



Curriculum Units by Fellows of the Yale-New Haven Teachers Institute
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Launch Biotechnology into Your Classroom: Drug Delivery and Diffusion

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Biotechnology involves new methods to enhance the quality of life through tissue and cellular engineering; biomaterials and biological signal processing, imaging, instrumentation; biomechanics, integrative biology; transport phenomena, systems analysis and electrophysiology. These technologies provide new and exciting avenues for those with an interest in the medical field and technology. This unit will explore only one technology that is still in its infancy but has enormous potential for future generations. The field of transdermal delivery has opened the door to pain free delivery of medication that provides consistent, continuous release, bypasses the digestive system without injection and minimizes adverse side effects of medications. The unit is intended to enhance student understanding of how drugs are delivered to patients and the technology and responsibility that accompanies the development of these systems. The focus will be on biomedical technologies such as transdermal patches, drug delivering disks and angioplasty procedures that seek to maximize efficacy of the drug at the target cellular level and minimize side effects to other parts of the organism. Enormous exposure to biomedical technology is seen in the many new CSI programs on television and has brought biomedical techniques and biotechnology to the forefront of education. There are abundant careers in these fields and teachers need to expose students to these options as they prepare to choose schools for their future education. Careers in medicine no longer mean doctor, nurse and direct patient care; biotechnology has burst open the field with exciting career paths for those with a pioneer spirit and an innovative mind.

(Developed for Biology, grade 10; recommended for Biology, Technology, and Forensic Science, grades 9-12)

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