Lab-aids®

Proven Science Programs

Lab-Aids, Inc. Workshops National Atlanta 2018

All workshops will be held in the Georgia World Congress Center, Workshop Room B305

THURSDAY, MARCH 15, 2018

NGSS Waves: Make an abstract concept become visible! - Lisa Kelp, Lab-Aids

8:00 am - 9:30 am Experience two exemplary NGSS-focused activities from SEPUP that build up to Waves and Their Applications in Technologies for Information Transfer (MS-PS4-2). Anchored in the context of health issues around various types and levels of wave exposure, these activities model seamless integration of the three dimensions, ELA, and math standards. We will explore the relationship between visible light frequency and energy through the use of a phosphorescent material and use light boxes to explore reflection and refraction.

NGSS Ecology: Modeling the Introduction of a New Species - Cindy Lilly, Ocean Bay Middle School, Myrtle Beach, SC

10:00 am - 11:30 am How does a new species affect the flow of matter and energy in an ecosystem? This card sort-style activity models the introduction of a new species with special attention to the effect on existing predators and producers. From the new SEPUP middle level ecology unit, revised and updated for the NGSS and published by Lab-Aids. Take home free samples of the activity.

NGSS Land, Water and Human Interactions: Cliff Model - Cindy Lilly, Ocean Bay Middle School, Myrtle Beach, SC

12:00 pm - 1:30 pm The relentless action of waves breaking on the shoreline can pose special problems for coastal homeowners. Use new tools to model the effect of ocean waves on a cliff as you design and test breakwater structures to prevent beach erosion. Strong support for middle level NGSS engineering practices provided. Supports Developing a Model, Designing Solutions, Engaging in Argument from Evidence, and CCSS ELA. From the SEPUP Third Edition Middle School Land, Water and Human Interactions unit—redesigned for NGSS.

Chemical Batteries - Cindy Lilly, Ocean Bay Middle School, Myrtle Beach, SC

2:00 pm - 3:30 pm Although we live a battery-powered lifestyle, most of us (middle school and high school students included) have no idea how batteries actually work. Engage in an activity from Issues and Physical Science from Lab-Aids. Make a wet cell battery, explore the effect of using different metal electrodes on battery output, and consider ways to reduce the number of discarded batteries in the waste stream.

NGSS Reproduction: Breeding Critters-More Traits - Cindy Lilly, Ocean Bay Middle School, Myrtle Beach, SC

4:00 pm - 5:30 pm Students model and explain additional patterns of inheritance as they explore cause-and-effect relationships for additional traits of the critters. These patterns help them model and explain the wide variation that can result from sexual reproduction. The activity provides an opportunity to assess student work related to Heredity: Inheritance and Variation of Traits (MS-LS3-2).

FRIDAY, MARCH 16, 2018

Photosynthesis and Respiration Shuffle - Mark Koker, Lab-Aids

8:00 am - 9:30 am Students have major misconceptions about photosynthesis and cellular respiration, but this content is essential for understanding how matter and energy flows, both at the micro (cellular) and macro (ecosystem) levels. Using a computer simulation, a hands-on activity, and notebooking and discussion strategies, expose student thinking—all from SEPUP's new Science and Global Issues: Biology program from Lab-Aids.

Cell Differentiation and Gene Expression - Mark Koker, Lab-Aids

10:00 pm - 11:30 pm Students often have trouble conceptualizing how selective gene expression works. We will use manipulatives to teach this concept and explain how it is connected to genetic engineering. Innovative activities are selected from the new Science and Global Issues: Biology program from SEPUP and Lab-Aids. Activities focus on ways to integrate selective gene expression as a relevant and engaging sustainability issue.

What is a Species? - Mark Koker, Lab-Aids

12:00 pm - 1:30 pm In this activity from the SEPUP high school biology program, participants learn about conditions that lead to speciation, including isolation due to temporal, geographical, and behavioral factors, and more. They then apply this knowledge to determine whether selected animal or plant pairs are in the early, mid, or late stages of speciation.

Chemical Formula and Amino Acids - Brandon Watters, Vernon Hills High School, Vernon Hills, IL

2:00 pm - 3:30 pm What is the difference between subscripts and coefficients? What does "balancing" a chemical equation mean? Many students have trouble with these fundamental concepts in chemistry. If a student does not fully understand the chemical formula, then moles, reactions, and stoichiometry are hopelessly confusing. Join us for some elegant, intuitive, and well-differentiated lessons that allow students of all levels to master the chemical formula and thereby move confidently into a deeper understanding of chemistry.

pH Scale - Brandon Watters, Vernon Hills High School, Vernon Hills, IL

4:00 pm - 5:30 pm What does pH actually measure? In this investigation, you will measure pH indirectly using indicators and absorption using the Lab-Master. Using their data, participants generate a graph of absorbance versus pH. This graph can be used to determine the pH of solutions, within the measured pH range. Join us for this activity from The Natural Approach to Chemistry program.

SATURDAY, MARCH 17, 2018

Prospecting for Mineral Ore - Eric Pyle, James Madison University, Harrisonburg, VA

10:00 am - 11:30 am How do geologists look for mineral ore? In this activity from EDC Earth Science, participants search for a layer of rock that contains a valuable mineral called molybdenum by testing sediments collected in strategic spots along river systems gathering data to decide where the deposit is located. This is no cookie mining activity!

Using Climate Proxies to Learn about Earth's Climate History - Eric Pyle, James Madison University, Harrisonburg, VA

12:00 pm - 1:30 pm How can scientists tell what Earth's climate was like thousands of years before human measurements? This activity simulates the use of fossil ocean foraminifera, tiny organisms whose growth patterns are different in warm or cold water. Analyze and graph samples of replicas of these organisms and then determine relative warm and cold periods in the past 200,000 years. This activity is from EDC Earth Science, a new NSF-supported high school Earth science program from Lab-Aids.

NGSS Biomedical Engineering: Get a Grip! - Lisa Kelp, Lab-Aids

2:00 pm - 3:30 pm Use the approach of biomimicry to design, test, evaluate, and redesign a mechanical gripping device to meet criteria. An iterative process is used to optimize the device by investigating the relationship between structure and function and applicable technology.

NGSS Energy: Follow the Energy - Lisa Kelp, Lab-Aids

4:00 pm - 5:30 pm Most of the energy we use every day needs to be "changed" before it is useful, i.e., batteries (chemical energy to electrical energy) and coffee makers (electrical energy to thermal energy). Explore new tools focused on the conservation of energy by analyzing common, and uncommon, energy transfers. Supports MS-PS3.A and MS-PS3.B, Engaging in Argument from Evidence, and CCSS ELA. From the SEPUP Middle School Energy unit, redesigned for NGSS.