

**October 3<sup>rd</sup>, 2011**

<b>Schedule of Events</b>	
8:00-8:30	Registration and Topeka Zoo Docents
8:35	Welcome and Opening Remarks
9:00	<b>Dr. Mary McCoy - "The Riveting Sand Hill Cranes"</b>
9:30	Morning Labs
10:45	<b>Dr. Susan Stagg-Williams - "What Fuels You?"</b>
11:15	Lunch with lab instructors and time to meet other girls!
11:45am	Afternoon Labs
1:05pm	Special Event!
1:30pm	Closing Remarks

# Special Thanks To:



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**ZONTA**



INTERNATIONAL

Association for Women in Science



**Kansas Department of  
Health and Environment**

Chartwells Dining Services

**KU Association for Women**

**Geoscientists**

Washburn Biology Club

...And many thanks to all the walking leaders, lab leaders,  
assistants, and extra sets of hands!!

# Our Guest Speakers



**Mary McCoy** is an entomologist – she studies insects and spiders. Mary grew up in the country near Kansas City, and spent as much time as possible in the nearby woods when she was young. She graduated from KU in 1961 with a Zoology degree. She earned her Master's Degree in entomology, where she was the only woman in a department with 30 guy students. She worked for the U.S. Forest Service for a year, and then went back to KU for her Ph.D. in Entomology. She taught at Washburn University for 33 years. She has studied social spiders, cockroach behavior, and medical entomology; and more recently she has studied the complicated and amazing ecosystems found in tropical rain forests. Her studies have taken her to rainforests in Ecuador and Peru in the Amazon

lowlands, and to the Galapagos Islands. In 2010, she travelled to Vietnam and Cambodia. She LOVES teaching, and biology, and the study of all organisms.

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**Susan Stagg-Williams** is an Associate Professor of Chemical and Petroleum Engineering at the University of Kansas. She grew up in Michigan and earned a bachelor's degree in Chemical Engineering from the University of Michigan. She moved to Oklahoma to get her PhD and then came to the University of Kansas in 1999. She loves to teach and has been active in running science camps since arriving at KU. Susan has an active research program specializing in catalysis for the production of alternative fuels including synthesis of gas and bio-based fuels. She is the co-originator and director of the KU Biodiesel Initiative which converts used cooking oil from the campus dining services into high quality transportation fuel. She is also the leader of the "Feedstock to Tailpipe<sup>®</sup>" research team which looks at sustainable feedstocks for the production of next generation liquid fuels. The multidisciplinary team includes more than 25 faculty, scientists, and students from chemical, mechanical and civil, architectural and environmental engineering, as well as ecology and evolutionary biology, and geography. The team is currently investigating the production of biofuels from waste-water fed algae.



# Lab Descriptions:

## Lab 1: Who Dunit?



Who Dunit? That is the question our budding forensic chemists will answer using and viewing analytical techniques used in actual crime laboratories. The hands-on laboratory will allow our future forensic scientists to run two types of chromatography. The demonstrations will include identification of a white powder by Infrared Spectroscopy (IR), differentiating various clear liquids by color change using Atomic Absorption Spectrophotometry (AAS), and – the ultimate crime solving tool – DNA analysis.

**Lab Leaders: Sue Salem, Sam Leung**

IR spectroscopy:

<http://video.google.com/videoplay?docid=-409480474387708300>

Chromatography:

<http://www.chemguide.co.uk/analysis/chromatography/paper.html#top>

Emissions:

[http://en.wikipedia.org/wiki/Emission\\_spectrum](http://en.wikipedia.org/wiki/Emission_spectrum)

DNA:

<http://www.youtube.com/watch?v=DZzuNpEwkvq>

## Lab 2: Volcanoes!

This lab will delve into all aspects of volcanoes - some of the most feared and awe-inspiring structures in the natural world. The lab will be divided into four stations that will cover everything from how volcanoes are formed to the history and dangers of volcanic eruptions. You will be able to build your own volcanoes and watch them explode, play with edible magmas and lavas, and model the formation of magma deep within the Earth's crust.



**Lab Leaders: Osage Chapter of the Association for Women Geoscientists; Cori Myers**

<http://en.wikipedia.org/wiki/Volcanology>

General information on volcanoes monitored by the USGS; Volcanoes and volcanology:

<http://volcanoes.usgs.gov/>

How Do I become a Volcanologist and what kind of schooling do I need?

<http://volcanoes.usgs.gov/about/faq/index.php>

OSU's Website on Volcanoes for Kids:

<http://volcano.oregonstate.edu/kids/index.html>

Smithsonian Global volcanism program:

<http://www.volcano.si.edu/faq/>

Geology/Geography Games and information:

<http://www.kidsgeo.com/>

Volcanology/plate tectonics:

<http://www.kidsgeo.com/geology-for-kids/0037-the-earth-earth-inside-out.php>

### **Lab 3: Am I Related to THAT? *Tracing our evolutionary history in the fossil record***

Where did modern humans come from and how did we get here? We will uncover our evolutionary history through an interactive lab using casts of our earliest ancestors. Students will compare key anatomical features and discover what makes us human. Is it a larger brain, a bipedal gait, or the ability to talk? The fossils have the answer.

