CLAIMS

1. A pharmaceutical composition for providing sustained glycemic control, comprising an effective amount of a fusion protein comprising the amino acid sequence of SEQ ID NO: 15 and the amino acid sequence of SEQ ID NO: 16, and an elastin-like peptide (ELP) amino acid sequence comprising at least one repeat of VPGXG (SEQ ID NO: 3), wherein administration of the fusion protein lowers fasting blood glucose levels for at least six hours following administration in a patient, and pharmaceutical excipients.

2. The pharmaceutical composition of claim 1, wherein the ELP is covalently bound to SEQ ID NO: 15.

3. The pharmaceutical composition of claim 1, wherein the amino acid sequence of SEQ ID NO: 15 and the amino acid sequence of SEQ ID NO:16 are bound by one or more disulfide bonds.

4. The pharmaceutical composition of claim 1, wherein the ELP component comprises at least 120 repeat units of VPGXG, wherein each X is independently selected from V, A, and G.

5. The pharmaceutical composition of claim 4, wherein the ELP component comprises at least 120 repeat units of VPGXG, wherein X is V, A, and G in the ratio of about V5, A2, and G3.

6. The pharmaceutical composition of claim 5, wherein the fusion protein comprises the amino acid sequences of SEQ ID NO: 15, SEQ ID NO: 16, and SEQ ID NO: 32.

7. The pharmaceutical composition of claim 1 or 6, wherein the pharmaceutical excipients comprise two or more of calcium chloride, magnesium chloride, potassium chloride, potassium phosphate monobasic, sodium chloride, and sodium phosphate dibasic.

8. The pharmaceutical composition of claim 1 or 6, wherein the pharmaceutical composition is formulated for administration about once per week.

9. The pharmaceutical composition of claim 1 or 6, wherein the pharmaceutical composition is formulated for administration daily.

10. The pharmaceutical composition of claim 1 or 6, wherein the pharmaceutical composition is formulated for administration at a dosage of about 0.5 mg/mL to about 200 mg/mL.

11. The pharmaceutical composition of claim 10, wherein the pharmaceutical composition is formulated for administration at a dosage of about 10 mg/mL to about 50 mg/mL.

12. The use of a pharmaceutical composition in the manufacture of a medicament for the treatment of diabetes, wherein the pharmaceutical composition comprises an effective amount of a fusion protein comprising the amino acid sequence of SEQ ID NO: 15 and the amino acid sequence of SEQ ID NO: 16, and an elastin-like peptide (ELP) amino acid sequence comprising at least one repeat of VPGXG (SEQ ID NO: 3), wherein administration

of the fusion protein lowers fasting blood glucose levels for at least six hours following administration in a patient, and pharmaceutical excipients.

13. The use of claim 12, wherein the ELP is covalently bound to SEQ ID NO: 15.

14. The use of claim 12, wherein the amino acid sequence of SEQ ID NO: 15 and the amino acid sequence of SEQ ID NO:16 are bound by one or more disulfide bonds.

15. The use of claim 12, wherein the ELP component comprises at least 120 repeat units of VPGXG, wherein each X is independently selected from V, A, and G.

16. The use of claim 15, wherein the ELP component comprises at least 120 repeat units of VPGXG, wherein X is V, A, and G in the ratio of about V5, A2, and G3.

17. The use of claim 16, wherein the fusion protein comprises the amino acid sequences of SEQ ID NO: 15, SEQ ID NO: 16, and SEQ ID NO: 32.

18. The use of claim 12 or 17, wherein the pharmaceutical excipients comprise two or more of calcium chloride, magnesium chloride, potassium chloride, potassium phosphate monobasic, sodium chloride, and sodium phosphate dibasic.

19. The use of claim 12 or 17, wherein the diabetes is type 1 diabetes.

20. The use of claim 12 or 17, wherein the diabetes is type 2 diabetes.

21. The use of claim 12 or 17, wherein the pharmaceutical composition is administered at a frequency of from about 1 to about 30 times per month,

22. The use of claim 21, wherein the pharmaceutical composition is administered about weekly.

23. The use of claim 21, wherein the pharmaceutical composition is administered two or three times per week.

24. The use of claim 21, wherein the pharmaceutical composition is administered about daily.

25. The use of claim 12 or 17, wherein the pharmaceutical composition is administered subcutaneously.

PHASSeqList

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<110> PhaseBio Pharmaceuticals, Inc.
Jowett, James
Woods, Christopher

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Glu Ala Glu Asp Leu Gln Val Gly Gln Val Glu Leu Gly Gly Gly Pro
35 40 45

Gly Ala Gly Ser Leu Gln Pro Leu Ala Leu Glu Gly Ser Leu Gln Lys
50 55 60

Arg Gly Ile Val Glu Gln Cys Cys Thr Ser Ile Cys Ser Leu Tyr Gln
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Gly Ala Gly Ser Leu Gln Pro Leu Ala Leu Glu Gly Ser Leu Gln Lys
    50                  55                  60

Arg Gly Ile Val Glu Gln Cys Cys Thr Ser Ile Cys Ser Leu Tyr Gln
65                  70                  75                  80

Leu Glu Asn Tyr Cys Asn Val Pro Gly Val Gly Val Pro Gly Val Gly
                85                  90                  95

Val Pro Gly Gly Gly Val Pro Gly Ala Gly Val Pro Gly Val Gly Val
            100                 105                 110

Pro Gly Val Gly Val Pro Gly Val Gly Val Pro Gly Gly Gly Val Pro
        115                 120                 125

Gly Ala Gly Val Pro Gly Gly Gly Val Pro Gly Val Gly Val Pro Gly
    130                 135                 140

Val Gly Val Pro Gly Gly Gly Val Pro Gly Ala Gly Val Pro Gly Val
145                 150                 155                 160

Gly Val Pro Gly Val Gly Val Pro Gly Val Gly Val Pro Gly Gly Gly
                165                 170                 175

Val Pro Gly Ala Gly Val Pro Gly Gly Gly Val Pro Gly Val Gly Val
            180                 185                 190

Pro Gly Val Gly Val Pro Gly Gly Gly Val Pro Gly Ala Gly Val Pro
        195                 200                 205

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Gly Gly Val Pro Gly Ala Gly Val Pro Gly Gly Gly Val Pro Gly Val
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Gly Val Pro Gly Val Gly Val Pro Gly Gly Gly Val Pro Gly Ala Gly
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Val Pro Gly Val Gly Val Pro Gly Val Gly Val Pro Gly Val Gly Val
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Pro Gly Gly Gly Val Pro Gly Ala Gly Val Pro Gly Gly Gly Val Pro
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Val Pro Gly Val Gly Val Pro Gly Val Gly Val Pro Gly Gly Gly Val
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Pro Gly Ala Gly Val Pro Gly Val Gly Val Pro Gly Val Gly Val Pro
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Gly Val Gly Val Pro Gly Gly Gly Val Pro Gly Ala Gly Val Pro Gly
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Gly Val Pro Gly Ala Gly Val Pro Gly Val Gly Val Pro Gly Val Gly
405 410 415

