

Causes and Effects of N-Terminal Codon Bias in Bacterial Genes

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Science **342** (6157), 475-479.

DOI: 10.1126/science.1241934 originally published online September 26, 2013

Exploiting Redundancy

The genetic code is redundant—multiple codons can code for the same amino acid. So-called synonymous codon changes within genes can nonetheless have substantial effects on protein expression, which have been attributed to changes in the structure of 5' messenger RNAs, among other factors. **Goodman *et al.*** (p. 475, published online 26 September) built and measured the expression of a synthetic library of 14,000 variant N-terminal sequences of 137 *Escherichia coli* genes to show that, unexpectedly, rare codons had a bigger effect on increasing protein expression than more common codons. Increased RNA structure downstream of translation initiation appeared to represent the major determinant of expression differences owing to codon usage.

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