De novo L1 vs Human specific L1 Threshold H2AFZ 100 H3K27ac 100 H4K20me1 100 H3K36me3 100 H3K4me1 100 H3K4me2 100 H3K4me3 100 H3K79me2 100 H3K9ac H3K9me3 H3K27me3 CTCF 100 100 DNase hypersensitive sites 100 RNA Pol2 100 G Quadruplexes 100 A-phased repeats Direct repeats Inverted repeats Mirror repeats 44 Z DNA motifs Most conserved element 100 Features 100 Exons 100 Introns 100 GC content AT content 100 100 Mononucleotides 100 Microsatellites di- tri- tetra-nucleotide DNA transposons 100 100 Alu MIR 100 LTR elements 100 L1 target motifs 100 L2 and L3 100 CpG islands 5-hydroxymethylcytosine 100 Sperm hypomethylation 10 100 Replication origin Sex-averaged recombination hotspots hESC exon expression 100 100 hESC gene expression 100 hESC transcript expression 100 Testis expression 100 CHH Methylation 100 CHG Methylation **CPG Methylation** 0087 + 0644 + 0644 + 0664 +

-log10(p-value)

2

kb