

Exploring whole-genome duplicate gene retention with complex genetic interaction analysis

Elena Kuzmin, Benjamin VanderSluis, Alex N. Nguyen Ba, Wen Wang, Elizabeth N. Koch, Matej Usaj, Anton Khmelinskii, Mojca Mattiazzzi Usaj, Jolanda van Leeuwen, Oren Kraus, Amy Tresenrider, Michael Prysizlak, Ming-Che Hu, Brenda Varriano, Michael Costanzo, Michael Knop, Alan Moses, Chad L. Myers, Brenda J. Andrews and Charles Boone

Science **368** (6498), eaaz5667.
DOI: 10.1126/science.aaz5667

The fate of genes after duplication

Gene duplication within an organism is a relatively common event during evolution. However, we cannot predict the fate of the duplicated genes: Will they be lost, evolve, or overlap in function within an organismal lineage or species? Kuzmin *et al.* explored the fate of duplicated gene function within the yeast *Saccharomyces cerevisiae* (see the Perspective by Ehrenreich). They examined how experimental deletions of one or two duplicated genes (paralogs) affected yeast fitness and were able to determine which genes have likely evolved new essential functions and which retained functional overlap, a condition the authors refer to as entanglement. On the basis of these results, they propose how entanglement affects the evolutionary trajectory of gene duplications.

Science, this issue p. eaaz5667; see also p. 1424

ARTICLE TOOLS

<http://science.sciencemag.org/content/368/6498/eaaz5667>

SUPPLEMENTARY MATERIALS

<http://science.sciencemag.org/content/suppl/2020/06/24/368.6498.eaaz5667.DC1>

RELATED CONTENT

<http://science.sciencemag.org/content/sci/368/6498/1424.full>

REFERENCES

This article cites 93 articles, 29 of which you can access for free
<http://science.sciencemag.org/content/368/6498/eaaz5667#BIBL>

PERMISSIONS

<http://www.sciencemag.org/help/reprints-and-permissions>

Use of this article is subject to the [Terms of Service](#)

Science (print ISSN 0036-8075; online ISSN 1095-9203) is published by the American Association for the Advancement of Science, 1200 New York Avenue NW, Washington, DC 20005. The title *Science* is a registered trademark of AAAS.

Copyright © 2020 The Authors, some rights reserved; exclusive licensee American Association for the Advancement of Science. No claim to original U.S. Government Works