



# Science Expeditions

## Exhibit Guide

# Key

Use this key to find out more about the many activities listed in this guide! Please remember that many of the events include multiple categories, so be sure to read the descriptions to find out what fun is in store!



## Biology and Health

Find fun learning activities next to this icon that involve learning about animal and human bodies, how they work, and how to keep them healthy!



## Explore Spaces

Explore the UW- Madison campus and other science facilities. Check out tours or history lessons relating to a wide array of science topics.



## Engineering

This logo has everything to do with engineering and creating something from few materials. Learn about engineering at the UW- Madison campus with these awesome events.



## Nature and the Outdoors

Find fun learning activities next to this icon that involve everything outdoors. From weather to plants, this green logo has to do with any science happening outdoors.



## Cells and More

Learn more about the parts of science that we can't always see with our naked eye. This logo will included everything including bacteria, genetics, and DNA!



## Physics

From electricity to density and everything inbetween. Check out this logo to find fun activities and learn more about how physics is in our everyday life.

All live virtual events can be found at the [Science Expeditions Youtube](#)  
All events available all weekend can be found at the [Science Expeditions Website](#)

## Live Virtual Events

### THURSDAY, APRIL 8th



#### **Artificial Intelligence in Animal Sciences | 7:00 PM - 8:00 PM**

*Animal & Dairy Sciences*

We will be working with animals to show how this technology works. Please register by signing up via the zoom link given below.

**Zoom Link:** <https://go.wisc.edu/r3x8lh>

### FRIDAY, APRIL 9th



#### **Wisconsin Idea Spotlight: What you Don't Know about Exercise | 12:00 PM - 1:00 PM**

*Wisconsin Alumni Association*

Enjoy flash talks from four faculty in the Kinesiology Department on the benefits of movement and their cutting edge research. Visit the event page to learn more and register for this event [here](#)



#### **A "Vert'ual" journey: what we can learn from dinosaur backbones | 1:00 PM - 1:45 PM**

*UW-Madison Geology Museum*

Learn about the physics and biology of dinosaur backbones, how they work and how they compare to other animals.



#### **Science Strikes Back | 2:00 PM - 2:45 PM**

*Upham Woods Outdoor Learning Center*

Winners from Science Strikes Back will have the opportunity to co-present and reflect on their projects from the February event and guide attendees on how to conduct their own or engage with the presenters on theirs.

**All live events can be found at the [Science Expeditions Youtube](#) at the designated time**

*The recorded videos will be available to watch after the live event*



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## Live Virtual Events

### FRIDAY, APRIL 9th



#### **Friday Nite Edition of Wednesday Nite @ The Lab: "Conversations in Science: Global Warming" and "Solving the Climate Challenge" | 7:00 PM - 8:30 PM**

*Wednesday Nite @ The Lab*

On April 9 we'll have a special Friday Nite Edition of Wednesday Nite @ The Lab with Tracey Holloway of the Nelson Institute and Bassam Shakhshiri of Chemistry sharing with us their points of view on what's ahead in grasping & dealing with climate change.

Register with this [zoom link](#) or watch live on [Youtube](#)

### SATURDAY, APRIL 10th



#### **Dive Under Water, Into History, Online! | 9:00 AM - 9:45 AM**

*UW Wisconsin Water Library*

This program for families begins with the Titanic and ends in a time machine. After an introduction to maritime archaeology and what we can learn from shipwrecks, Ms. Moser will ask that you suspend all formality and take a ride in a time machine to learn all about a tragic voyage on Lake Michigan.



#### **Gardening without Gravity | 10:00 AM - 10:45 AM**

*Botany*

Plants don't need much to thrive: sunlight, water and some soil, but how do you garden on the International Space Station (ISS) where even the air has to be shipped from the Earth and a watering can simply doesn't work? We will first discuss the challenges of growing plants in space and then explore how to design and build a growth chamber able to grow healthy plants on board the ISS, even when traveling at 17,500 miles per hour and 250 miles straight up.

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## Live Virtual Events

### SATURDAY, APRIL 10th



#### **The Joy of Science | 11:00 AM - 11:45 AM**

*Wisconsin Initiative for Science Literacy*

Celebrate the joy of science with Professor Bassam Shakhshiri and learn how to do home experiments safely. Kids of all ages are welcomed.

