

AP Biology Unit 3: Cellular Energetics

Chapter 8: An Introduction to Metabolism

Metabolism and Energy

-Metabolism: the totality of an organism's chemical reactions

- Metabolic Pathway: begins with a specific molecule and ends with a product, each step catalyzed by a specific enzyme (the product of the first reaction becomes the reactant for the second reaction, and so on)

-Catabolic Pathways: release energy by breaking down complex molecules into simpler compounds

- cellular respiration (glucose is broken down to CO_2 and H_2O in the presence of O_2)

-Anabolic Pathways: consume energy to build complex molecules from simpler ones

- the synthesis of a protein from simpler amino acids

-Energy exists in various forms, some of which can perform work in the cell (transport, chemical, mechanical, structural)

- thermal energy: kinetic energy associated with the random movement of molecules or atoms (when kinetic energy is increased, molecules begin to move faster and can overcome the activation energy barrier needed to break substrate bonds)
- chemical energy: potential energy available for release in a chemical reaction when bonds are broken

The Laws of Thermodynamics

-The First Law of Thermodynamics: energy can be transferred and transformed but it cannot be destroyed

- the energy of the universe is constant (the principle of the conservation of energy)

-The Second Law of Thermodynamics: every energy transfer or transformation increases the entropy (disorder) of the universe

- during every energy transfer, some energy is unusable and is often lost as heat

Biology Energetics Student Study Guide

Annelies Wilder-Smith



Biology Energetics Student Study Guide:

Biology Energetics Student Study Guide: Bestsellers in 2023 The year 2023 has witnessed a noteworthy surge in literary brilliance, with numerous compelling novels captivating the hearts of readers worldwide. Lets delve into the realm of popular books, exploring the fascinating narratives that have charmed audiences this year. Biology Energetics Student Study Guide : Colleen Hoover's "It Ends with Us" This heartfelt tale of love, loss, and resilience has captivated readers with its raw and emotional exploration of domestic abuse. Hoover masterfully weaves a story of hope and healing, reminding us that even in the darkest of times, the human spirit can succeed. Uncover the Best : Taylor Jenkins Reids "The Seven Husbands of Evelyn Hugo" This spellbinding historical fiction novel unravels the life of Evelyn Hugo, a Hollywood icon who defies expectations and societal norms to pursue her dreams. Reids compelling storytelling and compelling characters transport readers to a bygone era, immersing them in a world of glamour, ambition, and self-discovery. Biology Energetics Student Study Guide : Delia Owens "Where the Crawdads Sing" This captivating coming-of-age story follows Kya Clark, a young woman who grows up alone in the marshes of North Carolina. Owens spins a tale of resilience, survival, and the transformative power of nature, entrancing readers with its evocative prose and mesmerizing setting. These popular novels represent just a fraction of the literary treasures that have emerged in 2023. Whether you seek tales of romance, adventure, or personal growth, the world of literature offers an abundance of compelling stories waiting to be discovered. The novel begins with Richard Pape, a bright but troubled young man, arriving at Hampden College. Richard is immediately drawn to the group of students who call themselves the Classics Club. The club is led by Henry Winter, a brilliant and charismatic young man. Henry is obsessed with Greek mythology and philosophy, and he quickly draws Richard into his world. The other members of the Classics Club are equally as fascinating. Bunny Corcoran is a wealthy and spoiled young man who is always looking for a good time. Charles Tavis is a quiet and reserved young man who is deeply in love with Henry. Camilla Macaulay is a beautiful and intelligent young woman who is drawn to the power and danger of the Classics Club. The students are all deeply in love with Morrow, and they are willing to do anything to please him. Morrow is a complex and mysterious figure, and he seems to be manipulating the students for his own purposes. As the students become more involved with Morrow, they begin to commit increasingly dangerous acts. The Secret History is a masterful and gripping novel that will keep you guessing until the very end. The novel is a cautionary tale about the dangers of obsession and the power of evil.

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