Peak Area Leadership in Science (PALS) 2020-2021 - Semester 2 Only

Professional Development Workshops* for Science Teachers

Meetings are FREE! Reservations (and cancellations) required!**

To make reservations register online at www.sciencehubs.org

or contact Tammy Johnnie at rsvp@sciencehubs.org or 719-337-1552 (cell)

Date/Day/Time	Topic	Location	Contact Hours /Sem Credit***
Jan 23, 2021 (Sat.) 8:15 am - 4:00 pm	**Chemistry of Medicines and Drugs**	**U.S. Air Force Academy Chemistry Department**	**7.5 / 0.5**
Feb 10, 2021 (Wed.) 4:00 pm - 6:00 pm	**Incorporating Free LabXChange Resources Into Your Remote/Hybrid Learning**	**VIRTUAL**	**2.0 hrs / 0.125**
Feb 24, 2021 (Wed) 4:00 pm - 6:00 pm	**Virtual Teaching Tools - Getting students actively engaged in your online classroom and beyond!**	**VIRTUAL**	**2.0 hrs / 0.125**
March 10, 2021 (Wed) 4:00 pm - 6:00 pm	**Incorporating PhET in Your Science Classroom**	**VIRTUAL**	**2.0 hrs / 0.125**
March 31, 2021 (Wed) 4:00 pm - 6:00 pm	**Using the Hazards Education Awareness and Resilience Task Force (HEART Force) Curriculum in your Science Classroom**	**VIRTUAL**	**2.0 hrs / 0.125**
April 8, 2021 (Thurs.) 4:00 pm - 8:00 pm	**Physics in the Natural World - Little Shop of Physics**	**Discovery Canyon Campus**	**3.75 / 0.25**
May 1, 2021 (Sat) 8:30 am – 12:30 pm	**Operation Montserrat at the Challenger Learning Center**	**Challenger Learning Center**	**3.75 / 0.25**

Generous funding for these workshops provided by:

The Mikkelson Education Fund & Jim Mikkelson,
USAFA K12 STEM Outreach Program and the Dan Furstenau Memorial Donation

* **The information in this chart is subject to change!** See our web-site www.sciencehubs.org for a detailed flyer posted around the date of the previous month's meeting and for any updates to the information above.
Sessions offered this year may be converted to virtual meetings, rescheduled or cancelled depending on the status of COVID-19 in our community. Also - Sessions offered January – May 2021 are dependent on funding.

** **NEW - Registration** opening will vary depending on current pandemic conditions. Check the website for more information.

*** **Documentation** will be provided free for active participation in any hub meeting. In order to receive college credit you must earn a minimum of 7.5 hours or 0.5 semester credits. No college credit is given for only 3.75 hours or 0.25 semester credits. College credit only earned in increments of 0.5 semester credits. Hours/credits accumulate for the current school year only – no carry over for prior or future school years. Documentation / credit available at the end of the school year, typically in June. Total hours possible will change if meetings are cancelled or time is adjusted due to pandemic restrictions.

---------- 2020-2021 PALS Workshops (Hub Meetings) Info ----------
Semester Two

Sat., Jan. 23 Full Day [8:15 am - 4:00 pm] 0.5 sem hrs / 7.5 contact hours

Title: **Chemistry of Medicines and Drugs**

Presenters:
Dr. Gary Balaich, Professor of Chemistry, USAFA
Dr. Ron Furstenau, Retired Professor of Chemistry, USAFA
Dr. Abby Jennings, Assistant Professor of Chemistry, USAFA
Dr Doris Kimbrough, Professor of Chemistry, UCDenver

Description:
Now more than ever, the Chemistry of Medicine and Drugs is a fascinating study. You will learn about materials in medicines, the chemistry of vaping, and the drug approval process. You will participate in experiments that can be used in your classrooms and experiments in a research-style environment using advanced equipment to identify and synthesize drugs.