**Materials:** A tall, clear glass filled about 3/4 with water, a blank (white) sheet of paper, a writing utensil, 3-4 rubber bands.



#### **The Amazing Human Brain | 12:00 PM - 12:30 PM**

*Neuroscience Training Program*

Come see a real human brain, learn all about it, and hear amazing stories of how we learned about the brain's workings!

### SUNDAY, APRIL 11th



#### **Meet the Marmosets | 10:00 AM - 10:30 AM**

*Primate Center*

Meet the marmosets at the Wisconsin National Primate Research Center. Learn about science and animal care activities with them for home or classroom.



#### **Exploring the Aldo Leopold Archives | 10:40 AM - 11:00 AM**

*Aldo Leopold Foundation and UW Archives*

You will have a guided tour of the extensive archives documenting Aldo Leopold's life.

**All live events can be found at the [Science Expeditions Youtube](#) at the designated time**

*The recorded videos will be available to watch after the live event*



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# Live Virtual Events

## SUNDAY, APRIL 11th



### **The Physics Experience | 11:15 AM - 12:00 PM**

*The Physics Experience LLC*

Physics is the study of how things move, how they push and pull on each other, and how they exchange energy. The Physics Experience show is a fast-paced, engaging, and educational physics program, filled with demonstrations that help people better understand the physics in the world around them, while having fun at the same time!



### **Shipwreck Activities for Kids! | 12:15 PM - 1:00 PM**

*Wisconsin Historical Society*

Join us for 6 fun activities within the program: dressing a scuba diver (to learn about scuba equipment), matching artifacts to shipwreck stories, drawing ship routes through the Great Lakes, examining photo mosaics to learn nautical vocabulary, puzzles that show silhouettes of different vessel types that were used on the Great Lakes, and word games about some of the different causes of shipwrecks.



### **Build-a-Bug | 1:15 PM - 1:30 PM**

*Entomology*

Our activity lets participants explore the ways that insects have adapted to their environment. Insects are incredibly diverse, both in terms of species and body shapes. This activity focuses on the various physical adaptations that insects have - such as different wing shapes or leg types - and lets visitors create their own fantasy insect while learning about real insects.



### **Bacteria All Around Us LIVE | 2:00 - 2:30 PM**

*Genetics*

Watch the live reveal of what the bacteria looks like from different locations you selected after being collected on Saturday and grown overnight! Be sure to watch the pre-recorded video (in the "Available All Weekend" section) and submit your choices by 12:00 PM Saturday for where bacteria should be collected from using this [google form link](#). If you don't submit your choices in time, no worries, but still tune in live to see how much bacteria can grow overnight!

**All live events can be found at the [Science Expeditions Youtube](#) at the designated time**

*The recorded videos will be available to watch after the live event*



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## Available All Weekend OUTDOOR EVENTS

Come explore the UW- Madison Campus for yourself! These outdoor self- guided activities are a perfect way to get active outside and enjoy the campus. Check the website below and event details for more instructions for these self- guided events.



### Lakeshore Nature Preserve Self-Guided Outdoor Activities

*Lakeshore Nature Preserve*

Explore the Rock Wall at the entrance to Picnic Point, Grow your birding skills with Beyond Backyard Birding; and Discover the oh-so-cool Lichens in the Preserve. Three different self-guided activities for exploration are being offered, virtually, for the UW's Lakeshore Nature Preserve.

**Materials:** Use this [Link](#) to find the materials for each of the activities



### Planet Trek Dane County

*UW Space Place*

This is a self guided tour of our solar system along the Southwest Commuter Bike Path. All or part of the path can be biked or walked.



### Calling You All to Explore Outdoors!

*UW Madison Arboretum*

When you arrive at the Arboretum Visitor Center check out the kiosk near the front door for places to hike to see signs of spring, cool springtime phenomena, and activities to do while out on the trails and in the gardens. Looking and listening for birds is one great activity. Use the birding journal to record your bird observations.

**Materials:** [Map of the Arboretum](#) and [Bird Journal](#)

Find these events at the [Science Expeditions Website](#)



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## Available All Weekend VIRTUAL EVENTS



### Bacteria All Around Us

*Genetics*

Watch this video to learn more about bacteria, how it is collected, and how to grow it! After watching this video, submit your choices for where you think a UW- Madison scientist should collect bacteria from by 12:00 PM Saturday using this [google form link](#). Be sure to tune in live on Sunday, April 11th at 2:00pm to see where the bacteria was collected from and how much bacteria can grow overnight!



