CLAIMS

~~What is claimed is:~~

1. A pharmaceutical composition for topical, transdermal, superficial, or intradermal administration comprising:

(a) a herpes simplex virus comprising a recombinant herpes simplex virus genome, wherein the recombinant herpes simplex virus genome comprises ~~comprising~~ a first polynucleotide encoding a ~~first polypeptide comprising a~~ first cosmetic protein and a second polynucleotide encoding a second cosmetic protein; and

(b) a pharmaceutically acceptable excipient;

wherein the recombinant herpes simplex virus genome comprises an inactivating mutation in both copies of the Infected Cell Protein (ICP4) herpes simplex virus gene;

wherein the first cosmetic protein is selected from the group consisting of a first collagen protein, a first fibronectin protein, a first elastin protein, a first lumican protein, a first vitronectin protein, a first vitronectin receptor protein, a first laminin protein, a first neuromodulator protein, and a first fibrillin protein; and

wherein the recombinant herpes simplex virus genome does not comprise a polynucleotide encoding a Collagen alpha-1 (VII) chain polypeptide (COL7).

~~2. The recombinant herpes virus genome of claim 1, wherein the recombinant herpes virus genome comprises two or more copies of the first polynucleotide.~~

~~3. The recombinant herpes virus genome of claim 1 or claim 2, wherein the recombinant herpes virus genome is replication competent.~~

~~4.~~2. The pharmaceutical composition of claim 1, wherein the~~recombinant~~ herpes simplex virus comprising ~~genome of claim 1 or claim 2, wherein~~ the recombinant herpes simplex virus genome is replication defective.

~~5. The recombinant herpes virus genome of any one of claims 1-4, wherein the recombinant herpes virus genome is selected from the group consisting of a recombinant herpes simplex virus genome, a recombinant varicella zoster virus genome, a recombinant human cytomegalovirus genome, a recombinant herpesvirus 6A genome, a recombinant herpesvirus 6B genome, a recombinant herpesvirus 7 genome, a recombinant Kaposi's sarcoma-associated herpesvirus genome, and any derivatives thereof.~~

~~6. The recombinant herpes virus genome of any one of claims 1-5, wherein the recombinant herpes virus genome is a recombinant herpes simplex virus genome.~~

~~7. The recombinant herpes virus genome of claim 6, wherein the recombinant herpes simplex virus genome is a recombinant type 1 herpes simplex virus (HSV-1) genome, a recombinant type 2 herpes simplex virus (HSV-2) genome, or any derivatives thereof.~~

~~8.~~3. The pharmaceutical composition of claim 1 or 2, ~~recombinant herpes virus genome of claim 6 or claim 7,~~ wherein the recombinant herpes simplex virus genome is a recombinant ~~type 1~~ herpes simplex virus type 1 (HSV-1) genome.

~~9. The recombinant herpes virus genome of any one of claims 6-8, wherein the recombinant herpes simplex virus genome comprises an inactivating mutation.~~

~~10. The recombinant herpes virus genome of claim 9, wherein the inactivating mutation is in a herpes simplex virus gene.~~

~~11. The recombinant herpes virus genome of claim 10, wherein the inactivating mutation is a deletion of the coding sequence of the herpes simplex virus gene.~~

~~12.~~4. The pharmaceutical composition of any one of claims 1-3, ~~recombinant herpes virus genome of claim 10 or claim 11,~~ wherein the recombinant herpes simplex virus genome comprises an inactivating mutation in a herpes simplex virus gene ~~is~~ selected from the group consisting of ~~Infected Cell Protein (~~ICP~~)~~ 0, ~~ICP4,~~ ICP22, ICP27, and ICP47~~, thymidine kinase (tk), Long Unique Region (UL) 41, and UL55~~.

