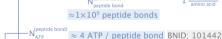
ATP synthesis 090,000







synthase complexes

 $r_{ATP \text{ synthesis}} \approx \frac{300 \text{ ATP / sec}}{\text{synthase}}$ BNID: 114701 ATP synthesis rate $N_{\text{ATP synthases}} \approx \frac{N_{\text{ATP}}^{\text{(peptide bond)}} \times N_{\text{peptide bond}}^{\text{(cell)}}}{r_{\text{ATP synthesis}} \times t_{\text{division}}} \approx \frac{4 \frac{\text{ATP}}{\text{peptide bond}} \times 10^9 \frac{\text{peptide bonds}}{\text{cell}}}{300 \frac{\text{ATP}}{\text{sec x synthase}} \times 5000 \frac{\text{sec}}{\text{cell}}}$ number of ATP

bond

number of proteins per cell

average number of amino

number of peptide bonds

acids per protein

ATP to generate peptide

required to double proteins