Val Pro Gly Val Gly Val Pro Gly Gly Gly Val Pro Gly Ala Gly Val
420 425 430

Pro Gly Gly Gly Val Pro Gly Val Gly Val Pro Gly Val Gly Val Pro
435 440 445

Gly Gly Gly Val Pro Gly Ala Gly Val Pro Gly Val Gly Val Pro Gly
450 455 460

Val Gly Val Pro Gly Val Gly Val Pro Gly Gly Gly Val Pro Gly Ala
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Gly Val Pro Gly Gly Gly Val Pro Gly Val Gly Val Pro Gly Val Gly
485 490 495

Val Pro Gly Gly Gly Val Pro Gly Ala Gly Val Pro Gly Val Gly Val
500 505 510

Pro Gly Val Gly Val Pro Gly Val Gly Val Pro Gly Gly Gly Val Pro
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Gly Ala Gly Val Pro Gly Gly Gly Val Pro Gly Val Gly Val Pro Gly
530 535 540

Val Gly Val Pro Gly Gly Gly Val Pro Gly Ala Gly Val Pro Gly Val
545 550 555 560

Gly Val Pro Gly Val Gly Val Pro Gly Val Gly Val Pro Gly Gly Gly
565 570 575

Val Pro Gly Ala Gly Val Pro Gly Gly Gly Val Pro Gly Val Gly Val
580 585 590

Pro Gly Val Gly Val Pro Gly Gly Gly Val Pro Gly Ala Gly Val Pro
595 600 605

Gly Val Gly Val Pro Gly Val Gly Val Pro Gly Val Gly Val Pro Gly
610 615 620

Gly Gly Val Pro Gly Ala Gly Val Pro Gly Gly Gly Val Pro Gly Val
625 630 635 640

Gly Val Pro Gly Val Gly Val Pro Gly Gly Gly Val Pro Gly Ala Gly
645 650 655

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1 5 10 15

Leu Val Cys Gly Glu Arg Gly Phe Phe Tyr Thr Pro Lys Ala
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20 25 30

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35 40 45

Pro Gly Ala Gly Ser Leu Gln Pro Leu Ala Leu Glu Gly Ser Leu Gln
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Glu Asp Ser Ala Ser Ser Glu Ser Phe Ala Ser Lys Ile Lys Arg His
35 40 45

Gly Glu Gly Thr Phe Thr Ser Asp Leu Ser Lys Gln Met Glu Glu Glu
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His Ala Glu Gly Thr Phe Thr Ser Asp Val Ser Ser Tyr Leu Glu Gly
1 5 10 15

Gln Ala Ala Lys Glu Phe Ile Ala Trp Leu Val Lys Gly Arg Gly
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20 25 30

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35 40 45

Gly Pro Arg Tyr Ala Glu Gly Thr Phe Ile Ser Asp Tyr Ser Ile Ala
50 55 60

Met Asp Lys Ile His Gln Gln Asp Phe Val Asn Trp Leu Leu Ala Gln
65 70 75 80

Lys Gly Lys Lys Asn Asp Trp Lys His Asn Ile Thr Gln Arg Glu Ala
85 90 95

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

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    50                  55                  60

Tyr Leu Asp Ser Arg Arg Ala Gln Asp Phe Val Gln Trp Leu Met Asn
65                  70                  75                  80

Thr Lys Arg Asn Arg Asn Asn Ile Ala Lys Arg His Asp Glu Phe Glu
                85                  90                  95

Arg His Ala Glu Gly Thr Phe Thr Ser Asp Val Ser Ser Tyr Leu Glu
            100                 105                 110

Gly Gln Ala Ala Lys Glu Phe Ile Ala Trp Leu Val Lys Gly Arg Gly
        115                 120                 125

Arg Arg Asp Phe Pro Glu Glu Val Ala Ile Val Glu Glu Leu Gly Arg
    130                 135                 140

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

Pro Gly Xaa Gly Val Pro Gly Xaa Gly Val Pro Gly Xaa Gly Val Pro
100 105 110

Gly Xaa Gly Val Pro Gly Xaa Gly Val Pro Gly Xaa Gly Val Pro Gly
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Val Pro Gly Xaa Gly Val Pro Gly Xaa Gly Val Pro Gly Xaa Gly Val
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Xaa Gly
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20 25 30

Gly Xaa Gly Val Pro Gly Xaa Gly Val Pro Gly Xaa Gly Val Pro Gly
35 40 45

Xaa Gly Val Pro Gly Xaa Gly Val Pro Gly Xaa Gly Val Pro Gly Xaa
50 55 60

Gly Val Pro Gly Xaa Gly Val Pro Gly Xaa Gly Val Pro Gly Xaa Gly
65 70 75 80

Val Pro Gly Xaa Gly Val Pro Gly Xaa Gly Val Pro Gly Xaa Gly Val
85 90 95

Pro Gly Xaa Gly Val Pro Gly Xaa Gly Val Pro Gly Xaa Gly Val Pro
100 105 110

Gly Xaa Gly Val Pro Gly Xaa Gly Val Pro Gly Xaa Gly Val Pro Gly
115 120 125

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Pro Gly Xaa Gly Val Pro Gly Xaa Gly Val Pro Gly Xaa Gly Val Pro
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Xaa Gly Val Pro Gly Xaa Gly Val Pro Gly Xaa Gly Val Pro Gly Xaa
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245 250 255

Pro Gly Xaa Gly Val Pro Gly Xaa Gly Val Pro Gly Xaa Gly Val Pro
260 265 270

Gly Xaa Gly Val Pro Gly Xaa Gly Val Pro Gly Xaa Gly Val Pro Gly
275 280 285

Xaa Gly Val Pro Gly Xaa Gly Val Pro Gly Xaa Gly Val Pro Gly Xaa
290 295 300

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305 310 315 320

Val Pro Gly Xaa Gly Val Pro Gly Xaa Gly Val Pro Gly Xaa Gly Val
325 330 335

Pro Gly Xaa Gly Val Pro Gly Xaa Gly Val Pro Gly Xaa Gly Val Pro
340 345 350

Gly Xaa Gly Val Pro Gly Xaa Gly Val Pro Gly Xaa Gly Val Pro Gly
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Xaa Gly Val Pro Gly Xaa Gly Val Pro Gly Xaa Gly Val Pro Gly Xaa
370 375 380

Gly Val Pro Gly Xaa Gly Val Pro Gly Xaa Gly Val Pro Gly Xaa Gly
385 390 395 400

Val Pro Gly Xaa Gly Val Pro Gly Xaa Gly Val Pro Gly Xaa Gly Val
405 410 415

Pro Gly Xaa Gly Val Pro Gly Xaa Gly Val Pro Gly Xaa Gly Val Pro
420 425 430

Gly Xaa Gly Val Pro Gly Xaa Gly Val Pro Gly Xaa Gly Val Pro Gly
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Xaa Gly Val Pro Gly Xaa Gly Val Pro Gly Xaa Gly Val Pro Gly Xaa
450 455 460

Gly Val Pro Gly Xaa Gly Val Pro Gly Xaa Gly Val Pro Gly Xaa Gly
465 470 475 480

Val Pro Gly Xaa Gly Val Pro Gly Xaa Gly Val Pro Gly Xaa Gly Val
485 490 495

Pro Gly Xaa Gly Val Pro Gly Xaa Gly Val Pro Gly Xaa Gly Val Pro
500 505 510

Gly Xaa Gly Val Pro Gly Xaa Gly Val Pro Gly Xaa Gly Val Pro Gly
515 520 525

Xaa Gly Val Pro Gly Xaa Gly Val Pro Gly Xaa Gly Val Pro Gly Xaa
530 535 540

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Val Pro Gly Xaa Gly Val Pro Gly Xaa Gly Val Pro Gly Xaa Gly Val
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Pro Gly Xaa Gly Val Pro Gly Xaa Gly Val Pro Gly Xaa Gly Val Pro
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Gly Xaa Gly Val Pro Gly Xaa Gly
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Gly Xaa Gly Val Pro Gly Xaa Gly Val Pro Gly Xaa Gly Val Pro Gly
        35                  40                  45

