Peak Area Leadership in Science (PALS) 2020-2021 - Semester 1 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***
Aug. 22, 2020 (Sat.) 8:15 am – 4:00 pm	**Explore Biodiversity and Life Zones at Mueller State Park**	**Mueller State Park** Provide your own transportation to Visitor Center and meet at 8:15 am	**7.5 / 0.5**
Sept. 9, 2020 (Wed.) 4:00 pm - 8:00 pm	**Going Viral: Coronavirus Lessons you can share with YOUR students**	**Virtual** - Link will be sent to registered teachers	**3.75 / 0.25**
Sept. 26, 2020 (Sat.) 8:00 am–1:30 pm	**The Discovery of Rise of the Mammals at Corral Bluffs**	**Corral Bluffs** Meet at Space Village Loaf n Jug no later than 8 am	**5 / 0.25**
Oct. 10, 2020 (Sat.) 8:00 am – 12:00 pm	**Brain Matters: How Stress Impacts the Teenage Brain**	**NEW - Virtual** - Link will be sent to registered teachers	**3.75 / 0.25**
Oct. 28, 2020 Wed.) 4:00 pm - 8:00 pm	**NEW TOPIC - Brave New Worlds in Learning** - using best practices in remote & hybrid Learning	**NEW - Virtual** - Link will be sent to registered teachers	**3.75 / 0.25**
Nov. 7, 2020 (Sat.) 8:30 am - 12:30 pm	**From the Nile to the Colorado - Hippos and Water Conservation at the Cheyenne Mountain Zoo**	**Cheyenne Mountain Zoo** Confirmed, registered teachers meet at front gate at 8:15 am	**3.75 / 0.25**
Dec 5, 2020 (Sat.) 8:00 am – 12:00 pm	**Exploring the Science of Caving with CaveSim Virtual Lessons**	**NEW - Virtual** - Link will be sent to registered teachers	**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**		**S1 TOTAL**	**30+ hrs / 2 sem credits***

* **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** for the August 22nd meeting is accepted on or after July 30th. Registration for each subsequent meeting is accepted on the day AFTER the most recent PALS hub meeting.

*** **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 One

Sat., Aug. 22 **Full Day [8:15 am - 4:00 pm]** **0.5 sem hrs / 7.5 contact hours**

Title: **Biodiversity of Mueller State Park**

Presenters: Linda Groat, Program Coordinator, Mueller State Park and
Tracy Predmore, Southeast Region Education Coordinator, Colorado Parks and Wildlife,
April Estep, Wildlife Biologist, Colorado Parks and Wildlife.

Description: Participants will explore the biodiversity of the many life zones of Mueller State Park and learn how to use the iNaturalist app. They will observe and identify macroinvertebrates, learn about bats and their biology and behavior, and study the watersheds of Colorado

Agenda:

8:15	Arrive, registration, restrooms, name tags, notebooks
8:30 – 9:05	Welcome; Announcements ; Overview of the Day, Introductions of hub coordinators, presenters and participants – Auditorium
9:05 – 9:15	Resources available from Colorado Parks and Wildlife (Linda Groat, Program Coordinator, Mueller State Park and Tracy Predmore, Southeast Region Education Coordinator, Colorado Parks and Wildlife)
9:15 – 10:30	Activity: Observing Relationships within an Ecosystem using the Biodiversity Poster sets (small groups) (Linda Groat and Tracy Predmore,)
10:30 – 11:00	Introduction to iNaturalist
11:00 – 11:45	Explore three habitats (insects, plants, birds/mammals)
11:45 – 12:15	Share Out (working lunch)
12:15 – 1:15	Bats (April Estep)
1:30 – 2:30	Pond Study at Dragonfly Loop – a 1000 foot walking tour of a wildlife pond habitat – focus on aquatic insects (Linda Groat and Tracy Predmore)
2:45 – 3:45	The Shape of Colorado – Understanding the Watershed
3:45	Door Prizes, Evaluations
4:00	Depart

Wed., Sept. 9 **Part Day [4:00 pm - 8:00 pm VIRTUAL]** **0.25 sem hrs / 3.75 contact hours**

Title: **Going Viral - Coronavirus Lessons you can share with YOUR students**

Presenters: Lt. Col. Tracy Clinton, Associate Professor of Chemistry, USAFA
Jane Wilson, Part-time STEM and science teacher
Sandy Smith, Part-time science teacher

Description: The current coronavirus pandemic has impacted each and all of us in many ways. Join us to learn a bit more about this virus and to explore some coronavirus lessons that you can use with your students this school year. Hear from Lt.Col.Tracy Clinton, an associate professor of chemistry at the USAFA who has recently completed her PHD studying the Ebola virus. Learn how her research is informing current research on the COVID-19 virus. Then, you will participate in an illuminating hands-on investigation that simulates how disease is spread. Experience how this investigation can be utilized to incorporate a phenomena-based lesson into your classroom. Finally, you will learn about other phenomena-based activities you can use with your students. You will receive materials that you can take back and use in your classroom the next day.