~~13. The recombinant herpes virus genome of claim 12, wherein the recombinant herpes simplex virus genome comprises an inactivating mutation in one or both copies of the ICP4 gene.~~

~~14. The recombinant herpes virus genome of claim 12 or claim 13, wherein the recombinant herpes simplex virus genome comprises an inactivating mutation in the ICP22 gene.~~

~~15. The recombinant herpes virus genome of any one of claims 12-14, wherein the recombinant herpes simplex virus genome comprises an inactivating mutation in the UL41 gene.~~

~~16. The recombinant herpes virus genome of any one of claims 12-15, wherein the recombinant herpes simplex virus genome comprises an inactivating mutation in one or both copies of the ICP0 gene.~~

~~17. The recombinant herpes virus genome of any one of claims 12-16, wherein the recombinant herpes simplex virus genome comprises an inactivating mutation in the ICP27 gene.~~

~~18. The recombinant herpes virus genome of any one of claims 6-17, wherein the recombinant herpes simplex virus genome comprises the first polynucleotide within one or both of the ICP4 viral gene loci.~~

~~19. The recombinant herpes virus genome of any one of claims 1-18, wherein the first cosmetic protein is selected from the group consisting of a first collagen protein, a first fibronectin protein, a first elastin protein, a first lumican protein, a first vitronectin protein, a first vitronectin receptor protein, a first laminin protein, a first neuromodulator protein, and a first fibrillin protein.~~

~~20. The recombinant herpes virus genome of any one of claims 1-19, wherein the first cosmetic protein comprises a sequence having at least 80%, at least 85%, at least 90%, at least 91%, at least 92%, at least 93%, at least 94%, at least 95%, at least 96%, at least 97%, at least 98%, at least 99%, or 100% sequence identity to an amino acid sequence selected from the group consisting of SEQ ID NOS: 15-21 and 53-64.~~

~~21. The recombinant herpes virus genome of any one of claims 1-20, wherein the first cosmetic protein is a structural extracellular matrix protein.~~

~~22. The recombinant herpes virus genome of any one of claims 19-21, wherein the first collagen protein is a human collagen protein.~~

~~23.~~5. The pharmaceutical composition of any one of claim 1-4, ~~recombinant herpes virus genome of any one of claims 19-22,~~ wherein the first collagen protein is selected from the group consisting of a Collagen alpha-1(I) chain polypeptide (COL1-1), a Collagen alpha-2(I) chain polypeptide (COL1-2), a Collagen alpha-1(II) chain polypeptide (COL2), a Collagen alpha-1(III) chain polypeptide (COL3), a Collagen alpha-1(IV) chain polypeptide (COL4-1), a Collagen alpha-2(IV) chain polypeptide (COL4-2), a Collagen alpha-3(IV) chain polypeptide (COL4-3), a Collagen alpha-4(IV) chain polypeptide (COL4-4), a Collagen alpha-5(IV) chain polypeptide (COL4-5), a Collagen alpha-6(IV) chain polypeptide (COL4-6), a Collagen alpha-1(V) chain polypeptide (COL5-1), a Collagen alpha-2(V) chain polypeptide (COL5-2), a Collagen alpha-3(V) chain polypeptide (COL5-3), a Collagen alpha-1(VI) chain polypeptide (COL6-1), a Collagen alpha-2(VI) chain polypeptide (COL6-2), a Collagen alpha-3(VI) chain polypeptide (COL6-3), a Collagen alpha-4(VI) chain polypeptide

(COL6-4), a Collagen alpha-5(VI) chain polypeptide (COL6-5), a Collagen alpha-6(VI) chain polypeptide (COL6-6), a Collagen alpha-1(VIII) chain polypeptide (COL8), a Collagen alpha-1(IX) chain polypeptide (COL9-1), a Collagen alpha-2(IX) chain polypeptide (COL9-2), a Collagen alpha-3(IX) chain polypeptide (COL9-3), a Collagen alpha-1(X) chain polypeptide (COL10), a Collagen alpha-1(XI) chain polypeptide (COL11-1), a Collagen alpha-2(XI) chain polypeptide (COL11-2), a Collagen alpha-1(XII) chain polypeptide (COL12), a Collagen alpha-1(XIII) chain polypeptide (COL13), a Collagen alpha-1(XIV) chain polypeptide (COL14), a Collagen alpha-1(XV) chain polypeptide (COL15), a Collagen alpha-1(XVI) chain polypeptide (COL16), a Collagen alpha-1(XVII) chain polypeptide (COL17), a Collagen alpha-1(XVIII) chain polypeptide (COL18), a Collagen alpha-1(XIX) chain polypeptide (COL19), a Collagen alpha-1(XX) chain polypeptide (COL20), a Collagen alpha-1(XXI) chain polypeptide (COL21), a Collagen alpha-1(XXII) chain polypeptide (COL22), a Collagen alpha-1(XXIII) chain polypeptide (COL23), a Collagen alpha-1(XXIV) chain polypeptide (COL24), a Collagen alpha-1(XXV) chain polypeptide (COL25), a Collagen alpha-1(XXVI) chain polypeptide (COL26), a Collagen alpha-1(XXVII) chain polypeptide (COL27), and a Collagen alpha-1(XXVIII) chain polypeptide (COL28).

