## CLAIMS

WHAT IS CLAIMED IS:

1. A composition comprising: a saccharide and a nucleic acid molecule, which said nucleic acid molecule is configured to facilitate a change in protein expression within a cell; and a polymeric material that is configured to encapsulate or adhere to said cell.

2. The composition of claim 1, wherein said polymeric material

i) comprises a polymer, optionally wherein said polymer comprises a polysaccharide-based polymer, a polypeptide-based polymer, a lipid-based polymer, or a combination thereof, optionally wherein said polysaccharide-based polymer comprises an alginate-based polymer, a gellan gum-based polymer, a cassava-based polymer, a maize-based polymer, a corn starch-based polymer, a xanthan gum-based polymer, a locust bean-based polymer, a pullulan-based polymer, a dextran -based polymer, a cellulose-based polymer, or a combination thereof;

ii) is configured to encapsulate said cell;

iii) comprises a hydrogel, optionally wherein said polymeric material comprises a 2-dimensional polymer or a 3-dimensional polymer; and/or

iv) is configured to be biodegradable;

and optionally wherein said nucleic acid molecule comprises a ribonucleic acid (RNA).

3. A composition comprising: a nucleic acid molecule comprising a ribonucleic acid (RNA) and a saccharide which are configured to collectively facilitate a change in protein expression within a cell, optionally wherein:

i) said change in protein expression within said cell facilitates differentiation of said cell into a mesodermal lineage, an endodermal lineage, or an ectodermal lineage, optionally wherein said change in protein expression within said cell facilitates adipogenic, angiogenic, cardiogenic, chondrogenic, endothelial, epithelial, hematopoietic, hepatogenic, myogenic, neurogenic, osteogenic, parenchymal, renal, or retinal differentiation of said cell, optionally wherein said differentiation of said cell comprises transdifferentiation of said cell or directed differentiation of said cell;

ii) said cell comprises a somatic cell or a naive cell;

iii) said cell comprises a fat cell, a blood vessel cell, a cardiac cell, a chondrocyte, an endothelial cell, an epithelial cell, a hematopoietic cell, a hepatocyte, a muscle cell, a neuron, or an osteogenic cell, optionally wherein said cell comprises said muscle cell, and optionally

wherein said muscle cell comprises a myofiber, a myotube, a myocyte, a myoblast, a myogenic spheroid, or a muscle cell progenitor; and/or

iv) said RNA comprises a messenger ribonucleic acid (mRNA), a micro ribonucleic acid (miRNA), a transfer ribonucleic acid (tRNA), a silencing ribonucleic acid (siRNA), a self-amplifying RNA (saRNA), an endless/circular RNA (eRNA), a trans-amplifying RNA (ta-RNA), or a combination thereof, optionally wherein said RNA comprises said mRNA, said saRNA, said eRNA, said ta-RNA, or a combination thereof.

4. A composition comprising: a saccharide and a nucleic acid molecule which are configured to collectively facilitate a change in protein expression within a cell, wherein said cell is a stem cell comprising an embryonic stem cell, an immortalized stem cell, a mesenchymal stem cell, a muscle progenitor cell, or an induced pluripotent stem cell (iPSC), optionally wherein:

i) said cell comprises said iPSC; and/or

ii) said nucleic acid molecule comprises a ribonucleic acid (RNA), optionally wherein said RNA comprises a messenger ribonucleic acid (mRNA), a micro ribonucleic acid (miRNA), a transfer ribonucleic acid (tRNA), a silencing ribonucleic acid (siRNA), a self-amplifying RNA (saRNA), an endless/circular RNA (eRNA), a trans-amplifying RNA (ta-RNA), or a combination thereof, optionally wherein:

a) said RNA comprises said mRNA, said saRNA, said eRNA, said ta-RNA, or a combination thereof;

b) said RNA encodes MYOD1, MYOG, MYFS, MYF6, PAX3, PAX7, PPARY, adiponectin, FATP1-6, FABP4, GLUT4, Leptin, AdipoRl-2, CD137, a fragment thereof, or a variant thereof;

c) said RNA is monocistronic or polycistronic;

