

## Description of Additional Supplementary Files

File Name: Supplementary Data 1

Description: Differential mRNA expression in wildtype vs *Nsd1*<sup>-/-</sup> BM erythroblasts

File Name: Supplementary Data 2

Description: Addback of SET mutated *Nsd1* into *Nsd1*<sup>-/-</sup> vs addback of wildtype *Nsd1* into *Nsd1*<sup>-/-</sup>. Differential mRNA expression after 24h in differentiation medium

File Name: Supplementary Data 3

Description: Gene Set Enrichment Analysis (GSEA) of significantly up- or down regulated genes according to shrunken log fold changes between maintenance medium (0h) and differentiation medium (24h) of cells rescued with add back of wildtype *Nsd1*

File Name: Supplementary Data 4

Description: Gene Set Enrichment Analysis (GESA) of significantly up- or down regulated genes according to shrunken log fold changes between wildtype add back of *Nsd1* and add back of SET mutated *Nsd1* at 24h in differentiation medium

File Name: Supplementary Data 5

Description: Addback of SET mutated *Nsd1* into *Nsd1*<sup>-/-</sup> vs addback of wildtype *Nsd1* into *Nsd1*<sup>-/-</sup>. Differential expression of protein after 24h in differentiation medium

File Name: Supplementary Data 6

Description: Addback of SET mutated *Nsd1* into *Nsd1*<sup>-/-</sup> vs addback of wildtype *Nsd1* into *Nsd1*<sup>-/-</sup>. Differential binding of GATA1 ChIP-seq after 24h in differentiation medium

File Name: Supplementary Data 7

Description: Addback of SET mutated *Nsd1* into *Nsd1*<sup>-/-</sup> vs addback of wildtype *Nsd1* into *Nsd1*<sup>-/-</sup>. Differential binding of H3K36me3 ChIP-seq after 24h in differentiation medium

File Name: Supplementary Data 8

Description: Addback of SET mutated *Nsd1* into *Nsd1*<sup>-/-</sup> vs addback of wildtype *Nsd1* into *Nsd1*<sup>-/-</sup>. Differential binding of H3K27ac ChIP-seq after 24h in differentiation medium

File Name: Supplementary Data 9

Description: Addback of SET mutated *Nsd1* into *Nsd1*<sup>-/-</sup> vs addback of wildtype functional *Nsd1* into *Nsd1*<sup>-/-</sup>. Differential protein expression following IP of GATA1 after 24h in differentiation medium (normalized to the IgG IP control)

File Name: Supplementary Data 10

Description: Addback of wildtype functional *Nsd1* into *Nsd1*<sup>-/-</sup>. Differential protein expression following IP of GATA1 after 24h in differentiation medium

File Name: Supplementary Data 11

Description: Addback of SET mutated *Nsd1* into *Nsd1*<sup>-/-</sup>. Differential protein expression following IP of GATA1 after 24h in differentiation medium

File Name: Supplementary Data 12

Description: Gene expression signature from ErythonDb: "ERYTHROID LINEAGE DEVELOPMENT" was obtained using the functionality "Build Gene Lists" within an erythropoietic lineage in a comparison between proerythroblasts and basophilic erythroblasts