Xaa Gly Val Pro Gly Xaa Gly Val Pro Gly Xaa Gly Val Pro Gly Xaa
    50                  55                  60

Gly Val Pro Gly Xaa Gly Val Pro Gly Xaa Gly Val Pro Gly Xaa Gly
65                  70                  75                  80

Val Pro Gly Xaa Gly Val Pro Gly Xaa Gly Val Pro Gly Xaa Gly Val
                85                  90                  95

Pro Gly Xaa Gly Val Pro Gly Xaa Gly Val Pro Gly Xaa Gly Val Pro
            100                 105                 110

Gly Xaa Gly Val Pro Gly Xaa Gly Val Pro Gly Xaa Gly Val Pro Gly
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115 120 125

Xaa Gly Val Pro Gly Xaa Gly Val Pro Gly Xaa Gly Val Pro Gly Xaa
130 135 140

Gly Val Pro Gly Xaa Gly Val Pro Gly Xaa Gly Val Pro Gly Xaa Gly
145 150 155 160

Val Pro Gly Xaa Gly Val Pro Gly Xaa Gly Val Pro Gly Xaa Gly Val
165 170 175

Pro Gly Xaa Gly Val Pro Gly Xaa Gly Val Pro Gly Xaa Gly Val Pro
180 185 190

Gly Xaa Gly Val Pro Gly Xaa Gly Val Pro Gly Xaa Gly Val Pro Gly
195 200 205

Xaa Gly Val Pro Gly Xaa Gly Val Pro Gly Xaa Gly Val Pro Gly Xaa
210 215 220

Gly Val Pro Gly Xaa Gly Val Pro Gly Xaa Gly Val Pro Gly Xaa Gly
225 230 235 240

Val Pro Gly Xaa Gly Val Pro Gly Xaa Gly Val Pro Gly Xaa Gly Val
245 250 255

Pro Gly Xaa Gly Val Pro Gly Xaa Gly Val Pro Gly Xaa Gly Val Pro
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275 280 285

Xaa Gly Val Pro Gly Xaa Gly Val Pro Gly Xaa Gly Val Pro Gly Xaa
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325 330 335

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Pro Gly Xaa Gly Val Pro Gly Xaa Gly Val Pro Gly Xaa Gly Val Pro
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465 470 475 480

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Pro Gly Xaa Gly Val Pro Gly Xaa Gly Val Pro Gly Xaa Gly Val Pro
500 505 510

Gly Xaa Gly Val Pro Gly Xaa Gly Val Pro Gly Xaa Gly Val Pro Gly
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Val Pro Gly Xaa Gly Val Pro Gly Xaa Gly Val Pro Gly Xaa Gly Val
565 570 575

Pro Gly Xaa Gly Val Pro Gly Xaa Gly Val Pro Gly Xaa Gly Val Pro
580 585 590

Gly Xaa Gly Val Pro Gly Xaa Gly Val Pro Gly Xaa Gly Val Pro Gly
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Xaa Gly Val Pro Gly Xaa Gly Val Pro Gly Xaa Gly Val Pro Gly Xaa
610 615 620

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625 630 635 640

Val Pro Gly Xaa Gly Val Pro Gly Xaa Gly Val Pro Gly Xaa Gly Val
645 650 655

Pro Gly Xaa Gly Val Pro Gly Xaa Gly Val Pro Gly Xaa Gly Val Pro
660 665 670

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675 680 685

Xaa Gly Val Pro Gly Xaa Gly Val Pro Gly Xaa Gly Val Pro Gly Xaa
690 695 700

Gly Val Pro Gly Xaa Gly Val Pro Gly Xaa Gly Val Pro Gly Xaa Gly
705 710 715 720

Val Pro Gly Xaa Gly Val Pro Gly Xaa Gly Val Pro Gly Xaa Gly Val
725 730 735

Pro Gly Xaa Gly Val Pro Gly Xaa Gly Val Pro Gly Xaa Gly Val Pro
740 745 750

Gly Xaa Gly Val Pro Gly Xaa Gly Val Pro Gly Xaa Gly Val Pro Gly
755 760 765

Xaa Gly Val Pro Gly Xaa Gly Val Pro Gly Xaa Gly Val Pro Gly Xaa
770 775 780

Gly Val Pro Gly Xaa Gly Val Pro Gly Xaa Gly Val Pro Gly Xaa Gly
785 790 795 800

Val Pro Gly Xaa Gly Val Pro Gly Xaa Gly Val Pro Gly Xaa Gly Val
805 810 815

Pro Gly Xaa Gly Val Pro Gly Xaa Gly Val Pro Gly Xaa Gly Val Pro
820 825 830

Gly Xaa Gly Val Pro Gly Xaa Gly Val Pro Gly Xaa Gly Val Pro Gly
835 840 845

Xaa Gly Val Pro Gly Xaa Gly Val Pro Gly Xaa Gly Val Pro Gly Xaa
850 855 860

Gly Val Pro Gly Xaa Gly Val Pro Gly Xaa Gly Val Pro Gly Xaa Gly
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Val Pro Gly Xaa Gly Val Pro Gly Xaa Gly Val Pro Gly Xaa Gly Val
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Pro Gly Xaa Gly
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<400> 34

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1 5 10 15

Gly Gly Gly Ser
20

CLAIMS

1. A pharmaceutical composition for providing sustained glycemic control, comprising an effective amount of a fusion protein comprising the amino acid sequence of SEQ ID NO: 35 and the amino acid sequence of SEQ ID NO: 36, and an elastin-like peptide (ELP) amino acid sequence comprising at least 90 repeats of VPGXG (SEQ ID NO: 3), wherein administration of the fusion protein lowers fasting blood glucose levels for at least six hours following administration in a patient, and pharmaceutical excipients, and wherein said pharmaceutical composition is administered about weekly.

2. The pharmaceutical composition of claim 1, wherein the ELP is covalently bound to SEQ ID NO:35.

3. The pharmaceutical composition of claim 1, wherein the amino acid sequence of SEQ ID NO: 35 and the amino acid sequence of SEQ ID NO:36 are joined by one or more disulfide bonds.

4. The pharmaceutical composition of claim 1, wherein the ELP component comprises at least 120 repeat units of VPGXG, wherein each X is independently selected from V, A, and G.

5. The pharmaceutical composition of claim 4, wherein the ELP component comprises at least 120 repeat units of VPGXG, wherein X is V, A, and G in the ratio of about V5, A2, and G3.

6. The pharmaceutical composition of claim 5, wherein the fusion protein comprises the amino acid sequences of SEQ ID NO: 35, SEQ ID NO: 36, and SEQ ID NO: 32.

7. The pharmaceutical composition of claim 1 or 6, wherein the pharmaceutical excipients comprise two or more of calcium chloride, magnesium chloride, potassium chloride, potassium phosphate monobasic, sodium chloride, and sodium phosphate dibasic.

