Independent Model for the Helix-Coil Transition

\[ \text{C} \rightarrow \text{C} \rightarrow \text{C} \rightarrow \text{C} \]

\[ \text{H} \rightarrow \text{C} \rightarrow \text{C} \rightarrow \text{C} \]

etc.

N = # of monomer units
\( q_c \) = partition function for each C unit
\( q_h \) = partition function for each H unit
\( \varepsilon \) = energy of forming a helical unit relative to a coil

Graded Changes in Helicity

(a) Partition Function, \( Q \)

(b) Free Energy, \( F \)

D&B, p. 500

Two-State Model

\[ \text{C} \rightarrow \text{C} \rightarrow \text{C} \rightarrow \text{C} \]

\[ \text{H} \rightarrow \text{H} \rightarrow \text{H} \rightarrow \text{H} \]
How Would You Test These Models?
Circular Dichroism

Incident light  Transmitted light

http://www-structure.llnl.gov/cd/cdtutorial.htm

Fluorescence Intensity

Wavelength

http://www-structure.llnl.gov/cd/cdtutorial.htm
Helix-Coil Transition

Prof. R. Huskey, http://www.people.virginia.edu/~rjh9u/ahelix.html

Nucleation vs. Propagation

Nucleation
Stat. wt. = \( \sigma \delta \)

Propagation
Stat. wt. = \( s \)