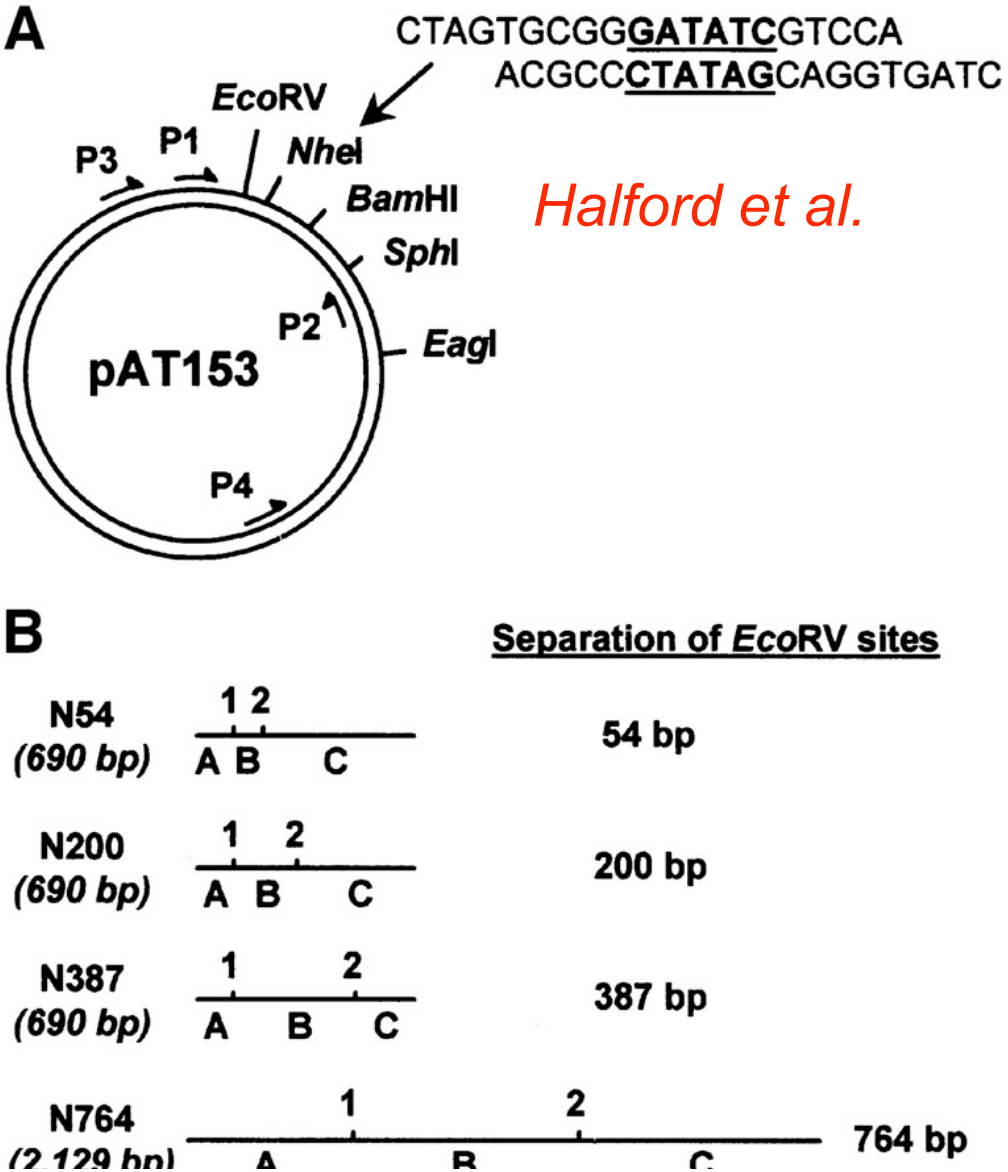
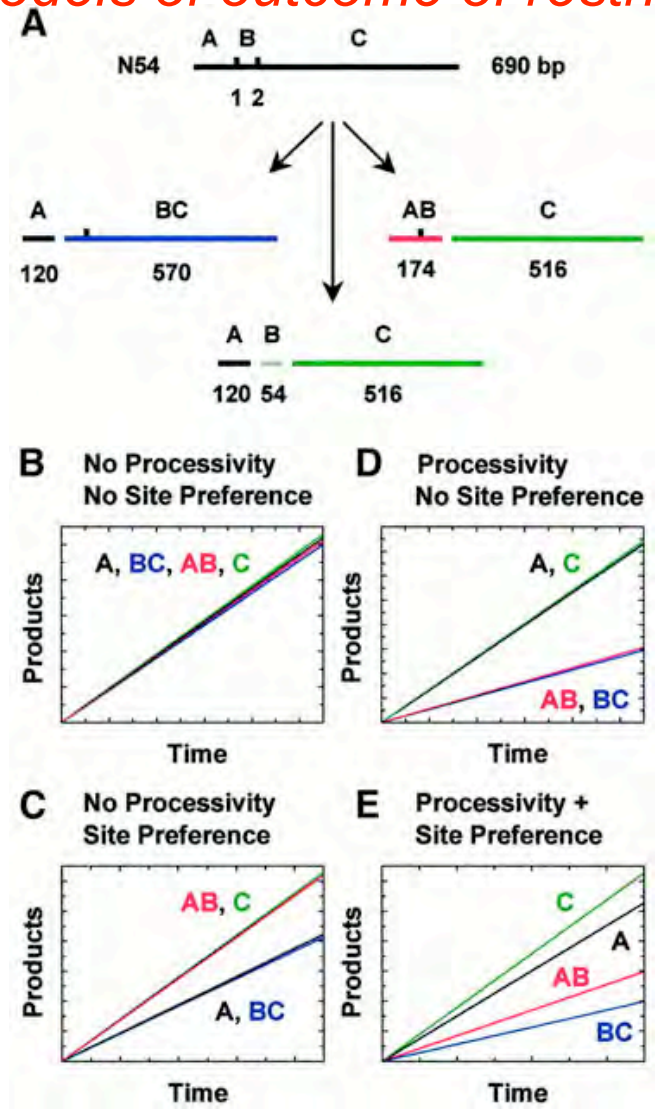
# Design of DNA for Restriction Digest



