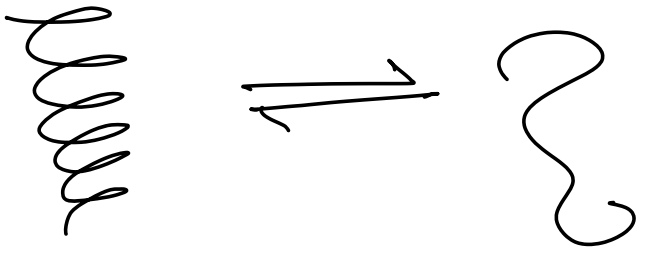


WHAT IS MOLECULAR CAUSE OF THIS RXN? (WHAT MAKES PROTEIN FOLD?)

$$\Delta G = \Delta H - T\Delta S$$

$$\Delta S_{REF} = \Delta H_{REF}/T_{REF}$$

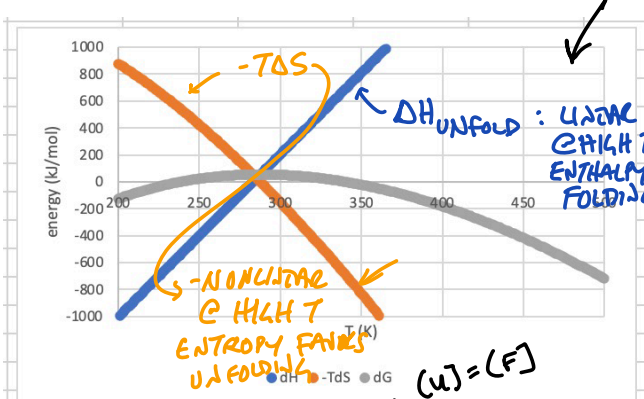
$$\Delta G = \underbrace{\Delta C_p (T - T_{REF}) + \Delta H_{REF}}_{\Delta H} - T\underbrace{\left(\Delta C_p \ln(T/T_{REF}) + \Delta S_{REF}\right)}_{\Delta S}$$

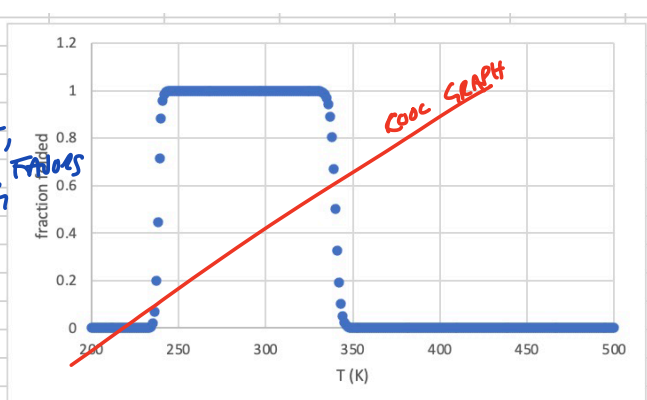
CAN MEASURE → HOW GO TO MOLECULAR INSIGHTS?

(1) HYDROPHOBIC EFFECT.

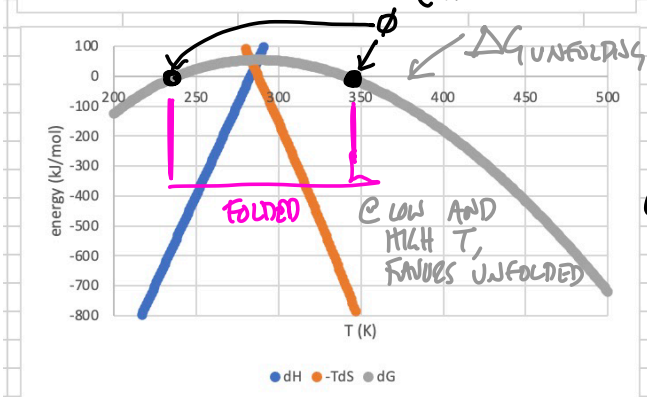
(2) SPECIFIC BONDS (LIKE ION PAIR)

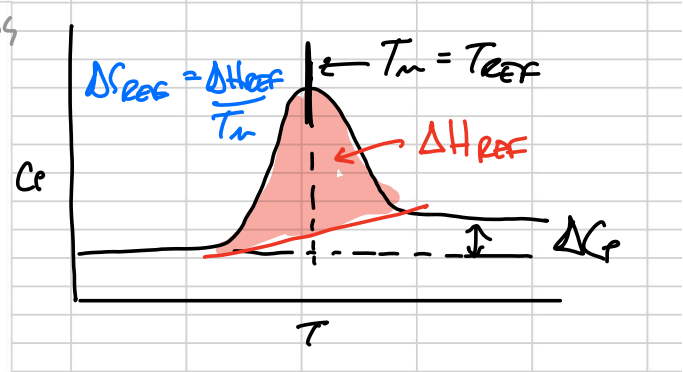
E. COLI → ΔG VS. T CURVES WE GOT?