d) said nucleic acid molecule comprises said mRNA or said saRNA;

e) said nucleic acid molecule comprises said miRNA or said siRNA, optionally wherein said miRNA or said siRNA comprises a polynucleotide sequence that facilitates a reduction of pluripotency of said cell, optionally wherein:

i) said reduction of pluripotency of said cell facilitates said differentiation of said cell; and/or

ii) said polynucleotide sequence comprises a polynucleotide sequence that comprises POUF51 (OCT3/4), KLF4, or SOX2, or a complementary sequence thereof; and/or

f) said nucleic acid molecule comprises a first nucleic acid molecule and a second nucleic molecule, wherein said first nucleic acid molecule is said mRNA or said saRNA, and wherein said second nucleic acid is said miRNA or said siRNA.

5. A composition comprising a nucleic acid molecule and a modified saccharide, wherein said nucleic acid molecule comprises a messenger ribonucleic acid (mRNA), a self-amplifying RNA (saRNA), an endless/circular RNA (eRNA), a trans-amplifying RNA (ta-RNA), or a combination thereof; wherein said modified saccharide comprises an aliphatic aldehyde modified saccharide, an aromatic aldehyde modified saccharide, a quaternary ammonium modified saccharide, a polyamine derivatized saccharide, a saccharide modified saccharide, a saccharide with a lipid additive, or a combination thereof; and wherein said nucleic acid or said modified saccharide is configured to facilitate a change in protein expression within a cell, optionally wherein said modified saccharide comprises a chitosan, a hyaluronic acid, a pullulan, a heparin, an alginate, or a combination or derivative thereof, optionally wherein said modified saccharide comprises a modified chitosan.

6. The composition of claim 5, wherein:

i) said modified saccharide comprises an aliphatic aldehyde modified saccharide, an aromatic aldehyde modified saccharide, a quaternary ammonium modified saccharide, a polyamine derivatized saccharide, a saccharide modified saccharide, saccharide a phenol modified saccharide, or a combination thereof, optionally wherein said aliphatic aldehyde modified saccharide comprises a decanal aldehyde modified saccharide;

ii) said aliphatic aldehyde modified saccharide comprises a hexanal aldehyde modified saccharide, a heptanal aldehyde modified saccharide, an octanal aldehyde modified saccharide, a nonanal aldehyde modified saccharide, or a decanal aldehyde modified saccharide, optionally wherein said aliphatic aldehyde modified saccharide comprises a decanal aldehyde modified saccharide;

iii) said aromatic aldehyde modified saccharide comprises a benzaldehyde modified saccharide or a cinnamaldehyde modified saccharide;

iv) said polyamine derivatized saccharide comprises a spermine modified saccharide, a spermidine modified saccharide, a putrescine modified saccharide, diethylethylamine modified saccharide, dimethylethylamine modified saccharide, quaternary ammonium modified saccharide, or an arginine modified saccharide;

v) said saccharide with said lipid additive comprises a saccharide with a lecithin or a saccharide with a phosphatidylcholine;

vi) said saccharide modified saccharide comprises a monosaccharide modified saccharide, optionally wherein said monosaccharide modified saccharide comprises a lactose modified saccharide, a mannose modified saccharide, a glucose modified saccharide, a galactose modified saccharide, a glucosamine modified saccharide, a sucrose modified saccharide, a xylose modified saccharide, a ribose modified saccharide, a fructose modified saccharide, or a glyceraldehyde modified saccharide;

vii) said saccharide modified saccharide comprises a polysaccharide modified saccharide, optionally wherein:

a) said polysaccharide modified saccharide comprises an anionic polysaccharide modified saccharide, a maltose modified saccharide, a reducing polysaccharide modified saccharide, or a combination thereof;

b) said anionic polysaccharide modified saccharide comprises an alginate modified saccharide, a carboxymethylated cellulose modified saccharide, a hyaluronic acid modified saccharide, a pectin modified saccharide, a pullulan modified saccharide, a starch modified saccharide, or a xanthan gum modified saccharide;

c) said reducing polysaccharide modified saccharide comprises a maltodextrin modified saccharide or a cellobiose modified saccharide; and/or

