

HMNS YOUTH EDUCATION LABS

- **2015-2016
Weekday Labs -
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2015-2016 HMNS and HMNS Sugar Land Weekday Lab Topics

Add a hands-on component to your HMNS visit with one of the Museum's interactive Science Labs! Weekday Labs are regularly scheduled labs in the months listed below.

Time: 9:30, 11:00, or 1:00 dependent on availability

Capacity: 25 students per lab per hour

Cost: \$165.00 per lab; \$200.00 for

*Dissection Lab

Visit

hmns.org/education/educators/classes/
for more information.

Time Labs

Assyria and the Fertile Crescent *(October)*

Assyria was at the pinnacle of technological, scientific, and cultural achievements for its time in history. Come discover the achievements of the Assyrians and explore the Fertile Crescent which they called home.

The Kingdom of Kush *(November)*

Experience the Kingdom of Kush — an ancient civilization in Africa, often referred to as Nubia. It was known for its skillful archers and had close ties to Ancient Egypt.

Indus River Valley Civilization *(December)*

The Indus River Valley Civilization is one of the three earliest civilizations. Also known as the Harappan Civilization, they were known for their urban planning and metallurgy. Come discover this vast empire that awaits you!

Imperial Rome *(January at HMNS and January 28 in Sugar Land)*

Experience the magnificence of Rome during its reign as the dominant political, economic and military power of the western civilized world.

Byzantine Empire *(February)*

Though the western half of the Roman Empire crumbled in the 5th century, the eastern half survived for 1,000 more years, spawning a rich tradition of art, literature and learning.

Aztecs *(March at HMNS and March 25 in Sugar Land)*

Come meet the Mesoamerican people who lived in what is now Mexico City and the surrounding territory beginning in the 14th century. They established a broad empire that lasted roughly 200 years and was one of the most advanced for its time.

Wildlife Labs

Bite Your Tongue *(September at HMNS and September 24 in Sugar Land)*

Why are giraffe tongues black? Are frog tongues really on backwards? Answer these questions as we study this important and often overlooked organ.

the Houston Museum of natural science

Youth Education Labs

Polyp-palooza! (*October at HMNS and October 22 in Sugar Land*)

Often confused for plants or rocks, coral beds are full of fascinating animals working together to support an incredible amount of lifeforms. Pay these polyps the attention they deserve in this wildlife lab.

Brr – It’s Cold in Here (*December at HMNS and December 17 in Sugar Land*)

How do arctic animals survive such extreme temperatures and snowy conditions that we Houstonians can barely imagine? Come to this class to find out!

Scat/Tracking (*February at HMNS and February 25 in Sugar Land*)

Get the scoop on poop and a knack for tracks as you study the evidence wildlife leaves behind.

One of These Things is Not Like the Other (*March at HMNS and March 24 in Sugar Land*)

Study characteristics of living things and sort them into their taxonomic groups; then, meet the animals you sorted!

Movin’ On Up! (*April*)

Texas is the perfect place to study migration as we are a common destination for many traveling animals. Get the low down on why these animals move around, how they navigate and why they love to visit the Lone Star State so much.

Beetlemania (*May at HMNS and May 27 in Sugar Land*)

Adults know there are only 4 Beetles (6 if you count Pete Best and Stuart Sutcliffe), but did you know there are almost 400,000 described beetle species?! “Come Together” to study “A Day In The Life” of the most popular insect “Across The Universe”.

Earth Science Labs

Layers of the Atmosphere (*October at HMNS and October 23 in Sugar Land*)

Let’s take it from the top! In this lab, we’ll explore the layers of the earth’s atmosphere, and discuss how altitude, pressure and temperature change in our atmosphere.

Layers of the Earth (*February at HMNS and February 26 in Sugar Land*)

Journey to the center of the earth? Of course! We’re going to explore everything from the core to the crust and all those layers in between.

Layers of the Ocean (*April at HMNS and April 29 in Sugar Land*)

Take a journey into the depths of the ocean! Learn about the layers of the ocean and the pressures it creates for the living and nonliving things in each layer.

