

CLAIMS

1. A purified and isolated DNA sequence having protein production increasing activity, characterized in that said DNA sequence comprises a) at least one bent DNA element, wherein the bent DNA element contains at least 33% of dinucleotide TA and/or at least 33% of dinucleotide AT on a stretch of 100 contiguous base pairs, b) at least one binding site for a DNA binding protein, c) and that it is a MAR nucleotide sequence with the sequence SEQ ID No. 24 or a sequence complementary thereof, or a sequence having at least 90% identity with said sequence SEQ ID No. 24.
2. The purified and isolated sequence of claims 1, characterized in that said DNA binding protein is a transcription factor.
3. The purified and isolated sequence of claim 2, characterized in that the transcription factor is selected from the group comprising the polyQpolyP domain proteins.
4. The purified and isolated sequence of claim 2, characterized in that the transcription factor is selected from the group comprising SATB1, NMP4, MEF2, S8, DLX1, FREAC7, BRN2, GATA 1/3, TATA, Bright, MSX, AP1, C/EBP, CREBP1, FOX, Freac7, HFH1, HNF3alpha, Nkx25, POU3F2, Pit1, TTF1, XFD1, AR, C/EBPgamma, Cdc5, FOXD3, HFH3, HNF3 beta, MRE2, Oct1, POU6F1, SRF, V\$MTATA_B, XFD2, Bach2, CDP CR3, Cdx2, FOXJ2, HFL, HP1, Myc, PBX, Pax3, TEF, VBP, XFD3, Brn2, COMP1, Evl, FOXP3, GATA4, HFN1, Lhx3, NKX3A, POU1F1, Pax6, TFIIA and Vmw65 or a combination of two or more of these transcription factors.
5. The use of a purified and isolated DNA sequence comprising a first isolated matrix attachment region (MAR) nucleotide sequence which is a MAR nucleotide sequence selected from the group comprising:
 - a purified and isolated DNA sequence of any of claims 1 to 4,
 - the sequence SEQ ID No. 24,or a sequence complementary thereof, for increasing protein production activity in a eukaryotic host cell.
6. The use of claim 5, characterized in that said purified and isolated DNA sequence further comprises a promoter operably linked to a gene of interest.
7. The use of claims 5 or 6, characterized in that said purified and isolated DNA sequence further comprises at least a second isolated matrix attachment region (MAR) nucleotide sequence which is a MAR nucleotide sequence selected from the group comprising:
 - a purified and isolated DNA sequence of any of claims 1 to 4,
 - the sequence SEQ ID No. 24,or a sequence complementary thereof, for increasing protein production activity in a eukaryotic host cell.
8. The use of claim 7, characterized in that said first and at least second MAR sequences are located at both the 5' and the 3' ends of the sequence containing the promoter and the gene of interest.
9. The use of claim 7, characterized in that said first and/or at least second MAR sequences are located on a sequence distinct from the one containing the promoter and the gene of interest.
10. The use of any of claims 5 to 9, characterized in that said purified and isolated DNA sequence is in the form of a linear DNA sequence as vector.
11. A method for transfecting a eukaryotic host cell, said method comprising a) introducing into said eukaryotic host cell at least one purified DNA sequence comprising at least one purified and isolated DNA sequence consisting of a MAR nucleotide sequence of any of claims 1 to 4, b) subjecting within a defined time said transfected eukaryotic host cell to at least one additional transfection step with at least one purified DNA sequence comprising at least one DNA sequence of interest and/or with at least one purified and isolated DNA sequence consisting of a MAR nucleotide sequence or other chromatin modifying elements, and c) selecting said transfected eukaryotic host cell.

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2. The purified and isolated sequence of claims 1, characterized in that said DNA binding protein is a transcription factor.
3. The purified and isolated sequence of claim 2, characterized in that the transcription factor is selected from the group comprising the polyQpolyP domain proteins.
4. The purified and isolated sequence of claim 2, characterized in that the transcription factor is selected from the group comprising SATB1, NMP4, MEF2, S8, DLX1, FREAC7, BRN2, GATA 1/3, TATA, Bright, MSX, AP1, C/EBP, CREBP1, FOX, Freac7, HFH1, HNF3alpha, Nkx25, POU3F2, Pit1, TTF1, XFD1, AR, C/EBPgamma, Cdc5, FOXD3, HFH3, HNF3 beta, MRF2, Oct1, POU6F1, SRF, V\$MTATA_B, XFD2, Bach2, CDP CR3, Cdx2, FOXJ2, HFL, HP1, Myc, PBX, Pax3, TEF, VBP, XFD3, Brn2, COMP1, Evl, FOXP3, GATA4, HFN1, Lhx3, NKX3A, POU1F1, Pax6, TFIIA and Vmw65 or a combination of two or more of these transcription factors.
5. The use of a purified and isolated DNA sequence comprising a first isolated matrix attachment region (MAR) nucleotide sequence which is a MAR nucleotide sequence selected from the group comprising:
 - a purified and isolated DNA sequence of any of claims 1 to 4,
 - the sequence SEQ ID No. 24,or a sequence complementary thereof, for increasing protein production activity in a eukaryotic host cell.
6. The use of claim 5, characterized in that said purified and isolated DNA sequence further comprises a promoter operably linked to a gene of interest.
7. The use of claims 5 or 6, characterized in that said purified and isolated DNA sequence further comprises at least a second isolated matrix attachment region (MAR) nucleotide sequence which is a MAR nucleotide sequence selected from the group comprising:
 - a purified and isolated DNA sequence of any of claims 1 to 4,
 - the sequence SEQ ID No. 24,or a sequence complementary thereof, for increasing protein production activity in a eukaryotic host cell.
8. The use of claim 7, characterized in that said first and at least second MAR sequences are located at both the 5' and the 3' ends of the sequence containing the promoter and the gene of interest.
9. The use of claim 7, characterized in that said first and/or at least second MAR sequences are located on a sequence distinct from the one containing the promoter and the gene of interest.
10. The use of any of claims 5 to 9, characterized in that said purified and isolated DNA sequence is in the form of a linear DNA sequence as vector.
11. A method for transfecting a eukaryotic host cell, said method comprising a) introducing into said eukaryotic host cell at least one purified DNA sequence comprising at least one purified and isolated DNA sequence consisting of a MAR nucleotide sequence of any of claims 1 to 4, b) subjecting within a defined time said transfected eukaryotic host cell to at least one additional transfection step with at least one purified DNA sequence comprising at least one DNA sequence of interest and/or with at least one purified and isolated DNA sequence consisting of a MAR nucleotide sequence or other chromatin modifying elements, and c) selecting said transfected eukaryotic host cell.