### Research Spotlight: Bacteria & Biofuels

*Great Lakes Bioenergy Research Center*

In this podcast, science writer Jill Sakai joins researcher Amy Enright to learn how we can use bacteria to make sustainable fuels out of plants.



### Exploring the Cosmos from the South Pole: A Virtual Tour of the IceCube Neutrino Observatory

*WIPAC*

Journey to the geographic South Pole with IceCube scientists John Hardin and Yuya Makino. They'll teach you about tiny "ghost" particles called neutrinos, and you'll get to experience what it's like to live and work in one of the world's most remote, coldest environments.



### In the Dark and In the Light

*McPherson Eye Research Institute*

"In the Dark and In the Light" is an interactive video that compares the adaptations in the eyes of animals that are active in the dark (nocturnal) to those that are active in the day (diurnal) to those with behaviors in between (arhythmic).

**Materials:** Print this [worksheet](#) and have a pen/pencil.



### Virtual Currie Lab

*Bacteriology; Currie Lab*

Come learn about the microbes from fungus-growing ants and other insects we study!

Find these events at the [Science Expeditions Website](#)



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## Available All Weekend VIRTUAL EVENTS



### Activities to Learn about your Brain!

*Educational Neuroscience Lab*

Easy at home activities to learn more about your senses, memory, and right/left sides of your body!



### Explore Science at the Museum

*Wisconsin Science Museum*

Take a virtual tour of the museum with demonstrations and activities that you can try at home with materials found in most homes.



### Diabetes Education and Management

*Operation Diabetes from Wisconsin Society of Pharmacy Students (WSPS)*

During our pre-recorded presentation we explain what diabetes is and what are some signs of diabetes. We also discuss ways to live a healthier lifestyle, from food recommendations to exercise recommendations!



### Wonders of Quantum Physics

*UW-Madison Department of Physics*

By completing two activities focusing on electron transitions and observing spectra, students will gain experience with fundamental quantum science concepts and further build their quantum intuition.

**Materials:** (the links will take you to examples that can be bought) 1 LED light bulb, 1 fluorescent light bulb, 1 red laser pointer, 1 light bulb socket (a lamp will also work), 1 diffraction grating, 1 LED Flashlight, 2 glow-in-the-dark stars, 1 piece of white paper



### Listen Up! Learn About Your Hearing and How to Protect It

*Communication Sciences and Disorders*

Watch this funny skit to learn how your hearing works, how to protect it, and how to make a delicious treat.

**Materials:** pretzel sticks, regular sized marshmallows, chocolate chips

Find these events at the [Science Expeditions Website](https://science.wisc.edu)



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### Introduction to Stem Cells and Cell Cultures

*Student Society of Stem Cell Research Club*

Introduction to using microscopes and pipetting to demonstrate how scientists grow and prepare stem cells in a laboratory, includes introductory information about stem cells and their applications.



### Milk Fireworks!

*Badger Precollege Programs-UW Madison*

"Milk Fireworks" is presented by Badger Precollege at the University of Wisconsin- Madison. This fun and easy demonstration combines simple household ingredients to create an eye-popping reaction! To learn more about our programs, please feel free to contact us at: [info@precollege.wisc.edu](mailto:info@precollege.wisc.edu).

**Materials:** milk, food colors, soap, q-tips, plate or shallow bowl (not paper)



### Scientist Work Together Coloring Page

*Wisconsin Energy Institute*

Learn about how teams of scientists at UW-Madison and beyond work together to find ways to make sustainable fuels as you color in this image!

**Materials:** printed coloring page, coloring utensils



### The Heart

*UW-Madison WSPS Operation Heart, School of Pharmacy*

This brief presentation helps you learn more about heart health by exploring different daily activities that are both good and bad for your heart.



### Step behind-the-scenes, into a 360-tour of an active laboratory in the Wisconsin Energy Institute!

*Wisconsin Energy Institute, Great Lakes Bioenergy Research Center*

Step behind-the-scenes, into a 360-tour of an active laboratory in the Wisconsin Energy Institute!