d) said reducing polysaccharide modified saccharide comprises a cationic lipid additive;

viii) said phenol modified saccharide comprises a chlorogenic acid modified saccharide, a ferulic acid modified saccharide, a caffeic acid modified saccharide, a gallic acid modified saccharide, or a combination thereof;

ix) said nucleic acid molecule encodes MYOD1, MYOG, MYFS, MYF6, PAX3, PAX7, PPARY, adiponectin, FATP1-6, FABP4, GLUT4, Leptin, AdipoR1-2, CD137, a fragment thereof, or a variant thereof; and/or

x) said nucleic acid molecule is monocistronic or polycistronic.

7. The composition of any one of claims 5 or 6, further comprising a micro-ribonucleic acid (miRNA) or a silencing ribonucleic acid (siRNA), optionally wherein:

i) said miRNA or said siRNA comprises a polynucleotide sequence that facilitates a reduction of pluripotency of said cell,

ii) said reduction in pluripotency of said cell facilitates said differentiation of said cell;

iii) said polynucleotide sequence comprises a polynucleotide sequence that comprises POUF51 (OCT3/4), KLF4, or SOX2, or a complementary sequence thereof; and/or

iv) wherein said nucleic acid molecule comprises a first nucleic acid molecule and a second nucleic molecule, wherein said first nucleic acid molecule is said mRNA or said saRNA, and wherein said second nucleic acid is said miRNA or said siRNA.

8. The composition of any one of claims 1-7,

i) wherein said change in said protein expression within said cell facilitates differentiation of said cell;

ii) further comprising a lipid, an anionic polymer, or a combination thereof;

iii) said saccharide is cationic in an aqueous solution or in a neutral solution;

iv) wherein a cationic charge of cationic moieties of said saccharide comprises at least about 0.5 mequivalent of basic group per gram of said saccharide (mequiv/g);

v) wherein said cationic charge of said cationic moieties of said saccharide comprises at most about 20 mequiv/g;

vi) wherein said saccharide comprises an average molecular mass of at least about 20 kilodaltons (kDa);

vii) wherein said saccharide comprises an average molecular mass of at most about 2000 kDa;

viii) wherein said saccharide comprises a polysaccharide;

ix) wherein said saccharide and said nucleic acid molecule are configured to self-assemble with each other; and/or

x) wherein said saccharide and said nucleic acid molecule are configured to form a polyplex, optionally wherein

a) said nucleic acid molecule is at or near a surface of said polyplex, or wherein said nucleic acid molecule is encapsulated within said polyplex;

b) said polyplex is regularly shaped, irregularly shaped, or branched, or wherein said polyplex is spherical or linear;

c) an apparent diameter of said polyplex is at least about 5 nanometer (nm), as measured by dynamic light scattering (DLS) or microscopy;

d) an apparent diameter of said polyplex is at most about 5000 nm, as measured by said DLS or said microscopy; and/or

e) said polyplex further comprises a nanoparticle.

9. The composition of any one of claims 1-8, wherein said nucleic acid molecule comprises an RNA-regulatory element, optionally wherein:

i) said RNA-regulatory element comprises a transcriptional regulatory element, a co-transcriptional regulatory element, a post-transcriptional regulatory element, a translational regulatory element, or any combination thereof, or wherein said RNA-regulatory element comprises a 5'-cap, 5'-untranslated region (UTR), a 3'-UTR, a poly-A tail modification, or any combination thereof;

ii) said saccharide stabilizes said nucleic acid molecule;

iii) said saccharide inhibits or reduces degradation of said nucleic acid molecule;

iv) said saccharide inhibits or reduces nuclease degradation of said nucleic acid molecule;

v) said nucleic acid molecule comprises a chemical modification;

vi) said nucleic acid molecule comprises an unlocked nucleic acid;

vii) said nucleic acid molecule comprises at least two types of nucleic acids;

viii) said cell comprises a mammalian cell, a bird cell, a fish cell, a mollusks cell, or an amphibian cell, optionally wherein said mammalian cell comprises a porcine cell, a bovine cell, a bubaline cell, an ovine cell, a caprine cell, a cervine cell, a bisontine cell, a cameline cell, an elaphine cell, or a lapine cell, or wherein said mammalian cell comprises said porcine cell;

