

# Dynamic Gibbs Sampling to find motifs in DNA

- **Goal:** Find motifs in DNA
- **Method:** Gibbs Sampling with incorporation of a deterministic selection once the sample begins to converge
  - Deterministic =  $\min(\text{HammingDistance}(\text{Consensus}, k\text{-mer}))$
  - Selection of motif =  $\text{random}(\text{Deterministic}, \text{Gibbs})$ 
    - Probability of Gibbs =  $(\tan^{-1}(\text{Score\_Slope}))/90$
    - Probability of Deterministic =  $1 - \text{Gibbs}$
    - Score\_Slope = Is the average slope of the graph of the score at each iteration
- **Expected results:** The deterministic approach should give a faster and more accurate convergence
- **Testing:** Test both my method and plain Gibbs sampling method on DNA strands with motif to quantify both performance and accuracy