

Department	Title
Animal Science	Ewe should visit the sheep display!
Animal Science	From baby chicks to dinner in 6 weeks?
Animal Sciences	Explore Bovine Fetal Development
Anthropology	Wisconsin Archaeology: Hunting, Flintknapping, and Artifacts from our State
Aquatic Sciences Center	Aquaponics: Fish for the Future
Biotechnology Center	Which Makes Better Bubbles: Skim Milk or Whole Milk?
Biotechnology Center	Extracting DNA Glop from Wheat Germ
Biology Outreach Club	Cold Tolerance in Yeast
Biology Outreach Club	How do Plants know where to grow?

Biology Outreach Club      Zebrafish: From Egg to adulthood and what it tells about us

Botany      Botany Plant Growth Facilities

Botany      Microscopy of Plant Cells

Botany, Herbarium      Know Your Home Habitat!

Center for Integrated Agriculture      Cows Turn Grass Into Milk

Comparative Biosciences      How do we breathe?

Chemistry      The Incredible Surface Tension of Water

Crow Institute for the Study of Evolution      All Around

DELTA Engage Children in Science      Magic Cabbage Juice

Civil Engineering      UW-Madison Concrete Canoe Team

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Edgewood Office of Science C Edgewood Office  
of Science Outreach

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Engage Children in Science Brain Web

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Engage Children in Science Mystery at Farmer Frog's Farm

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Entomology Insect Ambassadors

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Food Science Club Go With the Flow:  
Chocolate Rheology

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Forest and Wildlife Ecology, Z Animal Adaptations:  
Bird Beak Buffet

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Graduate Women in Science Graduate Women in Science

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Great Lakes Bioenergy Resear Sustainable Biofuels  
Wisconsin Bioenergy Initiative for the Future

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Heartland Farm Sanctuary Amazing Farm Animals

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Horticulture	The science of Wisconsin's cranberries marshes
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Human Factors and Ergonomics	Exploring Human Factors Engineering
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IceCube Neutrino Observatory	Become a South Pole Explorer with IceCube
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International Professionals In	Lactic Acid Bacteria for Cheese Making
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International Professionals In	Sperm Morphology
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Madison Area Herpetological	Reptiles and Amphibians
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Mechanical Engineering	SAE Clean Snowmobile
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Medicine	Putting Thickeners Into Motion
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Molecular and Environmental Toxicology	Explore Toxicology
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MRSEC IEG	Exploring the Nanoworld, Innovating through Materials
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Nanoscale Science and Engineering Stuck!!: Exploring Forces  
Institute for Chemical Education Between Molecules

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Neuroscience Training Program Brain Power!

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Nutritional Science & CIMMYT Biofortification of  
Provitamin A and Prevention  
of Mycotoxins In Corn

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Student Society for Stem Cell Stem Cell Learning Lab

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Synchrotron Radiation Center Light to the Rescue

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U.S. Forest Service Forest Products Laboratory  
Forest Products Laboratory's Weird and  
Wonderful World of Wood

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USDA - ARS - Vegetable Crops Research Unit  
What's All the Buzz About?

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USDA, Horticulture  
Amazing potatoes  
and the science behind them

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UW Eye Research Institute Different Ways of Seeing

UW Eye Research Institute    A Squid that Glows in the Night

UW Student Emergency    The Pulse  
Medical Services

UW Voice & Swallowing Clinic    It Talks, It Sings, It Eats:  
The Amazing Throat!

UW-Hybrid Vehicle Team    UW-Hybrid Vehicle Team

UW-Madison Arboretum    Discovering Science Outside

UW-Madison Contra Dancers    The Science of Square Dancing

Physics    Plasma: The Fourth State of Matter

Primate Research Center    Marmosets in our Midst

Waisman Center    Happy Sad Mad Scared:  
The Child Emotion Lab

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WI State Laboratory of Hygier Genetics & You: How Much Do  
You Know About DNA?