ix) a molar ratio of polycation amino groups of said polyplex to nucleic acid phosphate groups of said polyplex is at least about 1; and/or

x) a molar ratio of polycation amino groups of said polyplex to nucleic acid phosphate groups of said polyplex is at most about 60, optionally wherein the composition comprises said nucleic acid, said polymeric material, and said lipid, wherein a first mass ratio of said polymeric material to said nucleic acid is no less than 1:1, and wherein a second mass ratio of said lipid to said polymeric material is no less than 1:1, optionally wherein said first mass ratio is no less than 2:1; and wherein said second mass ratio is no less than 2:1, optionally wherein said first mass ratio is no less than 100:1.

10. A method for facilitating a change in protein expression within a cell, said method comprising:

(a) contacting a cell with a composition comprising:

i. a saccharide, and

ii. a nucleic acid molecule;

(b) encapsulating or adhering said cell and said composition using a polymeric material, thereby facilitating a change in protein expression within said cell,

optionally wherein:

i) said polymeric material comprises a polymer, optionally wherein said polymer comprises a polysaccharide-based polymer, a polypeptide-based polymer, a lipid-based polymer, or a combination thereof, optionally wherein said polysaccharide-based polymer comprises an alginate-based polymer, a gellan gum-based polymer, a cassava-based polymer, a maize-based polymer, a corn starch-based polymer, a xanthan gum-based polymer, a locust bean-based polymer, a pullulan-based polymer, a dextran -based polymer, a cellulose-based polymer, or a combination thereof;

ii) said polymeric material is configured to encapsulate said cell;

iii) said polymeric material comprises a hydrogel, optionally wherein said polymeric material comprises a 2-dimensional polymer or a 3-dimensional polymer;

iv) wherein said polymeric material is configured to be biodegradable; and/or

v) wherein said nucleic acid molecule comprises an ribonucleic acid (RNA).

11. A method for facilitating a change in protein expression within a cell, said method comprising: contacting said cell with a composition comprising:

i. a saccharide, and

ii. a nucleic acid molecule comprising a ribonucleic acid (RNA);

under conditions sufficient for said cell to uptake said composition, thereby facilitating said change in protein expression within said cell, optionally:

i) wherein said change in protein expression within said cell facilitates differentiation of said cell into a mesodermal lineage, an endodermal lineage, or an ectodermal lineage, optionally , wherein said change in protein expression within said cell facilitates adipogenic, angiogenic, cardiogenic, chondrogenic, endothelial, epithelial, hematopoietic, hepatogenic, myogenic, neurogenic, osteogenic, parenchymal, renal, or retinal differentiation of said cell;

ii) wherein said differentiation of said cell comprises transdifferentiation of said cell or directed differentiation of said cell;

iii) wherein said cell comprises a somatic cell or a naive cell;

iv) wherein said cell comprises a fat cell, a blood vessel cell, a cardiac cell, a chondrocyte, an endothelial cell, an epithelial cell, a hematopoietic cell, a hepatocyte, a muscle cell, a neuron, or an osteogenic cell, optionally wherein said cell comprises said

muscle cell, optionally wherein said muscle cell comprises a myofiber, a myotube, a myocyte, a myoblast, a myogenic spheroid, or a muscle cell progenitor; and/or

v) wherein said RNA comprises a messenger ribonucleic acid (mRNA), a micro ribonucleic acid (miRNA), a transfer ribonucleic acid (tRNA), a silencing ribonucleic acid (siRNA), a self-amplifying RNA (saRNA), an endless/circular RNA (eRNA), a trans-amplifying RNA (ta-RNA), or a combination thereof.