6. The pharmaceutical composition of any one of claims 1-5,~~recombinant herpes virus genome of any one of claims 19-23,~~ wherein the first collagen protein is ~~selected from the group consisting of~~a human ~~COL1-1, COL1-2,~~ COL3~~, COL4-1, COL4-2, COL6-1, and COL17~~ polypeptide.

~~24.~~7. The pharmaceutical composition of any one of claims 1-5, wherein the first collagen protein is a human COL1-1 polypeptide.

~~25. The recombinant herpes virus genome of any one of claims 19-24, wherein the first human collagen protein comprises a sequence having at least 80%, at least 85%, at least 90%, at least 91%, at least 92%, at least 93%, at least 94%, at least 95%, at least 96%, at least 97%, at least 98%, at least 99%, or 100% sequence identity to the amino acid sequence of SEQ ID NO: 17.~~

~~26. The recombinant herpes virus genome of any one of claims 1-25, wherein the first cosmetic protein is not a Collagen alpha-1(VII) chain polypeptide (COL7).~~

~~27. The recombinant herpes virus genome of any one of claims 1-26, wherein the first polypeptide consists essentially of or consists of the first cosmetic protein.~~

~~28. The recombinant herpes virus genome of any one of claims 1-26, wherein the first polypeptide comprises: (a) the first cosmetic protein; (b) a further cosmetic protein; and (c) a linker polypeptide linking (a) to (b).~~

~~29. The recombinant herpes virus genome of claim 28, wherein the linker polypeptide is a cleavable linker polypeptide.~~

~~30. The recombinant herpes virus genome of claim 28 or claim 29, wherein the linker polypeptide comprises a sequence having at least 80%, at least 85%, at least 90%, at least 91%, at least 92%, at least 93%, at least 94%, at least 95%, at least 96%, at least 97%, at least 98%, at least 99%, or 100% sequence identity to an amino acid sequence selected from the group consisting of SEQ ID NOS: 28-31.~~

~~31. The recombinant herpes virus genome of any one of claims 28-30, wherein the first cosmetic protein and the further cosmetic protein are different.~~

~~32. The recombinant herpes virus genome of any one of claims 1-31, wherein the first polynucleotide encodes a polycistronic mRNA comprising: (a) a first open reading frame (ORF) encoding the first polypeptide; (b) a second ORF encoding an additional cosmetic protein; and (c) an internal ribosomal entry site (IRES) separating (a) and (b).~~

~~33. The recombinant herpes virus genome of claim 32, wherein the nucleic acid sequence encoding the IRES has at least 80%, at least 85%, at least 90%, at least 91%, at least 92%, at least 93%, at least 94%, at least 95%, at least 96%, at least 97%, at least 98%, at least 99%, or 100% sequence identity to a nucleic acid sequence selected from SEQ ID NO: 22 or SEQ ID NO: 23.~~

~~34. The recombinant herpes virus genome of claim 32 or claim 33, wherein the first cosmetic protein and the additional cosmetic protein are different.~~

~~35. The recombinant herpes virus genome of any one of claims 1-34, wherein the recombinant herpes virus genome further comprises a second polynucleotide encoding a second cosmetic protein.~~

~~36. The recombinant herpes virus genome of claim 35, wherein the first and second cosmetic proteins are different.~~

~~37.~~8. The pharmaceutical composition of any one of claims 1-7,~~recombinant herpes virus genome of any one of claims 1-36,~~ wherein the ~~recombinant~~ herpes simplex virus ~~genome~~

has reduced cytotoxicity ~~when introduced into a target cell,~~ as compared to a corresponding wild-type herpes simplex virus ~~genome~~.