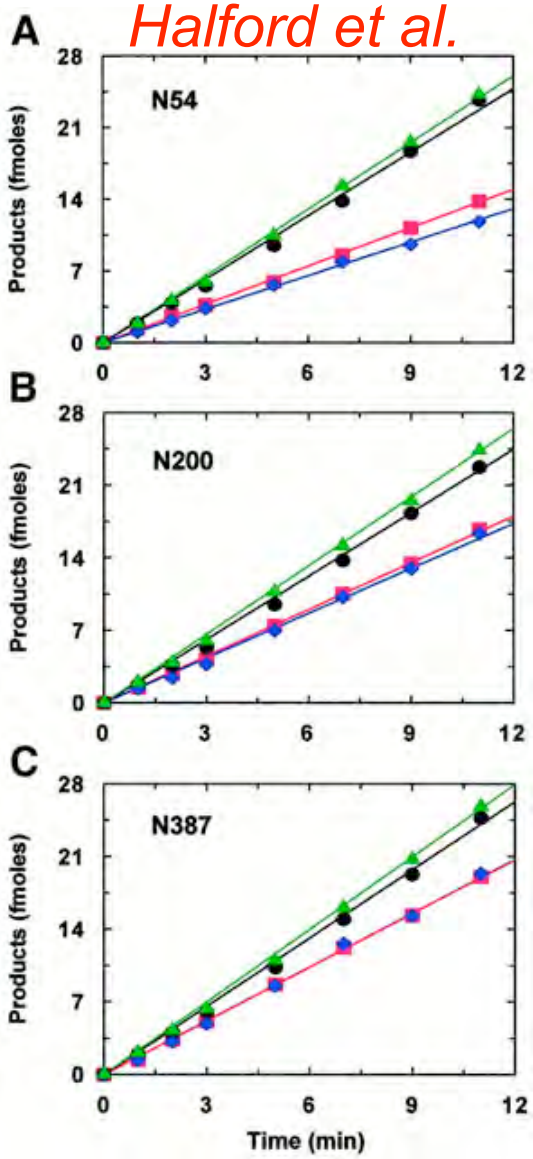

Halford et al.

