



US 20250263722A1

(19) **United States**

(12) **Patent Application Publication**
THOMPSON

(10) **Pub. No.: US 2025/0263722 A1**

(43) **Pub. Date: Aug. 21, 2025**

(54) **COMPOSITION FOR REGULATING
PRODUCTION OF INTERFERING
RIBONUCLEIC ACID**

(71) Applicant: **Wyvem Pharmaceuticals Inc.**, Calgary
(CA)

(72) Inventor: **Bradley G. THOMPSON**, Calgary
(CA)

(21) Appl. No.: **18/969,803**

(22) Filed: **Dec. 5, 2024**

Related U.S. Application Data

(63) Continuation of application No. 18/582,272, filed on
Feb. 20, 2024.

Publication Classification

(51) **Int. Cl.**
C12N 15/113 (2010.01)
C12N 15/86 (2006.01)

(52) **U.S. Cl.**
CPC **C12N 15/1138** (2013.01); **C12N 15/86**
(2013.01); **C12N 2310/141** (2013.01); **C12N**
2750/14143 (2013.01)

(57) **ABSTRACT**

Some embodiments of the present disclosure relate to one or more compositions that upregulate the production of one or more sequences of micro-interfering ribonucleic acid (miRNA). The sequences of miRNA may be complimentary to a sequence of target messenger RNA (mRNA) that encodes for translation of a target biomolecule and the miRNA can cause the target mRNA to be degraded or inactivated, thereby causing a decrease in bioavailability of the target biomolecule because it is degraded or inactivated by the miRNA, thereby decreasing the bioavailability of the target biomolecule within a subject that is administered the one or more compositions. In some embodiments of the present disclosure, the target biomolecule is a serotonin receptor, such as serotonin receptor 5HT1a, 5HT1b, 5HT1d, 5HT1e, 5HT1f, 5HT2a, 5HT2b, 5HT2c, 5HT3, 5HT4, 5HT6, or 5HT7.

Specification includes a Sequence Listing.

COMPOSITION FOR REGULATING PRODUCTION OF INTERFERING RIBONUCLEIC ACID

[0001] This application contains a Sequence Listing electronically submitted via Patent Center to the United States Patent and Trademark Office as an XML Document file entitled "A8149441US-Sequence Listing.xml" created on 2024 Feb. 12 and having a size of 110,545 bytes. The information contained in the Sequence Listing is incorporated by reference herein.

TECHNICAL FIELD

[0002] The present disclosure generally relates to compositions for regulating production of interfering ribonucleic acid (RNA). In particular, the present disclosure relates to compositions for regulating gene expression and therefore, the production of interfering RNA, that will suppress serotonin receptor expression.

BACKGROUND

[0003] Bioactive molecules, including complements and factors, are necessary for the homeostatic control of biological systems.

[0004] When bioactive molecules are over-expressed, under-expressed or mis-expressed, homeostasis is lost, and disease is often the result.

[0005] As such, it may be desirable to establish therapies, treatments and/or interventions that address when homeostasis and regulation of bioactive molecules is lost to prevent or treat the resulting disease.

SUMMARY

[0006] Some embodiments of the present disclosure relate to one or more compositions that upregulate the production of one or more sequences of micro-interfering ribonucleic acid (miRNA). The sequences of miRNA may be complementary to a sequence of target messenger RNA (mRNA) that encodes for translation of a target biomolecule and the miRNA can cause the target mRNA to be degraded or inactivated, thereby causing a decrease in bioavailability of the target biomolecule because it is degraded or inactivated by the miRNA, thereby decreasing the bioavailability of the target biomolecule within a subject that is administered the one or more compositions. In some embodiments of the present disclosure, the target biomolecule is a serotonin receptor. In some embodiments of the present disclosure, the target biomolecule is a serotonin receptor such as serotonin receptor 5HT1a. In some embodiments of the present disclosure, the target biomolecule is a serotonin receptor such as serotonin receptor 5HT1b. In some embodiments of the present disclosure, the target biomolecule is a serotonin receptor such as serotonin receptor 5HT1c. In some embodiments of the present disclosure, the target biomolecule is a serotonin receptor such as serotonin receptor 5HT1d. In some embodiments of the present disclosure, the target biomolecule is a serotonin receptor such as serotonin receptor 5HT1e. In some embodiments of the present disclosure, the target biomolecule is a serotonin receptor such as serotonin receptor 5HT1f. In some embodiments of the present disclosure, the target biomolecule is a serotonin receptor such as serotonin receptor 5HT2a. In some embodiments of the present disclosure, the target biomolecule is a serotonin

receptor such as serotonin receptor 5HT2b. In some embodiments of the present disclosure, the target biomolecule is a serotonin receptor such as serotonin receptor 5HT2c. In some embodiments of the present disclosure, the target biomolecule is a serotonin receptor such as serotonin receptor 5HT3. In some embodiments of the present disclosure, the target biomolecule is a serotonin receptor such as serotonin receptor 5HT4. In some embodiments of the present disclosure, the target biomolecule is a serotonin receptor such as serotonin receptor 5HT6. In some embodiments of the present disclosure, the target biomolecule is a serotonin receptor such as serotonin receptor 5HT7.

[0007] In some embodiments of the present disclosure the compositions comprise a plasmid of deoxyribonucleic acid (DNA) that includes one or more insert sequences of nucleic acids that encode for the production of miRNA and a backbone sequence of nucleic acids that facilitates introduction of the one or more insert sequences into one or more of a subject's cells where it is expressed and/or replicated. Expression of the one or more insert sequences by one or more cells of the subject results in an increased production of the miRNA and, therefore, decreased translation or production of the target biomolecule by one or more of the subject's cells.

[0008] Some embodiments of the present disclosure relate to compositions that upregulate the production of miRNA that degrades, or causes degradation of, or inactivates or causes the inactivation of, the target mRNA of the target biomolecule.

[0009] Some embodiments of the present disclosure relate to a recombinant plasmid (RP). In some embodiments of the present disclosure, the RP comprises a nucleotide sequence of SEQ ID NO. 1 and SEQ ID NO. 2. The RP comprises a nucleotide sequence encoding one or more nucleotide sequences encoding a miRNA sequence that targets the mRNA of serotonin receptor 5HT1a.

[0010] Some embodiments of the present disclosure relate to a recombinant plasmid. In some embodiments of the present disclosure, the RP comprises a nucleotide sequence of SEQ ID NO. 1 and SEQ ID NO. 3. The RP comprises a nucleotide sequence encoding one or more nucleotide sequences encoding a miRNA sequence that targets the mRNA of serotonin receptor 5HT1b.

[0011] Some embodiments of the present disclosure relate to a recombinant plasmid. In some embodiments of the present disclosure, the RP comprises a nucleotide sequence of SEQ ID NO. 1 and SEQ ID NO. 4. The RP comprises a nucleotide sequence encoding one or more nucleotide sequences encoding a miRNA sequence that targets the mRNA of serotonin receptor 5HT1d.

[0012] Some embodiments of the present disclosure relate to a recombinant plasmid. In some embodiments of the present disclosure, the RP comprises a nucleotide sequence of SEQ ID NO. 1 and SEQ ID NO. 5. The RP comprises a nucleotide sequence encoding one or more nucleotide sequences encoding a miRNA sequence that targets the mRNA of serotonin receptor 5HT1e.

[0013] Some embodiments of the present disclosure relate to a recombinant plasmid. In some embodiments of the present disclosure, the RP comprises a nucleotide sequence of SEQ ID NO. 1 and SEQ ID NO. 6. The RP comprises a nucleotide sequence encoding one or more nucleotide sequences encoding a miRNA sequence that targets the mRNA of serotonin receptor 5HT1f.

[0014] Some embodiments of the present disclosure relate to a recombinant plasmid. In some embodiments of the present disclosure, the RP comprises a nucleotide sequence of SEQ ID NO. 1 and SEQ ID NO. 7. The RP comprises a nucleotide sequence encoding one or more nucleotide sequences encoding a miRNA sequence that targets the mRNA of serotonin receptor 5HT2a.

[0015] Some embodiments of the present disclosure relate to a recombinant plasmid. In some embodiments of the present disclosure, the RP comprises a nucleotide sequence of SEQ ID NO. 1 and SEQ ID NO. 8. The RP comprises a nucleotide sequence encoding one or more nucleotide sequences encoding a miRNA sequence that targets the mRNA of serotonin receptor 5HT2b.

[0016] Some embodiments of the present disclosure relate to a recombinant plasmid. In some embodiments of the present disclosure, the RP comprises a nucleotide sequence of SEQ ID NO. 1 and SEQ ID NO. 9. The RP comprises a nucleotide sequence encoding one or more nucleotide sequences encoding a miRNA sequence that targets the mRNA of serotonin receptor 5HT2c.

[0017] Some embodiments of the present disclosure relate to a recombinant plasmid. In some embodiments of the present disclosure, the RP comprises a nucleotide sequence of SEQ ID NO. 1 and SEQ ID NO. 10. The RP comprises a nucleotide sequence encoding one or more nucleotide sequences encoding a miRNA sequence that targets the mRNA of serotonin receptor 5HT3.

[0018] Some embodiments of the present disclosure relate to a recombinant plasmid. In some embodiments of the present disclosure, the RP comprises a nucleotide sequence of SEQ ID NO. 1 and SEQ ID NO. 11. The RP comprises a nucleotide sequence encoding one or more nucleotide sequences encoding a miRNA sequence that targets the mRNA of serotonin receptor 5HT4.

[0019] Some embodiments of the present disclosure relate to a recombinant plasmid. In some embodiments of the present disclosure, the RP comprises a nucleotide sequence of SEQ ID NO. 1 and SEQ ID NO. 12. The RP comprises a nucleotide sequence encoding one or more nucleotide sequences encoding a miRNA sequence that targets the mRNA of serotonin receptor 5HT6.

[0020] Some embodiments of the present disclosure relate to a recombinant plasmid. In some embodiments of the present disclosure, the RP comprises a nucleotide sequence of SEQ ID NO. 1 and SEQ ID NO. 13. The RP comprises a nucleotide sequence encoding one or more nucleotide sequences encoding a miRNA sequence that targets the mRNA of serotonin receptor 5HT7.

[0021] Some embodiments of the present disclosure relate to a method of making a composition/target cell complex. The method comprising a step of administering a RP comprising SEQ ID NO. 1 and one of SEQ ID NO. 2, SEQ ID NO. 3, SEQ ID NO. 4, SEQ ID NO. 5, SEQ ID NO. 6, SEQ ID NO. 7, SEQ ID NO. 8, SEQ ID NO. 9, SEQ ID NO. 10, SEQ ID NO. 11, SEQ ID NO. 12, or SEQ ID NO. 13 to a target cell for forming the composition/target cell complex, wherein the composition/target cell complex causes the target cell to increase production of one or more sequences of miRNA that decreases production of a target biomolecule.

[0022] Embodiments of the present disclosure relate to at least one approach for inducing endogenous production of one or more sequences of miRNA that target and silence the mRNA of a target biomolecule, for example serotonin

receptor 5HT1a. A first approach utilizes gene vectors containing nucleotide sequences for increasing the endogenous production of one or more sequences of miRNA, which are complete or partial sequences and/or combinations thereof, that target and silence the mRNA of serotonin receptor 5HT1a, which can be administered to a subject to increase the subject's production of one or more sequences of the miRNA.

[0023] Embodiments of the present disclosure relate to at least one approach for inducing endogenous production of one or more sequences of miRNA that target and silence the mRNA of a target biomolecule, for example serotonin receptor 5HT1b. A first approach utilizes gene vectors containing nucleotide sequences for increasing the endogenous production of one or more sequences of miRNA, which are complete or partial sequences and/or combinations thereof, that target and silence the mRNA of serotonin receptor 5HT1b, which can be administered to a subject to increase the subject's production of one or more sequences of the miRNA.

[0024] Embodiments of the present disclosure relate to at least one approach for inducing endogenous production of one or more sequences of miRNA that target and silence the mRNA of a target biomolecule, for example serotonin receptor 5HT1d. A first approach utilizes gene vectors containing nucleotide sequences for increasing the endogenous production of one or more sequences of miRNA, which are complete or partial sequences and/or combinations thereof, that target and silence the mRNA of serotonin receptor 5HT1d, which can be administered to a subject to increase the subject's production of one or more sequences of the miRNA.

[0025] Embodiments of the present disclosure relate to at least one approach for inducing endogenous production of one or more sequences of miRNA that target and silence the mRNA of a target biomolecule, for example serotonin receptor 5HT1e. A first approach utilizes gene vectors containing nucleotide sequences for increasing the endogenous production of one or more sequences of miRNA, which are complete or partial sequences and/or combinations thereof, that target and silence the mRNA of serotonin receptor 5HT1e, which can be administered to a subject to increase the subject's production of one or more sequences of the miRNA.

[0026] Embodiments of the present disclosure relate to at least one approach for inducing endogenous production of one or more sequences of miRNA that target and silence the mRNA of a target biomolecule, for example serotonin receptor 5HT1f. A first approach utilizes gene vectors containing nucleotide sequences for increasing the endogenous production of one or more sequences of miRNA, which are complete or partial sequences and/or combinations thereof, that target and silence the mRNA of serotonin receptor 5HT1f, which can be administered to a subject to increase the subject's production of one or more sequences of the miRNA.

[0027] Embodiments of the present disclosure relate to at least one approach for inducing endogenous production of one or more sequences of miRNA that target and silence the mRNA of a target biomolecule, for example serotonin receptor 5HT2a. A first approach utilizes gene vectors containing nucleotide sequences for increasing the endogenous production of one or more sequences of miRNA, which are complete or partial sequences and/or combinations thereof,

that target and silence the mRNA of serotonin receptor 5HT2a, which can be administered to a subject to increase the subject's production of one or more sequences of the miRNA.

[0028] Embodiments of the present disclosure relate to at least one approach for inducing endogenous production of one or more sequences of miRNA that target and silence the mRNA of a target biomolecule, for example serotonin receptor 5HT2b. A first approach utilizes gene vectors containing nucleotide sequences for increasing the endogenous production of one or more sequences of miRNA, which are complete or partial sequences and/or combinations thereof, that target and silence the mRNA of serotonin receptor 5HT2b, which can be administered to a subject to increase the subject's production of one or more sequences of the miRNA.

[0029] Embodiments of the present disclosure relate to at least one approach for inducing endogenous production of one or more sequences of miRNA that target and silence the mRNA of a target biomolecule, for example serotonin receptor 5HT2c. A first approach utilizes gene vectors containing nucleotide sequences for increasing the endogenous production of one or more sequences of miRNA, which are complete or partial sequences and/or combinations thereof, that target and silence the mRNA of serotonin receptor 5HT2c, which can be administered to a subject to increase the subject's production of one or more sequences of the miRNA.

[0030] Embodiments of the present disclosure relate to at least one approach for inducing endogenous production of one or more sequences of miRNA that target and silence the mRNA of a target biomolecule, for example serotonin receptor 5HT3. A first approach utilizes gene vectors containing nucleotide sequences for increasing the endogenous production of one or more sequences of miRNA, which are complete or partial sequences and/or combinations thereof, that target and silence the mRNA of serotonin receptor 5HT3 which can be administered to a subject to increase the subject's production of one or more sequences of the miRNA.

[0031] Embodiments of the present disclosure relate to at least one approach for inducing endogenous production of one or more sequences of miRNA that target and silence the mRNA of a target biomolecule, for example serotonin receptor 5HT4. A first approach utilizes gene vectors containing nucleotide sequences for increasing the endogenous production of one or more sequences of miRNA, which are complete or partial sequences and/or combinations thereof, that target and silence the mRNA of serotonin receptor 5HT4, which can be administered to a subject to increase the subject's production of one or more sequences of the miRNA.

[0032] Embodiments of the present disclosure relate to at least one approach for inducing endogenous production of one or more sequences of miRNA that target and silence the mRNA of a target biomolecule, for example serotonin receptor 5HT6. A first approach utilizes gene vectors containing nucleotide sequences for increasing the endogenous production of one or more sequences of miRNA, which are complete or partial sequences and/or combinations thereof, that target and silence the mRNA of serotonin receptor 5HT6, which can be administered to a subject to increase the subject's production of one or more sequences of the miRNA.

[0033] Embodiments of the present disclosure relate to at least one approach for inducing endogenous production of one or more sequences of miRNA that target and silence the mRNA of a target biomolecule, for example serotonin receptor 5HT7. A first approach utilizes gene vectors containing nucleotide sequences for increasing the endogenous production of one or more sequences of miRNA, which are complete or partial sequences and/or combinations thereof, that target and silence the mRNA of serotonin receptor 5HT7, which can be administered to a subject to increase the subject's production of one or more sequences of the miRNA.

DETAILED DESCRIPTION

[0034] Unless defined otherwise, all technical and scientific terms used therein have the meanings that would be commonly understood by one of skill in the art in the context of the present description. Although any methods and materials similar or equivalent to those described therein can also be used in the practice or testing of the present disclosure, the preferred methods and materials are now described. All publications mentioned therein are incorporated therein by reference to disclose and describe the methods and/or materials in connection with which the publications are cited.

[0035] As used therein, the singular forms "a", "an", and "the" include plural references unless the context clearly dictates otherwise. For example, reference to "a composition" includes one or more compositions and reference to "a subject" or "the subject" includes one or more subjects.

[0036] As used therein, the terms "about" or "approximately" refer to within about 25%, preferably within about 20%, preferably within about 15%, preferably within about 10%, preferably within about 5% of a given value or range. It is understood that such a variation is always included in any given value provided therein, whether or not it is specifically referred to.

[0037] As used therein, the term "ameliorate" refers to improve and/or to make better and/or to make more satisfactory.

[0038] As used therein, the term "cell" refers to a single cell as well as a plurality of cells or a population of the same cell type or different cell types. Administering a composition to a cell includes in vivo, in vitro and ex vivo administrations and/or combinations thereof.

[0039] As used therein, the term "complex" refers to an association, either direct or indirect, between one or more particles of a composition and one or more target cells. This association results in a change in the metabolism of the target cell. As used therein, the phrase "change in metabolism" refers to an increase or a decrease in the one or more target cells' production of one or more proteins, and/or any post-translational modifications of one or more proteins.

[0040] As used therein, the term "composition" refers to a substance that, when administered to a subject, causes one or more chemical reactions and/or one or more physical reactions and/or one or more physiological reactions and/or one or more biological reactions in the subject. In some embodiments of the present disclosure, the composition is a plasmid vector.

[0041] As used therein, the term "endogenous" refers to the production and/or modification of a molecule that originates within a subject.

[0042] As used therein, the term "exogenous" refers to a molecule that is within a subject but that did not originate

within the subject. As used therein, the terms “production”, “producing” and “produce” refer to the synthesis and/or replication of DNA, the transcription of one or more sequences of RNA, the translation of one or more amino acid sequences, the post-translational modifications of an amino acid sequence, and/or the production of one or more regulatory molecules that can influence the production and/or functionality of an effector molecule or an effector cell. For clarity, “production” is also used therein to refer to the functionality of a regulatory molecule, unless the context reasonably indicates otherwise.

[0043] As used therein, the term “subject” refers to any therapeutic target that receives the composition. The subject can be a vertebrate, for example, a mammal including a human. The term “subject” does not denote a particular age or sex. The term “subject” also refers to one or more cells of an organism, an in vitro culture of one or more tissue types, an in vitro culture of one or more cell types, ex vivo preparations, and/or a sample of biological materials such as tissue, and/or biological fluids.

[0044] As used therein, the term “target biomolecule” refers to a serotonin receptor that is found within a subject. A biomolecule may be endogenous or exogenous to a subject and when bioavailable the biomolecule may inhibit or stimulate a biological process within the subject.

[0045] As used therein, the term “target cell” refers to one or more cells and/or cell types that are deleteriously affected, either directly or indirectly, by a dysregulated biomolecule. The term “target cell” also refers to cells that are not deleteriously affected but that are the cells in which it is desired that the composition interacts.

[0046] As used therein, the term “therapeutically effective amount” refers to the amount of the composition used that is of sufficient quantity to ameliorate, treat and/or inhibit one or more of a disease, disorder or a symptom thereof. The “therapeutically effective amount” will vary depending on the composition used, the route of administration of the composition and the severity of the disease, disorder or symptom thereof. The subject’s age, weight and genetic make-up may also influence the amount of the composition that will be a therapeutically effective amount.

[0047] As used therein, the terms “treat”, “treatment” and “treating” refer to obtaining a desired pharmacologic and/or physiologic effect. The effect may be prophylactic in terms of completely or partially preventing an occurrence of a disease, disorder or symptom thereof and/or the effect may be therapeutic in providing a partial or complete amelioration or inhibition of a disease, disorder, or symptom thereof. Additionally, the term “treatment” refers to any treatment of a disease, disorder, or symptom thereof in a subject and includes: (a) preventing the disease from occurring in a subject which may be predisposed to the disease but has not yet been diagnosed as having it; (b) inhibiting the disease, i.e., arresting its development; and (c) ameliorating the disease.

[0048] As used therein, the terms “unit dosage form” and “unit dose” refer to a physically discrete unit that is suitable as a unitary dose for patients. Each unit contains a predetermined quantity of the composition and optionally, one or more suitable pharmaceutically acceptable carriers, one or more excipients, one or more additional active ingredients, or combinations thereof. The amount of composition within each unit is a therapeutically effective amount.

[0049] Where a range of values is provided therein, it is understood that each intervening value, to the tenth of the unit of the lower limit unless the context clearly dictates otherwise, between the upper and lower limit of that range and any other stated or intervening value in that stated range, is encompassed within the disclosure. The upper and lower limits of these smaller ranges may independently be included in the smaller ranges, and are also, encompassed within the disclosure, subject to any specifically excluded limit in the stated range. Where the stated range includes one or both of the limits, ranges excluding either or both of those included limits are also included in the disclosure.

[0050] In some embodiments of the present disclosure, a composition is a recombinant plasmid (RP) for introducing genetic material, such as one or more nucleotide sequences, into a target cell for reproduction or transcription of an insert that comprises one or more nucleotide sequences that are carried within the RP. In some embodiments of the present disclosure, the RP is delivered without a carrier, by a viral vector, by a protein coat, or by a lipid vesicle. In some embodiments of the present disclosure, the vector is an adeno-associated virus (AAV) vector.

[0051] In some embodiments of the present disclosure, the insert comprises one or more nucleotide sequences that encode for production of at least one sequence of miRNA that decreases the production of target biomolecules. The miRNA may, directly or indirectly, bind to and degrade the target mRNA or otherwise inactivate the target mRNA so that less or none of the target-biomolecule protein is produced.

[0052] In some embodiments of the present disclosure, the target biomolecule is serotonin receptor 5HT1a.

[0053] In some embodiments of the present disclosure, the target biomolecule is serotonin receptor 5HT1b.

[0054] In some embodiments of the present disclosure, the target biomolecule is serotonin receptor 5HT1d.

[0055] In some embodiments of the present disclosure, the target biomolecule is serotonin receptor 5HT1e.

[0056] In some embodiments of the present disclosure, the target biomolecule is serotonin receptor 5HT1f.

[0057] In some embodiments of the present disclosure, the target biomolecule is serotonin receptor 5HT2a.

[0058] In some embodiments of the present disclosure, the target biomolecule is serotonin receptor 5HT2b.

[0059] In some embodiments of the present disclosure, the target biomolecule is serotonin receptor 5HT2c.

[0060] In some embodiments of the present disclosure, the target biomolecule is serotonin receptor 5HT3.

[0061] In some embodiments of the present disclosure, the target biomolecule is serotonin receptor 5HT4.

[0062] In some embodiments of the present disclosure, the target biomolecule is serotonin receptor 5HT6.

[0063] In some embodiments of the present disclosure, the target biomolecule is serotonin receptor 5HT7.

[0064] In some embodiments of the present disclosure, the insert comprises one or more nucleotide sequences that each encode for one or more miRNA sequences that may be complimentary to and degrade, or cause degradation of, mRNA of the target biomolecule.

[0065] Some embodiments of the present disclosure relate to a composition that can be administered to a subject with a condition that results, directly or indirectly, from the production of a dysregulated biomolecule. When a therapeutically effective amount of the composition is adminis-

tered to the subject, the subject may change production and/or functionality of one or more biomolecules.

[0066] In some embodiments of the present disclosure, the subject may respond to receiving the therapeutic amount of the composition by changing production and/or functionality of one or more intermediary molecules by changing production of one or more DNA sequences, one or more RNA sequences, and/or one or more proteins that regulate the levels and/or functionality of the one or more intermediary molecules. The one or more intermediary molecules regulate the subject's levels and/or functionality of the one or more biomolecules.

[0067] In some embodiments of the present disclosure, administering a therapeutic amount of the composition to a subject upregulates the production, functionality or both one or more sequences of miRNA that each target the mRNA of one or more target biomolecules. In some embodiments of the present disclosure, there are one, two, three, four, five, or six miRNA sequences that each are complimentary to and degrade, or cause degradation of, one biomolecule, such as the mRNA of serotonin receptor 5HT1a, serotonin receptor 5HT1b, serotonin receptor 5HT1d, serotonin receptor 5HT1e, serotonin receptor 5HT1f, serotonin receptor 5HT2a, serotonin receptor 5HT2b, serotonin receptor 5HT2c, serotonin receptor 5HT3, serotonin receptor 5HT4, serotonin receptor 5HT6, or serotonin receptor 5HT7. In some embodiments of the present disclosure, the composition may comprise multiple copies of the same nucleotide sequence of miRNA.

[0068] In some embodiments of the present disclosure, the composition is an RP that may be used for gene therapy. The gene therapy is useful for increasing the subject's endogenous production of one or more sequences of miRNA that target the mRNA of a target biomolecule. For example, the RP can contain one or more nucleotide sequences that cause increased production of one or more nucleotide sequences that cause an increased production of one or more miRNA sequences that are each complimentary to and degrade, or cause degradation of, or inactivate, or cause inactivation of, one biomolecule, such as serotonin receptor 5HT1a, serotonin receptor 5HT1b, serotonin receptor 5HT1d, serotonin receptor 5HT1e, serotonin receptor 5HT1f, serotonin receptor 5HT2a, serotonin receptor 5HT2b, serotonin receptor 5HT2c, serotonin receptor 5HT3, serotonin receptor 5HT4, serotonin receptor 5HT6, or serotonin receptor 5HT7.

[0069] In some embodiments of the present disclosure, the delivery vehicle of the RP used for gene therapy may be a vector that is comprised of a virus that can be enveloped, or not (unenveloped), replication effective or not (replication ineffective), or combinations thereof. In some embodiments of the present disclosure, the vector is a virus that is not enveloped and not replication effective. In some embodi-

ments of the present disclosure, the vector is a virus of the Parvoviridae family. In some embodiments of the present disclosure, the vector is a virus of the genus Dependoparvovirus. In some embodiments of the present disclosure, the vector is an adeno-associated virus (AAV). In some embodiments of the present disclosure, the vector is a recombinant AAV. In some embodiments of the present disclosure, the vector is a recombinant AAV6.2FF.

[0070] In some embodiments of the present disclosure, the delivery vehicle of the RP used for gene therapy may be a protein coat.

[0071] In some embodiments of the present disclosure, the delivery vehicle of the RP used for gene therapy may be a lipid vesicle.

[0072] The embodiments of the present disclosure also relate to administering a therapeutically effective amount of the composition. In some embodiments of the present disclosure, the therapeutically effective amount of the composition that is administered to a patient is between about 10 and about 1×10^{16} TCID₅₀/kg (50% tissue culture infective dose per kilogram of the patient's body mass). In some embodiments of the present disclosure, the therapeutically effective amount of the composition that is administered to the patient is about 1×10^{13} TCID₅₀/kg. In some embodiments of the present disclosure, the therapeutically effective amount of the composition that is administered to a patient is measured in TPC/kg (total particle count of the composition per kilogram of the patient's body mass). In some embodiments the therapeutically effective amount of the composition is between about 10 and about 1×10^{16} TCP/kg.

[0073] Some embodiments of the present disclosure relate to an adeno-associated virus (AAV) genome consisting of a RP that when operable inside a target cell will cause the target cell to produce a miRNA sequence that downregulates production of a biomolecule, with examples being serotonin receptor 5HT1a, serotonin receptor 5HT1b, serotonin receptor 5HT1d, serotonin receptor 5HT1e, serotonin receptor 5HT1f, serotonin receptor 5HT2a, serotonin receptor 5HT2b, serotonin receptor 5HT2c, serotonin receptor 5HT3, serotonin receptor 5HT4, serotonin receptor 5HT6, or serotonin receptor 5HT7. The RP is comprised of AAV2 inverted terminal repeats (ITRs), a composite CASI promoter, a human growth hormone (HGH) signal peptide followed by a miRNA expression cassette containing up to six different miRNAs targeting the mRNA of serotonin receptor 5HT1a, serotonin receptor 5HT1b, serotonin receptor 5HT1d, serotonin receptor 5HT1e, serotonin receptor 5HT1f, serotonin receptor 5HT2a, serotonin receptor 5HT2b, serotonin receptor 5HT2c, serotonin receptor 5HT3, serotonin receptor 5HT4, serotonin receptor 5HT6, or serotonin receptor 5HT7, followed by a Woodchuck Hepatitis Virus post-transcriptional regulatory element (WPRE) and a Simian virus 40 (SV40) polyadenylation (polyA) signal.

SEQ ID NO. 1 (backbone sequence No. 1):

```
5' AATCAACCTCTGGATTACAAAATTTGTGAAAGATTGACTGGTATTCTTAACATATGTT
GCTCCTTTTACGCTATGTGGATACGCTGCTTTAATGCCTTTGTATCATGCTATTGCTTCC
CGTATGGCTTTTCAATTTTCTCCTCCTGTATAAATCCTGGTTGCTGTCTTTATGAGGAG
TTGTGGCCCGTTGTGAGGCAACGTGGCGTGGTGTGCACTGTGTTTGTGACGCAACCCCC
ACTGGTTGGGGCATTGCCACCACCTGTCAGCTCCTTTCCGGGACTTTCGCTTTCCCCCTC
```

-continued

CCTATTGCCACGGCGGAACATCATCGCCGCCCTGCCCTGCCCCGCTGCTGGACAGGGGCTCGG
CTGTTGGGCACACTGACAATTCCGTGGTGTGTGCGGGAAATCATCGTCCTTTCCCTGGCTG
CTCGCCTGTGTTGCCACCTGGATTCTGCGCGGGACGTCCTTCTGTACGTCCCTTCGGCC
CTCAATCCAGCGGACCTTCCTTCCCGCGGCTGCTGCCGGCTCTGCGGCTCTTCCGCGT
CTTCGCCCTTCGCCCTCAGACGAGTCGGATCTCCCTTTGGGCCGCTCCCGCCTAAGCTT
ATCGATACCGTCGAGATCTAACTGTTTATTGCAGCTTATAATGGTTACAAATAAAGCAA
TAGCATCACAAATTCACAAATAAAGCATTTTTTCACTGCATTCTAGTTGTGGTTTGTG
CAAATCATCAATGTATCTTATCATGTCTGGATCTCGACCTCGACTAGAGCATGGCTACG
TAGATAAGTAGCATGGCGGGTTAATCATTAATAACAAGGAACCCCTAGTGATGGAGTTGG
CCACTCCCTCTCTGCGGCTCGCTCGCTCACTGAGGCCGGGCGACCAAAGGTCGCCCGAC
GCCCCGGCTTTGCCCGGGCGGCTCAGTGAGCGAGCGAGCGCGCAGCTGGCGTAATAGCG
AAGAGGCCCGCACCCGATCGCCCTTCCCAACAGTTGCGCAGCCTGAATGGCGAATGGCGAT
TCCGTTGCAATGGCTGGCGGTAATATTGTTCTGGATATTACCAGCAAGGCCGATAGTTTG
AGTTCTTCTACTCAGGCAAGTGATGTTATTACTAATCAAAGAAGTATTGCGACAACGGTT
AATTTGCGTGATGGACAGACTCTTTACTCGGTGGCCTCACTGATTATAAAAACACTTCT
CAGGATTCTGGCGTACCGTTCTGTCTAAAATCCCTTTAATCGGCCTCCTGTTTAGCTCC
CGCTCTGATTCTAACGAGGAAAGCACGTTATACGTGCTCGTCAAAGCAACCATAGTACGC
GCCCCGTAGCGCGCATTAAGCGCGGCGGGTGTTGGTTACGCGCAGCGTGACCGCTAC
ACTTGCCAGCGCCCTAGCGCCCGCTCCTTTGCTTTCTTCCCTTCCTTTCTCGCCACGTT
CGCCGGCTTTCCCGCTCAAGCTCTAAATCGGGGGCTCCCTTTAGGGTTCCGATTTAGTGC
TTTACGGCACCTCGACCCCAAAAACTTGATTAGGGTGATGGTTACGTAGTGGCCATC
GCCCTGATAGACGGTTTTTCGCCCTTTGACGTTGGAGTCCACGTTCTTTAATAGTGGACT
CTTGTTCCAACTGGAACAACACTCAACCTATCTCGGTCTATTCTTTGATTTATAAGG
GATTTTGCGGATTTGCGCTATTGGTTAAAAATGAGCTGATTTAACAAAAATTTAACGC
GAATTTTAACAAAATATTAACGTTTACAATTTAAATATTTGCTTATACAATCTTCCGTGTT
TTTGGGGCTTTTCTGATTATCAACCGGGTACATATGATTGACATGCTAGTTTTACGATT
ACCGTTTCATCGATTCTTGTGTTGCTCCAGACTCTCAGGCAATGACCTGATAGCCTTTGT
AGAGACCTCTCAAAAATAGCTACCCTCTCCGGCATGAATTTATCAGCTAGAACGTTGAA
TATCATATTGATGGTGATTGACTGTCTCCGGCTTCTCACCCGTTTGAATCTTTACCT
ACACATTACTCAGGCATTGCATTAAAAATATATGAGGGTTCTAAAAATTTTATCCTTGC
GTTGAAATAAAGGCTTCTCCCGCAAAAGTATTACAGGGTCATAATGTTTTTGGTACAACC
GATTTAGCTTTATGCTCTGAGGCTTTATTGCTTAATTTTGCTAATCTTTGCCTTGCCCTG
TATGATTTATTGGATGTTGGAATTCCTGATGCGGTATTTCTCCTTACGCATCTGTGCGG
TATTTACACCGCATATGGTGCACTCTCAGTACAATCTGCTCTGATGCCGCATAGTTAAG
CCAGCCCCGACACCCGCCAACCCGCTGACGCGCCCTGACGGGCTTGTCTGCTCCCGC
ATCCGCTTACAGACAAGCTGTGACCGTCTCCGGGAGCTGCATGTGTACAGAGTTTTTCACC
GTCATCACCGAAACGCGGAGACGAAAGGGCCTCGTGATACGCCATTTTTTATAGGTTAA
TGTCATGATAATAATGGTTTCTTAGACGTGAGGTGGCACTTTTCGGGGAAATGTGCGCGG
AACCCTATTTGTTTATTTTCTAAATACATTCAAATATGTATCCGCTCATGAGACAATA

-continued

ACCCGTGATAAATGCTTCAATAATATTGAAAAAGGAAGAGTATGAGTATTCAACATTTCCG
TGTCGCCCTTATTCCCTTTTTGCGGCATTTTGCTTCTCTGTTTTGCTCACCCAGAAAC
GCTGGTGAAAGTAAAAGATGCTGAAGATCAGTTGGGTGCACGAGTGGGTACATCGAACT
GGATCTCAACAGCGGTAAGATCCTTGAGAGTTTTGCCCCGAAGAAGCTTTTCCAATGAT
GAGCACTTTTAAAGTCTGCTATGTGGCGCGGTATTATCCCGTATTGACGCCGGGCAAGA
GCAACTCGGTGCGCCGCATACACTATTCTCAGAATGACTTGGTTGAGTACTCACCAGTCAC
AGAAAAGCATCTTACGGATGGCATGACAGTAAGAGAATTATGCAGTGCTGCCATAACCAT
GAGTGATAAAGTGCAGGCACTTACTTCTGACAACGATCGGAGGACCGAAGGAGCTAAC
CGCTTTTTTGCAACAATGCGGGGATCATGTAACGCGCTTGATCGTTGGGAACCGGAGCT
GAATGAAGCCATACCAACGACGAGCGTGACACCACGATGCCGTAGCAATGGCAACAAC
GTTGCGCAAACTATTAAGTGGCAACTACTTACTCTAGCTTCCCGGCAACAATTAATAGA
CTGGATGGAGGCGGATAAAGTTGCAGGACCCTTCTGCGCTCGGCCCTTCCGGCTGGCTG
GTTTATGCTGATAAATCTGGAGCCGGTGAGCGTGGGTCTCGCGGTATCATTGCAGCACT
GGGGCCAGATGGTAAGCCCTCCCGTATCGTAGTTATCTACACGACGGGAGTCAGGCAAC
TATGGATGAACGAAATAGACAGATCGCTGAGATAGGTGCCTCACTGATTAAGCATTGGTA
ACTGTCAGACCAAGTTTACTCATATATACTTTAGATTGATTTAAACTTCATTTTAAATT
TAAAAGGATCTAGGTGAAGATCCTTTTTGATAATCTCATGACCAAAATCCCTTAACGTGA
GTTTTCTGTTCCACTGAGCGTCAGACCCCGTAGAAAAGATCAAGGATCTTCTTGAGATCC
TTTTTTCTGCGCGTAATCTGCTGCTTGCAACAAAAAACCACCGCTACCAGCGGTGGT
TTGTTTCCGGATCAAGAGCTACCAACTCTTTTCCGAAGGTAAGTGGCTTCAGCAGAGC
GCAGATACCAAACTGTCCTTCTAGTGTAGCCGTAGTTAGGCCACCCTTCAAGAACTC
TGTAGCACCGCTACATACCTCGCTCTGCTAATCCTGTTACCAGTGGCTGCTGCCAGTGG
CGATAAGTCGTGCTTACC GGTTGGACTCAAGACGATAGTTACCGGATAAGGCGCAGCG
GTCGGGCTGAACGGGGGTTCTGTGCACACAGCCAGCTTGGAGCGAACGACCTACACCGA
ACTGAGATACCTACAGCGTGAGCTATGAGAAAGCGCCACGCTTCCCGAAGGGAGAAAGGC
GGACAGGTATCCGTAAGCGGCAGGTCGGAACAGGAGAGCGCACGAGGGAGCTTCCAGG
GGGAAACGCTTGGTATCTTTATAGTCTGTCGGGTTTCGCCACCTCTGACTGAGCGTCG
ATTTTTGTGATGCTCGTCAGGGGGCGGAGCCTATGGAAAAACGCCAGCAACGCGGCCTT
TTTACGGTTCTCGGCTTTTGTGCGCTTTTGCTCACATGTTCTTCTCGCTTATCCCC
TGATTCTGTGGATAACCGTATTACCGCCTTTGAGTGAGCTGATACCGCTCGCCGAGCCG
AACGACCGAGCGCAGCGAGTCAGTGAGCGAGGAAGCGGAAGAGCGCCCAATACGCAAACC
GCCTCTCCCCGCGCGTTGGCCGATTCAATTAATGCAGCAGCTGCGCGCTCGCTCGCTCACT
GAGGCCGCCCGGGCAAGCCCGGCGTCGGGCGACCTTTGGTCGCCCGGCTCAGTGAGC
GAGCGAGCGCGCAGAGAGGAGTGGCCAACTCCATCACTAGGGGTTCTTGTAGTTAATG
ATTAACCCGCCATGCTACTTATCTACGTAGCCATGCTCTAGGACATTGATTATTGACTAG
TGGAGTTCCGCGTTACATAACTTACGTTAAATGGCCGCTGGCTGACCGCCCAACGACC
CCCCCCCATTGACGTCAATAATGACGTATGTTCCCATAGTAACGCCAATAGGGACTTTCC
ATTGACGTCAATGGGTGGAGTATTTACGGTAACTGCCCACTTGGCAGTACATCAAGTGT
ATCATATGCCAAGTACGCCCCCTATTGACGTCAATGACGGTAAATGGCCCGCTTGGCATT

-continued

ATGCCCAGTACATGACCTTATGGGACTTTCCTACTTGGCAGTACATCTACGTATTAGTCA
 TCGCTATTACCATGGTCGAGGTGAGCCCCACGTTCTGCTTCACTCTCCCCATCTCCCCC
 CCTCCCCACCCCAATTTTGTATTTATTTATTTTAAATTATTTTGTGCAGCGATGGGGG
 GGGGGGGGGGGGGGGCGCGCCAGGCGGGGGGGCGGGGCGAGGGGCGGGGCGGGGCGA
 GCGGAGAGGTGCGGCGGCGAGCCAATCAGAGCGGCGGCTCCGAAAGTTTCCTTTTATGG
 CGAGGCGGCGGCGGCGGGCCCTATAAAAAGCGAAGCGCGCGGGCGGGAGTCGCTG
 CGCGCTGCCTTCGCCCCGTGCCCCGCTCCGCCGCGCCTCGCGCCGCCGCCCGGCTCT
 GACTGACCGGCTTACTAAACAGGTAAGTCCGGCCTCCGCGCCGGGTTTGGCGCTCCC
 GCGGGCGCCCCCTCTCACGGCGAGCGCTGCCACGTCAGACGAAGGGCGCAGCGAGCGT
 CCTGATCCTTCGCCCCGACGCTCAGGACAGCGGCCGCTGCTCATAAGACTCGGCCTTA
 GAACCCAGTATCAGCAGAAGGACATTTTAGGACGGGACTTGGGTGACTCTAGGGCACTG
 GTTTTCTTTCAGAGAGCGGAACAGGCGAGGAAAAGTAGTCCCTTCTCGGCGATTCTGCG
 GAGGGATCTCCGTGGGGCGGTGAACGCCGATGATGCCTCTACTAACCATGTTTCATGTTTT
 CTTTTTTTTTCTACAGGTCCTGGGTGACGAACAGGGTACC 3'

SEQ ID NO. 2 (miRNA expression cassette No. 2-serotonin receptor 5HT1a):
 5' GCCACCATGGCCACCGGCTCTCGCACAGCCTGCTGCTGGCTTTCGGACTGCTGTGC

CTGCCTTGGCTCCAGGAGGGCTCCGCCGCTAGCATCGATACCGTCGCTATGTGCTGGAGG
 CTTGCTGAAGGCTGTATGCTGATCAATCGGATTGCGGTAATCGCGTTTTGGCCTCTGACT
 GACGCGATTACCGATCCGATTGATCAGGACACAAGGCCTGTTACTAGCACTCACATGGAA
 CAAATGGCCTCTAGCCTGGAGGCTTGCTGAAGGCTGTATGCTGATCTTTGCTAAATTGGT
 GCACGCGTTTTGGCCTCTGACTGACGCGTGCAACATTAGCAAAGATCAGGACACAAGGCC
 TGTTACTAGCACTCACATGGAACAAATGGCCTCTAGCCTGGAGGCTTGCTGAAGGCTGTA
 TGCTGACTTCAATCACAATTCCAGCGCGTTTTTGGCCTCTGACTGACGCGCTGGAAGTG
 ATTGAAGTCAGGACACAAGGCCTGTTACTAGCACTCACATGGAACAAATGGCCTCTCTAG
 AAT 3'

SEQ ID NO. 3 (miRNA expression cassette No. 3-serotonin receptor 5HT1b):
 5' GCCACCATGGCCACCGGCTCTCGCACAGCCTGCTGCTGGCTTTCGGACTGCTGTGC

CTGCCTTGGCTCCAGGAGGGCTCCGCCGCTAGCATCGATACCGTCGCTATGTGCTGGAGG
 CTTGCTGAAGGCTGTATGCTGTAATCTTTCGCTGGCTGCAGTTCGTTTTGGCCTCTGACT
 GACGAACTGCAGCGCGAAAGATTACAGGACACAAGGCCTGTTACTAGCACTCACATGGAA
 CAAATGGCCTCTAGCCTGGAGGCTTGCTGAAGGCTGTATGCTGTGTTAATGCTGATGTCA
 CGCTGCGTTTTGGCCTCTGACTGACGCGAGCTGACCAAGCATTACACAGGACACAAGGCC
 TGTTACTAGCACTCACATGGAACAAATGGCCTCTAGCCTGGAGGCTTGCTGAAGGCTGTA
 TGCTGTTACCTGGTTAACACATACACCGTTTTTGGCCTCTGACTGACGGTGTATGTGAAC
 CAGGTGAACAGGACACAAGGCCTGTTACTAGCACTCACATGGAACAAATGGCCTCTCTAG
 AAT 3'

SEQ ID NO. 4 (miRNA expression cassette No. 4-serotonin receptor 5HT1d):
 5' GCCACCATGGCCACCGGCTCTCGCACAGCCTGCTGCTGGCTTTCGGACTGCTGTGC

CTGCCTTGGCTCCAGGAGGGCTCCGCCGCTAGCATCGATACCGTCGCTATGTGCTGGAGG
 CTTGCTGAAGGCTGTATGCTGATTTCTTCTGTGCGCTTTCGCCGTTTTGGCCTCTGACT
 GACGGCGAAGCGCAGGAAGAAATCAGGACACAAGGCCTGTTACTAGCACTCACATGGAA

-continued

CAAAATGGCCTCTAGCCTGGAGGCTTGCTGAAGGCTGTATGCTGAGAATAATCAGATCAGC
ACGCTCGTTTTGGCCTCTGACTGACGAGCGTGTCTGCTGATTATTCTCAGGACACAAGGCC
TGTTACTAGCACTCACATGGAACAAATGGCCTCTAGCCTGGAGGCTTGCTGAAGGCTGTA
TGCTGTAATCAGGCTGAATTCAGATAGCGTTTTGGCCTCTGACTGACGCTATCTGAACAG
CCTGATTACAGGACACAAGGCCTGTTACTAGCACTCACATGGAACAAATGGCCTCTCTAG
AAT 3'

SEQ ID NO. 5 (miRNA expression cassette No. 5-serotonin receptor 5HT1e) :
5' GCCACCATGGCCACCGGCTCTCGCACAGCCTGCTGCTGGCTTTCGGACTGCTGTGC

CTGCCTTGCTCCAGGAGGGCTCCGCCGCTAGCATCGATACCGTCGCTATGTGCTGGAGG
CTTGCTGAAGGCTGTATGCTGATAATCACCGCTGCAGGTTTCAGCGTTTTGGCCTCTGACT
GACGCTGAACCTGGCGGTGATTATCAGGACACAAGGCCTGTTACTAGCACTCACATGGAA
CAAAATGGCCTCTAGCCTGGAGGCTTGCTGAAGGCTGTATGCTGTTCAATCGCGTATTGGT
AATCGCGTTTTGGCCTCTGACTGACGCGATTACCAACGCGATTGAACAGGACACAAGGCC
TGTTACTAGCACTCACATGGAACAAATGGCCTCTAGCCTGGAGGCTTGCTGAAGGCTGTA
TGCTGTGATCATGCTGAAAATGGTGCACGTTTTGGCCTCTGACTGACGTGCACCATTAG
CATGATCACAGGACACAAGGCCTGTTACTAGCACTCACATGGAACAAATGGCCTCTCTAG
AAT 3'

SEQ ID NO. 6 (miRNA expression cassette No. 6-serotonin receptor 5HT1f) :
5' GCCACCATGGCCACCGGCTCTCGCACAGCCTGCTGCTGGCTTTCGGACTGCTGTGC

CTGCCTTGCTCCAGGAGGGCTCCGCCGCTAGCATCGATACCGTCGCTATGTGCTGGAGG
CTTGCTGAAGGCTGTATGCTGAGGTAATATCCTGACGCTCAGCCGTTTTGGCCTCTGACT
GACGCTGAGCGTGGATATTACCTCAGGACACAAGGCCTGTTACTAGCACTCACATGGAA
CAAAATGGCCTCTAGCCTGGAGGCTTGCTGAAGGCTGTATGCTGTACAGAATCAGATAATC
AGCGCCGTTTTGGCCTCTGACTGACGGCGCTGATTCTGATTCTGTACAGGACACAAGGCC
TGTTACTAGCACTCACATGGAACAAATGGCCTCTAGCCTGGAGGCTTGCTGAAGGCTGTA
TGCTGTATGTTTTAAAAATTCGCTGCGCGTTTTGGCCTCTGACTGACGCGCAGCGAATTT
AAACATGACAGGACACAAGGCCTGTTACTAGCACTCACATGGAACAAATGGCCTCTCTAG
AAT 3'

SEQ ID NO. 7 (miRNA expression cassette No. 7-serotonin receptor 5HT2a) :
5' GCCACCATGGCCACCGGCTCTCGCACAGCCTGCTGCTGGCTTTCGGACTGCTGTGC

CTGCCTTGCTCCAGGAGGGCTCCGCCGCTAGCATCGATACCGTCGCTATGTGCTGGAGG
CTTGCTGAAGGCTGTATGCTGATGAATCGGGTTGTCTGAATCGCGTTTTGGCCTCTGACT
GACGCGATTGAGAACCCGATTATCAGGACACAAGGCCTGTTACTAGCACTCACATGGAA
CAAAATGGCCTCTAGCCTGGAGGCTTGCTGAAGGCTGTATGCTGAACACTTTGCTATATCA
TCCTGCGTTTTGGCCTCTGACTGACGCGAGGATGATAGCAAAGTGTTCAGGACACAAGGCC
TGTTACTAGCACTCACATGGAACAAATGGCCTCTAGCCTGGAGGCTTGCTGAAGGCTGTA
TGCTGTTCTGTTGTTAAGCTAATGCTCGTTTTGGCCTCTGACTGACGAGCATTAGCAAC
GAACAGAACAGGACACAAGGCCTGTTACTAGCACTCACATGGAACAAATGGCCTCTCTAG
AAT 3'

-continued

SEQ ID NO. 8 (miRNA expression cassette No. 8-serotonin receptor 5HT2b):
5' GCCACCATGGCCACCGGCTCTCGCACAGCCTGCTGCTGGCTTTCGGACTGCTGTGC