8. The pharmaceutical composition of claim 1 or 6, wherein the pharmaceutical composition is formulated for administration at a concentration of about 0.5 mg/mL to about 200 mg/mL.

9. The pharmaceutical composition of claim 8, wherein the pharmaceutical composition is formulated for administration at a concentration of about 10 mg/mL to about 50 mg/mL.

10. The use of a pharmaceutical composition in the manufacture of a medicament for the treatment of diabetes, wherein the pharmaceutical composition comprises an effective amount of a fusion protein comprising the amino acid sequence of SEQ ID NO: 35 and the amino acid sequence of SEQ ID NO: 36, and an elastin-like peptide (ELP) amino acid sequence comprising at least 90 repeats of VPGXG (SEQ ID NO: 3), wherein administration of the fusion protein lowers fasting blood glucose levels for at least six hours following administration in a patient, and pharmaceutical excipients, and wherein said pharmaceutical composition is administered about weekly.

11. The use of claim 10, wherein the ELP is covalently bound to SEQ ID NO: 35.

12. The use of claim 10, wherein the amino acid sequence of SEQ ID NO: 35 and the amino acid sequence of SEQ ID NO:36 are joined by one or more disulfide bonds.

13. The use of claim 10, wherein the ELP component comprises at least 120 repeat units of VPGXG, wherein each X is independently selected from V, A, and G.

14. The use of claim 13, wherein the ELP component comprises at least 120 repeat units of VPGXG, wherein X is V, A, and G in the ratio of about V5, A2, and G3.

15. The use of claim 14, wherein the fusion protein comprises the amino acid sequences of SEQ ID NO: 35, SEQ ID NO: 36, and SEQ ID NO: 32.

16. The use of claim 10 or 15, wherein the pharmaceutical excipients comprise two or more of calcium chloride, magnesium chloride, potassium chloride, potassium phosphate monobasic, sodium chloride, and sodium phosphate dibasic.

17. The use of claim 10 or 15, wherein the diabetes is type 1 diabetes.

18. The use of claim 10 or 15, wherein the diabetes is type 2 diabetes.

19. The use of claim 10 or 15, wherein the pharmaceutical composition is administered subcutaneously.

SEQUENCE LISTING

<110> PhaseBio Pharmaceuticals, Inc.
Jowett, James
Woods, Christopher

<120> THERAPEUTIC AGENTS COMPRISING INSULIN AMINO ACID SEQUENCES

<130> PHAS-025/01WO 309646-2127

<140> PCT/US2012/066795
<141> 2012-11-28

<150> US 61/563,985
<151> 2011-11-28

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<400> 2

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<223> Xaa can be any naturally occurring or non-natural amino acid

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<400> 4

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Ile Pro Gly Xaa Gly
1 5

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1 5

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1 5

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1 5

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<210> 11
<211> 9
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1 5

<210> 12
<211> 9
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1 5

<210> 13
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<212> PRT
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<400> 13

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20 25 30

Glu Ala Glu Asp Leu Gln Val Gly Gln Val Glu Leu Gly Gly Gly Pro
35 40 45

Gly Ala Gly Ser Leu Gln Pro Leu Ala Leu Glu Gly Ser Leu Gln Lys
50 55 60

Arg Gly Ile Val Glu Gln Cys Cys Thr Ser Ile Cys Ser Leu Tyr Gln
65 70 75 80

Leu Glu Asn Tyr Cys Asn
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20 25 30

Glu Ala Glu Asp Leu Gln Val Gly Gln Val Glu Leu Gly Gly Gly Pro
35 40 45

Gly Ala Gly Ser Leu Gln Pro Leu Ala Leu Glu Gly Ser Leu Gln Lys
50 55 60

Arg Gly Ile Val Glu Gln Cys Cys Thr Ser Ile Cys Ser Leu Tyr Gln
65 70 75 80

Leu Glu Asn Tyr Cys Asn Val Pro Gly Val Gly Val Pro Gly Val Gly
85 90 95

Val Pro Gly Gly Gly Val Pro Gly Ala Gly Val Pro Gly Val Gly Val
100 105 110

Pro Gly Val Gly Val Pro Gly Val Gly Val Pro Gly Gly Gly Val Pro
115 120 125

Gly Ala Gly Val Pro Gly Gly Gly Val Pro Gly Val Gly Val Pro Gly
130 135 140

Val Gly Val Pro Gly Gly Gly Val Pro Gly Ala Gly Val Pro Gly Val
145 150 155 160

Gly Val Pro Gly Val Gly Val Pro Gly Val Gly Val Pro Gly Gly Gly
165 170 175

Val Pro Gly Ala Gly Val Pro Gly Gly Gly Val Pro Gly Val Gly Val
180 185 190

Pro Gly Val Gly Val Pro Gly Gly Gly Val Pro Gly Ala Gly Val Pro
195 200 205

Gly Val Gly Val Pro Gly Val Gly Val Pro Gly Val Gly Val Pro Gly
210 215 220

Gly Gly Val Pro Gly Ala Gly Val Pro Gly Gly Gly Val Pro Gly Val
225 230 235 240

Gly Val Pro Gly Val Gly Val Pro Gly Gly Gly Val Pro Gly Ala Gly
245 250 255

Val Pro Gly Val Gly Val Pro Gly Val Gly Val Pro Gly Val Gly Val
260 265 270

Pro Gly Gly Gly Val Pro Gly Ala Gly Val Pro Gly Gly Gly Val Pro
275 280 285

Gly Val Gly Val Pro Gly Val Gly Val Pro Gly Gly Gly Val Pro Gly
290 295 300

Ala Gly Val Pro Gly Val Gly Val Pro Gly Val Gly Val Pro Gly Val
305 310 315 320

Gly Val Pro Gly Gly Gly Val Pro Gly Ala Gly Val Pro Gly Gly Gly
325 330 335

Val Pro Gly Val Gly Val Pro Gly Val Gly Val Pro Gly Gly Gly Val
340 345 350

Pro Gly Ala Gly Val Pro Gly Val Gly Val Pro Gly Val Gly Val Pro
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Gly Val Gly Val Pro Gly Gly Gly Val Pro Gly Ala Gly Val Pro Gly
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Gly Gly Val Pro Gly Val Gly Val Pro Gly Val Gly Val Pro Gly Gly
385 390 395 400

