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Chromatin control during the cell cycle

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Maintaining cells in the quiescent G0 phase of the cell division cycle is achieved by suppressing the expression of genes required for cell-cycle progression. In the May 10 *Science*, Hidesato Ogawa and colleagues at the Dana-Farber Cancer Institute in Boston describe a repressive mechanism in quiescent cells involving the E2F-6 transcription factor (*Science* 2002, **296**:1132-1136). They immunopurified protein complexes that include E2F-6 from human cells and analysed co-purifying protein bands by mass spectrometry. They detected the DP-1, Mga and Max transcription factors and showed that the E2F-6 complex can bind to E2F- and Myc-binding sites on DNA; they also found two associated histone methyltransferase enzymes. In addition, Ogawa *et al.* detected the HP1 γ protein that binds to methylated lysine 9 residues in the tails of histone proteins. Finally, they also found evidence for Polycomb-group-like, ring-finger proteins in the same complex. The authors propose that E2F- and Myc-regulated genes are repressed in quiescent cells by E2F-6 and recruitment of a complex that modifies chromatin structure.

References

1. *Science*, [<http://www.sciencemag.org>]
2. Dana-Farber Cancer Institute , [<http://www.dfci.harvard.edu>]
3. Unusual proliferation arrest and transcriptional control properties of a newly discovered E2F family member, E2F-6.