



**Figure 1.** Epigenetic regulation of neurogenesis. (A) The temporal involvement of various major epigenetic regulator molecules, acting at key fate-defining genes, such as *Dlx2*, are indicated alongside the neurogenic differentiation pathway (i.e., cells shaded in pink). PcG, Polycomb group; TrxG, Trithorax group; DNMT, DNA methyltransferase; PSC, pluripotent stem cell; NSC, neuronal stem cell; NPC, neuronal precursor cell; GPC, glial progenitor cell. (B) The interplay and modes of action of the three types of epigenetic-regulating molecules involved in the neuronal differentiation process are illustrated. Dnmt3a methylates the gene bodies and upstream regulatory sequences of neurogenic genes, such as *Dlx2*. This nonpromoter methylation protects these genes from Polycomb-mediated silencing. MLL1, through the trimethylation of H3K4 and demethylation of H3K27me<sub>3</sub> (by association of KDM6), also antagonizes Polycomb-mediated silencing of *Dlx2* to promote neurogenesis.