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A proven role for methylation

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Cytosine methylation has been proposed to modulate tissue-specific expression, but **compelling evidence** has been hard to find. In an Advanced Online Publication in *Nature Genetics*, Futscher *et al.* describe a clear example of cell type-specific gene regulation by DNA methylation (*Nature Genetics* 20 May 2002, DOI:10.1038/ng886). They studied the maspin gene *SERPINB5*, expression of which is restricted to epithelial cells, and show, by bisulfite sequencing, that CpG sites in the *SERPINB5* promoter were unmethylated in maspin-positive cells. Chromatin immunoprecipitation experiments using antibodies specific for acetylated histones H3 and H4 revealed depleted acetylation in methylated *SERPINB5*-negative cells. Demethylation of the promoter by DNA methyltransferase inhibitors reactivated *SERPINB5* expression. These results indicate a clear relationship between cytosine methylation, histone acetylation and tissue-specific regulation.

References

1. Cytosine methylation and mammalian development.
2. *Nature Genetics*, [<http://www.nature.com/ng/>]
3. Maspin, a serpin with tumor-suppressing activity in human mammary epithelial cells.