

Thursday, April 14, 2016

8:00am **Breakfast, Introductions, Announcements - Auditorium**

8:30am **Plenary Speaker: Dr. Brook Wilke**, Farm Manager, Kellogg Biological Station. *Innovative solutions for sustainable agriculture at KBS.* – **Auditorium**

We will take a glimpse at the lessons learned from research at KBS relating to ecosystem services associated with crop and livestock agriculture, but primarily focus on management systems that optimize ecosystem services.

9:30am **Concurrent Session Teasers - Auditorium**

At this time, please sign up for carpool groups for afternoon sessions

10:00am **Concurrent Sessions 1**

- A. **Smartphone microscope.** (All grade levels) Jakob Nalley (KBS K-12 Fellow) **Location: Stack 139**

Check out the new smartphone microscope - Jake built for \$10 each with plexi-glass, plywood, a laser and a light source while highlighting existing lesson plans. Water samples, onion cell wet slides. We'll conclude with a brainstorm of how the microscopes could be used in your classroom.

- B. **Adventures in Avida-ED.** (HS track) Louise Mead (MSU) **Location: Terrace Room**

Avida-ED is an award-winning educational application developed at MSU to help students learn about evolution and the scientific method by allowing them to design and perform experiments to test hypotheses about evolutionary mechanisms using evolving digital organisms.

- C. **Ping Pong, Zombies, and Influenza: Let's Build a Model!** (MS/HS track) Anne-Marie Hoskinson (MSU) **Location: Stack 140**

This session is designed to give participants a taste of what scientific models are, what they do for our students, and how we can think about teaching this scientific practice. You will build your own models and brainstorm the many possible applications of models across all the sciences.

11:00am **Break** (Auditorium)

11:15am **Concurrent Sessions 2**

- A. **3D printing in the elementary classroom** (Elementary track) Kim Sandefur (Comstock STEM) **Location: Terrace Room**



KBS LTER
Kellogg Biological Station
Long-term Ecological Research



KBS K-12 Partnership Spring Workshop 2016 – Preparing Tomorrow’s Scientists: Technology in the Classroom

This session will provide an overview of how our school has integrated 3D printing into the curriculum to enhance lessons, beginning with Kindergarten and progressing from there.

B. **Adaptation to freezing temperatures in the model plant *Arabidopsis*** (MS/HS track) Doug Schemske (MSU) **Location: Stack 139**

Learn about an exciting summer RET experience. Research on physiological adaptations that enhance freezing tolerance in the model plant *Arabidopsis* has identified their genetic basis. There is surprising geographic variation in this trait, which has stimulated new questions on how the costs and benefits of freezing tolerance might differ with changing climates.

C. **Nature – there’s an App for that** (All grade levels) Michael Kuczynski and Sarah Garnett (KBS K-12 Fellows) **Location: Stack 140**

iPads and smartphones can be useful tools for science and teaching, but it can be difficult to identify how to use them most effectively. This session introduces several citizen science and naturalist apps and shows teachers how they can incorporate them in the classroom.

12:15pm **Lunch** at McCrary Dining Hall *(All elementary teachers join Kara at lunch to discuss Teaching Science Outdoors)

1:15pm **Assemble with carpool groups to travel to LTER Field Lab (10378 40th St.) or Kellogg Farm Office (10461 North 40th St.)**

1:30 **Outdoor sessions at LTER and Dairy** (groups will do both)

Climate change and agriculture: how can we protect our soils? Julie Doll (KBS LTER)

We will share Michigan climate data showing changes in temperatures, seasonality, and rainfall events, all which can affect soil health. A rainfall simulator will be used to demonstrate how different management techniques can be used to protect soil health.

KBS Dairy field trip Misty Klotz (KBS)

We will talk about different types of pasture plants, their growth rates and the cows needs as we travel via a wagon ride to the dairy barn. At the barn we will talk about how some of the same technology that is in your smart phone also helps manage the farm.

3:30pm **FREE STUFF (including guacamole) and future plans for the Partnership - Auditorium**

4:00pm **Evaluation and Adjourn**



KBS LTER
Kellogg Biological Station
Long-term Ecological Research



KBS K-12 Partnership Spring Workshop 2016 – Preparing Tomorrow’s Scientists: Technology in the Classroom

Directions to:

LTER Field Lab (10378 40th St.)

Turn right out of main KBS entrance

Head east on Gull Lake Dr E (0.1 mi)

Continue onto E B Ave (1.0 mi)

Turn left onto N 40th St (0.4 mi)

Destination will be on the RIGHT

Kellogg Farm Office (10461 North 40th St.)

Turn right out of main KBS entrance

Head east (right) on Gull Lake Dr E (0.1 mi)

Continue onto E B Ave (1.0 mi)

Turn left onto N 40th St (0.4 mi)

Destination will be on the LEFT