CTGCCTTGGCTCCAGGAGGGCTCCGCCGCTAGCATCGATACCGTCGCTATGTGCTGGAGG
CTTGCTGAAGGCTGTATGCTGGAGCATTAGCAATGCGAACAGAAGTTTGGCCTCTGACT
GACTTCTGTTCTGTTGCTAATGCTCCAGGACACAAGGCCTGTTACTAGCACTCACATGGAA
CAATGGCCTCTAGCCTGGAGGCTTGCTGAAGGCTGTATGCTGAAACATAATGGATTAG
CAGCGCGTTTTGGCCTCTGACTGACGCGCTGCTGACCATTATGTTTCAGGACACAAGGCC
TGTTACTAGCACTCACATGGAACAAATGGCCTCTAGCCTGGAGGCTTGCTGAAGGCTGTA
TGCTGTTATCTTTGCGAAGCTGCCATCCGTTTTGGCCTCTGACTGACGGATGGCAGCCGC
AAAGATAACAGGACACAAGGCCTGTTACTAGCACTCACATGGAACAAATGGCCTCTCTAG
AAT 3'

SEQ ID NO. 9 (miRNA expression cassette No. 9-serotonin receptor 5HT2c):
5' GCCACCATGGCCACCGGCTCTCGCACAGCCTGCTGCTGGCTTTCGGACTGCTGTGC

CTGCCTTGGCTCCAGGAGGGCTCCGCCGCTAGCATCGATACCGTCGCTATGTGCTGGAGG
CTTGCTGAAGGCTGTATGCTGGCTCCTCCACTTGGTGGTTTGGTTTTGGCCTCTGACTGA
CGCGCAACATTCTGGTGATTACAGGACACAAGGCCTGTTACTAGCACTCACATGGAACA
AATGGCCTCTAGCCTGGAGGCTTGCTGAAGGCTGTATGCTGTCATAATCGCTATTTGGTG
CGCGTTTTGGCCTCTGACTGACGCGCACCAAGCGATTATGACAGGACACAAGGCCTG
TTACTAGCACTCACATGGAACAAATGGCCTCTAGCCTGGAGGCTTGCTGAAGGCTGTATG
CTGTTCTGATCTGAAGTTCGGGTTGTTTTGGCCTCTGACTGACGAACCCGAACCAGGA
TCAGAACAGGACACAAGGCCTGTTACTAGCACTCACATGGAACAAATGGCCTCTCTAGAA
T 3'

SEQ ID NO. 10 (miRNA expression cassette No. 10-serotonin receptor 5HT3):
5' GCCACCATGGCCACCGGCTCTCGCACAGCCTGCTGCTGGCTTTCGGACTGCTGTGC

CTGCCTTGGCTCCAGGAGGGCTCCGCCGCTAGCATCGATACCGTCGCTATGTGCTGGAGG
CTTGCTGAAGGCTGTATGCTGAAATCTTCGGTGGTTCCACTGCGTTTTGGCCTCTGACT
GACGCAGTGAACCCGGAAGATTTCAGGACACAAGGCCTGTTACTAGCACTCACATGGAA
CAATGGCCTCTAGCCTGGAGGCTTGCTGAAGGCTGTATGCTGATATCCTGAATATGGTA
TGCAGCGTTTTGGCCTCTGACTGACGCTGCATACCATTCAGGATATCAGGACACAAGGCC
TGTTACTAGCACTCACATGGAACAAATGGCCTCTAGCCTGGAGGCTTGCTGAAGGCTGTA
TGCTGTTTAAAGCTCAAACGCGTTCGCCGTTTTGGCCTCTGACTGACGGCGAACGCGTGA
GCTTTAAACAGGACACAAGGCCTGTTACTAGCACTCACATGGAACAAATGGCCTCTCTAG
AAT 3'

SEQ ID NO. 11 (miRNA expression cassette No. 11-serotonin receptor 5HT4):
5' GCCACCATGGCCACCGGCTCTCGCACAGCCTGCTGCTGGCTTTCGGACTGCTGTGC

CTGCCTTGGCTCCAGGAGGGCTCCGCCGCTAGCATCGATACCGTCGCTATGTGCTGGAGG
CTTGCTGAAGGCTGTATGCTGTAATAAAGGCTGCGGAATCACCCTTTTGGCCTCTGACT
GACGGGTGATTCGACCTTTATTACAGGACACAAGGCCTGTTACTAGCACTCACATGGAA
CAATGGCCTCTAGCCTGGAGGCTTGCTGAAGGCTGTATGCTGTAATACGCCAGATCACC
ATCAGCGTTTTGGCCTCTGACTGACGCTGATGGTGTGCGTATTACAGGACACAAGGCC
TGTTACTAGCACTCACATGGAACAAATGGCCTCTAGCCTGGAGGCTTGCTGAAGGCTGTA

-continued

TGCTGATACAGAAACGAAGGTTTCAGGCCGTTTTGGCCTCTGACTGACGGCCTGAACCCGT
TTCTGTATCAGGACACAAGGCCTGTACTAGCACTCACATGGAACAAATGGCCTCTCTAG
AAT

SEQ ID NO. 12 (miRNA expression cassette No. 12-serotonin receptor 5HT6):
5' GCCACCATGGCCACCGGCTCTCGCACAGCCTGCTGCTGGCTTTCGGACTGCTGTGC

CTGCCTTGGCTCCAGGAGGGCTCCGCCGCTAGCATCGATACCGTCGCTATGTGCTGGAGG
CTTGCTGAAGGCTGTATGCTGTCAGATCGCTGTGGTAAACAGGCGTTTTGGCCTCTGACT
GACGCTGTTTTACCAGCATCTGACAGGACACAAGGCCTGTACTAGCACTCACATGGAA
CAAATGGCCTCTAGCCTGGAGGCTTGCTGAAGGCTGTATGCTGAGAATCAGATCAGATAG
CGATCCGTTTTGGCCTCTGACTGACGGATCGCTATCTGCTGATTCTCAGGACACAAGGCC
TGTTACTAGCACTCACATGGAACAAATGGCCTCTAGCCTGGAGGCTTGCTGAAGGCTGTA
TGCTGAAACATGCCAACAGCAGAATGCCGTTTTGGCCTCTGACTGACGGCATTCTGCTGG
GCATGTTTTCAGGACACAAGGCCTGTACTAGCACTCACATGGAACAAATGGCCTCTCTAG

AAT 3'

SEQ ID NO. 13 (miRNA expression cassette No. 13-serotonin receptor 5HT7):
5' GCCACCATGGCCACCGGCTCTCGCACAGCCTGCTGCTGGCTTTCGGACTGCTGTGC

CTGCCTTGGCTCCAGGAGGGCTCCGCCGCTAGCATCGATACCGTCGCTATGTGCTGGAGG
CTTGCTGAAGGCTGTATGCTGACAATCAGATATGGTTGCTCGGCGTTTTGGCCTCTGACT
GACGCCGAGCAACTATCTGATTGTTCAGGACACAAGGCCTGTACTAGCACTCACATGGAA
CAAATGGCCTCTAGCCTGGAGGCTTGCTGAAGGCTGTATGCTGTTTACAAATGCATCGTT
CAGCGCGTTTTGGCCTCTGACTGACGCGCTGAACGGCATTGTGAAACAGGACACAAGGCC
TGTTACTAGCACTCACATGGAACAAATGGCCTCTAGCCTGGAGGCTTGCTGAAGGCTGTA
TGCTGACAATAATGCCAACAGGGTGGTCGTTTTGGCCTCTGACTGACGACCACCCTGGGC
ATTATTGTCAGGACACAAGGCCTGTACTAGCACTCACATGGAACAAATGGCCTCTCTAG

AAT 3'

SEQ ID NO. 14 = SEQ ID NO. 1 + SEQ ID NO. 2

5' AATCAACCTCTGGATTACAAAATTTGTGAAAGATTGACTGGTATTCTTAATATGTT
GCTCCTTTTACGCTATGTGGATACGCTGCTTAAATGCCTTTGTATCATGCTATTGCTTCC
CGTATGGCTTTTCAATTTCTCCTTGTATAAATCCTGGTTGCTGTCTTTATGAGGAG
TTGTGGCCCGTTGTTCAGGCAACGTGGCGTGGTGTGCACTGTGTTTGCTGACGCAACCCCC
ACTGGTTGGGGCATTGCCACCACCTGTCAGCTCCTTTCCGGGACTTTCGCTTTCCCCCTC
CCTATTGCCACGGCGGAACCTCATCGCCGCTGCCTTGCCCGCTGCTGGACAGGGGCTCGG
CTGTTGGGCACTGACAATTCCGTGGTGTGTCGGGAAATCATCGTCCTTTCTTGGCTG
CTCGCCTGTGTTGCCACCTGGATTCTGCGGGGACGTCCTTCTGCTACGTCCTTTCGGCC
CTCAATCCAGCGGACCTTCTTCCCGCGGCTGCTGCCGGCTCTGCGGCTCTTCCGCGT
CTTCGCTTTCGCCCTCAGACGAGTCGGATCTCCCTTTGGGCCGCTCCCCGCTAAGCTT
ATCGATACCGTCGAGATCTAACTTGTTTATTGCAGCTTATAATGGTTACAAATAAGCAA
TAGCATCACAAATTTACAAATAAAGCATTTTTTCACTGCATTCTAGTTGTGGTTTGTC
CAAACCTCATCAATGTATCTTATCATGTCTGGATCTCGACCTCGACTAGAGCATGGCTACG
TAGATAAGTAGCATGGCGGGTAAATCATTAACACAAGGAACCCCTAGTGATGGAGTTGG
CCACTCCCTCTCTGCGCGCTCGCTCGCTCACTGAGGCCGGGCGACCAAGGTCGCCCCGAC

-continued

GCCCCGGGCTTTGCCCGGGCGGCCTCAGTGAGCGAGCGAGCGCGCAGCTGGCGTAATAGCG
AAGAGGCCCCGACCGGATCGCCCTTCCCAACAGTTGCGCAGCCTGAATGGCGAATGGCGAT
TCCGTTGCAATGGCTGGCGGTAATATTGTTCTGGATATTACCAGCAAGGCCGATAGTTTG
AGTTCTTCTACTCAGGCAAGTGATGTTATTACTAATCAAAGAAGTATTGCGACAACGGTT
AATTTGCGTGATGGACAGACTCTTTTACTCGGTGGCCTCACTGATTATAAAAACACTTCT
CAGGATTCTGGCGTACCGTTCTGTCTAAAATCCCTTTAATCGGCCTCCTGTTTAGCTCC
CGCTCTGATTCTAACGAGGAAAGCACGTTATACGTGCTCGTCAAAGCAACCATAGTACGC
GCCCTGTAGCGGCGCATTAAAGCGCGGGGTGTGGTGGTTACGCGCAGCGTGACCGCTAC
ACTTGCCAGCGCCCTAGCGCCCGCTCCTTTCGCTTCTTCCCTTCCTTCTCGCCACGTT
CGCCGGCTTTCCCGCTCAAGCTCTAAATCGGGGGCTCCCTTAGGGTTCCGATTTAGTGC
TTTACGGCACCTCGACCCCAAAAACTTGATTAGGGTGATGGTTCACGTAGTGGGCCATC
GCCCTGATAGACGGTTTTTTCGCCCTTTGACGTTGGAGTCCACGTTCTTTAATAGTGGACT
CTTGTTCCAACTGGAACAACACTCAACCCCTATCTCGGTCTATTCTTTGATTATAAGG
GATTTTGCCGATTTTCGGCCTATTGGTTAAAAAATGAGCTGATTTAACAAAAATTTAACGC
GAATTTTAACAAAATATTAACGTTTACAATTTAAATATTGCTTATACAATCTTCTGTT
TTTGGGGCTTTTCTGATTATCAACCGGGGTACATATGATTGACATGCTAGTTTACGATT
ACCGTTCATCGATTCTCTGTTTGCTCCAGACTCTCAGGCAATGACCTGATAGCCTTTGT
AGAGACCTCTCAAAATAGCTACCCCTCTCCGGCATGAATTTATCAGCTAGAACGGTTGAA
TATCATATTGATGGTGATTGACTGTCTCCGGCCTTCTCACCCGTTTGAATCTTTACCT
ACACATTACTCAGGCATTGCATTTAAAAATATATGAGGGTTCTAAAAATTTTATCCTTGC
GTTGAAATAAAGGCTTCTCCCGCAAAGTATTACAGGGTCATAATGTTTTTGGTACAACC
GATTTAGCTTTATGCTCTGAGGCTTTATTGCTTAATTTTGCTAATTTCTTGCCTTGCTG
TATGATTTATTGGATGTTGGAATTCCTGATGCGGTATTTCTCCTTACGCATCTGTGCGG
TATTTACACCCGATATGGTGCACTCTCAGTACAATCTGCTCTGATGCCGATAGTTAAG
CCAGCCCCGACACCCGCCAACCCGCTGACGCGCCCTGACGGGCTTGTCTGCTCCCGGC
ATCCGCTTACAGACAAGCTGTGACCGTCTCCGGGAGCTGCATGTGTGAGAGTTTTTCACC
GTCATACCGAAACGCGCGAGACGAAAGGGCCTCGTGATACGCCTATTTTATAGGTTAA
TGTCATGATAATAATGGTTTCTTAGACGTCAGGTGGCACTTTTCGGGGAATGTGCGCGG
AACCCTTATTGTTTATTTTCTAAATACATTCAAATATGTATCCGCTCATGAGACAATA
ACCTGATAAATGCTTCAATAATATTGAAAAAGGAAGAGTATGAGTATTCACATTTCCG
TGTCGCCCTTATTCCTTTTTTTCGGGCATTTTGCCTTCTGTTTTTGTCTACCCAGAAAC
GCTGGTGAAAGTAAAAGATGCTGAAGATCAGTTGGGTGCACGAGTGGGTTACATCGAACT
GGATCTCAACAGCGGTAAGATCCTTGAGAGTTTTTCGCCCGAAGAACGTTTTCCAATGAT
GAGCACTTTTAAAGTTCTGCTATGTGGCGCGGTATTATCCCGTATTGACGCCGGGCAAGA
GCAACTCGGTGCGCGCATACACTATTCTCAGAATGACTTGGTTGAGTACTCACCAGTCAC
AGAAAAGCATCTTACGGATGGCATGACAGTAAGAGAATTATGAGTGCTGCCATAACCAT
GAGTGATAACACTGCGGCCAACTTACTTCTGACAACGATCGGAGGACCGAAGGAGCTAAC
CGCTTTTTTGACACAACATGGGGGATCATGTAACTCGCCTTGATCGTTGGGAACCGGAGCT
GAATGAAGCCATACCAAACGACGAGCGTGACACCACGATGCCTGTAGCAATGGCAACAAC

-continued

GTTGCGCAAACATTAACTGGCGAACTACTTACTCTAGCTTCCCGGCAACAATTAATAGA
CTGGATGGAGGCGGATAAAGTTGCAGGACCACTTCTGCGCTCGGCCCTTCCGGCTGGCTG
GTTTATTGCTGATAAATCTGGAGCCGGTGAGCGTGGGTCTCGCGGTATCATTGCAGCACT
GGGGCCAGATGGTAAGCCCTCCCGTATCGTAGTTATCTACACGACGGGGAGTCAGGCAAC
TATGGATGAACGAAATAGACAGATCGCTGAGATAGGTGCCTCACTGATTAAGCATTGGTA
ACTGTCAGACCAAGTTTACTCATATATACTTTAGATTGATTTAAACCTTCATTTTAAATT
TAAAAGGATCTAGGTGAAGATCCTTTTGTATAATCTCATGACCAAAATCCCTTAACGTGA
GTTTTCTGTTCCACTGAGCGTCAGACCCCGTAGAAAAGATCAAAGGATCTTCTTGAGATCC
TTTTTTCTGCGCGTAATCTGCTGCTTGCAAAACAAAAAACACCGCTACCAGCGGTGGT
TTGTTTGGCGGATCAAGAGCTACCAACTCTTTTCCGAAGGTAACGGCTTCAGCAGAGC
GCAGATACCAATACTGTCCTTCTAGTGTAGCCGTAGTTAGGCCACCACCTCAAGAACTC
TGTAGACCGCCTACATACCTCGCTCTGCTAATCCTGTTACCAGTGGCTGCTGCCAGTGG
CGATAAGTCGTGCTTACCGGGTTGGACTCAAGACGATAGTTACCGGATAAGGCGCAGCG
GTCGGGCTGAACGGGGGGTTCGTGCACACAGCCAGCTTGAGCGAACGACCTACACCGA
ACTGAGATACCTACAGCGTGAGCTATGAGAAAGCGCCACGCTTCCGAAGGAGAAAGGC
GGACAGGTATCCGGTAAGCGGCAGGGTCGGAACAGGAGAGCGCACGAGGGAGCTTCCAGG
GGGAAACGCCTGGTATCTTTATAGTCCTGTGCGGTTTCGCCACCTCTGACTTGAGCGTCG
ATTTTGTGATGCTCGTCAGGGGGGGAGCCTATGGAAAACGCCAGCAACGCGGCCTTT
TTACGGTTCTTGGCCTTTTGCTGGCCTTTTGCTCACATGTTCTTTCTGCGTTATCCCTT
GATTCTGTGGATAACCGTATTACCGCCTTTGAGTGAGCTGATACCGCTCGCCGCAGCCGA
ACGACCGAGCGCAGCGAGTCAGTGAGCGAGGAAGCGAAGAGCGCCCAATACGCAAACCG
CCTCTCCCGCGCGTTGGCCGATTCAATTAATGCAGCAGCTGCGCGCTCGCTCGCTCACTG
AGGCCGCCCGGGCAAAGCCCGGGCGTCGGGCGACCTTTGGTCGCCCGGCCTCAGTGAGCG
AGCGAGCGCGCAGAGAGGGAGTGGCCAACTCCATCACTAGGGGTTCTTGTAGTTAATGA
TTAACC CGCATGCTACTTATCTACGTAGCCATGCTCTAGGACATTGATTATTGACTAGT
GGAGTTCGCGTTACATAACTTACGGTAAATGGCCCGCCTGGCTGACCGCCCAACGACCC
CCGCCCATTGACGTCAATAATGACGTATGTTCCCATAGTAACGCCAATAGGACCTTTCCA
TTGACGTCAATGGGTGGAGTATTACGGTAAGTGCCTTGGCAGTACATCAAGTGTA
TCATATGCCAAGTACGCCCCCTATTGACGTCAATGACGGTAAATGGCCCGCCTGGCATTA
TGCCAGTACATGACCTTATGGGACTTTCTACTTGGCAGTACATCTACGTATTAGTCAT
CGCTATTACCATTGGTCGAGGTGAGCCCCACGTTCTGCTTCACTCTCCCCATCTCCCCCCC
CTCCCCACCCCAATTTTGTATTTATTTATTTTAAATTATTTTGTGACGATGGGGGC
GGGGGGGGGGGGGGCGCGCCAGCGGGGGGGGGGGGGGAGGGGCGGGGCGGGGCGA
GGCGGAGAGGTGCGGCGGCAGCCAATCAGAGCGGCGCGCTCCGAAAGTTTCCTTTTATGG
CGAGGCGGCGGCGGCGGCGCCCTATAAAAAGCGAAGCGCGCGGCGGGCGGAGTCGCTG
CGCGCTGCCTTCGCCCCGTGCCCCGCTCCGCGCGCGCCTCGCGCGCGCGCGCGCGCTCT
GACTGACCGGTTACTAAACAGGTAAGTCCGGCCTCCGCGCGGGTTTTGCGCGCTCCC
GCGGGCGCCCCCTCTCACGCGAGCGCTGCCACGTCAGACGAAGGGCGCAGCGAGCGT
CCTGATCCTTCCGCCCCGACGCTCAGGACAGCGGCCGCTGCTCATAAGACTCGGCCTTA

-continued

GAACCCAGTATCAGCAGAAGGACATTTTAGGACGGGACTTGGGTGACTCTAGGGCACTG
GTTTTCTTTCCAGAGAGCGGAACAGGCGAGGAAAAGTAGTCCCTTCTCGGCGATTCTGCG
GAGGGATCTCCGTGGGGCGGTGAACGCCGATGATGCCTCTACTAACCATGTTTCATGTTTT
CTTTTTTTTTCTACAGGTCCTGGGTGACGAACAGGGTACCGCCACCATGGCCACCGGCTC
TCGCACAAGCCTGCTGCTGGCTTTTCGGACTGCTGTGCCTGCCTTGGCTCCAGGAGGGCTC
CGCCGCTAGCATCGATACCGTCGTATGTGCTGGAGGCTTGCTGAAGGCTGTATGCTGAT
CAATCGGATTGCGGTAATCGCGTTTTGGCCTCTGACTGACGCGATTACCGATCCGATTGA
TCAGGACACAAGGCCTGTTACTAGCACTCACATGGAACAAATGGCCTCTAGCCTGGAGGC
TTGCTGAAGGCTGTATGCTGATCTTTGCTAAATTGGTGCACGCGTTTTGGCCTCTGACTG
ACGCGTGCACCATTAGCAAAGATCAGGACACAAGGCCTGTTACTAGCACTCACATGGAAC
AAATGGCCTCTAGCCTGGAGGCTTGCTGAAGGCTGTATGCTGACTTCAATCACAATTCCA
GCGCCGTTTTGGCCTCTGACTGACGCGCTGGAAGTGATTGAAGTCAGGACACAAGGCCT
GTTACTAGCACTCACATGGAACAAATGGCCTCTCTAGAAT 3'

SEQ ID NO. 15 = SEQ ID NO. 1 + SEQ ID NO. 3

5' AATCAACCTCTGGATTACAAAATTTGTGAAAGATTGACTGGTATTCTTAATATATGTT
GCTCCTTTTACGCTATGTGGATACGCTGCTTTAATGCCTTTGTATCATGCTATTGCTTCC
CGTATGGCTTTTCATTTTCTCCTTGTATAAATCCTGGTTGCTGTCTTTATGAGGAG
TTGTGGCCCGTTGTGAGCAACGTGGCGTGGTGTGCACTGTGTTTGCTGACGCAACCCCC
ACTGGTTGGGGCATTGCCACCACCTGTCAGCTCCTTTCCGGGACTTTCGCTTTCCCCCTC
CCTATTGCCACGGCGGAACCTCATCGCCGCTGCCTTGCCCGCTGCTGGACAGGGGCTCGG
CTGTTGGGCACTGACAATTCCGTGGTGTGTCGGGGAATCATCGTCCTTTCTTGGCTG
CTCGCCTGTGTTGCCACCTGGATTCTGCGCGGGACGTCCTTCTGCTACGTCCTTTCGGCC
CTCAATCCAGCGGACCTTCTTCCCGCGGCTGCTGCCGCTCTGCGGCTCTTCCGCGT
CTTCGCTTTCGCGCTCAGACGAGTCGGATCTCCCTTTGGGCGCCTCCCCGCTAAGCTT
ATCGATACCGTCGAGATCTAACTTGTTTATTGCAGCTTATAATGGTTACAAATAAGCAA
TAGCATCACAAATTTACAAATAAAGCATTTTTTCACTGCATTCTAGTTGTGGTTTGTG
CAAATCTCAATGTATCTTATCATGTCTGGATCTCGACCTCGACTAGAGCATGGCTACG
TAGATAAGTAGCATGGCGGTTAATCATTAACTACAAGGAACCCCTAGTGATGGAGTTGG
CCACTCCCTCTCTGCGCGCTCGCTCGCTCACTGAGGCGGGGACCAAGGTCGCCCCGAC
GCCCCGGGCTTTGCCCGGGCGGCTCAGTGAGCGAGCGAGCGCAGCTGGCGTAATAGCG
AAGAGGCCCGCACCGATCGCCCTTCCCAACAGTTGCGCAGCCTGAATGGCGAATGGCGAT
TCCGTTGCAATGGCTGGCGGTAATATTGTTCTGGATATTACCAGCAAGGCCGATAGTTTG
AGTTCTTCTACTCAGGCAAGTGTATTATTACTAATCAAAGAAGATTGCGACAACGGTT
AATTTGCGTGATGGACAGACTCTTTTACTCGGTGGCCTCACTGATTATAAAAACTTCT
CAGGATTTCTGGCGTACCGTTCTGTCTAAAATCCCTTTAATCGGCCTCCTGTTTAGCTCC
CGCTCTGATTCTAACGAGGAAAGCACGTTATACGTGCTCGTCAAAGCAACCATAGTACGC
GCCCTGTAGCGGCGCATTAAGCGCGGGGGTGTGGTGGTTACGCGCAGCGTGACCGCTAC
ACTTGCCAGCGCCCTAGCGCCCGCTCCTTTCGCTTCTTCCCTTCTTCTCGCCACGTT
CGCCGGCTTTCCCCGTCAAGCTCTAAATCGGGGGCTCCCTTTAGGGTTCCGATTAGTGC

-continued

TTTACGGCACCTCGACCCCAAAAACTTGATTAGGGTGATGGTTCACGTAGTGGGCCATC
GCCCTGATAGACGGTTTTTTCGCCCTTTGACGTTGGAGTCCACGTTCTTTAATAGTGGACT
CTTGTTCCAACTGGAACAACACTCAACCTATCTCGGTCTATTCTTTTGATTATAAGG
GATTTTGCCGATTTCGGCCTATTGGTTAAAAAATGAGCTGATTTAACAAAAATTAACGC
GAATTTAACAAAATATTAACGTTTACAATTTAAATATTGCTTATACAATCTTCTGT
TTTGGGGCTTTCTGATTATCAACCGGGTACATATGATTGACATGCTAGTTTACGATT
ACCGTTCATCGATTCTCTTGTGTGCTCCAGACTCTCAGGCAATGACCTGATAGCCTTGT
AGAGACCTCTCAAAAATAGCTACCTCTCCGGCATGAATTTATCAGCTAGAACGGTTGAA
TATCATATTGATGGTGATTGACTGTCTCCGGCCTTCTCACCCGTTTGAATCTTACCT
ACACATTACTCAGGCATTGCATTTAAAAATATATGAGGGTTCTAAAAATTTTATCCTTGC
GTTGAAATAAAGGCTTCTCCCGCAAAGTATTACAGGGTCATAATGTTTTTGGTACAACC
GATTTAGCTTTATGCTCTGAGGCTTTATTGCTTAATTTTGCTAATCTTTGCCTTGCCTG
TATGATTTATTGGATGTTGGAATTCCTGATGCGGTATTTCTCCTTACGCATCTGTGCGG
TATTTACACCCGCATATGGTGCACTCTCAGTACAATCTGCTCTGATGCCGATAGTTAAG
CCAGCCCCGACACCCGCCAACACCCGCTGACGCGCCCTGACGGGCTTGTCTGCTCCCGC
ATCCGCTTACAGACAAGCTGTGACCGTCTCCGGGAGCTGCATGTGTGAGAGTTTTCACC
GTCATCACCGAAACGCGCGAGACGAAAGGGCCTCGTGATACGCCATTTTTATAGGTTAA
TGTCATGATAAATAGTTTCTTAGACGTGAGGTGGCACTTTTCGGGAAATGTGCGCGG
AACCCTTATTGTTTTATTTTCTAAATACATTCAAATATGTATCCGCTCATGAGACAATA
ACCTGATAAATGCTTCAATAATATTGAAAAAGGAAGAGTATGAGTATTCAACATTTCCG
TGTCGCCCTTATTCCTTTTTTGCGGCATTGTGCTTCTGTTTTTGCTCACCAGAAAC
GCTGGTGAAAGTAAAAGATGCTGAAGATCAGTTGGGTGCACGAGTGGGTACATCGAACT
GGATCTCAACAGCGGTAGATCCTTGAGAGTTTTCGCCCCGAAGAAGCTTTTCAATGAT
GAGCACTTTTAAAGTTCTGCTATGTGGCGCGGTATTATCCCGTATTGACGCCGGCAAGA
GCAACTCGGTGCGCGCATACACTATTCTCAGAATGACTTGGTTGAGTACTCACCAGTCAC
AGAAAAGCATCTTACGGATGGCATGACAGTAAGAGAATTATGAGTGTGCCATAACCAT
GAGTGATAACACTGCGGCCAACTTACTTCTGACAACGATCGGAGGACCGAAGGAGCTAAC
CGCTTTTTTGACACAACATGGGGGATCATGTAACTCGCCTTGATCGTTGGGAACCGGAGCT
GAATGAAGCCATACCAAACGACGAGCGTGACACCACGATGCCTGTAGCAATGGCAACAAC
GTTGCGCAAACTATTAAGTGGCGAACTACTTACTCTAGCTTCCCGGCAACAATTAATAGA
CTGGATGGAGGCGGATAAAGTTGCAGGACCACTTCTGCGCTCGGCCCTTCCGGCTGGCTG
GTTTATTGCTGATAAATCTGGAGCCGGTGAGCGTGGGTCTCGCGGTATCATTCAGCACT
GGGGCCAGATGGTAAGCCCTCCCGTATCGTAGTTATCTACACGACGGGAGTCAGGCAAC
TATGGATGAACGAAATAGACAGATCGCTGAGATAGGTGCCTCACTGATTAAGCATTGGTA
ACTGTCAGACCAAGTTTACTCATATATACTTTAGATTGATTTAAACCTTCATTTTAATT
TAAAAGGATCTAGGTGAAGATCCTTTTTGATAATCTCATGACCAAAATCCCTTAACGTGA
GTTTTCTGTTCCACTGAGCGTCAGACCCGCTAGAAAAGATCAAAGGATCTTCTTGAGATCC
TTTTTTCTGCGCGTAATCTGCTGCTTGCAACAAAAAACACCGCTACCGAGCGGTGGT
TTGTTTGC CGGATCAAGAGCTACCAACTCTTTTCCGAAGGTAAGTGGCTTCAGCAGAGC

-continued

GCAGATACCAAATACTGTCCTTCTAGTGTAGCCGTAGTTAGGCCACCACCTTCAAGAACTC
TGTAGCACCGCTACATACCTCGCTCTGCTAATCCTGTTACCACTGGCTGCTGCCAGTGG
CGATAAGTCGTGCTTACC GGTTGGACTCAAGACGATAGTTACCGGATAAGGCGCAGCG
GTCGGGCTGAACGGGGGGTTCGTGCACACAGCCAGCTTGGAGCGAACGACCTACACCGA
ACTGAGATACCTACAGCGTGAGCTATGAGAAAGCGCCACGCTTCCCGAAGGAGAAAGGC
GGACAGGTATCCGGTAAGCGGCAGGGTCGGAACAGGAGAGCGCACGAGGGAGCTTCCAGG
GGGAAACGCCTGGTATCTTTATAGTCCTGTGGGTTTCGCCACCTCTGACTTGAGCGTCG
ATTTTGTGTATGCTCGTCAGGGGGCGGAGCCTATGGAACCGCCAGCAACGCGGCCTT
TTTACGGTTCCGGCCTTTTGCTGGCCTTTTGCTCACATGTTCTTTCTGCGTTATCCCC
TGATTCTGTGGATAACCGTATTACCGCCTTTGAGTGAGCTGATACCGCTCGCCGAGCCG
AACGACCGAGCGCAGCGAGTCAGTGAGCGAGGAAGCGGAAGAGCGCCCAATACGCAACC
GCCTCTCCCCGCGCGTTGGCCGATTCTTAATGCAGCAGCTGCGCGCTCGCTCGCTCACT
GAGGCCGCCCGGGCAAAGCCCGGGCGTCGGGCGACCTTTGGTCGCCCCGGCCTCAGTGAGC
GAGCGAGCGCGCAGAGAGGAGTGCCCACTCCATCACTAGGGGTTCTTTGTAGTTAATG
ATTAACCCGCCATGTACTTATCTACGTAGCCATGCTCTAGGACATTGATTATTGACTAG
TGGAGTTCGCGTTACATAACTTACGGTAAATGGCCCGCCTGGCTGACCGCCCAACGACC
CCGCCCCATTGACGTCATAATGACGTATGTTCCCATAGTAACGCCAATAGGGACTTTCC
ATTGACGTCAATGGGTGGAGTATTTACGGTAACTGCCCACTTGGCAGTACATCAAGTGT
ATCATATGCCAAGTACGCCCCCTATTGACGTCAATGACGGTAAATGGCCCGCCTGGCATT
ATGCCAGTACATGACCTTATGGGACTTTCCTACTTGCCAGTACATCTACGTATTAGTCA
TCGCTATTACCATGGTCGAGGTGAGCCCCACGTTCTGCTTCACTCTCCCCATCTCCCCC
CCTCCCCACCCCCAATTTGTATTTATTTATTTTAAATTATTTTGTGCAGCGATGGGGG
CGGGGGGGGGGGGGCGCGCCAGGCGGGGGGGGGGGCGAGGGCGGGGCGGGGCG
AGGCGGAGAGGTGCGGCGGCAGCCAATCAGAGCGGCGCGCTCCGAAAGTTTCTTTTATG
GCGAGGCGGCGGCGGCGGCGCCCTATAAAAAGCGAAGCGCGCGGGCGGGAGTCGCT
GCGCGCTGCTTTCGCCCCGTGCCCCGCTCCGCGCGCGCTCGCGCGCGCCCCGGCTC
TGACTGACCGCTTACTAAAACAGGTAAGTCCGGCTCCGCGCGGGTTTGGCGCTCC
CGCGGGCGCCCCCTCCTACGGCGAGCGCTGCCACGTGAGCGAAGGGCGCAGCGAGCG
TCCTGATCCTTCCGCCCGACGCTCAGGACAGCGGCCGCTGCTCATAAGACTCGGCCTT
AGAACCCAGTATCAGCAGAAGGACATTTTAGGACGGGACTTGGGTGACTCTAGGGCACT
GGTTTTCTTTCCAGAGAGCGGAACAGGCGAGGAAAAGTAGTCCCTTCTCGGCGATTCTGC
GGAGGATCTCCGTGGGGCGGTGAACGCCGATGATGCCCTCTACTAACCATGTTTCATGTTT
TCTTTTTTTTTCTACAGGTCCTGGGTGACGAACAGGGTACCGCCACCATGGCCACCGCT
CTCGCACAAGCCTGCTGCTGGCTTTTCGACTGCTGTGCTGCCTTGGCTCCAGGAGGGCT
CCGCGCTAGCATCGATACCGTCGCTATGTGCTGGAGGCTTGCTGAAGGCTGTATGCTGT
AATCTTTCGCTGGCTGCAGTTCGTTTTGGCCTCTGACTGACGAACGCAGCGCGAAAGAT
TACAGGACACAAGGCCTGTACTAGCACTCACATGGAACAAATGGCCTCTAGCCTGGAGG
CTTGCTGAAGGCTGTATGCTGTGTTAATGCTGATGTCACGCTGCGTTTTGGCCTCTGACT
GACGCAGCGTGACCAGCATTAACACAGGACACAAGGCCTGTACTAGCACTCACATGGAA

-continued

CAAAATGGCCTCTAGCCTGGAGGCTTGCTGAAGGCTGTATGCTGTTACCTGGTTAACACA
TACACCGCTTTTGGCCTCTGACTGACGGTGTATGTGAACCAAGGTGAACAGGACACAAGGCC
TGTTACTAGCACTCACATGGAACAAATGGCCTCTCTAGAAT 3'

SEQ ID NO. 16 = SEQ ID NO. 1 + SEQ ID NO. 4
5' AATCAACCTCTGGATTACAAAATTTGTGAAAGATTGACTGGTATTCTTAACATATGTT
GCTCCTTTTACGCTATGTGGATACGCTGCTTTAATGCCTTTGTATCATGCTATTGCTTCC
CGTATGGCTTTTCAATTTCTCCTTGTATAAATCCTGGTTGCTGTCTCTTTATGAGGAG
TTGTGGCCCGTTGTGAGGCAACGTGGCGTGGTGTGCACTGTGTTTGCTGACGCAACCCCC
ACTGGTTGGGGCATTGCCACCACCTGTGAGCTCCTTTCCGGGACTTTGCTTTCCCCCTC
CCTATTGCCACGGCGGAATCATCGCCGCTGCCTTGCCCGCTGCTGGACAGGGGCTCGG
CTGTTGGGCACAGCAATTCGGTGGTGTGCGGGGAAATCATCGTCTTTCTTGCGTG
CTCGCCTGTGTTGCCACCTGGATTCTGCGCGGACGTCTTCTGCTACGTCCCTTCGGCC
CTCAATCCAGCGGACCTTCCTTCCCGCGGCTGCTGCGGCTCTGCGGCTCTTCGCGT
CTTCGCTTCGCGCTCAGACGAGTCGGATCTCCCTTTGGGCGCCTCCCCGCTAAGCTT
ATCGATACCGTCGAGATCTAACTTGTTTATTGACGCTTATAATGGTTACAAATAAGCAA
TAGCATCACAAATTTACAAATAAGCATTTTTTTCACTGCATTCTAGTTGTGGTTTGTC
CAAACCTCATCAATGTATCTTATCATGTCTGGATCTCGACCTCGACTAGAGCATGGCTACG
TAGATAAGTAGCATGGCGGTTAATCATTAACTACAAGGAACCCCTAGTGATGGAGTTGG
CCACTCCCTCTCTGCGCGCTCGCTCGCTCACTGAGGCGGGGACCAAGGTGCGCCGAC
GCCCCGGCTTTGCCCGGGCGGCTCAGTGAGCGAGCGAGCGCGCAGCTGGCGTAATAGCG
AAGAGGCCCGCACCGATCGCCCTTCCCAACAGTTGCGCAGCCTGAATGGCGAATGGCGAT
TCCGTTGCAATGGCTGGCGGTAATATTGTTCTGGATATTACCAGCAAGCCGATAGTTTG
AGTTCTTCTACTCAGGCAAGTGATGTTATTACTAATCAAAGAAGTATTGCGACAACGGTT
AATTTGCGTGATGGACAGACTCTTTTACTCGGTGGCCTCACTGATTATAAAAACTTCT
CAGGATTCTGGCGTACCGTTCTGTCTAAAATCCCTTTAATCGGCTCCTGTTTAGCTCC
CGCTCTGATTCTAACGAGGAAAGCACGTTATACGTGCTCGTCAAAGCAACCATAGTACGC
GCCCTGTAGCGGCGCATTAAGCGCGGCGGTGTGGTGGTTACGCGCAGCGTGACCGCTAC
ACTTGCCAGCGCCCTAGCGCCGCTCCTTTCTGCTTTCTTCCCTTCCTTTCTCGCCACGTT
CGCCGGCTTTCCCCGTCAAGCTCTAAATCGGGGGCTCCCTTAGGGTTCCGATTTAGTGC
TTTACGGCACCTCGACCCCAAAAACTTGATTAGGGTGATGGTTACGTAGTGGGCCATC
GCCCTGATAGACGGTTTTTTCGCCCTTTGACGTTGGAGTCCACGTTCTTTAATAGTGGACT
CTTGTTCCAACTGGAACAACACTCAACCTTATCTCGGTCTATTCTTTTGATTATAAGG
GATTTTGGCGATTTCGGCCTATTGGTTAAAAATGAGCTGATTAAACAAAAATTAACGC
GAATTTTAACAAATATTAACTTTACAATTTAAATATTGCTTATACAATCTTCTGTT
TTTGGGGCTTTTCTGATTATCAACCGGGTACATATGATTGACATGCTAGTTTACGATT
ACCGTTCATCGATTCTTGTGTTGCTCCAGACTCTCAGGCAATGACCTGATAGCCTTTGT
AGAGACCTCTCAAAATAGCTACCCCTCTCCGCATGAATTTATCAGCTAGAACGGTTGAA
TATCATATTGATGGTGATTGACTGTCTCCGGCTTCTCACCCGTTTGAATCTTTACCT
ACACATTACTCAGGCATTGCATTTAAAAATATAGAGGTTCTAAAAATTTTATCCTTGC
GTTGAAATAAAGGCTTCTCCCGCAAAGTATTACAGGTCATAATGTTTTTGGTACAACC

-continued

GATTTAGCTTTATGCTCTGAGGCTTTATTGCTTAATTTTGCTAATTCCTTGCCCTGCGCTG
TATGATTTATTGGATGTTGGAATTCCTGATGCGGTATTTTCTCCTTACGCATCTGTGCGG
TATTTACACCCGCATATGGTGCACCTCTCAGTACAATCTGCTCTGATGCCGCATAGTTAAG
CCAGCCCCGACACCCGCCAACACCCGCTGACGCGCCCTGACGGGCTTGTCTGCTCCCGGC
ATCCGCTTACAGACAAGCTGTGACCGTCTCCGGGAGCTGCATGTGTCTAGAGGTTTTTACC
GTCATCACCGAAACGCGCGAGACGAAAGGGCCTCGTGATACGCCATTTTTATAGGTTAA
TGTCATGATAATAATGGTTTCTTAGACGTCAGGTGGCACTTTTCGGGGAAATGTGCGCGG
AACCCTTATTTGTTTATTTTTCTAAATACATTCAAATATGTATCCGCTCATGAGACAATA
ACCTGATAAATGCTTCAATAATATTGAAAAGGAAGAGTATGAGTATCAACATTTCCG
TGTCGCCCTTATTCCTTTTTTGCGGCATTTTGCCCTTCCTGTTTTTGCTCAGCCAGAAAC
GCTGGTGAAAGTAAAAGATGCTGAAGATCAGTTGGGTGCACGAGTGGGTACATCGAACT
GGATCTCAACAGCGGTAAAGATCCTTGAGAGTTTTCGCCCCGAAGAAGCTTTTCCAATGAT
GAGCACTTTTAAAGTCTGCTATGTGGCGCGGTATTATCCCGTATTGACGCCGGGCAAGA
GCAACTCGGTGCGCGCATACACTATTCTCAGAATGACTTGGTTGAGTACTCACCAGTCAC
AGAAAAGCATCTTACGGATGGCATGACAGTAAGAGAATTATGCAGTGTGCCATAACCAT
GAGTGATAACACTGCGGCCAACTTACTTCTGACAACGATCGGAGGACCGAAGGAGCTAAC
CGCTTTTTTGACACAACATGGGGGATCATGTAACCTCGCCTTGATCGTTGGGAACCGAGCT
GAATGAAGCCATACCAAACGACGAGCGTGACACCACGATGCCTGTAGCAATGGCAACAAC
GTTGCGCAAACATTAACTGGCGAACTACTTACTCTAGCTTCCCGGCAACAATTAATAGA
CTGGATGGAGGCGGATAAAGTTGCAGGACCACTTCTGCGCTCGGCCCTTCCGGCTGGCTG
GTTTATTGCTGATAAATCTGGAGCCGTGAGCGTGGGTCTCGCGGTATCATTGCAGCACT
GGGGCCAGATGTAAGCCCTCCCGTATCGTAGTTATCTACACGACGGGAGTCAGGCAAC
TATGGATGAACGAAATAGACAGATCGCTGAGATAGGTGCCTCACTGATTAAGCATTGGTA
ACTGTCAGACCAAGTTTACTCATATATACTTTAGATTGATTTAAACCTTCATTTTAAATT
TAAAAGGATCTAGGTGAAGATCCTTTTTGATAATCTCATGACCAAAATCCCTTAACGTGA
GTTTTCTGTTCCACTGAGCGTCAGACCCGCTAGAAAAGATCAAAGGATCTTCTTGAGATCC
TTTTTTCTGCGCGTAATCTGCTGCTTGCAAAACAAAAAACCACCGCTACCAAGCGGTGGT
TTGTTTGCCGATCAAGAGCTACCAACTCTTTTCCGAAGGTAAGTGGCTTCAGCAGAGC
GCAGATACCAAATACTGTCCTTCTAGTGTAGCCGTAGTTAGGCCACCACTTCAAGAACTC
TGTCAGACCGCTACATACCTCGCTCTGCTAATCCTGTTACCAAGTGGCTGCTGCCAGTGG
CGATAAGTCGTGCTTACCGGTTGGACTCAAGACGATAGTTACCGGATAAGGCGCAGCG
GTCGGGCTGAACGGGGGTTCTGTGCACACAGCCAGCTTGGAGCGAACGACCTACACCGA
ACTGAGATACCTACAGCGTGAGCTATGAGAAAGCGCCACGCTTCCGAAGGGAGAAAGGC
GGACAGGTATCCGTAAGCGGAGGGTGGAAACAGGAGAGCGCACGAGGGAGCTTCCAGG
GGGAAACGCCCTGGTATCTTTATAGTCCTGTGCGGTTTCGCCACCTCTGACTTGAGCGTCG
ATTTTGTGATGCTCGTCAGGGGGCGGAGCCTATGGAACACGCCAGCAACGCGCCTT
TTTACGGTTCCTGGCCTTTTGCTGGCCTTTTGCTCACATGTTCTTTCTGCGTTATCCCC
TGATTCGTGGATAACCGTATTACCGCCTTTGAGTGAGCTGATACCGCTCGCCGAGCCG
AACGACCGAGCGCAGCGAGTCAGTGAGCGAGGAAGCGGAAGAGCGCCCAATACGCAAACC

-continued

GCCTCTCCCCGCGCGTTGGCCGATTCTTAATGCAGCAGCTGCGCGCTCGCTCGCTCACT
GAGGCCGCCCGGGCAAAGCCCGGGCGTCGGGCGACCTTTGGTCGCCCCGGCCTCAGTGAGC
GAGCGAGCGCGCAGAGAGGGAGTGGCCAACTCCATCACTAGGGGTTTCCTTGTAGTTAATG
ATTAACCCGCCATGTACTTATCTACGTAGCCATGCTCTAGGACATTGATTATTGACTAG
TGGAGTTCCGCGTTACATAACTTACGGTAAATGGCCGCTGGCTGACCGCCCAACGACC
CCCGCCCATTTGACGTCAATAATGACGTATGTTCCCATAGTAACGCCAATAGGGACTTTCC
ATTGACGTCAATGGGTGGAGTATTTACGGTAACTGCCCACTTGGCAGTACATCAAGTGT
ATCATATGCCAAGTACGCCCCCTATTGACGTCAATGACGGTAAATGGCCGCTGGCATT
ATGCCAGTACATGACCTTATGGGACTTTCCTACTTGGCAGTACATCTACGTATTAGTCA
TCGCTATTACCATGGTCGAGGTGAGCCCCACGTTCTGCTTCACTCTCCCCATCTCCCCC
CCTCCCCACCCCCAATTTTGTATTTATTTATTTTAAATTATTTTGTGCAGCGATGGGGG
CGGGGGGGGGGGGGGCGCGCCAGGCGGGGCGGGGCGGGGCGAGGGCGGGGCGGGGCG
GAGGCGGAGAGGTGCGGCGGCAGCCAATCAGAGCGGCGCTCCGAAAGTTTCCTTTTAT
GGCGAGGCGGCGGGCGGGCGGCCCTATAAAAAGCGAAGCGCGGGCGGGCGGGAGTCGC
TGCGCGCTGCCTTCGCCCCGTGCCCGCTCCGCCCGCCTCGCGCCGCCCGCCCGGCT
CTGACTGACCGCGTTACTAAAACAGGTAAGTCCGGCCTCCGCGCGGGTTTTGGCGCCTC
CCGCGGGCGCCCCCTCTCACGGCGAGCGCTGCCACGTGACGAGAGGGCGCAGCGAGC
GTCTGTATCCTTCGCCCCGACGCTCAGGACAGCGGCCGCTGCTCATAAGACTCGGCCT
TAGAACCCAGTATCAGCAGAAGGACATTTTAGGACGGGACTTGGGTGACTCTAGGGCAC
TGGTTTTCTTCCAGAGAGCGGAACAGGCGAGGAAAAGTAGTCCCTTCTCGGCGATTCTG
CGAGGGATCTCCGTGGGCGGTGAACGCCGATGATGCCTCTACTAACCATGTTTCATGTT
TTCTTTTTTTTTCTACAGGTCTGGGTGACGAACAGGGTACCGCCACCATGGCCACCGGC
TCTCGCACAAGCCTGCTGCTGGCTTTTCGGACTGCTGTGCCTGCCTTGGCTCCAGGAGGGC
TCCGCCGCTAGCATCGATACCGTCGCTATGTGCTGGAGGCTTGCTGAAGGCTGTATGCTG
ATTTCTTCTGTGCGCTTTCGCGCTTTTGGCCTCTGACTGACGGCGAAAGCGCAGGAAGA
AATCAGGACACAAGGCCTGTTACTAGCACTCACATGGAACAAATGGCCTCTAGCCTGGAG
GCTTGCTGAAGGCTGTATGCTGAGAATAATCAGATCAGCACGCTCGTTTTGGCCTCTGAC
TGACGAGCGTGCTGTGATTATTCTCAGGACACAAGGCCTGTTACTAGCACTCACATGGA
ACAAATGGCCTCTAGCCTGGAGGCTTGCTGAAGGCTGTATGCTGTAATCAGGCTGAATTC
AGATAGCGTTTTGGCCTCTGACTGACGCTATCTGAACAGCCTGATTACAGGACACAAGGC
CTGTTACTAGCACTCACATGGAACAAATGGCCTCTCTAGAAT 3'

SEQ ID NO. 17 = SEQ ID NO. 1 + SEQ ID NO. 5
5' AATCAACCTCTGGATTACAAAATTTGTGAAAGATTGACTGGTATTCTTAACATATGTT
GCTCCTTTTACGCTATGTGGATACGCTGCTTAAATGCCTTTGTATCATGCTATTGCTTCC
CGTATGGCTTTTCAATTTCTCCTCTGTATAAATCCTGGTTGCTGTCTCTTTATGAGGAG
TTGTGGCCCGTTGTGAGGCAACGTGGCGTGGTGTGCACTGTGTTTGTGACGCAACCCCC
ACTGGTTGGGGCATTGCCACCACCTGTGAGCTCCTTTCCGGGACTTTCGCTTTCCCCCTC
CCTATGCCACGGCGGAACCTATCGCCGCTGCCTTGCCCGCTGCTGGACAGGGGCTCGG
CTGTTGGGCACTGACAATTCCGTGGTGTGTCGGGAAATCATCGTCCTTTCTTGGCTG