Land forms: Part 2 (*May*)

In the second series of our Landforms lab, we’re examining our waterways. Follow our water from spring to shore!

the Houston Museum of natural science

Youth Education Labs

ConocoPhillips TechnoScience Labs

Magnets (*September at HMNS and September 25 in Sugar Land*)
Come investigate magnetic fields and electromagnets!

Light (*November at HMNS and November 19 in Sugar Land*)
Explore fluorescence, luminescence and color as we experiment with light.

Polymers (*December at HMNS and December 18 in Sugar Land*)
From plastic and rubber to gummy bears and slime, polymers are everywhere.

Shape Science 1 (*January at HMNS and January 29 in Sugar Land*)
Discover the science and math of shapes through tessellations, construction and more.

Falling Fast (*April at HMNS and April 28 in Sugar Land*)
Explore parachutes and other ways to cushion a fall or protect a passenger from a crash!

Pressure (*May at HMNS and May 26 in Sugar Land*)
Lift, crush and hover with the amazing power of air pressure.

Dissection Labs*

Featuring dissections for grades 5-10

Not for the Squeamish (*September*)
Take a close look at the mammalian respiratory system as you dissect a sheep pluck, separating the lungs from the trachea and heart. Includes lung dissection.

Leaping Lizards (*November at HMNS and November 20 in Sugar Land*)
Moths, roaches and beetles, Yum! Discover a fascinating predator and local color changer, the anole. Includes lizard dissection.

14-legged Fun (*January*)
It's neither part horse nor crab, but it sure is one incredible arthropod! Investigate the horseshoe crab inside and out. Includes horseshoe crab dissection.

Think About It (*March*)
Examine the body's most complex organ, the brain. Put your axons to work as you model nerves and neurotransmitters. Includes sheep brain dissection.

Like a Lab but can't make it work that month? Try a Lab on Demand (see attached list)! We'll work with you to find a mutually agreeable time and date. Email educationquestions@hmns.org to see if we can accommodate your request!

High School Labs on Demand:

Time Labs

Bloodstain Pattern Analysis: Spatter Lab - Bloodstains have a story to tell if you know how to listen. Get hands-on experience and learn to “listen” in our spatter lab. – Basics for 1 hour. Extended in depth – 2 hours

Forensic Anthropology: Who Owns These Bones? - Get up close and personal with bones and discover what secrets they can tell you if you know how to listen. Class includes work with skeletal reproductions. Basics for 1 hour. Extended in depth – 2 hours extended class includes work with calipers and osteometric boards.

Siege Machines - Discover the weapons of the “Medieval Arms Race” and design a working model

Middle Ages/ Castles - Explore the basics of medieval castle structure and life inside these amazing fortresses

Egypt (Mummification) - Discover the process of mummifying the dead; and delve into the closely held secrets of the ancient embalmers.

Archeology - Dead men really do tell tales! Come explore the science of archeology from shards to skulls and beyond.

Da Vinci Science - Inventor, artist, architect, genius- Leonardo Da Vinci is the ultimate Renaissance Man. Discover the range of Leonardo’s talents as you try out some challenges of your own.

Vikings - Boat builders, farmers, and fierce warriors are but a few descriptors for the amazing people known as the Vikings. Experience Viking culture and activities in this hands-on class.

Maya - Discover the Continent’s longest lived indigenous civilization and some of their enduring contributions.

Aztec - Come meet the Mesoamerican people who lived in what is now Mexico City and the surrounding territory beginning in the 14th century. They established a broad empire that lasted roughly 200 years and was one of the most advanced for its time.

Black Death - In 1348 Genovese sailors brought the Black Death to Europe from Asia. Explore the effects this plague had on the lives and cultures of Medieval Europe

Dissection Labs

Eyeball - Blind spots, color blindness or myopia a problem? Come find out why as you take an inside look at the eye and see how it functions. Includes eyeball dissection.

Brain - Examine the body’s most complex organ, the brain. Put your axons to work as you model nerves and neurotransmitters. Includes sheep brain dissection.

the Houston Museum of natural science

Youth Education Labs

Heart - Nothing beats that “Aww” moment! Take an in-depth look at one powerful muscle, the heart. Includes heart dissection.

Kidney - From filtration to waste removal, investigate our very own water treatment plant, the kidney. Includes kidney dissection.