Agenda:

0815	Meet participants on the south steps of the Cadet Field House; Escort to Chemistry Conference Room (2N189)
0845-0915	Introductions, refreshments, admin items in Chemistry Conference Room
0915-1015	Presentation: "Chemical Functional Groups, Drug Synthesis and Analysis" Dr Gary Balaich
1015-1030	Break, Chemistry Conference Room (2N189)
1030-1230	Laboratory Experiments

"*Identifying Drugs by Instrumental Analysis": In this series of labs, participants will synthesize biodiesel and biodiesel petroleum diesel blends. Different techniques will then be used to analyze drugs, including high-performance liquid chromatography (HPLC), Fourier Transform Infrared Spectroscopy (FTIR), and gas chromatography/mass spectrometry (GCMS).*

"Thin Layer Chromatography (TLC) to ID Drugs": TLC is a powerful, but simple technique which can be used to separate and identify over-the-counter drug mixtures and to identify unknowns, applicable to a wide variety of middle and high school classes.

"Synthesis of Aspirin and Methyl Salicylate": This is a straightforward lab allowing participants to make their own aspirin and methyl salicylate (oil of wintergreen; Ben Gay).

1030-1130	Group A: Identifying Drugs by Instrumental Analysis (Dr Balaich)
	Group B: Thin Layer Chromatography to ID Drugs (Dr Jennings)
	Group C: Synthesis of Aspirin and Methyl Salicylate (Dr Furstenau)
1130-1230	Group A: Thin Layer Chromatography to ID Drugs (Dr Jennings)
	Group B: Synthesis of Aspirin and Methyl Salicylate (Dr Furstenau)
	Group C: Identifying Drugs by Instrumental Analysis (Dr Balaich)

1230-1330	Working Lunch Break in Lecture Hall Presentation: "Chemistry of Vaping"; Dr Doris Kimbrough *Dr Kimbrough will discuss the chemistry behind vaping and the hazards associated with vaping.*
1330-1430	Laboratory Experiments Group A: Synthesis of Aspirin and Methyl Salicylate (Dr Furstenau) Group B: Identifying Drugs by Instrumental Analysis (Dr Balaich) Group C: Thin Layer Chromatography to ID Drugs (Dr Jennings)
1430-1530	Presentations: "Materials in Medicine"; Dr Abby Jennings

1530-1600	Final wrap-up of the day's events (2N189)
1600	Depart chemistry area for Cadet Field House

For the months of February and March 2021 Pals is going to offer 4 short sessions (2 hrs) instead of what was previously planned. The information below is to allow you a 'sneak peak' at the offerings. You will not be able to sign up for these until mid - late January.

Wed., Feb. 10 Part Day [4 pm - 6 pm] 0.125 sem hrs / 2 contact hours

Title: ***Incorporating Free LabXChange Resources Into Your Remote/Hybrid Learning***
(Geared toward 9-12 grade Biology, Chemistry, Biomed Pathway Teachers)

Presenters: Tim Blesse, Teacher Program Coordinator, Denver Museum Nature & Science
Jessica Silverman, Content Collaborations Manager, LabXchange
Meg John, Vice President, Colorado Bio Science Institute

Looking for some free field-tested biology and chemistry teaching on-line resources? The free LabXChange learning pathways from Harvard can be used "as is", or you can incorporate them into your existing lesson storylines. The free videos, simulations, virtual labs, and organizational tools have been proven to increase two things we find challenging in these remote and hybrid learning environments : student engagement and agency. Get ahead of the curve with this nationally recognized, research-based, inquiry teaching approach. Experience LabXChange's resources in a workshop led by a former high school teacher and national trainer.

This LabXchange teacher training is hosted for free by the Colorado BioScience Institute, 501(c)3, due to a generous donation from the ***Amgen Foundation****, which seeks to advance excellence in science education to inspire the next generation of innovators.*

Wed., Feb. 24 Part Day [4 pm - 6 pm] 0.125 sem hrs / 2 contact hours

Title: **Virtual Teaching Tools - Getting students actively engaged in your online classroom and beyond!**

Presenters: Robin Walters (SCHS),
Megan Caraway(VRHS),
Mary Mulikin (VRHS),
Sahvannah Mease (VRHS)

Description: Imagine if you could engage every student in your class, every day. What if you could instantly see who's confused and who's ready for more? Wondering if there are ways to get ***your*** students to be more engaged and interact with content while e-learning? Join us as local teachers share with you 3 simple Google teaching tools that engage and involve students. Learn how to create "Escape" Classrooms using "Digital Breakouts". See how you can add formative assessments and interactive questions to your presentations right from Google Slides using Pear Deck or just your own ingenuity.

