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## Radiation resistance

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Cells must be able to recognize and repair DNA damage if they are to tolerate the effects of radiation. Much of our understanding of mammalian repair mechanisms, and their involvement in cancer, has come from studying yeast. In the Advanced Online Publication issue of *Nature Genetics*, Craig Bennett and colleagues from the *National Institute of Environmental Health Sciences* in North Carolina describe a genome-wide screen to isolate genes involved in ionizing-radiation resistance in yeast (DOI:10.1038/ng778). They screened a set of diploid *Saccharomyces cerevisiae* strains, with deletions in non-essential genes, for sensitivity to  $\gamma$ -irradiation. Analysis of 3,670 mutants identified 107 new genes that affect the ionizing-radiation survival response. These encode proteins involved in chromatin remodelling or segregation, transcription, protein degradation, cytokinesis, or activities of the Golgi or mitochondria. Many of these are also involved in resistance to other DNA-damaging agents, such as ultraviolet irradiation or genotoxic drugs. Several of the genes identified are involved in recombination and cell-cycle checkpoints, which can prevent cell division until damaged DNA is repaired. Many of the genes have human homologues, emphasizing the power of yeast-based screens to identify cancer-related genes involved in resistance to irradiation and anti-cancer drugs.

## References

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