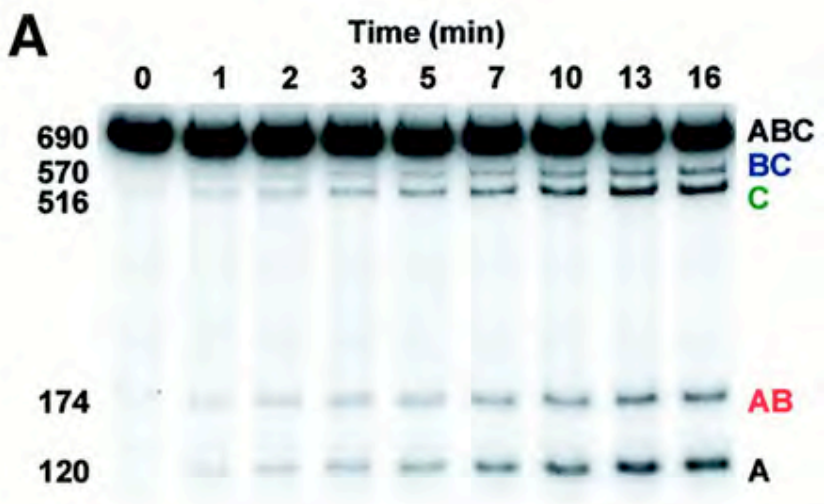
Models of outcome of restricti



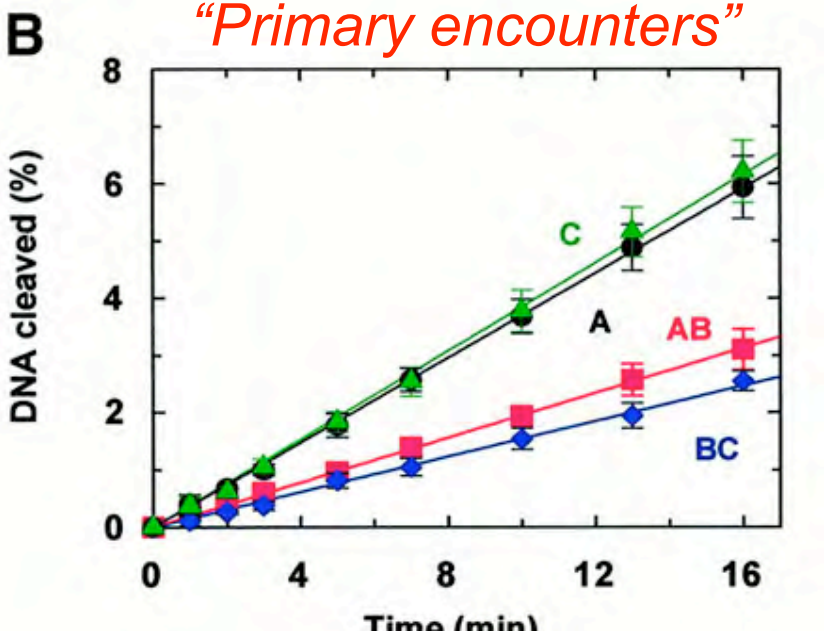
# Results of Restriction Digest

*Halford et al.*




*"Primary encounters"*



# Salt Dependence and Search Rate

## Berg, Winter, Von Hippel 3

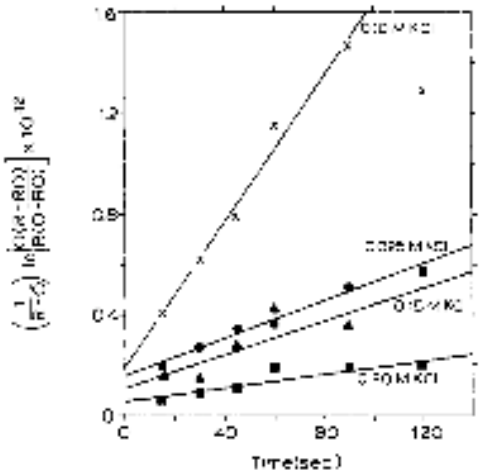



FIGURE 1: Kinetics of the formation of the RO complex with λ*plac*5 DNA at various salt concentrations. Experimental procedures are described under Materials and Methods. The solid lines represent the best linear least-squares fit to the data points, plotted according to eq 1. (●) Binding buffer (BB) + 0.025 M KCl, slope = $k_a$ = 3.5 × $10^9$ $M^{-1}$ $s^{-1}$; (×) BB + 0.10 M KCl, $k_a$ = 1.4 × $10^{10}$ $M^{-1}$ $s^{-1}$; (▲) BB + 0.15 M KCl, $k_a$ = 3.3 × $10^9$ $M^{-1}$ $s^{-1}$; (■) BB + 0.20 M KCl, $k_a$ = 1.4 × $10^9$ $M^{-1}$ $s^{-1}$.

Table I: Observed Values for $k_a$ for *lac* Repressor Association with λ*plac*5 DNA in Low Concentrations of $K^+$ and $Mg^{2+}$[a]

| [KCl] (mM) | [$MgCl_2$] (mM) | $k_a$ ($M^{-1}$ $s^{-1}$)[b] |
|---|---|---|
| | 1 | 1.5 × $10^{10}$ |
| | 10 | 1.4 × $10^{10}$ |
| 10 | 10 | 1.4 × $10^{10}$ |
| 20 | 1 | 1.3 × $10^{10}$ |

[a] All experiments were performed in BB containing the indicated amounts of KCl and $MgCl_2$. [b] The standard error in these values is ± 0.4 × $10^{10}$ $M^{-1}$ $s^{-1}$.