Find these events at the [Science Expeditions Website](https://science.wisc.edu)



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### Science Strikes Back

*Upham Woods Outdoor Learning Center*

An all-ages community science fair brought together the young and old to share their passions with each other - see how their projects have evolved from collaborating with each other!



### Generation Rx- Preventing Prescription Misuse and Abuse

*Wisconsin Society of Pharmacy Students (WSPS)*

This presentation provides information about prescription misuse and abuse, the opioid epidemic, and what you can do to help improve this public health problem.



### Energy BINGO

*Wisconsin Energy Institute*

We use energy in all aspects of our lives: from the food we eat to how we travel to school. Learn about energy and get a bingo by completing five challenges that line up in a row across, up/down, or diagonal.



### Weather and Climate Activities to Explore the Atmosphere

*NOAA's Cooperative Institute for Meteorological Satellite Studies*

Highly interactive teaching and training activities that allow users to explore physical processes such as tornadoes, air density effects on baseballs, thunderstorms, rainbows, snowflake crystals (and more!) all on a computer screen on any browser.



### Weather Satellites – past, present and future

*NOAA's Cooperative Institute for Meteorological Satellite Studies (CIMSS)*

Narrated movie that chronicles the history of weather satellites from the launch of the Sputnik spacecraft to NOAA's most recent GOES-R series of weather satellites and the many contributions that the UW's Space Science and Engineering Center made over the decades.



### Learn about Brain Cells

*NTP*

Do you want to learn about the different brain cells like neurons and glial cells? Come check it out and see what they are all about!

Find these events at the [Science Expeditions Website](#)



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### Shaking Triboelectric Nanogenerator

*Wisconsin MRSEC*

Gather some materials and build a device that converts movement into electricity! Participants will learn the science behind a triboelectric nanogenerator and will build one using some inexpensive supplies.

**Materials:** Plastic egg (standard Easter eggs are approximately 2.25 inch tall and work well for this activity, Bouncy balls (32 mm diameter, which, IMPORTANTLY, is smaller than the diameter of the egg), Aluminum foil, Jumper wires or regular copper wires, stripped, Double-sided tape, Clear office tape, or FEP (fluorinated ethylene propylene) tape, Low amperage green LED, clear lens (green was the easiest to visualize), (Optional) Black straws (to help visualize the light from the LED) (0.21 or 0.25 inch diameter), Scissors



### Diabetes Education and Management

*Operation Diabetes from Wisconsin Society of Pharmacy Students (WSPS)*

PharmD students address what diabetes is and what it means to be healthy.



### What's the buzz about bugs and bacteria?

*Department of Bacteriology*

Get crafty: use household items to learn more about insects and the microbes that help them do their job!



### Lava Action - Density Does It!

*Retired Teacher from Hamilton Middle School*

Create your own Lava Lamp Action in a glass and find out how density drives this reaction! In this hands on session, families will create a chemical reaction with Alka-seltzer, water and oil. We will observe the action created in the glass.

**Materials:** Tall clear glass, vegetable oil, water, Alka-Seltzer or generic equivalent, food coloring

Find these events at the [Science Expeditions Website](#)



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### Learn about Reflexes

*Neuroscience Training Program (NTP)*

What is a reflex and how in the world do they work?



### Soil Safari & Critter Quest

*Soil Science*

Prepare to set-off on a scavenger hunt! You will go on a quest to find critters living in the soil. On the way, you will explore the different homes they like to live. To explore the critters hiding in leaf litter, you can follow a how-to guide for making an arthropod-catching funnel. See insects and spiders galore! For those with a microscope at-hand, there is a how-to-guide for catching and looking at the small, worm-like nematode.

**Materials:** For the nematode activity, you will need: Soil (preferably high in organic matter), Cheesecloth, Rubber band, Funnel, Tube & clamp, Water, Shallow glass, Microscope

For the arthropod activity, you will need: Leaf litter, Milk jug, Wire mesh, Glue, Light, Jar



### Science Behind Ice Cream Making

*UW-Madison Food Science Club*

Come learn the food science behind making ice cream through creating your own no-churn tasty ice cream.

