



Figure 9. Recruitment of corepressors by methyl-CpG binding proteins. A hypothetical transition between an active, nonmethylated gene promoter and a repressed promoter whose silence is attributable to DNA methylation, as mediated by complexes containing an MBD protein such as MeCP2 (gray shading). The transition phase represents an intermediate step during which transcription is silenced and DNA methylation occurs. MeCP2 is envisaged to recruit the NCoR histone deacetylase (HDAC) complex and histone lysine methyltransferase (HKMT) activity to the methylated sites. In addition, there is some evidence that MeCP2 can directly repress (DR) transcription by contact with the transcription initiation complex. Other methyl-CpG binding proteins can also interact with and potentially recruit distinct corepressor complexes that include HKMT and/or HDAC activity. PRC1 and PRC2 are also involved in silencing gene expression through histone H3K27 methylation, catalyzed by PRC2 (left outcome). One of the mechanisms by which they function together to regulate the same set of target genes is through the recognition of the H3K27me3 mark by the chromodomain protein in the PRC1 complex. PRC1 can also be recruited by the CxxC domain-containing protein Kdm2b to effect gene silencing (right outcome). Proteins with known histone posttranslational modifying (PTM) activity are indicated.