

# EF-P Dependent Pauses Integrate Proximal and Distal Signals during Translation

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© 2014 Elgamal et al. Elongation factor P (EF-P) is required for the efficient synthesis of proteins with stretches of consecutive prolines and other motifs that would otherwise lead to ribosome pausing. However, previous reports also demonstrated that levels of most diprolyl-containing proteins are not altered by the deletion of *efp*. To define the particular sequences that trigger ribosome stalling at diprolyl (PPX) motifs, we used ribosome profiling to monitor global ribosome occupancy in *Escherichia coli* strains lacking EF-P. Only 2.8% of PPX motifs caused significant ribosomal pausing in the  $\Delta$ *efp* strain, with up to a 45-fold increase in ribosome density observed at the pausing site. The unexpectedly low fraction of PPX motifs that produce a pause in translation led us to investigate the possible role of sequences upstream of PPX. Our data indicate that EF-P dependent pauses are strongly affected by sequences upstream of the PPX pattern. We found that residues as far as 3 codons ups