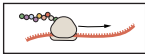


# TRANSLATION

(A)

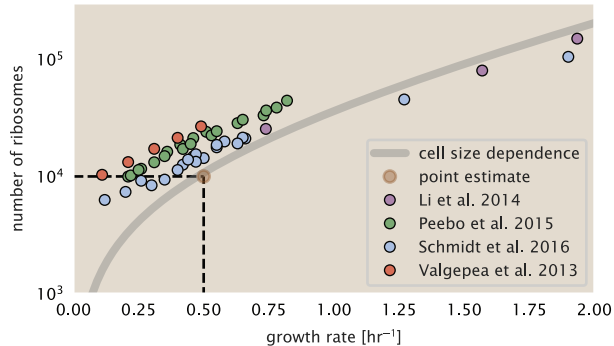
## protein synthesis



$N_{\text{peptide bonds}} \approx 10^9 \text{ peptide bonds}$  Fig. 3(A)

$r_{\text{translation}} \approx 15 \text{ peptide bonds / (ribosome} \times \text{sec)}$  BNID: 109043

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



(B)

## ribosomal protein synthesis

$N_{\text{peptide bonds}}^{(\text{ribosome})} \approx 7500 \text{ peptide bonds / ribosome}$  BNID: 101175

$$t_{\text{division}} \approx \frac{7500 \text{ peptide bonds}}{1 \text{ ribosome}} \times \frac{1 \text{ sec} \times \text{ribosome}}{15 \text{ peptide bonds}} \approx 500 \text{ seconds}$$