**Materials:** 2 cups (1pint) Chilled Heavy whipping cream, 1 ¼ cups of sweetened condensed milk, ¼ cup evaporated milk, 2 teaspoons of vanilla extract, Toppings of Your Choice (Get Creative!) Examples: broken chopped/cookies, sprinkles, caramel or fudge sauce, Mixing Bowl, Stand Mixer or Hand mixer or large mason jar or large food storage container, Large freezable container



### Crystalization and nucleation

*School of Pharmacy*

We will use HotSnapZ to demonstrate nucleation and crystal growth.

Find these events at the [Science Expeditions Website](#)



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### Investigating the Pandemic of 1918 and its Relationship to Today's Coronavirus: A History of the Health Sciences Guide

*The Ebling Library*

The bizarre timing of COVID-19's extraordinary impact on our personal and professional lives has not been lost on Micaela Sullivan-Fowler, a public historian who has studied the history of the 1918 Pandemic. As a graduate student said to her, just days before Ebling Library shuttered for Wisconsin's "safer at home" directive, "there [must] be some irony in a pandemic closing down an exhibit about a pandemic." This Research Guide shares the history of the 1918 Pandemic and offers resources on similarities and differences between the two Pandemics.



### Microgrid Mapping

*Wisconsin Energy Institute*

Microgrid Mapping is a hands-on drawing activity that allows learners to visualize the power grids in their communities and learn what a microgrid is in the process.

**Materials:** paper and a writing utensil



### Wisconsin Insects

*Entomology Graduate Student Association*

This is a video talking about the ecology and importance of some of the insects native to Wisconsin.



### Badger Jump Around

*UW-Madison Biocore Outreach Ambassadors*

Learn the physics behind how to jump around like a Wisconsin Badger! A presenter will lead a demonstration of an activity where viewers will learn how to jump as high as possible. They will learn a little bit about the physics and physiology behind how animals jump.

**Materials:** post-it notes and a ruler

Find these events at the [Science Expeditions Website](#)



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### Elephant Toothpaste

*Students Participating in Chemical Education (SPICE)*

Make your own toothpaste for your pet elephant! Learn about the science behind a catalyst while making some special growing toothpaste (only for elephants)

**Materials:** empty plastic bottle, tray, dish soap, 3% hydrogen peroxide, active yeast, warm water, cup, spoon, food coloring (optional)



### Balloon Experiment

*Students Participating in Chemical Education (SPICE)*

Watch what happens to a balloon when you mix vinegar and baking soda!

**Materials:** balloon, baking soda, vinegar, small plastic bottle



### Ice Cream Scientist

*Students Participating in Chemical Education (SPICE)*

Learn about the science behind making ice cream!

**Materials:** milk (any type), vanilla, white sugar, small plastic bag, large plastic bag, ice, salt, mittens (optional)



### All About OTC's!: An Over-The-Counter Medication Safety Lesson

*Wisconsin Society of Pharmacy Students (WSPS)*

Learn more about over-the-counter medications and their safe use to care for you, your family, and your friends!



### Missing in Action Research

*MIA Project*

Join us to learn about online research techniques and methods used in MIA research, including searches on ancestry.com, fold3.com, newspapers.com etc. to show what information is available when trying to research the history and possible location of US service members who were not recovered during wartime.

Find these events at the [Science Expeditions Website](https://science.wisc.edu)



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### At Home Yogurt Fermentation

*UW Microbiology Club*

Make your own homemade yogurt and learn a little about how fermentation works!

**Materials:** Microwave, microwave safe bowl, 4 cups fresh milk (any type), 2 tbsp fresh yogurt (plain with active cultures), food thermometer, dish towels, and plate to cover bowl



### Dry Marker Experiment

*Korean-American Scientists and Engineers Association (KSEA)*

Make your drawings come to life! Join this session to learn how to make what you draw with a marker move.

**Materials:** Dry Erase Marker, Glass Plate, room-temperature water



### DIY Lava Lamp

*Korean-American Scientists and Engineers Association (KSEA)*

Use simple materials around the house to make a lava lamp- with no electricity!

**Materials:** Clean plastic bottle, vegetable oil, water, food coloring, Alka-Seltzer tablet.



### Cloud chamber for visualizing radiation from space

*UW Medical Physics*

Join us as we talk about radiation and show you how you can make the invisible visible and to see radiation for yourself. check out this [link](#) for a detailed lesson plan for this activity

**Materials:** Dry ice (or ice pack or frozen salt water solution) Isopropyl alcohol (>90%), see the link above for more detailed materials.

