Claims

1. A nucleic acid encoding a CD8 alpha beta co-receptor, wherein alpha chain and beta chain are not covalently linked, and a TCR alpha chain construct and a TCR beta chain construct, wherein the nucleic acid comprises an operon capable of mediating expression of the CD8 alpha and CD8 beta chain and a TCR alpha chain construct and a TCR beta chain construct under the control of one promotor,

   wherein the nucleic acid segment encoding the CD8 beta chain is more proximal to the promotor than the nucleic acid segment encoding the CD8 alpha chain,

   and wherein at least one nucleic acid segment encoding a CD8 alpha chain or CD8 beta chain is between the nucleic acid segment encoding one of the TCR alpha chain construct and the TCR beta chain construct and the nucleic acid segment encoding the other of the TCR alpha chain construct and the TCR beta chain construct.

2. The nucleic acid of claim 1, wherein at least one nucleic acid segment encoding a CD8 alpha chain or CD8 beta chain is between the nucleic acid segment encoding the TCR beta chain construct and the nucleic acid segment encoding the TCR alpha chain construct,

   preferably, wherein only one nucleic acid segment encoding a CD8 alpha chain or CD8 beta chain is between the nucleic acid segment encoding the TCR beta chain construct and the nucleic acid segment encoding the TCR alpha chain construct, optionally, wherein said only one nucleic acid segment is the nucleic acid segment encoding the CD8 alpha chain.

3. The nucleic acid of any of the preceding claims, wherein at least the nucleic acid segment encoding the CD8 alpha chain is between the nucleic acid segment encoding one of the TCR alpha chain construct or TCR beta chain construct and the nucleic acid segment encoding the other of the TCR alpha chain construct and the TCR beta chain construct,

   preferably between the nucleic acid segment encoding the TCR beta chain construct and the nucleic acid segment encoding the TCR alpha chain construct.

4. The nucleic acid of any of the preceding claims, wherein the promotor is operably linked to the nucleic acid segment encoding the CD8 beta chain, which is, via a nucleic acid segment encoding a cleavage site, linked to the nucleic acid segment encoding one of the TCR alpha chain construct or TCR beta chain construct, which is, via a nucleic acid segment encoding a cleavage site, linked to the nucleic acid segment encoding the CD8 alpha chain, which is, via a nucleic acid segment encoding a cleavage site, linked to the nucleic acid segment encoding the other of the TCR alpha chain construct or TCR beta chain construct.

5. The nucleic acid of claim 4, wherein the promotor is operably linked to the nucleic acid segment encoding the CD8 beta chain, which is, via a nucleic acid segment encoding a cleavage site, linked to the nucleic acid segment encoding the TCR beta chain construct, which is, via a nucleic acid segment encoding a cleavage site, linked to the nucleic acid segment encoding the

CD8 alpha chain, which is, via a nucleic acid segment encoding a cleavage site, linked to the nucleic acid segment encoding the TCR alpha chain construct.

6. The nucleic acid of any of claims 1-3, wherein the nucleic acid segments encoding both the CD8 beta chain and the CD8 alpha chain are between the nucleic acid segment encoding one of the TCR alpha chain construct or the TCR beta chain construct and the nucleic acid segment encoding the other one of the TCR alpha chain construct and the TCR beta chain construct, preferably between the nucleic acid segment encoding the TCR beta chain construct and the nucleic acid segment encoding the TCR alpha chain construct.

7. The nucleic acid of any of the preceding claims, wherein the nucleic acid segment encoding the CD8 beta chain is linked to the nucleic acid segment encoding the CD8 alpha chain via a nucleic acid segment encoding a cleavage site, optionally, wherein the cleavage site is a self-cleaving peptide selected from the group comprising a P2A element, a T2A element, an E2A element and an F2A element,

   preferably, a P2A element.

8. The nucleic acid of any of claims 1-6, wherein an internal ribosome entry site (IRES) is located between the nucleic acid segment encoding the CD8 beta chain and the nucleic acid segment encoding the CD8 alpha chain.

9. The nucleic acid of any of claims 1-8, wherein the operon is flanked by inverted repeats capable of being mobilized by a transposase, preferably, by a Sleeping Beauty transposase such as SB100X.

10. The nucleic acid of any of claims 1-9 that is a minicircle, a plasmid, doggybone DNA or RNA, preferably, a minicircle.

11. A cell comprising the nucleic acid of any of claims 1-10, preferably, wherein the cell further expresses a class-I-restricted alpha beta T cell receptor construct, wherein the cell is selected from the group consisting of an immune cell such as a CD4 T cell and/or CD8 T cell, gamma delta T cell, NK cell, NKT cell, mucosa-associated invariant T (MAIT) cell, innate lymphoid cell (ILC), monocyte, macrophage and B-cell.

12. The immune cell of claim 11 that is a gamma delta T cell.

13. The immune cell of claim 11 that is a CD4+ T helper cell.

14. The nucleic acid of any of claims 1-10 or the cell of any of claims 11-13, and optionally, a suitable buffer and/or excipient, for use as a medicament.

15. Use of a nucleic acid of any of claims 1-10 or the cell of any of claims 11-13, and optionally, a suitable buffer and/or excipient, in the manufacture of a pharmaceutical composition for the treatment of cancer or an infectious disease, preferably, in adoptive T cell therapy of cancer.