-continued

CTCGCCTGTGTTGCCACCTGGATTCTGCGCGGACGTCCTTCTGCTACGTCCTTCGGCC
CTCAATCCAGCGGACCTTCCTTCCGCGGCCTGCTGCGGCTCTGCGGCTCTTCCGCGT
CTTCGCCTTCGCCCTCAGACGAGTCGGATCTCCCTTTGGGCCGCTCCCCGCTAAGCTT
ATCGATACCGTCGAGATCTAACTTGTTTATTGCAGCTTATAATGGTTACAAATAAGCAA
TAGCATCACAAATTTACAAATAAGCATTTTTTTCACTGCATTCTAGTTGTGGTTTGTG
CAAACCTCATCAATGTATCTTATCATGTCTGGATCTCGACCTCGACTAGAGCATGGCTACG
TAGATAAGTAGCATGGCGGTTAATCATTAACTACAAGGAACCCCTAGTGATGGAGTTGG
CCACTCCCCTCTGCGCGCTCGCTCGCTCACTGAGGCCGGGCGACAAAGGTCGCCGAC
GCCCCGGCTTTGCCCGGCGGCTCAGTGAGCGAGCGAGCGCGCAGCTGGCGTAATAGCG
AAGAGGCCCGCACCGATCGCCCTTCCCAACAGTTGCGCAGCCTGAATGGCGAATGGCGAT
TCCGTTGCAATGGCTGGCGGTAATATTGTTCTGGATATTACCAGCAAGCCGATAGTTTG
AGTTCTTCTACTCAGGCAAGTGATGTTATTACTAATCAAAGAAGTATTGCGACAACGGTT
AATTTGCGTGATGGACAGACTCTTTTACTCGGTGGCCTCACTGATTATAAAAACACTTCT
CAGGATTCTGGCGTACCGTTCTGTCTAAAATCCCTTTAATCGGCCTCCTGTTTAGCTCC
CGCTCTGATTCTAACGAGGAAAGCACGTTATACGTGCTCGTCAAAGCAACCATAGTACGC
GCCCTGTAGCGGCGCATTAAGCGCGGCGGTGTGGTGGTTACGCGCAGCGTGACCGCTAC
ACTTGCCAGCGCCCTAGCGCCCGCTCCTTTCTGCTTCTTCCCTTCCTTTCTGCCACGTT
CGCCGGCTTTCCCCGTCAAGCTCTAAATCGGGGGCTCCCTTAGGGTTCCGATTAGTGC
TTTACGGCACCTCGACCCCAAAAACTTGATTAGGGTGATGGTTCACGTAGTGGGCCATC
GCCCTGATAGACGTTTTCGCCCTTTGACGTTGGAGTCCACGTTCTTTAATAGTGGACT
CTTGTTCCAACTGGAACAACACTCAACCTTATCTCGGTCTATTCTTTGATTATAAGG
GATTTTGCCGATTTCGGCCTATTGGTTAAAAAATGAGCTGATTAAACAAAAATTAACGC
GAATTTTAACAAAATATTAACGTTTACAATTTAAATATTGCTTATACAATCTTCTGTT
TTTGGGGCTTTTCTGATTATCAACCGGGTACATATGATTGACATGCTAGTTTACGATT
ACCGTTCATCGATTCTCTTGTTCCTCAGACTCTCAGGCAATGACCTGATAGCCTTTGT
AGAGACCTCTCAAAATAGCTACCTCTCCGCGATGAATTTATCAGCTAGAACGGTTGAA
TATCATATGATGGTGATTGACTGTCTCCGGCCTTCTCACCCGTTTGAATCTTTACCT
ACACATTACTCAGGCATTGCATTTAAAAATATGAGGGTTCTAAAAATTTTATCCTTGC
GTTGAAATAAAGGCTTCTCCCGCAAAGTATTACAGGTCATAATGTTTTTGGTACAACC
GATTTAGCTTTATGCTCTGAGGCTTTATTGCTTAATTTTGCTAATCTTTGCCTTGCTG
TATGATTTATTGGATGTTGGAATTCCTGATGCGGTATTTCTCCTTACGCATCTGTGCGG
TATTTACACCCGATATGGTGACTCTCAGTACAATCTGCTCTGATGCCGATAGTTAAG
CCAGCCCCGACACCCGCCAACCCGCTGACGCGCCTGACGGGCTTGTCTGCTCCCGGC
ATCCGCTTACAGACAAGCTGTGACCGTCTCCGGGAGCTGCATGTGTGAGAGTTTTTACC
GTCATACCGAAACGCGGAGACGAAAGGGCTCGTGATACGCCTATTTTATAGGTTAA
TGTCATGATAATAATGGTTTCTTAGACGTCAGGTGGCACTTTTCGGGAAATGTGCGCGG
AACCCTTATTGTTTATTTTCTAAATACATTCAAATATGTATCCGCTCATGAGACAATA
ACCTTGATAAATGCTTCAATAATATTGAAAAAGGAAGAGTATGAGTATTCAACATTTCCG
TGTGCCCCATTATCCCTTTTTTGGCGCATTTTGCTTCCTGTTTTTGCTCACCCAGAAAC

-continued

GCTGGTGAAAGTAAAAGATGCTGAAGATCAGTTGGGTGCACGAGTGGGTACATCGAACT
GGATCTCAACAGCGGTAAGATCCTTGAGAGTTTTGCCCCGAAGAACGTTTTCCAATGAT
GAGCACTTTTAAAGTTCTGCTATGTGGCGCGGTATTATCCCGTATTGACGCCGGGCAAGA
GCAACTCGGTGCGCGCATACACTATTCTCAGAATGACTTGGTTGAGTACTCACCAGTCAC
AGAAAAGCATCTTACGGATGGCATGACAGTAAGAGAATTATGCAGTGTGCCATAACCAT
GAGTGATAACACTGCGGCCAACTTACTTCTGACAACGATCGGAGGACCGAAGGAGCTAAC
CGCTTTTTTGACACAACATGGGGGATCATGTAACTCGCCTTGATCGTTGGGAACCGGAGCT
GAATGAAGCCATACCAAACGACGAGCGTGACACCACGATGCCTGTAGCAATGGCAACAAC
GTTGCGCAAACTATTAAGTGGCGAACTACTTACTCTAGCTTCCCGGCAACAATTAATAGA
CTGGATGGAGGCGGATAAAGTTGCAGGACCACTTCTGCGCTCGGCCCTTCCGGCTGGCTG
GTTTATTGCTGATAAATCTGGAGCCGGTGAGCGTGGGTCTCGCGGTATCATTGCAGCACT
GGGGCCAGATGGTAAGCCCTCCCGTATCGTAGTTATCTACACGACGGGGAGTCAGGCAAC
TATGGATGAACGAAATAGACAGATCGCTGAGATAGGTGCCTCACTGATTAAGCATTGGTA
ACTGTCAGACCAAGTTTACTCATATATACTTTAGATTGATTTAAACCTTCATTTTAAATT
TAAAAGGATCTAGGTGAAGATCCTTTTTGATAATCTCATGACCAAAATCCCTTAACGTGA
GTTTTCTGTTCCACTGAGCGTCAGACCCCGTAGAAAAGATCAAAGGATCTTCTTGAGATCC
TTTTTTCTGCGCGTAATCTGCTGCTTGCAAAACAAAAAACCCGCTACCAGCGGTGGT
TTGTTTGCGGATCAAGAGCTACCAACTCTTTTCCGAAGGTAAGTGGCTTCAGCAGAGC
GCAGATACCAATACTGTCCTTCTAGTGTAGCCGTAGTTAGGCCACCCTTCAAGAACTC
TGTAGACCGCCTACATACCTCGCTCTGCTAATCCTGTACCAGTGGCTGCTGCCAGTGG
CGATAAGTCGTGCTTACCAGGTGGAATCAAGACGATAGTTACCGGATAAGGCGCAGCG
GTCGGGCTGAACGGGGGTTCTGTGCACACAGCCAGCTTGAGCGAACGACCTACACCGA
ACTGAGATACCTACAGCGTGAGCTATGAGAAAGCGCCACGCTTCCGAAGGGAGAAAGGC
GGACAGGTATCCGGTAAGCGGAGGTCGGAACAGGAGAGCGCACGAGGGAGCTTCCAGG
GGGAAACGCCCTGGTATCTTTATAGTCCTGTGCGGTTTCGCCACCTCTGACTTGAGCGTCG
ATTTTGTGATGCTCGTCAGGGGGCGGAGCCTATGGAACCGCCAGCAACGCGGCCCTT
TTTACGGTTCTGCGCCTTTTGCTGGCCTTTTGCTCACATGTTCTTCTGCGTTATCCCC
TGATTCTGTGGATAACCGTATTACCGCCTTTGAGTGAGCTGATACCGCTCGCCGAGCCG
AACGACCGAGCGCAGCGAGTCAGTGAGCGAGGAAGCGAAGAGCGCCCAATACGCAAACC
GCCTCTCCCCGCGCTTGGCCGATTCAATTAATGCAGCAGCTGCGCGCTCGCTCGCTCACT
GAGGCCGCCCGGGCAAAGCCCGGGCGTCGGGCGACCTTTGGTCGCCCGGCCTCAGTGAGC
GAGCGAGCGCGCAGAGAGGAGTGGCCAACTCCATCACTAGGGGTTCTTGTAGTTAATG
ATTAACCCGCCATGCTACTTATCTACGTAGCATGCTCTAGGACATTGATTATTGACTAG
TGGAGTTCGCGTTACATAACTTACGGTAAATGGCCCGCCTGGCTGACCGCCCAACGACC
CCCGCCATTGACGTCAATAATGACGTATGTTCCCATAGTAACGCCAATAGGGACTTTCC
ATTGACGTCAATGGGTGGAGTATTTACGGTAAACTGCCCACTTGGCAGTACATCAAGTGT
ATCATATGCCAAGTACGCCCCCTATTGACGTCAATGACGGTAAATGGCCCGCCTGGCATT
ATGCCAGTACATGACCTTATGGGACTTTCCTACTTGGCAGTACATCTACGTATTAGTCA
TCGCTATTACCATGGTCGAGGTGAGCCCCACGTTCTGCTTCACTCTCCCCATCTCCCCC

-continued

CCTCCCCACCCCCAATTTTGTATTTATTTATTTTAAATATTTTGTGCAGCGATGGGGG
CGGGGGGGGGGGGGCGCGCCAGGCGGGGCGGGGCGAGGGCGGGGCGGGGCG
GAGGCGGAGAGGTGCGGCGGCAGCCAATCAGAGCGGCGCTCCGAAAGTTTCCTTTAT
GGCGAGGCGGGCGGGCGGCCCTATAAAAAGCGAAGCGCGGGCGGGGAGTCGC
TGC GCGCTGCCTTCGCCCCGTGCCCGCTCCGCCCGCCTCGCGCCGCCCGCCCGCT
CTGACTGACCGGTTACTAAAACAGGTAAGTCCGGCCTCCGCGCGGGTTTTGGCGCCTC
CCGCGGGCGCCCCCTCTACGGCGAGCGCTGCCACGTCAGACGAAGGGCGCAGCGAGC
GTCTGATCCTTCGCGCGGACGCTCAGGACAGCGGCCCGCTGCTCATAAGACTCGGCCT
TAGAACC CAGTATCAGCAGAAGGACATTTTAGGACGGGACTTGGGTGACTCTAGGGCAC
TGGTTTTCTTCCAGAGAGCGAACAGGCGAGGAAAAGTAGTCCCTTCTCGGCGATTCTG
CGAGGGATCTCGTGGGCGGTGAACGCCGATGATGCCTCTACTAACCATGTTTCATGTT
TTCTTTTTTTTCTACAGGTCTTGGGTGACGAACAGGGTACCGCCACCATGGCCACCGGC
TCTCGCACAAGCCTGCTGCTGGCTTTCGGACTGCTGTGCCTGCCTTGGCTCCAGGAGGGC
TCCGCCCTAGCATCGATACCGTCGCTATGTGCTGGAGGCTTGCTGAAGGCTGTATGCTG
ATAATCACCGCTGCAGGTTTACGCTTTTGGCCTCTGACTGACGCTGAACCTGGCGGTGAT
TATCAGGACACAAGGCCTGTTACTAGCACTCACATGGAACAAATGGCCTCTAGCCTGGAG
GCTTGCTGAAGGCTGTATGCTGTTCAATCGCTATTGGTAATCGCTTTTGGCCTCTGAC
TGACGCGATTACCAACGCGATTGAACAGGACACAAGGCCTGTTACTAGCACTCACATGGA
ACAAATGGCCTCTAGCCTGGAGGCTTGCTGAAGGCTGTATGCTGTGATCATGCTGAAAA
GGTGACGTTTTTGGCCTCTGACTGACGTGCACCATTGAGCATGATCACAGGACACAAGGC
CTGTTACTAGCACTCACATGGAACAAATGGCCTCTCTAGAAT 3'

SEQ ID NO. 18 = SEQ ID NO. 1 + SEQ ID NO. 6

5' AATCAACCTCTGGATTACAAAATTTGTGAAAGATTGACTGGTATTCTTAATATGTT
GCTCCTTTTACGCTATGTGGATACGCTGCTTTAATGCCTTTGTATCATGCTATTGCTTCC
CGTATGGCTTTTCATTTTCTCCTTGTATAAATCCTGGTTGCTGTCTTTATGAGGAG
TTGTGGCCCGTTGTGAGGCAACGTGGCGTGGTGTGCACTGTGTTTGCTGACGCAACCCCC
ACTGGTTGGGGCATTGCCACCACCTGTCAGCTCCTTTCCGGGACTTTCGCTTTCCCCCTC
CCTATTGCCACGGCGGAACCTATCGCCGCTGCCTTGCCCGCTGCTGGACAGGGGCTCGG
CTGTTGGGCACTGACAATTCCGTGGTGTGTCGGGAAATCATCGTCCTTTCTTGGCTG
CTCGCCTGTGTTGCCACCTGGATTCTGCGGGGACGTCCTTCTGCTACGTCCTTTCGGCC
CTCAATCCAGCGGACCTTCTTCCCGCGGCTGCTGCCGGCTCTGCGGCTCTTCCGCGT
CTTCGCTTTCGCTCAGACGAGTCGGATCTCCCTTTGGGCGCCTCCCCGCTAAGCTT
ATCGATACCGTCGAGATCTAACTTGTTTATGTCAGCTTATAATGGTTACAAATAAGCAA
TAGCATCACAAATTCACAAATAAGCATTTTTTCACTGCATTCTAGTTGTGGTTTGTC
CAAACCTCATCAATGTATCTTATCATGTCTGGATCTCGACCTCGACTAGAGCATGGCTACG
TAGATAAGTAGCATGGCGGTTAATCATTAACACAAGGAACCCCTAGTGATGGAGTTGG
CCACTCCCTCTCTGCGCGCTCGCTCGCTCACTGAGGCCGGGCGACCAAGGTCGCCCAGC
GCCCCGGCTTTGCCGGGCGGCTCAGTGAGCGAGCGAGCGCAGCTGGCGTAATAGCG
AAGAGGCCCGCACCAGTCGCCCTTCCCAACAGTTGCGCAGCCTGAATGGCGAATGGCGAT
TCCGTTGCAATGGCTGGCGGTAATATTGTTCTGGATATTACCAGCAAGGCCGATAGTTTG

-continued

AGTTCTTCTACTCAGGCAAGTGATGTTATTACTAATCAAAGAAGTATTGCGACAACGGTT
AATTTGCGTGATGGACAGACTCTTTTACTCGGTGGCCTCACTGATTATAAAAACACTTCT
CAGGATTCTGCGGTACCGTTCTGTCTAAAATCCCTTTAATCGGCCTCCTGTTTAGCTCC
CGCTCTGATTCTAACGAGGAAAGCACGTTATACGTGCTCGTCAAAGCAACCATAGTACGC
GCCCTGTAGCGGCGCATTAAGCGCGGGGTGTGGTGGTTACGCGCAGCGTGACCGCTAC
ACTTGCCAGCGCCCTAGCGCCCGCTCCTTCGCTTTCTTCCTTCCTTTCTCGCCACGTT
CGCCGGCTTTCCCGTCAAGCTCTAAATCGGGGGCTCCCTTAGGGTTCCGATTTAGTGC
TTTACGGCACCTCGACCCCAAAAACTTGATTAGGGTGATGGTTCACGTAGTGGGCCATC
GCCCTGATAGACGTTTTTCGCCCTTTGACGTTGGAGTCCACGTTCTTAAATAGTGGACT
CTTGTTCCAACTGGAACAACACTCAACCTATCTCGGTCTATTCTTTGATTATAAGG
GATTTTGCCGATTTTCGGCCTATTGGTTAAAAATGAGCTGATTAAACAAAATTTAACGC
GAATTTTAAACAAATATTAACGTTTACAATTTAAATATTTGCTTATACAATCTTCTGT
TTTGGGGCTTTTCTGATTATCAACCGGGTACATATGATTGACATGCTAGTTTACGATT
ACCGTTCATCGATTCTCTGTTTGCTCCAGACTCTCAGGCAATGACCTGATAGCCTTTGT
AGAGACCTCTCAAAATAGCTACCTCTCCGGCATGAATTTATCAGCTAGAACGGTTGAA
TATCATATTGATGGTGATTGACTGTCTCCGGCTTTCTCACCCTTTGAATCTTACCT
ACACATTACTCAGGCATTGCATTTAAAAATATATGAGGGTTCTAAAAATTTTATCCTTGC
GTTGAAATAAAGGCTTCTCCCGCAAAGTATTACAGGGTCATAATGTTTTTGGTACAACC
GATTTAGCTTTATGCTCTGAGGCTTTATTGCTTAATTTTGCTAATTTCTTGCCTTGCCTG
TATGATTTATTGGATGTTGGAATTCCTGATGCGGTATTTCTCCTTACGCATCTGTGCGG
TATTTACACCCGATATGGTGCACTCTCAGTACAATCTGCTCTGATGCCGATAGTTAAG
CCAGCCCCGACACCCGCCAACCCGCTGACGCGCCCTGACGGGCTTGTCTGCTCCCGGC
ATCCGCTTACAGACAAGCTGTGACCGTCTCCGGGAGCTGCATGTGTGAGAGTTTTTACC
GTCATCACCGAAACGCGGAGACGAAAGGGCTCGTGATACGCCATTTTTATAGGTTAA
TGTCATGATAAATGTTTCTTAGACGTGAGGTGGCACTTTTCGGGAAATGTGCGCGG
AACCCTTATTGTTTATTTTCTAAATACATTCAAATATGTATCCGCTCATGAGACAATA
ACCTGATAAATGCTTCAATAATATTGAAAAGGAAGAGTATGAGTATTCAACATTTCCG
GTGCGCCTTATTCCTTTTTTTCGGCATTTTGCCTTCTGTTTTTGTCTACCCAGAAAC
GCTGGTGAAAGTAAAAGATGCTGAAGATCAGTTGGGTGCACGAGTGGGTTACATCGAACT
GGATCTCAACAGCGGTAGATCCTTGAGAGTTTTTCGCCCGAAGAACGTTTTCCAATGAT
GAGCACTTTTAAAGTCTGCTATGTGGCGCGGTATTATCCCGTATTGACGCCGGGCAAGA
GCAACTCGGTGCGCGCATACACTATTCTCAGAATGACTTGGTTGAGTACTCACCAGTCAC
AGAAAAGCATCTTACGGATGGCATGACAGTAAGAGAATTATGCAGTGCTGCCATAACCAT
GAGTGATAACACTGCGGCCAACTTACTTCTGACAACGATCGGAGGACCGAAGGAGCTAAC
CGCTTTTTTGACACAACATGGGGGATCATGTAACTCGCCTTGATCGTTGGGAACCGGAGCT
GAATGAAGCCATACCAAACGACGAGCGTGACACCACGATGCCTGTAGCAATGGCAACAAC
GTTGCGCAAACTATTAAGTGGCGAACTACTTACTCTAGCTTCCCGGCAACAATTAATAGA
CTGGATGGAGGCGGATAAAGTTGCAGGACCACTTCTGCGCTCGGCCCTTCGGCTGGCTG
GTTTATTGCTGATAAATCTGGAGCCGTGAGCGTGGGTCTCGCGGTATCATTCAGCACT

-continued

GGGGCCAGATGGTAAGCCCTCCCGTATCGTAGTTATCTACACGACGGGAGTCAGGCAAC
TATGGATGAACGAAATAGACAGATCGCTGAGATAGGTGCCCTCACTGATTAAGCATTGGTA
ACTGTCAGACCAAGTTTACTCATATATACTTTAGATTGATTTAAACTTCATTTTTTAATT
TAAAAGGATCTAGGTGAAGATCCTTTTGGATAATCTCATGACCAAAATCCCTTAACGTGA
GTTTTTCGTTCCACTGAGCGTCAGACCCCGTAGAAAAGATCAAAGGATCTTCTTGAGATCC
TTTTTTTCTGCGCGTAATCTGCTGCTTGCAAAACAAAAAACCCGCTACCAGCGGTGGT
TTGTTTGCCGGATCAAGAGCTACCAACTCTTTTCCGAAGGTAACGGCTTCAGCAGAGC
GCAGATACCAAATACTGTCCTTCTAGTGTAGCCGTAGTTAGGCCACCACCTCAAGAACTC
TGTAGCACCGCTACATACCTCGCTCTGCTAATCCTGTTACCAGTGGCTGCTGCCAGTGG
CGATAAGTCGTCTTACCAGGTGGAATCAAGACGATAGTTACCGGATAAGGCGCAGCG
GTCGGGCTGAACGGGGGGTTCGTGCACACAGCCAGCTTGAGCGAACGACCTACACCGA
ACTGAGATACCTACAGCGTGAGCTATGAGAAAGCGCCACGCTTCCGAAGGAGAAAGGC
GGACAGGTATCCGGTAAGCGGCAGGGTCGGAACAGGAGAGCGCACGAGGGAGCTTCCAGG
GGGAAACGCCTGGTATCTTTATAGTCCTGTCGGGTTTCGCCACCTCTGACTTGAGCGTCG
ATTTTGTGATGCTCGTCAGGGGGCGGAGCCTATGGAAAACGCCAGCAACGCGGCCTT
TTTACGGTTCCTGGCCTTTTGCTGGCCTTTTGCTCACATGTTCTTTCTGCGTTATCCCC
TGATTCTGTGGATAACCGTATTACCGCCTTTGAGTGAGCTGATACCGCTCGCCGAGCCG
AACGACCGAGCGCAGCGAGTCAGTGAGCGAGGAAGCGGAAGAGCGCCCAATACGCAAAAC
GCCTCTCCCCGCGCTTGCGCGATTCTTAATGCAGCAGCTGCGCGCTCGCTCGCTCACT
GAGGCCGCCCGGGCAAAGCCCGGGCGTCGGGCGACCTTTGGTCGCCCGGCCTCAGTGAGC
GAGCGAGCGCGCAGAGAGGAGTGGCCAACTCCATCACTAGGGGTTCTTTGTAGTTAATG
ATTAACCCGCCATGCTACTTATCTACGTAGCCATGCTCTAGGACATTGATTATTGACTAG
TGGAGTTCGCGTTACATAACTTACGGTAAATGGCCCGCCTGGCTGACCGCCCAACGACC
CCCGCCCATTGACGTCAATAATGACGTATGTTCCCATAGTAACGCCAATAGGGACTTTCC
ATTGACGTCAATGGGTGGAGTATTTACGGTAACTGCCCACTTGGCAGTACATCAAGTGT
ATCATATGCCAAGTACGCCCCCTATTGACGTCAATGACGGTAAATGGCCCGCCTGGCATT
ATGCCAGTACATGACCTTATGGGACTTTCCTACTTGCCAGTACATCTACGTATTAGTCA
TCGCTATTACCATGGTCGAGGTGAGCCCCACGTTCTGCTTCACTCTCCCCATCTCCCCC
CCTCCCCACCCCCAATTTTGTATTTATTTATTTTAAATTATTTTGTGCAGCGATGGGGG
GGGGGGGGGGGGGGCGCGCCAGCGGGGGGGGGGGGGGGCGAGGGGGGGGGGGGGGG
AGGCGGAGAGGTGCGGGCGCAGCCAATCAGAGCGCGCGCTCCGAAAGTTTCTTTTATG
GCGAGGCGGCGGGCGGGCGGCCCTATAAAAAGCGAAGCGCGCGGGCGGGAGTCGCT
GCGCGCTGCTTTCGCCCCGTGCCCCGCTCCGCGCGCGCTCGCGCGCCCCCGCGGCTC
TGACTGACCGCTTACTAAAACAGGTAAGTCCGGCTCCGCGCGGGTTTGGCGCTCC
CGCGGGCGCCCCCTCTCACGGCGAGCGCTGCCACGTGAGACGAAGGGCGCAGCGAGCG
TCCTGATCTTCCGCCCGACGCTCAGGACAGCGGCCGCTGCTCATAAGACTCGGCCTT
AGAACCCAGTATCAGCAGAAGGACATTTTAGGACGGGACTTGGGTGACTCTAGGGCACT
GGTTTTCTTTCCAGAGAGCGGAACAGGCGAGGAAAAGTAGTCCCTTCTCGGCGATTCTGC
GGAGGATCTCCGTGGGGCGGTGAACGCCGATGATGCCTCTACTAACCATGTTTCATGTTT

-continued

TCTTTTTTTTCTACAGGTCCTGGGTGACGAACAGGGTACCGCCACCATGGCCACCGGCT
CTCGCACAAAGCCTGCTGCTGGCTTTCGGACTGCTGTGCCTGCCTTGGCTCCAGGAGGGCT
CCGCCGCTAGCATCGATACCGTCGCTATGTGCTGGAGGCTTGCTGAAGGCTGTATGCTGA
GGTAATATCCTGACGCTCAGCCGTTTTGGCCTCTGACTGACGGCTGAGCGTGGATATTAC
CTCAGGACACAAGGCCTGTACTAGCACTCACATGGAACAAATGGCCTCTAGCCTGGAGG
CTTGCTGAAGGCTGTATGCTGTACAGAATCAGATAATCAGCGCGTTTTGGCCTCTGACT
GACGCGCTGATTCTGATTCTGTACAGGACACAAGGCCTGTACTAGCACTCACATGGAA
CAAATGGCCTCTAGCCTGGAGGCTTGCTGAAGGCTGTATGCTGTATGTTAAAAATTCTG
CTGCGCGTTTTGGCCTCTGACTGACGCGCAGCGAATTTAAACATGACAGGACACAAGGCC
TGTTACTAGCACTCACATGGAACAAATGGCCTCTCTAGAAT 3'

SEQ ID NO. 19 = SEQ ID NO. 1 + SEQ ID NO. 7
5' AATCAACCTCTGGATTACAAAATTTGTGAAAGATTGACTGGTATTCTTAACATATGTT
GCTCCTTTTACGCTATGTGGATACGCTGCTTTAATGCCTTTGTATCATGCTATTGCTTCC
CGTATGGCTTTTATTTCTCCTTGTATAAATCCTGGTTGCTGTCTTTATGAGGAG
TTGTGGCCCGTTGTGAGCAACGTGGCGTGGTGTGCACTGTGTTTGCTGACGCAACCCCC
ACTGGTTGGGGCATTGCCACCACCTGTGAGCTCCTTTCCGGGACTTTCGCTTTCCCCCTC
CCTATTGCCACGGCGGAACCTCATCGCCGCTGCCTTGCCCGCTGCTGGACAGGGGCTCGG
CTGTTGGGCACTGACAATTCCGTGGTGTGTCGGGGAATCATCGTCCTTTCTTGCGTG
CTCGCCTGTGTTGCCACCTGGATTCTGCGCGGACGTCCTTCTGCTACGTCCTTCGGCC
CTCAATCCAGCGGACCTTCTTCCCGCGGCTGCTGCGGCTCTGCGGCTCTTCCGCGT
CTTCGCTTCGCGCTCAGACGAGTCGGATCTCCCTTTGGGCGCCTCCCCGCTAAGCTT
ATCGATACCGTCGAGATCTAACTTGTTTATTGCAGCTTATAATGGTTACAAATAAGCAA
TAGCATCACAAATTTACAAATAAAGCATTTTTTCACTGCATTCTAGTTGTGGTTTGTC
CAAACCTCATATGTATCTTATCATGTCTGGATCTCGACCTCGACTAGAGCATGGCTACG
TAGATAAGTAGCATGGCGGTTAATCATTAACTACAAGGAACCCCTAGTGATGGAGTTGG
CCACTCCCTCTCTGCGCGCTCGCTCGCTCACTGAGGCCGGGCGACCAAGGTGCGCCGAC
GCCCCGGGCTTTGCCCGGGCGGCTCAGTGAGCGAGCGAGCGCAGCTGGCGTAATAGCG
AAGAGGCCCGCACCGATCGCCCTTCCCAACAGTTGCGCAGCCTGAATGGCGAATGGCGAT
TCCGTTGCAATGGCTGGCGGTAATATTGTTCTGGATATTACCAGCAAGCCGATAGTTTG
AGTTCTTCTACTCAGGCAAGTGATGTTATTACTAATCAAAGAAGATTGCGACAACGGTT
AATTTGCGTGATGGACAGACTCTTTTACTCGGTGGCCTCACTGATTATAAAAACACTTCT
CAGGATTCTGGCGTACCGTTCCTGTCTAAAATCCCTTTAATCGGCCTCCTGTTTAGCTCC
CGCTCTGATTCTAACGAGGAAAGCACGTTATACGTGCTCGTCAAAGCAACCATAGTACGC
GCCCTGTAGCGGCGCATTAAGCGCGGCGGTGTGGTGGTTACGCGCAGCGTGACCGCTAC
ACTTGCCAGCGCCCTAGCGCCGCTCCTTTCTGCTTTCTTCCCTTCTTCTCGCCACGTT
CGCCGCTTTCCCCGTCAGCTCTAAATCGGGGGCTCCCTTTAGGGTTCCGATTTAGTGC
TTTACGGCACCTCGACCCCAAAAACTTGATTAGGGTGATGGTTCACGTAGTGGGCCATC
GCCCTGATAGACGGTTTTTCGCCCTTTGACGTTGGAGTCCACGTTCTTTAATAGTGGACT
CTTGTTCCAACTGGAACAACACTCAACCCATCTCGGTCTATTCTTTGATTATAAAGG

-continued

GATTTTGGCCGATTTCGGCCTATTGGTTAAAAAATGAGCTGATTTAACAAAAATTTAACGC
GAATTTTAACAAAATATTAACTTTTACAATTTAAATATTGCTTATACAATCTTCTCTGT
TTTGGGGCTTTTCTGATTATCAACCGGGTACATATGATTGACATGCTAGTTTACGATT
ACCGTTCATCGATTCTCTTGTGCTCCAGACTCTCAGGCAATGACCTGATAGCCTTTGT
AGAGACCTCTCAAAATAGCTACCTCTCCGGCATGAATTTATCAGCTAGAACGGTTGAA
TATCATATTGATGGTGATTGACTGTCTCCGGCCTTCTCAGGCTTTGAATCTTTACCT
ACACATTACTCAGGCATTGCATTTAAAAATATATGAGGGTTCTAAAAATTTTATCCTTGC
GTTGAAATAAAGGCTTCTCCCGAAAAGTATTACAGGGTCATAATGTTTTTGGTACAACC
GATTTAGCTTTATGCTCTGAGGCTTTATTGCTTAATTTTGCTAATCTTTGCCCTGCGCTG
TATGATTTATTGGATGTTGGAATTCCTGATGCGGTATTTTCTCCTTACGCATCTGTGCGG
TATTTACACCCGCATATGGTGCCTCTCAGTACAATCTGCTCTGATGCGCATAGTTAAG
CCAGCCCCGACACCCGCCAACACCCGCTGACGCGCCCTGACGGGCTTGTCTGCTCCCGGC
ATCCGCTTACAGACAAGCTGTGACCGTCTCCGGGAGCTGCATGTGTGACAGGTTTTTACC
GTCATCACCGAAACGCGCGAGACGAAAGGGCCTCGTGATACGCCATTTTTATAGGTTAA
TGTCATGATAAATAGTTTCTTAGACGTGAGGTGGCACTTTTGGGGAAATGTGCGCGG
AACCCTTATTGTTTTATTTTCTAAATACATTCAAATATGTATCCGCTCATGAGACAATA
ACCTGATAAATGCTTCAATAATATTGAAAAAGGAAGAGTATGAGTATTCAACATTTCCG
TGTCGCCCTTATTCCTTTTTTGGCGCATTTTGCCTTCTGTTTTTGCTCAGCCAGAAAC
GCTGGTGAAAGTAAAAGATGCTGAAGATCAGTTGGGTGCACGAGTGGGTACATCGAACT
GGATCTCAACAGCGGTAAAGATCCTTGAGAGTTTTCGCCCCGAAGAAGCTTTTCAATGAT
GAGCACTTTTAAAGTTCTGCTATGTGGCGCGGTATTATCCCGTATTGACGCCGGGCAAGA
GCAACTCGGTGCGCGCATACACTATTCTCAGAATGACTTGGTTGAGTACTCACCAGTCAC
AGAAAGCATCTTACGGATGGCATGACAGTAAGAGAATTATGCAGTGTGCCATAACCAT
GAGTGATAACACTGCGGCCAACTTACTTCTGACAACGATCGGAGGACCGAAGGAGCTAAC
CGCTTTTTTGACACAACATGGGGGATCATGTAACCTCGCCTTGATCGTTGGGAACCGGAGCT
GAATGAAGCCATACCAAACGACGAGCGTGACACCACGATGCCTGTAGCAATGGCAACAAC
GTTGCGCAAACTATTAAGTGGCGAACTACTTACTCTAGCTTCCCGGCAACAATTAATAGA
CTGGATGGAGGCGGATAAAGTTGCAGGACCCTTCTGCGCTCGGCCCTTCCGGCTGGCTG
GTTTATTGCTGATAAATCTGGAGCCGGTGAGCGTGGGTCTCGCGGTATCATTCAGCACT
GGGGCCAGATGGTAAGCCCTCCCGTATCGTAGTTATCTACACGACGGGAGTCAGGCAAC
TATGGATGAACGAAATAGACAGATCGCTGAGTAGGTGCCTCACTGATTAAGCATTGGTA
ACTGTCAGACCAAGTTTACTCATATATACTTTAGATTGATTTAAACTTCATTTTAAAT
TAAAAGGATCTAGGTGAAGATCCTTTTTGATAATCTCATGACCAAAATCCCTTAACGTGA
GTTTTCTGTTCCACTGAGCGTCAGACCCGCTAGAAAAGATCAAAGGATCTTCTTGAGATCC
TTTTTTCTGCGCGTAATCTGCTGCTTGCAACAAAAAACACCGCTACCGAGCGGTGGT
TTGTTTGGCGGATCAAGAGCTACCAACTCTTTTTCCGAAGGTAAGTGGCTTCAGCAGAGC
GCAGATACCAATACTGTCTTCTAGTGTAGCCGTAGTTAGGCCACCCTTCAAGAACTC
TGTCAGCCGCTACATACCTCGCTCTGCTAATCTGTGTACAGTGGCTGCTGCCAGTGG
CGATAAGTCGTCTTACCGGGTGGACTCAAGACGATAGTTACCGGATAAGGCGCAGCG

-continued

GTCGGGCTGAACGGGGGGTTCGTGCACACAGCCCAGCTTGGAGCGAACGACCTACACCGA
ACTGAGATACCTACAGCGTGAGCTATGAGAAAGCGCCACGCTTCCCGAAGGGAGAAAGGC
GGACAGGTATCCGGTAAGCGGCAGGGTCGGAACAGGAGAGCGCACGAGGGAGCTTCCAGG
GGGAAACGCCTGGTATCTTTATAGTCCTGTGCGGGTTTCGCCACCTCTGACTTGAGCGTCG
ATTTTGTGATGCTCGTCAGGGGGCGGAGCCTATGGAACAGCCAGCAACGCGGCCTT
TTTACGGTTCCTGGCCTTTTGCTGGCCTTTTGCTCACATGTTCTTTCCTGCGTTATCCCC
TGATTCTGTGGATAACCGTATTACCGCCTTTGAGTGAGCTGATACCGCTCGCCGAGCCG
AACGACCGAGCGCAGCGAGTCACTGAGCGAGGAAGCGGAAGAGCGCCCAATACGCAAAAC
GCCTCTCCCCGCGCTTGGCCGATTCTTAATGCAGCAGCTGCGCGCTCGCTCGCTCACT
GAGGCCCGCCGGGCAAAGCCCGGGCGTCGGGCGACCTTTGGTCGCCCAGGCTCAGTGAGC
GAGCGAGCGCGCAGAGAGGAGTGGCCAACTCCATCACTAGGGGTTCTTGTAGTTAATG
ATTAACCCGCCATGCTACTTATCTACGTAGCCATGCTCTAGGACATTGATTATGACTAG
TGGAGTTCGCGTTACATAACTTACGGTAAATGGCCGCTGGCTGACCGCCCAACGACC
CCCGCCATTGACGTCATAATGACGTATGTTCCCATAGTAACGCCAATAGGGACTTTCC
ATTGACGTCAATGGGTGGAGTATTTACGGTAACTGCCCACTTGGCAGTACATCAAGTGT
ATCATATGCCAAGTACGCCCCCTATTGACGTCAATGACGGTAAATGGCCGCTGGCATT
ATGCCAGTACATGACCTTATGGGACTTTCCTACTTGGCAGTACATCTACGTATTAGTCA
TCGCTATTACCATGGTCGAGGTGAGCCCCACGTTCTGCTTCACTCTCCCCATCTCCCCC
CCTCCCCACCCCCAATTTGTATTTATTTATTTTAAATTATTTGTGTCAGCGATGGGG
CGGGGGGGGGGGGGCGCGCCAGCGGGGGGGGGGGGGGGGGGGGGGGGGGGGGGGGGGG
GAGGCGGAGAGGTGCGGCGGCAGCCAATCAGAGCGGCGCGCTCCGAAAGTTTCCTTTAT
GGCGAGGCGGGCGGGCGGGCGGCCCTATAAAAAGCGAAGCGCGGGCGGGCGGGAGTCGC
TGCGCGCTGCCTTCGCCCCGTGCCCGCTCCGCCGCGCTCGCGCCCGCGCCCCCGGT
CTGACTGACCGCGTTACTAAAACAGGTAAAGTCCGGCTCCGCGCGGGTTTTGGCGCCTC
CCGCGGGCGCCCCCTCTACGGCGAGCGCTGCCACGTGAGCGAAGGGCGCAGCGAGC
GTCTGATCCTTCCGCCCGGACGCTCAGGACAGCGGCCGCTGCTCATAAGACTCGGCCT
TAGAACCCAGTATCAGCAGAAGGACATTTTAGGACGGGACTTGGGTGACTCTAGGGCAC
TGGTTTTCTTCCAGAGAGCGGAACAGGCGAGGAAAAGTAGTCCCTTCTCGCGATTCTG
CGGAGGATCTCGTGGGCGGTGAACGCCGATGATGCCTCTACTAACCATGTTTCATGTT
TTCTTTTTTTTCTACAGGTCTGGGTGACGAACAGGTACCGCCACCATGGCCACCGGC
TCTCGCACAGCCTGCTGCTGGCTTTCGGACTGCTGTGCCTGCCTTGGCTCCAGGAGGGC
TCCGCGCTAGCATCGATACCGTCGCTATGTGCTGGAGGCTTGCTGAAGGCTGTATGCTG
ATGAATCGGGTTGTCTGAATCGCGTTTTGGCCTCTGACTGACGCGATTGAGAACCCGATT
CATCAGGACACAAGGCTGTTACTAGCACTCACATGGAACAAATGGCCTCTAGCCTGGAG
GCTTGTGAAGGCTGTATGCTGAACACTTTGCTATATCATCTGCGTTTTGGCCTCTGAC
TGACGAGGATGATAGCAAAGTGTTCAGGACACAAGGCTGTACTAGCACTCACATGGA
ACAAATGGCCTCTAGCCTGGAGGCTTGCTGAAGGCTGTATGCTGTTCTGTTGTTAAGCT
AATGCTCGTTTTGGCCTCTGACTGACGAGCATTAGCAACGAACAGAACAGGACACAAGGC
CTGTTACTAGCACTCACATGGAACAAATGGCCTCTCTAGAAT 3'

-continued

SEQ ID NO. 20 = SEQ ID NO. 1 + SEQ ID NO. 8
5' AATCAACCTCTGGATTACAAAATTTGTGAAAGATTGACTGGTATTCTTAACATATGTT
GCTCCTTTTACGCTATGTGGATACGCTGCTTTAATGCCTTTGTATCATGCTATTGCTTCC
CGTATGGCTTTTCATTTTCTCCTCTGTATAAATCCTGGTTGCTGTCTCTTTATGAGGAG
TTGTGGCCCGTTGTGAGCAACGTGGCGTGGTGTGCACTGTGTTTGCTGACGCAACCCCC
ACTGGTTGGGGCATTGCCACCACCTGTCAGCTCCTTTCCGGGACTTTGCGTTTCCCCCTC
CCTATTGCCACGGCGGAATCATCGCCGCTGCCTTGCCCGCTGCTGGACAGGGGCTCGG
CTGTTGGGCACTGACAATTCCGTGGTGTGTCGGGGAATCATCGTCCTTTCTTGCGTG
CTCGCCTGTGTTGCCACCTGGATTCTGCGCGGGACGTCTTCTGCTACGTCCTTCCGGCC
CTCAATCCAGCGGACCTTCCTTCCGCGGCTGCTGCGGCTCTGCGGCTCTTCCGCGT
CTTCGCTTCGCGCTCAGACGAGTCGGATCTCCCTTTGGGCGCCTCCCCGCTAAGCTT
ATCGATACCGTCGAGATCTAACTTGTTTATTGCAGCTTATAATGGTTACAAATAAGCAA
TAGCATCACAAATTTACAAATAAGCATTTTTTTCACTGCATTCTAGTTGTGTTTGTGTC
CAAACCTCATCAATGTATCTTATCATGTCTGGATCTCGACCTCGACTAGAGCATGGCTACG
TAGATAAGTAGCATGGCGGTTAATCATTAACTACAAGGAACCCCTAGTGATGGAGTTGG
CCACTCCCTCTCTGCGCGCTCGCTCGCTCACTGAGGCGGGCGACCAAAGGTCGCCCCGAC
GCCCCGGCTTTGCCCGGGCGGCTCAGTGAGCGAGCGAGCGCGCAGCTGGCGTAATAGCG
AAGAGGCCCGCACCGATCGCCCTTCCCAACAGTTGCGCAGCCTGAATGGCGAATGGCGAT
TCCGTTGCAATGGCTGGCGGTAATATTGTTCTGGATATTACCAGCAAGCCGATAGTTTG
AGTTCTTCTACTCAGGCAAGTGATGTTATTACTAATCAAAGAAGTATTGCGACAACGGTT
AATTTGCGTGATGGACAGACTCTTTTACTCGGTGGCCTCACTGATTATAAAAACACTTCT
CAGGATTCTGGCGTACCGTTCTGTCTAAAATCCCTTTAATCGGCTCCTGTTTAGCTCC
CGCTCTGATTCTAACGAGGAAAGCACGTTATACGTGCTCGTCAAAGCAACCATAGTACGC
GCCCTGTAGCGGCGCATTAAGCGCGGGGTGTGGTGGTTACGCGCAGCGTGACCGCTAC
ACTTGCCAGCGCCCTAGCGCCGCTCCTTTCTGCTTTCTTCCCTTCCTTTCTCGCCACGTT
CGCCGCTTTCCCCGTCAAGCTCTAAATCGGGGGCTCCCTTAGGGTTCCGATTAGTGC
TTTACGGCACCTCGACCCCAAAAACTTGATTAGGGTGATGGTTACGTAGTGGGCCATC
GCCCTGATAGACGGTTTTTTCGCCCTTTGACGTTGGAGTCCACGTTCTTTAATAGTGGACT
CTTGTTCCAACTGGAACAACACTCAACCTATCTCGGTCTATTCTTTTGATTATAAGG
GATTTTGCCGATTTCGGCCTATTGGTTAAAAAATGAGCTGATTTAACAAAAATTTAACGC
GAATTTTAACAAAATATTAACGTTTACAATTTAAATATTGCTTATACAATCTTCTGTT
TTTGGGGCTTTTCTGATTATCAACCGGGGTACATATGATTGACATGCTAGTTTACGATT
ACCGTTCATCGATTCTCTTGTGTGCTCCAGACTCTCAGGCAATGACCTGATAGCCTTTGT
AGAGACCTCTCAAAATAGCTACCCCTCTCCGCATGAATTTATCAGCTAGAACGGTTGAA
TATCATATTGATGGTGATTGACTGTCTCCGGCCTTCTCACCCGTTTGAATCTTTACCT
ACACATTACTCAGGCATTGCATTTAAAAATATAGAGGGTTCTAAAAATTTTATCCTTGC
GTTGAAATAAGGCTTCTCCCGCAAAGTATTACAGGGTCATAATGTTTTTGGTACAACC
GATTTAGCTTTATGCTCTGAGGCTTTATTGCTTAATTTTGCTAATCTTTGCTTGCCTG
TATGATTTATTGGATGTTGGAATTCCTGATGCGGTATTTCTCCTTACGCATCTGTGCGG
TATTTACACCCGATATGGTGCCTCTCAGTACAATCTGCTCTGATGCCGCATAGTTAAG

-continued

CCAGCCCCGACACCCGCCAACACCCGCTGACGCGCCCTGACGGGCTTGTCTGCTCCCGGC
ATCCGCTTACAGACAAGCTGTGACCGTCTCCGGGAGCTGCATGTGTGTCAGAGGTTTTACCC
GTCATCACCGAAACGCGCGAGACGAAAGGGCCTCGTGATACGCCATTTTTATAGGTAA
TGTCTAGATAATAATGGTTTCTTAGACGTGAGGTGGCACTTTTCGGGGAATGTGCGCGG
AACCCTTATTTGTTTATTTTTCTAAATACATTCAAATATGTATCCGCTCATGAGACAATA
ACCTGATAAATGCTTCAATAATATTGAAAAAGGAAGAGTATGAGTATTCACATTTCCG
TGTGCGCCTTATTCCTTTTTTTCGCGCATTTTGCCTTCCTGTTTTTGTCTACCCAGAAAC
GCTGGTGAAAGTAAAAGATGCTGAAGATCAGTTGGGTGCACGAGTGGGTACATCGAACT
GGATCTCAACAGCGGTAGATCCTTGAGAGTTTTCGCCCCGAAGAAGCTTTTCCAATGAT
GAGCACTTTTAAAGTCTGCTATGTGGCGCGGTATTATCCCGTATTGACGCCGGGCAAGA
GCAACTCGGTGCGCGCATACACTATTCTCAGAATGACTTGGTTGAGTACTCACCAGTCAC
AGAAAAGCATCTTACGGATGGCATGACAGTAAGAGAATTATGCAGTGTGCCATAACCAT
GAGTGATAAAGTGCAGGCAACTTACTTCTGACAACGATCGGAGGACCGAAGGAGCTAAC
CGCTTTTTTGCACAACATGGGGGATCATGTAACTCGCCTTGATCGTTGGGAACCGAGCT
GAATGAAGCCATACCAAACGACGAGCGTGACACCACGATGCCGTGTAGCAATGGCAACAAC
GTTGCGCAAACTATTAAGTGGCGAACTACTTACTCTAGCTTCCCGGCAACAATTAATAGA
CTGGATGGAGGCGGATAAAGTTGCAGGACCACTTCTGCGCTCGGCCCTTCCGGCTGGCTG
GTTTATTGTCTGATAAATCTGGAGCCGTGAGCGTGGGTCTCGCGGTATCATTGCAGCACT
GGGGCCAGATGGTAAGCCCTCCCGTATCGTAGTTATCTACACGACGGGAGTCAGGCAAC
TATGGATGAACGAAATAGACAGATCGCTGAGATAGGTGCCCTCACTGATTAAGCATTGGTA
ACTGTCAGACCAAGTTTACTCATATATACTTTAGATTGATTTAAACTTCATTTTAAAT
TAAAAGGATCTAGGTGAAGATCCTTTTTGATAATCTCATGACCAAAATCCCTTAACGTGA
GTTTTCTGTTCCACTGAGCGTCAGACCCGTAGAAAAGATCAAAGGATCTTCTTGAGATCC
TTTTTTCTGCGCGTAATCTGCTGCTTGCAAAACAAAAAACCCGCTACCAGCGGTGGT
TTGTTTGCAGGATCAAGAGCTACCAACTCTTTTCCGAAGGTAAGTGGCTTCAGCAGAGC
GCAGATACCAATACTGTCCTTCTAGTGTAGCCGTAGTTAGGCCACCCTTCAAGAACTC
TGTAGACCGCTACATACCTCGCTCTGCTAATCCTGTTACCAAGTGGCTGCTGCCAGTGG
CGATAAGTCGTGCTTACCGGGTTGGAATCAAGACGATAGTTACCGGATAAGGCGCAGCG
GTCGGGCTGAACGGGGGTTCTGTGCACACAGCCAGCTTGGAGCGAACGACCTACACCGA
ACTGAGATACCTACAGCGTGAGCTATGAGAAAGCGCCACGCTTCCCGAAGGGAGAAAGGC
GGACAGGTATCCGTAAGCGGCGAGGTCGGAACAGGAGAGCGCACGAGGGAGCTTCCAGG
GGGAAACGCCCTGGTATCTTTATAGTCTGTGCGGTTTCGCCACCTCTGACTTGAGCGTCG
ATTTTGTGATGCTCGTCAGGGGGCGGAGCCTATGGAACAGCCAGCAACGCGGCCCTT
TTTACGGTTCTTGGCCTTTTGTGCGCTTTTGTCTCACATGTTCTTTCTGCGTTATCCCC
TGATTCTGTGGATAACCGTATTACCGCCTTTGAGTGAGCTGATACCGCTCGCCGAGCCG
AACGACCGAGCGCAGCGAGTCAGTGAGCGAGGAAGCGGAAGAGCGCCCAATACGCAAAC
GCCTCTCCCCGCGCGTTGGCCGATTCAATATGCAGCAGCTGCGCGCTCGCTCGCTCACT
GAGGCCGCCGGGCAAGCCCGGGCGTGGGGCGACCTTTGGTCGCCCGGCCCTCAGTGAGC
GAGCGAGCGCGCAGAGAGGAGTGGCCAACTCCATCACTAGGGGTTCTTGTAGTTAATG

