

NSTA National Conference 2019

# Free Teacher Workshops

Presented by Bio-Rad Laboratories

Step-by-Step, Hands-on Experience

St. Louis, Missouri

America's Center  
Convention Complex

April 11–12

Thursday | April 11

	Room 101	Room 102
8–9:30 AM	Strategies for Motivating and Engaging All Students through Life Science	Algae Blooms: Agriculture, Ecology, and Economy
10–11:30 AM	Think Like an Engineer in Your Biology Class	Building Biology Learning through Connected Concepts – Reinforcing “Big Ideas”
2–3:30 PM	The Opioid Epidemic: Exploring the Genetic Associations of Opioid Abuse	Shifting Practices to Infuse Science/Engineering Practices with Common Core Strategies
4–5:30 PM	How to Get PCR and Electrophoresis Results Fast	Are Increased Incidences of Infection the Result of Climate Change?

Friday | April 12

	Room 101	Room 102
8–9:30 AM	The Opioid Epidemic: Exploring the Genetic Associations of Opioid Abuse	Conserving Panda Populations: Understanding Their Reproductive Endocrinology
10–11:30 AM	Yuck or Yum? Investigate Your Foods for Genetic Modification	Investigate Photosynthesis and Cellular Respiration with Algae Beads for GenBio
2–3:30 PM	Citizen Science, a Valuable Modern Biology Approach	Engage Students in Your Structure and Function Lessons
4–5:30 PM	A Gastronomic Time Capsule – the Victim's Last Meal	Modern Biology is Revolutionizing Human Lives! Are Your Students Prepared?

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► See reverse for workshop descriptions

19-2027

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## Workshop Descriptions

### Strategies for Motivating and Engaging All Students through Life Science

Attention administrators, coaches, teachers-on-special-assignment and teacher-leaders! Ever wonder why current science technologies have not made more impact on students or how to address access and equity in science classrooms? See how modern science engages students — making deep connections to standards through the lens of 21st-century tools, techniques and topics!

### Think Like an Engineer in Your Biology Class

Incorporate NGSS science and engineering practices in your biology class by engaging students to define the problem of world hunger. Considering constraints, students will design a treatment plan (solution) for protein-energy malnutrition, in the form of an evidence-based argument.

### The Opioid Epidemic: Exploring the Genetic Associations of Opioid Abuse

Opioid abuse is prevalent in the U.S. Students take on the role of researchers as they design an experiment utilizing a fast electrophoresis protocol of pre-amplified DNA samples that predicts addiction risks for opioid abuse, treatment, and implications to precision medicine based on a patient's genotype.

### How to Get PCR and Electrophoresis Results Fast

The average time served for a wrongfully convicted person exonerated using DNA is 14 years. Imagine the impact if forensic scientists could get the results faster. In this hands-on workshop, participants will learn how to perform a FAST PCR and nucleic acid electrophoresis protocol to identify the true suspect.

### Algae Blooms: Agriculture, Ecology, and Economy

Teach photosynthesis and cellular respiration together in the context of the dead zone in the Gulf of Mexico. Using algae beads together with an algae bloom case study, your students can engage in authentic inquiry investigations to learn about two connected processes and their ecological and economical implications.

### Building Biology Learning through Connected Concepts — Reinforcing “Big Ideas”

Do you have students ask, “What do I have to remember about this?” or clearly not understand the big concept behind the activity that you prepared? See how to design a series of activities that help students make connections and build a deep understanding of the major concepts being conveyed.

### Are Increased Incidences of Infection the Result of Climate Change?

Why does climate change matter to me? There have been increased reports of infections with symptoms such as gastroenteritis, bloody stools, fever, and dark blisters. Find out which suspected microbes are associated with this increase and why they may be more common as the average temperature on earth increases.

### Shifting Practices to Infuse Science/Engineering Practices with Common Core Strategies

This workshop will focus on illustrating the science and engineering practices described in the NGSS framework through the engaging pGLO Bacterial Transformation activity.

### Yuck or Yum? Investigate Your Foods for Genetic Modification

GM-Oh? Or GM-No!? Nearly half of people would avoid buying food containing genetically modified organisms (GMOs). In this hands-on workshop you'll learn the science basics of DNA extraction, PCR, and electrophoresis, and discuss the impact of genetic engineering on the foods you love.

### Citizen Science, a Valuable Modern Biology Approach

Are you interested in creating experiences for your students that will help them be more engaged and feel connected to their community as contributors to a larger scientific goal? Learn more about citizen science and explore some local and large-scale projects that your classroom could participate in.

### A Gastronomic Time Capsule — the Victim's Last Meal

Is that macerated roast chicken or the remnants of Mongolian beef? In this hands-on workshop learn how your students can use protein analysis to investigate the ingredients of a victim's last meal and help solve the case of “who done it?”

### Conserving Panda Populations: Understanding Their Reproductive Endocrinology

Can your students save the giant pandas? See how your students can explore challenging topics such as homeostatic regulation and the effect of reproductive hormones, immunological responses and ecosystem balance all at once as they engineer a hormone detection system that can be utilized for Giant Panda population conservation efforts.

### Investigate Photosynthesis and Cellular Respiration with Algae Beads for GenBio

Use algae beads in a colorimetric assay to study photosynthesis and cellular respiration. Learn how students can observe a phenomenon, ask meaningful questions, and design and carry out their own experiments to understand how these processes are connected.

### Engage Students in Your Structure and Function Lessons

Foster critical thinking skills in your cell structure lesson as students explore the use of DNA extraction protocols to identify a way to probe the unique characteristics of specialized different cell types. Using Claim Evidence Reasoning (CER), students translate experimental findings into a strong discussion of differences in cell structure.

### Modern Biology is Revolutionizing Human Lives! Are Your Students Prepared?

Glowing cats? Personalized medicine? Designer babies! Empower and prepare your students to think critically as modern biology revolutionizes medicine, industry, and human lives. Learn from a leader in biotechnology education how to build your bioscience lab program step-by-step with equipment, supplies, and student credentials.

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