

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

Clues to how prions cross the species barrier

ArticleInfo		
ArticleID	:	4005
ArticleDOI	:	10.1186/gb-spotlight-20010308-03
ArticleCitationID	:	spotlight-20010308-03
ArticleSequenceNumber	:	76
ArticleCategory	:	Research news
ArticleFirstPage	:	1
ArticleLastPage	:	2
ArticleHistory	:	RegistrationDate : 2001-03-08 OnlineDate : 2001-03-08
ArticleCopyright	:	BioMed Central Ltd2001
ArticleGrants	:	
ArticleContext	:	130592211

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Yeast cells manufacture a protein called Sup35, which displays prion-like behaviour: it forms aggregates and converts its normal counterpart to the prion version. [Previous work](#) by Peter Chien and Jonathan Weissman of the [University of California, San Francisco](#), showed that a species barrier prevents the prion version of Sup35 in one yeast species from converting Sup35 of a different yeast species into the prion version, and vice versa (*Cell* 2000, **100**:277-288).

In a study published in 8 March *Nature*, Chien and Weissman engineered a chimaeric prion that combined Sup35 segments from two yeast species - *Saccharomyces cerevisiae* and *Candida albicans*. When introduced into each species of yeast, the chimaera could adopt the shape of the prion specific for that species (*Nature* 2001, **410**:223-227).

The results suggest that a single protein - in this case Sup 35 - can adopt many prion conformations, some of which could cause infection across species barriers. This phenomenon may be a key to understanding how prions derived from cows infected with bovine spongiform encephalopathy (BSE) can cross the species barrier and infect humans. Weissman says, "the shape of a prion may evolve as it passes from host to host. If this is the case, then the processing of animal parts for subsequent use as feed for other animals may actually have selected for animal prions with conformations that are especially virulent."

References

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