Wed., Mar. 10 Part Day [4 pm - 6 pm] 0.125 sem hrs / 2 contact hours

Title: **Incorporating PhET in Your Science Classroom**

Presenters: Kathy Perkins, CU Boulder Physics Department
Local PhET experienced teacher

Description: Experience using PhET simulations in a science classroom. Get up to date information about new programs and best practices for using the simulations with students - in person or virtually. (https://phet.colorado.edu/) Join us to learn how you can use these to improve student learning in your science classroom. The workshop will include an overview of PhET logistics and a chance to experience using PhET and get suggestions from a local teacher for how to use this resource.

Wed., Mar. 31 Part Day [4 pm - 6 pm] 0.125 sem hrs / 2 contact hours

Title: **Using the Hazards Education Awareness and Resilience Task Force (HEART Force) Curriculum in your Science Classroom**

Presenters: Katya Schloesser, Education and Outreach Associate at CIRES
(Cooperative Institute for Research In Environmental Sciences)

Description: Natural hazards are a part of our lives. Explore the Hazards Education Awareness and Resilience Task (HEART) Force curriculum to teach your students about floods, wildfires and droughts. Learn how your students can use area resources to become better educated on how their community responds to these hazards. The goal of the HEART Force is to engage students and teachers to take proactive steps in preparing for potential hazards that are becoming more frequent due to climate change. During the workshop, participants will get an overview of the free curriculum, walk through a hazards lesson and hear from a scientist in the field. HEART Force is part of the education and outreach department of CIRES at CU Boulder.

https://cires.colorado.edu/outreach/programs/heart-force

Thurs, April 8 Part Day [4:00 pm - 8:00 pm] 0.25 sem hrs / 3.75 contact hours

Title: **Physics in the Natural World - Little Shop of Physics**

Presenters: Brian Jones, Little Shop of Physics
Sheila Ferguson, Little Shop of Physics

Description: **The natural world is full of seeming puzzles: Hippos spend their lives in water, and they look quite chubby, but they aren't fat, and they can't swim. Seals breathe air like all mammals, but they actually exhale before they take a deep dive. And there are animals possessed of what seem like superpowers: There are snakes who have a second set of vision organs that let them see in complete darkness. A dolphin can stun a fish with sound. The hairs on the body of a bee give it a "sixth sense" that lets the bee tell, from a distance, that a flower has been recently visited by another bee. A shark can sense your heartbeat. A dog can tell, from another dog's growl, how big it is.**

In this session we'll use physics as a tool to explain and explore the natural world, using it to investigate all of these topics, and more. As with all Little Shop of Physics workshops, it will be active. We'll spend our time making measurements and observations, sharing ideas and hypotheses, and then we'll connect all of this back to the living world. Along the way, we'll show you some superpowers that you possess. You can see beyond the rainbow. You have a rudimentary sense like that of a honeybee. And you, too, size up animals by their growls, whether you realize it or not!

Sat., May 1 Part Day [8:30 am - 12:30 pm] 0.25 sem hrs / 3.75 contact hours

Title: **Operation Montserrat at the Challenger Learning Center**

Presenters: Ron Bush, Vice President of Education, Challenger Learning Center
Robert Fredell, CEO, Challenger Learning Center

Description: Following a tour of the newly built learning center, participants will be able to experience a presentation in the new Mikkelson Planetarium and learn how to bring the portable planetarium to an individual school site. Teachers will then participate in a shortened e-mission, breaking into teams to evaluate and respond to a global emergency simulation, thus gaining insight into the programs available through the Challenger Learning Center.

Agenda:

8:30 – 8:45	Welcome and Introductions
8:45 – 9:15	Simulator tour and overview of Challenger programs
9:15 – 9:40	Mikkelson Planetarium Show
9:40 – 9:50	Break
9:50 – 12:15	Operation Montserrat e-mission
12:15 -12:30	Questions, wrap-up, and giveaways