



HUDSONALPHA
INSTITUTE FOR BIOTECHNOLOGY

Field Trip

EXPERIENCES

Take advantage of our state-of-the-art research facilities to allow your students to try on a biotechnology career.



scientific thinking



Our hands-on, laboratory-based field trips are tied to course of study and engage students in scientific thinking. HudsonAlpha field trips put hightech biotechnology tools in the hands of your students.

The HudsonAlpha Teaching lab has workspace for a maximum of 32 students per event. Costs are determined by event, not by student. There is no minimum number of participants.

Please visit our website at www.HudsonAlpha.org/fieldtrips and fill out the **Field Trip Request Form** if you would like to have your students experience the Science of Progress at HudsonAlpha.



Middle School Field Trip Experiences

All of our half-day experiences for middle school groups are \$150/group.

The HudsonAlpha Bistro can provide a boxed lunch for \$8.50/ student for experiences more than

3 hours. Are you an Alabama public school? If so, learn about our funding to cover field trip costs (p.5).

1 Exploring Enzymes (1.5 hours)

In this half-day, lab-based activity, students will investigate enzymes. Students will begin by learning about enzyme specificity using locks and keys and discuss the role of enzymatic reactions during digestion of a fast food meal. In addition, students will evaluate several enzymes used in the production of apple juice and create cheese using enzymes produced by biotechnology.

2 Kitchen DNA with a Twist of Inquiry (1.5 hours)

In this hands-on lab, students begin by performing a standard DNA extraction from strawberries. Students will learn how cell structure impacts the extraction process and discuss why scientists extract DNA with content presented at a middle school level. Then, students take DNA extractions to the next level by creating their own extraction solutions using common household items to extract DNA from one of a variety of food items.

3 What is Biotechnology? (1.5 hours)

In this half-day experience, students are allowed to answer the question, “What is Biotechnology?” Students will use a web-based timeline to investigate key events in the history of biotechnology and learn about modern applications of biotechnology. In the lab, students will examine and use biotechnology tools. Students will also tour HudsonAlpha laboratory facilities.

4 Genome Cache (1 hour) (Can be combined with other experiences)

Using the double helix sidewalks of McMillian Park, students investigate nearly 200 genetic points of interest along a Genome Walk®. The Genome Cache app provides clues to send students on a scavenger hunt through the genome. Students respond to genetic trivia questions to receive the next clue and can compare their scores to the statewide leaderboard. Genome Caching is only available at certain times. Instructors interested in Genome Caching with their students should inquire about availability when scheduling a visit to HudsonAlpha.

High School Half-Day Field Trip Experiences

All of our half-day experiences for high school groups are \$150/group.

The HudsonAlpha Bistro can provide a boxed lunch for \$8.50/student, for experiences more than 4 hours. Are you an Alabama public school? If so, learn about our funding to cover field trip costs (p.5).

1 Cytogeneticist for a Day (1.5 hours)

In this half-day experience, students will take on the role of a cytogeneticist, examining patient samples for chromosomal anomalies. Students will learn how karyotypes are produced and work through one of 15 patients' case studies, using HudsonAlpha's Disorder Detectives® kit, to create a karyotype. Along the way, HudsonAlpha instructors will lead students through discussion about the impact of chromosomal changes.

2 Extreme Extraction (1.5 hours)

Extracting DNA is a favorite activity for many students and teachers. In this half-day experience, students take DNA extractions to the next level, by creating their own extraction solutions using common household items to extract DNA from one of a variety of food items. Students will learn how cell structure impacts the extraction process and discuss why scientists extract DNA.

3 All in the Family-Or Is It? (2.5 hours)

In this half-day, lab-based experience, students will examine the role of inherited mutations and environmental factors using the HNPCC® kit. In the lab, students will use a family medical history to create a pedigree and select likely candidates for genetic testing. Using gel electrophoresis, students will identify family members carrying the cancer-linked mutation. Throughout the day, students will discuss ethical challenges related to genetic testing.

4 Genome Cache (Can be combined with other experiences) (1 hour)

Using the double helix sidewalks of McMillian Park, students investigate nearly 200 genetic points of interest along a Genome Walk®. The Genome Cache app provides clues to send students on a scavenger hunt through the genome. Students respond to genetic trivia questions to receive the next clue and can compare their scores to the statewide leaderboard. Genome Cache is only available at certain times. Instructors interested in Genome Caching with their students should inquire about availability when scheduling a visit to HudsonAlpha.

High School Full-Day Field Trip Experiences

All of our full-day experiences for high school groups are \$225/group plus the cost of lunch. The HudsonAlpha Bistro provides a boxed lunch for \$8.50/student, for experiences more than 4 hours. Are you an Alabama public school? If so, learn about our funding to cover field trip costs (p.5).

1 Investigating the Genetics of Cancer (5 hours)

In this full-day, lab-based experience, students will examine the genetic roots of cancer, compare hereditary and non-hereditary cancers and use the HNPCC® kit to trace a cancer-related mutation through a family. In the lab, students will use a family medical history to create a pedigree and select likely candidates for genetic testing. Using gel electrophoresis, students will identify family members carrying the cancer-linked mutation. Throughout the day, students will discuss ethical challenges related to genetic testing. This experience includes lunch (at an additional \$8.50/student), a tour of HudsonAlpha, and a talk with a scientist involved in cancer research.

2 Genetically Modified Snacks? (6 hours)

Genetically modified organisms (GMOs) are the subject of wide-ranging debates in the U.S. and in other countries. In this full-day experience, students will investigate genetic modifications on plants and examine common snack items for the presence of genetically modified corn or soybean. In the lab, students will extract DNA from snack foods, use PCR to amplify target regions, and use gel electrophoresis to analyze their results. Students will explore the ethical challenges related to genetic modification. This experience includes lunch, a tour of HudsonAlpha, including the Genome Sequencing Center where the soybean genome was completed, and a talk with a HudsonAlpha scientist.

3 Genes & ConSEQUENCES® (5 hours)

Students will dive into the Central Dogma in this full-day, computer-based activity. Students will gain experience with DNA sequencing and look at how changes in key regions of DNA can cause disease. Using one of 15 case studies, students will practice DNA base pairing, transcription and translation. Students will create protein folding models and discuss how changes in amino acid sequence may impact protein function. This experience includes lunch (at an additional cost of \$8.50/student), a tour of the Genome Sequencing Center, a talk with a sequencing center scientist, and a tour of another laboratory to discuss how sequencing data is used in modern genomic research.

Funding

Funding is available for Alabama public schools to offset HudsonAlpha-associated field trip expenses. This funding includes either a full-day or half-day field trip experience, along with a lunch for each student and chaperone for experiences lasting more than 3-4 hours.



When submitting your Field Trip Request Form, please indicate your school name and type of school to note if you are eligible for funding.
*Transportation and substitute costs are excluded.





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If you have any additional questions about field trips, including scheduling and field trip activity combinations, contact Dasi Price at dprice@hudsonalpha.org.



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The HudsonAlpha Institute for Biotechnology is a 501(c)(3) nonprofit organization.