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The telomerase shuttle

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Telomerase is a ribonucleoprotein-associated reverse transcriptase that prevents telomere erosion by adding telomeric repeats. In an Advanced Online Publication in *Nature Cell Biology*, Wong *et al.* describe the regulation of telomerase by subnuclear localization (*Nature Cell Biology*, 27 August 2002, doi:10.1038/ncb846). They created a fusion protein, GFP-hTERT, by joining the human telomerase catalytic subunit to green fluorescent protein, allowing them to investigate subcellular localization under different conditions. The fusion protein was biologically active, maintaining telomere length and extending the proliferative life span of primary cells. Subnuclear localization of the GFP-hTERT fusion protein changed during the cell cycle, however: Wong *et al.* observed nucleolar staining during the G1 phase and more diffuse patterns during the S and G2 phases. Transformed cells had a nucleoplasmic distribution of telomerase and exclusion of GFP-hTERT from the nucleolus. In contrast, ionizing radiation induced a return of telomerase to the nucleoli. Thus, subnuclear shuttling of telomerase affects its activity upon transformation or DNA damage.

References

1. Telomerase and human tumorigenesis.
2. *Nature Cell Biology*, [<http://www.nature.com/naturecellbiology>]