Claims

1. A DNA construct for gene expression, wherein the construct is a linear and open-chained DNA double strand comprising a promoter sequence, a coding sequence and a termination signal, wherein the construct comprises at least one L-DNA nucleotide.

2. A construct according to claim 1, wherein at least one L-DNA nucleotide is comprised within the last five nucleotides of a 5'- and/or the 3'-end.

3. A construct according to claim 1 or 2, wherein at least one end of the DNA construct comprises a single stranded loop.

4. A construct according to any of the preceding claims, wherein said construct is partially or completely double-stranded.

5. A construct according to any of the preceding claims, wherein at least one L- or D-DNA nucleotide is modified with a functional group selected from the group comprising carboxyl, amine, amide, aldimine, ketal, acetal, ester, ether, disulfide, thiol and aldehyde groups.

6. A construct according to claim 5, wherein a modified nucleotide is linked to a compound selected from the group comprising peptides, proteins, carbohydrates, antibodies, synthetic molecules, polymers, micro projectiles, metal particles, nanoparticles, lipids, or a solid phase.

7. A construct according to any of the preceding claims, wherein the promoter is selected from the group comprising promoter sequences, which are operable in a human being, animals or eukaryotic cells.

8. A construct according to at least one of the preceding claims, wherein said construct encodes proteins, peptides, antibodies, hormones, cytokines or other biologically active substances.

9. A construct according to claim 8, wherein biologically active substances are immunomodulators.

10. A pharmaceutical composition comprising a DNA construct according to any of the claims 1 to 9.

11. A pharmaceutical composition according to claim 14 comprising additionally a chemotherapeutic.

12. The use of a DNA construct according to any of the claims 1 to 9 or a pharmaceutical composition according to claims 10 or 11 for stable or transient transfection of a human, animal or eukaryotic cell.

13. The use of a DNA construct according to any of the claims 1 to 9 or a pharmaceutical composition according to claims 10 or 11 for *ex-vivo* gene therapy or DNA vaccination.

14. The use of a DNA construct according to any of the claims 1 to 9 or a pharmaceutical composition according to claims 10 or 11 for the treatment of cancer or autoimmune diseases.

15. The use of a DNA construct according to any of the claims 1 to 9 or a pharmaceutical composition according to claims 10 or 11 in combination with a non-coding immunomodulatory DNA construct.

Claims

1. A DNA construct for gene expression, wherein the construct is a linear and open-chained DNA double strand comprising a promoter sequence, a coding sequence and a termination signal, wherein the construct comprises at least one L-DNA nucleotide.

2. The construct according to claim 1, wherein at least one L-DNA nucleotide is comprised within the last five nucleotides of a 5'- and/or the 3'-end.

3. The construct according to claim 1 or 2, wherein at least one end of the DNA construct comprises a single stranded loop.

4. The construct according to any of the preceding claims, wherein said construct is partially or completely double-stranded.

5. The construct according to any of the preceding claims, wherein at least one L- or D-DNA nucleotide is modified with a functional group selected from the group comprising carboxyl, amine, amide, aldimine, ketal, acetal, ester, ether, disulfide, thiol and aldehyde groups.

6. The construct according to claim 5, wherein a modified nucleotide is linked to a compound selected from the group comprising peptides, proteins, carbohydrates, antibodies, synthetic molecules, polymers, micro projectiles, metal particles, nanoparticles, lipids, or a solid phase.

7. The construct according to any of the preceding claims, wherein the promoter is selected from the group comprising promoter sequences, which are operable in a human being, animals or eukaryotic cells.

8. The construct according to at least one of the preceding claims, wherein said construct encodes proteins, peptides, antibodies, hormones, cytokines or other biologically active substances.

9. The construct according to claim 8, wherein biologically active substances are immunomodulators.

10. A pharmaceutical composition comprising the DNA construct according to any of the claims 1 to 9.

11. The pharmaceutical composition according to claim 10 comprising additionally a chemotherapeutic.

12. The DNA construct according to any of the claims 1 to 9 or the pharmaceutical composition according to claims 10 or 11 for use in stable or transient transfection of a human, animal or eukaryotic cell.

13. The DNA construct according to any of the claims 1 to 9 or the pharmaceutical composition according to claims 10 or 11 for use in *ex-vivo* gene therapy or DNA vaccination.

14. The DNA construct according to any of the claims 1 to 9 or the pharmaceutical composition according to claims 10 or 11 for use in the treatment of cancer or autoimmune diseases.

15. The DNA construct according to any of the claims 1 to 9 or the pharmaceutical composition according to claims 10 or 11 for use in combination with a non-coding immunomodulatory DNA construct.