Gly Val Pro Gly Ala Gly Val Pro Gly Val Gly Val Pro Gly Val Gly
405 410 415

Val Pro Gly Val Gly Val Pro Gly Gly Gly Val Pro Gly Ala Gly Val
420 425 430

Pro Gly Gly Gly Val Pro Gly Val Gly Val Pro Gly Val Gly Val Pro
435 440 445

Gly Gly Gly Val Pro Gly Ala Gly Val Pro Gly Val Gly Val Pro Gly
450 455 460

Val Gly Val Pro Gly Val Gly Val Pro Gly Gly Gly Val Pro Gly Ala
465 470 475 480

Gly Val Pro Gly Gly Gly Val Pro Gly Val Gly Val Pro Gly Val Gly
485 490 495

Val Pro Gly Gly Gly Val Pro Gly Ala Gly Val Pro Gly Val Gly Val
500 505 510

Pro Gly Val Gly Val Pro Gly Val Gly Val Pro Gly Gly Gly Val Pro
515 520 525

Gly Ala Gly Val Pro Gly Gly Gly Val Pro Gly Val Gly Val Pro Gly
530 535 540

Val Gly Val Pro Gly Gly Gly Val Pro Gly Ala Gly Val Pro Gly Val
545 550 555 560

Gly Val Pro Gly Val Gly Val Pro Gly Val Gly Val Pro Gly Gly Gly
565 570 575

Val Pro Gly Ala Gly Val Pro Gly Gly Gly Val Pro Gly Val Gly Val
580 585 590

Pro Gly Val Gly Val Pro Gly Gly Gly Val Pro Gly Ala Gly Val Pro
595 600 605

Gly Val Gly Val Pro Gly Val Gly Val Pro Gly Val Gly Val Pro Gly
610 615 620

Gly Gly Val Pro Gly Ala Gly Val Pro Gly Gly Gly Val Pro Gly Val
625 630 635 640

Gly Val Pro Gly Val Gly Val Pro Gly Gly Gly Val Pro Gly Ala Gly
645 650 655

Val Pro Gly Val Gly Val Pro Gly Val Gly Val Pro Gly Val Gly Val
660 665 670

Pro Gly Gly Gly Val Pro Gly Ala Gly Val Pro Gly Gly Gly Val Pro
675 680 685

Gly Trp Pro
690

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<211> 21
<212> PRT
<213> Bos taurus

<400> 15

Gly Ile Val Glu Gln Cys Cys Ala Ser Val Cys Ser Leu Tyr Gln Leu
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Glu Asn Tyr Cys Asn
20

<210> 16
<211> 30
<212> PRT
<213> Bos taurus

<400> 16

Phe Val Asn Gln His Leu Cys Gly Ser His Leu Val Glu Ala Leu Tyr
1 5 10 15

Leu Val Cys Gly Glu Arg Gly Phe Phe Tyr Thr Pro Lys Ala
20 25 30

<210> 17
<211> 12
<212> PRT
<213> Artificial Sequence

<220>
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<400> 17

Lys Asp Asp Asn Pro Asn Leu Pro Arg Leu Val Arg
1 5 10

<210> 18
<211> 12
<212> PRT
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<220>
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<400> 18

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<211> 261
<212> DNA
<213> Homo sapiens

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gggcaggtgg agctgggcgg gggccctggt gcaggcagcc tgcagccctt ggccctggag 180

gggtccctgc agaagcgtgg cattgtggaa caatgctgta ccagcatctg ctccctctac 240

cagctggaga actactgcaa c 261

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<212> PRT
<213> Homo sapiens

<400> 20

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1 5 10 15

Tyr Leu Val Cys Gly Glu Arg Gly Phe Phe Tyr Thr Pro Lys Thr Arg
20 25 30

Arg Glu Ala Glu Asp Leu Gln Val Gly Gln Val Glu Leu Gly Gly Gly
35 40 45

Pro Gly Ala Gly Ser Leu Gln Pro Leu Ala Leu Glu Gly Ser Leu Gln
50 55 60

Lys Arg Gly Ile Val Glu Gln Cys Cys Thr Ser Ile Cys Ser Leu Tyr
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Gln Leu Glu Asn Tyr Cys Asn
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<211> 37
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<213> Homo sapiens

<400> 22

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1 5 10 15

Ser Ser Tyr Leu Glu Gly Gln Ala Ala Lys Glu Phe Ile Ala Trp Leu
20 25 30

Val Lys Gly Arg Gly
35

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<211> 87
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<213> Heloderma suspectum

<400> 23

Met Lys Ile Ile Leu Trp Leu Cys Val Phe Gly Leu Phe Leu Ala Thr
1 5 10 15

Leu Phe Pro Ile Ser Trp Gln Met Pro Val Glu Ser Gly Leu Ser Ser
20 25 30

Glu Asp Ser Ala Ser Ser Glu Ser Phe Ala Ser Lys Ile Lys Arg His
35 40 45

Gly Glu Gly Thr Phe Thr Ser Asp Leu Ser Lys Gln Met Glu Glu Glu
50 55 60

Ala Val Arg Leu Phe Ile Glu Trp Leu Lys Asn Gly Gly Pro Ser Ser
65 70 75 80

Gly Ala Pro Pro Pro Ser Gly
85

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<212> PRT
<213> Homo sapiens

<400> 24

His Ala Glu Gly Thr Phe Thr Ser Asp Val Ser Ser Tyr Leu Glu Gly
1 5 10 15

Gln Ala Ala Lys Glu Phe Ile Ala Trp Leu Val Lys Gly Arg
20 25 30

<210> 25
<211> 31

<212> PRT
<213> Homo sapiens

<400> 25

His Ala Glu Gly Thr Phe Thr Ser Asp Val Ser Ser Tyr Leu Glu Gly
1 5 10 15

Gln Ala Ala Lys Glu Phe Ile Ala Trp Leu Val Lys Gly Arg Gly
20 25 30

<210> 26
<211> 33
<212> PRT
<213> Homo sapiens

<400> 26

His Ala Asp Gly Ser Phe Ser Asp Glu Met Asn Thr Ile Leu Asp Asn
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Leu Ala Ala Arg Asp Phe Ile Asn Trp Leu Ile Gln Thr Lys Ile Thr
20 25 30

Asp

<210> 27
<211> 153
<212> PRT
<213> Homo sapiens

<400> 27

Met Val Ala Thr Lys Thr Phe Ala Leu Leu Leu Leu Ser Leu Phe Leu
1 5 10 15

Ala Val Gly Leu Gly Glu Lys Lys Glu Gly His Phe Ser Ala Leu Pro
20 25 30

Ser Leu Pro Val Gly Ser His Ala Lys Val Ser Ser Pro Gln Pro Arg
35 40 45

Gly Pro Arg Tyr Ala Glu Gly Thr Phe Ile Ser Asp Tyr Ser Ile Ala
50 55 60

Met Asp Lys Ile His Gln Gln Asp Phe Val Asn Trp Leu Leu Ala Gln
65 70 75 80

Lys Gly Lys Lys Asn Asp Trp Lys His Asn Ile Thr Gln Arg Glu Ala
85 90 95

Arg Ala Leu Glu Leu Ala Ser Gln Ala Asn Arg Lys Glu Glu Glu Ala
100 105 110

Val Glu Pro Gln Ser Ser Pro Ala Lys Asn Pro Ser Asp Glu Asp Leu
115 120 125

Leu Arg Asp Leu Leu Ile Gln Glu Leu Leu Ala Cys Leu Leu Asp Gln
130 135 140

Thr Asn Leu Cys Arg Leu Arg Ser Arg
145 150

<210> 28
<211> 180
<212> PRT
<213> Homo sapiens

<400> 28

Met Lys Ser Ile Tyr Phe Val Ala Gly Leu Phe Val Met Leu Val Gln
1 5 10 15

Gly Ser Trp Gln Arg Ser Leu Gln Asp Thr Glu Glu Lys Ser Arg Ser
20 25 30

Phe Ser Ala Ser Gln Ala Asp Pro Leu Ser Asp Pro Asp Gln Met Asn
35 40 45

Glu Asp Lys Arg His Ser Gln Gly Thr Phe Thr Ser Asp Tyr Ser Lys
50 55 60

Tyr Leu Asp Ser Arg Arg Ala Gln Asp Phe Val Gln Trp Leu Met Asn
65 70 75 80

Thr Lys Arg Asn Arg Asn Asn Ile Ala Lys Arg His Asp Glu Phe Glu
85 90 95

Arg His Ala Glu Gly Thr Phe Thr Ser Asp Val Ser Ser Tyr Leu Glu
100 105 110

Gly Gln Ala Ala Lys Glu Phe Ile Ala Trp Leu Val Lys Gly Arg Gly
115 120 125

Arg Arg Asp Phe Pro Glu Glu Val Ala Ile Val Glu Glu Leu Gly Arg
130 135 140

Arg His Ala Asp Gly Ser Phe Ser Asp Glu Met Asn Thr Ile Leu Asp
145 150 155 160

Asn Leu Ala Ala Arg Asp Phe Ile Asn Trp Leu Ile Gln Thr Lys Ile
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Thr Asp Arg Lys
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<210> 29
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<213> Homo sapiens

