

we start with 100 ng /  $\mu$ l of plasmid

(A) plasmid + competent cells  
5  $\mu$ l + 50  $\mu$ l of cells = 55  $\mu$ l

$$C_1 \times V_1 = C_2 \times V_2$$

$\downarrow$

$$100 \text{ ng} \times 5 \mu\text{l} = C_2 \times 55 \mu\text{l} \Rightarrow \boxed{9.09 \text{ ng}/\mu\text{l}}$$

(B) the mix from (A) + 500  $\mu$ l of LB  
555  $\mu$ l

$$C_1 \times V_1 = C_2 \times V_2$$
$$9.09 \times 55 = C_2 \times 555$$
0.9  $\text{ng}/\mu\text{l}$

(C) we plate all the mix (B)  
555  $\mu$ l  $\Rightarrow$  so the conc.  
of DNA we plated  $\approx 0.9 \text{ ng} \times 555 \mu\text{l}$   
499.5  $\text{ng}$