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Resource ID#: 18770

Primary Type: Video/Audio/Animation

**Direct Link:** http://blossoms.mit.edu/video/carpenter.html

# MIT BLOSSOMS - Discovering Medicines, Using Robots and Computers

Scientists who are working to discover new medicines often use robots to prepare samples of cells, allowing them to test chemicals to identify those that might be used to treat diseases. Students will meet a scientist who works to identify new medicines. She created free software that "looks" at images of cells and determines which images show cells that have responded to the potential medicines. Students will learn about how this technology is currently enabling research to identify new antibiotics to treat tuberculosis. Students will complete hands-on activities that demonstrate how new medicines can be discovered using robots and computer software, starring the student as "the computer." In the process, the students learn about experimental design, including positive and negative controls. Students should have some introductory knowledge about the following topics: (1) biology: students should have a basic understanding of infection and good hygiene, they should know what bacteria and cells are; (2) chemistry: the students should know what a chemical compound (molecule) is. They should have an understanding that medicines, also called "drugs", are chemical compounds; (3) basic experimental design: students should understand the terms "samples" and "testing". All hand-outs necessary for this video lesson can be downloaded below.

**Subject(s):** Science
**Grade Level(s):** 6, 7, 8, 9, 10, 11, 12
**Intended Audience:** Educators

**Suggested Technology:** Computer for Presenter, LCD Projector, Speakers/Headphones

**Instructional Time:** 50 Minute(s)

**Freely Available:** Yes

**Keywords:** medicine, discovering new medicine, antibiotic, experimental design

**Instructional Component Type(s):** **Video/Audio/Animation,** Lesson Plan, Problem-Solving Task,

**Instructional Design Framework(s):** Learning Cycle (e.g., 5E)

**Resource Collection:** MIT BLOSSOMS

## SOURCE AND ACCESS INFORMATION

**Contributed by:** MIT BLOSSOMS
**Name of Author/Source:** MIT BLOSSOMS
**District/Organization of Contributor(s):**
**Is this Resource freely Available?** Yes
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## Related Standards

| Name | Description |
|---|---|
| SC.6.L.14.6: | Compare and contrast types of infectious agents that may infect the human body, including viruses, bacteria, fungi, and parasites.<br>**Remarks/Examples:**<br>Integrate HE.6.C.1.8. Explain how body systems are impacted by hereditary factors and infectious agents. |

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|---|---|
| SC.912.L.16.7: | Describe how viruses and bacteria transfer genetic material between cells and the role of this process in biotechnology. |

## Attached Resources

Lesson Plan

| Name | Description |
|---|---|
| Killer Microbe: | A lesson about the important topic of antibiotic-resistant bacteria with student activities and A/V resources. |
| Pandemic Flu: | In this lesson, students will model an avian-human flu virus structure, replication, and spread. The accompanying PBS NOVA movie *Pandemic Flu* regarding H5N1 Avian and Swine Flu highlights interactions between the virus, humans, and birds. |