<400> 29

His Ser Gln Gly Thr Phe Thr Ser Asp Tyr Ser Lys Tyr Leu Asp Ser
1 5 10 15

Arg Arg Ala Gln Asp Phe Val Gln Trp Leu Met Asn Thr Lys Arg Asn
20 25 30

Arg Asn Asn Ile Ala
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<223> Xaa may be any natural or non-natural amino acid residue

<400> 30

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1 5 10 15

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20 25 30

Gly Xaa Gly Val Pro Gly Xaa Gly Val Pro Gly Xaa Gly Val Pro Gly
35 40 45

Xaa Gly Val Pro Gly Xaa Gly Val Pro Gly Xaa Gly Val Pro Gly Xaa
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Gly Val Pro Gly Xaa Gly Val Pro Gly Xaa Gly Val Pro Gly Xaa Gly
65 70 75 80

Val Pro Gly Xaa Gly Val Pro Gly Xaa Gly Val Pro Gly Xaa Gly Val
85 90 95

Pro Gly Xaa Gly Val Pro Gly Xaa Gly Val Pro Gly Xaa Gly Val Pro
100 105 110

Gly Xaa Gly Val Pro Gly Xaa Gly Val Pro Gly Xaa Gly Val Pro Gly
115 120 125

Xaa Gly Val Pro Gly Xaa Gly Val Pro Gly Xaa Gly Val Pro Gly Xaa
130 135 140

Gly Val Pro Gly Xaa Gly Val Pro Gly Xaa Gly Val Pro Gly Xaa Gly
145 150 155 160

Val Pro Gly Xaa Gly Val Pro Gly Xaa Gly Val Pro Gly Xaa Gly Val
165 170 175

Pro Gly Xaa Gly Val Pro Gly Xaa Gly Val Pro Gly Xaa Gly Val Pro
180 185 190

Gly Xaa Gly Val Pro Gly Xaa Gly Val Pro Gly Xaa Gly Val Pro Gly
195 200 205

Xaa Gly Val Pro Gly Xaa Gly Val Pro Gly Xaa Gly Val Pro Gly Xaa
210 215 220

Gly Val Pro Gly Xaa Gly Val Pro Gly Xaa Gly Val Pro Gly Xaa Gly
225 230 235 240

Val Pro Gly Xaa Gly Val Pro Gly Xaa Gly Val Pro Gly Xaa Gly Val
245 250 255

Pro Gly Xaa Gly Val Pro Gly Xaa Gly Val Pro Gly Xaa Gly Val Pro
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Xaa Gly Val Pro Gly Xaa Gly Val Pro Gly Xaa Gly
290 295 300

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20 25 30

Gly Xaa Gly Val Pro Gly Xaa Gly Val Pro Gly Xaa Gly Val Pro Gly
35 40 45

Xaa Gly Val Pro Gly Xaa Gly Val Pro Gly Xaa Gly Val Pro Gly Xaa
50 55 60

Gly Val Pro Gly Xaa Gly Val Pro Gly Xaa Gly Val Pro Gly Xaa Gly
65 70 75 80

Val Pro Gly Xaa Gly Val Pro Gly Xaa Gly Val Pro Gly Xaa Gly Val
85 90 95

Pro Gly Xaa Gly Val Pro Gly Xaa Gly Val Pro Gly Xaa Gly Val Pro
100 105 110

Gly Xaa Gly Val Pro Gly Xaa Gly Val Pro Gly Xaa Gly Val Pro Gly
115 120 125

Xaa Gly Val Pro Gly Xaa Gly Val Pro Gly Xaa Gly Val Pro Gly Xaa
130 135 140

Gly Val Pro Gly Xaa Gly Val Pro Gly Xaa Gly Val Pro Gly Xaa Gly
145 150 155 160

Val Pro Gly Xaa Gly Val Pro Gly Xaa Gly Val Pro Gly Xaa Gly Val
165 170 175

Pro Gly Xaa Gly Val Pro Gly Xaa Gly Val Pro Gly Xaa Gly Val Pro
180 185 190

Gly Xaa Gly Val Pro Gly Xaa Gly Val Pro Gly Xaa Gly Val Pro Gly
195 200 205

Xaa Gly Val Pro Gly Xaa Gly Val Pro Gly Xaa Gly Val Pro Gly Xaa
210 215 220

Gly Val Pro Gly Xaa Gly Val Pro Gly Xaa Gly Val Pro Gly Xaa Gly
225 230 235 240

Val Pro Gly Xaa Gly Val Pro Gly Xaa Gly Val Pro Gly Xaa Gly Val
245 250 255

Pro Gly Xaa Gly Val Pro Gly Xaa Gly Val Pro Gly Xaa Gly Val Pro
260 265 270

Gly Xaa Gly Val Pro Gly Xaa Gly Val Pro Gly Xaa Gly Val Pro Gly
275 280 285

Xaa Gly Val Pro Gly Xaa Gly Val Pro Gly Xaa Gly Val Pro Gly Xaa
290 295 300

Gly Val Pro Gly Xaa Gly Val Pro Gly Xaa Gly Val Pro Gly Xaa Gly
305 310 315 320

Val Pro Gly Xaa Gly Val Pro Gly Xaa Gly Val Pro Gly Xaa Gly Val
325 330 335

Pro Gly Xaa Gly Val Pro Gly Xaa Gly Val Pro Gly Xaa Gly Val Pro
340 345 350

Gly Xaa Gly Val Pro Gly Xaa Gly Val Pro Gly Xaa Gly Val Pro Gly
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Xaa Gly Val Pro Gly Xaa Gly Val Pro Gly Xaa Gly Val Pro Gly Xaa
370 375 380

Gly Val Pro Gly Xaa Gly Val Pro Gly Xaa Gly Val Pro Gly Xaa Gly
385 390 395 400

Val Pro Gly Xaa Gly Val Pro Gly Xaa Gly Val Pro Gly Xaa Gly Val
405 410 415

Pro Gly Xaa Gly Val Pro Gly Xaa Gly Val Pro Gly Xaa Gly Val Pro

420 425 430

Gly Xaa Gly Val Pro Gly Xaa Gly Val Pro Gly Xaa Gly Val Pro Gly
435 440 445

Xaa Gly
450

<210> 32
<211> 600
<212> PRT
<213> Artificial Sequence

<220>
<223> ELP biopolymer sequence

<220>
<221> MISC_FEATURE
<222> (1)..(600)
<223> Xaa may be any natural or non-natural amino acid residue

