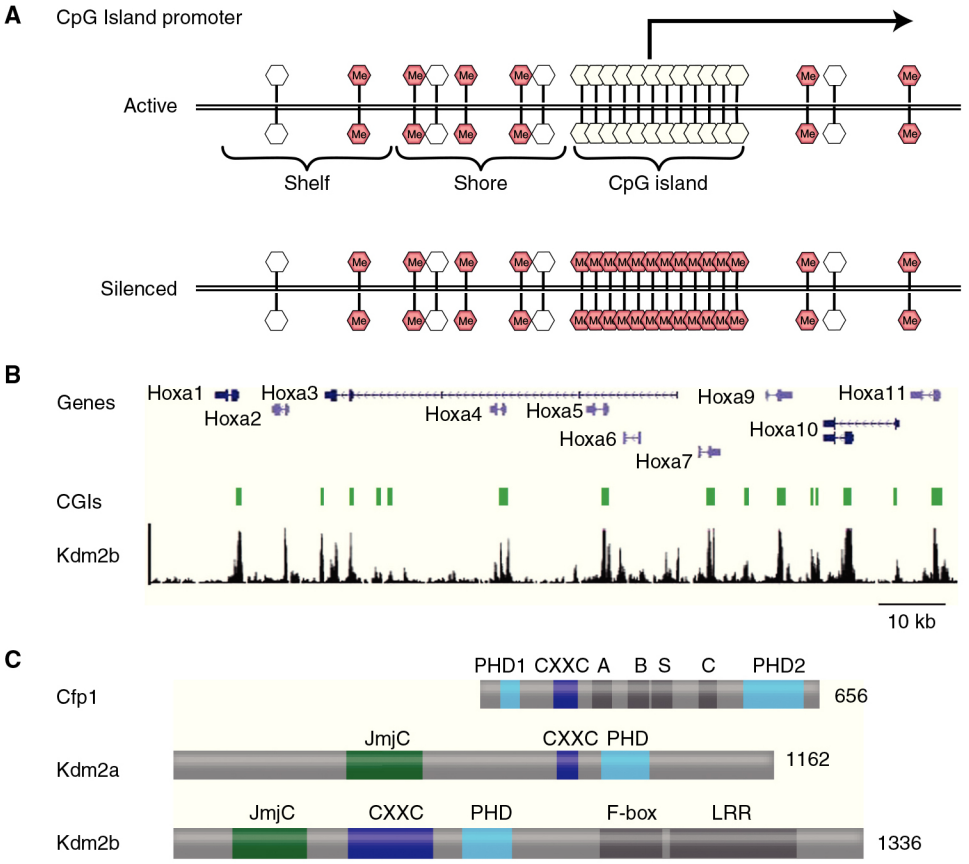

Figure 5. CpG islands. (*A*) CGIs are regions of high CpG density (>50%), usually 200 bp–2 kb in length that lack CpG methylation, found at promoters of most human genes. Long-term silencing of the gene can be insured by methylation of the CGI region. For example, genes on the inactive X chromosome and certain imprinted genes are silenced in this way. Also, in cancer cells certain genes are aberrantly silenced by CGI methylation. Shores are regions of the genome that reside up to 2 kb from CGIs, whereas shelves are found 2–4 kb away from CGIs. (*B*) Chromatin immunoprecipation (IP) analysis of Kdm2b binding sites shows that Kdm2b is enriched at the CpGs of the Hox locus in which the unmethylated CGIs (green bars) are located. (*C*) Cfp1, Kdm2a, and Kdm2b proteins share a common CXXC domain that binds specifically to unmethylated CpG sites. Protein length is indicated to the *right* of each protein. Abbreviations for other domains include PHD, plant homeodomain; A, acidic domain; B, basic domain; S, Set1 interacting domain; C, coiled coil domain; LRR, leucine-rich repeat domain.