

PublisherInfo		
PublisherName	:	BioMed Central
PublisherLocation	:	London
PublisherImprintName	:	BioMed Central

Replication coupled to recombination

ArticleInfo		
ArticleID	:	3813
ArticleDOI	:	10.1186/gb-spotlight-20001030-01
ArticleCitationID	:	spotlight-20001030-01
ArticleSequenceNumber	:	250
ArticleCategory	:	Research news
ArticleFirstPage	:	1
ArticleLastPage	:	2
ArticleHistory	:	RegistrationDate : 2000-10-30 OnlineDate : 2000-10-30
ArticleCopyright	:	BioMed Central Ltd2000
ArticleGrants	:	
ArticleContext	:	130591111

William Wells

Email: wells@biotext.com

Blocking meiotic DNA replication in budding yeast **prevents** recombination initiation. This could indicate a direct coupling of the two processes, or the presence of a checkpoint system that detects incomplete replication and shuts down the formation of double-strand breaks (DSBs). In the 27 October *Science*, Borde *et al.* report that budding yeast cells defective for the replication checkpoint can progress through meiosis I in the absence of replication, but DSBs are still not formed (*Science* 2000, **290**:809-812). Furthermore, delaying replication in specific parts of the genome (by deleting origins of replication or creating translocations into telomeric regions) delays DSB formation only in those regions. Thus DSB formation is controlled locally, whereas the subsequent recombination and repair processes are timed and controlled on a cell-wide basis. The 1.5 to 2 hour delay between replication and DSB formation may reflect the time needed to assemble protein complexes or to establish interhomolog contacts.

References

1. Recombination and hydroxyurea inhibition of DNA synthesis in yeast meiosis.
2. *Science*, [<http://www.sciencemag.org/>]

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