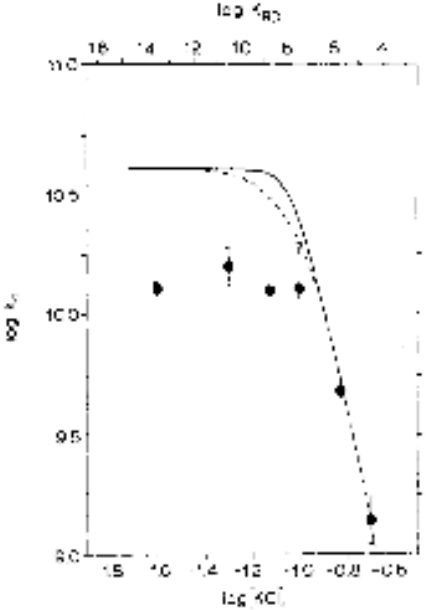
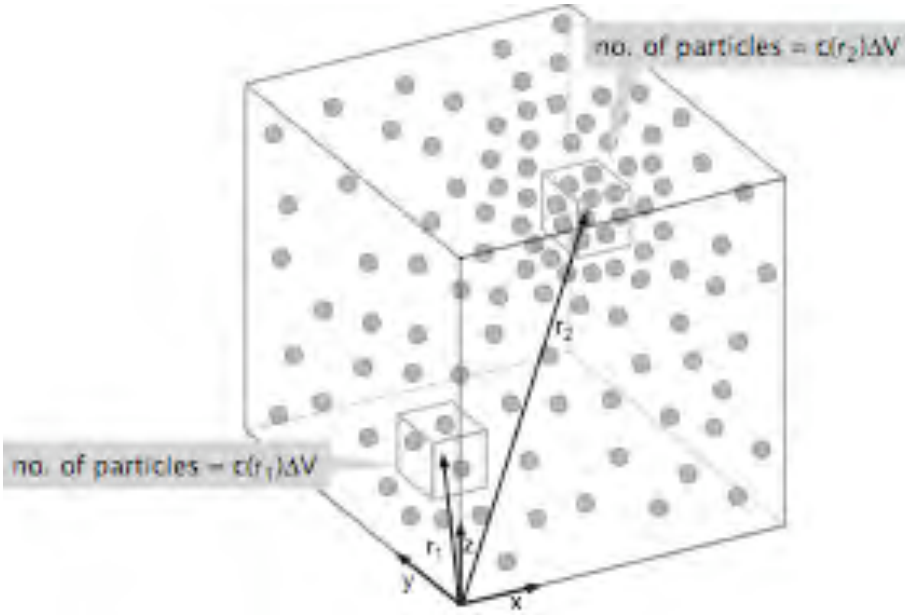
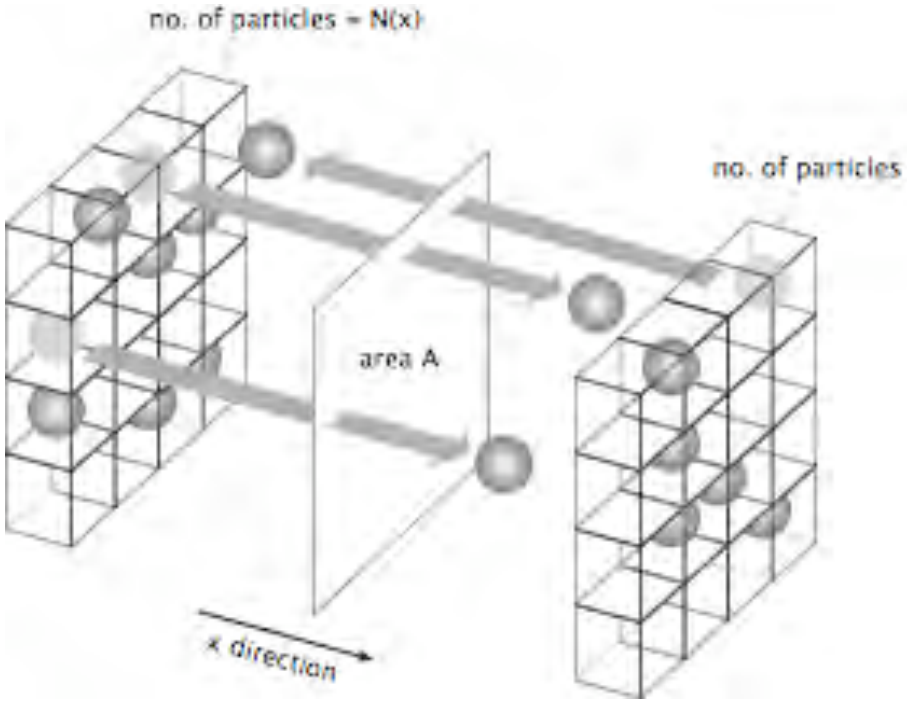



FIGURE 3: Log $k_a$ vs. log [KCl] for RO complex formation with *Eco*RI *lac* operator containing DNA fragments (see legend to Fig 2 for experimental details). The lines represent the theoretical predictions for the sliding mechanism as described by eq 7 and 12. parameter values used are $D$ = 5 × $10^{-7}$ $cm^2/s$. $M$ = 6700 base p $R_c$ = 750 Å, $r_a$ = 2100 Å, $O_T$ = 0.5 × $10^{-12}$ M, and $D_1$ = 9 × 1 $cm^2/s$. The solid curve represents values of $k_a$ calculated as a func of $K_{RO}$ (upper abscissa) estimated using eq 13. The dashed por

# The Notion of Concentration



# The Notion of Flux



# Diffusion to Capture