Thought Lab 18.1: DNA Deductions

Purpose: Use the rules of nucleotide composition to make deductions about the structure of a particular DNA molecule.

Procedure

1. Imagine that you are analyzing a DNA sample from the liver tissue of a newly discovered species of mouse. Use the information in the table below to complete the nucleotide composition of your sample.

Nucleotide	Presence in DNA sample (percent)
adenine	31
cytosine	
guanine	
thymine	

2. Draw a linear stretch of a double-stranded DNA molecule about 20 base pairs long, with a nucleotide composition that corresponds (as closely as you can) to the nucleotide composition of your sample. Use solid lines to show chemical bonds and dotted lines to show hydrogen bonds.

Analysis

1. Explain what you would expect to find if you compared the nucleotide composition of your DNA sample with the nucleotide composition of a second DNA sample from the muscle tissue of the same mouse.

2. Would the nucleotide composition of your original DNA sample be different from the nucleotide composition of a tissue sample from the gametes of the same mouse? Explain your answer.

3. Would the nucleotide composition of your original DNA sample be different from the nucleotide composition of a tissue sample from the liver of a deer? Explain your answer.