~~38. The recombinant herpes virus genome of claim 37, wherein the target cell is a cell of the epidermis and/or dermis.~~

~~39. The recombinant herpes virus genome of claim 37 or claim 38, wherein the target cell is a human cell.~~

~~40. The recombinant herpes virus genome of any one of claims 37-39, wherein the target cell is a fibroblast.~~

~~41. A herpes virus comprising the recombinant herpes virus genome of any one of claims 1-40.~~

~~42. The herpes virus of claim 41, wherein the herpes virus is replication competent.~~

~~43. The herpes virus of claim 41, wherein the herpes virus is replication defective.~~

~~44. The herpes virus of any one of claims 41-43, wherein the herpes virus has reduced cytotoxicity as compared to a corresponding wild-type herpes virus.~~

~~45. The herpes virus of any one of claims 41-44, wherein the herpes virus is selected from the group consisting of a herpes simplex virus, a varicella zoster virus, a human cytomegalovirus, a herpesvirus 6A, a herpesvirus 6B, a herpesvirus 7, and a Kaposi's sarcoma-associated herpesvirus.~~

~~46. The herpes virus of any one of claims 41-45, wherein the herpes virus is a herpes simplex virus.~~

~~47. The herpes virus of claim 46, wherein the herpes simplex virus is a type 1 herpes simplex virus (HSV-1), a type 2 herpes simplex virus (HSV-2), or any derivatives thereof.~~

~~48. A composition comprising: (a) the recombinant herpes virus genome of any one of claims 1-40 or the herpes virus of any one of claims 41-47; and (b) an excipient.~~

~~49. The composition of claim 48, wherein the composition is sterile.~~

~~50. The composition of claim 48 or claim 49, wherein the composition is suitable for topical, transdermal, subcutaneous, intradermal, oral, intranasal, intratracheal, sublingual, buccal, rectal, vaginal, urethral, inhaled, intravenous, intraarterial, intramuscular, intracardiac, intraosseous, intraperitoneal, transmucosal, intravitreal, subretinal, intraarticular, peri-articular, local, or epicutaneous administration.~~

~~51.~~9. The pharmaceutical composition of any one of claims 1-8,~~composition of any one of claims 48-50,~~ wherein the pharmaceutical composition is to be administered via~~suitable for~~ intradermal injection~~administration~~.

~~52.~~10. The pharmaceutical composition of any one of claims 1-8, ~~composition of any one of claims 48-51,~~ wherein the pharmaceutical composition is to be administered via~~suitable for~~ superficial injection.

~~53.~~11. The pharmaceutical composition of any one of claims 1-10,~~composition of any one of claims 48-52,~~ wherein the pharmaceutical composition is a cosmetic composition.

~~54. The composition of any one of claims 48-53, wherein the composition is a skin care product.~~

~~55. The herpes virus of any one of claims 41-47 or the composition of any one of claims 48-54 for use as a medicament.~~

~~56. The herpes virus of any one of claims 41-47 or the composition of any one of claims 48-54 for use in a therapy.~~

~~57. Use of the herpes virus of any one of claims 41-47 or the composition of any one of claims 48-54 in the manufacture of a medicament for treating one or more signs or symptoms of dermatological aging.~~

~~58. A method of enhancing, increasing, augmenting, and/or supplementing the levels of one or more dermal extracellular matrix proteins in a subject, the method comprising administering to the subject an effective amount of the herpes virus of any one of claims 41-47 or the composition of any one of claims 48-54.~~

~~59. A method of enhancing, increasing, augmenting, and/or supplementing the levels of one or more collagen proteins in a subject, the method comprising administering to the subject an effective amount of the herpes virus of any one of claims 41-47 or the composition of any one of claims 48-54.~~

~~60. A method of enhancing, increasing, augmenting, and/or supplementing the soft tissue of a subject, the method comprising administering to the subject an effective amount of the herpes virus of any one of claims 41-47 or the composition of any one of claims 48-54.~~

~~61. The method of claim 60, wherein the composition is injected into the soft tissue of the subject.~~

12. The pharmaceutical composition of any one of claims 1-11, wherein the recombinant herpes simplex virus genome is delivered to one or more target cells of the skin of the subject.

13. The pharmaceutical composition of any one of claims 1-12, wherein the first cosmetic protein is expressed in one or more target cells of the skin of a subject.

14. The pharmaceutical composition of any one of claims 1-13, wherein the first and second cosmetic proteins are the same.

15. The pharmaceutical composition of any one of claims 1-13, wherein the first and second cosmetic proteins are different.

