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

Disease genes in yeast

ArticleInfo		
ArticleID	:	4538
ArticleDOI	:	10.1186/gb-spotlight-20020724-01
ArticleCitationID	:	spotlight-20020724-01
ArticleSequenceNumber	:	204
ArticleCategory	:	Research news
ArticleFirstPage	:	1
ArticleLastPage	:	2
ArticleHistory	:	RegistrationDate : 2002–7–24 OnlineDate : 2002–7–24
ArticleCopyright	:	BioMed Central Ltd2002
ArticleGrants	:	
ArticleContext	:	130593311

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Yeast and humans look very different, but the similarities of their mitochondria make yeast a good model organism for studies of human mitochondrial diseases. In an Advanced Online Publication in Nature Genetics, Steinmetz *et al.* demonstrate how functional genomics in *Saccharomyces cerevisiae* can identify genes involved in mitochondrial respiratory functions that might be related to the hundreds of human mitochondrial diseases for which no candidate genes have been found (*Nature Genetics* 22 July 2002, doi:10.1038/ng929). They used the yeast deletion collection to systematically screen around 10,000 strains for survival and fitness under a range of experimental growth conditions; and they identified a large number of the genes known to be important for mitochondrial function. The screen also identified many new genes, some of which encode mitochondrial proteins while others may be important for integrating mitochondria into the cell. Steinmetz *et al.* found human orthologs for many of the yeast genes and show that some of these map to genomic regions implicated in mitochondrial disorders.

References

1. Yeast mitochondrial biogenesis: a model system for humans?

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

3. Quantitative phenotypic analysis of yeast deletion mutants using a highly parallel molecular bar-coding strategy.