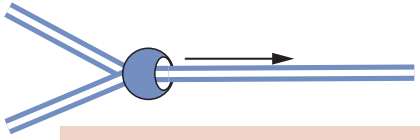
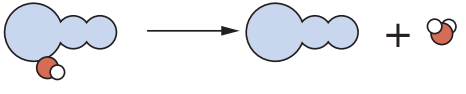
DNA replication



$$N_{\text{replisomes}} \approx \frac{2 \text{ rep. fork}}{1 \text{ genome}} \times \frac{1 \text{ replisome}}{1 \text{ rep. fork}} \times \frac{2 \text{ polymerases}}{\text{replisome}}$$
$$\approx 4 \text{ polymerases / genome}$$

number of DNA Pol III complexes

dNTP synthesis



$$r_{\text{ribonucleotide reductase}} \approx \frac{10 \text{ dNTP / sec}}{\text{ribonucleo reductase}}$$

dNTP turnover rate

Ge et al. 2003

$L_{\text{genome}} \approx 5 \times 10^6$ base pairs BNID:100269 $N_{\text{dNTPs}} \approx 2L_{\text{genome}} \approx 1 \times 10^7$ dNTPs

$$N_{\text{ribonucleotide reductases}} \approx \frac{10^7 \text{ dNTPs}}{1 \text{ cell}} \times \frac{1 \text{ sec}}{10 \text{ dNTPs}} \times \frac{1 \text{ cell}}{5000 \text{ sec}}$$
$$\approx 200 \text{ ribonucleotide reductases}$$

number of reductase complexes