

## APPLYING THE ROLE OF CELLS IN THE REAL WORLD

### KATHLEEN LANMAN, J.C. BOOTH MIDDLE SCHOOL, FAYETTE COUNTY SCHOOLS

**GRADE LEVEL AND CONTENT:** 7<sup>th</sup> grade Engineering & Technology, English Language Arts, Mathematics, and Science

#### OVERVIEW

In this integrated, seventh-grade biology unit, students learn about the concepts of active and passive transport in cells. In the first half of the unit, students conduct labs and a series of thought experiments to deeply understand diffusion, homeostasis, and osmosis. In the second half of the unit, students apply their knowledge of active and passive transport to design a solution to the real-world question, “How can we solve the potable water crisis in Puerto Rico?” Then, students work together to create a biofuels company. Finally, students take on the role of a medical counselor and work to understand and accurately explain cell diseases.

#### STANDARDS ADDRESSED

**English Language Arts:** ELA7W3, L6-8RST1; L6-8RST4; L6-8RST3; L6-8RST7; L6-8RST9; L6-8WHST1; L6-8WHST7; L6-8WHST8

**Engineering & Technology:** ENGR-STEM 1; ENGR-STEM 3; ENGR-STEM 4; ENGR-STEM 5

**Mathematics:** MGSE7.RP.2

**Science:** S7L2; S7L4

#### AVAILABLE MATERIALS

- Video of Unit
- Daily Lesson Plans
- Cell Transport Unit Slideshow
- Creativity & Innovation Rubric
- Cell Transport and Boundaries Lab Stations
- Cell Transport Formative Assessment
- Cells to Systems Formative Assessment
- Cell Theory
- Plant and Animal Cell Comparison
- Leaf Sort Handout
- Biofuels Challenge Logbook
- Cell Processes Performance Assessment



#### ABOUT THE TEACHER

*Dr. Lanman is an accomplished classroom educator with 20+ years' experience in teaching, leadership, curriculum, and professional development. She is a dedicated advocate for STE(A)M education for all students, and presents frequently at conferences on topics related to STEM and STEAM education. She has won state and national awards for her innovative teaching methods.*