CLAIMS

1. Use of a population of hematopoietic stem cells treated with a composition comprising a MYC-composition, a Bcl-2-composition, or both, for less than or about 1 day, in the manufacture of a composition for hematopoietic stem cell transplantation.

2. The use of claim 1, wherein the population of hematopoietic stem cells is treated with the composition comprising a MYC-composition, a Bcl-2-composition, or both, for about 1 hour.

3. The use of either one of claims 1 or 2, wherein the population of hematopoietic stem cells is treated with the MYC-composition.

4. The use of any one of claims 1 to 3, wherein the population of hematopoietic stem cells is treated with the composition comprising a MYC-composition and the Bcl-2-composition.

5. The use of any one of claims 1 to 4, wherein the MYC-composition, the Bcl-2-composition, or both, comprises a protein transduction domain (PTD).

6. The use of claim 5, wherein the Bcl-2-composition is a TAT-Bcl-2 fusion protein.

7. The use of claim 5, wherein the MYC-composition is a TAT-MYC fusion protein.

8. Use of a therapeutically effective amount of a MYC polypeptide in the manufacture of a composition for enhancing hematopoietic compartment reconstitution, comprising that the composition is formulated for administration.

9. The use of claim 8, wherein the MYC polypeptide comprises a protein transduction domain (PTD).

10. The use of claim 8, wherein the MYC polypeptide is a PTD-MYC fusion protein.

11. The use of claim 8, wherein the MYCpolypeptide is a TAT-MYC fusion protein.

12. The use of any one of claims 8 to 11, wherein the composition is to be administered before, after, or concurrently with transplantation of hematopoietic stem cells.

13. The use of claim 12, wherein the composition is to be administered at least 1 day after transplantation of the hematopoietic stem cells.

14. The use of claim 13, wherein the hematopoietic stem cells were cultured in the presence of a MYC-composition, a Bcl-2 -composition, or both before transplantation of the hematopoietic stem cells.

15. The use of claim 13, wherein the hematopoietic stem cells are conditionally immortalized hematopoietic stem cells.