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WI State Laboratory of Hygier Microscopy: Take a Guided Tour  
Through a Specimen

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Wisconsin Fast Plant Program Pet Plants: a guide to  
FH King Students for Sustaina container gardening

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Wisconsin Robotics Wisconsin Robotics

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Zoology, Finding Food  
UW Zoology Graduate Students In Science

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## Description

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Genetic research in practice: Meet a Polypay ewe (a sheep of moderate size, maternal ewes with high litter size) and her Hampshire ram (large, growth breed) counterpart from 10:00 a.m. to 2:00 p.m. in the historic UWMadison Stock Pavilion during the 2012 Science Expeditions, April 14. Learn how sheep producers cross two or more breeds to use the complementary genetics of different sheep breeds. Such genetic hookups create hybrid vigor - the increased performance of crossbred animals compared to purebred animals. The display consists of purebred rams, purebred ewes, and crossbred lambs to illustrate the genetic value of crossbreeding.

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Learn how genetic selection over the last 60 years has improved growth rate and feed efficiency in chickens. Older, dual-purpose breeds of chickens took up to 16 weeks to grow to a marketable size. Modern meat-type chickens grow to market size in 6 weeks or less, and use less feed in the process. We will have baby chicks and some of their "grown up" counterparts.

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Interactively explore fetal development in cattle. Software and images on iPads will allow you to view ultrasound images of fetuses in the uterus and make measurements to determine their age. Next, corresponding images of the uterus, placenta and fetus will allow you to determine which side of the uterus is the fetus present on, ovarian structures on the side of the reproductive tract, and the sequence of landmark developments in the fetus. You will be able to document when eyes, eye lids, ears, nose, and hoofs develop in the fetus and how these events relate to implantation.

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The Wisconsin Archaeology Exploration Station will feature interactive artifact displays and activities, including a chance for kids to hunt a mastodon using an atlatl (spear-thrower). In addition, flintknapping (stone toolmaking) demonstrations will be ongoing. Wisconsin artifacts including stone tools (axes, spear points, arrowheads, and hammerstones) as well as pottery and bone tools will be available to touch and explore. Families can engage in thinking like an archaeologist to understand the prehistory of our state.

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Aquatic Sciences Center Come see a working system of plants and fish growing together in perfect harmony. The fish fertilize the plants, and the plants clean the water for the fish. It's a natural system in a box! It's also a clean, green, sustainable way to grow a salad, vegetables, and fish for your community, your family, for restaurants, or just for fun.

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Design and do a fair comparison--an experiment--to test which makes better bubbles, skim milk or whole. How many cups do you need? Straws? How much milk goes into the cups? And how many different ways might you define "better"? Get a feel for how scientists ask questions, how they use "if, then" thinking to plan explorations, how they use creativity and ingenuity to come up with ways to test competing ideas, and how they draw conclusions and draw out new questions.

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Why study DNA? DNA is like a recipe card. If you had a choice between a plate full of cookies on the one hand, or a recipe card for cookies on the other, which would you take, and why? DNA is where most of a cell's genetic information is recorded. Recorded information--whether recipe card, DVD or DNA--is powerful because it can be stored, retrieved, copied, edited, expressed, shared, corrupted, and spread over time and space. Get a feel for how scientists get ahold of DNA by extracting DNA glop from wheat germ (a breakfast cereal) by using water, dishwashing detergent, rubbing alcohol and a Q-tip.

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What happens when you freeze yeast? Can it survive? Does it matter where the yeast comes from? Come try a cool experiment that looks into how organisms, such as yeast, can adapt to their surroundings.

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When a seed is planted deep in the ground, how does it know which way is up? Come find out how seedlings sense their environment, what they grow towards and what they try and avoid, and how they manage to grow toward the surface.

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Zebrafish may have a tail and gills instead of legs and lungs, but their early development is not so different from our own. Unlike humans, however, zebrafish lay clear eggs, which means that we can watch them develop and see how they go from a single cell to a fully formed fish.