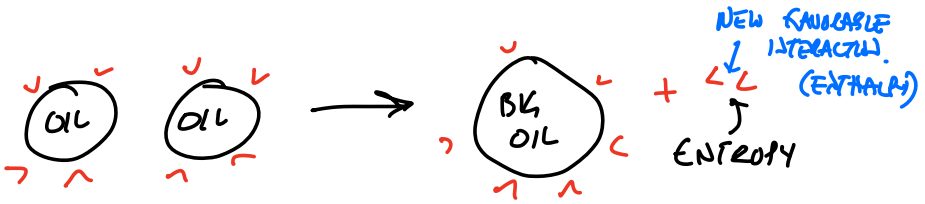


[U] = [F]



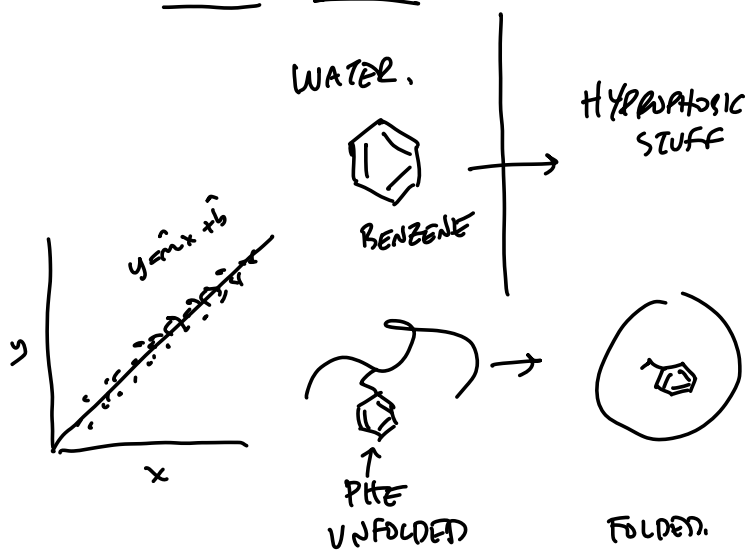


① HYDROPHOBIC EFFECT...

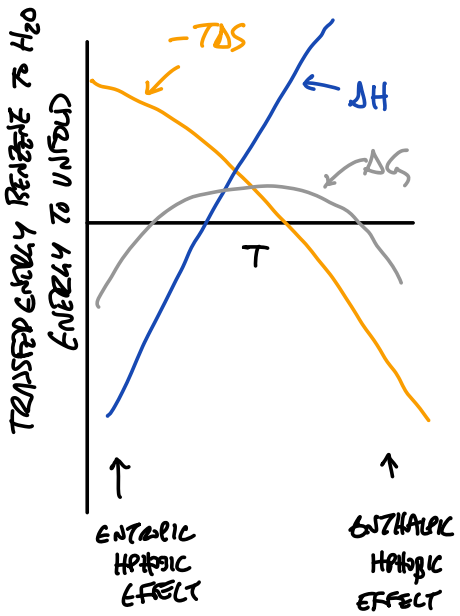


MODEL SYSTEM:

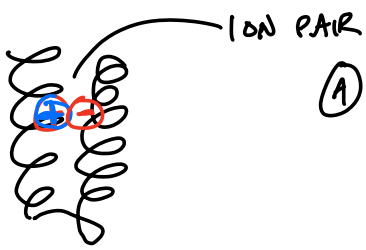
SOLVENT TRANSFER MODEL.



$\Delta G_{transfer}$



② SPECIFIC INTERACTIONS.



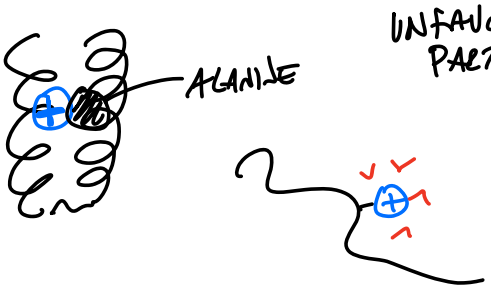
(A) MUTATE ONE RESIDUE TO ALANINE, REMEASURE STABILITY.

(IF IMPORTANT, LESS FAVORABLE TO FOLD)

(B) CHANGE SALT → INCREASE IN COST COMPETES WITH ION PAIR

HOW CAN WE RECONCILE SPECIFIC INTERACTIONS BEING IMPORTANT WITH HYDROPHOBIC EFFECT BEING "ALL THAT MATTERS."

IN ALANINE MUTANT CASE:



UNFAVORABLE BECAUSE ⊕ HAS NO PARTNER!!!