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The need for Nbs1

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Eukaryotic cells have developed two independent pathways to repair double-strand breaks (DSB) in their DNA: non-homologous end-joining (NHEJ) and homologous recombination. A complex containing Mre11, Rad50 and Nbs1 proteins has been implicated in DSB repair, but its exact function is unclear. In the November 7 Nature, Tauchi *et al.* characterized the role of the Mre11-Rad50-Nbs1 complex in vertebrate cells by creating Nbs1 knockout cells (*Nature* 2002, **420:**93-98). The recombinogenic chicken B-cell line DT40 was used to generate cells lacking a functional *Nbs1* allele. The knockout cell line was hypersensitive to ionizing radiation and displayed abnormal S-phase checkpoint behavior. These cells did not exhibit a profound end-joining defect; but loss of Nbs1 resulted in reduced gene conversion and sister-chromatid exchange events. Tauchi *et al.* used a site-specific enzyme (I-*Sce*I) to create a DSB and demonstrated that the homologous recombination repair pathway required a functional Nbs1 protein.

References

1. Partners and pathways repairing a double-strand break

2. *Nature*, [http://www.nature.com]