Agenda:

4:00 Login and Norms for PALS Zoom Meeting & Open Discussion on Coronavirus
4:20 Administrivia
4:30 Speaker - Virus Research
5:30 Break (get yourself a light/quick dinner/snack)
5:55 Initial door prizes - 5
6:00 DYO Investigation - How do viruses spread and how can we minimize transmission? What is the most effective way to reduce the spread of viruses?
7:15 Break - Announce evaluation
7:25 Door Prizes - 5
7:30 Other Coronavirus lessons to share...
7:45 Evaluations & Teacher Materials & Door Prizes
8:00 End

Sat, Sept. 26 Part Day [8:00 am - 1:30 pm] 0.25 sem hrs / 5 contact hours

Title: **The Discovery of the Rise of the Mammals at Corral Bluffs**

Presenter: Sharon Milito, retired teacher, DMNS volunteer, member of Corral Bluffs Rise of the Mammals Discovery

Description: Corral Bluffs Open Space - in our very own backyard - is the site of a 'paleontological trifecta' that holds a major discovery of how life came back after an asteroid wiped out the dinosaurs. Corral Bluffs combines animal fossils with historical climate indicators and precise dating to tell the story of the 'rise of the mammals'. Located just 10 minutes east of Colorado Springs, this unique area is only accessible by guided hikes that feature the geology, botany and zoology of the area. Join PALS on a custom hike led by a member of the Denver Museum of Nature and Science scientific team. You'll get to see where the different mammal skulls were found at Corral Bluffs and participate in a variety of fossil activities that you could use in your classroom.

Agenda:

8:00	Meet at Space Village Loaf'n'Jug - Sign In, Last minute prep (bathroom, check for long pants, close-toed shoes, waiver)
8:15	Safety Briefing
8:30	Depart for Corral Bluffs
8:45	Introductions & Administrivia - PALS / Corral Bluffs Alliance / Sharon
9:00	What is a Fossil? Activity
9:15	Hike in Corral Bluffs Open Space - Includes multiple stops where different fossils were discovered as well as discussions and a lunch stop.
12:15	Fossil Sort Activity
12:30	Evaluations and door prizes
1:00	Depart for Space Village Loaf'n'Jug

Sat., Oct. 10 Part Day [8:00 am - 12:00 noon VIRTUAL] 0.25 sem hrs / 3.75 contact hours

Title: **Brain Matters: How Stress Impacts the Teenage Brain**

Presenters: Tim Blesse (Teacher Programs Coordinator, Denver Museum of Nature and Science)

Description: Uncertainty and lack of predictability can stimulate the biological mechanisms of stress. In this workshop, you will have the opportunity to take a practical look at the science of stress from the perspectives of neuroscience and behavior. How do we benefit from stress **and** get harmed by it? How can we and our teenage students regulate stress in a way that promotes health and learning? You will have the opportunity to learn from the research of experts and interact with peers in a meaningful way.

Wed., Oct. 28 Part Day [4:00 pm - 8:00 pm VIRTUAL] 0.25 sem hrs / 3.75 contact hours

Title: **Brave New Worlds in Learning:** Approaching our profession in new ways using best practices in remote & hybrid Learning.

