Saturday, April 6, 2013
8:30am–3:15pm
Montana State University, Bozeman

Questions? Contact Ann Wells, MSU Extended University, (406) 994-6836, awells@montana.edu
http://eu.montana.edu/ContinuingEd/youth/

Schedule

8:30am  Registration and Drop-Off
        (EPS Building Lobby*)
9–9:20am  Color Group Activity
9:25–9:50am  Welcome
10:05–10:45am  Workshop I
11:00–11:40am  Workshop II
11:40am–12:20pm  Lunch and Color Group Activity (SUB Union Market)
12:35–1:15pm  Workshop III
1:30–2:10pm  Workshop IV
2:25–3:15pm  Color Group Activity, Wrap-up
3:15 pm  Pickup (EPS Lobby*)

*The Engineering and Physical Sciences (EPS) Building is located on the northeast corner of Grant and South 7th Avenue just east of the Strand Union (SUB). Look for the wind arc sculpture in front. The Visitors’ Parking Lot is across the street. Parking is free on Saturdays. Workshop and Color Group Activities take place at various campus locations.
Expanding Your Horizons Workshops

1. Nutrition for Life and Health
Learn what nutrition is and why a basic understanding of nutrition is important for living a full life, for good health, for raising a family or as a career. Find out what an essential nutrient is, what a calorie is and discover the basics of energy balance.
Dr. Barbara Moore, President & CEO, Shape Up America!

2. How Birds Make a Living
Are you fascinated by nature and curious about the great variety of birds? Would you like to be a naturalist or biologist who investigates birds? Discover bird adaptations to their habitats by putting together bird wings, tails and feet to make a whole bird whose shape relates to its ecology.
Cara Watchorn, Park Ranger, National Park Service, Yellowstone National Park

3. Rabbits and Rodents, Oh My!
This unique workshop will take you on a tour of the Animal Resource Center, where you’ll view common laboratory animals; discuss interesting careers such as veterinarian and animal researcher; and get the opportunity to perform some hands-on procedures.
Dr. Chris O’Rourke, Director & Attending Veterinarian, and Tammy Marcotte, Laboratory Animal Technologist, MSU Animal Resource Center

4. Spill Sleuths
Come and learn how scientists can find the source of pollution in an aquifer. Then try your hand at collecting evidence and following the trail of clues to determine where a mysterious pollutant came from that’s making the water in Smallville undrinkable.
Emily Hinz, Environmental Specialist, and Melissa Sjolund, Hydrologist, Montana Dept. of Environmental Quality

5. Catching a Virus Can Be Fun
Viruses are complex and interesting organisms that can make us very sick, but can also help make us well. In this workshop, you’ll learn about the world of viruses and make your own (non-contagious) virus to take home.
Michelle Tiggies, Associate Professor & PhD Candidate, and Dewey Brooke, Research Scientist, MSU Chemistry & Biochemistry

6. Waves: Secret Messages & a Mystery
Explore the physics of communications by sending secret messages, solving the mystery of the MSU Champ mascot and MSU fight song at the edge of space, and learning about waves.
Dr. Angela Des Jardins, PhD & Director, Montana Space Grant Consortium (MSGC) and Kathryn Williamson, Graduate Fellow, MSU Physics and MSGC

7. Genes and DNA
In this workshop you’ll do what molecular biologists and geneticists do—study genes and heredity. You’ll explore where our genes come from, why they are so important, and what they have to do with DNA.
Dr. Christa Merzdorf, MSU Cell Biology & Neuroscience

8. Using DNA to Improve Livestock Production
Collect DNA from the thymus gland and learn about genetic testing in livestock. See how molecular biology and genetics is being used to select better animals and predict how they will perform, sometimes even before they are born.
Jennifer Thomson, Assistant Professor, and Jane Ann Boles, Associate Professor – Meat Science, MSU Department of Animal & Range Sciences

9. Fossil Exploration
Explore the world or fossils, where they are found, and how they are formed. Check out some simulated rock samples and use the density of each sample to predict the presence of fossils buried within the rock. Finally, excavate the rocks for fossils and compare your predictions to your results.
Kim Yates, Doctoral Student, MSU Department of Education

10. Remote Control Maggots
Organisms including humans and fruit fly larva respond to each of the five senses. We will get fly larva to respond behaviorally to light in the same way they normally respond to touch and heat.
Steve Stowers, Assistant Professor, and Michelle Abrams, MSU Cell Biology and Neuroscience

11. They Think WHAT About Me?!
What might have happened if Albert Einstein had been Alberta Einstein? Do people in our culture have different perceptions of women in science than they do of male scientists? We’ll use psychological science to investigate how people may have unconscious stereotypes. We will also collect and analyze data on the prevalence of gender-related stereotypes and discuss how young women are already changing the culture of science.
Jessi Smith, Associate Professor & Director of ADVANCE, and Elizabeth Brown, Postdoctoral Research Assistant, MSU Psychology

12. Inspecting Sunlight
We can’t travel to the Sun, but we know a lot about what it’s like there. We can find out about temperatures and movement on the Sun from its light. You can build your own spectrograph, and learn how to see the messages hidden in the Sun’s light.
Aki Takeda, Research Scientist, MSU Physics

13. Mission to Mars
Why is it important to visit Mars? Does Mars have water? Did life once exist on Mars? Does it now? To answer these questions, NASA has sent satellites and rovers to Mars, and one day maybe people will visit! Learn what it takes for these difficult missions to succeed.
SPOT, Space Public Outreach Team

