Claims

1. An expression cassette which comprises a promoter, a polynucleotide sequence encoding a polypeptide, and expression enhancing element wherein expression enhancing element comprises a non-translated genomic DNA sequence downstream of a ~~eukaryotic~~ mammalian Glyceraldehyde 3-phosphate dehydrogenase (GAPDH) promoter, wherein the polypeptide encoded by the polynucleotide sequence is not GAPDH, and wherein the non-translated genomic DNA sequence downstream of the mammalian~~eukaryotic~~ GAPDH promoter starts within a region spanning from nucleotide position around +1 to nucleotide position around +7000, wherein the nucleotide position is relative to the transcription start of the GAPDH mRNA, and wherein the length of the non-translated genomic DNA sequence downstream of the mammalian~~eukaryotic~~ GAPDH promoter is from ~~around 100~~ 95 to around 15000 nucleotides.

2. The expression cassette of claim 1, wherein the expression cassette further comprises a non-translated genomic DNA sequence upstream of a mammalian~~eukaryotic~~ GAPDH promoter, wherein the non-translated genomic DNA sequence upstream of the mammalian~~eukaryotic~~ GAPDH promoter starts within a region spanning from around the 5' end of the mammalian~~eukaryotic~~ GAPDH promoter to nucleotide position around -3500, wherein the nucleotide position is relative to the transcription start of the GAPDH mRNA, and wherein the length of the non-translated genomic DNA sequence upstream of the mammalian~~eukaryotic~~ GAPDH promoter is from around 100 to around 15000 nucleotides.

3. An expression cassette which comprises a promoter, a polynucleotide sequence encoding a polypeptide, and a non-translated genomic DNA sequence upstream of a mammalian~~eukaryotic~~ GAPDH promoter, wherein the polypeptide encoded by the polynucleotide sequence is not GAPDH, and wherein the non-translated genomic DNA sequence upstream of the mammalian~~eukaryotic~~ GAPDH promoter starts within a region spanning from around the 5' end of the mammalian ~~eukaryotic~~ GAPDH promoter to nucleotide position around -3500, wherein the nucleotide position is relative to the transcription start of the GAPDH mRNA, wherein the length of the non-translated genomic DNA sequence upstream of the mammalian~~eukaryotic~~ GAPDH promoter is from 100 to around 15000 nucleotides, with the proviso that the expression cassette does not

comprise a mammalian~~eukaryotic~~ GAPDH promoter or fragments thereof.

4. The expression cassette of claim 3, wherein the expression cassette further comprises a non-translated genomic DNA sequence downstream of a mammalian~~eukaryotic~~ GAPDH promoter, wherein the non-translated genomic DNA sequence downstream of the mammalian~~eukaryotic~~ GAPDH promoter starts within a region spanning from nucleotide position around +1 to nucleotide position around +7000, wherein the nucleotide position is relative to the transcription start of the GAPDH mRNA, and wherein the length of the non-translated genomic DNA sequence downstream of the mammalian~~eukaryotic~~ GAPDH promoter is from ~~around 100~~95 to around 15000 nucleotides.

5. The expression cassette of any one of claims 1 to 4, wherein the non-translated genomic DNA sequence downstream and/or upstream of the mammalian~~eukaryotic~~ GAPDH promoter is not operably linked to the polynucleotide sequence encoding the polypeptide.

6. The expression cassette of any one of claims 1 to 4, wherein the expression cassette further comprises a polyadenylation site.

7. The expression cassette of claim 1 or 4, wherein the length of the non-translated genomic DNA sequence downstream of the mammalian~~eukaryotic~~ GAPDH promoter is around 10 nucleotides and extends at its maximum to the second last intron of the IFF01 gene or to a part thereof.

8. The expression cassette of claim 1 or 4, wherein the non-translated genomic DNA sequence downstream of the mammalian~~eukaryotic~~ GAPDH promoter starts downstream of the mammalian~~eukaryotic~~ GAPDH polyadenylation site and wherein the length of the non-translated genomic DNA sequence downstream of the mammalian~~eukaryotic~~ GAPDH promoter is at least ~~around 100~~ 95 nucleotides and extends at its maximum to the second last intron of the IFF01 gene.

9. The expression cassette of claim 2, wherein the length of the non-translated genomic DNA sequence upstream of the mammalian~~eukaryotic~~ GAPDH promoter is at least around 100 nucleotides and extends at its maximum to the start codon of the NCAPD2 gene.

10. The expression cassette of claim 2, wherein the length of the non-translated genomic DNA sequence upstream of the mammalian~~eukaryotic~~ GAPDH promoter is at least around 100 nucleotides and extends at its maximum to the third last intron of the NCAPD2 gene.

11. The expression cassette of claim 3, wherein the length of the non-translated genomic DNA sequence upstream of the mammalian~~eukaryotic~~ GAPDH promoter is at least 100 nucleotides and extends at its maximum to the start codon of the NCAPD2 gene.