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Botany's eight greenhouses, encompassing 8,000 square feet, feature more than 1,000 species and aquatic, desert, and tropical communities. Botany and other UW departments make extensive use of this working facility, permitting faculty and students to undertake a variety of research projects in plant geography, physiology, anatomy, ecology, taxonomy, and other related areas. The Botanical Garden serves both teaching and research as a living reference for plant families, genera, and species. Examples of plants from around the world demonstrate the diversity and beauty of the plant kingdom. This is the first garden in the world to be designed based on the new Angiosperm Phylogeny Group (APGII) system of molecular classification of plants.

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Extraordinary views of ordinary plants: Roots and shoots under a microscope. Come and see what the plants you eat (potatoes, onions, celery) and the plant products you use every day (cotton fibers, paper fibers) look like when magnified from a few times to a few thousand times larger than life. The microscope can reveal the minute detail and stunning beauty of plants at a cellular level.

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Connecting with nature and species diversity begins at home. At this station you can assemble a mini plant press like the ones that botanists use to collect plant specimens. You will learn how to press and dry plants in your new press, identify and mount them, and create a "Personal Field Guide" to the plants growing near your home. How many different species grow within 100 feet of your front door? Make a Plant Press and Create a Field Guide to the Plants Where You Live.

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Take a quiz comparing grassfed and conventional cheese and butter (including cheese tasting) and take part in a hands-on activity on designing managed grazing systems using miniature electric fence segments, cows, a water trough, a dairy barn, and a pasture. Children will be encouraged to draw cows and pastures, and their artwork will be posted. There will be fun worksheets and a craft for kids to take home, as well as take-home information on the properties of grassfed dairy products for their parents.

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At our station, we will explore how humans control their breathing in different situations by looking at the main components that allow us to breathe: the lungs, brain/brainstem and spinal cord utilizing hands-on activities, models and live recordings/videos. We will discover how the airways, lungs and diaphragm work together to move oxygen into carbon dioxide out of the body and how breathing changes as levels of oxygen and carbon dioxide are changed. Next, we will look at how breathing is controlled by the brain/brainstem and spinal cord by learning about respiratory neurons. Finally, we will end with how these components have a "memory" and how cervical spinal cord injury and amyotrophic lateral sclerosis (ALS or Lou Gehrig's disease) affects these components.

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Come explore water's unique properties by participating in hands-on demonstrations! Make a soap propelled boat or a lava lamp, learn about the shapes of soap films and bubbles, or find out how many drops of water can fit on top of a penny.

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The world around us reflects the process of evolution and studying evolution helps us understand where we fit in. We see evolution in the biodiversity of plants, animals and microbes. We see it in ecological systems. We see evidence of evolution in ancient times, and we see it happening now. Research in evolutionary biology touches on many practical aspects of our lives, guiding medical and public health practice, agricultural improvements and conservation efforts. Come explore how evolution works in the world and in your life with researchers from the Crow Institute for the Study of Evolution.

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Learn about acid/base chemistry using vinegar and ammonia to change red cabbage juice a variety of different colors.

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Every year the University of Wisconsin-Madison Concrete Canoe Team builds exactly what it sounds like, a

canoe made out of 100% concrete. As an engineering organization the team is primarily made up of Civil Engineers, although almost all of the engineering majors offered at UW are represented among the team members. Last year the team took 2nd place at the National Competition with their entry Element, which is on display. The team is currently preparing this year's canoe, Aurora. The team is looking forward to representing Wisconsin Engineering at the Regional Competition to be held April 19th - 21st.

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We will engage families in a hands-on activity and also have information about several upcoming outreach events at Edgewood including Family Science Night on April 16

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What's in your brain, anyway? The brain is the most important organ in your body. In addition to keeping you alive, it is also what allows you to think and remember stuff. How does your brain store all that knowledge? What happens to your brain when you learn something new? This exploration station will lead you in an activity that will help you discover what is in that brain of yours.

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What has happened to Farmer Frog's friends? Mrs. Robin's eggs won't hatch, Mr. Trout kids are swimming funny, and Miss Bumble's class won't sit still. Come learn about the toxic mystery at Farmer Frog's farm and how Dr. Duck saved the day. Then make your own garden to take home!

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See preserved insects and arthropods and handle live insects! Learn fun insect facts and get information on how to be a citizen scientist.