~~62.~~16. A method of improving skin condition, quality, and/or appearance in a subject ~~in need thereof~~, the method comprising administering to the subject an effective amount of a pharmaceutical composition comprising:

(a) a~~the~~ herpes simplex virus comprising~~of any one of claims 41-47 or the composition of any one of claims 48-54~~ a recombinant herpes simplex virus genome, wherein the recombinant herpes simplex virus genome comprises a first polynucleotide encoding a first cosmetic protein and a second polynucleotide encoding a second cosmetic protein; and

(b) a pharmaceutically acceptable excipient:

wherein the recombinant herpes simplex virus genome comprises an inactivating mutation in both copies of the ICP4 herpes simplex virus gene;

wherein the first cosmetic protein is selected from the group consisting of a first collagen protein, a first fibronectin protein, a first elastin protein, a first lumican protein ,a first vitronectin protein, a first vitronectin receptor protein, a first laminin protein, a first neuromodulator protein, and a first fibrillin protein;

wherein the recombinant herpes simplex virus genome does not comprise a polynucleotide encoding a Collagen alpha-1 (VII) chain polypeptide (COL7);

wherein the pharmaceutical composition is to be administered topically, transdermally, intradermally, or via superficial injection to the subject;

wherein the recombinant herpes simplex virus genome is delivered to one or more target cell of the skin of a subject; and

wherein the first cosmetic protein is expressed in one or more target cells of the skin of a subject.

~~63.~~17. The method of claim 16~~62~~, wherein the subject's skin comprises one or more~~composition is administered to one or more sites~~ of sun ~~damage~~ or ~~other~~ UV damage~~exposure~~, rough texture, ~~skin~~ sagging, wrinkles, or any combinations thereof.

~~64. A method of reducing the appearance of one or more superficial depressions in the skin of a subject in need thereof, the method comprising administering to the subject an effective amount of the herpes virus of any one of claims 41-47 or the composition of any one of claims 48-54.~~

~~65. The method of claim 64, wherein the one or more superficial depressions in the skin are selected from the group consisting of nasolabial folds, crows' feet, frown lines, worry lines, scars, glabellar lines, brow ptosis, tear troughs, nasojugal lines, bunny lines, cheek/mid-face ptosis, marionette lines, poppy dimpling, smile lines, laugh lines, chin creases, neck lines, platysma bands, and any combinations thereof.~~

~~66. A method of increasing and/or improving at least one of texture, smoothness, elasticity, or tension of the skin of a subject in need thereof, the method comprising administering to the subject an effective amount of the herpes virus of any one of claims 41-47 or the composition of any one of claims 48-54.~~

~~67. The method of any one of claims 62-66, wherein the skin of the subject is aging skin.~~

~~68. The method of any one of claims 62-67, wherein the skin of the subject has been damaged due to exposure to ultraviolet light.~~

~~69. The method of any one of claims 62-68, wherein the skin of the subject is wrinkled.~~

~~70. A method of diminishing one or more dermatological signs of aging in a subject in need thereof, the method comprising administering to the subject an effective amount of the herpes virus of any one of claims 41-47 or the composition of any one of claims 48-54.~~

~~71. The method of claim 70, wherein the diminishing of one or more dermatological signs of aging is indicated by the: (a) treatment, reduction, and/or prevention of fine lines and/or wrinkles; (b) reduction of skin pore size; (c) improvement in skin thickness, plumpness, and/or tautness; (d) improvement in skin smoothness, suppleness, and/or softness; (e) improvement in skin tone, radiance, and/or clarity; (f) improvement in procollagen and/or collagen production; (g) improvement in skin texture and or promotion of retexturization; (h) improvement in appearance of skin contours; (i) restoration of skin luster and/or brightness; (j) improvement of skin appearance decreased by aging and/or menopause; (k) improvement~~

~~in skin moisturization; (l) increase in skin elasticity and/or resiliency; (m) treatment, reduction, and/or prevention or skin sagging; (n) improvement in skin firmness; (o) reduction of pigment spots, mottled skin, and/or scars; (p) improvement of optical properties of skin by light diffraction or reflection; or (q) any combinations thereof.~~

~~72.~~18. The method of ~~any one of~~ claims 16 or 17~~58-71~~, wherein the subject is a human.

~~73. The method of any one of claims 58-72, wherein the herpes virus or composition is administered topically, transdermally, subcutaneously, epicutaneously, intradermally, orally, sublingually, buccally, rectally, vaginally, intraurethrally, intravenously, intraarterially, intramuscularly, intraosseously, intracardially, intraperitoneally, transmucosally, intravitreally, subretinally, intraarticularly, peri-articularly, locally, or via inhalation to the subject.~~

~~74.~~19. The method of any one of claims 16-18~~58-73~~, wherein the pharmaceutical ~~herpes virus or~~ composition is to be administered intradermally to the subject.