Lung - Take a close look at the mammalian respiratory system as you dissect a sheep pluck, separating the lungs from the trachea and heart. Includes lung dissection.

Owl Pellet - Ever wonder what happens to the indigestible parts when birds swallow food whole? They regurgitate it! Find out what’s on the menu as you deconstruct an owl pellet.

Starfish - Seeing stars, not the kind that twinkle, but the kind that crawl? Dive deep into this class about the starfish and its Echinoderm cousins. Includes starfish dissection.

Grasshopper - Explore insects as you look at the Lubber grasshopper (*Romalea*). Includes grasshopper dissection.

Frog - A classic example of vertebrate anatomy, the frog still has a few surprises in store. Find out what’s weird about these lean bug-eating machines. Includes frog dissection.

Fetal Pigs* (Advanced – 2 hours for \$400) - An extended dissection lab for older students. Explore mammalian anatomy of thoracic and abdominal cavities with dissection of a fetal pig.

Shark - Discover that there’s more to sharks than their teeth. Includes dogfish dissection.

Horseshoe Crab - It’s neither part horse nor crab, but it sure is one incredible arthropod! Investigate the horseshoe crab inside and out. Includes horseshoe crab dissection.

Lizard - Moths, roaches and beetles, yum! Discover a fascinating predator and local color changer, the anole. Includes lizard dissection.

Biology Labs

Cells - What do you have over 75 trillion of but have never seen with the naked eye? Compare animal and plant cells as you take an up close look at our most basic component. Includes microscope use.

Mitosis - Learn about chromosomes and cellular division as you study mitosis.

Mendelian Genetics - Investigate phenotypes, genotypes and Punnett squares using Mendel’s Principles of Inheritance.

Osmosis and Diffusion - Explore the mystery of molecular motion as you experiment with diffusion and osmosis.

Blood - Nobody can do without it and we mean no body! Learn about different kinds of blood and use simulated blood to identify human blood types. Includes microscope use.

Enzymes - Crazy for catalyzing! Examine how enzymes aid in digestion and control the release of energy essential to life.

Carbohydrates - Discover the facts about the structure and properties of a powerful energy source: carbohydrates. Crack the code and identify an unknown carbohydrate. Includes the use of a heat bath for testing.

Nitrogen Cycle/ Water Quality - pH got you down? Are your microbes multiplying? Learn about the nitrogen cycle and how your water quality affects your quality of life.

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Youth Education Labs

Flowers and Pollination - Get the buzz on how some plants pull out all the stops to attract their perfect pollinator. Investigate how flower form meets function in full color.

Probability and Problem Solving - Explore the mathematics of chance, from game shows and dice rolls to the weather report – what do the numbers really mean and that is the probability of getting a certain outcome?

Wildlife Labs

Taxonomy - Study characteristics of living things and sort them into their taxonomic groups; then, meet the animals you sorted!

Food Webs - Look out! There may be predators lurking about – you better prey you are not eaten in this lab all about who eats whom.

Chompin' Chelicerates - How can an animal with no jaws be known for its vicious, venomous bite? Hang out with some live chelicerates to find out!

ConocoPhillips TechnoScience Labs

Density - Discover how hot air balloons rise, why rocks sink, and explore cool density tricks.

Polymers Investigation - Polymers from plastics and rubber to gelatin and glue and are all around us and are incredibly useful! Explore different polymer types and properties (like strength or stickiness) and learn how they are made.

Test for the Best - Decide how to fairly test and compare products to discover which is the best chocolate bar, the most absorbent paper towel, the bubbliest bubble gum, and also how to select the best value as a smart consumer. Allergy note: We will consume food in this lab.

Labs on Demand

***1st-8th grade:**

Time Labs

Bloodstain Pattern Analysis: Spatter Lab -

Bloodstains have a story to tell if you know how to listen. Get hands-on experience and learn to “listen” in our spatter lab. – Basics for 1 hour. Extended in depth – 2 hours

Forensic Anthropology: Who Owns These

Bones? - get up close and personal with bones and discover what secrets they can tell you if you know how to listen. Class includes work with skeletal reproductions. Basics for 1 hour. Extended in depth – 2 hours extended class includes work with calipers and osteometric boards.