-continued

ATTAACCCGCCATGCTACTTATCTACGTAGCCATGCTCTAGGACATTGATTATTGACTAG
TGGAGTTCCGCGTTACATAACTTACGGTAAATGGCCGCTGGCTGACCGCCCAACGACC
CCCGCCCATTGACGTCAATAATGACGTATGTTCCCATAGTAACGCCAATAGGGACTTTCC
ATTGACGTCAATGGGTGGAGTATTTACGGTAACTGCCCACTTGGCAGTACATCAAGTGT
ATCATATGCCAAGTACGCCCCCTATTGACGTCAATGACGGTAAATGGCCGCTGGCATT
ATGCCAGTACATGACCTTATGGGACTTTCCTACTTGGCAGTACATCTACGTATTAGTCA
TCGCTATTACCATGGTCGAGGTGAGCCCCACGTTCTGCTTCACTCTCCCCATCTCCCCC
CCTCCCCACCCCAATTTTGTATTTATTTATTTTAAATTATTTTGTGCAGCGATGGGGG
CGGGGGGGGGGGGGCGCGCCAGGCGGGGCGGGGGGGGGCGAGGGCGGGGCGGGGCG
GAGGCGGAGAGGTGCGGCGGCAGCCAATCAGAGCGGCGCGCTCCGAAAGTTTCCTTTTAT
GGCGAGGCGGGCGGGCGGGCGGCCCTATAAAAAGCGAAGCGCGGGCGGGCGGGAGTCGC
TGC GCGCTGCCTTCGCCCCGTGCCCGCTCCGCCCGCCTCGCGCCCGCCCGCCCGCT
CTGACTGACCGCGTTACTAAAACAGGTAAGTCCGCTCCGCGCGGGTTTGGCGCCTC
CCGCGGGCGCCCCCTCTACGGCGAGCGCTGCCACGTGACGACGAAGGGCGCAGCGAGC
GTCTGATCCTTCGCCCCGAGCGCTCAGGACAGCGGCCGCTGCTCATAAGACTCGGCCT
TAGAACCCAGTATCAGCAGAAGGACATTTTAGGACGGGACTTGGGTGACTCTAGGGCAC
TGGTTTTCTTCCAGAGAGCGGAACAGGCGAGGAAAAGTAGTCCCTTCTCGGCGATTCTG
CGGAGGATCTCCGTGGGCGGTGAACGCCGATGATGCCTCTACTAACCATGTTTCATGTT
TTCTTTTTTTTTCTACAGGTCTTGGGTGACGAACAGGGTACCGCCACCATGGCCACCGGC
TCTCGCACAAAGCCTGCTGCTGGCTTTCGGACTGCTGTGCCTGCCTTGGCTCCAGGAGGGC
TCGCGCCTAGCATCGATACCGTCGCTATGTGCTGGAGGCTTGTGAAGGCTGTATGCTG
GAGCATTAGCAATGCGAACAGAAAGTTTGGCCTCTGACTGACTTCTGTTGTTGCTAATG
CTCCAGGACACAAGGCTGTACTAGCACTCACATGGAACAAATGGCCTCTAGCCTGGAG
GCTTGCTGAAGGCTGTATGCTGAAACATAATGGATTGACGAGCGGCTTTGGCCTCTGAC
TGACGCGCTGCTGACCATTATGTTTTCAGGACACAAGGCTGTACTAGCACTCACATGGA
ACAAATGGCCTCTAGCCTGGAGGCTTGTGAAGGCTGTATGCTGTTATCTTTGCGAAGCT
GCCATCCGTTTTGGCCTCTGACTGACGGATGGCAGCCGCAAGATAACAGGACACAAGGC
CTGTTACTAGCACTCACATGGAACAAATGGCCTCTCTAGAAT 3'

SEQ ID NO. 21 = SEQ ID NO. 1 + SEQ ID NO. 9

5' AATCAACCTCTGGATTACAAAATTTGTGAAAGATTGACTGGTATTCTTAACATATGTT
GCTCCTTTTACGCTATGTGGATACGCTGCTTTAATGCCTTTGTATCATGCTATTGCTTCC
CGTATGGCTTTTCATTTTCTCCTTGTATAAATCCTGGTTGCTGTCTTTATGAGGAG
TTGTGGCCCGTTGTGAGGCAACGTGGCGTGGTGTGCACTGTGTTTGTGACGCAACCCCC
ACTGGTTGGGGCATTGCCACCACCTGTCAGCTCCTTTCCGGGACTTTCGCTTTCCCCCTC
CCTATTGCCACGGCGGAACCTATCGCCGCTGCCTTGCCCGCTGCTGGACAGGGGCTCGG
CTGTTGGGCACTGACAATTCCGTGGTGTGTCGGGGAATCATCGTCCTTTCCTTGGCTG
CTCGCCTGTGTTGCCACCTGGATTCTGCGCGGGACGTCCTTCTGCTACGTCCCTTCGGCC
CTCAATCCAGCGGACCTTCTTCCCGCGGCTGCTGCCGGCTCTGCGGCTCTTCCGCGT
CTTCGCCTTCGCCCTCAGACGAGTCGGATCTCCCTTTGGGCGCCTCCCCGCTAAGCTT

-continued

ATCGATACCGTCGAGATCTAACTTGTTTATTGTCAGCTTATAATGGTTACAAATAAGCAA
TAGCATCACAAATTCACAAATAAGCATTTTTTTCTACTGCATTCTAGTTGTGGTTTGTC
CAAATCTATCAATGTATCTTATCATGTCTGGATCTCGACCTCGACTAGAGCATGGCTACG
TAGATAAGTAGCATGGCGGGTTAATCATTAACTACAAGGAACCCCTAGTGATGGAGTTGG
CCACTCCCCTCTCTGCGCGCTCGCTCGCTCACTGAGGCCGGCGACCAAAGGTCGCCCGAC
GCCCCGGGCTTTGCCCGGGCGGCTCAGTGAGCGAGCGAGCGCGCAGCTGGCGTAATAGCG
AAGAGGCCCGCACCGGATCGCCCTTCCCAACAGTTGCGCAGCCTGAATGGCGAATGGCGAT
TCCGTTGCAATGGCTGGCGGTAATATTGTTCTGGATATTACCAGCAAGGCCGATAGTTTG
AGTTCTTCTACTCAGGCAAGTGATGTTATTACTAATCAAAGAAGTATTGCGACAACGGTT
AATTTGCGTGATGGACAGACTCTTTTACTCGGTGGCCTCACTGATTATAAAAACACTTCT
CAGGATTCTGGCGTACCGTTCCGTGTCTAAAATCCCTTTAATCGGCCTCCTGTTTAGCTCC
CGCTCTGATTCTAACGAGGAAAGCACGTTATACGTGCTCGTCAAAGCAACCATAGTACGC
GCCCTGTAGCGGCGCATTAAGCGCGGGGTGTGGTGGTTACGCGCAGCGTGACCGCTAC
ACTTGCCAGCGCCCTAGCGCCCGCTCCTTTCGCTTCTTCCCTTCCTTCTCGCCACGTT
CGCCGGCTTTCCCGTCAAGCTCTAAATCGGGGGCTCCCTTAGGGTTCCGATTAGTGCG
TTTACGGCACCTCGACCCCAAAAACTTGATTAGGGTGATGGTTCACGTAGTGGGCCATC
GCCCTGATAGACGGTTTTTTCGCCCTTTGACGTTGGAGTCCACGTTCTTTAATAGTGGACT
CTTGTTCCAACTGGAACAACACTCAACCTATCTCGGTCTATTCTTTGATTATAAAGG
GATTTTGCCGATTTCGGCCTATTGGTTAAAAATGAGCTGATTAAACAAAATTTAACGC
GAATTTTAACAAAATATTAACGTTTACAATTTAAATATTGCTTATACAATCTTCTGTT
TTTGGGGCTTTTCTGATTATCAACCGGGTACATATGATTGACATGCTAGTTTACGATT
ACCGTTCATCGATTCTCTGTTTGCTCCAGACTCTCAGGCAATGACCTGATAGCCTTTGT
AGAGACCTCTCAAAATAGCTACCCCTCTCCGGCATGAATTTATCAGCTAGAACGGTTGAA
TATCATATTGATGGTGATTGACTGTCTCCGGCCTTCTCACCCTTTGAATCTTTACCT
ACACATTACTCAGGCATTGCATTTAAAATATATGAGGGTTCTAAAAATTTTATCCTTGC
GTTGAAATAAAGGCTTCTCCCGCAAAGTATTACAGGTCATAATGTTTTTGGTACAACC
GATTTAGCTTTATGCTCTGAGGCTTTATTGCTTAATTTTGCTAATCTTTGCCTTGCTG
TATGATTTATTGGATGTTGGAATTCCTGATGCGGTATTTTCTCCTTACGCATCTGTGCGG
TATTTACACCCGATATGGTGCACTCTCAGTACAATCTGCTCTGATGCCGATAGTTAAG
CCAGCCCCGACACCCGCCAACCCGCTGACGCGCCCTGACGGGCTTGTCTGCTCCCGGC
ATCCGCTTACAGACAAGCTGTGACCGTCTCCGGGAGCTGCATGTGTGACAGGTTTTTACC
GTCATACCGAAACGCGCGAGACGAAAGGGCCTCGTGATACGCCTATTTTATAGGTAA
TGTCATGATAATAATGGTTTCTTAGACGTGAGGTGGCACTTTTCGGGGAATGTGCGCGG
AACCCTTATTGTTTATTTTCTAAATACATTCAAATATGTATCCGCTCATGAGACAATA
ACCTGATAAATGCTTCAATAATATTGAAAAAGGAAGAGTATGAGTATTCAACATTTCCG
TGTCGCCCTTATTCCTTTTTTTCGGGCATTTTGCTTCTGTTTTTGTCTACCCAGAAAC
GCTGGTGAAAGTAAAAGATGCTGAAGATCAGTTGGGTGCACGAGTGGGTTACATCGAACT
GGATCTCAACAGCGGTAAGATCCTTGAGAGTTTTTCGCCCGAAGAACGTTTTCCAATGAT
GAGCACTTTTAAAGTTCTGCTATGTGGCGCGGTATTATCCCGTATTGACGCCGGCAAGA

-continued

GCAACTCGGTGCGCCGATACACTATTCTCAGAATGACTTGGTTGAGTACTCACCAGTCAC
AGAAAAGCATCTTACGGATGCGATGACAGTAAGAGAATTATGCAGTGCTGCCATAACCAT
GAGTGATAACACTGCGGCCAACTTACTTCTGACAACGATCGGAGGACCGAAGGAGCTAAC
CGCTTTTTTGCACAACATGGGGGATCATGTAACCTCGCCTTGATCGTTGGGAACCGGAGCT
GAATGAAGCCATACCAAACGACGAGCGTGACACCACGATGCCTGTAGCAATGGCAACAAC
GTTGCGCAAACTATTAACCTGGCGAACTACTTACTCTAGCTTCCCGGCAACAATTAATAGA
CTGGATGGAGGCGGATAAAGTTGCAGGACCACTTCTGCGCTCGGCCCTTCCGGCTGGCTG
GTTTATTGCTGATAAATCTGGAGCCGGTGAGCGTGGGTCTCGCGGTATCATTGCAGCACT
GGGGCCAGATGGTAAGCCCTCCCGTATCGTAGTTATCTACACGACGGGGAGTCAGGCAAC
TATGGATGAACGAAATAGACAGATCGCTGAGATAGGTGCCTCACTGATTAAGCATTGGTA
ACTGTCAGACCAAGTTTACTCATATATACTTTAGATTGATTTAAACTTCATTTTAAATT
TAAAAGGATCTAGGTGAAGATCCTTTTTGATAATCTCATGACCAAAATCCCTTAACGTGA
GTTTTCTGTTCCACTGAGCGTCAGACCCCGTAGAAAAGATCAAAGGATCTTCTTGAGATCC
TTTTTTCTGCGCGTAATCTGCTGCTTGCAACAAAAAACCCGCTACCAGCGGTGGT
TTGTTTGC CGGATCAAGAGCTACCAACTCTTTTCCGAAGGTAACGGCTTCAGCAGAGC
GCAGATACCAAATACTGTCCTTCTAGTGTAGCCGTAGTTAGGCCACCACCTCAAGAACTC
TGTAGACCGCTACATACCTCGCTCTGCTAATCCTGTTACCAGTGGCTGCTGCCAGTGG
CGATAAGTCGTCTTACCGGGTTGGACTCAAGACGATAGTTACCGGATAAGGCGCAGCG
GTCGGGCTGAACGGGGGGTTCGTGCACACAGCCAGCTTGAGCGAACGACCTACACCGA
ACTGAGATACCTACAGCGTGAGCTATGAGAAAGCGCCACGCTTCCGAAGGGAGAAAGGC
GGACAGGTATCCGGTAAGCGGCGAGGTCGGAACAGGAGAGCGCACGAGGGAGCTTCCAGG
GGGAAACGCCTGGTATCTTTATAGTCCTGTGCGGTTTCGCCACCTCTGACTTGAGCGTCG
ATTTTGTGATGCTCGTCAGGGGGCGGAGCCTATGGAACCGCCAGCAACGCGGCCCTT
TTTACGGTTCTCGGCCTTTTGCTGGCCTTTTGCTCACATGTTCTTTCTGCGTTATCCCC
TGATTCTGTGGATAACCGTATTACCGCCTTTGAGTGAGCTGATACCGCTCGCCGAGCCG
AACGACCGAGCGCAGCGAGTCAGTGAGCGAGGAAGCGGAAGAGCGCCCAATACGCAAAAC
GCCTCTCCCCGCGCGTTGGCCGATTCTAATGACGAGCTGCGCGCTCGCTCGCTCACT
GAGGCCGCCCGGGCAAAGCCCGGGCGTCGGGCGACCTTTGGTCGCCCGGCCTCAGTGAGC
GAGCGAGCGCGCAGAGAGGAGTGGCCAACTCCATCACTAGGGGTTCCCTGTAGTTAATG
ATTAACCCGCCATGCTACTTATCTACGTAGCCATGCTCTAGGACATTGATTATTGACTAG
TGGAGTTCGCGTTACATAACTTACGGTAAATGGCCCGCCTGGCTGACCGCCCAACGACC
CCCGCCATTGACGTCAATAATGACGTATGTTCCCATAGTAACGCCAATAGGGACTTTCC
ATTGACGTCAATGGGTGGAGTATTTACGGTAACTGCCCACTTGGCAGTACATCAAGTGT
ATCATATGCCAAGTACGCCCCCTATTGACGTCAATGACGGTAAATGGCCCGCCTGGCATT
ATGCCAGTACATGACCTTATGGGACTTTCCTACTTGGCAGTACATCTACGTATTAGTCA
TCGCTATTACCATGGTCGAGGTGAGCCCCACGTTCTGCTTCACTCTCCCCATCTCCCCC
CCTCCCCACCCCCAATTTTGTATTTATTTATTTTAAATTATTTTGTGCAGCGATGGGGG
CGGGGGGGGGGGGGCGCGCCAGGCGGGCGGGCGGGCGAGGGCGGGGGGGGGGG
AGGCGGAGAGGTGCGGCGGACGCAATCAGAGCGGCGCGCTCCGAAAGTTTCTTTTATG

SEQ ID NO. 22 = SEQ ID NO. 1 + SEQ ID NO. 10
5' AATCAACCTCTGGATTACAAAATTGTGAAAGATTGACTGGTATCTTAACTATGTTT
GCTCCTTTTACGCTATGTGGATACGCTGCTTTAATGCCTTTGTATCATGCTATTGCTTCC
CGTATGGCTTTTCATTTTCTCCTCCTTGTATAAATCCTGGTTGCTGTCTCTTTATGAGGAG
TTGTGGCCCGTTGTGCAGGCAACGTGGCGTGGTGTGCACGTGTTTGTGACGCAACCCCC
ACTGGTTGGGGCATTGCCACCACCTGTCAAGCTCCTTTCCGGGACTTTTCGCTTTCCCCCTC
CCTATTGCCACGGCGGAACCTATCGCCGCCTGCCTTGCCCGCTGCTGGACAGGGGCTCGG
CTGTTGGGCACTGACAATTCGTGGTGTGTGCGGGAAATCATCGTCCTTTCTTGGCTG
CTCGCCTGTGTGCGACCTGGATTCTGCGCGGAGCTCCTTCTGCTACGTCCTTTCGGCC
CTCAATCCAGCGGACCTTCCTTCCGCGGCCTGCTGCCGGCTCTGCGGCCTCTTCCGCGT
CTTCGCCTTCGCCCTCAGACGAGTCGGATCTCCCTTTGGGCCGCCCTCCCGCCTAAGCTT
ATCGATACCGTCGAGATCTAACTGTTTATTGTCAGCTTATAATGGTTACAAATAAAGCAA
TAGCATACAAATTTACAAATAAAGCATTTTTTCACTGCATTCTAGTTGTGGTTTGTGTC
CAAACCTCATCAATGTATCTTATCATGTCTGGATCTCGACCTCGACTAGAGCATGGCTACG
TAGATAAGTAGCATGGCGGGTTAATCATTAACTACAAGGAACCCCTAGTGATGGAGTTGG
CCACTCCCTCTCTGCGCGCTCGCTCGCTCACTGAGGCCGGGGACCAAAGGTCGCCCGAC
GCCCGGGCTTTGCCCGGGCGGCCTCAGTGAGCGAGCGAGCGCGAGCTGGCGTAATAGCG
AAGAGGCCCGCACCGATCGCCCTTCCCAACAGTTGCGCAGCCTGAATGGCGAATGGCGAT
TCCGTTGCAATGGCTGGCGGTAATATTGTTCTGGATATTACCAGCAAGGCCGATAGTTTG
AGTTCCTCTACTCAGGCAAGTGATGTTATTACTAATCAAAGAAGTATTGCGACAACGGTT
AATTTCGTGATGGACAGACTCTTTTACTCGGTGGCCTCACTGATTATAAAACACTTCT
CAGGATTCTGGCGTACCGTTCCTGTCTAAATCCCTTAAATCGGCCTCCTGTTTAGCTCT

-continued

CGCTCTGATTCTAACGAGGAAAGCACGTTATACGTGCTCGTCAAAGCAACCATAGTACGC
GCCCTGTAGCGGCGCATTAAAGCGCGGGGTGGTGGTTACGCGCAGCGTGACCGCTAC
ACTTGCCAGCGCCCTAGCGCCCGCTCCTTCGCTTCTTCCTTCCTTCTCGCCACGTT
CGCCGGCTTTCCCGTCAAGCTCTAAATCGGGGGCTCCCTTAGGGTTCGATTAGTGC
TTTACGGCACCTCGACCCCAAAAACTTGATTAGGGTGATGGTTCACGTAGTGGGCCATC
GCCCTGATAGACGGTTTTTCGCCCTTTGACGTTGGAGTCCACGTTCTTAAATAGTGACT
CTTGTTCCAACTGGAACAACACTCAACCTATCTCGGTCTATTCTTTGATTATAAGG
GATTTTGCCGATTTCGGCCTATTGGTTAAAAATGAGCTGATTAAACAAAATTTAACGC
GAATTTAAACAAATATTAACGTTTACAATTTAAATATTGCTTATACAATCTTCTGTT
TTTGGGGCTTTTCTGATTATCAACCGGGGTACATATGATTGACATGCTAGTTTACGATT
ACCGTTCATCGATTCTCTGTTTGCTCCAGACTCTCAGGCAATGACCTGATAGCCTTTGT
AGAGACCTCTCAAAAATAGCTACCTCTCCGGCATGAATTTATCAGCTAGAACGGTTGAA
TATCATATTGATGGTGATTGACTGTCTCCGGCCTTCTCACCCGTTTGAATCTTACCT
ACACATTACTCAGGCATTGCATTTAAAAATATAGAGGGTCTAAAAATTTTATCCTTGC
GTTGAAATAAAGGCTTCTCCCGCAAAGTATTACAGGGTCATAATGTTTTTGGTACAACC
GATTTAGCTTTATGCTCTGAGGCTTTATTGCTTAATTTTGCTAATCTTTGCCCTGCTG
TATGATTTATTGGATGTTGGAATTCCTGATGCGGTATTTCTCCTTACGCATCTGTGCGG
TATTTACACCCGATATGGTGCACTCTCAGTACAATCTGCTCTGATGCCGATAGTTAAG
CCAGCCCCGACACCCGCCAACCCCGCTGACGCGCCCTGACGGGCTTGTCTGCTCCCGGC
ATCCGCTTACAGACAAGCTGTGACCGTCTCCGGGAGCTGCATGTGTGACAGGTTTTTACC
GTCATCACCGAAACGCGCGAGACGAAAGGGCCTCGTGATACGCCATTTTTATAGGTTAA
TGTCATGATAAATAGGTTTCTTAGACGTGAGGTGGCACTTTTCGGGAAATGTGCGCGG
AACCCTTATTGTTTATTTTCTAAATACATTCAAATATGTATCCGCTCATGAGACAATA
ACCTGATAAATGCTTCAATAATATTGAAAAAGGAAGAGTATGAGTATTCAACATTTCCG
TGTCGCCCTTATTCCTTTTTTGGCGCATTTTGCCTTCTGTTTTTGCTCACCAGAAAC
GCTGGTGAAAGTAAAAGATGCTGAAGATCAGTTGGGTGCACGAGTGGGTACATCGAACT
GGATCTCAACAGCGGTAGATCCTTGAGAGTTTTCGCCCCGAAGACGTTTTTCAATGAT
GAGCACTTTTAAAGTTCTGCTATGTGGCGCGGTATTATCCCGTATTGACGCCGGGCAAGA
GCAACTCGGTGCGCGCATACACTATTCTCAGAATGACTTGGTTGAGTACTCACCAGTCAC
AGAAAAGCATCTTACGGATGGCATGACAGTAAGAGAATTATGAGTGCTGCCATAACCAT
GAGTGATAACACTGCGGCCAACTTACTTCTGACAACGATCGGAGGACCGAAGGAGCTAAC
CGCTTTTTTGACACAACATGGGGGATCATGTAACTCGCCTTGATCGTTGGGAACCGGAGCT
GAATGAAGCCATACCAAACGACGAGCGTGACACCAGATGCCTGTAGCAATGGCAACAAC
GTTGCGCAAACTATTAAGTGGCGAACTACTTACTCTAGCTTCCCGGCAACAATTAATAGA
CTGGATGGAGGCGGATAAAGTTGCAGGACCCTTCTGCGCTCGGCCCTTCCGGCTGGCTG
GTTTATTGCTGATAAATCTGGAGCCGGTGAGCGTGGGTCTCGCGGTATCATGCGCACT
GGGGCCAGATGGTAAGCCCTCCCGTATCGTAGTTATCTACACGACGGGAGTCAGGCAAC
TATGGATGAACGAAATAGACAGATCGCTGAGATAGGTGCCTCACTGATTAAGCATTGGTA
ACTGTCAGACCAAGTTTACTCATATATACTTTAGATTGATTTAAACTTCATTTTAAAT

-continued

TAAAAGGATCTAGGTGAAGATCCTTTTGTGATAATCTCATGACCAAAATCCCTTAACGTGA
GTTTTTCGTTCCACTGAGCGTCAGACCCCGTAGAAAAGATCAAAGGATCTTCTTGAGATCC
TTTTTTTCTGCGCGTAATCTGCTGCTTGCAAAACAAAAAACACCGCTACCAGCGGTGGT
TTGTTTGCCGGATCAAGAGCTACCAACTCTTTTCCGAAGGTAAGTGGCTTCAGCAGAGC
GCAGATACCAAATACTGTCCTTCTAGTGTAGCCGTAGTTAGGCCACCACCTCAAGAACTC
TGTAGCACCGCTACATACCTCGCTCTGCTAATCCTGTTACCAGTGGCTGCTGCCAGTGG
CGATAAGTCGTGCTTACCAGGTGGAAGTCAAGACGATAGTTACCGGATAAGGCGCAGCG
GTCGGGCTGAACGGGGGGTTCGTGCACACAGCCAGCTTGAGAGCGAACGACCTACACCGA
ACTGAGATACCTACAGCGTGAGCTATGAGAAAGCGCCACGCTTCCGAAGGAGAAAGGC
GGACAGGTATCCGGTAAGCGGCAGGGTCGGAACAGGAGAGCGCACGAGGGAGCTTCCAGG
GGGAAACGCCTGGTATCTTTATAGTCCTGTGCGGTTTCGCCACCTCTGACTTGAGCGTCG
ATTTTGTGATGCTCGTCAGGGGGCGGAGCCTATGGAAAACGCCAGCAACGCGGCCTT
TTTACGGTTCCTGGCCTTTTGCTGGCCTTTTGCTCACATGTTCTTTCTGCGTTATCCCC
TGATTCTGTGGATAACCGTATTACCGCCTTTGAGTGAGCTGATACCGCTCGCCGAGCCG
AACGACCGAGCGCAGCGAGTCAGTGAGCGAGGAAGCGGAAGAGCGCCCAATACGCAAACC
GCCTCTCCCCGCGCGTTGGCCGATTCTTAATGCAGCAGCTGCGCGCTCGCTCGCTCACT
GAGGCCGCCCGGGCAAAGCCCGGGCGTCGGGCGACCTTTGGTCGCCCGGCCTCAGTGAGC
GAGCGAGCGCGCAGAGAGGAGTGGCCAACTCCATCACTAGGGGTTTCCTTGTAGTTAATG
ATTAACCCGCCATGTACTTATCTACGTAGCCATGCTCTAGGACATTGATTATTGACTAG
TGGAGTTCGCGTTACATAACTTACGGTAAATGGCCCGCCTGGCTGACCGCCCAACGACC
CCCGCCCATTGACGTCAATAATGACGTATGTTCCCATAGTAACGCCAATAGGGACTTTCC
ATTGACGTCAATGGGTGGAGTATTTACGGTAACTGCCCACTTGGCAGTACATCAAGTGT
ATCATATGCCAAGTACGCCCCCTATTGACGTCAATGACGGTAAATGGCCCGCCTGGCATT
ATGCCAGTACATGACCTTATGGGACTTTCCTACTTGGCAGTACATCTACGTATTAGTCA
TCGCTATTACCATGGTCGAGGTGAGCCCCACGTTCTGCTTCACTCTCCCCATCTCCCCC
CCTCCCCACCCCCAATTTGTATTTATTTATTTTAAATTATTTTGTGCAGCGATGGGGG
CGGGGGGGGGGGGGCGCGCCAGGCGGGCGGGGGGGGGCGAGGGCGGGGCGGGGCG
GAGGCGGAGAGGTGCGGCGGCAGCCAATCAGAGCGGCGCGCTCCGAAAGTTTCCTTTTAT
GGCGAGGCGGCGGGCGGGCGGCCCTATAAAAAGCGAAGCGCGGGCGGGCGGGAGTCGC
TGCGCGCTGCCTTCGCCCCGTGCCCGCTCCGCCCGCCTCGCGCCCGCCCGCCCGGT
CTGACTGACCGCGTTACTAAAACAGGTAAGTCCGCCTCCGCGCGGGTTTTGGCGCCTC
CCGCGGGCGCCCCCTCTACGGCGAGCGCTGCCACGTGACGAAAGGCGCAGCGAGC
GTCTGTATCCTTCGCCCCGACGCTCAGGACAGCGGCCCGCTGCTCATAAGACTCGGCCT
TAGAACCCAGTATCAGCAGAAGGACATTTTAGGACGGGACTTGGGTGACTCTAGGGCAC
TGGTTTTCTTTCAGAGAGCGGAACAGGCGAGGAAAAGTAGTCCCTTCTCGGCGATTCTG
CGGAGGGATCTCCGTGGGCGGTGAACGCCGATGATGCCTCTACTAACCATGTTTCATGTT
TTCTTTTTTTTTCTACAGGTCCTGGGTGACGAACAGGTACCGCCACCATGGCCACCGGC
TCTCGCACAAGCCTGCTGCTGGCTTTCGGAAGTGTGTGCTGCCTGGCTCCAGGAGGGC
TCCGCCGCTAGCATCGATACCGTCGCTATGTGCTGGAGGCTTGCTGAAGGCTGTATGCTG

-continued

AAATCTTCGGTGGTTCCACTGCGTTTTGGCCTCTGACTGACGCAGTGGAAACCCGGAAGA
TTTCAGGACACAAGGCCTGTTACTAGCACTCACATGGAACAAATGGCCTCTAGCCTGGAG
GCTTGCTGAAGCTGTATGCTGATATCCTGAATATGGTATGCAGCGTTTTGGCCTCTGAC
TGACGCTGCATACCATTCAAGGATATCAGGACACAAGGCCTGTTACTAGCACTCACATGGA
ACAAATGGCCTCTAGCCTGGAGGCTTGCTGAAGGCTGTATGCTGTTTAAAGCTCAAACGC
GTTCCGCCGTTTTGGCCTCTGACTGACGGCGAACGCGTGAGCTTTAAACAGGACACAAGGC
CTGTTACTAGCACTCACATGGAACAAATGGCCTCTCTAGAAT 3'

SEQ ID NO. 23 = SEQ ID NO. 1 + SEQ ID NO. 11

5' AATCAACCTCTGGATTACAAAATTTGTGAAAGATTGACTGGTATTCTTAACATATGTT
GCTCCTTTTACGCTATGTGGATACGCTGCTTTAATGCCTTTGTATCATGCTATTGCTTCC
CGTATGGCTTTTCATTTTCTCCTTGTATAAATCCTGGTTGCTGTCTTTATGAGGAG
TTGTGGCCCGTTGTGAGGCAACGTGGCGTGGTGTGCACTGTGTTTGCTGACGCAACCCCC
ACTGGTTGGGGCATTGCCACCACCTGTGAGCTCCTTTCCGGGACTTTGCTTTCCCCCTC
CCTATTGCCACGGCGGAACCTCATCGCCGCTGCCTTGCCCGCTGCTGGACAGGGGCTCGG
CTGTTGGGCACAGACAATTCCGTGGTGTGTCGGGGAATCATCGTCCTTTCTTGCGTG
CTCGCCTGTGTTGCCACCTGGATTCTGCGCGGGACGTCCTTCTGCTACGTCCTTTCGGCC
CTCAATCCAGCGGACCTTCTTCCCGCGGCTGCTGCGGCTCTGCGGCTCTTCCGCGT
CTTCGCCTTCGCCCTCAGACGAGTCGGATCTCCCTTTGGGCCGCTCCCCGCTAAGCTT
ATCGATACCGTCGAGATCTAACTTGTTTATTGACGCTTATAATGGTTACAAATAAGCAA
TAGCATCACAAATTTACAAATAAAGCATTTTTTCACTGCATTCTAGTTGTGGTTGTGTC
CAAACCTCATCAATGTATCTTATCATGTCTGGATCTCGACCTCGACTAGAGCATGGCTACG
TAGATAAGTAGCATGGCGGTTAATCATTAACTACAAGGAACCCCTAGTGATGGAGTTGG
CCACTCCCTCTCTGCGCGCTCGCTCGCTCACTGAGGCCGGGCGACCAAAGGTCGCCCAGC
GCCCCGGGCTTTGCCCGGGCGGCTCAGTGAGCGAGCGAGCGCGCAGCTGGCGTAATAGCG
AAGAGGCCCGCACCGATCGCCCTTCCCAACAGTTGCGCAGCCTGAATGGCGAATGGCGAT
TCCGTTGCAATGGCTGGCGGTAATATTGTTCTGGATATTACCAGCAAGCCGATAGTTTG
AGTTCTTCTACTCAGGCAAGTGATGTTATTACTAATCAAAGAAGATTGCGACAACGGTT
AATTTGCGTGATGGACAGACTCTTTTACTCGGTGGCCTCACTGATTATAAAAACACTTCT
CAGGATTCTGGCGTACCGTTCCTGTCTAAAATCCCTTTAATCGGCCTCCTGTTTAGCTCC
CGCTCTGATTCTAACGAGGAAAGCACGTTATACGTGCTCGTCAAAGCAACCATAGTACGC
GCCCTGTAGCGGCGCATTAAGCGCGGGGTGTGGTGGTTACGCGCAGCGTGACCGCTAC
ACTTGCCAGCGCCCTAGCGCCGCTCCTTTTCGCTTTCTTCCCTTCTTCTCGCCACGTT
CGCCGCTTTCCCCGTCAGCTCTAAATCGGGGGCTCCCTTAGGGTTCCGATTTAGTGC
TTTACGGCACCTCGACCCCAAAAACTTGATTAGGGTGATGGTTCACGTAGTGGGCCATC
GCCCTGATAGACGGTTTTTCGCCCTTTGACGTTGGAGTCCACGTTCTTTAATAGTGGACT
CTTGTTCCAACTGGAACAACACTCAACCTATCTCGGTCTATTCTTTTGATTATAAGG
GATTTTGGCGATTTCGGCCTATTGGTTAAAAAATGAGCTGATTAAACAAAAATTAACGC
GAATTTTAACAAATATTAACTTTACAATTTAAATATTGCTTATACAATCTTCTGTT
TTTGGGGCTTTCTGATTATCAACCGGGGTACATATGATTGACATGCTAGTTTACGATT

-continued

ACCGTTCATCGATTCTCTTGTGCTCCAGACTCTCAGGCAATGACCTGATAGCCTTTGT
AGAGACCTCTCAAAATAGCTACCCTCTCCGGCATGAATTTATCAGCTAGAACGGTTGAA
TATCATATTGATGGTGATTGACTGTCTCCGGCCTTCTCACCCTTTGAATCTTTACCT
ACACATTACTCAGGCATTGCATTTAAAAATATATGAGGGTTCTAAAAATTTTATCCTTGC
GTTGAAATAAAGGCTTCTCCCGCAAAGTATTACAGGGTCATAATGTTTTTGGTACAACC
GATTTAGCTTTATGCTCTGAGGCTTTATTGCTTAATTTTGCTAATTTCTTGCCCTGCGCTG
TATGATTTATTGGATGTTGGAATTCCTGATGCGGTATTTTCTCCTTACGCATCTGTGCGG
TATTTACACCCGCATATGGTGCCTCTCAGTACAATCTGCTCTGATGCCGCATAGTTAAG
CCAGCCCCGACACCCGCCAACACCCGCTGACGCGCCCTGACGGGCTTGTCTGCTCCCGGC
ATCCGCTTACAGACAAGCTGTGACCGTCTCCGGGAGCTGCATGTGTGACAGGTTTTTACC
GTCATCACCGAAACGCGCGAGACGAAAGGGCCTCGTGATACGCCTATTTTATAGGTTAA
TGTCATGATAATAATGGTTTCTTAGACGTGAGGTGGCACTTTTCGGGGAAATGTGCGCGG
AACCCTTATTTGTTTATTTTCTAAATACATTCAAATATGTATCCGCTCATGAGACAATA
ACCTGATAAATGCTTCAATAATATTGAAAAGGAAGAGTATGAGTATTCACATTTCCG
TGTCGCCCTTATTCCTTTTTTGCGGCATTTTGCCCTCTGTTTTTGCTCACCAGAAAC
GCTGGTGAAAGTAAAAGATGCTGAAGATCAGTTGGGTGCACGAGTGGGTACATCGAACT
GGATCTCAACAGCGGTAAAGATCCTTGAGAGTTTTCGCCCCGAAGAAGCTTTTCCAATGAT
GAGCACTTTTAAAGTCTGCTATGTGGCGCGGTATTATCCCGTATTGACGCCGGGCAAGA
GCAACTCGGTGCGCGCATACACTATTCTCAGAATGACTTGGTTGAGTACTCACCAGTCAC
AGAAAAGCATCTTACGGATGGCATGACAGTAAGAGAATTATGCAGTGTGCCATAACCAT
GAGTGATAACACTGCGGCCAACTTACTTCTGACAACGATCGGAGGACCGAAGGAGCTAAC
CGCTTTTTTGACACAACATGGGGGATCATGTAACTCGCCTTGATCGTTGGGAACCGGAGCT
GAATGAAGCCATACCAAACGACGAGCGTGACACCACGATGCCTGTAGCAATGGCAACAAC
GTTGCGCAAACATTAACTGGCGAACTACTTACTCTAGCTTCCCGGCAACAATTAATAGA
CTGGATGGAGGCGGATAAAGTTGCAGGACCCTTCTGCGCTCGGCCCTTCCGGCTGGCTG
GTTTATTGCTGATAAATCTGGAGCCGGTGAGCGTGGGTCTCGCGGTATCATTGCAGCACT
GGGGCCAGATGTAAGCCCTCCCGTATCGTAGTTATCTACACGACGGGAGTCAGGCAAC
TATGGATGAACGAAATAGACAGATCGCTGAGATAGGTGCCTCACTGATTAAGCATTGGTA
ACTGTGAGACCAAGTTTACTCATATATACTTTAGATTGATTTAAACTTCATTTTAAATT
TAAAAGGATCTAGGTGAAGATCCTTTTTGATAATCTCATGACCAAAATCCCTTAACGTGA
GTTTTCTGTTCCACTGAGCGTCAGACCCGTAGAAAAGATCAAAGGATCTTCTTGAGATCC
TTTTTTCTGCGCGTAATCTGCTGCTTGCAAACAAAAAACCCGCTACCAAGCGGTGGT
TTGTTTGCGGATCAAGAGCTACCAACTCTTTTTCCGAAGGTAAGTGGCTTCAGCAGAGC
GCAGATACCAATACTGTCTTCTAGTGTAGCCGTAGTTAGGCCACCCTTCAAGAACTC
TGTAGACCGCTACATACCTCGCTCTGCTAATCCTGTTACCAAGTGGCTGCTGCCAGTGG
CGATAAGTCGTGCTTACCGGTTGGACTCAAGACGATAGTTACCGGATAAGGCGCAGCG
GTCGGGCTGAACGGGGGTTCTGTGCACACAGCCAGCTTGGAGCGAACGACCTACACCGA
ACTGAGATACCTACAGCGTGAGCTATGAGAAAGCGCCACGCTTCCGAAGGAGAAAGGC
GGACAGGTATCCGGTAAGCGGCAGGGTCGGAACAGGAGAGCGCACGAGGGAGCTTCCAGG

-continued

GGGAAACGCCTGGTATCTTTATAGTCCTGTGGGTTTCGCCACCTCTGACTTGAGCGTCG
ATTTTGTGATGCTCGTCAGGGGGCGGAGCCTATGGAAAAACGCCAGCAACGCGGCCTT
TTTACGGTTCTGGCCTTTTGCTGGCCTTTTGCTCACATGTTCTTTCTCGGTTATCCCC
TGATTCTGTGGATAACCGTATTACCGCCTTTGAGTGAGCTGATACCGCTCGCCGAGCCG
AACGACCGAGCGCAGCGAGTCAGTGAGCGAGGAAGCGGAAGAGCGCCCAATACGCAAACC
GCCTCTCCCCGCGCTTGGCCGATTCTTAATGCAGCAGCTGCGCGCTCGCTCGCTCACT
GAGGCCGCCCGGGCAAAGCCCGGGCGTCGGGCGACCTTTGGTCGCCCGGCCTCAGTGAGC
GAGCGAGCGCGCAGAGAGGGAGTGGCCAACTCCATCACTAGGGGTTCTTTGTAGTTAATG
ATTAACCCGCCATGTACTTATCTACGTAGCCATGCTCTAGGACATTGATTATTGACTAG
TGGAGTTCGCGTTACATAACTTACGGTAAATGGCCGCTGGCTGACCGCCCAACGACC
CCCGCCCATTGACGTCATAATGACGTATGTTCCCATAGTAACGCCAATAGGGACTTTCC
ATTGACGTCAATGGGTGGAGTATTTACGGTAAACTGCCCACTTGCGAGTACATCAAGTGT
ATCATATGCCAAGTACGCCCCCTATTGACGTCAATGACGGTAAATGGCCGCTGGCATT
ATGCCAGTACATGACCTTATGGGACTTTCCTACTTGCGAGTACATCTACGTATTAGTCA
TCGCTATTACCATGGTCGAGGTGAGCCCCACGTTCTGCTTCACTCTCCCCATCTCCCCC
CCTCCCCACCCCCAATTTTGTTATTTATTTATTTTAAATTATTTTGTGCAGCGATGGGG
GGGGGGGGGGGGGGCGCGCCAGCGGGGGGGGGGGGGGGGGGGGGGGGGGGGGGGGGGG
AGGCGGAGAGGTGCGGCGGCGAGCCAATCAGAGCGGCGCGCTCCGAAAGTTTCTTTTATG
GCGAGGCGGCGGCGGCGGCGCCCTATAAAAAGCGAAGCGCGCGGGGGGGGAGTCTGCT
GCGCGCTGCTTTCGCCCCGTGCCCCGCTCCGCGCGCGCTCGCGCGCGCGCGCGCGCTC
TGACTGACCGCTTACTAAAACAGGTAAGTCCGGCTCCGCGCGGGTTTGGCGCCTCC
CGCGGGCGCCCCCTCCTCACGGCGAGCGCTGCCACGTGACGCAAGGGCGCAGCGAGCG
TCCTGATCTTCCGCCCGGACGCTCAGGACAGCGCCCGCTGCTCATAAGACTCGGCCTT
AGAACCCAGTATCAGCAGAAGGACATTTTAGGACGGGACTTGGGTGACTCTAGGGCACT
GGTTTTCTTTCCAGAGAGCGGAACAGGCGAGGAAAAGTAGTCCCTTCTCGGCGATTCTGC
GGAGGATCTCCGTGGGGCGGTGAACGCCGATGATGCCTCTACTAACCATGTTTATGTTT
TCTTTTTTTTTCTACAGGTCCTGGGTGACGAACAGGTACCGCCACCATGGCCACCGCT
CTCGCACAAGCCTGCTGCTGGCTTTCGACTGCTGTGCTGCCTTGGCTCCAGGAGGGCT
CCGCCGTAGCATCGATACCGTCGCTATGTGCTGGAGGCTTGCTGAAGCTGTATGCTGT
AATAAAGTCTGGGAATCACCGTTTTGGCCTCTGACTGACGGGTGATTCCGACCTTAT
TACAGGACACAAGGCCTGTTACTAGCACTCACATGGAACAAATGGCCTCTAGCCTGGAGG
CTTGCTGAAGGCTGTATGCTGTAATACGCCAGATCACCATCAGCGTTTTGGCCTCTGACT
GACGCTGATGGTGTGGCGTATTACAGGACACAAGGCCTGTTACTAGCACTCACATGGAA
CAAATGGCCTCTAGCCTGGAGGCTTGCTGAAGGCTGTATGCTGATACAGAAACGAAGTT
CAGGCCGTTTTGGCCTCTGACTGACGGCCTGAACCGTTTTCTGTATCAGGACACAAGGCC
TGTTACTAGCACTCACATGGAACAAATGGCCTCTCTAGAAT 3'

SEQ ID NO. 24 = SEQ ID NO. 1 + SEQ ID NO. 12
5' AATCAACCTCTGGATTACAAAATTTGTGAAAGATTGACTGGTATTCTTAACATGTT
GCTCCTTTTACGCTATGTGGATACGCTGCTTTAATGCCTTTGTATCATGCTATTGCTTCC
CGTATGGCTTTCATTTTCTCCTCTGTATAAATCCTGGTTGCTGTCTTTATGAGGAG

-continued

TTGTGGCCCGTTGTGAGGCAACGTGGCGTGGTGTGCACTGTGTTTGCTGACGCAACCCCC
ACTGGTTGGGGCATTGCCACCACCTGTGAGCTCCTTTCCGGGACTTTCGCTTTCCCCCTC
CCTATTGCCACGGCGGAACATCGCCGCTGCCTTGCCCGCTGCTGGACAGGGGCTCGG
CTGTTGGGCACTGACAATTCCGTGGTGTGTCGGGGAATCATCGTCCTTTCCTTGGCTG
CTCGCCTGTGTTGCCACCTGGATTCTGCGCGGGACGTCTCTGCTACGTCCCTTCGGCC
CTCAATCCAGCGGACCTTCCTTCCGCGGCCTGCTGCGGCTCTGCGGCCTCTCCGCGT
CTTCGCCTTCGCCCTCAGACGAGTCGGATCTCCCTTTGGGCCGCTCCCGCCTAAGCTT
ATCGATACCGTCGAGATCTAACTTGTATTATGCACTTATAATGGTTACAAATAAGCAA
TAGCATCACAAATTTACAAATAAGCATTTTTTCACTGCATTCTAGTTGTGGTTTGTG
CAAACCTCATCAATGTATCTTATCATGTCTGGATCTCGACCTCGACTAGAGCATGGCTACG
TAGATAAGTAGCATGGCGGTTAATCATTAACTACAAGGAACCCCTAGTGATGGAGTTGG
CCACTCCCTCTCTGCGCGCTCGCTCGCTCACTGAGGCCGGGCGACCAAGGTCGCCCGAC
GCCCCGGCTTTGCCCGGGCGGCTCAGTGAGCGAGCGAGCGCGCAGCTGGCGTAATAGCG
AAGAGGCCCGCACCGATCGCCCTTCCCAACAGTTGCGCAGCCTGAATGGCGAATGGCGAT
TCCGTTGCAATGGCTGGCGGTAATATTGTTCTGGATATTACCAGCAAGGCCGATAGTTTG
AGTTCTTCTACTCAGGCAAGTGATGTTATTACTAATCAAAGAAGTATTGCGACAACGGTT
AATTTGCGTGATGGACAGACTCTTTACTCGGTGGCCTCACTGATTATAAAAACACTTCT
CAGGATTCTGCGGTACCGTTCTGTCTAAAATCCCTTTAATCGGCCTCCTGTTTAGCTCC
CGCTCTGATTCTAACGAGGAAAGCACGTTATACGTGCTCGTCAAAGCAACCATAGTACGC
GCCCTGTAGCGGCGCATTAAGCGCGGGGGTGTGGTGGTTACGCGCAGCGTGACCGCTAC
ACTTGCCAGCGCCCTAGCGCCGCTCCTTTCGCTTCTTCCCTTCCTTCTCGCCACGTT
CGCCGGCTTTCCCGTCAAGCTCTAAATCGGGGGCTCCCTTAGGGTTCCGATTTAGTGC
TTTACGGCACCTCGACCCCAAAAACTTGATTAGGGTGATGGTTACGTAGTGGGCCATC
GCCCTGATAGACGGTTTTTCGCCCTTTGACGTTGGAGTCCACGTTCTTAAAGTGGACT
CTTGTTCCAACTGGAACAACACTCAACCTATCTCGGTCTATTCTTTGATTATAAGG
GATTTTGCCGATTTCGGCCTATTGGTTAAAAATGAGCTGATTTAACAAAAATTAACGC
GAATTTTAACAAATATTAACGTTTACAATTTAAATATTGCTTATACAATCTTCTGTT
TTTGGGGCTTTTCTGATTATCAACCGGGGTACATATGATTGACATGCTAGTTTACGATT
ACCGTTCATCGATTCTCTTGTGTTGCTCCAGACTCTCAGGCAATGACCTGATAGCCTTGT
AGAGACCTCTCAAAATAGCTACCCCTCTCCGCATGAATTTATCAGCTAGAACGGTTGAA
TATCATATTGATGGTGATTGACTGTCTCCGGCCTTCTCACCCTTTGAATCTTTACCT
ACACATTACTCAGGCATTGCATTTAAAAATATAGAGGGTTCTAAAAATTTTATCCTTGC
GTTGAAATAAAGGCTTCTCCCGCAAAGTATTACAGGTCATAATGTTTTTGGTACAACC
GATTTAGCTTTATGCTCTGAGGCTTTATTGCTTAATTTTGCTAATCTTTGCCTTGCCTG
TATGATTTATTGGATGTTGGAATTCCTGATGCGGTATTTCTCCTTACGCATCTGTGCGG
TATTTACACCCGATATGGTGCACTCTCAGTACAATCTGCTCTGATGCCGATAGTTAAG
CCAGCCCCGACACCCGCCAACCCGCTGACGCGCCCTGACGGGCTTGTCTGCTCCCGGC
ATCCGCTTACAGACAAGCTGTGACCGTCTCCGGGAGCTGCATGTGTGACAGGTTTTACCC
GTCATACCGAAACGCGCGAGACGAAAGGGCCTCGTGATACGCCTATTTTTATAGGTAA