12. A method for facilitating a change in protein expression within a cell, said method comprising: contacting said cell with a composition comprising:

i. a saccharide, and

ii. a nucleic acid molecule;

under conditions sufficient for said stem to uptake said composition, wherein said cell comprises a stem cell comprising an embryonic stem cell, an immortalized stem cell, a mesenchymal stem cell, a muscle progenitor cell, or an induced pluripotent stem cell (iPSC), thereby facilitating said change in said protein expression in said stem cell,

optionally wherein:

i) said cell comprises said iPSC;

ii) said nucleic acid molecule comprises an ribonucleic acid (RNA); and/or said RNA comprises a messenger ribonucleic acid (mRNA), a micro ribonucleic acid (miRNA), a transfer ribonucleic acid (tRNA), a silencing ribonucleic acid (siRNA), a self-amplifying RNA (saRNA), an endless/circular RNA (eRNA), a trans-amplifying RNA (ta-RNA), or a combination thereof optionally wherein:

a) said RNA comprises said mRNA, said saRNA, said eRNA, said to-RNA, or a combination thereof, optionally wherein said RNA encodes MYOD1, MYOG, MYFS, MYF6, PAX3, PAX7, PPARY, adiponectin, FATP1-6, FABP4, GLUT4, Leptin, AdipoRl-2, CD137, a fragment thereof, or a variant thereof;

b) said RNA is monocistronic or polycistronic;

c) said nucleic acid molecule comprises said mRNA, or comprises said saRNA.

d) said nucleic acid molecule comprises said miRNA or said siRNA, optionally wherein said miRNA or said siRNA comprises a polynucleotide sequence that facilitates a reduction of pluripotency of said cell, optionally wherein said reduction in pluripotency of said cell facilitates said differentiation of said cell, and/or

wherein said polynucleotide sequence comprises a polynucleotide sequence that comprises POUF51 (OCT3/4), KLF4, or SOX2, or a complementary sequence thereof;

and/or

e) said nucleic acid molecule comprises a first nucleic acid molecule and a second nucleic molecule, wherein said first nucleic acid molecule is said mRNA or said saRNA, and wherein said second nucleic acid is said miRNA or said siRNA.

13. A method for facilitating a change in protein expression within a cell, said method comprising: contacting said cell with a composition comprising:

i. a modified saccharide comprising an aliphatic aldehyde modified saccharide, an aromatic aldehyde modified saccharide, a quaternary ammonium modified saccharide, a polyamine derivatized saccharide, a saccharide modified saccharide, a saccharide with a lipid additive, or a combination thereof, and

ii. a nucleic acid molecule comprising a messenger ribonucleic acid (mRNA), a self-amplifying RNA (saRNA), an endless/circular RNA (eRNA), a trans-amplifying RNA (ta-RNA), and a combination thereof;

under conditions sufficient for said cell to uptake said composition, thereby facilitating said change in protein expression within said cell,

optionally wherein:

a) said modified saccharide comprises a chitosan, a hyaluronic acid, a pullulan, a heparin, an alginate, or a combination or derivative thereof, optionally wherein said modified saccharide comprises a modified chitosan;

b) said modified saccharide comprises an aliphatic aldehyde modified saccharide, an aromatic aldehyde modified saccharide, a quaternary ammonium modified saccharide, a polyamine derivatized saccharide, a saccharide modified saccharide, saccharide a phenol modified saccharide, or a combination thereof, optionally wherein said aliphatic aldehyde modified saccharide comprises a decanal aldehyde modified saccharide;

c) said aliphatic aldehyde modified saccharide comprises a hexanal aldehyde modified saccharide, a heptanal aldehyde modified saccharide, an octanal aldehyde modified saccharide, a nonanal aldehyde modified saccharide, or a decanal aldehyde modified saccharide, optionally wherein said aliphatic aldehyde modified saccharide comprises a decanal aldehyde modified saccharide;

d) said aromatic aldehyde modified saccharide comprises a benzaldehyde modified saccharide or a cinnamaldehyde modified saccharide;

e) said polyamine derivatized saccharide comprises a spermine modified saccharide, a spermidine modified saccharide, a putrescine modified saccharide, diethylethylamine modified saccharide, dimethylethylamine modified saccharide, quaternary ammonium modified saccharide, or an arginine modified saccharide;

f) said saccharide with said lipid additive comprises a saccharide with a lecithin or a saccharide with a phosphatidylcholine;

