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Cellular Metabolism: AP Biology

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UNDERSTANDING BY DESIGN

Unit Cover Page

Unit Title: Cellular Metabolism

Grade Level: 11-12

Subject/Topic Area(s): AP Biology

Designed By: Tiffany Montoya

Time Frame: 11 days (block schedule: 1.5 hour class periods)

School District: Northside Independent School District

School: Health Careers High School

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Brief Summary of Unit (Including curricular context and unit goals):

Students will engage in scientific questioning and extend their thinking beyond the scope of principles applied in AP Biology. Students will create a media outlet (magazine, newspaper, video blog) of their choice to communicate how athletes (or any other highly active individuals) use free energy and molecular building blocks to perform at high levels, while maintaining homeostasis.

There are various strategies for living organisms to use in order to capture, use and store free energy. Cellular respiration is one of the process that allow living organisms to harvest that free energy a drive the metabolic pathway. Students will identify the structure of the mitochondria that enables the localization of chemical reactions that occur. They will investigate factors that influence enzyme activity and rate of respiration. Students will also make connections between cellular respiration and evolution. They will understand that metabolic pathways are common among the domains and be able to justify their understanding based on structure evidence.

In this unit the student will also understand that biological system utilize free energy and molecular building blocks to grow, reproduce, and maintain dynamic homeostasis; biological systems interact, and these systems and their interactions possess complex properties that influence their structure and function; and that the process of evolution drives the diversity and unity of life.