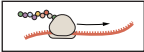


translation



$$N_{\text{peptide bonds}} \approx 3 \times 10^6 \text{ proteins} \times \frac{300 \text{ amino acids}}{1 \text{ protein}} \times \frac{1 \text{ peptide bond}}{1 \text{ amino acid}}$$

$\approx 10^9 \text{ peptide bonds}$

$$r_{\text{translation}} \approx 15 \text{ peptide bonds / ribosome} \times \text{sec}$$

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$$N_{\text{ribosomes}} \approx \frac{N_{\text{peptide bonds}}}{r_{\text{translation}} \times t_{\text{division}}} \approx 1.5 \times 10^4 \text{ ribosomes}$$

