

## Evolutionary tradeoffs: How DNA works so living things have a ‘competitive advantage’ to survive

Evolution is a game of trade-offs. Every trait an organism inherits may have benefits and drawbacks; what matters to natural selection is whether the trait is positive or negative on balance. But in a recent study, researchers described a balancing act that seems more counterintuitive than most: Bacterial cells prioritize transcription — the process of making RNA transcripts of genes as the first step in protein production — over repairing double-strand breaks in their DNA.

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Last month, [researchers Susan Rosenberg, Christophe] Herman and their team [published the results of their research in Nature](#): They found, using a series of experiments and intricate controls, that transcription can trump DNA repair in *E. coli*.

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“In a normal growing population,” [genetics professor Robert] Lloyd said, “the requirement of repairing DNA breaks would not be as great as the need to secure a competitive advantage against other species.” If the cells had evolved under extreme conditions that were more likely to break DNA, “they would have evolved different mechanisms to deal with that, and the efficiency of gene expression would no longer be the first concern.”

“This is not so much a conundrum as it is an inevitable advantage,” Lloyd said — a classic example of an evolutionary trade-off.

**The GLP aggregated and excerpted this blog/article to reflect the diversity of news, opinion, and analysis. Read full, original post: [Bacteria Sacrifice DNA Repair for Better RNA](#)**