

Swamp Scurry: A Game for the Cell Cycle and Its Regulating Factors

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Games are a fun and effective tool that can be used to teach students fundamental concepts about the cell cycle while highlighting the importance of cell cycle regulation. There is a need for additional educational tools for development and cell biology for high school or lower-division students before they take upper-division classes. We developed a board game called Swamp Scurry that teaches the fundamental concepts of cell cycle including stages, regulation, and termination. The cyclical nature of the game conceptualizes the cyclical pattern of cell development. The dynamic and interactive point system (CDK, ubiquitin) represents the regulation and termination of the cell cycle. Swamp Scurry is based on a fictionalized swamp where players, represented by animals, must compete for survival. Students who answer the most questions correctly earn the most points, complete more cell cycles, develop their organism faster and thus they win. Questions used in this game are flexible, and can be modified by instructors to customize topic or complexity. This module was tested in two sections of an upper-division biological writing class at University of California, Irvine in 2015. 92.8% of students found the game to be fun of which 28% indicated they prefer using this game as a review tool, but indicated the tool should not replace lecture. Overall, Swamp Scurry would be a good supplement to traditional didactic lectures when used as a review tool in not only developmental and cell biology classes, but in any science classes from high school to college levels.

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