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DNA repair within nucleosomes

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DNA lesions are repaired by a cut-and-remove process called [nucleotide excision repair](#). An *in vitro* biochemically defined system has been developed in which six repair factors are sufficient to excise damage from naked DNA. In the December [Molecular and Cellular Biology](#), Hara *et al.* use this system to examine the effect of DNA organization into nucleosome structures on the DNA repair process (*Mol Cell Biol* 2000, **20**:9173-9181). A nucleosome structure was assembled by mixing human histone proteins with a 136 bp DNA fragment containing a (6-4) photoproduct lesion. The nucleosome was then used as a damaged substrate using the reconstituted human excision assay or human whole-cell extracts. DNA damage within the nucleosome core was repaired at about 10% the rate of naked DNA. Hara *et al.* also showed that there are no additional accessibility factors that are specific for nucleotide excision repair. Hence, chromatin compaction presents a significant impediment to the human excision nuclease.

References

1. DNA excision repair.
2. *Molecular and Cellular Biology*, [<http://www.intl-mcb.asm.org>]