12. The expression cassette of claim 3, wherein the length of the non-translated genomic DNA sequence upstream of the mammalian~~eukaryotic~~ GAPDH promoter is at least 100 nucleotides and extends at its maximum to the third last intron of the NCAPD2 gene.

~~13. The expression cassette of any one of claims 1 to 4, wherein the non-translated genomic DNA sequence downstream and/or upstream of the eukaryotic GAPDH promoter is of mammalian origin.~~

~~14.~~13. The expression cassette of any one of claims 1 to ~~4~~3, wherein the non-translated genomic DNA sequence downstream and/or upstream of the mammalian~~eukaryotic~~ GAPDH promoter is of rodent or human origin.

~~15.~~14. The expression cassette of claim 1 or 4, wherein the non-translated genomic DNA sequence downstream of the mammalian~~eukaryotic~~ GAPDH promoter comprises the nucleotide sequence selected from the group consisting of SEQ ID NOs: 8 and 21 or fragments thereof.

~~16.~~15. The expression cassette of claim 1 or 4, wherein the non-translated genomic DNA sequence downstream of the mammalian~~eukaryotic~~ GAPDH promoter comprises a nucleotide sequence complementary to the nucleotide sequence selected from the group consisting of SEQ ID NOs: 8 and 21 or fragments thereof.

~~17.~~16. The expression cassette of claim 1 or 4, wherein the non-translated genomic DNA sequence downstream of the mammalian~~eukaryotic~~ GAPDH promoter comprises a nucleotide sequence at least 80% identical to the nucleotide sequence selected from the

group consisting of SEQ ID NOs: 8 and 21 or fragments thereof.

~~18.~~17. The expression cassette of claim 2 or 3, wherein the non-translated genomic DNA sequence upstream of the mammalian~~eukaryotic~~ GAPDH promoter comprises a nucleotide sequence selected from the group consisting of SEQ ID NO: 7, 9, 10, 11, 12, 13, 14, 15, 16, 20, 22, 23, 24, 25, 26, 27 and 28 or fragments thereof.

~~19.~~18. The expression cassette of claim 1~~78~~, wherein the nucleotide sequence selected from the group consisting of SEQ ID NOs: 7, 9, 10, 11, 12, 13, 14, 15, 16, 20, 22, 23, 24, 25, 26, 27 and 28 or fragments thereof comprises five or less nucleic acid modifications.

~~20.~~19. The expression cassette of claim 2 or 3, wherein the non-translated genomic DNA sequence upstream of the mammalian~~eukaryotic~~ GAPDH promoter comprises a nucleotide sequence complementary to the nucleotide sequence selected from the group consisting of SEQ ID NO: 7, 9, 10, 11, 12, 13, 14, 15, 16, 20, 22, 23, 24, 25, 26, 27 and 28 or fragments thereof.

~~21.~~20. The expression cassette of claim 2 or 3, wherein the non-translated genomic DNA sequence upstream of the mammalian~~eukaryotic~~ GAPDH promoter comprises a nucleotide sequence at least 80% identical to the nucleotide sequence selected from the group consisting of SEQ ID NO: 7, 9, 10, 11, 12, 13, 14, 15, 16, 20, 22, 23, 24, 25, 26, 27 and 28 or fragments thereof.

~~22.~~21. The expression cassette of any one of claims 1 to 4, wherein the promoter and the polynucleotide sequence encoding a polypeptide are operatively linked.

~~23.~~22. The expression cassette of claim 1 or 4, wherein the non-translated genomic DNA sequence downstream of the mammalian~~eukaryotic~~ GAPDH promoter is orientated in the same direction as the polynucleotide sequence encoding a polypeptide.

~~24.~~23. The expression cassette of claim 1 or 4, wherein the non-translated genomic DNA sequence downstream of the mammalian~~eukaryotic~~ GAPDH promoter is orientated in opposite direction in relation to the polynucleotide sequence encoding a polypeptide.

~~25.~~24. The expression cassette of claim 2 or 3, wherein the non-translated genomic DNA sequence upstream of the mammalian~~eukaryotic~~ GAPDH promoter is orientated in the same direction as the polynucleotide sequence encoding a polypeptide.

~~26.~~25. The expression cassette of claim 2 or 3, wherein the non-translated genomic DNA sequence upstream of the mammalian~~eukaryotic~~ GAPDH promoter is orientated in opposite direction in relation to the polynucleotide sequence encoding a polypeptide.

~~27.~~26. The expression cassette of any one of claims 1 to 4, wherein the promoter is selected from the group consisting of SV40 promoter, MPSV promoter, mouse CMV, human tk, human CMV, rat CMV, human EF1alpha, Chinese hamster EF1alpha, human GAPDH, hybrid promoters including MYC, HYK and CX promoter.

~~28.~~27. The expression cassette of any one of claims 1 to 4, wherein the polypeptide is selected from the group consisting of antibodies, antibody fragments or antibody derivates.

~~29.~~28. The expression cassette of claim 6, wherein the polyadenylation site is selected from the group consisting of BGH poly(A) and SV40 poly(A).