Presenters: Tim Blesse (Teacher Programs Coordinator, Denver Museum of Nature and Science)

Description: How do we continue to capitalize on the huge benefits of social constructivist learning approaches when the element of physical proximity is not available? Recent events have catapulted members of our profession into a new period of learning that is both exciting and daunting. In this engaging workshop plan to:

- ➔ **Explore the Question** How do we know what works in Distance Learning?
  - ◆ **Use Case Studies** to determine what is needed for effective Distance Learning
- ➔ **Examine** different Models of Hybrid Learning & **Choose** the Model that works best for you
- ➔ **Learn from** from the successes & failures of some real classroom teachers about:
  - ◆ **Technology –** What role does it play in distance learning
  - ● **Reframe** thinking about how we use technology to meet learning goals
  - ● **Discuss** Tools to Fit the Task
  - ◆ **Working Memory –** What is it and Why is it especially important in distance learning.
  - ◆ **Building Agency & Community** so that students feel connected and persist when working independently.
  - ◆ **Planning – An Introduction to the SOAP Model** for planning distance learning lessons

Sat., Nov 7 Part Day [8:30 am - 12:30 pm] 0.25 sem hrs / 3.75 contact hours

Title: **From the Nile to the Colorado - Hippos and Water Conservation**

Presenter: Stacey Graham, Director of EdVenture Programs, Cheyenne Mountain Zoo Educator

Description: Coloradans and hippos have something in common. We need water, and sometimes it is in short supply for both of us. Join the Cheyenne Mountain Zoo team in exploring all things hippo, including natural history, conservation, adaptations. You will get to meet the zoo's resident hippos: Zambezi, Kasai, and the newly arrived Biko! We will also be

diving into water conservation in both Africa and here in Colorado, and how you and your students can be better water stewards for the planet

Agenda:

8:30 Arrive at Cheyenne Mountain Zoo.
Check in at the front by the elevation sign (left of the front gate)
8:45 Introductions and discuss goals of the day
9:00 Water Use Activity: How much water do you think is used?
9:45 Quick Activity: Calculate Your Water Footprint. How does it compare? Watercalculator.org
10:00 Meet an animal ambassador. Learn how Cheyenne Mountain Zoo connects people to animals through storytelling and hands on animal experiences.
10:30 Water's Edge Africa Tour: Explore the new space, see hippos, penguins, and more! TBD: Meet a hippo keeper!
11:15 Create a Water Filter: How to turn "dirty" water into "clean" water.
12:00 Q&A and Wrap Up; Evaluations and Door Prizes
12:30 Free to explore the zoo on your own!

Sat., Dec. 5 Part Day [8:00 am - 12:00 noon VIRTUAL] 0.25 sem hrs / 3.75 contact hours

This workshop is being restructured to run virtually, with a potential rescheduling of the in-person CaveSim and Cave of the Winds Tour sometime next Spring or Fall 2021. More details will be posted later.

Title: **Exploring the Science of Caving**

Presenters: Dave Jackson, CaveSim Inventor and Engineer

Description: *Description:* From physics, to engineering, to chemistry - CaveSim programs (many now available virtually) teach a wide variety of science lessons, all centered around the theme of cave exploration. The virtual lessons also include biology and geology content. Come join us to see how we are reaching out to students to love science by allowing them to feel the joy of exploration. We'll show you how we teach the physical science of vertical caving, the physics and engineering of a waterproof phone, and the chemistry of carbide lamps in the virtual world. You will get to complete several investigations at home with materials you will pick up in advance. You'll gain a better understanding of how CaveSim virtual programs can integrate with your curriculum, and you'll come away with activities that you can do in your own classroom. Dave may also share how he is adapting CaveSim itself to address COVID-19 pandemic concerns!

More Information: Exploring Caves Goes Virtual !

Join Dave Jackson, inventor of CaveSim (https://www.cavesim.com), for a VIRTUAL exploration of some of the science behind caving. (We still plan to offer a part-day workshop with Dave that will involve the actual CaveSim itself and the accompanying equipment - like the 12' vertical caving tower. That workshop will include more information about the geology and biology of caves.)

For this workshop you will experience three different virtual sessions offered by CaveSim. With direction from Dave, PALS is preparing a set of lab materials that you will pick up BEFORE the

workshop to be used during the workshop. You may also pick up additional materials AFTER the workshop.

- In the Physical Science of Vertical Caving (Session 1) you will experience the power of friction generated by moving rope and see demos involving the use of rope-ascent and rappel devices on a 12’ vertical caving tower. You’ll also get to see the role pulley systems play in vertical caving.
- In a Maker Lab: Sparks, Light, and Ripples you will explore a variety of simple electronic components (batteries, capacitors, resistors, LEDs, and a waterproof speaker) and learn how they are used in the waterproof military phones that are used during underground rescue operations. You’ll even get to create your own cup phone !
- In Carbide Chemistry, you’ll get to explore chemical reactions with simple household powders and an acid. This is in preparation for a more complex acid base reaction that is used to power an older, traditional miner’s lamp - the reaction of calcium carbide with water.