The silencing team

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Inactivation of tumor suppressor genes is an essential stage in the development of human cancer but the extent of involvement of epigenetic silencing and hypermethylation in this process remains unclear. In the April 4 issue of Nature, Ina Rhee and colleagues from Johns Hopkins University School of Medicine, show that two enzymes, DNMT1 and DNMT3b, cooperate to silence genes and maintain DNA methylation in human cancer cells.

Rhee *et al.* worked on a colorectal cancer cell line and observed that genetic disruption of both DNMT1 and DNMT3b eliminated nearly all methyltransferase activity and reduced genomic DNA methylation by greater than 95%. This resulted in demethylation of repeated sequences, loss of insulin-like growth factor II (IGF2) imprinting, abrogation of silencing of the tumor suppressor gene *p16INK4a* and growth suppression (*Nature* 2002, **416:**552-556).

These results "establish that methylation is essential for silencing tumor suppressor genes in human cancer cells. It will be of interest to determine whether these results apply to other human cell types," concluded the authors.

References

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