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Molten chocolate has unique flow characteristics, from thick to thin and with high or low stand-up properties (yield stress).

At this exhibit, you can explore the flow properties of different chocolates used for different applications.

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At our station, children will learn about bird beak adaptations and how a bird's beak is specialized to eat a specific diet. Each child will pick a bird beak tool (e.g., pipet, chopstick, strainer, forceps) to test which food item their beak is most adapted for eating. Children will test their bird beak to see what they can and can not pick up and place into their bird stomachs (ie dixie cups). We will have images of birds and natural diets to represent each beak tool and artificial food item. Children will then be able to compare the contents of their bird's stomachs to other children's bird stomachs in order to better understand the diversity of feeding adaptations among birds. Additionally, we will have a station to teach children about the adaptation of cryptic coloration and how animals use this strategy to hide from both predators and prey. We will have posters containing color photographs of various animals in their natural habitat and ask the children to find the 'hidden' animal to illustrate cryptic coloration.

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Decorating laboratory gloves and matching well known female scientists to their discovery.

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What will future biofuels be made from, how will they be made, and will they be sustainable? Come experiment with making biofuels and talk with representatives from the Wisconsin Bioenergy Initiative (<http://www.wbi.wisc.edu/>) and the Great Lakes Bioenergy Research Center ([www.glbrc.org](http://www.glbrc.org)), which are focused on the research and development of future biofuels, both statewide and nationally.

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Discover the inner world of farm animals - how their bodies work, how they communicate, why they behave the way they do, and their unique social dynamics. We'll also discuss the emerging scientific study of the human-animal

bond, long-regarded as having a healing effect on people. You'll never think about cows, sheep, and pigs the same way again! Our own rescued animals will be on hand for you to meet and learn from firsthand.

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Come and explore the science behind Wisconsin's cranberry marshes. Touch live, in vitro, and potted plants and explore the cranberry growth habit. Take a cranberry seedling home! Explore the properties that allow cranberries to be harvested, processed, stored, and consumed. Taste sweet and unsweetened juice! Learn about the chemicals and healthy components in cranberries. Make cranberry fruit color stamps using acidity of a cranberry fruit. Talk to USDA-ARS and UW Horticulture Scientists about cranberry research.

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Please come explore the exciting world of Human Factors through our interactive Unmanned Vehicle simulator, and watch as we uncover the mysteries of humans and their interactions with airplanes, cars, and healthcare technology.

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An IceCube South Pole Explorer must first learn how to live and work in the harsh environment at the South Pole. IceCube researchers wear thick, protective clothing to keep them warm. You can try on Antarctic coldweather gear including a coat, gloves, and boots then have your picture taken against a backdrop of the South Pole that includes IceCube. You will also learn how this unique telescope was built and frozen deep inside South Pole ice by using a water drill to make your own hole in the ice.

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The basis of cheese making relies on the fermentation of lactose by lactic acid bacteria; visitors will be able to observe the bacteria first hand and learn about the key role it plays in the cheese making process. Lactic acid bacteria produce lactic acid which lowers the pH and in turn assists coagulation, helps prevent spoilage and pathogenic bacteria from growing, contributes to cheese texture, flavour and keeping quality. Lactic acid bacteria also produce growth factors which encourage the growth of non-starter organisms, and provides inputs necessary for flavour development.

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Visitors will be able to observe sperm from bulls, stallions, and bears. Evaluation of sperm morphology is important for determining the likelihood of a male being fertile. Sperm morphology in bulls, stallions, and bears

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The Madison Area Herpetological Society educates enthusiasts and the general public about frequently misunderstood reptiles and amphibians. It is a great source for people to exchange knowledge from amateur hobbyists to experts. It also gives communities a basis of expertise on issues surrounding local laws, ordinances, and conservation. Visitors will be able to see and touch live snakes and other reptiles. Learn about the biology, natural history, captive husbandry, and possible careers pertaining to reptiles and amphibians.

