ala Ser Ser Lys Glu Ile Lys Thr Val Glu Ser Ile Thr Asp Ile
    130                 135                 140

agg gca gat ata gat aaa aaa tac aga tgt gtt agt ggc acc cag gtc        480
Arg Ala Asp Ile Asp Lys Lys Tyr Arg Cys Val Ser Gly Thr Gln Val
145                 150                 155                 160

cac atg aac aac gtg acc gta acg ctc cat gat gcc acc atc cag gcg        528
His Met Asn Asn Val Thr Val Thr Leu His Asp Ala Thr Ile Gln Ala
                165                 170                 175

tac ctt tcc aac agc agc ttc agc cgg gga gag aca cgc tgt gaa caa        576
Tyr Leu Ser Asn Ser Ser Phe Ser Arg Gly Glu Thr Arg Cys Glu Gln
            180                 185                 190

gac agg cct tcc cca acc aca gcg ccc cct gcg cca ccc agc ccc tcg        624
Asp Arg Pro Ser Pro Thr Thr Ala Pro Pro Ala Pro Pro Ser Pro Ser
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ccc tca ccc gtg ccc aag agc ccc tct gtg gac aag tac aac gtg agc        672
Pro Ser Pro Val Pro Lys Ser Pro Ser Val Asp Lys Tyr Asn Val Ser
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ggc acc aac ggg acc tgc ctg ctg gcc agc atg ggg ctg cag ctg aac        720
Gly Thr Asn Gly Thr Cys Leu Leu Ala Ser Met Gly Leu Gln Leu Asn
225                 230                 235                 240

ctc acc tat gag agg aag gac aac acg acg gtg aca agg ctt ctc aac        768
Leu Thr Tyr Glu Arg Lys Asp Asn Thr Thr Val Thr Arg Leu Leu Asn
                245                 250                 255

atc aac ccc aac aag acc tcg gcc agc ggg agc tgc ggc gcc cac ctg        816
Ile Asn Pro Asn Lys Thr Ser Ala Ser Gly Ser Cys Gly Ala His Leu
            260                 265                 270

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Val Thr Leu Glu Leu His Ser Glu Gly Thr Thr Val Leu Leu Phe Gln
        275                 280                 285

ttc ggg atg aat gca agt tct agc cgg ttt ttc cta caa gga atc cag        912
Phe Gly Met Asn Ala Ser Ser Ser Arg Phe Phe Leu Gln Gly Ile Gln
    290                 295                 300

ttg aat aca att ctt cct gac gcc aga gac cct gcc ttt aaa gct gcc        960
Leu Asn Thr Ile Leu Pro Asp Ala Arg Asp Pro Ala Phe Lys Ala Ala
305                 310                 315                 320

aac ggc tcc ctg cga gcg ctg cag gcc aca gtc ggc aat tcc tac aag       1008
Asn Gly Ser Leu Arg Ala Leu Gln Ala Thr Val Gly Asn Ser Tyr Lys
                325                 330                 335

tgc aac gcg gag gag cac gtc cgt gtc acg aag gcg ttt tca gtc aat       1056
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Cys Asn Ala Glu Glu His Val Arg Val Thr Lys Ala Phe Ser Val Asn
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ata ttc aaa gtg tgg gtc cag gct ttc aag gtg gaa ggt ggc cag ttt  1104
Ile Phe Lys Val Trp Val Gln Ala Phe Lys Val Glu Gly Gly Gln Phe
        355                 360                 365

ggc tct gtg gag gag tgt ctg ctg gac gag aac agc ctc gag atg gac  1152
Gly Ser Val Glu Glu Cys Leu Leu Asp Glu Asn Ser Leu Glu Met Asp
    370                 375                 380

gcc ata aag aag aaa atg caa gcg atg aaa ctg gag aag gat aac gcc  1200
Ala Ile Lys Lys Lys Met Gln Ala Met Lys Leu Glu Lys Asp Asn Ala
385                 390                 395                 400

atg gat cgg gct gat acg ctg gaa cag cag aat aag gaa gca aac aat  1248
Met Asp Arg Ala Asp Thr Leu Glu Gln Gln Asn Lys Glu Ala Asn Asn
                405                 410                 415

