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Introduction: Previously in the research, hydrogen bonds were used as the metrics of identifying separation efficiency. The goal of the current research was to look for other metrics which we can try using machine learning and AI.

Methods: Most of the time was spent on collecting data through reading papers and articles. The purpose of this is to have a large enough data set to analyze the separation of enantiomers.

Results:

1. A chiral center is a carbon atom within a chiral molecule that is chiral at that point. A molecule can have one or more chiral centers. The molecule itself is a chiral but that mirror image is an enantiomer. Enantiomer refers to how two molecules relate to each other.
2. Enantiomer separation is a process by which we separate isomers in a racemic mixture into individual enantiomers. Using membranes to separate enantiomers is done by adsorption type enantioselective membranes.
3. Below are a few examples of chiral membranes we looked into and their characteristics:

Chiral Membranes	Characteristics
cross-linked chitosan membrane with a 70% swelling index was used for the enantioseparation of a racemic tryptophan mixture (0.49 mmol/l aqueous solution), over 98% ee and 6.4 mg/(m2 h) of flux were obtained	Enantioselectivity increased with an increase in the degree of cross-linking.
PVDF membranes	higher molecular weight and density of the polypeptide chains, which enhances the interaction between the chiral compounds and the surface-bound polypeptides
Acetylated-β-cyclodextrin-immobilized cellulose dialysis membranes	Acetylation time
immobilized BSA membranes	use of the binding site of bovine serum albumin (BSA) to the l-isomer
Immobilized DNA membranes	interaction between DNA and a specific stereoenantiomer
CDs	Based on lateral interactions of hydroxyl groups.
Macrocyclic antibiotics	Multiple interactions with the analyte to enable chiral recognition.
Proteins/polypeptides	qualitative/ quantitative interactions. Very specific high-affinity binding often occurs.
Polysaccharides	Hydrogen bonds and dipole-dipole interactions with hydroxyl groups of the sugar molecules
Chiral surfactants	Partition coefficients between the chiral micelle phase and electrolyte bulk phase.

Discussion: We were able to accomplish the first part of the project, that is, gathering data. Moving forward, we will be using machine learning and AI to analyze this data.