



Yale-New Haven
Teachers Institute®

Curriculum Units by Fellows of the Yale-New Haven Teachers Institute
2014 Volume IV: Engineering in Biology, Health and Medicine

Bioengineering and the Immune System: Engineering Super Cells

Guide for Curriculum Unit 14.04.06

by Laura Carroll-Koch

The immune system is at the heart of human health. The immune system's ability to protect our body from disease and intruders is extraordinary. This curriculum unit is designed to teach students the ways in which the body's immune system is able to fight disease and intruders. As a way of learning key concepts, students will create analogies of the immune system function and the immune cell function with familiar guardians and protectors of their community. Students will apply this knowledge to look at the various immune cells in different ways. Within the engineering design process, students will be able to explore, manipulate, and reorganize how the immune system works in order to develop new ways to organize and think about the structures and functions of the system. After developing an understanding of our immune system, students will think about improving its function. They will analyze this fascinating system and employ materials and technologies to harness its secrets in an effort to enhance the cells. Finally, students will explore the possibilities in the design process to engineer a super cell.

(Recommended for Science, grades 3-8)

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