**Lab Leader: Mary Sundal**

### **Lab 4: What's In That Dirty Mouth?**



You probably know that the mouths of cats and dogs have lots of bacteria living inside of them. What you may or may not know is that human mouths also contain a wide variety of microorganisms. Are you curious about what kinds of bacteria you can find in your mouth? Come search your own saliva samples for bacteria that live inside the human mouth and discuss some of the positive and negative impacts these microbes have on your lifestyle.

**Lab Leader: Susan Bjerke**

<http://commtechlab.msu.edu/sites/dlc-me/zoo/zahmain.html>

### **Lab 5: What Lies Beneath?**



Everyone enjoys spending time at the lake. Have you ever looked out over the water and wondered what goes on beneath the lake surface? There are a lot of things going on down there! The unique physical properties of water allow lakes to separate into distinct layers during warm summer months. This process is called thermal stratification. During this laboratory you will construct a model lake, create thermally distinct layers, explore how storms affect these layers, and discuss the influence these layers have on water quality and aquatic organisms.

**Lab Leader: Jennifer Graham**

<http://faculty.gvsu.edu/videticp/stratification.htm>

[http://waterontheweb.org/under/lakeecology/05\\_stratification.html](http://waterontheweb.org/under/lakeecology/05_stratification.html)

## Lab 6: Would You Drink That Water?

The chemical properties of water tell a story about where it came from. Learning about what's in water and its watershed can be a great adventure! During this lab, students will test water from several sources. The test results will give clues about where the water came from and whether or not students would want to drink it. Students will have the opportunity to use leading edge technology to test for chemical properties such as dissolved oxygen, nutrients, and pH.

**Lab Leader: Mandy Stone**



Information about water chemistry:

<http://ga.water.usgs.gov/edu/waterquality.html>

<http://www.dnr.mo.gov/env/wpp/vmqmp/vwqm-intro07.pdf>

Hydrology and what hydrologists do:

<http://ga.water.usgs.gov/edu/hydrology.html>

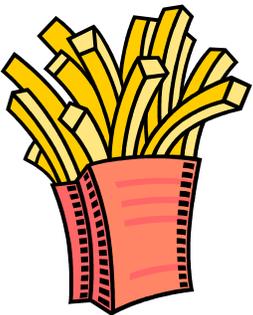
## Lab 7: Everyday Super Powers!



We all know that if you touch something hot, you will pull back quickly, or if an insect flies towards your eye, you blink. Have you ever thought about how that happens? Come investigate the amazing "World of Reflexes". See how reflexes protect you by utilizing different parts of the nervous system, then test the speed and strength of some of your reflexes.

**Lab Leaders: Paul Wagner, Tracy Wagner**

## Lab 8: What's the Fate of that French Fry?



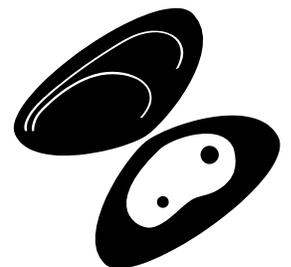
Have you ever wondered what happens to a French Fry after you eat it? In this lab, we will learn about the human digestion process and specifically the digestion of starch. You may know that starch and sugars are carbohydrates, but have you wondered what a "carb" is exactly? Did you know that your body makes an enzyme called amylase that is able to digest starch? Have you ever wondered what enzymes actually are and how they work? In this lab, we will answer all these questions. We will also conduct experiments to determine the kinds of conditions under which amylase works best.

**Lab Leader: Kristin Barkus**

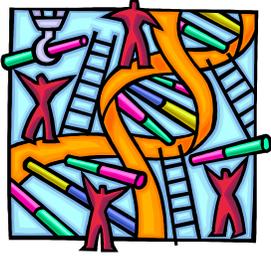
## Lab 9: Mussel Power!

Did you know that oysters and clams have relatives in the Midwest? Learn all about freshwater mussels from the inside out – from anatomy and life history to amazing facts about their diversity and ecology – and then take a mussel shell home with you!

**Lab Leader: Liz Smith**



## Lab 10: DNA – The Art of Science



When Rosalind Franklin, a female biophysicist, first saw the double helix model constructed by Crick and Watson based on her research, she exclaimed, “All that matters is the beauty.” By creating your own jewelry model of DNA (deoxyribonucleic acid), you too can experience Ms. Franklin’s delight in the beauty of the master molecule of life! In this lab, you will learn about the structure and function of DNA by constructing a wearable model (necklace, earrings, or key chain) of this double helix design.

**Lab Leaders:** Susan Metzger, Bobbi Wendt



## Lab 11: Why Do You Run So Fast?

Have you ever wondered why some people can run faster, longer, better than others? How fit do you think you are? The Physical Therapy Department at Washburn University will give you an hour full of fitness testing and training tips for fitness and fun. Bring your workout clothes, running shoes, a willingness to test your fitness level, and all the questions you have about physical therapy and becoming involved in your own fitness as well as a career that focuses on helping others do the same.

**Lab Leader:** Jean Sanchez

## Lab 12: Presto Chango: How the Dragonfly Gets its Wings



Did you know dragonflies start their lives in the water? They swim and crawl when they are young and fly when they are adults! Like butterflies, they undergo metamorphosis. We'll look at several different kinds of insects that move from the water to the land as they age. Learn about the changes that happen as they make this transition, from how they get around to what they eat. Come compare the young to the adults - the differences will astound you!

**Lab Leader:** Sarah Schmidt