Siege Machines - Discover the weapons of the “Medieval Arms Race” and design a working model

Middle Ages/ Castles - Explore the basics of medieval castle structure and life inside these amazing fortresses

Egypt 101 - What is Egyptology? What does and Egyptologist do? Come explore this exciting field of study in our “mini” Egyptology Lab

Egypt (Mummification) - Discover the process of mummifying the dead; and delve into the closely held secrets of the ancient embalmers.

Archeology - Dead men really do tell tales! Come explore the science of archeology from shards to skulls and beyond.

Underwater Archeology - Dive into Archeology as you discover the amazing ancient world that lies just under the surface.

Pillars of Progress - Delve into architecture as we explore the marvels of the ancient world. You become the scientist as you explore the basics of architecture.

Secrets of the Silk Road - Uncover the secrets of the hundreds of well-preserved mummies found buried in China.

We Built this City - What does it take to build a successful city? Try your hand at ancient urban engineering.

Monstrous Megaliths - From Stonehenge to Easter Island come uncover the mysteries of these fascinating stone structures.

Science of the Round Table - Calling all lords and ladies! Join us as we journey to a time of castles, kings, and queens.

Bawdy Barbarians - What is a barbarian? The answer may surprise you. Discover the bad boys (and girls) of the ancient world as we explore the most famous fighters from Vikings to Vandals and beyond.

Castles - Explore the basics of medieval castle structure and life inside these amazing fortresses. Then use what you’ve learned to design your own.

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Youth Education Labs

Civil War Family Life - The Civil War split families, as brothers fought brothers on the battlefield and women and children were forced to take up the work of their men at home. Catch a glimpse of this trying time and participate in a Civil War based hands-on activity.

Civil War Science - Argued by some to be the first “modern” war, come explore what made this conflict different than those before.

Catherine the Great - Come meet Catherine II who reigned on the throne of Russia after the assassination of her husband. Shrewd, smart and a collector of art; there is much to discover about this dynamic ruler.

Ancient Writing - Try your hand as an ancient scribe! Experiment with different writing styles from different ancient cultures and discover the earliest alphabets.

Black Death - In 1348 Genovese sailors brought the Black Death to Europe from Asia. Explore the effects this plague had on the lives and cultures of Medieval Europe.

Gallant Gladiators - In Rome, gladiators were big business! Encounter the various versions of gladiators and immerse yourself in the ultimate spectator sport.

The Babylonians - A culture that valued mathematics and literature; the Babylonians were an inventive and intelligent people who made large advances in the techniques of agriculture and science.

Scientists of the Ancient World - From Pythagoras to Pliny, the ancient world was brimming with great scientific minds. Come and meet some of these famous thinkers as we explore science from long ago.

Is There a Doctor in the Hut? - Explore the good and the bad as we consider medicine throughout the ancient world from trepanation to tourniquets.

Medieval Japan - Shogun to samurai; come on a journey to Medieval Japan.

Roman Water – Explore the genius of the Roman aqueducts and use what you learn to design and test your own.

Seven Wonders of the Ancient World - Come travel the world as you discover the wonders of the ancient world, from the Lighthouse of Alexandria to the Great Pyramids at Giza.

Cleopatra - Last pharaoh of Ancient Egypt and shrewd politician meet this mysterious woman of the past

Age of Exploration - Let’s circumnavigate the globe together as we discover the intrepid explorers who took to the seas.

The Race for Space! - Delve into the great race and explore the extreme competition between the United States and the Soviets for primacy in space.

History of Espionage - Do you have what it takes to crack the case? Discover the history of the covert world of espionage.

Spice - Follow the spice routes as you take a flavorful journey to investigate spices and their impact on economy, health and food.

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Youth Education Labs

Dissection Labs *5th grade and up **(certain dissections are only offered at the Hermann Park location of the museum)**

Assyria and the Fertile Crescent - Assyria was at the pinnacle of technological, scientific, and cultural achievements for its time in history. Come discover the achievements of the Assyrians and explore the Fertile Crescent, which they called home.

The Kingdom of Kush - Experience the Kingdom of Kush — an ancient civilization in Africa, often referred to as Nubia. It was known for its skillful archers and had close ties to Ancient Egypt.