14. Kinesio Taping® for Athletic Injuries
Get ready for hands-on health! Learn how to use Kinesio Taping® and exercises to improve your posture, which is key for injury prevention and in displaying confidence.
Janice Garcia, ATC, PTC, WCC, Bozeman Deaconess Rehabilitation

15. Strawberry Short’Cut’ to DNA
Did you know that DNA is in the food you eat? Step into the laboratory and learn a simple method for extracting DNA. You’ll discover why each step is necessary due to the complex organization of DNA in cells, and you’ll also learn why scientists extract DNA from organisms.
Katelyn Mason, MSU Chemistry and Biochemistry

16. A World in Motion
Did you know that girls outshine boys in the areas of math and science during the middle school years? Come join in the fun and design and test your very own sailing vessel or jet toy. You will be glad you did!
Patricia Schneider, SAE International MiPAS Educational Consulting, Association for Women in Computing
17. Motor Mania
Electricity and magnetism work together in many spectacular ways. In this workshop, you will put electricity and magnetism to work by creating your own spinning electric motor using wire, a magnet, and a small battery. At the end, you can take this motor home with you!

Allison Banfield, Ross Snider and Rob Maher, MSU Department of Electrical & Computer Engineering

18. Seeing Sounds, Hearing Pictures
Did you know that computers allow us to both see and hear sounds? We also use computers to understand and modify sound. In this workshop you will listen to, view and process sounds on the computer. You’ll even make your own audio composition to take home via email!

Dr. Linda Antas, Assistant Professor, MSU School of Music

19. Colorful Coatings
Put on those safety glasses and get ready to coat silverware with red, yellow, blue or purple coatings using a fluidized bed that is used by engineers to coat many things we see in our daily lives—like M&M’s!

Roberta Amendola, Assistant Professor, MSU Chemical and Biological Engineering

20. Magnetic Magic
Doctors depend on magnetic resonance imaging (MRI) to diagnose patients. Engineers use MRI to understand unusual fluid behavior. So how does MRI work? We’ll use our MRI machine to diagnose “fruit, vegetable, and candy” patients.

Dr. Jennifer Brown, MSU Chemical and Biological Engineering

21. Jewelry from Recycled Materials
Create a ring sized just for you from a tin can! Measure and layout patterns to design a personal ring to take home.

Bryan Petersen, Assistant Professor, MSU School of Art

22. What do Biomedical Engineers Do?
Biomedical engineers harness the power of engineering to treat diseases, develop medical instruments, help people stay healthy and design everything from artificial organs to bionics. If you like medical fields and solving problems, you’ll love learning about this career!

Sarah Codd, Associate Professor, MSU College of Engineering

23. Drawing in 3-D
Movies aren’t the only place you can see in 3-D. In this workshop you’ll develop an actual computer-aided design (CAD) in 3-D!

Alaina Garcia Scott, Associate Professor, MSU Mechanical Engineering

24. Bubbles and Hot Air Balloons
What can you learn about designing an experiment, variability, and fluid dynamics, just by blowing bubbles? We’ll hypothesize, simulate, and compete in a bubble race!

Beth Burroughs, MSU Department of Mathematical Sciences

25. Celebrating Einstein: Listening to the Universe
Soon a new window into the Universe will open. Astronomy has been deaf for many years, but find out how Einstein’s last prediction, gravitational waves, will reveal what the Universe sounds like when black holes collide.

Ginny Price, Montana Space Grant Consortium, MSU Physics

How EYH Works
Each participant attends four workshops, which are clustered into “color groups.” For example, the Royal color group below will attend workshops 1, 9, 21 and 22. Participants rank their top six color group choices on the registration form. Every effort will be made to place participants in one of their top color choices; however, this is not guaranteed. All groups are unique and aim to “expand your horizons.” Each color group is limited to 12 students and fills on a first-come/first-served basis. The conference is limited to 240 participants. Workshops are listed in numerical order, not in the order of presentation. Participants receive a confirmation, indicating their color group. Each participant attends the four workshops listed in their color group. The $30 registration fee is non-refundable. Please note that EYH is an event for middle-schoolers only. We do not have space to accommodate parents. Thanks for understanding.

----- Color Groups -----
Royal………1, 9, 21, 22
Brick……..2, 10, 14, 25
Navy……. 4, 10, 18, 23
Yellow….. 3, 12, 16, 22
Cherry…….5, 13, 15, 25
Light Pink…..6, 14, 20, 23
Tan………….1, 7, 19, 25
Light Blue……2, 8, 24, 24
Gold…………3, 9, 17, 19
Brown……...4, 16, 23, 25
White……...5, 11, 14, 15
Magenta…..6, 13, 17, 20
Orange.......1, 7, 22, 24
Green........2, 3, 14, 21
Lavender….3, 8, 10, 16
Sky Blue……4, 10, 17, 20
Cinnamon…6, 11, 18, 19
Lime..........6, 12, 17, 20
Purple……..1, 4, 18, 19
Black……...2, 8, 9, 23

Thanks to our EYH Sponsors and Supporters

Expanding Your Horizons is only possible through these generous contributors

Hughes Undergraduate Biology Program with funding from the Howard Hughes Medical Institute
MSU Office of the Vice President for Research Montana NSF EPSCoR

MSU College of Engineering - EMPower
MSU College of Letters and Science
Montana Girls STEM Collaborative Project
Bozeman Business and Professional Women (BPW)
AAUW-Bozeman
Saturday, April 6, 2013

8:30am–3:15pm
Montana State University, Bozeman

A Day of Science and Math Exploration for Girls in Grades 6, 7 & 8