Bromodomain-dependent stage-specific male genome programming by Brdt: Brdt: a master regulator of spermatogenesis

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Résumé en anglais	Male germ cell differentiation is a highly regulated multistep process initiated by the commitment of progenitor cells into meiosis and characterized by major chromatin reorganizations in haploid spermatids. We report here that a single member of the double bromodomain BET factors, Brdt, is a master regulator of both meiotic divisions and post-meiotic genome repackaging. Upon its activation at the onset of meiosis, Brdt drives and determines the developmental timing of a testis-specific gene expression program. In meiotic and post-meiotic cells, Brdt initiates a genuine histone acetylation-guided programming of the genome by activating essential genes and repressing a ‘progenitor cells’ gene expression program. At post-meiotic stages, a global chromatin hyperacetylation gives the signal for Brdt's first bromodomain to direct the genome-wide replacement of histones by transition proteins. Brdt is therefore a unique and essential regulator of male germ cell differentiation, which, by using various domains in a developmentally controlled manner, first drives a specific spermatogenic gene expression program, and later controls the tight packaging of the male genome.
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