Indus River Valley Civilization - The Indus River Valley Civilization is one of the three earliest civilizations. Also known as the Harappan Civilization, they were known for their urban planning and metallurgy. Come discover this vast empire that awaits you!

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Aztecs - Come meet the Mesoamerican people who lived in what is now Mexico City and the surrounding territory beginning in the 14th century. They established a broad empire that lasted roughly 200 years and was one of the most advanced for its time.

Introduction to Dissection - Learn how to hold a scalpel, what tools are needed for success, and which way is up in this class for anyone unfamiliar with dissection. Includes pickle dissection.

Eyeball - Blind spots, color blindness or myopia a problem? Come find out why as you take an inside look at the eye and see how it functions. Includes eyeball dissection.

Brain - Examine the body's most complex organ, the brain. Put your axons to work as you model nerves and neurotransmitters. Includes sheep brain dissection.

Heart - Nothing beats that "Aww" moment! Take an in-depth look at one powerful muscle, the heart. Includes heart dissection.

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Starfish - Seeing stars, not the kind that twinkle, but the kind that crawl? Dive deep into this class about the starfish and its Echinoderm cousins. Includes starfish dissection.

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Youth Education Labs

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Nitrogen Cycle/ Water Quality - pH got you down? Are your microbes multiplying? Learn about the nitrogen cycle and how your water quality affects your quality of life.

Flowers and Pollination - Get the buzz on how some plants pull out all the stops to attract their perfect pollinator. Investigate how flower form meets function in full color.

Earth Science Labs

Fossil Sort - Watch your students become paleontologists! From shark teeth to sea shells, students will catch a glimpse of the past. They will have the opportunity to sort through fossil matrix and identify the fossilized remains of prehistoric ocean creatures.

Rock Cycle - Sedimentary, metamorphic and igneous, oh my! Take a spin through the rock cycle and investigate how rocks are changed and formed.

Rocks and Minerals - Discover the difference between rocks and minerals and learn how you use them daily.

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Youth Education Labs

Moh's Hardness Scale - Moh's scale helps determine how useful a mineral can be. In this lab you will test some minerals and learn their uses.

Land Forms - Explore the basic landforms and waterways found in Texas. Follow our water from spring to shore!

Layers of the Atmosphere - Let's take it from the top! In this lab, we'll explore the layers of the earth's atmosphere, and discuss how altitude, pressure and temperature change in our atmosphere.

Layers of the Earth - Journey to the center of the earth? Of course! We're going to explore everything from the core to the crust and all those layers in between.

Layers of the Ocean - Take a journey into the depths of the ocean! Learn about the layers of the ocean and the pressures it creates for the living and nonliving things in each layer.

Wildlife Labs

Oceans – Who lives down in the deep blue sea? Discover an underwater world of wildlife in this class.

Slow and Steady – Turtles and tortoises seem invincible with their heavy armor, but these living tanks are actually quite vulnerable to human influence. Investigate why in this lab.

Food Chain – Look out! There may be predators lurking about – you better prey you are not eaten in this lab all about who eats whom.

To Blend or Not to Blend? – Crack the camouflage code in this course.

Amphibians – Are frogs and salamanders fortune tellers? Study these environmental indicators to discover what they could tell you about your own future.

Animal Sense of Sight/Smell – He who smelt it... gets the best meal! See the world through the eyes of alligators, rodents, hawks and more; then test your own schnoz to see how it stacks up with the rest of the animal kingdom!

Toxic Avengers - Don't make these animals mad, as they are equipped to exact their revenge! Study identification of venomous and poisonous animals in this lab.

Weird, Wacky and Wonderful (Adaptations) – Discover the odd way animals adapt to their environments as you interact with our most peculiar specimens.

Divine Spines – Get up close and personal with these animals as you learn about various vertebrates.

Young Wonders – Learn about the interesting forms young animals take on their journey to adulthood.

Spineless Wonders – Bending over backwards is nothing for these critters. Snails, spiders and sponges, oh my! You won't believe your eyes!

The Better to Bite You With – Say cheese! Say plants! Say meat! Smile wide and examine your teeth and the teeth of other animals to see how they match up to their favorite meal.

Endangered Animals – Come quickly because they're going fast! Why are some animal populations on the decline? What can we do to help them?