-continued

TGTCATGATAATAATGGTTTCTTAGACGTCAGGTGGCACTTTTCGGGGAAATGTGCGCGG
AACCCCTATTTGTTTATTTTCTAAATACATTCAAATATGTATCCGCTCATGAGACAATA
ACCCTGATAAATGCTTCAATAATATTGAAAAAGGAAGAGTATGAGTATTCAACATTTCCG
TGTCGCCCTTATTCCTTTTTTGCGGCATTTCCTTCTGTTTTTGCTCAGCCAGAAAC
GCTGGTGAAAGTAAAAGATGCTGAAGATCAGTTGGGTGCACGAGTGGGTACATCGAACT
GGATCTCAACAGCGGTAAAGATCCTTGAGAGTTTTCGCCCCGAAGAAGTTTTCCAATGAT
GAGCACTTTTAAAGTCTGCTATGTGGCGCGGTATTATCCCGTATTGACGCCGGGCAAGA
GCAACTCGGTGCGCGCATACACTATTCTCAGAATGACTTGGTTGAGTACTCACCAGTCAC
AGAAAAGCATCTTACGGATGGCATGACAGTAAGAGAATTATGCAGTGTGCCATAACCAT
GAGTGATAAAGTGCAGGCAACTTACTTCTGACAACGATCGGAGGACCGAAGGAGCTAAC
CGCTTTTTTGACACAACATGGGGGATCATGTAACCTCGCCTTGATCGTTGGGAACCGAGCT
GAATGAAGCCATACCAAACGACGAGCGTGACACCACGATGCCTGTAGCAATGGCAACAAC
GTTGCGCAAACTATTAAGTGGCGAACTACTTACTCTAGCTTCCCGGCAACAATTAATAGA
CTGGATGGAGGCGGATAAAGTTGCAGGACCACTTCTGCGCTCGGCCCTTCCGGCTGGCTG
GTTTATTGCTGATAAATCTGGAGCCGTGAGCGTGGGTCTCGCGGTATCATTGCAGCACT
GGGGCCAGATGGTAAGCCCTCCCGTATCGTAGTTATCTACACGACGGGAGTCAGGCAAC
TATGGATGAACGAAATAGACAGATCGCTGAGTAGGTGCCTCACTGATTAAGCATTTGGTA
ACTGTCAGACCAAGTTTACTCATATATACTTTAGATTGATTTAAACTTCATTTTAAAT
TAAAAGGATCTAGGTGAAGATCCTTTTTGATAATCTCATGACCAAAATCCCTTAACGTGA
GTTTTCTGTTCCACTGAGCGTCAGACCCGTAGAAAAGATCAAAGGATCTTCTTGAGATCC
TTTTTTCTGCGCGTAATCTGCTGCTTGCAAAACAAAAAACCCGCTACCAGCGGTGGT
TTGTTTGCAGGATCAAGAGCTACCAACTCTTTTCCGAAGGTAAGTGGCTTCAGCAGAGC
GCAGATACCAATACTGTCCTTCTAGTGTAGCCGTAGTTAGGCCACCACCTTCAAGAACTC
TGTAGACCGCTACATACCTCGCTCTGCTAATCCTGTTACCAAGTGGCTGCTGCCAGTGG
CGATAAGTGTGCTTACCGGGTTGGACTCAAGACGATAGTTACCGGATAAGGCGCAGCG
GTGCGGCTGAACGGGGGTTCTGTGCACACAGCCAGCTTGAGCGAACGACCTACACCGA
ACTGAGATACCTACAGCGTGAGCTATGAGAAAGCGCCACGCTTCCGAAGGGAGAAAGGC
GGACAGGTATCCGTAAGCGGCAGGGTCGGAACAGGAGAGCGCACGAGGGAGCTTCCAGG
GGGAAACGCCTGGTATCTTTATAGTCTGTGCGGTTTCGCCACCTCTGACTTGAGCGTCG
ATTTTGTGATGCTCGTCAGGGGGCGGAGCCTATGGAACAAAGCAGCAACGCGCCTT
TTTACGGTTCCTGGCCTTTTGCTGGCCTTTTGCTCACATGTTCTTCTGCGTTATCCCC
TGATTCTGTGGATAACCGTATTACCGCCTTTGAGTGAGCTGATACCGCTCGCCGAGCCG
AACGACCGAGCGCAGCGAGTCAGTGAGCGAGGAAGCGGAAGAGCGCCCAATACGCAAAAC
GCCTCTCCCCGCGCTTGCGCGATTCTTAATGCAGCAGCTGCGCGCTCGCTCGCTCACT
GAGGCCGCCCGGGCAAAGCCCGGGCGTCGGGCGACCTTTGGTCGCCCGGCCTCAGTGAGC
GAGCGAGCGCGCAGAGAGGGAGTGGCCAACTCCATCACTAGGGGTTTCTTGTAGTTAATG
ATTAACCCGCCATGCTACTTATCTACGTAGCATGCTCTAGGACATTGATTATTGACTAG
TGGAGTTCGCGTTACATAACTTACGGTAAATGGCCGCTGGCTGACCGCCCAACGACC
CCGCCCCATTGACGTCAATAATGACGTATGTTCCCATAGTAACGCCAATAGGGACTTTCC

-continued

ATTGACGTCAATGGGTGGAGTATTTACGGTAAACTGCCCACTTGGCAGTACATCAAGTGT
ATCATATGCCAAGTACGCCCCCTATTGACGTCAATGACGGTAAATGGCCCGCCTGGCATT
ATGCCCAGTACATGACCTTATGGGACTTTCCTACTTGGCAGTACATCTACGTATTAGTCA
TCGCTATTACCATGGTCGAGGTGAGCCCCACGTTCTGCTTCACTCTCCCCATCTCCCCC
CCTCCCCACCCCCAATTTTGTATTTATTTATTTTAAATTATTTTGTGCAGCGATGGGGG
CGGGGGGGGGGGGGCGCGCCAGGCGGGGCGGGGGGGGGCGAGGGCGGGGGGGGGCG
AGGCGGAGAGGTGCGGCGGCGAGCCAATCAGAGCGGCGCGCTCCGAAAGTTTCCTTTTATG
GCGAGGCGGCGGCGGCGGCGCCCTATAAAAAGCGAAGCGCGCGGGCGGGAGTCGCT
GCGCGCTGCCTTCGCCCCGTGCCCCGCTCCGCGCGCGCTCGCGCGCCCCGCCCCGCTC
TGACTGACCGCTTACTAAAACAGGTAAGTCCGGCTCCGCGCGGGTTTGGCGCTCC
CGCGGGCGCCCCCTCCTCAGGCGAGCGCTGCCACGTGAGACGAAGGGCGCAGCGAGCG
TCCTGATCCTTCGCCCCGACGCTCAGGACAGCGGCCGCTGCTCATAAGACTCGGCCTT
AGAACCCAGTATCAGCAGAAGGACATTTTAGGACGGGACTTGGGTGACTCTAGGGCACT
GGTTTTCTTTCCAGAGAGCGGAACAGGCGAGGAAAAGTAGTCCCTTCTCGGCGATTCTGC
GGAGGATCTCCGTGGGGCGGTGAACGCCGATGATGCCTCTACTAACCATGTTTCATGTTT
TCTTTTTTTTTCTACAGGTCTTGGGTGACGAACAGGGTACCGCCACCATGGCCACCGCT
CTCGCACAAGCCTGCTGCTGGCTTTCGGACTGCTGTGCCTGCCTTGGCTCCAGGAGGGCT
CCGCCGTAGCATCGATACCGTCGCTATGTGCTGGAGGCTTGCTGAAGGCTGTATGCTGT
CAGATCGCTGTGGTAAACAGGCGTTTGGCCTCTGACTGACGCTGTTTACCAGCGATCT
GACAGGACACAAGGCCTGTTACTAGCACTCACATGGAACAAATGGCCTCTAGCCTGGAGG
CTTGCTGAAGGCTGTATGCTGAGAATCAGATCAGATAGCGATCCGTTTTGGCCTCTGACT
GACGGATCGCTATCTGCTGATTCTCAGGACACAAGGCCTGTTACTAGCACTCACATGGAA
CAAATGGCCTCTAGCCTGGAGGCTTGCTGAAGGCTGTATGCTGAAACATGCCAACAGCAG
AATGCCGTTTTTGGCCTCTGACTGACGGCATTCTGCTGGGCATGTTTCAGGACACAAGGCC
TGTTACTAGCACTCACATGGAACAAATGGCCTCTCTAGAAT 3'

SEQ ID NO. 25 = SEQ ID NO. 1 + SEQ ID NO. 13

5' AATCAACCTCTGGATTACAAAATTTGTGAAAGATTGACTGGTATTCTTAACATATGT
GCTCCTTTTACGCTATGTGGATACGCTGCTTTAATGCCTTTGTATCATGCTATTGCTTCC
CGTATGGCTTTTCATTTTCTCCTCTGTATAAATCCTGGTTGCTGTCTTTATGAGGAG
TTGTGGCCCGTTGTCAGGCAACGTGGCGTGGTGTGCACTGTGTTTGTGACGCAACCCCC
ACTGGTTGGGGCATTGCCACCACCTGTCAGCTCCTTCCGGGACTTTCGCTTTCCCCCTC
CCTATTGCCACGGCGGAACCTATCGCCGCTGCCTTGCCCGCTGCTGGACAGGGGCTCGG
CTGTTGGGCACTGACAATTCCGTGGTGTGTGCGGGAAATCATCGTCCTTTCCTTGGCTG
CTCGCCTGTGTTGCCACCTGGATTCTGCGCGGACGTCCTTCTGCTACGTCCTTTCGGCC
CTCAATCCAGCGGACCTTTCCTTCCCGCGGCCTGCTGCCGGCTCTGCGGCCTCTCCGCGT
CTTCGCCTTCGCCCTCAGACGAGTCGGATCTCCCTTTGGGCCGCTCCCCGCTAAGCTT
ATCGATACCGTCGAGATCTAACTTGTTTATTGCAGCTTATAATGGTTACAAATAAGCAA
TAGCATCACAAATTTACAAATAAAGCATTTTTTCACTGCATTCTAGTTGTGGTTTGTG
CAAACCTCATCAATGTATCTTATCATGTCTGGATCTCGACCTCGACTAGAGCATGGCTACG

-continued

TAGATAAGTAGCATGGCGGGTTAATCATTAACTACAAGGAACCCCTAGTGATGGAGTTGG
CCACTCCCCTCTCTGCGCGCTCGCTCGCTCACTGAGGCCGGGCGACCAAAGGTCGCCCCGAC
GCCCCGGGCTTTGCCCGGGCGGCCTCAGTGAGCGAGCGAGCGCGCAGCTGGCGTAATAGCG
AAGAGGCCCGCACCCGATCGCCCTTCCCAACAGTTGCGCAGCCTGAATGGCGAATGGCGAT
TCCGTTGCAATGGCTGGCGGTAATATTGTTCTGGATATTACCAGCAAGGCCGATAGTTTG
AGTTCTTCTACTCAGGCAAGTGATGTTATTACTAATCAAAGAAGTATTGCGACAACGGTT
AATTTGCGTGATGGACAGACTCTTTTACTCGGTGGCCTCACTGATTATAAAAACACTTCT
CAGGATTCTGGCGTACCGTTCTGTCTAAAATCCCTTTAATCGGCCTCCTGTTTAGCTCC
CGCTCTGATTCTAACGAGGAAAGCACGTTATACGTGCTCGTCAAAGCAACCATAGTACGC
GCCCCGTAGCGGCGCATTAAGCGCGGCGGGTGTGGTGGTTACGCGCAGCGTGACCGCTAC
ACTTGCCAGCGCCCTAGCGCCCGCTCCTTCGCTTTCTTCCTTCCTTTCTCGCCACGTT
CGCCGGCTTTCCCGCTCAAGCTCTAAATCGGGGGCTCCCTTAGGGTTCCGATTTAGTGC
TTTACGGCACCTCGACCCCAAAAACTTGATTAGGGTGATGGTTCACGTAGTGGGCCATC
GCCCTGATAGACGTTTTTTCGCCCTTTGACGTTGGAGTCCACGTTCTTTAATAGTGGACT
CTTGTTCCAACTGGAACAACACTCAACCTATCTCGGTCTATTCTTTGATTATAAAGG
GATTTTGCCGATTTTCGGCCTATTGGTTAAAAAATGAGCTGATTAAACAAAAATTAACGC
GAATTTTAACAAAATATTAACGTTTACAATTTAAATATTGCTTATACAATCTTCTGT
TTTGGGGCTTTTCTGATTATCAACCGGGTACATATGATTGACATGCTAGTTTACGATT
ACCGTTCATCGATTCTTGTGTTGCTCCAGACTCTCAGGCAATGACCTGATAGCCTTTGT
AGAGACCTCTCAAAATAGCTACCCCTCTCCGCATGAATTTATCAGCTAGAACGGTTGAA
TATCATATTGATGGTGATTGACTGTCTCCGGCCTTCTCACCCGTTTGAATCTTTACCT
ACACATTACTCAGGCATTGCATTTAAAAATATATGAGGGTTCTAAAAATTTTATCCTTGC
GTTGAAATAAAGGCTTCTCCCGCAAAGTATTACAGGGTCATAATGTTTTTGGTACAACC
GATTTAGCTTTATGCTCTGAGGCTTTATTGCTTAATTTTGCTAATCTTTGCTTGCCTG
TATGATTTATTGGATGTTGGAATTCCTGATGCGGTATTTCTCCTTACGCATCTGTGCGG
TATTTACACCCGATATGGTGCACTCTCAGTACAATCTGCTCTGATGCCGATAGTTAAG
CCAGCCCCGACACCCGCCAACCCGCTGACGCGCCCTGACGGGCTTGTCTGCTCCCGGC
ATCCGCTTACAGACAAGCTGTGACCGTCTCCGGGAGCTGCATGTGTGACAGGTTTTCCACC
GTCATCACCGAAACGCGCGAGACGAAAGGGCCTCGTGATACGCCTATTTTTATAGGTTAA
TGTCATGATAATAATGGTTTTCTTAGACGTGAGTGGCACTTTTCGGGGAATGTGCGCGG
AACCCTTATTGTTTTATTTTTCTAAATACATTCAAATATGTATCCGCTCATGAGACAATA
ACCTGATAAATGCTTCAATAATATTGAAAAAGGAAGAGTATGAGTATTCAACATTTCCG
TGTCGCCCTTATTCCTTTTTTGCGGCATTTTGCTTCTGTTTTTGCTCACCAGAAAC
GCTGGTGAAAGTAAAAGATGCTGAAGATCAGTTGGGTGCACGAGTGGGTTACATCGAACT
GGATCTCAACAGCGGTAAGATCCTTGAGAGTTTTCGCCCCGAAGAAGCTTTTCAATGAT
GAGCACTTTTAAAGTTCTGCTATGTGGCGCGGTATTATCCCGTATTGACGCCGGGCAAGA
GCAACTCGGTGCGCGCATACACTATTCTCAGAATGACTTGGTTGAGTACTCACCAGTCAC
AGAAAAGCATCTTACGGATGGCATGACAGTAAGAGAATTATGAGTGCTGCCATAACCAT
GAGTGATAACACTGCGGCCAACTTACTTCTGACAACGATCGGAGGACCGAAGGAGCTAAC

-continued

CGCTTTTTTGCACAACATGGGGGATCATGTAACTCGCCTTGATCGTTGGGAACCGGAGCT
GAATGAAGCCATACCAAACGACGAGCGTGACACCACGATGCCTGTAGCAATGGCAACAAC
GTTGCGCAAACTATTAACTGGCGAACTACTTACTCTAGCTTCCCGGCAACAATTAATAGA
CTGGATGGAGGCGGATAAAGTTGCAGGACCACTTCTGCGCTCGGCCCTTCCGGCTGGCTG
GTTTATTGCTGATAAATCTGGAGCCGGTGAGCGTGGGTCTCGCGGTATCATTGCAGCACT
GGGGCCAGATGGTAAGCCCTCCCGTATCGTAGTTATCTACACGACGGGGAGTCAGGCAAC
TATGGATGAACGAAATAGACAGATCGCTGAGATAGGTGCCTCACTGATTAAGCATTGGTA
ACTGTCAGACCAAGTTTACTCATATATACTTTAGATTGATTTAAACTTCATTTTTAATT
TAAAAGGATCTAGGTGAAGATCCTTTTGTATAATCTCATGACCAAAATCCCTTAACGTGA
GTTTTTCGTTCCACTGAGCGTCAGACCCCGTAGAAAAGATCAAAGGATCTTCTTGAGATCC
TTTTTTTCTGCGCGTAATCTGCTGCTTGCAAAACAAAAAACACCGCTACCAGCGGTGGT
TTGTTTGCCGGATCAAGAGCTACCAACTCTTTTCCGAAGGTAACGGCTTCAGCAGAGC
GCAGATACCAAATACTGTCCTTCTAGTGTAGCCGTAGTTAGGCCACCACCTCAAGAACTC
TGTAGACCGCCTACATACCTCGCTCTGCTAATCCTGTACCAGTGGCTGCTGCCAGTGG
CGATAAGTCGTCTTACCAGGTGGAATCAAGACGATAGTTACCGGATAAGGCGCAGCG
GTCGGGCTGAACGGGGGTTCTGTCACACAGCCAGCTTGAGCGAACGACCTACACCGA
ACTGAGATACCTACAGCGTGAGCTATGAGAAAGCGCCACGCTTCCCGAAGGAGAAAGGC
GGACAGGTATCCGGTAAGCGGCAGGGTCGGAACAGGAGAGCGCACGAGGGAGCTTCCAGG
GGGAAACGCCCTGGTATCTTTATAGTCCTGTGCGGTTTCGCCACCTCTGACTTGAGCGTCG
ATTTTGTGATGCTCGTCAGGGGGCGGAGCCTATGGAACAGCCAGCAACGCGGCCCTT
TTTACGGTTCTGGCCCTTTTGCTGGCCTTTTGCTCACATGTTCTTTCTGCGTTATCCCC
TGATTCTGTGGATAACCGTATTACCGCCTTTGAGTGAGCTGATACCGCTCGCCGAGCCG
AACGACCGAGCGCAGCGAGTCAGTGAGCGAGGAAGCGGAAGAGCGCCCAATACGCAAAAC
GCCTCTCCCCGCGCGTTGGCCGATTCTTAATGCAGCAGCTGCGCGCTCGCTCGCTCACT
GAGGCCGCCCGGGCAAAGCCCGGGCGTCGGGCGACCTTTGGTCGCCCGGCCTCAGTGAGC
GAGCGAGCGCGCAGAGAGGAGTGGCCAACTCCATCACTAGGGGTTTCTTGTAGTTAATG
ATTAACCCGCCATGCTACTTATCTACGTAGCCATGCTCTAGGACATTGATTATTGACTAG
TGGAGTTCGCGTTACATAACTTACGGTAAATGGCCCGCCTGGCTGACCGCCCAACGACC
CCCGCCCATTGAGCTCAATAATGACGTATGTTCCCATAGTAACGCCAATAGGGACTTTCC
ATTGACGTCAATGGGTGGAGTATTTACGGTAACTGCCCCACTTGGCAGTACATCAAGTGT
ATCATATGCCAAGTACGCCCCCTATTGACGTCAATGACGGTAAATGGCCCGCCTGGCATT
ATGCCAGTACATGACCTTATGGGACTTTCCTACTTGCCAGTACATCTACGTATTAGTCA
TCGCTATTACCATGGTCGAGGTGAGCCCCACGTTCTGCTTCACTCTCCCCATCTCCCCC
CCTCCCCACCCCCAATTTTGTATTTATTTATTTTAAATTATTTTGTGCAGCGATGGGGG
GGGGGGGGGGGGGGCGCGCCAGGCGGGGCGGGGGGGGCGAGGGGCGGGGCGGGGGG
AGGCGGAGAGGTGCGGCGGCGCAATCAGAGCGGCGGCTCCGAAAGTTTCTTTTATG
GCGAGGCGGCGGCGGCGGCGCCCTATAAAAAGCGAAGCGCGGCGGGCGGGAGTCGCT
GCGCGCTGCCTTCGCCCGGTGCCCCGCTCCGCGCGGCTCGCGCGGCCCGCCCCGGCTC
TGACTGACCGGTTACTAAAACAGGTAAGTCCGGCTCCGCGCGGGTTTTGGCGCCTCC

-continued

CGCGGGCGCCCCCTCCTCACGGCGAGCGCTGCCACGTCAGACGAAGGGCGCAGCGAGCG
 TCCTGATCCTTCGCCCGGACGCTCAGGACAGCGGCCGCTGCTCATAAGACTCGGCCTT
 AGAACCCAGTATCAGCAGAAGGACATTTTAGGACGGGACTTGGGTGACTCTAGGGCACT
 GGTTCCTTTCCAGAGAGCGGAACAGGCGAGGAAAAGTAGTCCCTTCTCGGCGATTCTGC
 GGAGGGATCTCCGTGGGCGGTGAACGCCGATGATGCCTCTACTAACCATGTTTCATGTTT
 TCTTTTTTTTTTCTACAGGTCTGGGTGACGAACAGGGTACCGCCACCATTGGCCACCGGCT
 CTCGCACAAGCCTGCTGCTGGCTTTTCGGACTGCTGTGCCTGCCCTTGGCTCCAGGAGGGCT
 CGCCGCTAGCATCGATACCGTCGCTATGTGCTGGAGGCTTGCTGAAGGCTGTATGCTGA
 CAATCAGATATGGTTGCTCGGCGTTTTGGCCTCTGACTGACGCCGAGCAACTATCTGATT
 GTCAGGACACAAGGCCTGTTACTAGCACTCACATGGAACAAATGGCCTCTAGCCTGGAGG
 CTTGTGTAAGGCTGTATGCTGTTTACAATGCATCGTTCAGCGCGTTTTGGCCTCTGACT
 GACGCGCTGAACGGCATTGTGAAACAGGACACAAGGCCTGTTACTAGCACTCACATGGAA
 CAAATGGCCTCTAGCCTGGAGGCTTGCTGAAGGCTGTATGCTGACAATAATGCCAACAGG
 GTGGTCGTTTTGGCCTCTGACTGACGACCACCTGGGCATTATTGTGAGGACACAAGGCC
 TGTACTAGCACTCACATGGAACAAATGGCCTCTCTAGAAT 3'

[0074] As will be appreciated by those skilled in the art, because the recombinant plasmid is a circular vector, the one or more sequences of the miRNA expression cassettes may be connected at the 3' end of SEQ ID NO. 1, as shown in SEQ ID NO. 14, SEQ ID NO. 15, SEQ ID NO. 16, SEQ ID NO. 17, SEQ ID NO. 18, SEQ ID NO. 19, SEQ ID NO. 20, SEQ ID NO. 21, SEQ ID NO. 22, SEQ ID NO. 23, SEQ ID NO. 24 and SEQ ID NO. 25, or at the 5' end of SEQ ID NO. 1.

[0075] As will be appreciated by those skilled in the art, a perfect match of nucleotides with each of the miRNA expression cassette sequences is not necessary in order to have the desired result of decreased bioavailability of the target biomolecule as a result of the target cell producing the miRNA sequence that will bind to and degrade the mRNA of the target biomolecule. In some embodiments of the present disclosure, about 80% to about 100% nucleotide sequence matching with each of the miRNA expression cassettes causes the desired result. In some embodiments of the present disclosure, about 85% to about 100% nucleotide sequence matching with each of the miRNA expression cassettes causes the desired result. In some embodiments of the present disclosure, about 90% to about 100% nucleotide sequence matching with each of the miRNA expression cassettes causes the desired result. In some embodiments of the present disclosure, about 95% to about 100% nucleotide

sequence matching with each of the miRNA expression cassettes causes the desired result.

Example 1—Expression Cassette

[0076] Expression cassettes for expressing miRNA were synthesized. The synthesized miRNA expression cassettes were cloned into the pAVA-00200 plasmid backbone containing the CASI promoter, multiple cloning site (MCS), Woodchuck Hepatitis Virus post-transcriptional regulatory element (WPRE), and Simian virus 40 (SV40) polyadenylation (polyA) sequence, all flanked by the AAV2 inverted terminal repeats (ITR). pAVA-00200 was cut with the restriction enzymes KpnI and XbaI in the MCS and separated on a 1% agarose gel. The band of interest was excised and purified using a gel extraction kit. Each miRNA expression cassette was amplified by polymerase chain reaction (PCR) using Taq polymerase and the PCR products were gel purified and the bands of interest were also excised and purified using a gel extraction kit. These PCR products contained the miRNA expression cassettes in addition to 15 base pair 5' and 3' overhangs that aligned with the ends of the linearized pAVA-00200 backbone. Using in-fusion cloning, the amplified miRNA expression cassettes were integrated with the pAVA-00200 backbone via homologous recombination. The resulting RP contained the following: 5' ITR, CASI promoter, miRNA expression cassette, WPRE, SV40 polyA and ITR 3'.

SEQUENCE LISTING

Sequence total quantity: 25

SEQ ID NO: 1 moltype = DNA length = 5799
 FEATURE Location/Qualifiers
 source 1..5799
 mol_type = other DNA
 organism = synthetic construct

SEQUENCE: 1

aatcaacctc tggattacaa aatttgtgaa agattgactg gtattcttaa ctatgttgct 60

-continued

ccttttacgc	tatgtggata	cgtgctttaa	atgcctttgt	atcatgctat	tgettcccg	120
atggcctttc	ttttctctc	cttgtataaa	tcttggttgc	tgtctcttta	tgaggagtgt	180
tgcccgcttg	tcaggcaacg	tggcgtggtg	tgcactgtgt	ttgctgacgc	aacccccact	240
ggttggggca	tggccaccac	ctgtcagctc	ctttccggga	ctttegcttt	ccccctccct	300
attgccacgg	cggaaactcat	cgcgcctgc	cttgcccgct	gctggacagg	ggctcggctg	360
ttgggcactg	acaattccgt	gggtgtgtcg	gggaaatcat	cgtcctttcc	ttggctgctc	420
gcctgtgttg	ccacctggat	tctgcgcggg	acgtccttct	gctaagctcc	ttcggccctc	480
aatccagcgg	accttcccttc	ccgcggcctg	ctgcccgtct	tgcggcctct	tccgcgtctt	540
cgccctcgcc	ctcagacgag	tccgatctcc	ctttgggccc	cctccccgcc	taagcttatc	600
gataccgtcg	agatctaact	tgtttattgc	agcttataat	ggttacaaat	aaagcaatag	660
catcacaaat	ttcacaaaata	aagcattttt	ttcactgcat	tctagtgtgt	gtttgtccaa	720
actcatcaat	gtatcttata	atgtctggat	ctcgacctcg	actagagcat	ggctacgtag	780
ataagtagca	tggcgggtta	atcattaact	acaaggaacc	cctagtgtatg	gagttggcca	840
ctccctctct	cgcgcctcgc	tcgctcactg	aggccggggc	accaagggtc	gcccgacgcc	900
cgggctttgc	ccggggcgcc	tcagtgagcg	agcgagcgcg	cagctggcgt	aatagcgaag	960
aggcccgcac	cgatcgccct	tcccaacagt	tgcgcagcct	gaatggcgaa	tggcgattcc	1020
ggtgcaatgg	ctggcggtaa	tattgttctg	gatattacca	gcaaggccga	tagtttgagt	1080
tcttctactc	aggcaagtga	tgttattact	aatcaaaaga	gtattgcgac	aacgggttaat	1140
ttgcgtgatg	gacagactct	tttactcggg	ggcctcactg	attataaaaa	cacttctcag	1200
gattctggcg	taccgttctc	gtctaaaaat	cctttaatcg	gcctcctgtt	tagctcccg	1260
tctgattcta	acgaggaag	cacgttatac	gtgctcgtca	aagcaaccat	agtacgcgcc	1320
ctgtagcggc	gcattaagcg	cggcgggtgt	gggtggttacg	cgcagcgtga	ccgctacact	1380
tgccagcgcc	ctcagcgccc	ctcctttcgc	ttcttctcct	tcctttctcg	ccacgttcgc	1440
cggctttccc	cgtcaagctc	taaactcggg	gctcccttta	gggttccgat	ttagtgtctt	1500
acggcacctc	gacccaaaaa	aacttgatta	gggtgatggg	tcacgtatgt	ggccatcgcc	1560
ctgataagcg	gtttttcgcc	ctttgacggt	ggagtccacg	ttcttttaata	gtggactctt	1620
gttccaaact	ggaacaacac	tcaaccctat	ctcggctctat	tcttttgatt	tataagggat	1680
tttgcggtat	tccgcttatt	gggttaaaaa	tgagctgatt	taacaaaaat	ttaacgcgaa	1740
ttttaacaaa	atatttaact	ttacaattta	aatatttgct	tatacaatct	tctgtttttt	1800
ggggcttttc	tgtattatcaa	cgggggtaca	tatgattgac	atgctagtgt	tacgattacc	1860
gttcatcgat	tctctgtgtt	gctccagact	ctcaggcaat	gacctgatag	cctttgtaga	1920
gacctctcaa	aaatagctac	ctctccggc	atgaatttat	cagctagaac	ggttgaatat	1980
catattgatg	gtgatttgac	tgtctccggc	ctttctcacc	cggttgaaac	tttacctaca	2040
cattactcag	gcattgcatt	taaaatatat	gagggttcta	aaaattttta	tccttgcggt	2100
gaaataaagg	cttctcccg	aaaagtatta	cagggtcata	atgttttttg	tacaaccgat	2160
ttagctttat	gctctgaggg	tttattgctt	aattttgcta	attctttgcc	ttgcctgtat	2220
gatttattgg	atggttgaat	tcttgatcgc	gtattttctc	cttacgcate	tgtgcgggat	2280
ttcacaccgc	atatgggtgca	ctctcagtac	aatctgctct	gatgccgcac	agttaagcca	2340
gccccgacac	ccgccaacac	ccgctgacgc	gcccgtgacg	gcttgtctgc	tcccgccatc	2400
cgtttacaga	caagctgtga	ccgtctccgg	gagctgcacg	tgtcagaggt	tttcacgctc	2460
atcacccgaaa	cgcgcgagac	gaaagggcct	cgtgatacgc	ctatttttat	agggttaagt	2520
catgataata	atggtttctt	agacgtcagg	tggcactttt	cggggaaatg	tgcgcgggaa	2580
ccctatttgt	ttatttttct	aaatacattc	aaatatgtat	ccgctcatga	gacaataacc	2640
ctgataaatg	cttcaataat	attgaaaaag	gaagagtatg	agtatccaac	atttccgtgt	2700
cgcccttatt	cccttttttg	cggcattttg	ccttctcgtt	tttgctcacc	cagaaacgct	2760
ggtgaaagta	aaagatgcctg	aagatcagtt	gggtgcacga	gtgggttaca	tcgaactgga	2820
tctcaacagc	ggtaagatcc	ttgagagtgt	tgcgcccgaa	gaacgttttc	caatgatgag	2880
cacttttaaa	gttctgctat	gtggcgcggt	attatccggt	attgacgcgc	ggcaagagca	2940
actcggctcg	cgcatcacat	attctcagaa	tgaacttggt	gagtaactac	cagtcacaga	3000
aaagcatctt	acggatggca	tgacagtaag	agaattatgc	agtgtctgcca	taaccatgag	3060
tgataaacct	cgcggccaact	tacttctgac	aacgatcgga	ggaccgaagg	agctaaccgc	3120
ttttttgcac	aacatggggg	atcatgtaac	tcgccttgat	cgttgggaac	cggagctgaa	3180
tgaagccata	ccaaacgacg	agcgtgacac	cacgatgcct	gtagcaatgg	caacaacggt	3240
gcgcaaaact	ttaactggcg	aactacttac	tctagcttcc	cggcaacaat	taatagactg	3300
gatggagcgc	gataaagtgt	caggaccact	tctgcgctcg	gcccttcggg	ctggctgggt	3360
tattgctgat	aaatctggag	ccgggtgagc	tgggtctcgc	gggtatcattg	cagcaactggg	3420
gccagatggt	aagccctccc	gtatcgtagt	tatctacacg	acggggagtc	aggcaactat	3480
ggatgaacga	aatagacaga	tcgctgagat	agggtccctca	ctgattaaag	attggtaact	3540
gtcagaccaa	gtttactcat	atatacttta	gatttgattta	aaacttcatt	tttaatttaa	3600
aaggatctag	tgaaagatcc	tttttgataa	tctcatgacc	aaaatccctt	aacgtgagtt	3660
ttcgttccac	tgagcgtcag	accccgtaga	aaagatcaaa	ggatcttctt	gagatccttt	3720
ttttctgcgc	gtaatctgct	gcttgcaaac	aaaaaaacca	ccgctaccag	cgggtggtttg	3780
tttgccggat	caagagctac	caactctttt	tccgaaggta	actggtctca	gcagagcgca	3840
gataccaaat	actgtccttc	tagttagacc	gtagttaggc	caccacttca	agaactctgt	3900
agcacccgct	acatacctcg	ctctgctaata	cctgtttacca	gtggctgctg	ccagtggcga	3960
taagtctgtg	cttaccgggt	tggactcaag	acgatagtta	ccggataaag	cgcagcggct	4020
gggctgaacg	gggggttcgt	gcacacagcc	cagcttgagg	cgaacgacct	acaccgaact	4080
gagatacccta	cagcgtgagc	tatgagaaag	cgccacgctt	cccgaaggga	gaaaggcgga	4140
caggatcccg	gtaagcggca	gggtcggaac	aggagagcgc	acgagggagc	ttccaggggg	4200
aaacgcctgg	tatctttata	gtcctgtcgg	gtttcgccac	ctctgacttg	agcgtcgatt	4260
tttgtgatgc	tctgcagggg	ggcggagcct	atggaaaaac	gccagcaaac	cgcctttttt	4320
acgggttctg	gccttttgct	ggccttttgc	tcacatgttc	tttctcgctg	tatcccttga	4380
ttctgtggat	aaccgtatta	ccgcctttga	gtgagctgat	accgctcgcc	gcagccgaac	4440
gaccgagcgc	agcgagtcag	tgagcgagga	agcgggaagag	cgcccaatac	gcaaacccgc	4500
tctccccgcg	cgttgggcga	ttcattaatg	cagcagctgc	gcgctcgctc	gctcactgag	4560
gcccggccgg	caaagcccg	gcgtcggggc	acctttggtc	gcccggccctc	agtgagcgag	4620

-continued

```

cgagcgcgca gagaggagtg ggccaactcc atcactaggg gttccttgta gttaatgatt 4680
aaccgcgcat gctacttata tacgtagcca tgctctagga cattgattat tgactagtgg 4740
agttccgcgt tacataactt acggtaaatg gcccgccctg ctgaccgccc aacgaccccc 4800
gcccattgac gtcaataatg acgtatgttc ccatagtaac gccaataggg actttccatt 4860
gacgtcaatg ggtggagtat ttacggtaaa ctgcccactt ggcagtacat caagtgtatc 4920
atatgccaaag tacgccccct attgacgtca atgacggtaa atggcccgcg tggcattatg 4980
cccagtacat gaccttatgg gactttctca ctgggcagta catctacgta ttagtcatcg 5040
ctattaccat ggtcgagggt agccccacgt tetgcttcac tctcccatc tccccccct 5100
ccccaccccc aattttgtat ttatttattt tttaattatt ttgtgcagcg atgggggcgg 5160
gggggggggg gggcgcgcg caggcggggc gggggcgggc gaggggcggg gcggggcgag 5220
gcggagaggt gcggcgcgag ccaatcagag cggcgcgctc cgaaagtctt cttttatggc 5280
gaggcgcgcg gcggcgcggc cctataaaaa gcgaagcgcg cggcgggcgg gagtctgctg 5340
gcgtgcctt cgccccgtgc cccgtccgc cgccgctcg cgccgcccgc cccggtctg 5400
actgaccgcg ttactaaaac aggtaatgct ggctccgcg cgggttttg gcgcctccc 5460
cgggcgcccc cctcctcacg gcgagcgctg ccaagtcaga cgaagggcgc agcgagcgtc 5520
ctgatccttc cgccccgacg ctcaggacag cggcccgctg ctcataagac tcggccttag 5580
aaccaccagta tcagcagaag gacattttag gacgggactt gggtgactct agggcactg 5640
ttttctttcc agagagcgga acaggcgagg aaaagtagtc cctctcggc gattctgcgg 5700
agggatctcc gtggggcggt gaacgcccgt gatgcctcta ctaaccatgt tcatgttttc 5760
tttttttttc tacaggctct ggggtacgaa cagggtacc 5799

```

```

SEQ ID NO: 2      moltype = DNA length = 540
FEATURE          Location/Qualifiers
source           1..540
                 mol_type = other DNA
                 organism = synthetic construct

```

```

SEQUENCE: 2
gccaccatgg ccacgggctc tcgcacaagc ctgctgctgg ctttcggact gctgtgctg 60
ccttggtctc aggagggtc cgcgctagc atcgataccg tcgctatgtg ctggaggctt 120
gctgaaggct gtatgctgat caatcggatt gcggtaatcg cgttttggcc tctgactgac 180
gcgattaccg atccgattga tcaggacaca aggcctgtta ctgcaactca catggaacaa 240
atggcctcta gcctggaggg ttgctgaagg ctgtatgctg atctttgcta aattgggtgca 300
cgcgttttgg cctctgactg acgctgcac cattagcaaa gatcaggaca caaggcctgt 360
tactagcact cacatggaac aaatggcctc tagcctggag gcttgctgaa ggctgtatgc 420
tgacttcaat cacaattcca gcgcgctttt ggccctctgac tgacggcgct ggaagtgtat 480
gaagtcaggga cacaaggcct gttactagca ctcacatgga acaaatggcc tctctagaat 540

```

```

SEQ ID NO: 3      moltype = DNA length = 540
FEATURE          Location/Qualifiers
source           1..540
                 mol_type = other DNA
                 organism = synthetic construct

```

```

SEQUENCE: 3
gccaccatgg ccacgggctc tcgcacaagc ctgctgctgg ctttcggact gctgtgctg 60
ccttggtctc aggagggtc cgcgctagc atcgataccg tcgctatgtg ctggaggctt 120
gctgaaggct gtatgctgta atctttcgtt ggctgcagtt cgttttggcc tctgactgac 180
gaactgcagc gcgaagatt acaggacaca aggcctgtta ctgcaactca catggaacaa 240
atggcctcta gcctggaggg ttgctgaagg ctgtatgctg tgtaaatgct gatgtcacgc 300
tgcgttttgg cctctgactg acgacgctg accagcatta acacaggaca caaggcctgt 360
tactagcact cacatggaac aaatggcctc tagcctggag gcttgctgaa ggctgtatgc 420
tgttcacctg gttaacacat acacgctttt ggccctctgac tgacgggtga tgtgaaccag 480
gtgaacaggga cacaaggcct gttactagca ctcacatgga acaaatggcc tctctagaat 540

```

```

SEQ ID NO: 4      moltype = DNA length = 540
FEATURE          Location/Qualifiers
source           1..540
                 mol_type = other DNA
                 organism = synthetic construct

```

```

SEQUENCE: 4
gccaccatgg ccacgggctc tcgcacaagc ctgctgctgg ctttcggact gctgtgctg 60
ccttggtctc aggagggtc cgcgctagc atcgataccg tcgctatgtg ctggaggctt 120
gctgaaggct gtatgctgat ttcttctgtt gcgctttcgc cgttttggcc tctgactgac 180
ggcgaagcgc caggaaagaa tcaggacaca aggcctgtta ctgcaactca catggaacaa 240
atggcctcta gcctggaggg ttgctgaagg ctgtatgctg agaataatca gatcagcacg 300
ctcgttttgg cctctgactg acgagcgtgc tgctgattat tctcaggaca caaggcctgt 360
tactagcact cacatggaac aaatggcctc tagcctggag gcttgctgaa ggctgtatgc 420
tgtaatcagg ctgaattcag atagcgtttt ggccctctgac tgacgctatc tgaacagcct 480
gattacaggga cacaaggcct gttactagca ctcacatgga acaaatggcc tctctagaat 540

```

```

SEQ ID NO: 5      moltype = DNA length = 540
FEATURE          Location/Qualifiers
source           1..540
                 mol_type = other DNA
                 organism = synthetic construct

```

```

SEQUENCE: 5
gccaccatgg ccacgggctc tcgcacaagc ctgctgctgg ctttcggact gctgtgctg 60

```

-continued

```

ccttggctcc aggagggctc cgcgcctagc atcgataccg tcgctatgtg ctggaggctt 120
gctgaaggct gtatgctgat aatcacgcgt gcaggttcag cgttttggcc tctgactgac 180
gctgaacctg gcggtgatta tcaggacaca aggcctgtta ctgacctca catggaacaa 240
atggcctcta gcttggagggc ttgctgaagg ctgtatgctg ttcaatcgcg tatggtaat 300
cgcgttttgg cctctgactg acgcgattac caacgcgatt gaacaggaca caaggcctgt 360
tactagcact cacatggaac aaatggcctc tagcctggag gcttgcgtgaa ggctgtatgc 420
tgtgatcatg ctgaaaatgg tgcacgtttt ggccctctgac tgacgtgcac cattcagcat 480
gatcacagga cacaaggcct gttactagca ctcacatgga acaaatggcc tctctagaat 540

```

```

SEQ ID NO: 6      moltype = DNA length = 540
FEATURE          Location/Qualifiers
source           1..540
                 mol_type = other DNA
                 organism = synthetic construct

```

```

SEQUENCE: 6
gccaccatgg ccacgggctc tcgcacaagc ctgctgctgg ctttcggact gctgtgacctg 60
ccttggctcc aggagggctc cgcgcctagc atcgataccg tcgctatgtg ctggaggctt 120
gctgaaggct gtatgctgag gtaatatcct gacgcctcag cgttttggcc tctgactgac 180
ggctgagcgt ggaattacc tcaggacaca aggcctgtta ctgacctca catggaacaa 240
atggcctcta gcttggagggc ttgctgaagg ctgtatgctg tacagaatca gataatcagc 300
gcggttttgg cctctgactg acggcgctga ttctgattct gtacaggaca caaggcctgt 360
tactagcact cacatggaac aaatggcctc tagcctggag gcttgcgtgaa ggctgtatgc 420
tgtcatgttt aaaaattcgc tgcgcgtttt ggccctctgac tgacgcgcag cgaattttaa 480
catgacagga cacaaggcct gttactagca ctcacatgga acaaatggcc tctctagaat 540

```

```

SEQ ID NO: 7      moltype = DNA length = 540
FEATURE          Location/Qualifiers
source           1..540
                 mol_type = other DNA
                 organism = synthetic construct

```

```

SEQUENCE: 7
gccaccatgg ccacgggctc tcgcacaagc ctgctgctgg ctttcggact gctgtgacctg 60
ccttggctcc aggagggctc cgcgcctagc atcgataccg tcgctatgtg ctggaggctt 120
gctgaaggct gtatgctgat gaatcgggtt gtctgaatcg cgttttggcc tctgactgac 180
gcgattcaga acccgattca tcaggacaca aggcctgtta ctgacctca catggaacaa 240
atggcctcta gcttggagggc ttgctgaagg ctgtatgctg aacactttgc tatatcatcc 300
tcggttttgg cctctgactg acgcaggatg atagcaaatg gttcaggaca caaggcctgt 360
tactagcact cacatggaac aaatggcctc tagcctggag gcttgcgtgaa ggctgtatgc 420
tgttctgttc gtttaagctaa tgcctgtttt ggccctctgac tgacgagcat tagcaacgaa 480
cagaacagga cacaaggcct gttactagca ctcacatgga acaaatggcc tctctagaat 540

```

```

SEQ ID NO: 8      moltype = DNA length = 540
FEATURE          Location/Qualifiers
source           1..540
                 mol_type = other DNA
                 organism = synthetic construct

```

```

SEQUENCE: 8
gccaccatgg ccacgggctc tcgcacaagc ctgctgctgg ctttcggact gctgtgacctg 60
ccttggctcc aggagggctc cgcgcctagc atcgataccg tcgctatgtg ctggaggctt 120
gctgaaggct gtatgctgga gcattagcaa tcgcaacaga agttttggcc tctgactgac 180
ttctgttcgt tgtaaatgct ccaggacaca aggcctgtta ctgacctca catggaacaa 240
atggcctcta gcttggagggc ttgctgaagg ctgtatgctg aaacataatg gattcagcag 300
cgcgttttgg cctctgactg acgcgctgct gaccattatg tttcaggaca caaggcctgt 360
tactagcact cacatggaac aaatggcctc tagcctggag gcttgcgtgaa ggctgtatgc 420
tgttatcttt gcgaagctgc catccgtttt ggccctctgac tgacggatgg cagccgcaaa 480
gataacagga cacaaggcct gttactagca ctcacatgga acaaatggcc tctctagaat 540

```

```

SEQ ID NO: 9      moltype = DNA length = 538
FEATURE          Location/Qualifiers
source           1..538
                 mol_type = other DNA
                 organism = synthetic construct

```

```

SEQUENCE: 9
gccaccatgg ccacgggctc tcgcacaagc ctgctgctgg ctttcggact gctgtgacctg 60
ccttggctcc aggagggctc cgcgcctagc atcgataccg tcgctatgtg ctggaggctt 120
gctgaaggct gtatgctggc tcctccactt ggtggttttg ttttggcctc tgactgacgc 180
ggcaacattc tggtgattac aggacacaag gcctgttact agcactcaca tggaaacaaat 240
ggcctctagc cttgaggcct gctgaaggct gtatgctgtc ataactcgta ttgggtgcgg 300
cgttttggcc tctgactgac gccgcaccaa agcgattatg acaggacaca aggcctgtta 360
ctagactca catggaacaa atggcctcta gcctggagggc ttgtgtaagg ctgtatgctg 420
tttgatcct caagttcggg ttctgttttg cctctgactg acgaaccoga accaggatca 480
gaacaggaca gaaggcctgt tactagcact cacatggaac aaatggcctc tctagaat 538

```

```

SEQ ID NO: 10     moltype = DNA length = 540
FEATURE          Location/Qualifiers
source           1..540

```


-continued

```

mol_type = other DNA
organism = synthetic construct

SEQUENCE: 10
gccaccatgg ccaccggctc tcgcacaagc ctgctgctgg ctttcggact gctgtgacctg 60
ccttggctcc aggagggctc cgcgcctagc atcgataccg tcgctatgtg ctggaggctt 120
gctgaaggct gtatgctgaa atcttcgggt ggttccactg cgttttggcc tctgactgac 180
gcagtggaaac ccggaagatt tcaggacaca aggcctgtta ctagcaactca catggaacaa 240
atggcctcta gcctggaggc ttgctgaagg ctgtatgctg atatcctgaa tatggtatgc 300
agcgttttgg cctctgactg acgctgcata ccattcagga tatcaggaca caaggcctgt 360
tactagcact cacatggaac aaatggcctc tagcctggag gcttgcctgaa ggctgtatgc 420
tgtttaaacg tcaaacgcgt tcgccgtttt ggcctctgac tgacggcgaa cgcgtgagct 480
ttaaacagga cacaaggcct gttactagca ctcacatgga acaaatggcc tctctagaat 540

SEQ ID NO: 11      moltype = DNA length = 540
FEATURE            Location/Qualifiers
source              1..540
                    mol_type = other DNA
                    organism = synthetic construct

SEQUENCE: 11
gccaccatgg ccaccggctc tcgcacaagc ctgctgctgg ctttcggact gctgtgacctg 60
ccttggctcc aggagggctc cgcgcctagc atcgataccg tcgctatgtg ctggaggctt 120
gctgaaggct gtatgctgta ataaaggctt ggaatcacc cgttttggcc tctgactgac 180
gggtgattcc gacctttatt acaggacaca aggcctgtta ctagcaactca catggaacaa 240
atggcctcta gcctggaggc ttgctgaagg ctgtatgctg taatacgcga gatcaccatc 300
agcgttttgg cctctgactg acgctgatgg tgctggcgta ttacaggaca caaggcctgt 360
tactagcact cacatggaac aaatggcctc tagcctggag gcttgcctgaa ggctgtatgc 420
tgatacagaa acgaaggctt aggcgcgttt ggcctctgac tgacggcctg aaccgcgttc 480
tgtatcagga cacaaggcct gttactagca ctcacatgga acaaatggcc tctctagaat 540

SEQ ID NO: 12      moltype = DNA length = 540
FEATURE            Location/Qualifiers
source              1..540
                    mol_type = other DNA
                    organism = synthetic construct

SEQUENCE: 12
gccaccatgg ccaccggctc tcgcacaagc ctgctgctgg ctttcggact gctgtgacctg 60
ccttggctcc aggagggctc cgcgcctagc atcgataccg tcgctatgtg ctggaggctt 120
gctgaaggct gtatgctgac agatcgctgt ggtaaacagg cgttttggcc tctgactgac 180
gcctgtttac cagcgatctg acaggacaca aggcctgtta ctagcaactca catggaacaa 240
atggcctcta gcctggaggc ttgctgaagg ctgtatgctg agaatcagat cagatagcga 300
tcggttttgg cctctgactg acggatcgct atctgctgat tctcaggaca caaggcctgt 360
tactagcact cacatggaac aaatggcctc tagcctggag gcttgcctgaa ggctgtatgc 420
tgaaacatgc caacagcaga atgccgtttt ggcctctgac tgacggcatt ctgctgggca 480
tgtttcagga cacaaggcct gttactagca ctcacatgga acaaatggcc tctctagaat 540

SEQ ID NO: 13      moltype = DNA length = 540
FEATURE            Location/Qualifiers
source              1..540
                    mol_type = other DNA
                    organism = synthetic construct

SEQUENCE: 13
gccaccatgg ccaccggctc tcgcacaagc ctgctgctgg ctttcggact gctgtgacctg 60
ccttggctcc aggagggctc cgcgcctagc atcgataccg tcgctatgtg ctggaggctt 120
gctgaaggct gtatgctgac aatcagatat ggttgcctcg cgttttggcc tctgactgac 180
cccgagcaac tatctgattg tcaggacaca aggcctgtta ctagcaactca catggaacaa 240
atggcctcta gcctggaggc ttgctgaagg ctgtatgctg ttccacaatg catcgttcag 300
cgcgttttgg cctctgactg acgcgctgaa cggcatttgt aaacaggaca caaggcctgt 360
tactagcact cacatggaac aaatggcctc tagcctggag gcttgcctgaa ggctgtatgc 420
tgacaataat gccaacaggg ttgtcgtttt ggcctctgac tgacgaccac cctgggcatt 480
attgtcagga cacaaggcct gttactagca ctcacatgga acaaatggcc tctctagaat 540

SEQ ID NO: 14      moltype = DNA length = 6339
FEATURE            Location/Qualifiers
source              1..6339
                    mol_type = other DNA
                    organism = synthetic construct

SEQUENCE: 14
aatcaacctc tggattacaa aatttgtgaa agattgactg gtattcttaa ctatgttgct 60
ccttttacgc tatgtggata cgtgcttcta atgcctttgt atcatgctat tgcttcccgt 120
atggctttca tttctcctc cttgtataaa tccctggttg tgtctcttta tgaggagtgt 180
tggcccggtg tcaggcaaac tggcgtgggt tgcactgtgt ttgctgacgc aacccccact 240
ggttggggca ttgccaccac ctgtcagctc ctttcgggga ctttcgcttt cccctccctc 300
attgccacgg cggaactcat cgcgcctgac cttgcctgct gctggacagg ggctcggtgt 360
ttgggcactg acaattccgt ggtgttgtcg gggaaatcat cgtcctttcc ttggctgctc 420
gcctgtgttg cacactggat tctgcgcggg acgtccttct gctacgtccc ttcgccctc 480
aatccagcgg accttccttc ccgcggcctg ctgcgcggctc tgcggcctct tccgcgtctt 540

