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Crash Course BIOLOGY (2012 SERIES) 40 Episode Series Bundle

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Crash Course Biology (2012) #7: ATP and Respiration

Name: _____ Date: _____

You can access the video here → https://youtu.be/60bG_cGGuQ?si=ph4m9lAXaI8HaaCe

- _____ is how cells derive energy from food, specifically glucose.
- Cells convert usable energy into _____ to power movement, nerve impulses, and transport.
- ATP contains adenine, _____, and three phosphate groups.
- When ATP is split by _____, the terminal phosphate is removed and energy is released.
- Cellular respiration adds six molecules of _____ to glucose to produce CO_2 , H_2O , and energy.
- Glycolysis splits one glucose into two three-carbon _____.
- To begin glycolysis, cells invest 2 _____, but 4 are produced, for a net gain of 2.
- Along with ATP, glycolysis also yields 2 high-energy electron carriers: _____.
- In the absence of oxygen, pyruvates are rerouted into _____, which frees up NAD^+ .
- During oxygen debt in muscle, the fermentation by-product is _____ contributing to soreness.
- The Krebs Cycle happens across the inner membrane of the _____, generating 2 ATP per glucose.
- Before the cycle, pyruvate is oxidized to _____ coenzyme A (releasing CO_2).
- Per glucose, the Krebs Cycle loads electron carriers with 6 FADH_2 and 2 _____.
- The electron transport chain uses a proton gradient and _____ to synthesize ATP.
- In an efficient cell, the electron transport chain can produce about _____ ATP from one glucose.

Crash Course Biology (2012) #7: ATP and Respiration - KEY

- Cellular respiration** is how cells derive energy from food, specifically glucose.
- Cells convert usable energy into **ATP** to power movement, nerve impulses, and transport.
- ATP contains adenine, **ribose**, and three phosphate groups.
- When ATP is split by **hydrolysis**, the terminal phosphate is removed and energy is released.
- Cellular respiration adds six molecules of **oxygen** to glucose to produce CO_2 , H_2O , and energy.
- Glycolysis splits one glucose into two three-carbon **pyruvates**.
- To begin glycolysis, cells invest 2 **ATP**, but 4 are produced, for a net gain of 2.
- Along with ATP, glycolysis also yields 2 high-energy electron carriers: **NADH**.
- In the absence of oxygen, pyruvates are rerouted into **fermentation**, which frees up NAD^+ .
- During oxygen debt in muscle, the fermentation by-product is **lactic acid**, contributing to soreness.
- The Krebs Cycle happens across the inner membrane of the **mitochondria**, generating 2 ATP per glucose.
- Before the cycle, pyruvate is oxidized to **acetyl coenzyme A** (releasing CO_2).
- Per glucose, the Krebs Cycle loads electron carriers with 6 **NADH** and 2 **FADH_2** .
- The electron transport chain uses a proton gradient and **ATP synthase** to synthesize ATP.
- In an efficient cell, the electron transport chain can produce about **34 ATP** from one glucose.

15 Questions

Answer Key Included

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