cgt gca gaa aag tcc gaa gaa gag gtt cac aac ctt cag aag aga atg  1296
Arg Ala Glu Lys Ser Glu Glu Glu Val His Asn Leu Gln Lys Arg Met
            420                 425                 430

cag caa ctg gag aat gac ctg gat cag gtg caa gag agc ctg ctg aag  1344
Gln Gln Leu Glu Asn Asp Leu Asp Gln Val Gln Glu Ser Leu Leu Lys
        435                 440                 445

gcc aac atc caa ctg gtc gag aag gat aag gcc ctt agt aac gcc gaa  1392
Ala Asn Ile Gln Leu Val Glu Lys Asp Lys Ala Leu Ser Asn Ala Glu
    450                 455                 460

ggc gag gta gcc gcc ttg aat cgt cgc att caa ctt ctt gag gag gac  1440
Gly Glu Val Ala Ala Leu Asn Arg Arg Ile Gln Leu Leu Glu Glu Asp
465                 470                 475                 480

ctt gag aga tcc gaa gag aga ctg aac acc gct acc acc aaa ctg gca  1488
Leu Glu Arg Ser Glu Glu Arg Leu Asn Thr Ala Thr Thr Lys Leu Ala
                485                 490                 495

gaa gca agc caa gct gcc gat gag tct gaa cgc atg cgc aag gta ttg  1536
Glu Ala Ser Gln Ala Ala Asp Glu Ser Glu Arg Met Arg Lys Val Leu
            500                 505                 510

gag aac agg agc ttg tct gat gag gaa cgc atg gat gcg ttg gag aat  1584
Glu Asn Arg Ser Leu Ser Asp Glu Glu Arg Met Asp Ala Leu Glu Asn
        515                 520                 525

cag ctc aag gaa gca cgg ttc ctg gcc gag gaa gcg gat agg aag tat  1632
Gln Leu Lys Glu Ala Arg Phe Leu Ala Glu Glu Ala Asp Arg Lys Tyr
    530                 535                 540

gat gag gtg gca cga aaa ctc gca atg gtg gag gca gac ttg gaa aga  1680
Asp Glu Val Ala Arg Lys Leu Ala Met Val Glu Ala Asp Leu Glu Arg
545                 550                 555                 560

gct gaa gag aga gct gag aca ggc gag tct aaa atc gtg gaa ctg gag  1728
Ala Glu Glu Arg Ala Glu Thr Gly Glu Ser Lys Ile Val Glu Leu Glu
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gaa gaa ctg cgg gtt gtg ggc aac aac ctc aag tca ctg gaa gtg tca      1776
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            580                 585                 590

gaa gag aaa gcc aac caa agg gaa gag gcc tat aaa gag cag atc aaa      1824
Glu Glu Lys Ala Asn Gln Arg Glu Glu Ala Tyr Lys Glu Gln Ile Lys
        595                 600                 605

acc ctg act aac aag ctc aaa gcc gca gag gct cgc gct gaa ttt gct      1872
Thr Leu Thr Asn Lys Leu Lys Ala Ala Glu Ala Arg Ala Glu Phe Ala
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gag cgg tca gtg cag aaa ctg cag aag gaa gtg gac agg ctg gag gat      1920
Glu Arg Ser Val Gln Lys Leu Gln Lys Glu Val Asp Arg Leu Glu Asp
625                 630                 635                 640

gag ctc gtc aat gag aaa gag aaa tac aag tcc att aca gac gag ctg      1968
Glu Leu Val Asn Glu Lys Glu Lys Tyr Lys Ser Ile Thr Asp Glu Leu
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gat cag acc ttc agt gag ctc tca ggc tac gga gga ggt ggg atg gcc      2016
Asp Gln Thr Phe Ser Glu Leu Ser Gly Tyr Gly Gly Gly Gly Met Ala
            660                 665                 670

tat agc tgg gat aat cgc gtg aag tac gtg gtg cgg tac atg tac gat      2064
Tyr Ser Trp Asp Asn Arg Val Lys Tyr Val Val Arg Tyr Met Tyr Asp
        675                 680                 685

atc gac aac aac ggg ttt ctc gac aag aac gat ttc gaa tgc ctt gcc      2112
Ile Asp Asn Asn Gly Phe Leu Asp Lys Asn Asp Phe Glu Cys Leu Ala
    690                 695                 700