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Youth Education Labs

Get Batty! – Next time you see a bat, don't call pest control, bats ARE the pest control! Discover why bats aren't as spooky as they seem and why they make such great neighbors.

Ancient Texas Wildlife – What was Texas' wildlife like long ago when it was underwater? Handle some real fossils as we explore the wildlife that was, and learn about fossils you can dig up yourself.

African Safari – The continent of Africa offers some of the most diverse wildlife on the globe. Come see African natives and learn about their struggles to survive.

Magnificent Mollusca – What has a beak (but it's not a bird), a mantle (but it's not a fireplace), a foot (but no legs) and jet propulsion (but isn't a rocket)?

Mechanics of Flight – Soar like an eagle, dive like a falcon or glide like an owl as you get a bird's eye view of flight.

How It's Made – If you have eaten honey or worn silk, you have benefited from the labor of industrious creatures. Take a behind-the-scenes look at animal-run factories.

MARVEL-ous Creatures – BAM! POW! WHAM! Feats of super strength, ultra-vision and tremendous speed happen every day! Don't miss your chance to encounter real-life superheroes of the animal kingdom.

Just Keep Swimming – Become an amateur ichthyologist in this lab all about fish fins. After class, test your knowledge in the Alfred C. Glassel, Jr. Hall of the museum.

Swamp Things – Dig up the truth on the animals in the muck as we encounter wetland wildlife.

Rodents: Gnaw-t So Bad After All – From pests to pets, rodents are everywhere. But do they really deserve the bad rap? Study these toothy mammals then judge for yourself.

Critter Caverns – Study some spectacular spelunkers in this lab all about cave-dwelling wildlife!

Space Invaders – What happens when the animal brought in for pest control becomes the pest? Meet the invasive species that moved in and made themselves at home, whether we like it or not.

Crustacean Station – What do lobsters, sea monkeys and pill bugs have in common? Immerse yourself in the world of these leggy arthropods to discover how they are all connected.

Chompin' Chelicerates – How can an animal with no jaws be known for its vicious, venomous bite? Hang out with some live chelicerates to find out!

Bite Your Tongue – Why are giraffe tongues dark? Are frog tongues really on backwards? Answer these questions as we study this important and often overlooked organ.

Polyp-palooza! – Often confused for plants or rocks, coral beds are full of fascinating animals working together to support an incredible amount of life forms. Pay these polyps the attention they deserve in this wildlife lab.

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Youth Education Labs

One of These Things is Not Like the Other – Study characteristics of living things and sort them into their taxonomic groups; then, meet the animals you sorted!

ConocoPhillips TechnoScience Labs

Discovering Density - Discover how hot air balloons rise, why rocks sink, and explore cool density tricks.

Light - Explore fluorescence, luminescence and color as we experiment with light.

Magnets - Investigate magnetic fields and electromagnets.

Polymers - From plastic and rubber to gummy bears and slime, polymers are everywhere.

Shape Science - Discover the science and math of shapes through tessellations, construction and more.

Sound Science - Use tuning forks and tubes to investigate pitch, resonance and the science of music.

Optical Illusions - Investigate ambiguous pictures, impossible shapes, strobe effects and other amazing illusions.

Pressure - Lift, crush and hover with the amazing power of air pressure.

Balancing Act - From levers and mobiles to leaning towers, explore the center of mass and find out why it matters.

Speed - Explore circular motion and discover what shapes are speediest.

Marvelous Mixtures - Investigate properties of solutions, colloids, alloys and other mixtures.

Falling Fast - Explore parachutes and other ways to cushion a fall, then design and protect an egg 'passenger' from a crash.

The labs listed above cost \$200.00 per hour per 25 students with the exception of a few Advanced Labs (\$400 per 2 hours per 25 students). If a special kit or demonstration is needed for a specially requested lab, the price of the lab would reflect this. There is a \$75.00 travel fee for traveling presentations. If you have a topic in mind that is not listed, please let us know, and we can work something out!

- Labs are offered at 9:30, 11:00, and 1:00 dependent on instructor availability.
- With the purchase of any lab, your students and chaperones will receive free permanent exhibit hall entry

For questions and/or to ask about availability, email educationquestions@hmns.org or Matti Hammett at mhammett@hmns.org