

The Supplementary Information file (PDF; 180 Ko) contains

Supplementary Figures 1 to 3 with their legend;

Supplementary Tables 1 and 2;

Supplementary Notes 1 to 3 and associated references.

Supplementary Figures provide the structure of the therapeutic globin lentiviral vector, the kinetics of circulating blood cells after transplantation, and the ratios of hemoglobin species *in vitro* and *in vivo*. Supplementary Tables list the primers used for various PCR reactions.