~~75.~~20. The method of any one of claims 16-18~~58-74~~, wherein the pharmaceutical ~~herpes virus or~~ composition is to be administered by superficial injection to the subject.

21. The method of any one of claims 16-20, wherein the recombinant herpes simplex virus genome is a recombinant herpes simplex virus type 1 (HSV-1) genome.

22. The method of any one of claims 16-21, wherein the recombinant HSV-1 genome comprises an inactivating mutation in a herpes simplex virus gene selected from the group consisting of ICP0, ICP22, ICP27, and ICP47.

23. The method of any one of claims 16-22, wherein the first collagen protein is selected from the group consisting of a Collagen alpha-1(I) chain polypeptide (COL1-1), a Collagen alpha-2(I) chain polypeptide (COL1-2), a Collagen alpha-1(II) chain polypeptide (COL2), a Collagen alpha-1(III) chain polypeptide (COL3), a Collagen alpha-1(IV) chain polypeptide (COL4-1), a Collagen alpha-2(IV) chain polypeptide (COL4-2), a Collagen alpha-3(IV) chain polypeptide (COL4-3), a Collagen alpha-4(IV) chain polypeptide (COL4-4), a Collagen alpha-5(IV) chain polypeptide (COL4-5), a Collagen alpha-6(IV) chain polypeptide (COL4-6), a Collagen alpha-1(V) chain polypeptide (COL5-1), a Collagen alpha-2(V) chain polypeptide (COL5-2), a Collagen alpha-3(V) chain polypeptide (COL5-3), a Collagen alpha-1(VI) chain polypeptide (COL6-1), a Collagen alpha-2(VI) chain polypeptide (COL6-2), a Collagen alpha-3(VI) chain polypeptide (COL6-3), a Collagen alpha-4(VI) chain polypeptide (COL6-4), a Collagen alpha-5(VI) chain polypeptide (COL6-5), a Collagen alpha-6(VI) chain

polypeptide (COL6-6), a Collagen alpha-1(VIII) chain polypeptide (COLE), a Collagen alpha-1(IX) chain polypeptide (COL5-1), a Collagen alpha-2(IX) chain polypeptide (COL5-2), a Collagen alpha-3(IX) chain polypeptide (COL9-3), a Collagen alpha-1(X) chain polypeptide (COL10), a Collagen alpha-1(XI) chain polypeptide (COL11-1), a Collagen alpha-2(XI) chain polypeptide (COL11-2), a Collagen alpha-1(XII) chain polypeptide (COL12), a Collagen alpha-1(XIII) chain polypeptide (COL13), a Collagen alpha-1(XIV) chain polypeptide (COL14), a Collagen alpha-1(XV) chain polypeptide (COL15), a Collagen alpha-1(XVI) chain polypeptide (COL16), a Collagen alpha-1(XVII) chain polypeptide (COL17), a Collagen alpha-1(XVIII) chain polypeptide (COL18), a Collagen alpha-1(XIX) chain polypeptide (COL19), a Collagen alpha-1(XX) chain polypeptide (COL20), a Collagen alpha-1(XXI) chain polypeptide (COL21), a Collagen alpha-1(XXII) chain polypeptide (COL22), a Collagen alpha-1(XXIII) chain polypeptide (COL23), a Collagen alpha-1(XXIV) chain polypeptide (COL24), a Collagen alpha-1(XXV) chain polypeptide (COL25), a Collagen alpha-1(XXVI) chain polypeptide (COL26), a Collagen alpha-1(XXVII) chain polypeptide (COL27), and a Collagen alpha-1(XXVIII) chain polypeptide (COL28).

24. The method of any one of claims 16-23, wherein the first collagen protein is a human COL3 polypeptide.

25. The method of any one of claims 16-23, wherein the first collagen protein is a human COL1-1 polypeptide.

26. The method of any one of claims 16-25, wherein the herpes simplex virus has reduced cytotoxicity as compared to a corresponding wild-type herpes simplex virus.

27. The method of any one of claims 16-26, wherein the first and second cosmetic proteins are the same.

28. The method of any one of claims 16-26, wherein the first and second cosmetic proteins are different.