~~30.~~29. The expression cassette of any one of claims 1 to 4, further comprising a genetic element selected from the group consisting of an additional promoter, an enhancer, transcriptional control elements, and a selectable marker.

~~31.~~30. The expression cassette of claim 29~~30~~, wherein the genetic element is a selectable marker wherein the content of CpG sites contained in the polynucleotide sequence encoding the selectable marker is 45 or less.

~~32.~~31. An expression vector comprising an expression cassette of any one of claims 1 to 30~~29~~.

~~33.~~32. An expression vector, which comprises in order:

a) a non-translated genomic DNA sequence upstream and/or downstream of a mammalian~~eukaryotic~~ GAPDH promoter

b) a promoter

c) a polynucleotide sequence encoding a polypeptide

d) a polyadenylation site

e) an enhancer

f) a non-translated genomic DNA sequence downstream and/or upstream of a mammalian~~eukaryotic~~ GAPDH promoter, or

a) a non-translated genomic DNA sequence upstream and/or downstream of a mammalian~~eukaryotic~~ GAPDH promoter

b) an enhancer

c) a promoter

d) a polynucleotide sequence encoding a polypeptide

e) a polyadenylation site

f) a non-translated genomic DNA sequence downstream and/or upstream of a mammalian~~eukaryotic~~ GAPDH promoter, or

a) an enhancer

b) a non-translated genomic DNA sequence upstream and/or downstream of a mammalian~~eukaryotic~~ GAPDH

c) a promoter

d) a polynucleotide sequence encoding a polypeptide

e) a polyadenylation site

f) non-translated genomic DNA sequence downstream and/or upstream of a mammalian~~eukaryotic~~ GAPDH,

wherein inclusion of the enhancer is optional, and wherein the polypeptide encoded by the polynucleotide sequence is not GAPDH, and wherein the non-translated genomic DNA sequence downstream of the mammalian~~eukaryotic~~ GAPDH promoter starts within a region spanning from nucleotide position around +1 to nucleotide position around +7000, wherein the nucleotide position is relative to the transcription start of the GAPDH mRNA, and wherein the length of the non-translated genomic DNA sequence downstream of the mammalian~~eukaryotic~~ GAPDH promoter is from ~~around 100~~95 to around 15000 nucleotides and wherein the non-translated genomic DNA sequence upstream of the mammalian ~~eukaryotic~~ GAPDH promoter starts within a region spanning from around the 5' end of the mammalian~~eukaryotic~~ GAPDH promoter to nucleotide position around -3500, wherein the nucleotide position is relative to the transcription start of the GAPDH mRNA, and wherein the length of the non-translated genomic DNA sequence upstream of the mammalian~~eukaryotic~~ GAPDH promoter is from around 100 to around 15000 nucleotides, with the proviso that if a) or b) is a non-translated genomic DNA sequence

upstream of a mammalian~~eukaryotic~~ GAPDH f) is a non-translated genomic DNA sequence downstream of a mammalian ~~eukaryotic~~ GAPDH and if a) or b) is a non-translated genomic DNA sequence downstream of a mammalian~~eukaryotic~~ GAPDH f) is a non-translated genomic DNA sequence upstream of a mammalian ~~eukaryotic~~ GAPDH.

~~34.~~33. The expression vector of claim 3~~12~~ or 3~~23~~, wherein the expression vector further comprises a genetic element selected from the group consisting of an additional promoter, an enhancer, transcriptional control elements, an origin of replication and a selectable marker.

~~35.~~34. The expression vector of claim 3~~12~~ or 3~~23~~, wherein the expression vector further comprises an origin of replication and a selectable marker wherein the content of CpG sites contained in the polynucleotide sequence of the expression vector encoding the origin of replication and the selectable marker is 200 or less.

~~36.~~35. A host cell comprising an expression cassette of any one of claims 1 to 3~~01~~ or an expression vector of any one of claims 3~~12~~ to 3~~45~~.

~~37.~~36. The expression cassette of any one of claims 1 to 3~~01~~ or the expression vector of any one of claims 3~~12~~ to 3~~45~~ for use as a medicament for the treatment of a disorder.

~~38.~~37. The expression cassette of any one of claims 1 to 3~~01~~ or the expression vector of any one of claims 3~~12~~ to 3~~45~~ for use in gene therapy.

~~39.~~38. An *in vitro* method for the expression of a polypeptide, comprising transfecting a host cell with the expression cassette of any one of claims 1 to 3~~01~~ or the expression vector of any one of claims 3~~12~~ to 3~~45~~ and recovering the polypeptide.

~~40.~~39. The method of claim 3~~89~~, wherein the expression cassette or the expression vector is stably transfected.

~~41.~~40. The method of claim 3~~89~~, wherein the expression cassette or the expression vector is transiently transfected.

~~42.~~41. Use of an expression cassette of any one of claims 1 to 3~~0~~1 or an expression vector of any one of claims 3~~1~~2 to 3~~4~~5 for the expression of a heterologous polypeptide from a mammalian host cell.