WHAT IS CLAIMED IS:

1. A Liver bio-factory platform (LBP) system for expressing a transgene comprising,

a hepatocyte including the transgene artificially inserted in a region encoding a highly expressed and secretory gene on a genome of the hepatocyte,

wherein the highly expressed and secretory gene is at least one selected from the group consisting of ALB gene, FTL gene, FTH1 gene, ACTB gene, HP gene, APOC3 gene, SOD2 gene, ORM1 gene, and F9 gene present in the genome of hepatocytes,

wherein the transgene is expressed higher compared to before insertion, or the transgene is newly expressed in the hepatocyte,

wherein a protein produced by expressing the transgene is present in the hepatocyte or secreted out of the hepatocyte.

2. The LBP system of claim 1,

wherein the transgene is expressed by an endogenous promotor in the genome of hepatocytes.

3. The LBP system of claim 1,

wherein the transgene is a F9 gene.

4. A composition for artificially inserting a transgene into a genome of hepatocyte, comprising:

a guide nucleic acid or a nucleic acid encoding the guide nucleic acid,

wherein the guide nucleic acid includes a guide domain which is corresponding to a target sequence on a sequence of highly expressed and secretory gene in the genome of the hepatocyte,

wherein the guide domain is a 18 to 25nt includes 0-5 nucleotide(s) mismatched to the target sequence,

an editor protein or a nucleic acid encoding the editor protein; and

a donor or a nucleic acid encoding the donor,

wherein the donor includes the transgene,

wherein the highly expressed and secretory gene is at least one selected from the group consisting of ALB gene, FTL gene, FTH1 gene, ACTB gene, HP gene, APOC3 gene, SOD2 gene, ORM1 gene, and F9 gene present in the genome of hepatocyte.

5. The composition of claim 4,

Wherein The editor protein is at least one selected from the group consisting of a Streptococcus pyogenes-derived Cas9 protein, a *Campylobacter jejuni*-derived Cas9 protein, a *Streptococcus thermophilus*-derived Cas9 protein, a *Streptocuccus aureus*-derived Cas9 protein, a Neisseria meningitidis-derived Cas9 protein, a Cpf1 protein, ZFN and TALEN.

6. The composition of claim 4,

wherein the target sequence is at least one selected from the group consisting of SEQ ID NO.: 1-348.

7. The composition of claim 4, the composition comprising at least one of following sets:

(a) wherein when the target sequence is selected from the group consisting of SEQ ID NO.: 1-40 and 154-167 the editor protein is a a *Campylobacter jejuni*-derived Cas9 protein; (b) wherein when the target sequence is selected from the group consisting of SEQ ID NO.: 41-134 and 168-332, the editor protein is a Streptococcus pyogenes-derived Cas9 protein;

(c) wherein when the target sequence is selected from the group consisting of SEQ ID NO.: 135-153 and 333-348, the editor protein is a *Streptocuccus aureus*-derived Cas9 protein.

8. The composition of claim 4,

wherein the transgene is a F9 gene.

9. The composition of claim 4,

wherein the guide nucleic acid, editor protein and donor are respectively encoded in at least one vector in the form of a nucleotide sequence.

10. The composition of claim 9,

wherein the vector is a viral vector at least one selected from the group consisting of adenovirus, adeno-associated virus (AAV), vaccinia virus, poxvirus, herpes simplex virus and lentivirus.

11. A method for modifying a genome of stem cell *ex vivo* or *in vitro*, to express a protein of interest by inserting a transgene into a region encoding a highly expressed and secretory gene in the genome of stem cell, comprising: introducing

i) a guide nucleic acid or a nucleic acid encoding the guide nucleic acid,

wherein the guide nucleic acid includes a guide domain which is corresponding to a target sequence on the highly expressed and secretory gene

wherein the guide domain is a 18 to 25nt includes 0-5 nucleotide(s) mismatched to the target sequence

ii) an editor protein or a nucleic acid encoding the editor protein; and

iii) a donor or a nucleic acid encoding the donor,

wherein the donor includes the transgenewherein the highly expressed and secretory gene selected from the group consisting of FTL gene, FTH1 gene, ACTB gene, HP gene, APOC3 gene, SOD2 gene, ORM1 gene, and F9 gene.

12. The method of claim 11,

wherein the transgene is a F9 gene.

13. The method of claim 11,

wherein the target sequence is at least one selected from the group consisting of SEQ ID NO.: 1-348.

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14. The method of claim 11,

wherein the editor protein is at least one selected from the group consisting of a Streptococcus pyogenes-derived Cas9 protein, a *Campylobacter jejuni*-derived Cas9

protein, a *Streptococcus thermophilus*-derived Cas9 protein, a *Streptocuccus aureus*-derived Cas9 protein, a Neisseria meningitidis-derived Cas9 protein, a Cpf1 protein, ZFN and TALEN.

15. The method of claim 11,

wherein the guide nucleic acid, editor protein and donor are respectively encoded in at least one vector in the form of a nucleotide sequence.

16. The method of claim 15,

wherein the vector is a viral vector at least one selected from the group consisting of adenovirus, adeno-associated virus (AAV), vaccinia virus, poxvirus, herpes simplex virus and lentivirus.

17. The method of claim 15,

wherein the vector is introduced into the stem cell by systemic or topical administration.

18. The method of claim 11,

wherein a process of introducing the editor protein or the nucleic acid encoding the editor protein, and the donor or the nucleic acid encoding the donor into the stem cell is performed *ex vivo*.