gta cgg aac aca ctg att gag gga agg ggt gag ttt tcc gcc gat gcc      2160
Val Arg Asn Thr Leu Ile Glu Gly Arg Gly Glu Phe Ser Ala Asp Ala
705                 710                 715                 720

tac gcg aac aat cag aaa atc atg cga aac ttg tgg aat gag att gcc      2208
Tyr Ala Asn Asn Gln Lys Ile Met Arg Asn Leu Trp Asn Glu Ile Ala
                725                 730                 735

gaa ctg gcc gac ttc aat aag gat ggg gaa gtt act gtc gac gag ttc      2256
Glu Leu Ala Asp Phe Asn Lys Asp Gly Glu Val Thr Val Asp Glu Phe
            740                 745                 750

aaa cag gca gtg cag aaa cac tgt cag ggc aag aag tat gga gac ttc      2304
Lys Gln Ala Val Gln Lys His Cys Gln Gly Lys Lys Tyr Gly Asp Phe
        755                 760                 765

cca ggc gct ttc aaa gtt ttc ata gcc aac cag ttc aaa gca ata gac      2352
Pro Gly Ala Phe Lys Val Phe Ile Ala Asn Gln Phe Lys Ala Ile Asp
    770                 775                 780

gta aat ggg gat ggg aag gtt ggg ctc gat gag tat cga ctg gac tgc      2400
Val Asn Gly Asp Gly Lys Val Gly Leu Asp Glu Tyr Arg Leu Asp Cys
785                 790                 795                 800
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ata act cga tcc gcc ttt gcc gag gtc aaa gag atc gat gac gcg tat      2448
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aac aaa ctg acc act gaa gat gac cgc aag gct ggt ggg ctg aca ctc      2496
Asn Lys Leu Thr Thr Glu Asp Asp Arg Lys Ala Gly Gly Leu Thr Leu
            820                 825                 830

gaa agg tac cag gat ctg tat gcc cag ttt atc agc aat ccc gac gaa      2544
Glu Arg Tyr Gln Asp Leu Tyr Ala Gln Phe Ile Ser Asn Pro Asp Glu
        835                 840                 845

agc tgt tct gcc tgt tac ctc ttt ggc ccg ctg aaa gtc gtc caa gga      2592
Ser Cys Ser Ala Cys Tyr Leu Phe Gly Pro Leu Lys Val Val Gln Gly
    850                 855                 860

gga ggc ggg atg tca cgg aag agc ggc tct cgg agt tcc agc aag agg      2640
Gly Gly Gly Met Ser Arg Lys Ser Gly Ser Arg Ser Ser Ser Lys Arg
865                 870                 875                 880

agc aag aag tct gga ggc ggt tcc aat gtc ttt gac atg ttt acc cag      2688
Ser Lys Lys Ser Gly Gly Gly Ser Asn Val Phe Asp Met Phe Thr Gln
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aga cag gtg gct gaa ttt aaa gag gga ttt cag ctg atg gac cgt gac      2736
Arg Gln Val Ala Glu Phe Lys Glu Gly Phe Gln Leu Met Asp Arg Asp
            900                 905                 910

aaa gac gga gtt atc ggt aag act gac ttg aga ggt acg ttc gat gag      2784
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        915                 920                 925

att ggc aga atc gcc act gac cag gag ctg gat gag atg ctg gcg gac      2832
Ile Gly Arg Ile Ala Thr Asp Gln Glu Leu Asp Glu Met Leu Ala Asp
    930                 935                 940

gct cct gca ccc atc aat ttc acc atg ctt ctc aat atg ttc gcc gag      2880
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945                 950                 955                 960

aga caa aca gga gaa agt gac gac gac gac gtg gtg gct aag gct ttc      2928
Arg Gln Thr Gly Glu Ser Asp Asp Asp Asp Val Val Ala Lys Ala Phe
                965                 970                 975

ctg gcc ttt gct gat gag gaa ggg aat att gat tgc gac acg ttc agg      2976
Leu Ala Phe Ala Asp Glu Glu Gly Asn Ile Asp Cys Asp Thr Phe Arg
            980                 985                 990

cat gct ctg atg aca tgg ggc gac  aaa ttt agc agt cag  gaa gca gac    3024
His Ala Leu Met Thr Trp Gly Asp  Lys Phe Ser Ser Gln  Glu Ala Asp
        995                 1000                1005