```

-continued

cgccctcgcc	ctcagacgag	tccggtctcc	ctttggggccg	cctccccgcc	taagcttate	600
gataccgctg	agatctaact	tgtttattgc	agcttataat	ggttacaaat	aaagcaatag	660
catcacaaat	ttcacaaata	aagcatTTTT	ttcactgcat	tctagtgtg	gtttgtccaa	720
actcatcaat	gtatcttate	atgtctggat	ctcgacctcg	actagagcat	ggctacgtag	780
ataagtagca	tggcggtgta	atcattaact	acaaggaacc	cctagtgtg	gagttggcca	840
ctccctctct	gcgcgctcgc	tcgctcactg	aggccgggcg	accaaaggct	gcccgcagcc	900
cgggctttgc	cggggcgccg	tcagtgcgcg	agcgagcgcg	cagctggcgt	aatagcgaag	960
aggcccgac	cgatcgccct	tcccaacagt	tgcgcagcct	gaatggcgaa	tggcgattcc	1020
gttgcaatgg	ctggcggtaa	tattgttctg	gatattacca	gcaaggccga	tagtttgagt	1080
tcttctactc	aggcaagtga	tgttattact	aatcaaagaa	gtattgcgac	aacggttaat	1140
ttgcgtgatg	gacagactct	tttactcggt	ggcctcactg	attataaaaa	cacttctcag	1200
gattctggcg	taccgttccct	gtctaaaaatc	cctttaatcg	gcctcctggt	tagctcccgc	1260
tctgattcta	acgaggaagc	cacgttatac	gtgctcgta	aagcaaccat	agtacgcgcc	1320
ctgtagcggc	gcattaaagc	cggcggtgtg	gggtggttacg	cgcagcggtga	ccgctacact	1380
tgcacgccc	ctagcgcccg	ctcctttcgc	ttctctccct	tcctttctcg	ccacgttcgc	1440
cggctttccc	cgtcaagctc	taaatcgggg	gctcccttta	gggttccgat	ttagtgcttt	1500
acggcacctc	gaccccaaaa	aaacttgatta	gggtgatggg	tcacgtagt	ggccactcgc	1560
ctgtagacgc	gtttttcgcc	ctttgacgtt	ggagtccacg	ttctttaata	gtggactcct	1620
gttccaaact	ggaacaacac	tcaaccctat	ctcggtctat	tttttgatt	tataagggat	1680
tttgccgatt	tcggcctatt	gggtaaaaaa	tgagctgatt	taacaaaaat	ttaacgcgaa	1740
ttttaacaaa	atattaaagt	ttacaattta	aatatttgct	tatacaactc	tcctgttttt	1800
ggggcttttc	tgattatcaa	ccggggatca	tatgattgac	atgctagtgt	tacgattacc	1860
gttcatcgat	ttctctgttt	gctccagact	ctcaggcaat	gacctgatag	cctttgtaga	1920
gacctctcaa	aaatagctac	cctctccggc	atgaatttat	cagctagaac	gggtgaatat	1980
catattgatg	gtgatttgac	tgtctccggc	ctttctcacc	cgttggaatc	tttacctaca	2040
cattactcag	gcattgcatt	taaaaatata	gagggttcta	aaaattttta	tccttgcggt	2100
gaaataaagg	cttctcccg	aaaagtatta	cagggctcata	atgtttttgg	tacaaccgat	2160
ttagctttat	gctctgaggc	tttattgctt	aattttgcta	attctttgct	ttgctgtat	2220
gatttattgg	atgtttggaat	tcctgatgcg	gtattttctc	cttacgcact	tgtgcgggat	2280
ttcacaccgc	atatgggtca	ctctcagtag	aatctgctct	gatgcgcgat	agttaaagcca	2340
gccccgacac	ccgccaacac	ccgctgacgc	gcccctgacgc	gcttgctctg	tcggcgcatc	2400
gccttacaga	caagctgtga	ccgtctccgg	gagctgcactg	tgtcagaggt	tttcaccgct	2460
atcacccgaa	cgccgcgagc	gaaagggcct	cgtgatagcg	ctatttttat	aggttaagt	2520
catgataata	atgggtttctt	agacgtcagg	tggcactttt	cggggaaaatg	tgcgcggaac	2580
ccctatttgt	ttatttttct	aaatacatct	aaatatgtat	ccgctcatga	gacaataacc	2640
ctgataaatg	cttcaataat	attgaaaaag	gaagagtagt	agttatcaac	atttccgtgt	2700
cgcccttatt	cccttttttg	cgccattttg	ccttctctgt	tttgctcacc	cagaaaagct	2760
ggtgaaagta	aaagatgctg	aagatcagtt	gggtgcacga	gtgggttaca	tcgaactgga	2820
tctcaacagc	ggtaagatcc	ttgagagttt	tcgccccgaa	gaacggtttc	caatgatgag	2880
cacttttaaa	gttctgctat	gtggcgcggt	attatcccg	attgacgcgc	ggcaagagca	2940
actcggtcgc	cgcatacact	attctcagaa	tgaactgggt	gagtagctac	cagtcacaga	3000
aaagcatcct	acggatggca	tgacagtaag	agaattatgc	agtgtcgcca	taaccatgag	3060
tgataaacct	gcgccaact	tactctgac	aacgatcgga	ggacggaagg	agctaaccgc	3120
ttttttgcac	aacatggggg	atcatgtaac	tcgcttgat	cgttgggaac	cggagctgaa	3180
tgaagccata	ccaaacgacg	agcgtgacac	cacgatgcct	gtagcaatgg	caacaacgtt	3240
gcgcaaaact	ttaactggcg	aactactttac	tctagcttcc	cggcaacaat	taatagactg	3300
gatggaggcg	gataaaagt	caggaccact	tctgcgctcg	gcccttccgg	ctggctgggt	3360
tattgctgat	aaatctggag	ccgggtgagc	tgggtctcgc	ggatcatctg	cagcactggg	3420
gcagatggg	aagccctccc	gtatcgtagt	tatctacacg	acggggagtc	aggcaactat	3480
ggatgaacga	aatagacaga	tcgctgagat	agggtccctca	ctgattaaag	attggtaact	3540
gtcagaccaa	gtttactcat	atatacttta	gattgattta	aaacttcatt	tttaatttaa	3600
aaagatctag	tggaagatcc	tttttgataa	tctcatgacc	aaaatccctt	aacgtgagtt	3660
ttcggtccac	tgagcgtcag	accccgtaga	aaagatcaaa	ggatcttctt	gagatccttt	3720
ttttctgcgc	gtaatctgct	gcttgcaaac	aaaaaaaacca	ccgctaccag	cgggtggttg	3780
tttgccggat	caagagctac	caactctttt	tcggaaggta	actggcttca	gcagagcgca	3840
gatacccaat	actgtccttc	tagttagacc	gtagttaggc	caccacttca	agaactctgt	3900
agcacccgct	acatacctcg	ctctgcta	cctgttacca	gtggctgctg	ccagtggcga	3960
taagtctgtg	cttaccgggt	tggactcaag	acgatagtta	ccggataaag	cgcagcggtc	4020
gggctgaacg	gggggttcgt	gcacacagcc	cagcttgagg	cgaacgacct	acaccgaact	4080
gagataccta	cagcgtgagc	tattgagaaag	cgccacgctt	cccgaaggga	gaaaggcgga	4140
caggatctcg	gtaagcgcca	gggtcggaac	aggagagcgc	acgagggagc	ttccaggggg	4200
aaacgcctgg	tatctttata	gtcctgtcgg	gtttcgccac	ctctgacttg	agcgtcgatt	4260
tttgtgatgc	tcgtcagggg	ggcggagcct	atggaaaaac	gccagcaacg	cggccttttt	4320
acggttcctg	gccttttctg	ggccttttgc	tcacatgttc	tttctgctg	tatcccttga	4380
ttctgtggat	aaccgtaata	ccgcctttga	gtgagctgat	accgctcgcc	gcagccgaac	4440
gaccgagcgc	agcgagtcag	tgagcgagga	agcgggaagag	cgcccaatac	gcaaacggcc	4500
tctcccccg	cgttggccga	ttcattaatg	cagcagctgc	gcgctcgctc	gctcactgag	4560
gcgcgccggg	caaagcccg	cgctcgggcg	acctttgttc	gcccggcctc	agtgagcgag	4620
cgagcgcgca	gagagggagt	ggccaactcc	atcactaggg	gttccttgta	gttaatgatt	4680
aaccgcgcct	gctacttate	tacgtagcca	tgtcttagga	cattgattat	tgactagtgg	4740
agttccgctg	tacataactt	acggtaaatg	gcccgcctgg	ctgaccgccc	aacgaccccc	4800
gcccattgac	gtcaataatg	acgtatgttc	ccatagttaac	gccaataggg	acttttccatt	4860
gacgtcaatg	ggtaggagat	ttacggtaaa	ctgcccactt	ggcagtagat	caagtgtatc	4920
atatgccaa	tacgccccct	attgacgtca	atgacggtaa	atggcccgcc	tggcattatg	4980
cccagtacat	gactttatgg	gactttccta	cttggcagta	catctacgta	ttagtcatcg	5040
ctattaccat	ggctgagggtg	agccccacgt	tctgcttcac	tctccccatc	ttccccccct	5100

-continued

```

ccccaccccc aattttgtat ttatttattt tttaattatt ttgtgcagcg atgggggcgg 5160
gggggggggg gggcgcgcg caggcggggc gggcgggggc gaggggcggg gcggggcgag 5220
gcgagagagg gcgcgcgcg ccaatcagag cggcgcgctc cgaaagtttc cttttatgac 5280
gaggcgggcg cggcgggcg cctataaaaa gcgaagcgcg cggcgggcgg gactcgtgac 5340
gcgctgcctt cgcgccgtgc cccgctccgc cgcgcgccgc cccggctctg 5400
actgaccgcg ttactaaaac aggttaagtcc ggccctccgc cggggttttg gcgcctccgc 5460
cggcgcccc cctcctcacg gcgagcgctg ccacgtcaga cgaagggcgc agcgagcgctc 5520
ctgatccctc cgcgcggacg ctcaggacag cggcgcgctg ctcataagac tcggccttag 5580
aaccocagta tcagcagaag gacattttag gacgggactt ggggtgactc agggcactgg 5640
ttttctttcc agagagcgga acaggcgagg aaaagtagtc ccttctcggc gattctgagg 5700
agggatctcc gtggggcggt gaacgcgat gatgcctcta ctaaccatgt tcatgttttc 5760
tttttttttc tacaggctct ggttgacgaa cagggtaccg ccaccatggc caccggctct 5820
cgcaacagcc tgctgctggc ttccggactg ctgtgcctgc cttggctcca ggagggtccc 5880
gcgctagcca tcgatacgt cgctatgtgc tggaggcttg ctgaaggctg tatgctgac 5940
aatcggattg cggtaactgc gttttggcct ctgactgacg cgattaccga tccgattgat 6000
caggacacaa ggcctgttac tagcactcac atggaacaaa tggcctctag cctggaggct 6060
tgctgaaggc gctgtgctga tctttgctaa attggtgcac gcgttttggc cctgactga 6120
cgctgcacc attagcaaa atcaggacac aaggcctgtt actagcactc acatggaaca 6180
aatggcctct agcctggagg ctgtgtaag gctgtatgct gacttcaatc acaattccag 6240
cgccgttttg gcctctgact gacggcgctg gaagtgattg aagtcaggac acaaggcctg 6300
ttactagcac tcacatggaa caaatggcct ctctagaat 6339

```

```

SEQ ID NO: 15      moltype = DNA length = 6339
FEATURE            Location/Qualifiers
source              1..6339
                    mol_type = other DNA
                    organism = synthetic construct

```

```

SEQUENCE: 15
aatcaacctc tggattacaa aattttgtga agattgactg gtattcttaa ctatgttgct 60
ccttttacgc tatgtggata cgcgtcttta atgcctttgt atcatgctat tgcttcccgt 120
atggctttca tttctctctc tctgtataaa tcttggttgc tgtctcttta tgaggagtgt 180
tggcccggtg tcaggcaacg tggcggtggt tgcactgtgt ttgctgacgc aacccccact 240
ggttggggca ttgccaccac ctgtcagctc ctttccggga ctttgcgttt cccctccctc 300
attgccacgg ccgaactcat cgcgcctgc cttgcccgct gctggacagg ggctcggtcg 360
ttgggcactg acaattccgt ggtgtgtgct gggaaatcat cgtcctttcc ttggctgctc 420
gcctgtgttg ccacctggat tctgcgcggg acgtccttct gctacgtccc ttcggccctc 480
aatccagcgg acctctcttc ccgcggcctg ctgcggcgct tgcggcctct tccgcgtctt 540
cgctctcgcc ctcagacgag tcggatctcc ctttgggccc cctccccgcc taagcttatc 600
gataccgtcg agatctaact tgtttattgc agcttataat gggtacaaat aaagcaatag 660
catcacaaat ttacacaaat aagcattttt ttcactgcat tctagtgtg gtttgtocaa 720
actcatcaat gtatcttatc atgtctggat ctcgacctcg actagagcat ggctacgtag 780
ataagtagca tggcgggtta atcattaact acaaggaaac cctagtgtat gatttggcca 840
ctccctctct gcgcgctcgc agcctcactg aggcggggcg accaaaggtc gcccgacgcc 900
cgggctttgc ccggcggggc tcagtgcgag agcgagcgcg cagctggcgt aatagcgaag 960
aggcccgcac cgatcgccct tcccaacagt tgcgcagcct gaatggcgaa tggcgattcc 1020
gttgcaatgg ctggcggtta tattgttctg gatattacca gcaaggccga tagtttgagt 1080
tcttctactc aggcaagtga tgttattact aatcaaagaa gtattgcgac aacgggttaat 1140
ttgcgtgatg gacagactct tttactcggt ggcctcactg attataaaaa cacttctcag 1200
gattctggcg taccgttctc gtctaaaatc cctttaatcg gcctcctgtt tagctcccgc 1260
tctgatctta acgaggaaag cacggtatac gtgctcgcca aagcaaccat agtacgcgcc 1320
ctgtagcgcg gcattaaagc cggcggggtg ggtggttaac cgcagcgctga ccgctacact 1380
tgccagcgcc ctacgcgccg ctcccttcgc tttcttccct tcttttctcg ccacgttcgc 1440
cggctttccc cgtcaagctc taaatcgggg gctcccttta ggggtccgat ttagtgcttt 1500
acggcacctc gaccccaaaa aacttgatta ggggtgatgt tcacgtagtg ggccatcgcc 1560
ctgatagacg gtttttcgcc ctttgacgtt ggagtcacag tcttttaata gtggactctt 1620
gttccaaact ggaacaacac tcaacctat ctcggtctat tcttttgatt tataagggat 1680
tttgccgatt tcggcctatt ggttaaaaaa tgagctgatt taacaaaaat ttaacgcgaa 1740
ttttaacaaa atattaacgt ttacaattta aatatttgct tatacaactc tctgtttttt 1800
ggggcttttc tgattatcaa ccgggggtaca tatgattgac atgctagtgt tacgattacc 1860
gttcacgatc tctcttggtt gctccagact ctcaggcaat gacctgatag cctttttaga 1920
gacctctcaa aaatagctac cctctccggc atgaatttat cagctagaac ggttgaatat 1980
catattgatg gtgatttgac tgtctccggc ctttctcacc cgtttgaatc ttacctaca 2040
cattactcag gcattgcatt taaaaatat gagggttcta aaaattttta tccctgctgt 2100
gaaataaagg cttctccgcc aaaagtatta cagggtcata atgtttttgg tacaaccgat 2160
ttagctttat gctctgaggt tttattgctt aattttgcta attctttgcc ttgctggtat 2220
gatttattgg atgttggaat tctctagtcg gtattttctc cttacgcacg tgtgcgggtat 2280
ttcacaccgc atatggtgca ctctcagtac aatctgctct gatgcgcgat agttaagcca 2340
gcccgacac ccgccaacac ccgctgacgc gccctgacgc gcttgctcgc tccggcatc 2400
cgcttacaga caagctgtga ccgtctccgg gagctgcacg tgtcagaggt tttaccgctc 2460
atcccgaaa cgcgcgagac gaaagggcct cgtgatacgc ctatttttat aggttaatat 2520
catgataata atggtttctt agacgtcagg tggcactttt cggggaaaatg tgcgcggaac 2580
ccctatttgt ttatttttct aaatacatte aaatatgtat ccgctcatga gacaataaac 2640
ctgataaatg cttcaataat attgaaaaag gaagagtatg agtattcaac atttccgtgt 2700
cgcccttatt cccttttttg cggcattttg ccttctctgt tttgctcacc cagaaacgct 2760
ggtgaaagta aaagatcgtg aagatcagtt ggggtgcaca gtgggttaca tcgaactgga 2820
tctcaacacg ggtaagatcc ttgagagttt tcgccccgaa gaacgttttc caatgatgag 2880

```

-continued

```

cacttttaaa gttctgctat gtggcgcggt attatcccg attgacgcgc ggcaagagca 2940
actcgggtcgc cgcatacact attctcagaa tgacttggtt gagtactcac cagtcacaga 3000
aaagcatctt acggatggca tgacagtaag agaattatgc agtgctgccca taaccatgag 3060
tgataaacat cggcgcaact tacttctgac aacgatcgga ggaccgaagg agctaaccgc 3120
ttttttgcac aacatggggg atcatgtaac tcgccttgat cgttgggaac cggagctgaa 3180
tgaagccata ccaaacgacg agcgtgacac cacgatgcct gtagcaatgg caacaacgtt 3240
gcgcaaaacta ttaactggcg aactacttac tctagcttcc cggcaacaat taatagactg 3300
gatggaggcg gataaagttg caggaccact tctgcgctcg gcccttcggg ctggctgggt 3360
tattgctgat aaatctggag ccggtgagcg tgggtctcgc ggatcattg cagcactggg 3420
gccagatggt aagccctccc gtatcgtagt tatctacacg acggggagtc aggcaactat 3480
ggatgaacga aatagacaga tcgctgagat aggtgcctca ctgattaagc attggtaact 3540
gtcagaccaa gtttactcat atatacttta gattgattta aaacttcatt ttttaattaa 3600
aaggatctag gtgaagatcc tttttgataa tctcatgacc aaaatccctt aacgtgagtt 3660
ttcgttccac tgagcgtcag accccgtaga aaagatcaaa ggatcctctt gagatccttt 3720
ttttctgcgc gtaatctgct gcttgcaaac aaaaaaacca ccgctaccag cgggtggtttg 3780
tttgccggat caagagctac caactctttt ccgaaggta actggcttca gcagagcgca 3840
gataccaaat actgtccttc tagttagacc gtagttaagg caccacttca agaactctgt 3900
agcaccgcct acatacctcg ctctgctaact cctgttacca gtggctgctg ccagtggcga 3960
taagtctgtt cttaccgggtt ggactcaag acgatagtta ccgataagg cgcagcggtc 4020
gggctgaacg ggggggtctg gcacacagcc cagcttgagg cgaacgacct acaccgaact 4080
gagatacctc cagcgtgagc tatgagaaag ccgccagcct ccgcaaggga gaaaggcgga 4140
caggtatccg gtaagcggca gggtcggaac aggagagcgc acgagggagc ttccaggggg 4200
aaacgctcgg tactcttata gtccctgctcg gtttcgcac ctctgacttg agcgtcgatt 4260
tttgtgatgc tcgtcagggg ggcggagcct atggaaaaac gccagcaacg cggccttttt 4320
acggttcctg gcccttttgc ggccttttgc tcacatgttc tttctgcgt tatccctga 4380
ttctgtggat aaacgtatta ccgcctttga gtgagctgat accgctcgc gcagccgaac 4440
gaccgagcgc agcagagtcag tgacgagga agcggaaagag ccgccaatat gcaaacccgc 4500
tctccccgcg cgttgcccgat ttcaataatg cagcagctgc gcgctcgctc gctcactgag 4560
gcccgcgggg caaagccggg gcgtcggggc accttggttc gcccgccctc agtgagcgag 4620
cgagcgcgca gagaggaggt ggcacaactcc atcactaggg gttccttgta gttaatgatt 4680
aaaccgccat gctacttacc tacgtagcca tgctctagga cattgattat tgactagtgg 4740
agttccgcgt tacataaact acggtaaatg gcccgccctg ctgaccgccc aacgaccccc 4800
gcccattgac gtcaataatg acttatgttc ccatagtaac gccaataggg actttccatt 4860
gacgtcaatg ggtggagtat ttacggtaaa ctgcccaact ggacgtacat caagtgtatc 4920
atatgccaa gtagccccc attgacgtca atgacggtaa atggcccgcc tggcattatg 4980
cccagtacat gaccttatgg gactttccta ctggcagta catctacgta ttagtcatcg 5040
ctattaccat ggtcgagggt agccccacgt tctgcttcac tctccccatc tccccccct 5100
ccccaccccc aattttgtat ttattttatt tttaattatt ttgtgcagcg atggggggcg 5160
gggggggggg gggcgcgcg caggcggggg gggggcgggg gagggggcgg gcggggcgag 5220
gcggaagagg gcggcgcgag ccaatcagag cggcgcgctc cgaaggttcc cttttatggc 5280
gaggcgcgcg cggcgcgcg cctataaaaa gcgaagcgcg cggcgggcgg gactcgctgc 5340
cgctgccttc cgccccgtgc ccgctccgc cgccgcctcg cgccgcgcgc cccggctctg 5400
actgacgcg ttactaaaac aggttaagtcc ggccctccgc cggggttttg gcgcctccgc 5460
cggcgcccc cctcctcacg gcgagcgtg ccacgtcaga cgaaggcgcg agcgagcgtc 5520
ctgatccttc cgcccgagc ctacggacag cggcccgctg ctcataagac tcggccttag 5580
aaaccacgta tcagcagaag gacattttag gacgggactt gggtagctct agggcactgg 5640
ttttctttcc agagagcgga acaggcgagg aaaagtagtc cctctcggc gattctcgcg 5700
agggatctcc ttggggcggt gaacgccgat gatgcctcta ctaaccatgt tcatgttttc 5760
tttttttttc tacaggtcct ggttgacgaa cagggtaccg ccaccatggc caccggctct 5820
cgcaacaagc tgctgctggc ttctggactg ctgtgcctgc cttggctcca ggagggtccc 5880
cgcgtagca tcgataccgt cgctatgtgc tggaggcttg ctgaaggctg tatgctgtaa 5940
tctttcgctg gctcgagtc gttttggcct ctgactgacg aactgcagcg cgaagatta 6000
caggacacaa ggcctgttac tagcactcac atggaaacaa tggcctctag cctggaggct 6060
tgctgaaggc tgtatgctgt gttaatgctg atgtcacgct gcgttttggc ctctgactga 6120
cgacgcgtga ccagcattaa cacaggacac aaggcctgtt actagcactc acatggaaca 6180
aatggcctct agcctggagg cttgctgaag gctgtatgct gttcacctgg ttaacacata 6240
caccgttttg gcctctgact gacggtgat gtgaaccagg tgaacaggac acaaggcctg 6300
ttactagcac tcacatggaa caaatggcct ctctagaat 6339

```

```

SEQ ID NO: 16      moltype = DNA length = 6339
FEATURE
source             Location/Qualifiers
                   1..6339
                   mol_type = other DNA
                   organism = synthetic construct

```

```

SEQUENCE: 16
aatcaacctc tggattacaa aattttgtga agattgactg gtattcttaa ctatgttget 60
ccttttacgc tatgtggata cgctgcttta atgcctttgt atcatgctat tgcctcccgt 120
atggctttta tttctcctc ctgtataaa tcttggtgct tgtctcttta tgaggagttg 180
tgcccgcttg tcaggcaacg tggcgtgggt tgcactgtgt ttgctgacgc aacccccact 240
ggttggggca ttgccaccac ctgtcagctc ctttcgggga ctttcgcttt cccctccctc 300
attgccagcg cgaactcat cgccgcctgc cttgccgcgt gctggacagg ggctcggctg 360
ttgggcactg acaattccgt ggtgttgtcg gggaaatcat cgtcctttcc ttggctgctc 420
gcctgtgttg ccacctggat tctgcgcggg acgtccttct gctacgtccc ttggccctc 480
aatccagcgc accttccttc ccgcgccctg ctgcggctc tcgggctctt tccgctctt 540
cgcttcgcgc ctcagacgag tcggatctcc ctttggggcg cctccccgc taagcttatc 600
gataccgtcg agatctaact tgtttattgc agcttataat ggttacaataa aaagcaatag 660

```

-continued

catcacaaat	ttcacaaata	aagcattttt	tteactgcat	tctagtgtg	gtttgtccaa	720
actcatcaat	gtatottatc	atgtctggat	ctcgacctcg	actagagcat	ggctacgtag	780
ataagtagca	tggcgggtta	atcattaact	acaaggaacc	cctagtgtatg	gagttggcca	840
ctccctctct	gcgcgctcgc	tcgctcactg	aggcggggcg	accaaaggctc	gcccgaagcc	900
cgggctttgc	ccgggcgggc	tcagttagcg	agcgagcgcg	cagctggcgt	aatagcgaag	960
aggcccgac	cgatcgccct	tcccaacagt	tgcgcagcct	gaatggcgaa	tggcgattcc	1020
gttgcaatgg	ctggcggtta	tattgttctg	gatattacca	gcaaggccga	tagtttgagt	1080
tcttctactc	aggcaagtga	tgttattact	aatcaaagaa	gtattgagac	aacggttaat	1140
ttgcgtgatg	gacagactct	tttactcgg	ggcctcactg	attataaaaa	cacttctcag	1200
gattctggcg	tacggttctc	gtctaaaatc	cctttaatcg	gcctcctggt	tagctccgcg	1260
tctgattcta	acgaggaag	cacgttatac	gtgctcgta	aagcaaccat	agtacgcgc	1320
ctgtagcggc	gcattaaagg	cggcgggtgt	ggtggttacg	cgcagcgtga	ccgctacact	1380
tgcacgcgc	ctagcgcgcg	ctccttccgc	ttcttccct	tccttctcgc	ccacgttcgc	1440
cggctttccc	cgtaagctc	taaaatcggg	gctcccttta	gggttccgat	ttagtgcctt	1500
acggcacctc	gaccccaaaa	aacttgatta	gggtgatggt	tcacgtagtgt	ggccatcgcc	1560
ctgatagacg	gtttttcgcc	ccttgacgtt	ggagtcacg	ttctttaata	gtggactcct	1620
gttccaaact	ggaacaacac	tcaaccctat	ctcggtctat	tcctttgatt	tataagggat	1680
tttgccgatt	tccgctcatt	gggtaaaaaa	tgagctgatt	taacaaaaat	ttaacgcgaa	1740
ttttaacaaa	atattaacgt	ttacaattta	aataattgct	tatacaatct	tcctgttttt	1800
ggggcttttc	tgattatcaa	ccggggtaca	tatgattgac	atgctagtgt	tacgattacc	1860
gttcatcgat	tctctgtgtt	gctccagact	ctcaggcaat	gacctgatag	cctttgtaga	1920
gaacctctca	aaatagctac	cctctccggc	atgaatttat	cagctagaac	ggttgaatat	1980
catattgatg	gtgatttgac	tgtctccggc	ctttctcacc	cgtttgaatc	tttacctaca	2040
cattactcag	gcatttgcat	taaaatatat	gaggggtcta	aaaattttta	tccttgcggt	2100
gaaataaagg	cttctccggc	aaaagtatta	caggggtcata	atgtttttgg	tacaaccgat	2160
ttagctttat	gtctctgaggc	tttattgctt	aattttgcta	attctttgct	ttgcctgcat	2220
gatttattgg	atgttggaat	tctctgatcg	gtattttctc	cttacgcac	tgtgcgggtat	2280
ttcacaccgc	atatggtgta	ctctcagta	aatctgctct	gatgcgcgat	agttaagcca	2340
gccccgacac	gcgcaaacac	ccgctgacgc	gcccgtgacg	gcttctctgc	tcccggcatc	2400
cgcttacaga	caagctgtga	ccgtctccgg	gagctgcatg	tgtcagaggt	tttcaccgct	2460
atcccgcaaa	cgccgagagc	gaaaggccct	cgtgatacgc	ctatttttat	aggttaatgt	2520
catgataata	atggttttct	agacgtcagg	tggcactttt	cggggaaatg	tgcgcggaac	2580
cctattttgt	ttatttttct	aaatacatct	aaatatgtat	ccgctcatga	gacaataacc	2640
ctgataaatg	cttcaataat	attgaaaaag	gaagagtatg	agtattcaac	atttccgtgt	2700
cgcccttatt	cccttttttg	cggcattttg	ccttctctgt	tttgctcacc	cagaaaacgt	2760
ggtgaaagta	aaagatgctg	aagatcagtt	gggtgcacga	gtgggttaca	tcgaactgga	2820
tctcaacagc	ggttaagatc	ttagagttt	tcgccccgaa	gaacgttttc	caatgatgag	2880
cacttttaaa	gttctgctat	gtggcgcggt	attatcccg	attgacgcgc	ggcaagagca	2940
actcggtcgc	cgcatacact	attctcagaa	tgaacttggt	gagtaactc	cagtcacaga	3000
aaagcatctc	cgagatggca	tgacagtaag	agaattatgc	agtgcgcga	taaccatgag	3060
tgataaacct	gcggccaaat	tacttctgac	aacgatcgga	ggaccgaagg	agctaaccgc	3120
ttttttgcac	aacatggggg	atcatgtaac	tcgccttgat	cgttggggaa	cggagctgaa	3180
tgaagccata	ccaaacgacg	acgctgacac	cacgatgcct	gtagcaatgg	caacaacgct	3240
gcgcaaaact	ttaactggcg	aactacttac	tctagcttcc	cggcaacaat	taatagactg	3300
gatggaggcg	gataaagtgt	caggaccact	ctcgctcg	gcccctccgg	ctggctgggt	3360
tattgctgat	aaatctggag	cgggtgagcg	tgggtctcgc	ggtatcattg	cagcactggg	3420
gccagatggt	aagccctccc	gtatcgtagt	tatctacacg	acggggagtc	aggcaactat	3480
ggatgaacga	aatagacaga	tcgctgagat	agggtccctc	ctgattaaag	attggttaact	3540
gtcagaccaa	gtttactcat	atatacttta	gattgattta	aaacttcatt	tttaatttaa	3600
aaggatctag	gtgaagatcc	tttttgataa	tctcatgacc	aaaatccctt	aacgtgagtt	3660
tctgttccac	tgagcgtcag	accccgtaga	aaagatcaaa	ggatcttctt	gagatccctt	3720
ttttctgcgc	gtaatctgct	gcttgcaaac	aaaaaaacca	ccgctaccag	cgggtggtttg	3780
tttgccggat	caagagctac	caactctttt	tcggaaggta	actggcttca	gcagagcgca	3840
gataccaaat	actgctcttc	tagtgtagcc	gtagttaggc	caccacttca	agaactctgt	3900
agcacccgct	acatacctcg	ctctgcta	cctgttacc	gtggtgctg	ccagtgccga	3960
taagtcgtgt	cttaccgggt	tggactcaag	acgatagtta	ccggataagg	cgcagcggtc	4020
gggctgaacg	gggggttcgt	gcacacagcc	cagcttgag	cgaacgacct	acaccgaact	4080
gagataccca	cagcgtgagc	tatgagaaag	cgccacgctt	cccgaaggga	gaaaggcgga	4140
caggatcccg	gtaagcgcca	gggtcggaac	aggagagcgc	acgagggagc	ttccaggggg	4200
aaacgcctgg	tatctttata	gtcctgtcgg	gtttcgccac	ctctgacttg	agcgtcgatt	4260
tttgtagtgc	tcgtcagggg	ggcggagcct	atggaaaaac	gccagcaaac	cggccttttt	4320
acggttccgt	gccttttget	ggccttttgc	tcacatgttc	tttctgctg	tatccccctga	4380
ttctgtggat	aaccgtatta	ccgcctttga	gtgagctgat	accgctcgcc	gcagccgaac	4440
gaccgagcgc	agcgagtcag	tgagcgagga	agcgggaag	cgcccaatac	gcaaacggcc	4500
tctccccgcg	cgttggccga	ttcattaatg	cagcagctgc	gcctcgctc	gctcactgag	4560
gcccggccgg	caaagcccg	gcgtcggg	acctttggtc	gcccggcctc	agtgaagcag	4620
cgagcgcgca	gagaggaggt	ggccaaactcc	atcactagg	gttcccttga	gttaatgatt	4680
aaaccgcat	gctacttatc	tacgtagcca	tgctctagga	cattgattat	tgactagtgg	4740
agttccgcgt	tacataactt	acggtaaatg	gcccgcctgg	ctgaccgccc	aacgaccccc	4800
gcccattgac	gtcaataatg	acgtatgttc	ccatagtaac	gccaaatagg	actttccatt	4860
gagctcaatg	gggtggagat	ttacggtaaa	ctgcccactt	ggcagtaacat	caagtgtatc	4920
atatgccaa	tacgccccct	attgacgtca	atgacggtaa	atggccccgc	tggcattatg	4980
cccagtagat	gactttatgg	gactttccta	cttgccagta	catctacgta	ttagtcatcg	5040
ctattaccat	ggctgaggtg	agccccacgt	tctgcttca	tctccccatc	ttccccccct	5100
ccccacccc	aattttgtat	tttaattatt	ttgtgcagcg	atggggcg	atggggcg	5160
gggggggggg	ggggcgcg	caggcgggg	ggggcgggg	gagggcg	gagggcg	5220

-continued

gcggagaggt	gcgggcgag	ccaatcagag	cggcgcgctc	cgaaagtttc	cttttatggc	5280
gagggcgcg	cgggcgcg	cctataaaaa	gcgaagcgcg	cgggcgggcg	gagtcgctgc	5340
gcgctgcctt	cgccccgtgc	cccgcctccg	cgccgcctcg	cgccgcctcg	cccggctctg	5400
actgaccg	ttactaaaac	aggttaagtc	ggcctccg	cggggttttg	gcgcctccg	5460
cgggcgcccc	cctcctcacg	gcgagcgctg	ccacgtcaga	cgaagggcg	agcgagcgtc	5520
ctgatccttc	cgcccggaacg	ctcaggacag	cgcccgctg	ctcataagac	tcggccttag	5580
aaacccagta	tcagcagaag	gacattttag	gacgggactt	gggtgactct	agggcactgg	5640
ttttcttttc	agagagcgga	acaggcgagg	aaaagtagtc	ccttcctggc	gattctgcgg	5700
agggatctcc	gtggggcggt	gaacgcgat	gatgcctcta	ctaaccatgt	tcatgttttc	5760
tttttttttc	tacaggctct	gggtgacgaa	cagggtaccg	ccaccatggc	caccggctct	5820
cgcacaagcc	tgtgctggc	tttcggactg	ctgtgcctgc	cttggctcca	ggagggtctc	5880
gcgctagca	tcgataccgt	cgtatgtgc	tggaggcttg	ctgaaggctg	tatgtgatt	5940
tcttcctgtg	cgctttcgcc	gttttggcct	ctgactgacg	gcgaaagcgc	aggaagaaat	6000
caggacacaa	ggcctgttac	tagcactcac	atggaacaaa	tggcctctag	cctggaggct	6060
tgtgaagcg	tgtatgtga	gaataatcag	atcagcacgc	tcgttttggc	ctctgactga	6120
cgagcgtgct	gctgattatt	ctcaggacac	aaggcctgtt	actagcactc	acatggaaca	6180
aatggcctct	agcctggagg	cttgcctgaag	gctgtatgct	gtaatcaggc	tgaattcaga	6240
tagcgttttg	gcctctgact	gacgctatct	gaacagcctg	attacaggac	acaaggcctg	6300
ttactagcac	tcacatggaa	caaatggcct	ctctagaat			6339

SEQ ID NO: 17 moltype = DNA length = 6339
 FEATURE Location/Qualifiers
 source 1..6339
 mol_type = other DNA
 organism = synthetic construct

SEQUENCE: 17

aatcaacctc	tggattacaa	aatttgtgaa	agattgactg	gtattcttaa	ctatgttgc	60
ccttttacgc	tattgtgata	cgtgcttta	atgcctttgt	atcatgctat	tgcttcccg	120
atggctttca	ttttctcttc	ctgtataaa	tcctgggtgc	tgctctctta	tgaggagtgt	180
tggcccggtg	tcagggaacg	tggcgtggtg	tgcactgtgt	ttgtgacgc	aaaccccaact	240
ggttggggca	ttgccaccac	ctgtcagctc	ctttccggga	ctttcgcttt	ccccctccct	300
attgccacgg	cggaactcat	cgcgcctgc	cttgcctgc	gctggacagg	ggctcggtgc	360
ttgggcactg	acaattccgt	gggtgtgtcg	gggaaatcat	cgtcctttcc	ttggctgctc	420
gcctgtgttg	ccacctggat	ctgcgcggg	acgtcctctc	gctacgtccc	ttcggccctc	480
aatccagcgg	accttctctc	ccgcgcctgc	ctgcgcctgc	tgccgctctc	tcgcgctctc	540
cgccctcgcc	ctcagacgag	tcggatctcc	ctttggggcg	cctccccgcc	taagcttatc	600
gataccgtcg	agattctaac	tgtttattgc	agcttataat	ggttacaata	aaagcaatag	660
catcacaaat	ttcacaaata	aagcattttt	ttcactgcat	tctagttgtg	gtttgtccaa	720
actcatcaat	gtatcttatt	atgtctggat	ctcgacctcg	actagagcat	ggctacgtag	780
ataagttagc	tggcgggtta	atcattaact	acaaggaacc	cctagttagt	gagttggcca	840
ctccctctct	gcgcgctcgc	tcgctcactg	aggccggggc	accaagggtc	gcccgcagcc	900
cggtctttgc	cgggggggcc	tcagtgagcg	agcgagcgcg	cagctggcgt	aatagcgaag	960
aggcccgac	cgatcgccct	tcccacagct	tgcgcagcct	gaatggcgaa	tggcgattcc	1020
gttgcaatgg	ctggcggtaa	tattgttctg	gatattacca	gcaaggccga	tagtttgagt	1080
ctcttctact	aggcaagtga	tgttattact	aatcaagaa	gtattgcgac	aacggttaat	1140
ttgcgtgatg	gacagactct	tttactcggt	ggcctcactg	attataaaaa	cacttctcag	1200
gattctggcg	taccgttctc	gtctaaaaat	cctttaatcg	gcctcctgtt	tagctccgc	1260
cttgattcta	acgaggaag	caggttatac	gtgctcgtca	aagcaaccat	agtagcgcc	1320
ctgtagcgcg	gcattaaagg	cgccgggtgt	gggtggttac	cgacgctga	ccgctacact	1380
tgccagcgcc	ctagcgcccg	ctcctttcgc	tttcttccct	tcctttctcg	ccacgttcgc	1440
cggtctttcc	cgtcaagctc	taaatcgggg	gctcccttta	gggttccgat	ttagtgtttt	1500
acggcacctc	gaccccaaaa	aacttgatta	gggtgatggt	tcacgtagtg	ggccatcgcc	1560
ctgatatagc	gttttttcgc	ctttgacgtt	ggagtccacg	ttctttaata	gtggactctt	1620
gttccaaact	ggaacaacac	tcaaccctat	ctcggtctat	tcctttgatt	tataagggat	1680
tttgcgattt	tcggcctatt	ggttaaaaaa	tgagctgatt	taacaaaaat	ttaacgcgaa	1740
ttttaacaaa	atattaacgt	ttacaattta	aatatttgct	tatacaatct	tcctgttttt	1800
ggggcttttc	tgattatcaa	ccgggggtaca	tatgattgac	atgctagttt	tacgattacc	1860
gttcatcgat	tcctctgttt	gctccagact	ctcaggcaat	gacctgtag	cctttgtaga	1920
gacctctcaa	aaatagctac	cctctccggc	atgaatttat	cagctagaac	ggttgaatat	1980
catattgatg	gtgatttgac	tgtctccggc	ctttctcacc	cggttgaaac	tttacctaca	2040
cattactcag	gcatttgcatt	taaaatatat	gagggttcta	aaaattttta	tccttgcggt	2100
gaaataaagg	cttctcccg	aaaagtatta	cagggtcata	atgttttttg	tacaaccgat	2160
ttagctttat	gctctgagcg	tttattgctt	aattttgcta	attctttgct	ttgcctgtag	2220
gatttattgg	atgttggaat	tcctgatgcg	gtattttctc	cttacgcac	tgtagcggtat	2280
ttcacaccgc	atatgggtga	ctctcagtag	aatctgctct	gatgccgcac	agttaagcca	2340
gccccgcac	ccgccaacac	ccgctgacgc	gccctgacgc	gcttgtctgc	ttccggcatc	2400
cgcttacaga	caagctgtga	ccgtctccgg	gagctgcatg	tgtcagagg	tttcaccgct	2460
atcacccgaa	cgcgcgagac	gaaagggcct	cgtgatacgc	ctatttttat	aggtttaagt	2520
catgataata	atggtttctt	agacgtcagg	tggcactttt	cggggaaatg	tgccgcggaac	2580
cctattttgt	ttatttttct	aaatacatct	aaatatgtat	ccgctcatga	gacaataacc	2640
ctgataaatg	cttcaataat	attgaaaaag	gaagagtatg	agatttcaac	atttccgtgt	2700
cgcccttatt	cccttttttg	cggtcatttt	ccttcctgtt	tttgctcacc	cagaaacgct	2760
ggtgaaagta	aaagatgctg	aagatcagtt	gggtgcacga	gtgggttaca	tcgaactgga	2820
tctcaacagc	ggtaagatcc	ttgagagttt	tcgccccgaa	gaacgttttc	caatgatgag	2880
cacttttaaa	gttctgctat	gtggcgcggt	attatcccg	attgacgcgc	ggcaagagca	2940
actcggtcgc	cgcatacact	attctcagaa	tgacttggtt	gagtagctac	cagtagcaga	3000

-continued

```

aaagcatctt acggatggca tgacagtaag agaattatgc agtgetgcca taaccatgag 3060
tgataaacact gcggaacaact tactttctgac aacgatcgga ggacogaagg agctaaccgc 3120
ttttttgcac aacatggggg atcatgtaac tcgccttgat cggtgggaac cggagctgaa 3180
tgaagccata ccaaacgacg agcgtgacac cacgatgcct gtagcaatgg caacaacgtt 3240
gcgcaaaacta ttaactggcg aactacttac tctagcttcc cggcaacaat taatagactg 3300
gatggaggcg gataaagtgt caggaccact tctgcgctcg gcccttcagg ctggtctggtt 3360
tattgctgat aaatctggag ccggtgagcg tgggtctcgc ggtatcattg cagcactggg 3420
gccgatgggt aagccctccc gtatcgtagt tatctacacg acggggagtc aggcaactat 3480
ggatgaacga aatagacaga tcgctgagat aggtgcctca ctgattaagc attggtaact 3540
gtcagaccaa gtttactcat atatacttta gattgattta aaacttcatt tttaatttaa 3600
aaggatctag gtgaagatcc tttttgataa tctcatgacc aaaatccctt aacgtgagtt 3660
ttcgttccac tgagcgtcag accccgtaga aaagatcaaa ggatcttctt gagatccttt 3720
ttttctgcgc gtaatctgct gcttgcaaac aaaaaaacca ccgctaccag cggtaggtttg 3780
tttgccggat caagaggtac caactctttt tccgaaggta actggcttca gcagagcgca 3840
gataccaaat actgtccttc tagttagacc gtatgttagc caccacttca agaactctgt 3900
agcaccgcct acatacctc cctgctaata cctgttacca gtggtgctgt ccagtggcga 3960
taagtctgtt cttaccgggt tggactcaag acgatagtta ccggataagg cgcagcggtc 4020
gggctgaacg gggggtctgt gcacacagcc cagcttgagg cgaacgacct acaccgaact 4080
gagataccata cagcgtgagc tatgagaaag cgccacgctt ccgaaggga gaaaggcgga 4140
caggtatccg gtaagcggca gggtcggaa acgagagcgc acgagggagc ttccaggggg 4200
aaacgcctgg tatctttata gtctctcgg gtttcgccac ctctgacttg agcgtcgatt 4260
tttgtgatgc tcgtcagggg ggcggagcct atggaaaaac gccagcaacg cggccttttt 4320
acggttctcg gccctttgct ggctttttgc tcacatgttc tttcctgcgt tatccccga 4380
ttctgtggtt aaccgtatta ccgcctttga gtgagctgat accgctcgcc gcagccgaac 4440
gaccgagcgc agcgtgtag tgagcgagga agcggagag cgcccaatc gcaaacgcgc 4500
tctccccgcg cgttggcgga ttcatatag cagcagctgc gcgctcgctc gctcactgag 4560
gccgccccgg caaagcccg gcttcgggag acccttggtc gcccgccctc agtgagcgag 4620
cgagcgcgca gagaggaggt ggcacaactcc atcactaggg gttccttgta gttaatgatt 4680
aaccgcctat gctactatc tacgtagcca tgccttagga cattgattat tgactagtgg 4740
agttcccggt tacataactt agggtaaatg gcccgccctg ctgaccgccc aacgaccccc 4800
gccattgac gtcataatg acgtatgttc ccatagtaac gccaataggg actttccatt 4860
gacgtcaatg gttggagtat ttacggtaaa ctgcccactt ggcagtacat caagtgtatc 4920
atatgccaa gtaacccccct attgacgtca atgacggtaa atggcccgcc tggcattatg 4980
cccagttacat gactttatgg gactttccta cttggcagta catctacgta ttagtcatcg 5040
ctattaccat ggtcgagggt agccccacgt tctgcttacc tctccccatc tccccccct 5100
ccccaccccc aattttgtat ttatttattt tttaattatt ttgtgcagcg atggggggcg 5160
gggggggggg gggcgcgcg cagggcgggg gggggcgggg gaggggcggg gcggggcgag 5220
gcggagaggt gcggcgcgag ccaatcagag cggcgcgctc cgaaagtctt cttttatggc 5280
gaggcgggcg cggcgcgcg cctataaaaa gcgaagcgcg cggcgggcgg gagtctgctg 5340
gcgctgcctt ccgcccgtgc ccgctcccg cgcccgcccg cccggctctg 5400
actgaccgag ttactaaaac aggttaagtc ggctcccgcg cggggttttg gcgctcccg 5460
cggcgcccc cctcctcagc gcgagcgctg ccaagtcaga cgaaggcgcg agcagcgctc 5520
ctgatctctt cgcocggag ctcaggacag cggcccgctg ctcataagac tcggccttag 5580
aaccaccagta tcagcagaag gacattttag gacgggactt gggtagactt agggcactgg 5640
ttttctttcc agagagcgga acaggcgagg aaaagtagtc cctctcggcg gattctcgcg 5700
agggatctcc gtggggcggt gaacgccgat gatgcctcta ctaaccatgt tcatgttttc 5760
tttttttttc ttcaggtcct ggggtgacga cagggtaccg ccaccatggc caccgctct 5820
cgcacaaagc tgctgtggcg ttccggactg ctgtgcctgc cttggctcca ggagggtcc 5880
gccgtagaca tcgataccgt cgtatgtgct tggaggcttg ctgaaggctg tatgctgata 5940
atcaccgctg caggttcagc gttttggcct ctgactgacg ctgaacctgg cggtagtat 6000
caggacacaa ggctgtttac tagcactcac atggaacaaa tggcctctag cctggaggct 6060
tgctgaaggc tgtatgctgt tcaatcgctg attggtaatc gcgttttggc ctctgactga 6120
cgcgattacc aacgcgattg aacaggacac aaggcctgtt actagcactc acatggaaca 6180
aatggcctct agcctggagg ctgtgtgaag gctgtatgct gtgatcatgc tgaatatggt 6240
gcacgttttg gcccttgact cagctgcacc attcagcatg atcacaggac acaaggcctg 6300
ttactagcac tcacatggaa caaatggcct ctctagaat 6339

```

```

SEQ ID NO: 18      moltype = DNA length = 6339
FEATURE            Location/Qualifiers
source              1..6339
                    mol_type = other DNA
                    organism = synthetic construct

```

```

SEQUENCE: 18
aatcaacctc tggattacaa aattttgtgaa agattgactg gtattcttaa ctatgttgct 60
ccttttacgc tatgttgata cgtgctttta atgcctttgt atcatgctat tgettcccgt 120
atggcctttc ttttctctc cttgtataaa tccctggttgc tgtctcttta tgaggagttg 180
tggcccggtt tcaggcaacg tggcgtgggt tgcactgtgt ttgtgacgc aacccccact 240
ggttggggca ttgccaccac ctgtcagctc ctttcggga ctttcgctt cccctccct 300
attgccacg cggaactcat cgcgcctgc cttgcccgct gctggacagg ggctcggctg 360
ttgggcactg acaattccgt ggtgtgtgct gggaaatcat cgtcctttcc ttggctgctc 420
gctgtgtgtg ccactggat tctgcgggg acgtccttct gctacgtccc ttcggccctc 480
aatccagcgg accttccttc ccgcgccctg ctgcgggctc tgcggcctct tccgctctt 540
cgcttcgccc ctcagacgag tcggatctcc ctttgggccc cctccccgcc taagcttatc 600
gataccgtcg agatctaact tgtttattgc agcttataat gggtacaaat aaagcaatag 660
catcacaaat ttcacaaata aagcattttt ttcactgcat tctagtgtgt gtttgtccaa 720
actcatcaat gtatcttctc atgtctggat ctgcacctcg actagagcat ggctacgtag 780

