

A new twist in the regulatory landscape of *Escherichia coli*

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In their natural environment, Bacteria encounter a variety of stressors. Thus, they are equipped with diverse mechanisms to adapt to these dynamic environmental cues. Hitherto, the alteration of gene expression in response to stress was mainly attributed to alternative transcription or the regulation of protein synthesis by means of protein or RNA factors that affect translation initiation. In contrast, we focus on the modulation of the translome *via* reversible ribosome heterogeneity to achieve a fast and energy-efficient stress response.

Here, evidence will be provided that this mechanism has the potential to reshape established regulatory pathways in *E. coli*, thus emphasizing the key role of the translational machinery in the economic integration of environmental signals in the stress response network.