Find these events at the [Science Expeditions Website](#)



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### Spend a Day in Urology Research!

*Department of Urology*

An exploration through innovative Urology Research techniques at the Wisconsin Institutes for Medical Research



### Battery at home

*Graduate Women in Science*

The activity involves a demonstration of a simple experiment of making a lemon/potato/salt-water powered battery at home. It is a simple experiment that can be performed at home under the guidance of an adult. It requires easily available household items. It is a simple yet fascinating experiment for someone who is interested in electrical science.

**Materials:** Lemon/potato/salt-water, copper-wire, paper-clip and galvanized nail



### Create your own groundwater model

*Wisconsin Geological and Natural History Survey (WGNHS)*

Create your own groundwater model with supplies around your home to learn how surface water and groundwater are connected.

**Materials:** One transparent 6-quart plastic shoebox or other large rectangular plastic container, Coarse-grained sand and fine gravel to fill about half of the plastic box. (Aquarium gravel works well. A 20-lb bag is enough for 3 models.), One 5-oz disposable cup, A paperclip or other tool to poke small holes in the cup, Small plastic toy people, houses, cars, etc. (These could be optional.), A turkey baster.



### Plant Science for Kids

*Entomology Graduate Student Association*

The Plant CMB (cellular and molecular biology) have a collection of short videos that will be scientific demonstrations to show the audience different concepts within plant cellular and molecular biology.

Find these events at the [Science Expeditions Website](https://science.wisc.edu)



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### Up, up, & away! Yeast-powered balloon inflation

*Bacteriology, Wisconsin Energy Institute*

We will feed sugar to baker's yeast, and watch them grow, bubble, fizz, and release gas to puff up a balloon! Yeast use fermentation - the process of breaking down sugars into energy without any oxygen - to eat sugars and make carbon dioxide gas. Next, we ask scientists at home to help answer our big question: What else can yeast eat?

**Materials:** Instant or Active Dry Yeast, water, table sugar, a balloon OR plastic wrap and a rubber band, small-mouthed vessel (such as a clean soda bottle) that you can fit the balloon opening onto



### Cytotechnology- Cell Detectives

*Wisconsin State Laboratory of Hygiene*

Have you ever wondered what cells from YOUR body look like under a microscope? Join us in taking a look and learning more about what we do in Cytotechnology.



### Explore the "Vert" in Virtual

*Geology Museum*

Join museum staff through short videos to learn about specimens including mammoth backbones (vertebrae), spiny sea creatures, vertical exaggeration in maps, and pokey minerals.



### Alumni Park Virtual Tour

*Wisconsin Alumni Association*

Enjoy a self guided virtual tour of Alumni Park that sits on the shores of Lake Mendota on campus and shares the stories of UW Madison alumni.



### Characteristics of Marine Debris

*WI Sea Grant*

Learn how different types of marine debris can impact our waters and wildlife.

Find these events at the [Science Expeditions Website](https://science.wisc.edu)



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### What's it like to be a scientist in the Center for Sustainable Nanotechnology?

*Chemistry*

Graduate students and professors in the Center for Sustainable Nanotechnology from across the country talk about nanotechnology and why we love doing science.



### At-home DNA extraction

*Great Lakes Bioenergy Research Center*

Using warm water, table salt, dish soap, and rubbing alcohol, we will extract DNA from wheat germ (or a food item of your choice, e.g., strawberries)



### Science at UW-Madison: Sources for its History

*Department of Special Collections*

More information to come!



### Building with Bones: Cat Skeleton

*University of Wisconsin–Madison Zoological Museum*

Learn about different bone types and build your own paper version of a cat skeleton!

**Materials:** Scissors, glue, colorful paper to glue bones onto, the PDF found at this [link](#) of the cat bones printed off



### Exploring the Zoological Museum

*University of Wisconsin–Madison Zoological Museum*

Come take a look behind the scenes of the Zoological Museum! This video takes viewers on a virtual tour of the Zoological Museum at UW-Madison, exploring the various natural history collections that help to further conservation studies and ecological research by looking back in time.



### The World of Bees

*USDA-ARS VCRU*

Learn about the lives of bees and how they locate their favorite sources of food.

