

Description Of Additional Supplementary File

Supplementary Data1: Details of data quality for each sample of RNA-seq data set

Supplementary Data2: Details of data quality for each sample of Cut&Tag data set

Supplementary Data3: Details of data quality for each sample of DNA methylation data set

Supplementary Data4: Details of data quality for each sample and library of the in suite Hi-C data set

Supplementary Data5: Heterozygous SNPs details for each trio family used in the phasing analysis

Supplementary Data6: Details of the percentage of phase-specific epigenetic marks derived from phased signals

Supplementary Data7: List of tissues-shared imprinted-like genes

Supplementary Data8: Details of fluorescence reporter assay

Supplementary Data9: Details of 3CqPCR

Supplementary Data10: Details of phase-specific signals identified through multi-omics analysis of known imprinted genes between BF and LD

Supplementary Data11: qPCR details of the enhancer knockout experiment