g) said saccharide modified saccharide comprises a monosaccharide modified saccharide, optionally wherein said monosaccharide modified saccharide comprises a lactose modified saccharide, a mannose modified saccharide, a glucose modified saccharide, a galactose modified saccharide, a glucosamine modified saccharide, a sucrose modified saccharide, a xylose modified saccharide, a ribose modified saccharide, a fructose modified saccharide, or a glyceraldehyde modified saccharide;

h) said saccharide modified saccharide comprises a polysaccharide modified saccharide, optionally wherein said polysaccharide modified saccharide comprises an anionic polysaccharide modified saccharide, a maltose modified saccharide, a reducing polysaccharide modified saccharide, or a combination thereof, optionally wherein:

i) said anionic polysaccharide modified saccharide comprises an alginate modified saccharide, a carboxymethylated cellulose modified saccharide, a hyaluronic acid modified saccharide, a pectin modified saccharide, a pullulan modified saccharide, a starch modified saccharide, or a xanthan gum modified saccharide;

ii) said reducing polysaccharide modified saccharide comprises a maltodextrin modified saccharide or a cellobiose modified saccharide; and/or

iii) said reducing polysaccharide modified saccharide comprises a cationic lipid additive;

i) said phenol modified saccharide comprises a chlorogenic acid modified saccharide, a ferulic acid modified saccharide, a caffeic acid modified saccharide, a gallic acid modified saccharide, or a combination thereof;

j) said nucleic acid molecule encodes MYOD1, MYOG, MYFS, MYF6, PAX3, PAX7, PPARY, adiponectin, FATP1-6, FABP4, GLUT4, Leptin, AdipoR1-2, CD137, a fragment thereof, or a variant thereof;

k) said nucleic acid molecule is monocistronic or polycistronic; and/or

l) the composition further comprises a micro-ribonucleic acid (miRNA) or a silencing ribonucleic acid (siRNA), optionally wherein:

i) said miRNA or said siRNA comprises a polynucleotide sequence that facilitates a reduction of pluripotency of said cell;

ii) said reduction in pluripotency of said cell facilitates said differentiation of said cell;

iii) said polynucleotide sequence comprises a polynucleotide sequence that comprises POUF51 (OCT3/4), KLF4, or SOX2, or a complementary sequence thereof; and/or

iv) said nucleic acid molecule comprises a first nucleic acid molecule and a second nucleic molecule, wherein said first nucleic acid molecule is said mRNA or said saRNA, and wherein said second nucleic acid is said miRNA or said siRNA.

14. The method of any one of claims 10-13, wherein:

i) said change in said protein expression within said cell facilitates differentiation of said cell;

ii) said composition further comprises a lipid, an anionic polymer, or a combination thereof;

iii) said saccharide is configured to be cationic in an aqueous solution or in a neutral solution;

iv) a cationic charge of cationic moieties of said saccharide comprises at least about 0.5 mequivalent of basic group per gram of said saccharide (mequiv/g);

v) said cationic charge of said cationic moieties of said saccharide comprises at most about 20 mequiv/g;

vi) said saccharide comprises an average molecular mass of at least about 20 kilodaltons (kDa);

vii) said saccharide comprises an average molecular mass of at most about 2000 kDa;

viii) said saccharide comprises a polysaccharide;

ix) said saccharide and said nucleic acid molecule are configured to self-assemble with each other;

x) said saccharide and said nucleic acid molecule are configured to form a polyplex, optionally wherein:

a) said nucleic acid molecule is at or near a surface of said polyplex, or said nucleic acid molecule is encapsulated within said polyplex;

b) said polyplex is regularly shaped, irregularly shaped, or branched or said polyplex is spherical or linear;

c) an apparent diameter of said polyplex is at least about 5 nanometer (nm), as measured by dynamic light scattering (DLS) or microscopy;

d) an apparent diameter of said polyplex is at most about 5000 nm, as measured by said DLS or said microscopy;

e) said polyplex further comprises a nanoparticle;

