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Mr. Speice

Independent Study and Mentorship

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**A Look into DNA Sequencing**

 **Assessment 3-Research**

**Date:** 9/14/2018

**Topic:** Biological Chemistry

**Work Cited:**

 Cobb, Bryan. "Human Genome Project." *The Gale Encyclopedia of Science*, edited

by K. Lee Lerner and Brenda Wilmoth Lerner, 5th ed., Gale, 2014. *Academic OneFile*,

Accessed 12 Sept. 2018.

**Assessment:**

The Human Genome Project summarized by Bryan Cobb highlights the importance of knowing the complete sequence of genomes within the human body. Cobb described that identifying the 30,000 genes can provide future information on the evolution of organisms and their differences and similarities. However, there are almost four billion nucleotides that make up the human genome. For me, this arises new questions such as: what ways was this information stored on publicly accessible database and what methodology did they use to separate the various fragments of the chromosomes?

As per my earlier research, biochemists almost always need to secure grants and funds to develop products and experiments. In this case, the Human Genome Project began a $5.3 million pilot program by Department of Energy and the Office of Health and Environmental Research. I simply found it surprising that they were able to find such a generous amount of money for this research project.

In other instances, this research assessment allowed me to gather more information over DNA sequencing and how understanding the genome helps clinical biochemists with gene expression sicknesses. In addition, this cleared up questions from previous research assessment and career outlook projects. For example, I was confused about how gel electrophoresis can separate macromolecules into such tiny fragments such as nucleotides. After this research assessment, I found that an electric current is able to separate the negatively charged DNA from the positive electrode. It now seems clear how biochemist and chemical engineers were able to separate the genes and create a human genome map.

More importantly I realized that over the few research assessments that I have completed, I have been more focused towards the fundamentals of a biochemist and basic terminology that they use on a day-to-day basis and not experiments and research assignments performed in the past. This time I branched out and focused on a project that encompasses DNA and gene expression, a topic most clinical and genetic biochemists focus on.

After reading this article, I came across a term called “gene discrimination.” This, by definition, means people are treated differently in the professional community because of having genetic mutations that cause a risk in inheritance disorder. I realized that understanding such problems can help mitigate the immediate concerning problem such as the discrimination in the genetic industry. This has grappled my interest and I would like to further assess how biochemists help solve these problems using biological chemistry techniques and instruments. In addition, I truthfully feel that I should create a final product that reflects on current issues in the medical industry, such as gene discrimination, while covering the topic of biological chemistry.

In conclusion, I am pleased with the amount of information I was able to take away from this research assessment. DNA sequencing altogether is an intriguing topic that I hope to further explore in the future. For next research assessments, I plant to focus on various other famous experiments that have been performed in that past and widen my terminology of biological chemistry.

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