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## Determination of DNA Charge Density Parameters for DNA Oligonucleotides

Nucleic acids such as DNA are highly negatively charged due to their acidic phosphate group. As a result, DNA is known as a polyelectrolyte. The negative charge causes a positively charged ion cloud to form around the polyelectrolyte. The magnitude of the charge density for each nucleic acid can be measured as a function of its size and conformation. Through examination of interactions between ions and nucleic acids, preferential interaction parameters can be determined and be used to help measure the amount of charge on a molecule of DNA. This knowledge will assist in understanding the extent to which nucleic acid properties such as sequence, length, and conformation determine electrostatic properties of the molecule. Based on the ionic properties of specific sequences of DNA, new knowledge can be shed on the thermodynamic properties and assist in modeling and predicting physical behavior.

Equilibrium dialysis followed by spectroscopic and capillary electrophoresis analysis was performed on DNA samples of varying length (160bp, 14bp, and 34bp) to determine the extent of ion binding to DNA oligonucleotides. The results showed a negative correlation between chloride concentration and phosphate concentration for each of the DNA strands.