gat gcc  ctg gac cag atg gat  att gac gac ggc ggg  aag atc gat       3069
Asp Ala  Leu Asp Gln Met Asp  Ile Asp Asp Gly Gly  Lys Ile Asp
    1010                1015                1020
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gtg cag  gga gtc att cag atg  ctg aca gca ggc ggt  ggg gat gac        3114
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gca gct  gct gaa gag gcg gaa  ttc acg ctg atc ccc  atc gct gtg        3159
Ala Ala  Ala Glu Glu Ala Glu  Phe Thr Leu Ile Pro  Ile Ala Val
    1040                 1045                 1050

ggt ggt  gcc ctg gcg ggg ctg  gtc ctc atc gtc ctc  atc gcc tac        3204
Gly Gly  Ala Leu Ala Gly Leu  Val Leu Ile Val Leu  Ile Ala Tyr
    1055                 1060                 1065

ctc gtc  ggc agg aag agg agt  cac gca ggc tac cag  act atc tag        3249
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Lys Asn Gly Asn Gly Thr Ala Cys Ile Met Ala Asn Phe Ser Ala Ala
        35                  40                  45

Phe Ser Val Asn Tyr Asp Thr Lys Ser Gly Pro Lys Asn Met Thr Leu
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Asp Leu Pro Ser Asp Ala Thr Val Val Leu Asn Arg Ser Ser Cys Gly
65                  70                  75                  80

Lys Glu Asn Thr Ser Asp Pro Ser Leu Val Ile Ala Phe Gly Arg Gly
                85                  90                  95

His Thr Leu Thr Leu Asn Phe Thr Arg Asn Ala Thr Arg Tyr Ser Val
            100                 105                 110

Gln Leu Met Ser Phe Val Tyr Asn Leu Ser Asp Thr His Leu Phe Pro
        115                 120                 125
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Asn Ala Ser Ser Lys Glu Ile Lys Thr Val Glu Ser Ile Thr Asp Ile
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Arg Ala Asp Ile Asp Lys Lys Tyr Arg Cys Val Ser Gly Thr Gln Val
145 150 155 160

His Met Asn Asn Val Thr Val Thr Leu His Asp Ala Thr Ile Gln Ala
165 170 175

Tyr Leu Ser Asn Ser Ser Phe Ser Arg Gly Glu Thr Arg Cys Glu Gln
180 185 190

Asp Arg Pro Ser Pro Thr Thr Ala Pro Pro Ala Pro Pro Ser Pro Ser
195 200 205

Pro Ser Pro Val Pro Lys Ser Pro Ser Val Asp Lys Tyr Asn Val Ser
210 215 220

Gly Thr Asn Gly Thr Cys Leu Leu Ala Ser Met Gly Leu Gln Leu Asn
225 230 235 240

Leu Thr Tyr Glu Arg Lys Asp Asn Thr Thr Val Thr Arg Leu Leu Asn
245 250 255

Ile Asn Pro Asn Lys Thr Ser Ala Ser Gly Ser Cys Gly Ala His Leu
260 265 270

Val Thr Leu Glu Leu His Ser Glu Gly Thr Thr Val Leu Leu Phe Gln
275 280 285

Phe Gly Met Asn Ala Ser Ser Ser Arg Phe Phe Leu Gln Gly Ile Gln
290 295 300

Leu Asn Thr Ile Leu Pro Asp Ala Arg Asp Pro Ala Phe Lys Ala Ala
305 310 315 320

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

Cys Asn Ala Glu Glu His Val Arg Val Thr Lys Ala Phe Ser Val Asn
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Ile Phe Lys Val Trp Val Gln Ala Phe Lys Val Glu Gly Gly Gln Phe
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Gly Ser Val Glu Glu Cys Leu Leu Asp Glu Asn Ser Leu Glu Met Asp
370 375 380

Ala Ile Lys Lys Lys Met Gln Ala Met Lys Leu Glu Lys Asp Asn Ala
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Gly Glu Val Ala Ala Leu Asn Arg Arg Ile Gln Leu Leu Glu Glu Asp
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485 490 495

Glu Ala Ser Gln Ala Ala Asp Glu Ser Glu Arg Met Arg Lys Val Leu
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515 520 525

