

Case-Based Strategies for Enhancing Student Interest and Understanding of Cellular Respiration

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Cellular respiration is a challenging topic for introductory biology students to understand. The underlying foundational concepts of redox and thermodynamics rely on a chemistry background, and many students get lost in the details, losing sight of the physiological importance (and elegance) of cellular respiration. Adding relevant and engaging “stories” (case studies) to supplement and reinforce lectures enhances student understanding. The cases discussed included uranium bioremediation (anaerobic respiration in action), brown fat (thermogenesis through uncoupling of the PMF from ATP synthesis) and poisoned firefighters (were they poisoned by carbon monoxide or hydrogen cyanide and how should they be treated?).

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Citing This Article

Shuster, M. 2012. Case-Based Strategies for Enhancing Student Interest and Understanding of Cellular Respiration. *Tested Studies for Laboratory Teaching*, Volume 33 (K. McMahon, Editor). Proceedings of the 33rd Conference of the Association for Biology Laboratory Education (ABLE), 390 pages. <http://www.ableweb.org/volumes/vol-33/?art=37>

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