```

-continued

ataagtagca	tggcggggtta	atcattaact	acaaggaacc	cctagtgatg	gagttggcca	840
ctccctctct	gcgcgctcgc	tcgctcactg	aggccggggcg	accaaagggtc	gcccgacgcc	900
cgggcttttg	cggggcgggcc	tcagtgagcg	agcgagcgcg	cagctggcgt	aatagcgaag	960
aggcccgcac	cgatcgccct	tcccaacagt	tgccgcagcct	gaatggcgaa	tgccgattcc	1020
gttgcaatgg	ctggcggttaa	tattgttctg	gatattacca	gcaaggcgga	tagtttgagt	1080
tcttctactc	aggcaagtga	tgttattact	aatcaaaaga	gtattgcgac	aacggttaat	1140
ttgcgtgatg	gacagactct	tttactcggg	ggcctcactg	attataaaaa	cacttctcag	1200
gattctggcg	taccgttccct	gtctaaaatc	cctttaatcg	gcctcctgtt	tagctccgcg	1260
tctgattcta	acgaggaaag	cacgttatac	gtgctcgtea	aagcaaccat	agtacgcgcc	1320
ctgtagcggc	gcattaaagcg	cggcggggtgt	ggtaggttacg	cgcagcgtga	ccgctacact	1380
tgccagcgcc	ctagcgcccg	ctcctttcgc	ttcttccctc	tcctttctcg	ccacgttcgc	1440
cggctttccc	cgtcaagctc	taaatcgggg	gctcccttta	gggttccgat	ttagtgtttt	1500
acggcacctc	gaccccaaaa	aacttgatta	gggtgatggg	tcacgtagtg	ggccatcgcc	1560
ctgatagacg	gtttttcgcc	ccttgacgtt	ggagtccacg	ttctttaata	gtggactcct	1620
gttccaaact	ggaacaacac	tcaaccctat	ctcggctctat	tccttttgatt	tataagggat	1680
tttgccgatt	tcggcctatt	gggtaaaaaa	tgagctgatt	taacaaaaat	ttaacgcgaa	1740
ttttaacaaa	atattaacgt	ttacaattta	aatatttgct	tatacaatct	tcctgttttt	1800
ggggcttttc	tgattatcaa	cgggggtaca	tatgattgac	atgctagttt	tacgattacc	1860
gttcatcgat	tctcttggtt	gctccagact	ctcaggcaat	gacctgatag	cctttgtaga	1920
gacctctcaa	aaatagctac	ctctccggcg	atgaatttat	cagctagaac	gggtgaatat	1980
catattgatg	gtgatttgac	tgtctccggc	ctttctcacc	cgtttgaatc	tttacctaca	2040
cattactcag	gcattgcatt	taaaaatat	gagggttcta	aaaattttta	tccttgcggt	2100
gaaataaagg	cttctccgcg	aaaagtatta	cagggtcata	atgttttttg	tacaaccgat	2160
ttagctttat	gctctgagcg	tttattgctt	aattttgcta	attctttgcc	ttgcctgtat	2220
gatttattgg	atggttgaat	tcctgatcg	gtattttctc	cttacgcac	tgtgcgggat	2280
ttcacaccgc	atatgggtgca	ctctcagtac	aatctgctct	gatgccgcac	agtttaagcca	2340
gccccgacac	cgcgcaacac	cgcctgacgc	gccctgacgg	ccttgctcgc	ttccggcatc	2400
cgtttacaga	caagctgtga	cgtctccgg	gagctgcatg	tgtcagaggt	tttaccggtc	2460
atcacccgaaa	cgcgcgagac	gaaagggcct	cgtgatacgc	ctatttttat	aggttaattgt	2520
catgataata	atgggtttctt	agacgtcagg	tggcactttt	cggggaaatg	tgccgcggaac	2580
ccctatttgt	ttatttttct	aaatacattc	aaatatgtat	cgcctcatga	gacaataacc	2640
ctgataaatg	cttcaataat	attgaaaaag	gaagagtatg	agtatccaac	atttccgtgt	2700
cgcccttatt	cccttttttg	cggcattttg	ccttctcgtt	tttgctcacc	cagaaacgct	2760
gggtgaaagta	aaagatcgat	aagatcagtt	gggtgcacga	gtgggttaca	tcgaactgga	2820
tctcaacagc	ggtaagatcc	ttgagagtgt	tcgccccgaa	gaacgttttc	caatgatgag	2880
cacttttaaa	gttctgctat	gtggcgcggt	attatcccg	attgacgcgc	ggcaagagca	2940
actcggctcg	cgcatacaat	attctcagaa	tgacttggtt	gagtaactcac	cagtcacaga	3000
aaagcatctt	acggatggca	tgacagtaag	agaattatgc	agtgcctcca	taaccatgag	3060
tgataaacct	gcggccaact	tacttctgac	aacgatcgga	ggaccgaagg	agctaaccgc	3120
ttttttgca	aacatggggg	atcatgtaac	tcgccttgat	cgttgggga	cggagctgaa	3180
tgaagccata	ccaaacgacg	agcgtgacac	cacgatgcct	gtagcaatgg	caacaacggt	3240
gcgcaaaact	ttaactggcg	aactacttac	tctagcttcc	cggcaacaat	taatagactg	3300
gtgggagcg	gataaagtgt	caggaccact	ctcgcgctcg	gcccttcggg	ctggctgggt	3360
tattgctgat	aaatctggag	cgggtgagcg	tgggtctcgc	gggtatcattg	cagcactggg	3420
gccagatggg	aagccctccc	gtatcgtagt	tatctacacg	acggggagtc	aggcaactat	3480
ggatgaacga	aatagacaga	tcgctgagat	agggtgcctca	ctgattaaagc	attggtaact	3540
gtcagaccaa	gtttactcat	atatacttta	gatttgattta	aaacttcatt	tttaatttaa	3600
aaggatctag	gtgaagatcc	tttttgataa	tctcatgacc	aaaatccctt	aacgtgagtt	3660
ttcgtttccac	tgaagctcag	accccgtaga	aaagatcaaa	ggatcttctt	gagatccttt	3720
ttttctgcgc	gtaactctgct	gcttgcaaac	aaaaaaacca	ccgctaccag	cgggtgggttg	3780
tttgccggat	caagagctac	caactctttt	tcggaaggtta	actggctcca	gcagagcgca	3840
gataccaaat	actgtctcttc	tagtttaggc	gtagtttaggc	caccacttca	agaactctgt	3900
agcaccgcct	acatacctcg	ctctgctaat	cctgtttacca	gtggctgctg	ccagtggcga	3960
taagtctgtg	cttaccgggt	tggaactcaag	acgatagtta	cgggataagg	cgcagcggtc	4020
gggctgaacg	gggggttcgt	gcacacagcc	cagcttgagg	cgaacgaact	acccgaact	4080
gagataacct	cagcgtgagc	tatgagaaa	cggcacgctt	cccgaaggga	gaaaggcgga	4140
caggatcccg	gtaagcgga	gggtcggaac	aggagagcgc	acgaggagc	ttccaggggg	4200
aaacgcctgg	tatctttata	gtcctgtcgg	gtttcgccac	ctctgacttg	agcgtcgatt	4260
tttgtgatgc	tcgtcagggg	ggcggagcct	atggaaaaac	gccagcaacg	cggccttttt	4320
acggttctcg	gccttttgct	ggccttttgc	tcacatgttc	tttctcgtgt	tatcccttga	4380
ttctgtggat	aaccgatata	ccgcctttga	gtgagctgat	accgctcgcc	gcagccgaac	4440
gaccgagcgc	agcaggtcag	tgagcgagga	agcgggaagag	cgcccaatac	gcaaacccgc	4500
tctcccccg	cgttggccga	ttcattaatg	cagcagctgc	gcgctcgctc	gctcactgag	4560
gcccggccgg	caaagccggg	gcgtcggggc	acctttggtc	gcccggcctc	agtgagcgag	4620
cgagcgcgca	gagaggaggt	ggccaaactcc	atcactaggg	gttctctgta	gttaatgatt	4680
aaaccgcca	gctacttatc	tacgtagcca	tgctctagga	cattgatgat	tgactagtgg	4740
agttccgcgt	tacataactt	acgggtaaatg	gcccgcctgg	ctgaccgcgc	aacgaccccc	4800
gcccattgac	gtcaataatg	acgtatgttc	ccatagtaac	gccaataggg	actttccatt	4860
gacgtcaatg	gggtggagtat	ttacggtaaa	ctgcccactt	ggcagttacat	caagtgtatc	4920
atatgccaa	tacgccccct	attgacgtca	atgacggtaa	atggcccgcc	tggtcattatg	4980
cccagtgacat	ggccttatgg	gactttccta	cttggcagta	catctacgta	ttagtcatcg	5040
ctattaccat	ggtcgagggtg	agccccacgt	tctgcttcac	tctccccatc	ttccccccct	5100
ccccaccccc	aattttgtat	ttatttattt	tttaattatt	tttgtcagcg	atggggggcg	5160
gggggggggg	ggggcgcgcg	caggcggggc	ggggcggggc	gagggggggg	gcgggggcgag	5220
gcggagaggt	cggcgcgcg	ccaatcagag	cggcgcgctc	cgaaagtctc	cttttatggc	5280
gaggcgggcg	cggcgggcg	cctataaaaa	gcgaagcgcg	cggcgggcg	gagtcgctgc	5340

-continued

```

gcgctgctt cgccecgctg cccgctccgc cgcgcctcg cgcgccecg cccggtctg 5400
actgaccgcg ttactaaaac aggttaagtcc ggccctccgc cggggttttg gcgcctccgc 5460
cgggcgcccc cctcctcacg gcgagcgctg ccacgtcaga cgaagggcgc agcgagcgctc 5520
ctgactcttc cgccecgagc ctcaggacag cggcccgctg ctcataagac tcggccttag 5580
aaccocagta tcagcagaag gacattttag gacgggactt ggggtgactct agggcactgg 5640
ttttttttcc agagagcgga acaggcgagg aaaagtagtc cctctcggcg gattctgcgg 5700
agggatctcc gtggggcggt gaacgcccgc gatgcctcta ctaaccatgt tcatgttttc 5760
tttttttttc tacaggctct ggggtgacga cagggtagcg ccaccatggc caccggctct 5820
cgacacaagc tgctgctggc tttcggactg ctgtgctcgc cttggctcca ggagggtccc 5880
gcccgtagca tcgataccgt cgctatgtgc tggaggcttg ctgaaggctg tatgctgagg 5940
taatatcctg acgctcagcc gttttggcct ctgactgacg gctgagcggt gatattacct 6000
caggacacaa ggctgtttac tagcactcac atggaacaaa tggcctctag cctggaggct 6060
tgctgaaggc tgtatgctgt acagaatcag ataatcagcg ccgttttggc ctctgactga 6120
cggcgctgat tctgattctg tacaggacac aaggcctgtt actagcactc acatgggaaca 6180
aatggcctct agcctggagg ctgctgaag gctgtatgct gtcatgttta aaaattcgct 6240
gcgctgtttg gcctctgact gacgcgcagc gaatttaaac atgacaggac acaaggcctg 6300
ttactagcac tcacatggaa caaatggcct ctctagaat 6339

```

```

SEQ ID NO: 19      moltype = DNA length = 6339
FEATURE           Location/Qualifiers
source            1..6339
                  mol_type = other DNA
                  organism = synthetic construct

```

```

SEQUENCE: 19
aatcaacctc tggattacaa aatttgtgaa agattgactg gtattcttaa ctatgttgct 60
ccttttacgc ttgttggata cgtgcttta atgcctttgt atcatgctat tgcctcccgt 120
atggctttca tttctcctc cttgtataaa tcctgggtgc tgctctctta tgaggagttg 180
tgcccggttg tcaggcaaac tggcgtggtg tgcactgtgt ttgctgacgc aacccccact 240
ggttggggca ttgccaccac ctgtcagctc ctttcgggga ctttcgcttt cccctccctc 300
attgccacgg cggaactcat cgcgcgcctg cttgcgcgct gctggacagg ggctcggtcg 360
ttgggcactg acaattccgt ggtgtgtgct gggaaatcat cgtcctttcc ttggtgctc 420
gctgtgttg ccacctggat tctgcgcggg acgtccttct gctacgtccc ttcggccctc 480
aatccagcgg acctcctctc cgcgcgcctg ctgcgcgctc tgcggcctct tccgcgtctt 540
cgcttcgccc ctacagcagc tcggatctcc ctttgggccc cctcccgcgc taagcttatc 600
gataccgtcg agatctaaat tgtttattgc agcttataat gggtacaaat aaagcaatag 660
catcacaaat ttcacaaata aagcattttt ttcactgcat tctagtgtgt gtttgtccaa 720
actcatcaat ttactttatc atgtctggat ctgcacctcg actagacatg ggctacgtag 780
ataagtagca tggcgggtta atcattaaat acaaggaacc cctagtgtat gagttggcca 840
ctccctctct gcgcgctcgc tcgctcactg aggcggggcg accaaaggct gccgcagccc 900
cgggctttgc cgggcggcgc tcagttagcg agcagcgcgc cagctggcgt aatagcgaag 960
agggccgcac cgatcgccct tcccaacagt tgcgcagcct gaatggcgaa tggcgattcc 1020
gttgcaatgg ctggcggtta tattgttctg gatattacca gcaaggccga tagtttgagt 1080
tcttctactc agcgaagtga tgttattact aatcaagaa gtattgagac aacggttaat 1140
ttgctgtgat gccagactct tttactcggg ggctcactg attataaaaa cacttctcag 1200
gattctggcg tacctgtcct gtctaaaatc cctttaatcg gcctcctgtt tagctcccgc 1260
tctgattcta acgaggaagc acggttatac gtgctcgtea aagcaacctat agtacgcgcc 1320
ctgtagcggc gcattaaagc cggcgggtgt ggtggttacg cgcagcgtga ccgctacact 1380
tgccagcggc ctagcgcggc ctcccttcgc tttcttccct tcctttctcg ccacgttcgc 1440
cggctttccc gctcaagctc taaatcgggg gctcccttta gggttccgat ttagtgcttt 1500
acggcacctc gacccccaaa aacttgatta ggggtatggt tcacgtagtg ggccatcgcc 1560
ctgataagcg gtttttcgac ctttgacgtt ggagtcacag ttctttaata gtggaactct 1620
gttccaaact ggaacaacac tcaaccctat ctcggtctat tcttttgatt tataagggat 1680
tttgccgatt tcggcctatt ggttaaaaaa tgagctgatt taacaaaaat ttaacgcgaa 1740
ttttaacaaa atatttaacgt ttacaattta aatatttgct tatacaatct tctgtttttt 1800
ggggcttttc tgatttatcaa cgggggtaca tatgattgac atgctagtgt tacgattacc 1860
gttcatcgat tctcttgttt gctccagact ctcaggcaat gacctgatag cctttgtaga 1920
gacctctcaa aaatagctac cctctccggc atgaatttat cagctagaac ggttgaatat 1980
catattgatg gtgatttgac tgtctccggc ctttctcacc cgtttgaatc tttacctaca 2040
cattactcag gcattgcatt taaaaatat gagggttcta aaaattttta tctttcggtt 2100
gaaataaagg cttctccgcg aaaagtatta cagggtcata atgttttttg tacaaccgat 2160
ttagctttat cgtctgagcg tttattgctt aattttgcta attccttgcc ttgcctgtag 2220
gattttattg atgttggaat tcttgatgag gtattttctc cttacgcacg tgtgcggtag 2280
ttcacaccgc atatggtgca ctctcagtag aatctgctct gatgcgcgat agttaagcca 2340
gccccgacac ccgccaacac ccgctgacgc gccctgacgg gcttgctcgc tcccggcac 2400
cgcttacaga caagctgtga ccgtctccgg gagctgcatg tgcagaggtt ttccacgctc 2460
atcacccgaa cgcgcgagac gaaagggcct cgtgatacgc ctatttttat aggttaatgt 2520
catgataata atggtttctt agacgtcagg tggcactttt cggggaaatg tgcgcggaac 2580
ccctatttgt ttatttttct aaatacattc cgcctcatga gacaataacc 2640
ctgataaatg cttcaataat attgaaaaag gaagagtatg agtattcaac atttccgtgt 2700
cgcccttatt cctttttttg cggcattttg ccttctctgt tttgctcacc cagaaacgct 2760
ggtgaaagta aagatcagtt ggggtgcacga gtgggttaca tcgaactgga 2820
tctcaacagc ggttaagatc ttgagagtgt tgcggccgaa gaacgttttc caatgatgag 2880
cacttttaaa gttctgctat gtggcgcggt attatccggt attgacgcgc ggcaagagca 2940
actcggctgc cgcatacact attctcagaa tgacttggtt gactactcac cagtcacaga 3000
aaagcatctt acggatggca tgacagtaag agaattatgc agtgctgcca taaccatgag 3060
tgataacact gcggccaact tacttctgac aacgatcgga ggaccgaagg agctaaccgc 3120

```

-continued

ttttttgcac	aacatggggg	atcatgtaac	tcgccttgat	cgttgggaac	cggagctgaa	3180
tgaagccata	ccaaacgacg	agcgtgacac	cacgatgcct	gtagcaatgg	caacaacggt	3240
gcgcaaaacta	ttaactggcg	aactactttac	tctagcttcc	cggcaacaat	taatagactg	3300
gatggaggcg	gataaagtgg	caggaccact	tctgcgctcg	gcccttccgg	ctggctggtt	3360
tattgctgat	aaatctggag	cgggtgagcg	tgggtctcgc	ggtatcattg	cagcactggg	3420
gccagatggt	aagccctccc	gtatcgtagt	tatctacacg	acggggagtc	aggcaactat	3480
ggatgaacga	aatagacaga	tcgctgagat	agggtgcctca	ctgattaagc	attggttaact	3540
gtcagaccac	gtttactcat	atatacttta	gattgattta	aaacttcatt	tttaatttaa	3600
aaggatctag	gtgaagatcc	tttttgataa	tctcatgacc	aaaatccctt	aacgtgagtt	3660
ttcgttccac	tgagcgtcag	accccgtaga	aaagatcaaa	ggatcttctt	gagatccctt	3720
ttttctgcgc	gtaatctgct	gcttgcaaac	aaaaaaacca	ccgctaccag	cgggtggttg	3780
tttgccggat	caagagctac	caactctttt	tccgaaggta	actggcttca	gcagagcgca	3840
gatacccaat	actgtccttc	tagtgtagcc	gtagttaggc	caccacttca	agaactctgt	3900
agcacccgct	actacactcg	ctctgcta	ctctgttacc	gtggctgctg	ccagtggcga	3960
taagtcgtgt	cttaccgggt	tggactcaag	acgatagtta	ccggataaag	cgcagcggtc	4020
gggctgaacg	gggggttcgt	gcacacagcc	cagcttggag	cgaacgacct	acaccgaact	4080
gagataaccta	cagcgtagag	tatgagaaag	cgccacgctt	cccgaaggga	gaaaggcgga	4140
caggatctcg	gtaagcgcca	gggtcggaac	aggagagcgc	acgagggagc	ttccaggggg	4200
aaacgcctgg	tatctttata	gtcctgtcgg	gtttcgccac	ctctgaactg	agcgtcgatt	4260
tttgtgatgc	tcgtcagggg	ggcgagcct	atggaaaaac	gccagcaact	cggccttttt	4320
acggttcctg	gccttttgct	ggccttttgc	tcacatgttc	tttctcgctt	tatccccctg	4380
ttctgtggat	aaccgtatta	ccgcctttga	gtgagctgat	accgctcgcc	gcagccgaac	4440
gaccgagcgc	cagcagtcag	tgagcgagga	agcggaagag	cgcccaatac	gcaaacccgc	4500
tctcccccg	cgttggccga	ttcattaatg	cagcagctgc	gcgctcgctc	gctcactgag	4560
gccgcccggg	caaagccggg	gcgtcgggcg	acctttggtc	gcccgccctc	agtgaagcga	4620
cgagcgcgca	cgagggagtg	ggccaaactc	atcactaggg	gttccttgta	gttaatgatt	4680
aaccgcgcat	gctactatct	tacgtagcca	tgctctagga	cattgattat	tgactagtgg	4740
agttccgcgt	tacataaact	acggtaaatg	gcccgcctgg	ctgaccgccc	aacgaccccc	4800
gccatttgac	gtcaataatg	acgtatgttc	ccatagtaac	gccaataggg	actttccatt	4860
gacgtcaatg	gggtggagtg	ttacggtaaa	ctgcccactt	ggcagtagat	caagtgtatc	4920
atatgccaa	gacgcccct	attgacgtca	atgacggtaa	atggcccgcg	tgccattatg	4980
cccagtagat	gaccttatgg	gaccttccct	cttggcagta	catctacgta	ttagtcacgc	5040
ctattaccat	ggtcgaggtg	agccccacgt	tctgcttcc	tctccccatc	tccccccct	5100
ccccaccccc	aattttgtat	ttatttattt	tttaattatt	ttgtgcagcg	atggggcgcg	5160
gggggggggg	gggcgcgcgc	caggcggggc	ggggcggggc	gaggggcggg	gcggggcgag	5220
gcggagaggt	gcggcgccag	ccaatcagag	cggcgccctc	cgaaagtctc	cttttatggc	5280
gagggcgccg	cggcgccggc	cctataaaaa	gcgaagcgcg	cggcgggcgg	gagtcgctgc	5340
gcgctgcctt	cgccccgtgc	cccgcctcgc	cgccgcctcg	cgccgcgcgc	cccggctctg	5400
actgaccgcg	ttactaaaa	aggtaagtc	ggcctccgcg	cggggttttg	gcgcctcccg	5460
cggcgccccc	cctcctcaac	gcgagcgctg	ccacgtcaga	cgaagggcgc	agcgaagcgc	5520
ctgatccctc	cgccccgagc	ctcaggacag	cggcccgctg	ctcataagac	tcggccttag	5580
aaccgccagt	tcagcagaag	gacattttag	gacgggactt	gggtgactct	agggcactgg	5640
ttttctttcc	agagagcgga	acaggcgagg	aaaagtagtc	ccttctcgcc	gattctcgcg	5700
agggatctcc	gtggggcggt	gaacgcgat	gatgcctcta	ctaaccatgt	tcatgttttc	5760
tttttttttc	tacaggtcct	gggtgacgaa	cagggtaccg	ccaccatggc	caccggctct	5820
cgcacaagcc	tgctgtgctg	tttcggactg	ctgtgcctgc	cttggctcca	ggagggtctc	5880
gccgctagca	tcgataccgt	cgtatgtgtc	tggaggcttg	ctgaaggctg	tatgctgatg	5940
aatcggtgtg	tctgaatcgc	gttttggcct	ctgactgacg	cgattcagaa	cccgaattcat	6000
caggacacaa	ggcctgtttc	tagcactcac	atggaacaaa	tggcctctag	cctggaggct	6060
tgctgaagcg	tgatgtctga	acactttgct	atatcatcct	gcgttttggc	ctctgactga	6120
cgcaggatga	tagcaaatgt	ttcaggacac	aaggcctgtt	actagcactc	acatggaaca	6180
aatggcctct	gcctggagg	cttgcgtga	gctgtatgct	gttctgttgc	ttaaagcta	6240
gctcgttttg	gcctctgact	gacgagcatt	agcaacgaac	agaacaggac	acaaggcctg	6300
ttactagcac	tcacatggaa	caaatggcct	ctctagaat			6339

SEQ ID NO: 20 moltype = DNA length = 6339
 FEATURE Location/Qualifiers
 source 1..6339
 mol_type = other DNA
 organism = synthetic construct

SEQUENCE: 20

aatcaacctc	tggattacaa	aatttgtgaa	agattgactg	gtattcttaa	ctatgttgc	60
ccttttacgc	tatgtggata	cgtgcttta	atgcctttgt	atcatgctat	tgcttcccg	120
atggctttca	ttttctcctc	cttgataaaa	tcctgggtgc	tgctctctta	tgaggagttg	180
tgcccggttg	tcaggcaacg	tggcggtggt	tgcaactgtg	ttgctgacgc	aacccccact	240
ggttggggca	ttgccaccac	ctgtcagctc	ctttccggga	ctttcgcttt	ccccctccct	300
attgccacgg	ggaaactcat	cgcgcctgc	cttgcccgtc	gctggacagg	ggctcggtcg	360
ttgggcactg	acaattccgt	ggtgtgtgct	gggaaatcat	cgtcccttcc	ttggctgctc	420
gcctgtgttg	ccacctggat	tctgcgcggg	acgtccttct	gctacgtccc	ttcgcccttc	480
aatccagcgg	accttccctc	cgcggcgctg	ctgcggcttc	tgccggctct	tcgcgctctt	540
cgccttcgcc	ctcagacgag	tcggatctcc	ctttggggcg	cctccccgcc	taagcttatc	600
gataccgctg	agatctaaact	tgtttattgc	agcttataat	ggttacaaat	aaagcaatag	660
catcacaaat	ttcacaaata	aagcattttt	ttcactgcat	tctagttgtg	gtttgtccaa	720
actcatcaat	tgtatcttate	atgtctggat	ctcgacctcg	actagagcat	ggctacgtag	780
ataagtagca	tgagcggtta	atcattaact	acaaggaaac	cctagtgtatg	gagttggcca	840
ctccctctct	gcgcgctcgc	tcgctcactg	aggccggggc	accaaaagtc	gcccagcgc	900

-continued

cgggcttttc	cggggcgggc	tcagtgcgcg	agcgagcgcg	cagctggcgt	aatagcgaag	960
aggcccgac	cgatcgccct	tcccaacagt	tgccgagcct	gaatggcgaa	tgccgattcc	1020
gttgcaatgg	ctggcggtaa	tattgttctg	gatattacca	gcaaggccga	tagtttgagt	1080
tcttctactc	aggcaagtga	tgttattact	aatcaaagaa	gtattgcgac	aacggttaat	1140
ttgcgtgatg	gacagactct	tttactcggt	ggcctcactg	attataaaaa	cacttctcag	1200
gattctggcg	taccgttctc	gtctaaaaac	cctttaatcg	gcctcctggt	tagctcccgc	1260
ctgattctta	acgaggaag	cacgttatac	gtgctcgta	aagcaaccat	agtacgcgcc	1320
ctgtagcgcg	gcattaaagc	cggcggtgt	ggtggttacg	cgcagcgta	ccgctacact	1380
tgccagcgcc	ctagcgcccg	ctcctttcgc	tttcttccct	tcctttctcg	ccacgttcgc	1440
cggctttccc	cgtcaagctc	taaatcgggg	gctcccttta	gggttccgat	ttagtgcctt	1500
acggcacctc	gaccccaaaa	aaacttgatta	gggtgatggt	tcacgtagtg	ggccatcgcc	1560
ctgatagcg	gtttttcgcc	ccttgacgtt	ggagtccacg	ttctttaata	gtggactcct	1620
gttccaaact	ggaacaacac	tcaaccctat	ctcggctctat	tttttgatt	tataagggat	1680
tttgccgatt	tcggccttatt	gggttaaaaa	tgagctgatt	taacaaaaat	ttaacgcgaa	1740
ttttaacaaa	atattaaact	ttacaattta	aatatttgct	tatacaactc	tcctgttttt	1800
ggggcttttc	tgattatcaa	ccggggtaca	tatgattgac	atgctagttt	tacgattacc	1860
gttcatcgat	tcctttgttt	gctccagact	ctcaggcaat	gacctgatag	cctttttaga	1920
gacctctcaa	aaatagctac	cctctccggc	atgaatttat	cagctagaac	gggtgaatat	1980
catattgatg	gtgatttgac	tgtctccggc	ctttctcacc	cgttggaatc	tttacctaca	2040
cattactcag	gcatttgcat	taaaaatata	gaggggttcta	aaaattttta	tccttgcggt	2100
gaaataaagg	cttctcccg	aaaagtatta	cagggtcata	atgtttttgg	tacaaccgat	2160
ttagctttat	gctctgaggg	ttattgctt	aattttgcta	attctttgce	ttgctgtat	2220
gatttattgg	atgtttggaat	tcctgatgcg	gtattttctc	cttacgcact	tgtgcgggat	2280
ttcacaccgc	atatggtgca	ctctcagtag	aatctgctct	gatgcgcgat	agttaaagcca	2340
gccccgacac	ccgcccaacac	ccgctgacgc	gcccgtgacg	gcttgctctg	tcocggcatc	2400
gccttacaga	caagctgtga	ccgtctccgg	gagctgcactg	tgtcagaggt	tttcaccgct	2460
atcacccgaa	cgccgcgagac	gaaagggcct	cgtgatacgc	ctatttttat	aggttaaatgt	2520
catgataata	atggttttct	agacgtcagg	tggcactttt	cggggaaatg	tgcccggaac	2580
ccctatttgt	ttatttttct	aaatacattc	aaatatgtat	ccgctcatga	gacaataacc	2640
ctgataaatg	cttcaataat	attgaaaaag	gaagagtagt	agttatcaac	atttccgtgt	2700
cgcccttatt	cccttttttg	cgccattttg	ccttctctgt	tttgctcacc	cagaaaacgct	2760
gggtgaaagta	aaagatgctg	aagatcagtt	gggtgcacga	gtgggttaca	tcgaactgga	2820
ttctaacacg	ggtaagatcc	ttgagagttt	tcgccccgaa	gaacggtttc	caatgatgag	2880
caacttttaa	gttctgctat	gtggcgcggt	attatcccg	attgacgcgc	ggcaagagca	2940
actcggtcgc	cgcatacact	attctcagaa	tgaactgggt	gagtactcac	cagtcacaga	3000
aaagcatctt	acggatggca	tgacagtaag	agaattatgc	agtgtcgcca	taaccatgag	3060
tgataaacct	cgccgcaact	tacttctgac	aacgatcgga	ggaccgaaag	agctaaccgc	3120
ttttttgcac	aacatggggg	atcatgtaac	tcgcttgat	cgttggaagc	cggagctgaa	3180
tgaagccata	ccaaacgacg	agcgtgacac	cacgatgctc	gtagcaatgg	caacaacgtt	3240
gcgcaaaact	ttaactggcg	aaactactta	cttagcttcc	cggcaacaat	taataagactg	3300
gatggaggcg	gataaagtgt	caggaccact	ctgctgctcg	gcccttccgg	ctggctgggt	3360
tattgctgat	aaatctggag	ccgggtgagc	tgggtctcgc	ggatcattg	cagcactggg	3420
gcagatgggt	aagccctccc	gtatcgtagt	tatctacacg	acggggagtc	aggcaactat	3480
ggatgaacga	aatagacaga	tcgctgagat	agggtgctca	ctgattaaag	attggtaact	3540
gtcagaccaa	gtttactcat	atatacttta	gattgattta	aaacttcatt	tttaatttaa	3600
aaagatctag	tgaaagatcc	tttttgataa	tctcatgacc	aaaatccctt	aacgtgagtt	3660
ttcgttccac	tgagcgtcag	accccgtaga	aaagatcaaa	ggatcttctt	gagatccctt	3720
ttttctgcgc	gtaactctgt	gcttgcaaac	aaaaaaaacca	ccgtaccag	cgggtggttg	3780
tttgccggat	caagagctac	caactctttt	tcggaaggta	actggcttca	gcagagcgca	3840
gatacccaat	actgtccttc	tagttagacc	gtagttaggc	caccacttca	agaactctgt	3900
agcacccgct	acatacctcg	ctctgcta	cctgttacc	gtggctgctg	ccagtggcga	3960
taagtctgtg	cttaccgggt	ggactcaag	acgatagtta	ccgataaagg	cgcacgggtc	4020
gggctgaacg	gggggttcgt	gcacacagcc	cagcttgagg	cgaacgacct	acaccgaact	4080
gagataccca	cagcgtgagc	tatgagaaag	cgccacgctt	cccgaaggga	gaaaggcgga	4140
caggatatccg	gtaagcggca	gggtcggaa	aggagagcgc	acgagggagc	ttccaggggg	4200
aaacgctcgg	tatctttata	gtcctgtcgg	gtttcgccac	ctctgacttg	agcgtcgatt	4260
tttgtgatgc	tcgtcagggg	ggcggagcct	atggaaaaac	gccagcaacg	cggccttttt	4320
acgggttctg	gccttttgct	ggccttttgc	tcacatgttc	tttctgctg	tatcccttga	4380
ttctgtggat	aaccgatata	ccgcttttga	gtgagctgat	accgctcgcc	gcagccgaac	4440
gaccgagcgc	agcgagtcag	tgagcgagga	agcggaaagag	cgcccaatac	gcaaacccgc	4500
ttctcccgcg	cgttgccgga	ttcattaatg	cagcagctgc	gcgctcgctc	gctcactgag	4560
gcccggccggg	caaagcccg	gcgtcggggc	acctttgggt	gcccgccctc	agtgagcgag	4620
cgagcgcgca	gagagggagt	ggccaaactcc	atcactaggg	gttccttgta	gttaatgatt	4680
aaaccgccat	tctacttatc	tacgtagcca	tgtcttagga	cattgattat	tgactagtgg	4740
agttccgcgt	gacataactt	acggtaaatg	gcccgcctgg	ctgaccgccc	aacgaccccc	4800
gcccattgac	gtcaataaatg	acgtatgttc	ccatagtaac	gccaataggg	actttccatt	4860
gacgtcaatg	gggtggagtat	ttacggtaaa	ctgcccactt	ggcagtagat	caagtgtatc	4920
atatgccaa	tacgccccct	attgacgtca	atgacggtaa	atggcccgcg	tgccattatg	4980
cccagtagat	gaccttatgg	gacttttcta	cttgccagta	catctacgta	ttagtcatcg	5040
ctattaccat	ggtcgaggtg	agccccacgt	tctgcttcac	tctccccatc	ttccccccct	5100
ccccaccccc	aatttttgat	ttatttattt	ttgtgacggc	atggggggcg		5160
gggggggggg	gggcgcgcgc	caggcggggc	ggggcggggc	gagggggcg	gcgggggcgag	5220
gcgagagaggt	gcgcgcgcg	ccaatcagag	cggcgcgctc	cgaaagtctc	cttttatggc	5280
gaggcgcgcg	cggcgcgcg	cctataaaaa	gcgaagcgcg	cggcgggcg	gagtcgctgc	5340
cgctgcctt	gcgcccgtgc	cccgctccgc	cgccgctcgc	cgccgcccgc	cccggtctgc	5400
actgaccgcg	ttactaaaac	aggtaagtcc	ggcctccgcg	ccgggttttg	gcgctccgcg	5460

-continued

```

cgggcgcccc cctcctcagc gcgagcgctg ccacgtcaga cgaaggcgcg agcgagcgct 5520
ctgataccttc cgcccggaag ctcaggacag cggcccgctg ctcataagac tcggccttag 5580
aaccocagta tcagcagaag gacatttttag gacgggactt ggggtgactct agggcactgg 5640
ttttctttcc agagagcgga acaggcgagg aaaagtagtc ccttctcggc gattctgcgg 5700
agggatctcc gtggggcggt gaacgcgat gatgcctcta ctaacctgt tcatgttttc 5760
tttttttttc tacaggctct ggggtgacga cagggtaccg ccacctggc caccgctct 5820
cgcaacagcc tgctgtggc tttcggactg ctgtgcctgc cttggctcca ggagggtcc 5880
gcccgtagca tcgataccgt cgctatgtgc tggaggcttg ctgaaggctg tatgctggag 5940
cattagcaat gcgaacagaa gttttggcct ctgactgact tctgttcgtt gctaattgctc 6000
caggacacaa ggctgtttac tagcactcac atggaacaaa tggcctctag cctggaggct 6060
tgctgaaggc tgtatgctga aacataatgg attcagcagc gcgttttggc cctgactga 6120
cgcgctgctg accattatgt ttcaggacac aaggcctgtt actagcactc acatggaaca 6180
aatggcctct agcctggagg cttgctgaag gctgtatgct gttatctttg cgaagctgcc 6240
atccggtttg gcctctgact gacggatggc agccgcaagc ataacaggac acaaggcctg 6300
ttactagcac tcacatggaa caaatggcct ctctagaat 6339

```

```

SEQ ID NO: 21      moltype = DNA length = 6337
FEATURE           Location/Qualifiers
source            1..6337
                  mol_type = other DNA
                  organism = synthetic construct

```

```

SEQUENCE: 21
aatcaacctc tggattacaa aatttgtgaa agattgactg gtattcttaa ctatgttgct 60
ccttttacgc tatgtggata cgctgcttta atgcctttgt atcatgctat tgcttcccgt 120
atggctttca tttctcctc cttgtataaa tcttggttgc tgtctcttta tgaggagtgt 180
tggcccgctg tcaggcaacg tggcggtggg tgcactgtgt ttgctgacgc aacccccact 240
ggttggggca ttgccaccac ctgtcagctc ctttccggga ctttgcgttt cccctccctc 300
attggccagg cggaactcat gcgcgcctgc cttgcccgtc gctggacagg ggctcggtcg 360
tggggcactg acaattccgt ggtgtgtgcg gggaaatcat cgtccttccc ttggtgctc 420
gcctgtgttg ccacctggat tctgcgcggg acgtccttct gctacgtccc ttcggccctc 480
aatccagcgg acccttccct ccgcggcctg ctgcggcctc tgcggcctct tccgcgtctt 540
cgcttccgcc ctcagacgag tcggatctcc ctttgggccc cctccccgcc taagcttatc 600
gataccgtcg agatctaact tgtttattgc agcttataat ggttacaaat aaagcaatag 660
catcacaaat ttcacaaata aagcattttt ttcactgcat tctagtgtgt gtttgtocaa 720
actcatcaat gtatcttatc atgtctggat ctgcacctcg actagagcat ggctacgtag 780
ataagtagca tggcggttga atcattaact acaaggaaac cctagtgtat gaggttggcca 840
ctccctctct gcgcgctcgc tcgctcactg aggcggggcg accaaaggtc gcccgacgcc 900
cgggctttgc ccgggcgggc tcagtgcgcg agcgagcgcg cagctggcgt aatagcgaag 960
agggccgcac cgatcgccct tcccaacagt tgcgcagcct gaatggcgaa tggcgattcc 1020
gttgcaatgg ctggcggttaa tattgttctg gatattacca gcaaggccga tagtttgagt 1080
tcttctactc aggaagtgta tgttattact aatcaaaaga gtattgcgac aacggttaat 1140
ttgcgtgatg gacagactct tttactcggg ggcctcactg attataaaaa cacttctcag 1200
gattctggcg tacggttccct gctctaaatc cctttaatcg gcctcctgtt tagctcccgc 1260
tctgattcta acgaggaag acggttatcc gtgctcgcca aagcaacct agtacgcgcc 1320
ctgtagcgcg gcattaaagg cggcggtgtg ggtggtttac gcgagcgctg ccgctacact 1380
tgccagcgcc ctacgcgcgc ctccttccgc tttcttccct tcttctctcg ccacgttcgc 1440
cggctttccc cgtcaagctc taaatcgggg gctcccttta gggttccgat ttagtgcttt 1500
acggcacctc gaccccaaaa aacttgatta ggggtgatgt tcacgtagtgt ggccatcgcc 1560
ctgtagacgc gtttttcgcc ctttgacggt ggagtcacac tcttttaata gtggactcct 1620
gttccaaact ggaacaacac tcaacctat ctcggtctat tcttttgatt tataagggat 1680
tttgccgatt tcggcctatt ggttaaaaaa tgagctgatt taacaaaaaa ttaacgcgaa 1740
ttttaacaaa atattaacgt ttacaattta aatatttgct tatacaatct tctgtttttt 1800
ggggcttttc tgattatcaa ccggggtaca tatgattgac atgctagtgt tacgattacc 1860
gttcctcgat tctctgtttt gctccagact ctcaggcaat gacctgatg cctttgtaga 1920
gacctctcaa aatatagctac cctctccggc atgaatttat cagctagaac ggttgaatat 1980
catattgatg gtgatttgac tgtctccggc ctttctcacc cgtttgaatc tttacctaca 2040
cattactcag gcattgcatt taaaatatat gaggtttcta aaaattttta tccctgcgtt 2100
gaaataaagg cttctccgcg aaaagtatta cagggtcata atgttttttg tacaaccgat 2160
ttagctttat gctctgaggc tttattgctt aattttgcta attctttgcc ttgctgtat 2220
gatttattgg atgttggaaat tctgtatgcg gtattttctc cttacgcac tgtgcgggat 2280
ttcacaccgc atatggtgca cttctagtac aatctgctct gatgccgat agttaagcca 2340
gccccgacac ccgccaacac ccgctgacgc gccctgacgg gcttgcctgc tcccggcatc 2400
cgcttacaga caagctgtga ccgtctccgg gagctgcagt tgtcagaggt tttcacgcct 2460
atcaccgaaa cgccgcgagc gaaagggcct cgtgatacgc ctatttttat aggttaaatgt 2520
catgataata atggtttctt agacgtcagg tggcactttt cggggaaatg tgcgcggaac 2580
ccctatttgt ttatttttct aaatacattc aaatatgtat ccgctcatga gacaataaacc 2640
ctgataaatg cttcaataat attgaaaaag gaagagtatg agtattcaac atttcogtgt 2700
cgcccttatt cctttttttg cggcattttt ccttctctgt tttgctcacc cagaaacgct 2760
ggtgaaagta aaagatgctg aagatcagtt ggggtgcaca gtgggttaca tcgaactgga 2820
tctcaacagc ggtgaagatc ttgagagttt tcgccccgaa gaacggtttc caatgatgag 2880
cacttttaaa gttctgctat gtggcgcggt attatcccggt attgacgcc ggcaagagca 2940
actcggctgc gcatacact attctcagaa tgacttggtt gactactcac cagtcacaga 3000
aaagcatctt acggatggca tgacagtaag agaattatgc agtgctgcca taacctagag 3060
tgataacact cgccccaact tacttctgac aacgatcgga ggaccgaagg agctaaccgc 3120
ttttttgcac aacatggggg atcatgtaac tcgcttgat cgttgggaac cggagctgaa 3180
tgaagccata ccaaacgacg agcgtgacac cagcatgcct gtagcaatgg caacaacgtt 3240

```

-continued

```

gcgcaaaacta ttaactggcg aactacttac tctagcttcc cggcaacaat taatagactg 3300
gatggaggcg gataaagtgt caggaccact tctgcgctcg gcccttcogg ctggctgggt 3360
tattgctgat aaatctggag cccgtgagcg tgggtctcgc ggtatcattg cagcactggg 3420
gccagatggg aagccctccc gtatcgtagt tatctacacg acggggagtc aggcaactat 3480
ggatgaacga aatagacaga tcgctgagat aggtgoccca ctgattaagc attggtaact 3540
gtcagaccaa gtttactcat atatacttta gattgattta aaacttcatt tttaatttaa 3600
aaggatctag gtgaagatcc tttttgataa tctcatgacc aaaatccctt aacgtgagtt 3660
ttcgttccac tgagcgtag accccgtaga aaagatcaaa ggatctctct gagatccttt 3720
ttttctgcgc gtaatctgct gcttgcaaac aaaaaaacca ccgctaccag cgggtggtttg 3780
tttgccggat caagagctac caactctttt tccgaaggta actggcttca gcagagcgca 3840
gataccaaat actgtccttc tagttagacc gtagttaggc caccacttca agaactctgt 3900
agcaccgcct acatacctcg ctctgcta at cctgttacca gtggctgctg ccagtggcga 3960
taagtcgtgt cttaccgggt tggactcaag acgatagtta ccggataagg cgcagcggtc 4020
gggctgaacg ggggggtcgt gcacacagcc cagcttgagg cgaacgacct acaccgaact 4080
gagataccta cagcgtgagc tatgagaaag ccgcccgctt cccgaaggga gaaaggcgga 4140
caggtatccg gtaagcggca gggtcggaac aggagagcgc acgagggagc ttccaggggg 4200
aaacgcctgg tatctttata gtctctgctg gtttcgccac ctctgacttg agcgtcgatt 4260
tttgtgatgc tcgtcagggg ggcggagcct atggaaaaac gccagcaacg cggccttttt 4320
acggttcctg gccctttgtc ggccttttgc tcacatgttc tttctgcgt tatccctga 4380
ttctgtggat aaacgcttta ccgcctttga gtgagctgat accgctcgcc gcagccgaac 4440
gaccgagcgc agcagctcag tgagcgagga agcgggaagag cgcaccaatac gcaaacggcc 4500
tctccccgcg cgttgcccgga ttcaataatg cagcagctgc gcgctcgctc gctcactgag 4560
gccgccccgg gaaagccggg gcgtcggggc acctttggtc gcccgccctc agtgagcgag 4620
cgagcgcgca gagaggaggt ggcacaactcc atcactaggg gttccttgta gttaatgatt 4680
aaaccgccaat ctacttacc taccgtagcca tgccttagga cattgattat tgactagtgg 4740
agttccgcgt tacataactt acggtaaatg gcccgccctg ctgaccgccc aacgaccccc 4800
gcccattgac gtcaataatg acttatgttc ccatagtaac gccaataggg actttccatt 4860
gacgtcaatg ggtggagtat ttacggtaaa ctgcccaact ggcagtaaat caagtgtatc 4920
atatgccaaag tacgcccctt attgacgtca atgacggtaa atggcccgc tgccattatg 4980
cccagtagat gaccttatgg gactttccta ctgtgcagta catctacgta ttagtcatcg 5040
ctattaccat ggtcgaggtg agccccacgt tctgcttcac tctccccatc tccccccct 5100
ccccaccccc aattttgtat ttattttatt tttaattatt ttgtgcagcg atggggggcg 5160
gggggggggg gggcgcgcg caggcgggggc gggcgggggc gagggggcg gggggggcgag 5220
goggagaggt cggcgcgcg ccaatcagag cggcgcgctc gaaagtttc cttttatggc 5280
gaggcgggcg cggcgcgcg cctataaaaa gcgaagcgcg cggcgggcg gagtcgctgc 5340
cgctgccttc cgcgccgtgc cccgctccgc cgcgcgctcg cgcgcgcgc cccggctctg 5400
actgacgcg ttaactaaac aggttaagtc ggcctccgc cgggttttg gcgcctccgc 5460
cgggcgcccc cctcctcacg gcgagcgctg ccacgtcaga cgaagggcgc agcgagcgct 5520
ctgactcttc cgcgccgagc ctacggacag cggcccgctg ctacataagc tcggccttag 5580
aaacccagta tcagcagaag gacattttag gacgggactt gggtagctct agggcactgg 5640
ttttctttcc agagagcgga acaggcgagg aaaagtagtc cctctcggc gattctgcgg 5700
agggatctcc gtggggcggt gaacgcgat gatgcctcta ctaaccatgt tcatgttttc 5760
tttttttttc tacaggtcct ggttgacgaa cagggtaccg ccaccatggc caccggctct 5820
cgcacaagcc tgcgtctggc ttctggactg ctgtgcctgc cttggctcca ggagggtccc 5880
gcgcgtagca tcgataccgt cgttatgtgc tggaggcttg ctgaaggctg tatgctggct 5940
cctccacttg gtggtttggt ttggccctct gactgacgc gcaacattct ggtgattaca 6000
ggacacaagg cctgttacta gcaactcacat ggaacaaatg gcctctagc tggaggcttg 6060
ctgaaggctg tatgctgtca taatcgctat ttggtcgggc gttttggcct ctgactgagc 6120
ccgacacaaa ccgattatga caggacacaa ggcctgttac tagcaactac atggaacaaa 6180
tggcctctag cctggaggct tgcctgaaggc tgtatgctgt tctgatcctg aagttcgggt 6240
tcgttttggc ctctgactga cgaaccgaa ccaggatcag aacaggacac aaggcctgtt 6300
actagcactc acatggaaca aatggcctct ctagaat 6337

```

```

SEQ ID NO: 22      moltype = DNA length = 6339
FEATURE           Location/Qualifiers
source            1..6339
                  mol_type = other DNA
                  organism = synthetic construct

```

```

SEQUENCE: 22
aatcaacctc tggattacaa aatttgtgaa agattgactg gtattcttaa ctatgttgct 60
ccttttacgc tatgtggata cgtgctttta atgcctttgt atcatgctat tgcttccgt 120
atggctttca ttttctcttc cttgtataaa tctctgggtg tgtctcttta tgaggagttg 180
tggcccgctg tcaggcaacg tggcgtggtg tgcactgtgt ttgctgacgc aacccccact 240
ggttggggca ttgccaccac ctgtcagctc ctttccggga ctttgcgttt cccctccct 300
attgccagcg cggaaactcat cgcgcgctgc cttgcccgtc gctggacagg ggtcggctg 360
ttgggcactg acaattccgt ggtgtgtgct gggaaatcat cgtcctttcc ttggctgctc 420
gctgtgtgtg ccacctggat tctgcgcggg acgtcctctc gctacgtccc ttcgccctc 480
aatccagcgg acccttcttc ccgcggcctg ctgcggcctc tgccgctctt tccgctctt 540
cgcttctgcc ctacagacgag tcggatcttc ctttgggccc cctccccgc taagcttatc 600
gataccgtcg agatctaact gttttattgc agcttataat ggttacaata aaagcaatat 660
catcacaaat ttcacaaaaa agcaattttt ttaactgcat tctagtgtg gtttgtccaa 720
actcatcaat gtatcttata atgtctggat ctgcacctcg actagagcat ggctacgtag 780
ataagtagca tggcgggtta atcattaact acaaggaaac cctagtgtat gaggttggca 840
ctccctctct gcgcgctcgc tcgctcactg aggcggggcg accaaaggtc gcccgacgcc 900
cgggctttgc ccgggggggc tcaagtggcg agcagcgcg cagctggcgt aatagcgaag 960
agggccgcac cgatgcacct tcccaacagt tgcgcagcct gaatggcgaa tggcgattcc 1020

