



DNA Learning Center

Preparing students and families to thrive in the gene age

Cold Spring Harbor Laboratory
1 Bungtown Road
Cold Spring Harbor, NY 11724-0100
(516) 367-5170
Fax (516) 367-5182
Internet: www.dnalc.org

Participate in the Biology Revolution...

Middle School Student Programs

The DNA Learning Center is the world's first science museum devoted to genetics education for the public. It is an operating unit of the Cold Spring Harbor Laboratory, a world-renowned center for genetics research.

Our services include a variety of hands-on laboratories to introduce elementary and middle school students to the wonderful world of molecular biology. We provide in-school instruction and onsite field trips to our labs and museum at the DNA Learning Center.

In-School Programs (teachers may select one, or a sequence of several of the following labs):

Suggested for grades 5 & 6

Baggie Cell Model (1 hour)

Learn about the structure and function of the cell and make a cell model.

Diversity of Life (1 or 2 hours)

Investigate taxonomy using compound microscopes

DNA Models (1 hour)

Learn about the genetic code and make a 3-D model of the double helix. (\$3 materials fee per student)

Mutant Organisms (1 hour)

Discuss the impact of genetic mutations and observe mutations in fruit flies and/or nematodes using stereo- microscopes.

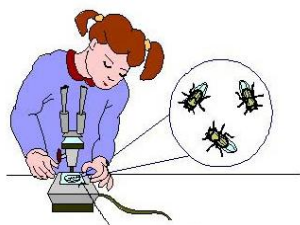
Mendelian Inheritance (1 hour)

Use corn as a model to investigate the laws of inheritance.

DNA Extraction (1 hour)

(Grades 5, 6, 7)

Extract DNA from harmless bacteria.



Suggested for grades 6 & 7

Molecular Models and Bubbling Liver (1 hour)

Observe the metabolic enzyme catalase as it reacts with hydrogen peroxide and learn about the factors that affect enzyme activity.

Enzymatic Food Production (1 hour)

Use enzymes to make cheese and apple juice.

Better Milk for Cats (1 hour)

Build a bioreactor to convert regular milk into lactose free milk.

Gene Therapy (1 or 2 hours)

Genetically engineer "lactose intolerant" bacteria to become "lactose tolerant."

Bacteria and Antibiotics (1 hour)

Observe the effect of antibiotics on bacteria.

Antibiotic Resistant Bacteria (1 or 2 hours)

Genetically engineer bacteria to become antibiotic resistant.

Viral Infection (1 hour)

Infect bacteria with a virus and observe the result.

Glowing Genes (1 or 2 hours)

Genetically engineer bacteria with the GFP (Green Fluorescent Protein) gene for bioluminescence.

Suggested for grade 8

Glowing Genes (1 or 2 hours)

Genetically engineer bacteria with the GFP (Green Fluorescent Protein) gene for bioluminescence.

Protein Purification (2 hours)

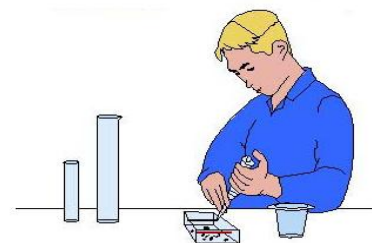
Collect and purify green fluorescent protein from glowing bacteria.

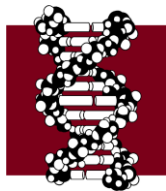
DNA Fingerprint (2 hours)

Use gel electrophoresis to analyze and compare "evidence" DNA to "suspects."

Personalized Medicine (2 hours)

Use gel electrophoresis to compare "patient" genotypes and determine which medication will work best for each one.





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Classes are also invited to visit our facility for field trips. Any of the above labs may be chosen for trips. Below, please find the field trip options.

Most popular field trip labs:

Glowing Genes (Grades 6, 7, 8)
DNA Extraction (Grades 5, 6, 7)

Two hour field trip options include:

- 1-hour laboratory experience
and
- 1-hour tour of *The Genes We Share*, an interactive exhibition on the human genome
or
- 1-hour computer lab, *The Mystery of Anastasia*: Use forensic techniques to identify the remains of the Russian royal family, and the missing princess Anastasia Romanov.
- One 2-hour laboratory experience, such as Glowing Genes or DNA Fingerprint.
- Two 1-hour laboratory experiences such as DNA Models and DNA Extraction.

Extended day field trips:

CSI: Learning Center

Grades 6-8, \$650 per class
9:30-11:30 DNA Extraction
& Mystery of Anastasia
11:30-12:00 Lunch
12:00-2:00 DNA Fingerprint

Survival of the Fittest

Grades 5-8, \$650 per class
9:30-11:30 Exhibit Tour & Mutant Organisms
11:30-12:00 Lunch
12:00-2:00 DNA Extraction &
Dino DNA or Walking Whales
(computers)

DNA Basics

Grades 5-7, \$650 per class
9:30-11:30 Exhibit tour & DNA Models
11:30-12:00 Lunch
12:00-2:00 Chromosome splats (prepare and view human chromosomes with microscopes) & DNA Extraction

RESERVATION DETAILS

- Class size is limited to 32 students.
- For most field trips, we can accommodate two classes at the same time (9:30-11:30am or 12:00-2:00pm).
- Lunchroom must be reserved in advance, bag lunches only (no vending machines).
- Two-hour wet lab/museum tour trips are \$300/class.
- Two-hour wet lab/computer lab and two-hour lab trips are \$350/class.
- In-school instruction is \$1,200/day (up to 5 classes).
- Reserve in-school instruction and field trips by phone.

Contact:

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