Could we artificially create mutations that might aid cells in battling cancer?

The scientific challenge has not just been to demonstrate convincingly that harsh environments cause nonrandom mutations. It has also been to find a plausible mechanism consistent with the rest of molecular biology that could make lucky mutations more likely.

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[Jonathan Houseley, a specialist in molecular biology and genetics] therefore decided to test whether similar mechanisms might act on genes more directly activated by hazardous changes in the environment. In their 2017 paper, he and his team focused on CUP1, a gene that helps yeast resist the toxic effects of environmental copper…
The key point is that these effects center on genes responding to the environment, and that they could give natural selection extra opportunities to fine-tune which levels of gene expression might be optimal against certain challenges.

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> JonHousely LRV
> Jonathan Houseley

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Adaptive mutation theory, however, finds little acceptance among most biologists, and many of them view the original experiments by Cairns and the new ones by Houseley skeptically. They argue that even if higher mutation rates yield adaptations to environmental stress, proving that the higher mutation rates are themselves an adaptation to stress remains difficult to demonstrate convincingly.

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[C]hemotherapy drugs and other stresses on tumors may encourage malignant cells to mutate further, including mutations for resistance to the drugs. If that resistance is facilitated by the kind of mechanism he explored in his work on yeast, it could very well present a new drug target. Cancer patients might be treated both with normal courses of chemotherapy and with agents that would inhibit the biochemical modifications that make resistance mutations possible.
The GLP aggregated and excerpted this blog/article to reflect the diversity of news, opinion, and analysis. Read full, original post: Beating the Odds for Lucky Mutations