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Molecular cloning involving AAV-CXCL12 gene

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The American Cancer Society reports that this year there will be an estimated 600,920 deaths due to cancer in the United States. Current cancer research includes the use of biomarkers on the surface of cancer cells to distinguish the cancerous cells from normal body cells. Molecular cloning can enhance these biomarkers. Over the past thirty years, molecular cloning has progressed immensely. From digestion to plasmid insertion, the possibilities are endless. The AAV (adeno associated virus) CXCL12 (C-X-C motif chemokine ligand 12) is a protein coding gene that shows great promise with cloning and plasmid insertion. Our project aims to use this gene to bind tightly to biomarkers on the surface of cancer cells. However, before this optimal binding can occur, it is essential to know more about the AAV CXCL12 gene itself. For this reason, our project includes multiple gel electrophoresis assays, plasmid insertion/digestion assays, and PCR purification. From the results of these assays, the efficacy of AAV CXCL12 to bind to cancer biomarkers will become clear. In particular, the cloning assay for the AAV CXCL12 gene holds great potential, as it is possible to clone extraneous DNA into a different host. If extraneous DNA can be cloned into a different host, then there is the possibility of that DNA binding to a biomarker on a cancer cell.

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