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On display is our 2012 SAE Clean Snowmobile Challenge competition snowmobile. It utilizes a 750cc turbocharged four-stroke engine along with a 3-way catalytic converter and student developed engine controls to be one of the most environmentally friendly snowmobiles ever made.

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Ever wondered what happens inside your mouth and throat when you swallow? Come see how clinical scientists diagnose swallowing problems using x-rays, mechanical techniques, and common strategies for treatment. Science explorers will get the chance to SEE and TASTE how thickeners work first hand, testing out the differences by mixing and shaking.

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Explore toxicology through hands-on activities and games that demonstrate how chemicals interact with you and the environment. Learn about acids and bases, household items that may be toxic, or play a game called ToxLand. There is also an activity to demonstrate how chemicals are taken up by plants.

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Science is catching up with science fiction. Nanotechnology is making amazing new advances in medicine and computers with new materials and devices smaller than the eye can see. Come see our giant balloon model of

something way too small to see. Play with metal that has a memory and a magnet that acts like a liquid. Learn how scientist copy nature to make amazing new materials.

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Come explore one of most interesting characteristics of molecules "stickiness". Molecules are made of individual atoms that can attract atoms on other molecules. These interactions between molecules give way to interesting and surprising properties of materials. At this station you will experiment with molecules and build models explaining what you are seeing.

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How exactly does the brain work? Do you ever wonder how your brain controls what you see, taste, hear, and smell? Participants will get to see and touch a real human brain while they learn about perception and the senses, and make a neuron that they're able to take home with them!

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The University of Wisconsin is working with the International Maize and Wheat Improvement Center (CIMMYT) in Mexico in effort to ensure more nutritious and safe corn around the world. Vitamin A is found in animal products but also in fruits and vegetables as colorful compounds called carotenoids. In many countries vitamin A foods are not available but corn is. Biofortification of carotenoids in corn will make it more nutritious. Mycotoxins are harmful for life and are found on crops such as corn. Exploring strategies to reduce the occurrence and effects of mycotoxins for populations that rely on corn for their food are being made.

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Through this hands-on experience, learners use the same equipment and methods stem cell researchers use to prepare and grow their cells. The activity will include using micropipettes, plates, and an organic stem cell substitute to mimic the actual procedure of growing cells.

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At this station participants will use a scientific tool that reveals the hidden nature of light. This tool is used by scientists to investigate nature including: studying the properties of new materials, understanding how diseases work, and studying the world around us. Participants will use this tool to help an astronomer solve a light pollution problem.

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Wood is Good! Stop by to see, smell, and touch different types of wood and even watch them do tricks! You won't believe what wood can do.(Hurry, before the termites eat up all our samples!) And don't forget to take home a treat from our friend, Smokey Bear.

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Come explore pollination and pollinators. Did you know that approximately every third mouthful of food you eat comes from pollinators pollinating plants? Do you know which foods you eat require pollinators? Think you can identify a bee from a wasp? How about a bee from a fly? Come take our quiz and find out!

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Join us to learn about the amazing potato story. We'll see colorful potatoes like those first domesticated in South America, and learn about how potato took the long way around to get to the United States. There will be demonstrations of the disease that caused the Irish Potato Famine, and an opportunity to talk with researchers trying to make new potato varieties resistant to this disease. We'll show you how potato varieties are kept free from viruses and maintained from year to year. And there will be an opportunity to participate in a national potato research project, as we taste potato chips made from the most advanced new varieties, to see how they compare with varieties that are currently being used. Learn about the amazing potato, and discover why it is one of the world's most important foods.

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How might a person with impaired vision see the world? With different abilities and limitations, what things are easy to do and what things are difficult to do? Looking through specially prepared masks (for children) or

goggles (for youth and adults), participants can simulate vision impaired by: (1) central blind spots, often caused by age-related macular degeneration (AMD) or Stargardt's disease; (2) tunnel vision, often an early symptom of glaucoma or retinitis pigmentosa; (3) impaired acuity across the whole visual field, occurring with cataracts and with congenital impairments such as optic nerve hypoplasia, albinism, and colorblindness. While looking through these mask and goggle simulators, participants will try activities including reading (varied print sizes), writing (varied pens and papers), telling time (using regular and large-print watches, a talking watch/clock, regular and large-print calendars), and vision testing with a traditional eye chart.