Find these events at the [Science Expeditions Website](#)



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### **A day in the life of a scientist**

*Outreach Subcommittee of the Chemistry Department GSFLC*

A video compilation showcasing a day in the life of scientist from the UW-Madison Chemistry department.



### **Surprising patterns in simple mathematics**

*Department of Chemical & Biological Engineering*

Come find out how the process of multiplication defines complex geometric patterns, and learn how to make your own!



### **Windmill Design Activity**

*Wisconsin Energy Institute*

Join us to complete this windmill design challenge, using household items to construct a windmill that spins, and learn about the benefits of wind energy in the process!

**Materials:** a fan or hairdryer (anything that can create wind), scissors, tape, something to write with and on, 6 thin wooden dowels if possible, otherwise pencils or other thin long sturdy materials, a straw or other long hollow item, 2 sheets of cardstock paper/notecards, T-pins or paperclips (something with which to attach blades of windmill to a styrofoam ball), styrofoam ball or other round object between 1-2 inches in diameter (into which a wooden dowel attached to your blades could stick), 2 feet of string, a plastic cup, a wooden spool, and coins, washers, or marbles (will come at the very end of the windmill design process, so less important than the previous materials).



### **Gopalan Lab Tour**

*Materials Research Science and Engineering Center*

The Gopalan Group takes you on a tour of their polymer synthesis and characterization lab.



### **What's In Your Blood?**

*Premedical Association for Latinx Medical school Access (PALMA)*

We will be exploring the components of blood, what their functions are, and where they come from!

Find these events at the [Science Expeditions Website](https://science.wisc.edu)



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### Crystal Cave

*Materials Research Science and Engineering Center*

Crystal Cave is an interactive, online game that teaches young scientists about one of the main forms of solid materials, crystals! Through nine levels, players will be challenged to grow a variety of crystals and learn about the properties and importance of their unique structures.



### Lost at the Forever Mine

*Materials Research Science and Engineering Center*

You are a materials scientist who crash landed on an abandoned mining planet in this interactive, online game. You must use mathematical models to mine enough fuel to make it off the planet before your oxygen runs out!



### Atom Touch

*Materials Research Science and Engineering Center*

Atom Touch looks at the extremely small building blocks of life—atoms! Choose from a variety of activities or partake in free play, exploring how atoms really behave.



### Science of Scuba Diving

*Wisconsin Historical Society*

Learn about the science of Boyle's Law and how water pressure affects air and then talk to a diver about scuba equipment and the science of breathing underwater.

**Materials:** A clear plastic water bottle with cap (preferably with the sticker removed), A plastic bendy straw, Scissors, Several paper clips, Enough water to fill the bottle



### Tapping Triboelectric Nanogenerator

*Materials Research Science and Engineering Center*

Gather some materials and build a device a device that converts movement into electricity!

**Materials:** paper, aluminum foil, transparent office tape, 2 wires, LED light

Find these events at the [Science Expeditions Website](https://science.wisc.edu)



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### Thin Film Fun

*Materials Research Science and Engineering Center*

Join the Ediger Group as they show you how to create some nail polish thin films and then measure just how thin they are!

**Materials:** 2+ colors of nail polish, nail polish remover, plastic bags, scissors, paper towels, a cup of water (one that you don't mind getting dirty), pen/ stick (one that you don't mind getting dirty)



### Determining Distances with Diffraction

*Materials Research Science and Engineering Center*

Measuring the size of small things, like the width of your hair, can be tricky, but Tesia and Carl can show you how to do it with the help of diffraction!

**Materials:** laser pointer, binder clips, tape, pencil, tape measure, playdough



### Creating Art with Polarized Light

*Materials Research Science and Engineering Center*

Polarized light can be used to create works of art in this fun and easy activity.

**Materials:** 2 polarized filters, cellophane or shipping/package tape, school glue (optional)



### Atomic Force Microscope Model

*Materials Research Science and Engineering Center*

Build a model of an Atomic Force Microscope, a tool scientists use to "feel" individual atoms on a surface!

**Materials:** CD disk, scissors, laser pointer, various objects to measure, plastic bricks or similar



### Studying Single Molecules with the Goldsmith Group

*Materials Research Science and Engineering Center*

The Goldsmith Group explains how and why they study single molecules as they tour their laser lab.