f) said nucleic acid molecule comprises an RNA-regulatory element, optionally wherein said RNA-regulatory element comprises a transcriptional regulatory element, a co-transcriptional regulatory element, a post-transcriptional regulatory element, a translational regulatory element, or any combination thereof, or wherein said RNA-regulatory element comprises a 5'-cap, 5'-untranslated region (UTR), a 3'-UTR, a poly-A tail modification, or any combination thereof;

h) said saccharide is configured to stabilize said nucleic acid molecule;

i) said saccharide is configured to inhibit or reduce degradation of said nucleic acid molecule;

j) said saccharide is configured to inhibit a or reduce nuclease degradation of said nucleic acid molecule;

k) said nucleic acid molecule comprises a chemical modification;

l) said nucleic acid molecule comprises an unlocked nucleic acid;

m) said nucleic acid molecule comprises at least two types of nucleic acids;

n) said cell comprises a mammalian cell, a bird cell, a fish cell, a mollusks cell, or an amphibian cell, optionally wherein said mammalian cell comprises a porcine cell, a bovine cell, a bubaline cell, an ovine cell, a caprine cell, a cervine cell, a bisontine cell, a cameline cell, an elaphine cell, or a lapine cell, optionally wherein said mammalian cell comprises said porcine cell;

o) a molar ratio of polycation amino groups of said polyplex to nucleic acid phosphate groups of said polyplex is at least about 1;

p) wherein a molar ratio of polycation amino groups of said polyplex to nucleic acid phosphate groups of said polyplex is at most about 60;

q) the composition comprises said nucleic acid, said polymeric material, and said lipid, wherein a first mass ratio of said polymeric material to said nucleic acid is no less than 1:1, and wherein a second mass ratio of said lipid to said polymeric material is no less than 1:1, optionally wherein said first mass ratio is no less than 2:1;

and wherein said second mass ratio is no less than 2:1, optionally wherein said first mass ratio is no less than 100:1;

r) a ratio of said nucleic acid molecule and said cell in said contacting is at least about 0.001 ng per 10000 cells, optionally wherein a ratio of said nucleic acid molecule and said cell in said contacting is at least about 0.01 ng per 10000 cells, optionally wherein a ratio of said nucleic acid molecule and said cell in said contacting is at least about 0.1 ng per 10000 cells; and/or

s) said change of protein expression within said cell comprises an increased expression of a transcript encoded by said nucleic acid molecule within said cell, optionally

i) wherein said transcript encoded by said nucleic acid molecule within said cell is at least about 1 %, 5 %, 10%, 50 %, 100 %, 150 %, 2-fold, 5-fold, 10-fold, 100-fold, or 1000-fold higher than (1) a level of said transcript within a cell that has not contacted with said saccharide; (2) a level of said transcript within a cell that has not contacted with said nucleic acid molecule; or (3) a combination thereof, as measured by quantitative real-time polymerase chain reaction (QRT-PCR); or

ii) said change of protein expression within said cell comprises an increased expression of a transcript not encoded by said nucleic acid molecule within said cell, optionally wherein said transcript not encoded by said nucleic acid molecule within said cell is at least about 1 %, 5 %, 10%, 50 %, 100 %, 150 %, 2-fold, 5-fold, 10-fold, 100-fold, or 1000-fold higher than (1) a level of said transcript within a cell that has not contacted with said saccharide; (2) a level of said transcript within a cell that has not contacted with said nucleic acid molecule; or (3) a combination thereof, as measured by quantitative real-time polymerase chain reaction (QRT-PCR), or wherein said transcript not encoded by said nucleic acid molecule within said cell is at least about 1 %, 5 %, 10%, 20 %, 30 %, 40 % 50 %, 60 %, 70 %, 80 %, 90%, or 99 % lower than (1) a level of said transcript within a cell that has not contacted with said saccharide; (2) a level of said transcript within a cell that has not contacted with said nucleic acid molecule; or (3) a combination thereof, as measured by quantitative real-time polymerase chain reaction (QRT-PCR); and/or

iii) said change of protein expression within said cell comprises a decreased expression of a transcript not encoded by said nucleic acid molecule within said cell.

15. An edible product, a pharmaceutical active ingredient, or a tissue prepared by the method of any one of claims 10-14.