CLAIMS

1. A polypeptide comprising a transposase ~~or a fragment or a derivative thereof having transposase function~~ and at least one heterologous ~~chromatin~~ histone reader domain ~~element (CRE)~~.

2. The polypeptide of claim 1, wherein the at least one heterologous ~~CRE~~ histone reader domain is connected to the transposase~~, preferably~~ via a linker.

3. The polypeptide of claim 1 or 2, wherein the at least one heterologous ~~CRE~~ histone reader domain is connected to the N-terminus and/or C-terminus of the transposase~~, preferably~~ via a linker.

~~4. The polypeptide of any one of claims 1 to 3, wherein the at least one heterologous CRE is a chromatin reader domain (CRD).~~

~~5~~4. The polypeptide of ~~claim 4~~ any one of claims 1 to 3, wherein the at least one heterologous ~~CRD~~ histone reader domain is a naturally occurring ~~CRD~~ histone reader domain recognising histone methylation degree and/or acetylation state of histones.

~~6~~5. The polypeptide of claim ~~5~~ 4, wherein
the naturally occurring ~~CRD~~ histone reader domain recognising histone methylation degree is a plant homeodomain (PHD) type zinc finger, or
the naturally occurring ~~CRD~~ histone reader domain recognising the acetylation state of histones is a bromodomain.

~~7~~6. The polypeptide of claim ~~6~~ 5, wherein
the PHD type zinc finger is a transcription initiation factor TFIID subunit 3 PHD, or
the bromodomain is a histone acetyltransferase KAT2A domain.

~~8~~7. The polypeptide of claim ~~7~~ 6, wherein
the transcription initiation factor TFIID subunit 3 PHD has an amino acid sequence according to SEQ ID NO: 20, or

the histone acetyltransferase KAT2A domain has an amino acid sequence according to SEQ ID NO: 21.

~~9. The polypeptide of any one of claims 1 to 8, wherein the CRE is an artificial CRE recognising histone tails with specific methylated and/or acetylated sites.~~

~~10. The polypeptide of claim 9, wherein the artificial CRE is selected from the group consisting of a micro antibody, a single chain antibody, an antibody fragment, an affibody, an affilin, an anticalin, an atrimer, a DARPin, a FN2 scaffold, a fynomer, and a Kunitz domain.~~

~~11~~8. The polypeptide of any one of claims 1 to ~~10~~ 7, wherein the transposase is selected from the group consisting of a wild-type PiggyBac transposase, a hyperactive PiggyBac transposase, a wild-type PiggyBac-like transposase, a hyperactive PiggyBac-like transposase, a sleeping beauty transposase, and a Tol2 transposase~~, and the PiggyBac-like transposase is preferably selected from the group consisting of PiggyBat, PiggyBac-like transposase from *Xenopus tropicalis*, and PiggyBac-like transposase from *Bombyx mori*~~.

~~12~~9. The polypeptide of any one of claims 1 to ~~11~~ 8, wherein the polypeptide further comprises at least one heterologous DNA binding domain and/or a heterologous nuclear localization signal (NLS).

~~13~~10. A polynucleotide encoding the polypeptide of any one of claims 1 to ~~12~~ 9.

~~14~~11. A vector comprising the polynucleotide of claim ~~13~~ 10.

~~15~~12. A method for producing a transgenic cell comprising the steps of:

(i) providing a cell, and

(ii) introducing

a transposable element comprising at least one polynucleotide of interest, and

a polypeptide of any one of claims 1 to ~~12~~ 9,

a polynucleotide of claim ~~13~~ 10, or

a vector of claim ~~14~~ 11

into the cell, thereby producing the transgenic cell.

~~16~~13. The method of claim ~~15~~ 12, wherein the introduction takes place via electroporation, transfection, injection, lipofection, and/or (viral) infection.

~~17~~14. The method of claim ~~15~~ 12 or ~~16~~ 13, wherein the transposable element comprises terminal repeats (TRs).

~~18~~15. The method of claim ~~17~~ 14, wherein the at least one polynucleotide of interest is flanked by TRs.

~~19~~16. The method of any one of claims ~~15~~ 12 to ~~18~~ 15, wherein the transposable element is
a DNA transposable element, or
a retrotransposable element.

~~20~~17. The method of claim ~~19~~ 16, wherein
the DNA transposable element comprises inverted terminal repeats (ITRs), or
the retrotransposable element is a long terminal repeat (LTR) retrotransposable element.

~~21~~18. The method of any one of claims ~~15~~ 12 to ~~20~~ 17, wherein the cell is eukaryotic cell.

~~22~~19. The method of claim ~~21~~ 18, wherein the eukaryotic cell is a vertebrate, yeast, fungus, insect cell.

~~23~~20. The method of any one of claims ~~15~~ 12 to ~~22~~ 19, wherein the at least one polynucleotide of interest is selected from the group consisting of a polynucleotide encoding a polypeptide, a non-coding polynucleotide, a polynucleotide comprising a promoter sequence, a polynucleotide encoding a mRNA, a polynucleotide encoding a tag, and a viral polynucleotide.

~~24~~21. A transgenic cell obtainable by the method of any one of claims ~~15~~ 12 to ~~23~~ 20.

~~25~~22. Use of a transgenic cell of claim ~~24~~ 21 for the production of a protein or virus.

~~26~~23. A kit comprising

(i) a transposable element comprising a cloning site for inserting at least one polynucleotide of interest, and

(ii) a polypeptide of any one of claims 1 to ~~12~~ 9,

a polynucleotide of claim ~~13~~ 10,

a vector of claim ~~14~~ 11, or

at least one heterologous CRE and a polypeptide comprising a transposase or a fragment or a derivative thereof having transposase function.