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### Serial Dilutions

*Materials Research Science and Engineering Center*

Sometimes scientists need to work with very dilute substances, but how do they make a solution with only one molecule dissolved in a billion others?

**Materials:** cups/bowls for the dilutions, measuring device (1 tsp, table-spoon, 1/4 cup, etc), something to dilute (fruit juice, water with food coloring), water



### Mitten Challenge

*Materials Research Science and Engineering Center*

This quick, inexpensive activity helps you understand why scientists and engineers need to find the right tool for the job.

**Materials:** mittens, a task that requires dexterity (puzzle, sorting jelly beans, stacking blocks, etc.)



### Cutting it Down to Nano

*Materials Research Science and Engineering Center*

This easy, inexpensive activity helps you understand just how small atoms and the nanoscale are.

**Materials:** paper, scissors, tape, printer (optional)



### Carbon Nanotube Finger Puppets

*Materials Research Science and Engineering Center*

Learn about the incredible properties of nanotubes while making finger puppets!

**Materials:** paper, scissors, tape, markers



### Polymer Engineering Center

*Materials Research Science and Engineering Center*

Gerardo and Camila take a look at the Polymer Engineering Center and the advanced 3D printer within.

Find these events at the [Science Expeditions Website](https://science.wisc.edu)



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### **The Wonders of Physics Video Contest 2021**

*UW Department of Physics*

The Wonders of Physics annual show has brought fun and exciting physics demonstrations to the public for the past 37 years. However, this year we need YOUR help to capture the wonders of physics happening in your own home.

Record yourself doing an amazing physics demonstration, explain the science behind it, and enter the video in the 2021 Wonders of Physics video contest. Your video could win you the top award of a Repaper Pencil & Paper Graphic Tablet by iskn, along with many other great awards. Plus, the best videos will be featured in the 2021 Wonders of Physics show!

This video will be an introduction to the contest, example videos, and actual videos already submitted by students. Visit <https://wonders.physics.wisc.edu/contest/> for info.



### **Women's Health Physical and Mental Wellbeing**

*Wisconsin Society of Pharmacy Students (WSPS)*

This presentation discusses physical and mental wellbeing in terms of women's health.



### **Safe disposal of medication**

*Operation Med-Drop*

We will be discussing proper medication disposal and how it is beneficial for the community.



### **HPV**

*Wisconsin Society of Pharmacy Students (WSPS)*

This presentation discusses the impact of HPV in the United States.

Find these events at the [Science Expeditions Website](https://science.wisc.edu)



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### Education about Organ Donation

*Operation Organ Donation*

This is a pre-recorded presentation discussing the importance of organ and tissue donation.



### Impacts of Smoking on Your Lungs

*Operation Airways*

We will be discussing the effects of smoking cigarettes as well as e-cigarettes on your lungs and overall health.



### Explore Magnetism with Jello

*Materials Research Science and Engineering Center*

Use jello in various ways to explore magnetism and its effects.

**Materials:** Jello, magnets, magnetic items (flat washers, screws, etc)



### Atomic Layer Deposition

*Materials Research Science and Engineering Center*

Chuck Winter explains the fundamentals of Atomic Layer Deposition, a technique to sequentially lay down layers of single atoms.



### Tour of Washburn Observatory

*Astronomy Department*

Take a virtual tour of historic Washburn Observatory



### Science at Home: Make Your Own "Lake Layers!"

*Center for Limnology*

Every summer, lakes separate into two bodies of water. This is all due to the magic of density and it has all sorts of implications for the conditions in a lake. Our science station will help you learn why this happens with a cool demonstration video and a do-it-yourself experiment!

**Materials:** click on this [link](#) for the materials

Find these events at the [Science Expeditions Website](#)



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### Science Expeditions Weather Forecast

*Department of Oceanic and Atmospheric Sciences (AOS)*

Get the weekend weather forecast from UW Weather Guy and AOS Professor Jonathan Martin! New for 2021! Short weather discussions 3 days a week during the 2021 spring semester for Wisconsin High School students featuring UW-Madison Weather Guy & AOS Professor Jonathan Martin.



### History of Pharmacy

*Wisconsin Society of Pharmacy Students (WSPS)*

Join us for the history of pharmacy, present and past

Find these events at the [Science Expeditions Website](#)



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