```

-continued

gttgcaatgg	ctggcggtaa	tattgttctg	gatattacca	gcaaggccga	tagtttgagt	1080
tcttctactc	aggcaagtga	tgttattact	aatcaaaaga	gtattgcgac	aacggttaat	1140
ttgcgtgatg	gacagactct	tttactcggg	ggcctcactg	attataaaaa	cacttctcag	1200
gattctggcg	tacggttctc	gtctaaaatc	cctttaatcg	gcctcctggt	tagctcccgc	1260
tctgattcta	acgaggaaag	cacgttatac	gtgctcgtea	aagcaaccat	agtacgcgcc	1320
ctgtagcggc	gcattaaagc	cggcgggtgt	gggtggttac	cgcagcgtga	ccgctacact	1380
tgccagcgcc	ctagcgcggc	ctccttccgc	ttctctccct	tcctttctcg	ccacgttcgc	1440
cggctttccc	cgtcaagctc	taaaatcggg	gctcccttta	gggttccgat	ttagtgcctt	1500
acggcaccto	gaccccaaaa	aacttgatta	gggtgatggt	tcacgtagtg	ggccatcgcc	1560
ctgatagacg	gtttttcgcc	ctttgacgtt	ggagtcacg	ttctttaata	gtggactcct	1620
gttccaaact	ggaacaacac	tcaaccctat	ctcggtctat	tccttttgat	tataagggat	1680
tttgccgatt	tcggcctatt	gggtaaaaaa	tgagctgatt	taacaaaaat	ttaacgcgaa	1740
ttttaacaaa	atattaacgt	ttacaattta	aatatttgct	tatacaatct	tcctgttttt	1800
ggggcttttc	tgattatcaa	ccgggttaca	tatgattgac	atgctagttt	tacgattacc	1860
gttcactgat	tctctgtgtt	gtccagactc	ctcaggcaat	gacctgatag	cctttgttaga	1920
gaacctctca	aaatagctac	cctctccggc	atgaatttat	cagctagaac	ggttgaatat	1980
catattgatg	gtgatttgac	tgtctccggc	ctttctcacc	cgtttgaatc	tttacctaca	2040
cattactcag	gcatttgatt	taaaatatat	gaggggtcta	aaaattttta	tccttgcggt	2100
gaaataaagg	cttctccggc	aaaagtatta	cagggtcata	atgttttggg	tacaaccgat	2160
ttagctttat	gtctctgagg	tttattgctt	aattttgcta	attctttgce	ttgcctgfat	2220
gatttattgg	atgttggaat	tctctgatcg	gtattttctc	cttacgcgat	tgtgcgggat	2280
ttcacaccgc	atagggtgta	ctctcagtag	aatctgctct	gatgcgcgat	agttaagcca	2340
gccccgacac	ccgccaacac	ccgctgacgc	gccctgacgg	gcttgctctg	tcccggcatc	2400
cgcttacaga	caagctgtga	ccgtctccgg	gagctgcgat	tgtcagagggt	tttcaccgct	2460
atcacccgaa	cgcgcgagac	gaaagggcct	cgtgatacgc	ctatttttat	aggttaaatgt	2520
catgataata	atgggtttct	agacgtcagg	tggcactttt	cgggggaaatg	tgcgcggaac	2580
ccctatttgt	ttatttttct	aaatacatct	aaatatgtat	ccgctcatga	gacaataacc	2640
ctgataaatg	cttcaataat	attgaaaaag	gaagagtagt	agtattcaac	atttccgtgt	2700
cggccttatt	cccttttttg	cggcattttg	ccttctctgt	tttgctcacc	cagaaaacgt	2760
gggtgaaagt	aaagatgctg	aaagatcagt	gggtgcacga	gtgggttaca	tcgaactgga	2820
tctcaacagc	ggtaagatct	ttgagagtgt	tcgccccgaa	gaacgttttc	caatgatgag	2880
cacttttaaa	gttctgctat	gtggcgcggg	attatccctg	attgacgcgc	ggcaagagca	2940
actcgggtcg	cgcatacact	attctcagaa	tgaacttggt	gagtaactcac	cagtcacaga	3000
aaagcatctc	acggatggca	tgacagtaag	agaattatgc	agtgcgcgca	taaccatgag	3060
tgataaacct	cgggccaact	tacttctgac	aacgatcgga	ggaccggaag	agctaaccgc	3120
ttttttgcac	aacatggggg	atcatgtaac	tcgccttgat	cgttggggaa	cggagctgaa	3180
tgaagccata	ccaaacgacg	agcgtgacac	cacgatgcct	gtagcaatgg	caacaacggt	3240
gcgcaaaact	ttaactggcg	aactacttac	tctagcttcc	cggcaacaat	taatagactg	3300
gatggaggcg	gataaagtgt	caggaccact	ctcgcgctcg	gcccttccgg	ctggctgggt	3360
tattgctgat	aaatctggag	cgggtgagcg	tgggtctcgc	ggtatcattg	cagcactggg	3420
gccagatggg	aagccctccc	gtatctagtg	tatctacacg	acggggagtc	aggcaactat	3480
ggatgaacga	aatagacaga	tcgctgagat	aggtgcctca	ctgattaagc	attggtaact	3540
gtcagaccga	gtttactctat	atatacttta	gattgattta	aaacttcatt	tttaatttaa	3600
aaggatctag	gtgaagatcc	tttttgataa	tctcatgacc	aaaatccctt	aacgtgagtt	3660
ttcgttccac	tgagcgtcag	accocgtaga	aaagatcaaa	ggatcttctt	gagatccttt	3720
ttttctcgcg	gtaatctgct	gcttgcaaac	aaaaaaacca	cgcctaccag	cgggtggtttg	3780
tttgccggat	caagagctac	caactctttt	tcggaaggta	actggcttca	gcagagcgca	3840
gataccaaat	actgctcttc	tagtgtagcc	gtagttaggc	caccacttca	agaactctgt	3900
agcaccgcct	acatacctcg	ctctgctaact	cctgttaccg	gtggctgctg	ccagtggcga	3960
taagtcgtgt	cttaccgggt	tggactcaag	acgatagtta	ccggataaag	cgcagcggtc	4020
gggtggaacg	gggggttcgt	gcacacagcc	cagcttggaag	cgaacgacct	acaccgaaat	4080
gagataccga	cacgctgagc	tatgagaaag	cgccacgctt	cccgaaggga	gaaaggcgcc	4140
caggtatccg	gtaagcggca	gggtcgggaa	aggagagcgc	acgagggagc	ttccaggggg	4200
aaacgcctgg	tatctttata	gtcctgtcgg	gtttcgccac	ctctgacttg	agcgtcgatt	4260
tttgtgatgc	tcgtcagggg	ggcggagcct	atggaaaaac	gccagcaaac	cggccttttt	4320
acggttcctg	gccttttgct	ggccttttgc	tcacatgttc	tttctgctg	tatccctctga	4380
ttctgtggat	aaccgtatta	ccgcctttga	gtgagctgat	accgctcgcc	gcagccgaac	4440
gaccgagcgc	agcgagtcag	tgagcgagga	agcggaaagag	cgcccaatac	gcaaacggcc	4500
tctccccgcg	cgttgggcca	ttcattaatg	cagcagctgc	gcgctcgctc	gctcactgag	4560
gccgccccgg	caaagcccg	gcgtcggggc	accttttgct	gcccgccctc	agtgagcgag	4620
cgagcgcgca	gagagggaat	ggccaactcc	atcactaggg	gttctctgta	gttaatgatt	4680
aaaccgcat	gctacttate	tacgtagcca	tgtctctagga	cattgattat	tgactagtgg	4740
agttcccggt	tacataactt	acggtaaatg	gcccgccctg	ctgaccgccc	aacgaccccc	4800
gcccattgac	gtcaataatg	acgtatgttc	ccatagtaac	gccaataggg	actttccatt	4860
gacgtcaatg	ggtggagtat	ttacggtaaa	ctgcccactt	ggcagtagat	caagtgatc	4920
atatgccaaag	tacgccccct	attgacgtca	atgacggtaa	atggcccgcc	tggcatttatg	4980
cccagtagat	gaccttatgg	gactttccta	cttggcagta	catctacgta	ttagtcatcg	5040
ctattaccat	ggtcgagggt	agccccacgt	tctgcttcac	tctccccatc	tccccccct	5100
ccccaccccc	aattttgtat	ttattttatt	tttaattatt	ttgtgcagcg	atggggggcg	5160
gggggggggg	gggcgcgcgc	caggcggggc	ggggcggggc	gagggggggg	gcggggcgag	5220
gcggagaggt	gcggcgccag	ccaatcagag	cggcgcgctc	cgaaggttcc	cttttatggc	5280
gaggcgcgcg	cggcgcgccg	cctataaaaa	gcgaagcgcg	cggcgggcgg	gagtcgctgc	5340
gcgctgcctt	cgccccgctg	ccgcctccgc	cgccgcctcg	cgccgcgcgc	cccggtctctg	5400
actgacggcg	ttactaaaaa	aggtaaagtc	ggcctccgcg	cggggttttg	gcgcctcccg	5460
ggggcgcccc	cctcctcaag	gcgagcgctg	ccacgtcaga	cgaaggcgcg	agcgagcgct	5520
ctgatccttc	cgccccgacg	ctcaggacag	cggcccgctg	ctcataagac	tcggccttag	5580

-continued

aacccccagta	tcagcagaag	gacatttttag	gacggggactt	gggtgactct	agggcactgg	5640
ttttctttcc	agagagcgga	acaggcgagg	aaaagtagtc	ccttctcggc	gattctgcgg	5700
agggatctcc	gtggggcggt	gaacgcgat	gatgcctcta	ctaaccatgt	tcatgttttc	5760
tttttttttc	tacaggctct	gggtgacgaa	cagggtaccg	ccaccatggc	cacggctct	5820
cgcacaagcc	tgtctgtggc	tttcggactg	ctgtgcctgc	cctggctcca	ggagggtccc	5880
gcccgtagca	tcgataccgt	cgtatgtgct	tggaggcttg	ctgaaggctg	tatgtcgaaa	5940
tcttcgggtg	gttccactgc	gttttggcct	ctgactgacg	cagtggaaac	cggaagattt	6000
caggacacaa	ggcctgttac	tagcactcac	atggaacaaa	tggcctctag	cctggaggct	6060
tgtcgaagcg	tgtatgtgta	tatcctgaat	atggtatgca	gcgttttggc	ctctgactga	6120
cgtgcatac	cattcaggat	atcaggacac	aaggcctgtt	actagcactc	acatggaaca	6180
aatggcctct	agcctggagg	cttgcctgaag	gctgtatgct	gtttaaagct	caaacgcgtt	6240
cgcggttttg	gcctctgact	gacggcgaa	gcgtgagctt	taaacaggac	acaaggcctg	6300
ttactagcac	tcacatggaa	caaattggcct	ctctagaat			6339

SEQ ID NO: 23 moltype = DNA length = 6339
 FEATURE Location/Qualifiers
 source 1..6339
 mol_type = other DNA
 organism = synthetic construct

SEQUENCE: 23

aatcaacctc	tggattacaa	aattttgtgaa	agattgactg	gtattcttaa	ctatgttgct	60
ccttttacgc	tatgtggata	cgtgcttta	atgcctttgt	atcatgctat	tgcttcccg	120
atggctttca	ttttctctc	ctgtataaa	tcttggtg	tgctcttta	tgaggagtg	180
tggcccggtg	tcaggcaacg	tggcgtggtg	tgcactgtgt	ttgctgacgc	aacccccact	240
ggttggggca	tggccaccac	cgtcagctc	ctttccggga	cttctgcttt	ccccctccct	300
attgcccagg	cggaaactcat	cgcgcctgc	cttgcccgc	gctggacagg	ggctcggtg	360
tgggcactg	acaattccgt	gggtgtgtcg	gggaaatcat	cgtcctttcc	ttggctgctc	420
gcctgtgttg	ccacctggat	tctgcgcggg	acgtcctctc	gctacgtccc	ttcggccctc	480
aatccagcgg	acctctcttc	cgcgcgcctg	ctgcgcgctc	tgcggcctct	tcgcgctctt	540
cgccttcgcc	ctcagacgag	tgggactctc	ctttggggccg	cctccccgcc	taagcttatc	600
gataccgtcg	agatctaact	tgtttattgc	agcttataat	ggttacaana	aaagcaatag	660
catcacaana	ttcacaana	aagcattttt	ttcactgcat	tctagttgtg	gtttgtccaa	720
actcatcaat	gtatcttatc	atgtctggat	ctcgacctcg	actagagcat	ggctacgtag	780
ataagtacga	tggcgggtta	atcattaaat	acaaggaacc	cctagtgtatg	gagttggcca	840
ctccctctct	gcgcgctcgc	tcgctcactg	agggcggggc	accaaaagtc	gcccgcagcc	900
cgggctttgc	cggggcgccg	tcagtgagcg	agcgagcgcg	cagctggcgt	aatagcgaag	960
agggccgcac	cgatcgccct	tcccaacagt	tgcgcagcct	gaatggcgaa	tggcgattcc	1020
gttgcaatgg	tggcgggtaa	tattgttctg	gatattacca	gcaaggccga	tagtttgagt	1080
tcttctactc	aggaagtgta	tgttattact	aatcaaaaga	gtattgcgac	aacgggttaat	1140
ttgcgtgatg	gacagactct	tttactcggt	ggcctcactg	attataaaaa	cacttctcag	1200
gattctggcg	tacogttctc	gtctaaaaat	cctttaatcg	gcctcctgtt	tagctccgcg	1260
tctgattcta	acgaggaaag	cacgttatat	gtgctcgcta	aagcaaccat	agtagcgcgc	1320
ctgtagcggc	gcattagcgc	gcgcgggtgt	gggtggttacg	cgcagcgtga	ccgctacact	1380
tgcacgcgc	ctagcgcgcg	ctcctttcgc	tttcttccct	tcctttctcg	ccacgttcgc	1440
cggctttccc	cgtcaagctc	taaatcgggg	gctcccttta	gggttccgat	ttagtgtctt	1500
acggcacctc	gaccccaaaa	aacttgatta	gggtgatggg	tcacgtatgt	ggccatcgcc	1560
ctgatatagc	gttttttcgc	ctttgacgtt	ggagtcacag	ttctttaata	gtggactctt	1620
gttccaaact	gggaacaacac	tcaaccctat	ctcgtctctat	tccttttgatt	tataagggat	1680
tttgccgatt	tcggcctatt	ggttaaaaaa	tgagctgatt	taacaaaaat	ttaacgcgaa	1740
ttttaacaaa	atattaacgt	ttacaattta	aatatttgct	tatacaatct	tcctgttttt	1800
ggggcttttc	tgtattatcaa	cgggggtaca	tatgattgac	atgctagtgt	tacgattacc	1860
gttcatcgat	tcctgtgttt	gctccagact	ctcaggcaat	gacctgatag	cctttgttaga	1920
gacctctcaa	aaatagctac	ctctccggc	atgaatttat	cagctagaac	gggtgaatat	1980
catattgatg	gtgatttgac	tgtctccggc	ctttctcacc	cgtttgaatc	ttacctacata	2040
cattactcag	gcattgcaat	taaaatatat	gagggttcta	aaaattttta	tccttgcgtt	2100
gaaataaagg	cttctccgcg	aaaagtatta	cagggtcata	atgttttttg	tacaaccgat	2160
ttagctttat	gctctgagcg	tttattgctt	aattttgcta	attctttgce	ttgcctgtat	2220
gatttattgg	atgttggaat	tcctgatgcg	gtattttctc	cttacgcata	tgtagcggtat	2280
ttcacaccgc	atatgggtgca	ctctcagtag	aatctgctct	gatgcgcgat	agtttaagcca	2340
gcccgcagac	ccgccaacac	ccgctgacgc	gccctgacgg	gcttgctcgc	tcgccgcata	2400
cgttatacga	caagctgtga	cgtctccgg	gagctgcata	tgtcagaggt	tttccacgtc	2460
atccaccgaa	cgccgcagac	gaaagggcct	cgtgatacgc	ctatttttat	aggttaaatgt	2520
catgataata	atgggttctt	agacgtcagg	tggcactttt	cggggaaatg	tgcgcggaac	2580
ccctatttgt	ttattttttt	aaatacatte	aaatatgtat	ccgctcatga	gacaataacc	2640
ctgataaatg	cttcaataat	attgaaaaag	gaagagtagt	agtattcaac	atttccgtgt	2700
cgcctctatt	cccttttttg	cggcattttg	ccttctctgt	tttgctcacc	cagaaacgct	2760
ggtgaaagta	aaagatgctg	aagatcagtt	gggtgcacga	gtgggttaca	tcgaactgga	2820
ttctcaacgc	ggtaagatcc	ttgagagttt	tcgcccga	gaacgttttc	caatgatgag	2880
cacttttaaa	gttctgctat	gtggcgcggt	attatcccg	attgacgcgc	ggcaagagca	2940
actcggctcg	cgcatacact	attctcagaa	tgaacttggt	gagtaactcac	cagtcacaga	3000
aaagcatctt	acggtaggca	tgacagtaag	agaattatgc	agtctgcca	taaccatgag	3060
tgataaacct	cggcccaact	tacttctgac	aacgatcgga	ggaccggaag	agctaaccgc	3120
ttttttgcac	aacatggggg	atcatgtaac	tcgccttgat	cgttgggaac	cggagctgaa	3180
tgaagccata	ccaaacgacg	agcgtgacac	cacgatgcct	gtagcaatgg	caacaacgtt	3240
cgcaaaacta	ttaaactggcg	aactacttac	tctagcttcc	cggcaacaat	taatatagct	3300
gatggaggcg	gataaagtgt	caggaccact	tctgcgctcg	gccctccgg	ctggctggtt	3360

-continued

tattgtgat	aaatctggag	cgggtgagcg	tgggtctcgc	ggtatcattg	cagcaactggg	3420
gccagatggt	aagccctccc	gtatcgtagt	tatctacacg	acggggagtc	aggcaactat	3480
ggatgaacga	aatagacaga	tcgctgagat	agggtgctca	ctgattaagc	attggtaact	3540
gtcagaccaa	gtttactcat	atatacttta	gattgattta	aaacttcatt	tttaatttaa	3600
aaggatctag	gtgaagatcc	tttttgataa	tctcatgacc	aaaatccctt	aacgtgagtt	3660
ttcgttccac	tgagcgtcag	accccgtaga	aaagatcaaa	ggatcttctt	gagatccttt	3720
ttttctgcgc	gtaatctgct	gcttgcaaac	aaaaaaacca	ccgctaccag	cggtaggtttg	3780
tttgccggat	caagagctac	caactctttt	tccgaaggta	actggcttca	gcagagcgca	3840
gataccaaat	actgtccttc	tagtgtagcc	gtagttaggc	caccacttca	agaactctgt	3900
agcaccgcct	acatacctcg	ctctgctaag	cctgttacca	gtggtgctg	ccagtggcga	3960
taagtcgtgt	cttaccgggt	tggactcaag	acgatagtta	ccggataagg	cgcagcggtc	4020
gggctgaacg	gggggttcgt	gcacacagcc	cagcttgag	cgaacgacct	acaccgaact	4080
gagataccta	cagcgtgagc	tatgagaaag	cgccacgctt	cccgaaggga	gaaaggcgga	4140
acggatccg	gtgaagcgga	gggtcggaac	aggagagcgc	acgagggagc	ttccaggggg	4200
aaacgccttg	tatctttata	gtcctgtcgg	gtttcgccac	ctctgacttg	agcgtcgatt	4260
tttgtgatgc	tcgtcagggg	ggcggagcct	atggaaaaac	gccagcaacg	cggccttttt	4320
acggttcctg	gccttttctg	ggccttttgc	tcacatgttc	tttctcgtgt	tatcccttga	4380
ttctgtggaat	aacgtgatta	ccgcctttga	gtgagctgat	accgctcgcc	gcagccgaac	4440
gaaccgagcg	agcgagtcag	tgagcgagga	agcgggaagag	cgcccaatac	gcaaacgcgc	4500
tctcccccgc	cgttgggcga	ttcattaatg	cagcagctgc	gcgctcgctc	gctcactgag	4560
gcccgcggcg	caaagccggg	gcgtcggggc	acctttggtc	gcccggcctc	agtgcgagag	4620
cgagcgcgca	gagagggagt	ggcccaactcc	atcactaggg	gttccttgta	gttaatgatt	4680
aaaccgccat	gctacttata	tacgtagcca	tgctctagga	cattgattat	tgactagtgg	4740
agttcccggt	tacataactt	acggtaaatg	gcccgccttg	ctgaccgccc	aacgaccccc	4800
gcccattgac	gttaataatg	acgtatgttc	ccatagtaac	gccaataggg	actttccatt	4860
gagtcgaatg	ggtggagtat	ttacggtaaa	ctgcccactt	ggcagtagat	caagtgtatc	4920
atatgccaa	tacgccccct	attgacgtca	atgacggtaa	atggcccgcg	tggtcattatg	4980
cccagtagat	gactttatgg	gactttccta	cttgccagta	catctacgta	ttagtcatcg	5040
ctattaccat	ggctgaggtg	agccccacgt	tctgcttca	tctccctac	tccccccct	5100
ccccaccccc	aattttgtat	ttatttattt	tttaattatt	ttgtgcagcg	atggggggcg	5160
gggggggggg	ggggcgcgcg	caggcggggc	ggggcggggc	gagggggcg	gcggggcgag	5220
gaggagaggt	gcggcgcgag	ccaatcagag	cggcgcgctc	cgaaagtctc	cttttatggc	5280
gaggcggcg	cgggcggcg	cctataaaaa	gcgaagcgcg	cgggcggcg	gagtcgctgc	5340
gcgctgcctt	gcggcggcg	cccgctccgc	cgccgctcgc	cgccgcccgc	cccggctcgc	5400
actgaccgcg	ttactaaaac	aggtaagtcc	ggcctccgcg	ccgggttttg	gcgctcccg	5460
ggggcggccc	cctcctcagc	gcgagcgctg	ccaagtcaga	cgaagggcgc	agcagcgctc	5520
ctgatctctc	gcggcggaag	ctcaggacag	cgcccgctcg	ctcataagac	tcggccttag	5580
aaaccagta	tcagcagaag	gacattttag	gacgggactt	gggtgactct	agggcactgg	5640
ttttctttcc	agagagcgga	acaggcgagg	aaaagtagtc	cctctcggcg	gattctcgcg	5700
agggatctcc	gtggggcggt	gaacgcccag	gatgcctcta	ctaaccatgt	tcagtgtttc	5760
tttttttttc	tacaggtcct	gggtgacgaa	cagggtagcg	ccaccatggc	caccgctctc	5820
cgccacaagc	tgctgctggc	tttcggactg	ctgtgcctgc	cttggtccca	ggagggtctc	5880
gccgctagca	tcgataccgt	cgctatgtgc	tggaaggctg	ctgaaggctg	tatgctgtaa	5940
taaaaggtctg	ggaatcacc	gttttggtct	ctgactgacg	gggtgattccg	acctttatta	6000
caggacacaa	ggcctgtttac	tagcactcac	atggaacaaa	tgccctctag	cctggaggct	6060
tgctgaaggc	tgtagctgtg	aatacgcag	atcaccatca	gcgttttggc	ctctgactga	6120
cgctgatggt	tgctggcgat	tacaggacac	aaggcctgtt	actagcactc	acatggaaca	6180
aatggcctct	agcctggagg	ctgtctgaag	gctgtatgct	gatacagaaa	cgaaggttca	6240
ggccgttttg	gcctctgact	cacggcctga	acccgtttct	gtatcaggag	acaaggcctg	6300
ttactagcac	tcacatggaa	caaatggcct	ctctagaat			6339

SEQ ID NO: 24 moltype = DNA length = 6339
FEATURE Location/Qualifiers
source 1..6339
 mol_type = other DNA
 organism = synthetic construct

SEQUENCE: 24

aatcaacctc	tggtattacaa	aattttgtgaa	agattgactg	gtattcttaa	ctatgttgct	60
ccttttaccg	tatgtggata	cgtgtcttta	atgcctttgt	atcatgctat	tgttcccggt	120
atggctttca	ttttctcctc	cttgataaaa	tcctgggtgc	tgctctctta	tgaggagtgt	180
tgcccggttg	tcaggcaaacg	tgccgtgggt	tgcaactgtg	ttgctgacgc	aacccccact	240
ggttggggca	ttgccaccac	ctgtcagctc	ctttccggga	ctttcgtctt	ccccctccct	300
attgccacgg	cggaaactcat	cgcgcgctgc	cttgcccgct	gctggacagg	ggctcggtgt	360
ttgggcactg	acaattccgt	ggtgttgtcg	gggaatcat	cgtcctttcc	ttggctgtct	420
gcctgtgttg	ccacctggat	tctgcgcggg	acgtccttct	gctacgtccc	ttcgccctcc	480
aatccagcgg	accttctctc	cgcggcgctg	ctgcgggctc	tgccgctctc	tcgcgctctt	540
cgcttccgcc	ctcagacgag	tcggatctcc	ctttggggcg	cctccccgcg	taagcttata	600
gataccgtcg	agactctaac	gttttattgc	agcttataat	ggttacaaat	aaagcaatag	660
catcacaaat	ttcacaaata	aagcattttt	ttcactgcat	tctagtgtgt	gtttgtccaa	720
actcatcaat	gtatcttata	atgtctggat	ctcgacctcg	actagagcat	ggctacgtag	780
ataagttagca	tgccgggtta	atcataact	acaaggaaac	cctagttagt	gagttggcca	840
ctccctctct	gcgcgctcgc	tcgctcactg	agggcggggc	accaaaaggt	gcccgcgcgc	900
cgggcttttg	ccggggcgcc	tcagttagcg	agcagcgcg	cagctggcgt	aatagcgaag	960
aggcccgcc	cgatcgccct	tcaccaacgt	tgccgcagct	gaatggcgaa	tgccgattcc	1020
gttgcaaatg	ctggcggtta	tattgttctg	gatattacca	gcaaggccga	tagtttgagt	1080
tcttctactc	aggcaagtga	tggtattact	aatcaagaa	gtattgcgac	aacggttaat	1140

-continued

ttgcgtgatg	gacagactct	tttactcggt	ggcctcactg	attataaaaa	cactttctcag	1200
gattctggcg	taccgttctc	gtctaaaaatc	cctttaaatcg	gcctcctggt	tagctcccg	1260
tctgattcta	acgaggaaag	cacgttatac	gtgctcgta	aagcaaccat	agtacgcgc	1320
ctgtagcgcg	gcattaaagc	cggcggtgt	gggtggttacg	cgcagcgtga	ccgctacact	1380
tgccagcgcc	ctagcgcccg	ctcctttcgc	ttcttccct	tcctttctcg	ccacgttcgc	1440
cggctttccc	cgtcaagctc	taaatcgggg	gctcccttta	gggttccgat	ttagtgttt	1500
acggcacctc	gaccccaaaa	aacttgatta	gggtgatggt	tcacgtagt	ggccatcgcc	1560
ctgatagagc	gtttttcgcc	ctttgacgtt	ggagtccacg	ttctttaata	gtggactctt	1620
gttccaaact	ggaacaacac	tcaaccctat	ctcgtctctat	tcttttgatt	tataagggat	1680
tttgcgatt	tcggcctatt	gggtaaaaaa	tgagctgatt	taacaaaaat	ttaacgcgaa	1740
ttttaacaaa	atattaacgt	ttacaattta	aatatttgct	tatacaatct	tcctgttttt	1800
ggggcttttc	tgattatcaa	cgggggtaca	tatgattgac	atgctagttt	tacgattacc	1860
gttcatcgat	tctcttggtt	gctccagact	ctcaggcaat	gacctgatag	cctttgtaga	1920
gacctctcaa	tcctcagctac	ctcctccggc	atgaatttat	cagctagaac	gggtgaatat	1980
catattgatg	gtgatttgac	tgtctccggc	ctttctcacc	cgtttgaatc	tttacctaca	2040
cattactcag	gcattgcatt	taaaaatat	gagggttcta	aaaattttta	tccttgcggt	2100
gaaataaagg	cttctcccg	aaaagtatta	cagggtcata	atgttttttg	tacaaccgat	2160
ttagctttat	gctctgagcg	tttattgctt	aattttgcta	attctttgct	ttgctgtat	2220
gatttattgg	atgttggaat	tctgatgctg	gtattttctc	cttacgcac	tgtgcggtat	2280
ttcacaccgc	atatgggtgca	ctctcagtac	aatctgctct	gatgccgcac	agtttaagcca	2340
gccccgacac	ccgccaacac	ccgctgacgc	gccctgacgg	cgttgctgctg	tcgccgcac	2400
cgtctacaga	caagctgtga	cgtctccgg	gagctgcatg	tgtcagaggt	tttaccgctc	2460
atcacccgaaa	cgcgcgagac	gaaagggcct	cgtgatacgc	ctatttttat	aggttaaatgt	2520
catgataata	atgggtttctt	agacgtcagg	tggcactttt	cggggaaatg	tgccgcggaac	2580
ccctatttgt	ttatttttct	aaatacatct	aaatatgtat	ccgctcatga	gacaataacc	2640
ctgataaatg	cttcaataat	attgaaaaag	gaagagtagt	agatttcaac	atttccgtgt	2700
cgcccttatt	cccttttttg	cggcattttg	ccttctctgt	tttgctcacc	cagaaacgct	2760
gggtgaaagta	aaagatgctg	aagatcagtt	gggtgcacga	gtgggttaca	tcgaactgga	2820
ttctcaacagc	ggtaagatcc	ttgagagtgt	tcgccccgaa	gaacgttttc	caatgatgag	2880
cacttttaaa	gttctgctat	gtggcgcggt	attatcccg	attgacgcgc	ggcaagagca	2940
actcggctcg	cgcatacact	attctcagaa	tgacttggtt	gagtactcac	cagtcacaga	3000
aaagcatctt	acggatggca	tgacagtaag	agaattatgc	agtgtctcca	taaccatgag	3060
tgataaacct	gcggccaact	tacttctgac	aacgatcgga	ggaccgaagg	agctaaccgc	3120
ttttttgcac	aacatggggg	atcatgtaac	tcgcttgat	cgttggaagg	cggagctgaa	3180
tgaagccata	ccaaacgacg	agcgtgacac	cacgatgcct	gtagcaatgg	caacaacgct	3240
gcgcaaaacta	ttaactggcg	aactacttac	tctagcttcc	cggcaacaat	taatagactg	3300
gatggagcg	gataaagtgt	caggaccact	ctcgcgctcg	gcccttccgg	ctggctggtt	3360
tattgctgat	aaatctggag	ccgggtgagc	tgggtctcgc	ggatcatctg	cagcactggg	3420
gccagatggg	aagccctccc	gtactgtagt	tatctacacg	acggggagtc	aggcaactat	3480
ggatgaacga	aatagacaga	tcgctgagat	aggtgcctca	ctgattaaagc	attggtaact	3540
gtcagaccaa	gtttactact	atatacttta	gattgattta	aaacttcatt	tttaatttaa	3600
aaggatctag	gtgaagatcc	tttttgataa	tctcatgacc	aaaatccctt	aacgtgagtt	3660
ttcgttccac	tgacgctcag	accocgtaga	aaagatcaaa	ggatcttctt	gagatccttt	3720
ttttctgcgc	gtaactctgt	gcttgcaaac	aaaaaaacca	ccgctaccag	cgggtggttg	3780
tttgccggat	caagagctac	caactctttt	tcggaaggt	actggctcca	gcagagcgca	3840
gataccaaat	actgtctctc	tagtttagcc	gtagttagcc	caccacttca	agaactctgt	3900
agcaccgcct	acatacctcg	ctctgctaat	cctgttacca	gtggctgctg	ccagtggcga	3960
taagtctgt	cttaccgggt	tggaactcaag	acgatagtta	ccggataaag	cgcagcggtc	4020
gggttgaaag	gggggttcgt	gcacacagcc	cagcttgga	cgaacgacct	acaccgaact	4080
gagataccta	cagcgtgagc	tatgagaaa	cgcacgcctt	cccgaaggga	gaaaggcgga	4140
caggtatccg	gtaagcgcca	gggtcggaac	aggagagcgc	acgagggagc	ttccaggggg	4200
aaacgcctgg	tatctttata	gtcctgtcgg	gtttcgccac	ctctgacttg	agcgtcgatt	4260
tttgtgatgc	tcgtcagggg	ggcggagcct	atggaaaaac	gccagcaacg	cggccttttt	4320
acggttccgt	gccttttctg	ggccttttgc	tcacatgttc	tttctcgct	tatcccttga	4380
ttctgtggat	aaccgtatta	cgccttttga	gtgagctgat	accgctcgcc	gcagccgaac	4440
gaccgagcgc	agcagtcag	tgagcgagga	agcggaaag	cgcccaatac	gcaaacccgc	4500
tctccccgcg	cgttgccga	ttcattaatg	cagcagctgc	gcgctcgctc	gctcactgag	4560
gccgcccggg	caaaagcccg	cgttcggcg	accttttgct	gcccgccctc	agtgaagcag	4620
cagagcgcca	gagagggagt	ggccaactcc	atcactaggg	gttctctgta	gttaatgatt	4680
aaccgcctat	gctacttatc	tacgtagcca	tgtcttagga	cattgattat	tgactagtgg	4740
agttcccgct	tacataaact	acggtaaatg	gcgcgcctgg	ctgaccgcgc	aacgaccccc	4800
gcccattgac	gtcaataatg	acgtatgttc	ccatagtaac	gccaataggg	actttccatt	4860
gacgtcaatg	gggtggagt	ttacggtaaa	ctgcccactt	ggcagtcacat	caagtgtatc	4920
atatgccaa	tacgccccct	attgacgtca	atgacggtaa	atggcccgc	tggcattatg	4980
ccagtgacat	gaccttatgg	gactttcccta	cttggcagta	catctacgta	ttagtcacg	5040
ctattaccat	ggctgaggtg	agccccacgt	tctgcttcac	tctcccatc	ttccccccct	5100
ccccaccccc	aattttgtat	ttatttat	tttaattatt	ttgtgcagcg	atggggggcg	5160
gggggggggg	gggcgcgcgc	caggcggggc	ggggcggggc	gagggcgggg	gcggggcgag	5220
gcggagaggt	gcggcgcgag	ccaatcagag	cggcgcgctc	cgaaggttcc	cttttatggc	5280
gaggcgcg	cggcgcggc	cctataaaaa	gcgaagcgcg	cggcgggcg	gagtcgctgc	5340
cgctgcctt	cgcctcgcg	ccgcctcgc	cgcgcctcgc	cgcgcctcgc	ccggctcgc	5400
actgaccgcg	ttactaaaac	aggtaagtcc	ggcctccgcg	cgggtttttg	gcgcctccgc	5460
cggcgcccc	cctcctcag	gcgagcgctg	ccacgtcaga	cgaagggcgc	agcagcgctc	5520
ctgatccttc	gcgccggagc	ctcaggacag	cggcccgctg	ctcataagac	tcggccttag	5580
aaacccagta	tcagcagaag	gacattttag	gacgggactt	gggtgactct	agggcactgg	5640
ttttctttcc	agagagcgga	acaggcgag	aaaagttagt	ccttctcgcg	gattctcgcg	5700

-continued

agggatctcc	gtggggcggt	gaacgccgat	gatgcctcta	ctaaccatgt	tcatgttttc	5760
tttttttttc	tacagggtcct	gggtgacgaa	caggggtaccg	ccaccatggc	caccggctct	5820
cgcacaagcc	tgtctgctggc	tttcggactg	ctgtgcctgc	cttggtccca	ggagggtccc	5880
gccgctagca	tcgataccgt	cgtatgtg	tggaggcttg	ctgaaggctg	tatgctgtca	5940
gatcgctgtg	gtaaacaggc	gttttggcct	ctgactgacg	cctgtttacc	agcgatctga	6000
caggacacaa	ggcctgtttac	tagcactcac	atggaacaaa	tggcctctag	cctggaggct	6060
tgctgaaggc	tgtatgctga	gaatcagatc	agatagcgat	ccgttttggc	ctctgactga	6120
cggatcgcta	tctgctgatt	ctcaggacac	aaggcctgtt	actagcactc	acatgggaaca	6180
aatggcctct	agcctggagg	cttgcctgaag	gctgtatgct	gaaacatgcc	aacagcagaa	6240
tgccgttttg	gcctctgact	gacggcattc	tgcctgggcat	gtttcaggac	acaaggcctg	6300
ttactagcac	tcacatggaa	caaatggcct	ctctagaat			6339

SEQ ID NO: 25 moltype = DNA length = 6339
 FEATURE Location/Qualifiers
 source 1..6339
 mol_type = other DNA
 organism = synthetic construct

SEQUENCE: 25

aatcaacctc	tggattacaa	aatttgtgaa	agattgactg	gtattcttaa	ctatgttgct	60
ccttttacgc	tatgtggata	cgtgcttta	atgcctttgt	atcatgctat	tgttcccgt	120
atggcctttc	ttttctcctc	cttgataaaa	tcttggttgc	tgtctcttta	tgaggagtgt	180
tgcccggttg	tcaggcaacg	tggcgtggtg	tgcactgtgt	ttgctgacgc	aacccccact	240
ggttggggca	ttgccaccac	ctgtcagctc	ctttccggga	ctttcgcttt	ccccctccct	300
attgccacgg	cggaaactcat	cgcgcctgc	cttgcccgct	gctggacagg	ggctcggctg	360
ttgggcactg	acaattccgt	ggtgtgtgc	gggaatcat	cgtcctttcc	ttggtgtcgt	420
gctgtgttg	ccacctggat	tctgcgcggg	acgtccttct	gctacgtccc	ttcggccctc	480
aatccagcgg	accttctctc	cgcgcgcctg	ctgcgcgctc	tgcggcctct	tccgcgtctt	540
cgccttcgcc	ctcagacgag	tcggatctcc	ctttgggccc	cctccccgcc	taagcttatc	600
gataccgtcg	agatctaact	tgtttattgc	agcttataat	gggtacaaat	aaagcaatag	660
catcacaaat	ttcacaaaa	aagcattttt	ttcactgcat	tctagtgtgt	gtttgtccaa	720
actcatcaat	tgtctttatc	atgtctggat	ctcgacctcg	actagagcat	ggctacgtag	780
ataagtagca	tggcgggtta	atcattaact	acaaggaacc	cctagtgtatg	gagttggcca	840
ctccctctct	gcgcgctcgc	tcgctcactg	aggccgggcg	accaaaagtc	gcccgcacgc	900
cgggctttgc	cgggcggcgc	tcagtgcgcg	agcgcgcgcg	cagctggcgt	aatagcgaag	960
aggccgcgac	cgcgcgcctc	tcccaacagt	tgcgcgcctc	gaatggcgaa	tggcgattcc	1020
gttgcaatgg	ctggcggtaa	tattgttctg	gatattacca	gcaaggccga	tagtttgagt	1080
ttcttcaact	aggcaagtga	tgttattact	aatcaaaaga	gtattgcgac	aacgggtaat	1140
ttgcgtgatg	gacagactct	tttactcgtt	ggcctcactg	attataaaaa	cacttctcag	1200
gattctggcg	taccgttctc	gtctaaaaatc	cctttaatcg	gcctcctggt	tagctcccgc	1260
tctgattcta	acgaggaagc	cacgttatac	gtgctcgta	aagcaaccat	agtcacgcgc	1320
ctgtagcggc	gcattaaagc	cggcggtgtg	gggtggttacg	cgcagcgtga	ccgctacact	1380
tgccagcgcc	ctagcgcgcg	ctcctttcgc	ttcttccctc	tcttctctcg	ccacgttcgc	1440
cggctttccc	gctcaagctc	taaatcgggg	gctcccttta	gggttccgat	ttagtgtctt	1500
acggcacctc	gacccccaaa	aacttgatta	gggtgatggt	tcacgtatgt	ggccatcgcc	1560
ctgatagcgc	gtttttcgcc	ctttgacgtt	ggagtccacg	ttctttaata	gtggactctt	1620
gttccaaact	ggaacaacac	tcaaccctat	ctcggctctat	ctttttgatt	tataagggat	1680
tttgccgatt	tcggcctatt	gggttaaaaa	tgagctgatt	taacaaaaat	ttaacgcgaa	1740
ttttaacaaa	atattaaact	ttacaattta	aatatttgct	tatacaatct	tctgtttttt	1800
ggggcttttc	tgattatcaa	cgggggtaca	tatgattgac	atgctagtgt	tacgattacc	1860
gttcatcgat	tctcttgttt	gtctcagact	ctcaggcaat	gacctgatag	cctttttaga	1920
gacctctcaa	aaatagctac	cctctccggc	atgaatttat	cagctagaac	gggtgaatat	1980
catattgatg	gtgatttgac	tgtctccggc	ctttctcacc	cgtttgaatc	tttacctaca	2040
cattactcag	gcatttgatt	taaaaatat	gaggggttcta	aaaaattttta	tctttcggtt	2100
gaaataaagg	cttctccgcg	aaaagtatta	cagggtcata	atgtttttgg	tacaaccgat	2160
ttagctttat	gctctgaggc	tttattgctt	aattttgcta	attccttggc	ttgcctgcat	2220
gatttatttg	atgttggaat	tcttgatgct	gtattttctc	cttacgcctc	tgtgcgggtat	2280
ttcacaccgc	atatgggtgca	ctctcagtag	aatctgctct	gatgcgcgat	agttaagcca	2340
gccccgacac	ccgccaacac	ccgctgacgc	gccctgacgc	gctgtctctg	tcccggcatc	2400
cgtttacaga	caagctgtga	ccgtctccgc	gagctgcctg	tgtcagaggt	tttcaccgtc	2460
atcacccgaa	cgcgcgagac	gaaagggcct	cgtgatacgc	ctatttttat	agggttaagt	2520
catgataata	atggtttctt	agacgtcagg	tggcactttt	cggggaaatg	tgcgcgggac	2580
ccctatttgt	ttatttttct	aaatacatct	aaatatgtat	ccgctcatga	gacaataacc	2640
ctgataaatg	cttcaataat	attgaaaaag	gaagagtatg	agtattcaac	atttccgtgt	2700
cgccttattt	cccttttttg	cggcattttg	ccttctctgt	tttgcctacc	cagaaacgct	2760
gggtgaaagta	aaagatgctg	aaagatcagt	gggtgcacga	gtgggttaca	tcgaactgga	2820
tctcaacagc	ggtaagatcc	ttgagagtgt	tcgccccgaa	gaacgttttc	caatgatgag	2880
cacttttaaa	gttctgctat	gtggcgcggt	attatccgct	attgacgcgc	ggcaagagca	2940
actcggctcg	cgcatacact	attctcagaa	tgaacttggt	gagtaactac	cagtcacaga	3000
aaagcatctt	acggatggca	tgacagtaag	agaattatgc	agtgcgtcca	taacctgag	3060
tgataaacct	gcggccaact	tacttctgac	aacgatcgga	ggaccgaagg	agctaaccgc	3120
ttttttgca	cccatggggg	tacgtgtaac	tcgccttgat	cgtttgggaa	cggagctgaa	3180
tgaagccata	caaacacgac	agcgtgacac	cacgatgcct	gtagcaatgg	caacaacgtt	3240
gcgcaaaact	ttactggcg	aactacttac	tctagcttcc	cggcaacaat	taatagactg	3300
gatggaggcg	gataaagtgt	caggaccact	tctgcgctcg	gccttccggg	ctggctggtt	3360
tattgctgat	aaatctggag	cgggtgagcg	tgggtctcgc	ggatcattg	cagcaactggg	3420
gccagatggt	aagccctccc	gtatcgtagt	tatctacacg	acggggagtc	aggcaactat	3480

-continued

ggatgaacga	aatagacaga	tcgctgagat	aggtgcctca	ctgattaagc	attggtaact	3540
gtcagaccaa	gtttactcat	atatacttta	gattgattta	aaacttcatt	tttaatttaa	3600
aaggatctag	gtgaagatcc	tttttgataa	tctcatgacc	aaaatccctt	aacgtgagtt	3660
ttcgttccac	tgagcgtcag	accccgtaga	aaagatcaaa	ggatcttctt	gagatccttt	3720
ttttctgcgc	gtaatctgct	gcttgcaaac	aaaaaaacca	ccgctaccag	cggtggtttg	3780
tttgccggat	caagagctac	caactctttt	tccgaaggta	actggtctca	gcagagcgca	3840
gataccaaat	actgtccttc	tagtgtagcc	gtagttaggc	caccacttca	agaactctgt	3900
agcacccgct	acatacctcg	ctctgcta	cctgttacca	gtggctgctg	ccagtggcga	3960
taagtcgtgt	cttaccgggt	tggactcaag	acgatagtta	ccggataaag	cgcagcggtc	4020
gggctgaacg	gggggttcgt	gcacacagcc	cagcttgag	cgaacgaact	acaccgaact	4080
gagataccta	cagcgtgagc	tatgagaaa	cgccacgctt	cccgaaggga	gaaaggcgga	4140
caggatccg	gtaagcgca	gggtcggaa	aggagagcgc	acgagggagc	ttccaggggg	4200
aaacgcctgg	tatctttata	gtcctgtcgg	gtttcgccac	ctctgacttg	agcgtcgatt	4260
tttggtgag	tcgtcagggg	ggcggagcct	atggaaaaac	gccagcaacg	cgcccttttt	4320
acggttccctg	gccttttctg	ggccttttgc	tcacatgttc	tttctcgctg	tatcccttga	4380
ttctgtggat	aaccgtatta	ccgcctttga	gtgagctgat	accgctcgcc	gcagccgaac	4440
gaaccgagcg	agcaggtcag	tgagcgagga	agcggaaagag	cgcccaatac	gcaaaccgcc	4500
tctcccccg	cgttgccga	ttcattaatg	cagcagctgc	gcgctcgctc	gctcactgag	4560
gcccggccgg	caaagcccg	gcgtcggg	acctttggtc	gcccggcctc	agtgaagcga	4620
cgagcgcgca	gagagggag	ggccaaactcc	atcactaggg	gttccttgta	gttaatgatt	4680
aaccgcgcat	gctactatc	tacgtagcca	tgctctagga	cattgattat	tgactagtgg	4740
agttccgctg	tacataaact	acggtaaatg	gcccgcctgg	ctgaccgccc	aacgaccccc	4800
gcccattgac	gtcaataatg	acgtatgttc	ccatagtaac	gccaataggg	actttccatt	4860
gacgtcaatg	gggtgagtat	ttacggtaaa	ctgcccactt	ggcagtagat	caagtgtatc	4920
atatgccaa	tacgccctct	attgacgtca	atggcccgcc	tggcattatg		4980
cccagtagat	gaccttatgg	gactttcccta	cttggcagta	catctacgta	ttagtcatcg	5040
ctattaccat	ggtcgaggtg	agccccacgt	tctgcttcac	tctccccatc	ttccccccct	5100
ccccaccccc	aattttgtat	ttatttattt	ttgtgcagcg	atggggcgcg		5160
gggggggggg	ggggcgcgcg	cagggcgggg	ggggcggggg	gagggggcg	gcgggcgcg	5220
gcgagagagt	gcgggcgcg	ccaatcagag	cggcgcgctc	cgaaggttcc	cttttatggc	5280
gagggcgcg	cggcgcgcg	cctataaaaa	gcgaagcgcg	cggcgggcg	gagtcgctgc	5340
gcgctgcctt	cgccccgtgc	cccgtccgc	cgccgcctcg	cgccgcgcgc	cccggctctg	5400
actgaccgct	ttactaaaac	aggtaagtcc	ggcctccgcg	cggggttttg	gcccctcccg	5460
cgggcgcctc	cctcctcacg	gcgagcgctg	ccacgtcaga	cgaagggcg	agcgaagctc	5520
ctgacccctc	cgcccgagcg	ctcaggacag	cggcccgctg	ctcataagac	tcggcccttag	5580
aaccccgcta	tcagcagaag	gacattttag	gacgggactt	gggtgactct	agggcactgg	5640
ttttctttcc	agagagcgga	acaggcgagg	aaaagttagt	ccttctcgcc	gattctcgcg	5700
agggatctcc	gtggggcggt	gaacgcgat	gatgcctcta	ctaaccatgt	tcattgtttc	5760
tttttttttc	tacaggtcct	gggtgacgaa	cagggtagcc	ccaccatggc	caccggctct	5820
cgcacaagcc	tgctgtgccc	cttcggactg	ctgtgcctgc	cttggctcca	ggagggctcc	5880
gcgctagca	tcgataccgt	cgctatgtgc	tggaggcttg	ctgaaggctg	tatgctgaca	5940
atcagatatt	gttgctcggc	gttttggcct	ctgactgacg	ccgagcaact	atctgattgt	6000
caggacacaa	ggcctgttac	tagcaactcac	atggaacaaa	tggcctctag	cctggaggct	6060
tgctgaagcc	tgatgtctgt	ttcacaaatgc	atcgctcagc	gcgttttggc	ctctgactga	6120
cgcgctgaac	ggcattgtga	aacaggacac	aaggcctgtt	actagcactc	acatggaaca	6180
aatggcctct	agcctggagg	cttgctgaag	gctgtatgct	gacaataatg	ccaacagggt	6240
ggctggtttg	gcctctgact	gaagcaccac	ctgggcatta	ttgtcaggac	acaaggcctg	6300
ttactagcac	tcacatggaa	caaatggcct	ctctagaat			6339

The invention claimed is:

1. A composition that comprises a recombinant plasmid (RP) a sequence of nucleotides that encode micro-interfering ribonucleic acid (miRNA) that binds to and inactivates and/or degrades messenger ribonucleic acid (mRNA) that encodes for a serotonin receptor, wherein the sequence of nucleotides comprises 95-100% the same nucleotide sequence as SEQ ID NO. 6.

2. The composition of claim 1, wherein the sequence of nucleotides is configured to be delivered to a target cell that has expressed the serotonin receptor.

3. The composition of claim 1, wherein the sequence of nucleotides is encased in a protein coat, a lipid vesicle, or any combination thereof.

4. The composition of claim 1, wherein the sequence of nucleotides is encased in a viral vector.

5. The composition of claim 4, wherein the viral vector is one of a double stranded DNA virus, a single stranded DNA virus, a single stranded RNA virus, or a double stranded RNA virus.

6. The composition of claim 4, wherein the viral vector is an adeno-associated virus.

7. The composition of claim 1 wherein the serotonin receptor is serotonin receptor 5HT1f.

8. A composition that comprises a recombinant plasmid (RP) with a sequence of nucleotides for encoding a sequence of micro-interfering ribonucleic acid (miRNA) that binds to and degrades and/or inactivates messenger ribonucleic acid (mRNA) that encodes for a serotonin receptor, wherein the sequence of nucleotides comprises 95-100% of the same nucleotide sequence as SEQ ID NO. 18.

* * * * *