<400> 32

Val Pro Gly Xaa Gly Val Pro Gly Xaa Gly Val Pro Gly Xaa Gly Val
1 5 10 15

Pro Gly Xaa Gly Val Pro Gly Xaa Gly Val Pro Gly Xaa Gly Val Pro
20 25 30

Gly Xaa Gly Val Pro Gly Xaa Gly Val Pro Gly Xaa Gly Val Pro Gly
35 40 45

Xaa Gly Val Pro Gly Xaa Gly Val Pro Gly Xaa Gly Val Pro Gly Xaa
50 55 60

Gly Val Pro Gly Xaa Gly Val Pro Gly Xaa Gly Val Pro Gly Xaa Gly
65 70 75 80

Val Pro Gly Xaa Gly Val Pro Gly Xaa Gly Val Pro Gly Xaa Gly Val
85 90 95

Pro Gly Xaa Gly Val Pro Gly Xaa Gly Val Pro Gly Xaa Gly Val Pro
100 105 110

Gly Xaa Gly Val Pro Gly Xaa Gly Val Pro Gly Xaa Gly Val Pro Gly
115 120 125

Xaa Gly Val Pro Gly Xaa Gly Val Pro Gly Xaa Gly Val Pro Gly Xaa
130 135 140

Gly Val Pro Gly Xaa Gly Val Pro Gly Xaa Gly Val Pro Gly Xaa Gly
145 150 155 160

Val Pro Gly Xaa Gly Val Pro Gly Xaa Gly Val Pro Gly Xaa Gly Val
165 170 175

Pro Gly Xaa Gly Val Pro Gly Xaa Gly Val Pro Gly Xaa Gly Val Pro
180 185 190

Gly Xaa Gly Val Pro Gly Xaa Gly Val Pro Gly Xaa Gly Val Pro Gly
195 200 205

Xaa Gly Val Pro Gly Xaa Gly Val Pro Gly Xaa Gly Val Pro Gly Xaa
210 215 220

Gly Val Pro Gly Xaa Gly Val Pro Gly Xaa Gly Val Pro Gly Xaa Gly
225 230 235 240

Val Pro Gly Xaa Gly Val Pro Gly Xaa Gly Val Pro Gly Xaa Gly Val
245 250 255

Pro Gly Xaa Gly Val Pro Gly Xaa Gly Val Pro Gly Xaa Gly Val Pro
260 265 270

Gly Xaa Gly Val Pro Gly Xaa Gly Val Pro Gly Xaa Gly Val Pro Gly
275 280 285

Xaa Gly Val Pro Gly Xaa Gly Val Pro Gly Xaa Gly Val Pro Gly Xaa
290 295 300

Gly Val Pro Gly Xaa Gly Val Pro Gly Xaa Gly Val Pro Gly Xaa Gly
305 310 315 320

Val Pro Gly Xaa Gly Val Pro Gly Xaa Gly Val Pro Gly Xaa Gly Val
325 330 335

Pro Gly Xaa Gly Val Pro Gly Xaa Gly Val Pro Gly Xaa Gly Val Pro
340 345 350

Gly Xaa Gly Val Pro Gly Xaa Gly Val Pro Gly Xaa Gly Val Pro Gly
355 360 365

Xaa Gly Val Pro Gly Xaa Gly Val Pro Gly Xaa Gly Val Pro Gly Xaa
370 375 380

Gly Val Pro Gly Xaa Gly Val Pro Gly Xaa Gly Val Pro Gly Xaa Gly
385 390 395 400

Val Pro Gly Xaa Gly Val Pro Gly Xaa Gly Val Pro Gly Xaa Gly Val
405 410 415

Pro Gly Xaa Gly Val Pro Gly Xaa Gly Val Pro Gly Xaa Gly Val Pro
420 425 430

Gly Xaa Gly Val Pro Gly Xaa Gly Val Pro Gly Xaa Gly Val Pro Gly
435 440 445

Xaa Gly Val Pro Gly Xaa Gly Val Pro Gly Xaa Gly Val Pro Gly Xaa
450 455 460

Gly Val Pro Gly Xaa Gly Val Pro Gly Xaa Gly Val Pro Gly Xaa Gly
465 470 475 480

Val Pro Gly Xaa Gly Val Pro Gly Xaa Gly Val Pro Gly Xaa Gly Val
485 490 495

Pro Gly Xaa Gly Val Pro Gly Xaa Gly Val Pro Gly Xaa Gly Val Pro
500 505 510

Gly Xaa Gly Val Pro Gly Xaa Gly Val Pro Gly Xaa Gly Val Pro Gly
515 520 525

Xaa Gly Val Pro Gly Xaa Gly Val Pro Gly Xaa Gly Val Pro Gly Xaa
530 535 540

Gly Val Pro Gly Xaa Gly Val Pro Gly Xaa Gly Val Pro Gly Xaa Gly
545 550 555 560

Val Pro Gly Xaa Gly Val Pro Gly Xaa Gly Val Pro Gly Xaa Gly Val
565 570 575

Pro Gly Xaa Gly Val Pro Gly Xaa Gly Val Pro Gly Xaa Gly Val Pro
580 585 590

Gly Xaa Gly Val Pro Gly Xaa Gly
595 600

<210> 33
<211> 900
<212> PRT
<213> Artificial Sequence

<220>
<223> ELP biopolymer sequence

<220>
<221> MISC_FEATURE
<222> (1)..(900)
<223> Xaa may be any natural or non-natural amino acid residue

