

CLAIMS

1. A manipulated human cell comprising an engineered gene having an indel in a HIF1AN gene,

5 wherein a sequence of the engineered gene is different from the sequence of the wild-type gene,

wherein an mRNA transcribed from the engineered gene in the manipulated human cell exhibits a lower expression level or has a different sequence than an mRNA transcribed from the
10 wild-type gene in a wild-type human cell,

wherein the expression level of HIF1 α in the manipulated human cell is higher than the expression level of HIF1 α in the wild-type human cell, and

wherein the manipulated human cell is characterized by a
15 higher viability compared to the wild-type human cell in a hypoxic environment.

2. The manipulated human cell of claim 1,

wherein the indel in the HIF1AN gene is located in exon
20 1 of the HIF1AN gene.

3. The manipulated human cell of claim 1, the engineered gene does not comprise one or more sequences selected from the group consisting of SEQ ID NOs:1 to 9.

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4. The manipulated human cell of claim 1, wherein the expression level of FIH-1 in the manipulated human cell is 70% or lower than the expression level of FIH-1 in the wild-type human cell.

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5. The manipulated human cell of claim 1, wherein the expression level of VEGF and IL-8 in the manipulated human cell is higher than the expression level of VEGF and IL-8 in the wild-type human cell.

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6. The manipulated human cell of claim 1, wherein the manipulated human cell is a mesenchymal stem cell derived from a tissue selected from the group consisting of bone marrow, adipose tissue, umbilical cord, placenta, amniotic fluid, and
10 umbilical cord blood.

7. The manipulated human cell of claim 6, wherein the manipulated human cell is a mesenchymal stem cell derived from bone marrow.