

W I S C O N S I N SCIENCE FESTIVAL? CURIOSITY UNLEASHED.

2017 Wisconsin Science Festival Teacher Workshops

All workshops are on **Saturday, November 4**, at the Discovery Building (330 N. Orchard St., Madison, WI).
Teacher check-in will start at 8:30 a.m. on Saturday.

—————> **Register at: [WiSciFest.org/teachers](https://wiscifest.org/teachers)** <—————

Cosmic Watch & Drilling in Antarctica

Saturday: 9:15 a.m. – Noon (two connected workshops)

2nd floor teaching lab | <https://wipac.wisc.edu/>

Session 1 (9:15 – 10:30 a.m.)

Cosmic Watch: Get Your Detector and Measure Particles from Outer Space in the Classroom

Cosmic Watch is a project that brings small, easy-to-use detectors to classrooms in the U.S. and around the world. With the Cosmic Watch detectors, students can measure muons created by the interaction of cosmic rays with the atmosphere, allowing them to conduct particle physics research in the classroom—developing their own research questions, modeling and designing experiments that could answer those questions, and collecting and analyzing data to arrive at answers.

This summer, we worked with a group of high school students to investigate what kinds of experiments can be implemented in the classroom. In this session, we will present several of these experiments and share lesson plans. Some of the students we worked with will also attend the workshop and share their experience. And, if you are one of the first 20 teachers to register, you can take a detector back to your school.

Session 2 (10:45 a.m. – Noon)

Drilling in Antarctica: A High School Research Program Inspired by the Construction of IceCube, the World's Largest Telescope

IceCube is a cubic-kilometer neutrino detector at the South Pole. It is advancing astronomy in a brand-new way, but building it was a physics and engineering challenge. Eighty-six three-kilometer-deep holes were drilled in Antarctica using only hot water. But, everything is difficult and expensive in Antarctica. How could we drill holes in an efficient and affordable way? A team of researchers and two high school teachers have designed a research project to discuss thermodynamics and engineering in the classroom. The project includes the design of a drilling experiment and optimization of their drilling model, taking into account time, budget and specific detector requirements such as the size of the holes or their vertical alignment.

Session speakers:

Spencer Axani, MIT graduate student and Cosmic Watch project leader

Silvia Bravo, WIPAC outreach and communications specialist, UW-Madison

Amanda Nothem, physics teacher, Whitnall High School

Jeff Paradis, physics teacher, Whitnall High School

Workshops, cont'd

J.F. Crow Institute for the Study of Evolution Presents Teaching Evolution

10:45 a.m. – Noon

4th floor teaching lab | <http://www.evolution.wisc.edu/>

Explore evolution activities that are well-suited for the classroom in this activity-based workshop. Participants will discuss the challenges teachers face when teaching evolution and leave with a toolkit of strategies for dealing with these challenges and new ways to engage students who are learning about evolution.

Small World Initiative – Crowdsourcing Antibiotic Discovery Starts in Your Soil

1 – 2:15 p.m.

4th floor teaching lab | <http://www.smallworldinitiative.org/>

Discover how soil samples collected by Wisconsin high school students can connect to undergraduate research projects that are investigating what antibiotic producers might be part of the living soil. A short introduction to the Small World Initiative will be part of the workshop, which seeks to find new antibiotics through crowdsourced soil collection, bacteriology, genetic and chemical analysis. Find out how your students and your community can get involved with the project.

Foldscope Origami Microscope

Saturday: 2:30 – 3:45 p.m.

2nd floor teaching lab | <https://microcosmos.foldscope.com/>

Calling origami scientists! Use your folding skills to build a powerful, portable and durable origami pocket microscope. In this workshop you will learn how to fold and use the foldscope alongside foldscope club super-users from the UW-Madison campus. You will be able to take home your own foldscope classroom kits to investigate the microworld around us thanks to generous support from Alliant Energy as part of their Wisconsin Science Festival sponsorship.