<400> 33

Val Pro Gly Xaa Gly Val Pro Gly Xaa Gly Val Pro Gly Xaa Gly Val
1 5 10 15

Pro Gly Xaa Gly Val Pro Gly Xaa Gly Val Pro Gly Xaa Gly Val Pro
20 25 30

Gly Xaa Gly Val Pro Gly Xaa Gly Val Pro Gly Xaa Gly Val Pro Gly
35 40 45

Xaa Gly Val Pro Gly Xaa Gly Val Pro Gly Xaa Gly Val Pro Gly Xaa
50 55 60

Gly Val Pro Gly Xaa Gly Val Pro Gly Xaa Gly Val Pro Gly Xaa Gly
65 70 75 80

Val Pro Gly Xaa Gly Val Pro Gly Xaa Gly Val Pro Gly Xaa Gly Val
85 90 95

Pro Gly Xaa Gly Val Pro Gly Xaa Gly Val Pro Gly Xaa Gly Val Pro
100 105 110

Gly Xaa Gly Val Pro Gly Xaa Gly Val Pro Gly Xaa Gly Val Pro Gly
115 120 125

Xaa Gly Val Pro Gly Xaa Gly Val Pro Gly Xaa Gly Val Pro Gly Xaa
130 135 140

Gly Val Pro Gly Xaa Gly Val Pro Gly Xaa Gly Val Pro Gly Xaa Gly
145 150 155 160

Val Pro Gly Xaa Gly Val Pro Gly Xaa Gly Val Pro Gly Xaa Gly Val
165 170 175

Pro Gly Xaa Gly Val Pro Gly Xaa Gly Val Pro Gly Xaa Gly Val Pro
180 185 190

Gly Xaa Gly Val Pro Gly Xaa Gly Val Pro Gly Xaa Gly Val Pro Gly

195 200 205

Xaa Gly Val Pro Gly Xaa Gly Val Pro Gly Xaa Gly Val Pro Gly Xaa
210 215 220

Gly Val Pro Gly Xaa Gly Val Pro Gly Xaa Gly Val Pro Gly Xaa Gly
225 230 235 240

Val Pro Gly Xaa Gly Val Pro Gly Xaa Gly Val Pro Gly Xaa Gly Val
245 250 255

Pro Gly Xaa Gly Val Pro Gly Xaa Gly Val Pro Gly Xaa Gly Val Pro
260 265 270

Gly Xaa Gly Val Pro Gly Xaa Gly Val Pro Gly Xaa Gly Val Pro Gly
275 280 285

Xaa Gly Val Pro Gly Xaa Gly Val Pro Gly Xaa Gly Val Pro Gly Xaa
290 295 300

Gly Val Pro Gly Xaa Gly Val Pro Gly Xaa Gly Val Pro Gly Xaa Gly
305 310 315 320

Val Pro Gly Xaa Gly Val Pro Gly Xaa Gly Val Pro Gly Xaa Gly Val
325 330 335

Pro Gly Xaa Gly Val Pro Gly Xaa Gly Val Pro Gly Xaa Gly Val Pro
340 345 350

Gly Xaa Gly Val Pro Gly Xaa Gly Val Pro Gly Xaa Gly Val Pro Gly
355 360 365

Xaa Gly Val Pro Gly Xaa Gly Val Pro Gly Xaa Gly Val Pro Gly Xaa
370 375 380

Gly Val Pro Gly Xaa Gly Val Pro Gly Xaa Gly Val Pro Gly Xaa Gly
385 390 395 400

Val Pro Gly Xaa Gly Val Pro Gly Xaa Gly Val Pro Gly Xaa Gly Val
405 410 415

Pro Gly Xaa Gly Val Pro Gly Xaa Gly Val Pro Gly Xaa Gly Val Pro
420 425 430

Gly Xaa Gly Val Pro Gly Xaa Gly Val Pro Gly Xaa Gly Val Pro Gly
435 440 445

Xaa Gly Val Pro Gly Xaa Gly Val Pro Gly Xaa Gly Val Pro Gly Xaa
450 455 460

Gly Val Pro Gly Xaa Gly Val Pro Gly Xaa Gly Val Pro Gly Xaa Gly
465 470 475 480

Val Pro Gly Xaa Gly Val Pro Gly Xaa Gly Val Pro Gly Xaa Gly Val
485 490 495

Pro Gly Xaa Gly Val Pro Gly Xaa Gly Val Pro Gly Xaa Gly Val Pro
500 505 510

Gly Xaa Gly Val Pro Gly Xaa Gly Val Pro Gly Xaa Gly Val Pro Gly
515 520 525

Xaa Gly Val Pro Gly Xaa Gly Val Pro Gly Xaa Gly Val Pro Gly Xaa
530 535 540

Gly Val Pro Gly Xaa Gly Val Pro Gly Xaa Gly Val Pro Gly Xaa Gly
545 550 555 560

Val Pro Gly Xaa Gly Val Pro Gly Xaa Gly Val Pro Gly Xaa Gly Val
565 570 575

Pro Gly Xaa Gly Val Pro Gly Xaa Gly Val Pro Gly Xaa Gly Val Pro
580 585 590

Gly Xaa Gly Val Pro Gly Xaa Gly Val Pro Gly Xaa Gly Val Pro Gly
595 600 605

Xaa Gly Val Pro Gly Xaa Gly Val Pro Gly Xaa Gly Val Pro Gly Xaa
610 615 620

Gly Val Pro Gly Xaa Gly Val Pro Gly Xaa Gly Val Pro Gly Xaa Gly
625 630 635 640

Val Pro Gly Xaa Gly Val Pro Gly Xaa Gly Val Pro Gly Xaa Gly Val
645 650 655

Pro Gly Xaa Gly Val Pro Gly Xaa Gly Val Pro Gly Xaa Gly Val Pro
660 665 670

Gly Xaa Gly Val Pro Gly Xaa Gly Val Pro Gly Xaa Gly Val Pro Gly
675 680 685

Xaa Gly Val Pro Gly Xaa Gly Val Pro Gly Xaa Gly Val Pro Gly Xaa
690 695 700

Gly Val Pro Gly Xaa Gly Val Pro Gly Xaa Gly Val Pro Gly Xaa Gly
705 710 715 720

Val Pro Gly Xaa Gly Val Pro Gly Xaa Gly Val Pro Gly Xaa Gly Val
725 730 735

Pro Gly Xaa Gly Val Pro Gly Xaa Gly Val Pro Gly Xaa Gly Val Pro
740 745 750

Gly Xaa Gly Val Pro Gly Xaa Gly Val Pro Gly Xaa Gly Val Pro Gly
755 760 765

Xaa Gly Val Pro Gly Xaa Gly Val Pro Gly Xaa Gly Val Pro Gly Xaa
770 775 780

Gly Val Pro Gly Xaa Gly Val Pro Gly Xaa Gly Val Pro Gly Xaa Gly
785 790 795 800

Val Pro Gly Xaa Gly Val Pro Gly Xaa Gly Val Pro Gly Xaa Gly Val
805 810 815

Pro Gly Xaa Gly Val Pro Gly Xaa Gly Val Pro Gly Xaa Gly Val Pro
820 825 830

Gly Xaa Gly Val Pro Gly Xaa Gly Val Pro Gly Xaa Gly Val Pro Gly
835 840 845

Xaa Gly Val Pro Gly Xaa Gly Val Pro Gly Xaa Gly Val Pro Gly Xaa
850 855 860

Gly Val Pro Gly Xaa Gly Val Pro Gly Xaa Gly Val Pro Gly Xaa Gly
865 870 875 880

Val Pro Gly Xaa Gly Val Pro Gly Xaa Gly Val Pro Gly Xaa Gly Val
885 890 895

Pro Gly Xaa Gly
900

<210> 34
<211> 20
<212> PRT
<213> Artificial Sequence

<220>
<223> non-cleavable spacer peptide

<220>
<221> REPEAT
<222> (1)..(20)
<223> Gly residues in Gy Gly Gly Gly Ser subsequence may be repeated 1 to 4 times

<220>
<221> REPEAT
<222> (1)..(20)
<223> Gy Gly Gly Gly Ser subsequence may be repeated 1 to 4 times

<400> 34

Gly Gly Gly Gly Ser Gly Gly Gly Gly Ser Gly Gly Gly Gly Ser Gly
1 5 10 15

Gly Gly Gly Ser
20

<210> 35
<211> 21
<212> PRT
<213> Homo sapiens

<400> 35

Gly Ile Val Glu Gln Cys Cys Thr Ser Ile Cys Ser Leu Tyr Gln Leu
1 5 10 15

Glu Asn Tyr Cys Asn
20

<210> 36
<211> 30
<212> PRT
<213> Homo sapiens

<400> 36

Phe Val Asn Gln His Leu Cys Gly Ser His Leu Val Glu Ala Leu Tyr
1 5 10 15

Leu Val Cys Gly Glu Arg Gly Phe Phe Tyr Thr Pro Lys Thr
20 25 30