Gln Leu Lys Glu Ala Arg Phe Leu Ala Glu Glu Ala Asp Arg Lys Tyr
530 535 540

Asp Glu Val Ala Arg Lys Leu Ala Met Val Glu Ala Asp Leu Glu Arg
545 550 555 560

Ala Glu Glu Arg Ala Glu Thr Gly Glu Ser Lys Ile Val Glu Leu Glu
565 570 575

Glu Glu Leu Arg Val Val Gly Asn Asn Leu Lys Ser Leu Glu Val Ser
580 585 590

Glu Glu Lys Ala Asn Gln Arg Glu Glu Ala Tyr Lys Glu Gln Ile Lys
595 600 605

Thr Leu Thr Asn Lys Leu Lys Ala Ala Glu Ala Arg Ala Glu Phe Ala
610 615 620

Glu Arg Ser Val Gln Lys Leu Gln Lys Glu Val Asp Arg Leu Glu Asp
625 630 635 640

Glu Leu Val Asn Glu Lys Glu Lys Tyr Lys Ser Ile Thr Asp Glu Leu
645 650 655

Asp Gln Thr Phe Ser Glu Leu Ser Gly Tyr Gly Gly Gly Gly Met Ala
660 665 670

Tyr Ser Trp Asp Asn Arg Val Lys Tyr Val Val Arg Tyr Met Tyr Asp
675 680 685

Ile Asp Asn Asn Gly Phe Leu Asp Lys Asn Asp Phe Glu Cys Leu Ala
690 695 700

Val Arg Asn Thr Leu Ile Glu Gly Arg Gly Glu Phe Ser Ala Asp Ala
705 710 715 720

Tyr Ala Asn Asn Gln Lys Ile Met Arg Asn Leu Trp Asn Glu Ile Ala
725 730 735

Glu Leu Ala Asp Phe Asn Lys Asp Gly Glu Val Thr Val Asp Glu Phe
740 745 750

Lys Gln Ala Val Gln Lys His Cys Gln Gly Lys Lys Tyr Gly Asp Phe
755 760 765

Pro Gly Ala Phe Lys Val Phe Ile Ala Asn Gln Phe Lys Ala Ile Asp
770 775 780

Val Asn Gly Asp Gly Lys Val Gly Leu Asp Glu Tyr Arg Leu Asp Cys
785 790 795 800

Ile Thr Arg Ser Ala Phe Ala Glu Val Lys Glu Ile Asp Asp Ala Tyr

805 810 815

Asn Lys Leu Thr Thr Glu Asp Asp Arg Lys Ala Gly Gly Leu Thr Leu
820 825 830

Glu Arg Tyr Gln Asp Leu Tyr Ala Gln Phe Ile Ser Asn Pro Asp Glu
835 840 845

Ser Cys Ser Ala Cys Tyr Leu Phe Gly Pro Leu Lys Val Val Gln Gly
850 855 860

Gly Gly Gly Met Ser Arg Lys Ser Gly Ser Arg Ser Ser Ser Lys Arg
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Ser Lys Lys Ser Gly Gly Gly Ser Asn Val Phe Asp Met Phe Thr Gln
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Lys Asp Gly Val Ile Gly Lys Thr Asp Leu Arg Gly Thr Phe Asp Glu
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Ile Gly Arg Ile Ala Thr Asp Gln Glu Leu Asp Glu Met Leu Ala Asp
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Ala Pro Ala Pro Ile Asn Phe Thr Met Leu Leu Asn Met Phe Ala Glu
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Arg Gln Thr Gly Glu Ser Asp Asp Asp Asp Val Val Ala Lys Ala Phe
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Leu Ala Phe Ala Asp Glu Glu Gly Asn Ile Asp Cys Asp Thr Phe Arg
980 985 990

His Ala Leu Met Thr Trp Gly Asp Lys Phe Ser Ser Gln Glu Ala Asp
995 1000 1005

Asp Ala Leu Asp Gln Met Asp Ile Asp Asp Gly Gly Lys Ile Asp
1010 1015 1020

Val Gln Gly Val Ile Gln Met Leu Thr Ala Gly Gly Gly Asp Asp
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Ala Ala Ala Glu Glu Ala Glu Phe Thr Leu Ile Pro Ile Ala Val
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