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The telomere position effect (TPE), first described in yeast, causes the reversible silencing of genes near telomeres by a mechanism that depends on telomere length and the distance to the gene. Evidence for TPE in human cells might explain the altered cellular phenotypes associated with replicative aging and telomere shortening. In the June 15 Science, Baur *et al.* report the first demonstration of TPE in human cells (*Science* 2001, **292**:2075-2077). They created new telomere structures in HeLa cells by introducing a plasmid containing a luciferase reporter gene next to a stretch of telomeric repeats. Cell clones with a telomeric reporter expressed ten times less luciferase than clones with a random internal integration site. The telomere silencing effects could be overcome by treating cells with an inhibitor of histone deacetylase (Trichostatin A). Baur *et al.* found that when they elongated the telomere length, using the catalytic subunit of human telomerase reverse transcriptase (hTERT), there was an additional 2-10-fold decrease in telomeric luciferase expression. The authors suggest that TPE provides a mechanism by which the expression of subtelomeric human genes could increase with replicative age.

# References

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