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Learn about a symbiotic relationship in which light is fundamental. We will introduce a squid-bacteria partnership, explaining how bacterial light benefits the squid and how the squid may respond to the light signal. We will provide living, juvenile squid and highly luminescent bacteria. The squid will be in a bowl of artificial seawater with a microscope linked to a computer, making visualization easier. Bacterial plates will be set within a dark box so that people can see that the bacteria are luminescent.

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Stop by "The Pulse" for a little medical fun! Learn how to give CPR compressions on a real manikin and hear your own heartbeat through a stethoscope! Our EMTs can also take your blood pressure reading. You won't want to miss this station!

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This interactive station explores the anatomy and physiology of the human throat for voice and swallowing. Video examples of swallowing xrays and endoscopic views of the voice in action may be viewed. Build your own larynx (voice box) with gummy candies as an expert volunteer from the UW Voice & Swallow clinic explains the role of the larynx in speech and eating. Push your own larynx to its limit in the "Hold a Note" challenge. Trivia questions will test your knowledge of this talented multi-tasker, the throat!

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The University of Wisconsin Hybrid Vehicle Team is an automotive team that transforms a standard vehicle into a hybrid vehicle. The team is mainly comprised of undergraduate students from different engineering disciplines, some non-engineering students and graduate students. The team competes in technologically advanced vehicle competition and work with the Engine Research Center on campus to test out new vehicle technology

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See, touch, smell, and hear items that can be found outside. Learn what they are and how the UW-Madison Arboretum is working to preserve them. We invite you to take the next step and pledge to explore nature outside- its where science begins.

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Square dancing isn't just fun though – it can be a medium to teach people about science! In this exploration station, we would have an interactive space where people could try out square dancing steps and then learn about the science behind the moves and their interactions.

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What is a PLASMA? How does a PLASMA GLOBE work? Learn the answers to these questions and MORE! Play with our collection of cool plasma globes! Learn where plasmas can be found in nature. Find out how we use plasmas for lighting, entertainment...and someday, an unlimited source of clean energy!

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Visit our lively family of common marmosets in the Primate Center Learning Lobby. Enjoy a variety of hands-on activities. Learn why we need monkeys for research and how we care for them.

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We all have feelings and lots of them everyday. Try some of the activities that scientists use to study children's emotional development. Learn about "ERP". See how an eye-tracker works. Play some neuro-psych games.

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Using microscopes, learn more about DNA – What do we inherit from our Mom and our Dad? What kind of genetic differences can run through a family tree? What’s a genetic mutation? How do scientists look at genes and chromosomes? How do Wisconsin State Laboratory of Hygiene scientists use genetic testing to help patients and doctors?

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Take a test drive with WI State Laboratory of Hygiene scientists looking at cells using a microscope or a computer. Learn how cytotechnologists, pathologists, and other laboratory scientists use this technology to evaluate cells to determine whether the specimen is normal; an infection is present; or if the cells represent a precancerous or cancerous disease.

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What's even better than pet rocks? Pet plants! Join us for live-specimen displays with science researchers and educators.

Learn home and classroom cultivation techniques to keep your pet happy. Leave with a necklace greenhouse for your new pet plant!

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Stop on by for a hands-on exhibit and get a chance to drive some of our handmade Mini-Bots and learn how robots work. You will also get the chance to meet Singularity, our autonomous robot.

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Finding food is tough, particularly when you can't just run to the grocery store! We'll explore a few of the decisions and risks animals have to make when foraging for food, using research currently underway in the UW Zoology department. Come find out how hard it is to build a spider web and how time, energy, and risks might make a difference in what food choices an animal might make.

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Location

Stock  
Pavilion

Stock  
Pavilion

Stock  
Pavilion

WID

WID

WID

Birge  
Hall

WID

WID

WID

Birge  
Hall

Birge  
Hall

WID

Stock  
Pavilion

WID

Science  
House

WID

WID