

## **Description of Additional Supplementary Files**

File Name: Supplementary Data 1

Description: Fetal hemoglobin levels and cases of HPFH SNVs and the  $\Delta$ 13bp deletion within the proximal  $\gamma$ -globin (HBG1/2) promoters.

File Name: Supplementary Data 2

Description: SRA accession number of RNA-seq, ATAC-seq, CHIP-seq and CUT&RUN shown in Supplementary Figure 2.

File Name: Supplementary Data 3

Description: gRNA nucleotide sequence information.

File Name: Supplementary Data 4

Description: Primer sequences used for PCR screening and Sanger sequencing of gRNA editing efficiency.

File Name: Supplementary Data 5

Description: qPCR primer sequences used for detection of genome editing events.

File Name: Supplementary Data 6

Description: qPCR primer sequences used for mRNA expression.

File Name: Supplementary Data 7

Description: qPCR primer sequences used for 3C.

File Name: Supplementary Data 8

Description: Oligos for Site Directed Mutagenesis of BCL11A exon 4 mutations.

File Name: Supplementary Data 9

Description: Western blot antibodies

File Name: Supplementary Data 10

Description: Flow cytometry antibodies.