**Quantitative Biology and Biophysics Lab 03/30**

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1. Free Energy Simulations I (Exploring Enthalpy)

The expression for statistical weight is:

The expression for partition function is:

A close up of a map

Description automatically generated

In these cases, as increases (while ), the absolute value of slope of the becomes larger (the line becomes steeper). In addition, all three lines still intersect when T = Tm, that is, when .

1. Population Simulations I

A screenshot of a cell phone

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A picture containing screenshot

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In the graph of the folded probability of all three cases, the greater is, the faster the curve of folded probability drops within ‘the transition zone’. This suggests that a greater will narrow the temperature window for the rapid transition of these two states. In other words, the transition will occur faster than a case of lower in the transition zone’ of temperature.

1. Free Energy Simulations II (Exploring Heat Capacity)

A screenshot of a map

Description automatically generatedIn these cases, as increases (while and is constant), the curvature of curve becomes greater. All three curves still intersect when T = Tm ().

1. Population Simulations

A screenshot of a cell phone

Description automatically generated

A screenshot of a cell phone

Description automatically generated

In these cases, the changes of unfolded probability over temperature does not significantly differ, although they have different . This suggests that changes of makes little contribution to the changes of two-state transition at different temperatures.